



Study

Global Health Competencies for Family Physician Residents, Nursing, Physiotherapy and Occupational Therapy Students: A Province-Wide

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Thesis submitted to the Faculty of Graduate and Postdoctoral Studies
In partial fulfillment of the requirements For the PhD degree in Population Health

Population Health PhD Program
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Shall I teach you what knowledge?
When you know a thing, say that you know it;
when you do not know a thing,
admit that you do not know it.
That is knowledge”
Confucius

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List of Abbreviations and acronyms used in this thesis

GHC	Global Health Competencies
WHO	World Health Organization
WCPT	The World Confederation for Physical Therapy
CAN	Canadian Nurses Association
GHHE	Global Health and Health Equity
SDH	Social Determinants of Health
e.g.	for example
CIHR	Canadian Institutes of Health Research
et al.	and others
Vs	Versus
US	United States
UK	United Kingdom
SEP	Socioeconomic Position
LSIC	Canada's Longitudinal Survey of Immigrants to Canada

Thesis 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 interprofessional practice. Although Health professionals are paying increased attention to issues of global health, there are no current competency assessment tools appropriate for evaluating their competency in global health. This study aims to assess global health competencies of family medicine residents, nursing, physiotherapy and occupational therapy students in five universities across Ontario, Canada

Methods: A total of 429 students participated in the Global Health Competency Survey, drawn from family medicine residency, nursing, physiotherapy and occupational therapy programs of five universities in Ontario, Canada. The surveys were evaluated for face and content validity and reliability.

Results: Factor analysis was used to identify the main factors to be included in the reliability analysis. Content validity was supported with one floor effect in the “racial/ethnic disparities” variable (36.1%), and few ceiling effects. Seven of the twenty-two variables performed the best (between 34% and 59.6%). For the overall rating score, no participants had floor or ceiling effects. Five factors were identified which accounted for 95% of the variance. Cronbach’s alpha was >0.8 indicating that the survey items had good internal consistency and represent a homogeneous construct. The results of the survey demonstrated that self-reported knowledge

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 themselves confident was less than 60% for all global health issues.

Conclusion: The Global Health Competency Survey demonstrated good internal consistency and face and content validity. The new century requires professionals competent in global health. Improvements in the core competencies in global health can be a bridge to a more equal world. Institutions must offer interprofessional approaches and a curriculum that exposes them to a varied learning methods and opportunities to improve their knowledge and skills in global health.

Dedication

This thesis is dedicated to three people who are the tripod of my life:

my wonderful love and life partner, Shane Bastien, my mother Maria Soares Veras (Socorro

Veras) and my daughter Rayne Maria Bastien,

who inspire and encourage the best version of me.

Together they bring balance and happiness into my life.

I am forever grateful for the gift of their love.

“Nunca deixe que lhe digam que não vale a pena
acreditar nos sonhos que se têm
ou que os seus planos nunca vão dar certo
ou que você nunca vais ser alguém...”

Renato Russo

Acknowledgement

I feel so relieved to have finally completed my thesis. It is a milestone moment in my life. Since I came to Canada about four years ago, it has been a long, tough, yet very rewarding journey. Looking back, I know I have come a long way to reach this point in my life, a stage with more knowledge, experience, understanding, and responsiveness. My thesis was a long journey and I was blessed to be able to find so much help and support from a lot of people. They gave me guidance and support in all steps of my thesis, a journey which I had already started in Brazil. The completion of this thesis would not have been possible without the guidance, help and encouragement of many people who in one way or another contributed to and extended their significant assistance in all steps of the preparation and completion of this study. All the words do not fully encompass how these people have assisted me both in my work and in my personal life.

Firstly, I would like to thank my supervisor, Dr. Peter Tugwell, who has provided me with continuous mentorship and guidance over the years we have worked together. He helped me to face the language barriers to achieve my goals as a person and as a researcher. His dedication and generosity helping me with other side-projects is greatly appreciated also. I truly admire his expertise, which is best demonstrated by the level of dedication and hard work of colleagues, inspired by his leadership and presence. I am in debt to him forever. I also would like to thank my co-supervisor Dr. Kevin Pottie who has been a positive influence in both my academic as well as my professional career. He continually encouraged me to improve my abilities in a way that developed and enhanced my strengths.

Even though he is heavily involved with so many activities and research, he still finds the time to keep in touch. I would also like to thank the other members of my committee for their

constructive input, valuable insights, and guidance: Dr. Ron Labonte and Dr. Tim Ramsay. Dr. Ron Labonte is the finest student-centered professor I have ever had the pleasure of working with. His absolute passion for what he shares with his students is truly inspiring. Dr. Tim Ramsay was always available to help me with statistical analyses and guidance in finding the best strategies for analyzing my results. Together all these individuals have contributed significantly to my knowledge and understanding of global health and population health.

My sincere gratitude also goes to Dr. Vivian Welch, for sharing her expertise and providing nurture and guidance for all steps in this journey. No matter how busy she was, she always found the time to discuss my challenges and encourage me. I am also grateful to Dr. Cory Borkhoff for his tutelage, advice, and guidance during my thesis journey. Many thanks to Dr. Eric Duku and Dr. Javier Eslava Schmalbach for their statistical advice. Many thanks to Dr. Mark Wieland for your support and for sharing your survey and many materials that we used for this survey. Many thanks also to Dr. Lana Augustincic for sharing her global health survey.

I have been fortunate to have many other people both at work and at home who have supported me without fail through this long journey. I am thankful for the support that I received from everyone at the Center for Global Health. I am especially grateful to Jordi Pardo, Karine Toupin-April, Tamara Rader, Maria Cannataro, Elizabeth Ghogomu, Bob Shumsky and Kerry O'Brien. Thank you Dr. Karine Toupin-April for generously sharing your applications and giving me advice to guide my work. I would also like to thank Liz Lacasse who helped me edit some letters and gave me support in the beginning of my life in Canada.

I would like to thank Dr. Nathan Souza who recommended the program to me and introduced me to Dr. Peter Tugwell. He has been a tremendous support to me through the years. I pay my respect and gratitude to him and wish him my best. Thank you as well to Roseline Savage, for her support and guidance related to the PhD Population Health Program.

Finally, this journey was positively enabled through the unconditional love and support of my family and friends and especially my love Shane Bastien. This journey would have been harder if I had not met Shane in the middle of my program. He is my rock. I would not have been able to complete this thesis without his continuous support. I am very fortunate to have him in my life and his encouragement is always a great strength to me. He always motivates me and encourages me to follow my dreams. His diligence in editing my papers has improved my writing tremendously. He always listened patiently and compassionately, and gave me the support I needed. Thank you my love for the best gift ever: Our daughter Rayne. Thank you also for taking good care of her when I was writing this thesis.

I am also grateful to Rayne Maria Bastien, who was born in the middle of this journey. My daughter is a source of unending joy and love. She has inspired and changed my life in a very positive way. I always heard that some people delay their thesis because of their children. I can say that it was the opposite with me. After Rayne was born, I learned how to be more efficient and have more focus in my work. As a result, I finished my program without delay.

My family has been there for me through every occasion in my life. I could not have asked for a more supportive and loving family.

My parents have always encouraged me to be the best I can be and to them I owe everything. Thank you my mother, Socorro Veras and my father Mardonio Veras. Even though they are in Brazil, and didn't have educational opportunities to pursue university degrees, they always did everything possible to make sure I would be able to have a higher education. Thanks God, for blessing me with all these opportunities and for putting all the right people in my life.

CHAPTER ONE

Literature Review, Rationale and Objectives

“To acquire knowledge, one must study;
but to acquire wisdom, one must observe.”

— Marilyn Vos Savant

Context of the Research

Globalization in the 21st Century is affecting health and health care. Globalization is defined as “the ways in which nations, businesses, and people are becoming more connected and interdependent across national borders through increased economic integration, communication, cultural diffusion, and travel.”¹ All these changes represent new challenges for health systems and health workers resulting in an impact on health equity within and between countries. For example, inequalities in health persist throughout Canada². Canadians are considered to be one of the healthiest people in the world. However, there are some differences in the health status between some groups of Canadians. Health inequalities exist and are mainly related to aboriginal status, gender, educational level, income, geographic location and other characteristics that can bring some disadvantage or inequality in opportunities to access health status for some groups compared to other groups ².

To guide this research, disadvantaged populations and persons vulnerable to inequity have been identified using the ‘PROGRESS’- Plus Framework. The acronym PROGRESS stands for Place of residence; Race/ethnicity/culture; Occupation/unemployed; Gender; Religion; Education; Socioeconomic status (SES); and Social capital ³. “Plus” incorporates other important elements which impact health equity (e.g. disability, sexual orientation, age and other conditions that can increase health vulnerabilities) ⁴.

The World Health Organization (WHO) has defined health inequalities as “differences in health status or in the distribution of health determinants between different population groups” Some of these differences are attributable to biological or other conditions outside of the

individual's control. However, if these differences are avoidable, unfair and unjust, the inequalities will result in health inequity⁵. Promoting health equity means eliminating health inequities. For this study, health equity is defined as “absence of systematic disparities in health (or in the major social determinants of health) between groups with different social advantages/disadvantages (eg. Wealth, power, prestige)”⁶. Therefore, health care professionals and health systems act as an intermediary determinant of health and play an important role in addressing inequalities through equity policy and intersectoral interventions⁷. They are an important component in providing effective care for disadvantaged populations⁸. Therefore, the quality of the education for health students is an essential element in the effectiveness of health care⁹. We believe that improving the family medicine, nursing, occupational therapy and physiotherapy knowledge about global health may help to reduce health care disparities and address the bias and misperceptions about treatments such as gender and race/ethnicity stereotypes that seem to contribute to the previously observed suboptimal care of vulnerable populations. Hence, improving the quality of education for health students related to preventing health inequities for all populations can contribute to achieving effective health care.

For this study, global health is defined as “an area of education, research, and practice that places priority on improving health and achieving equity in health for all people worldwide”.

¹⁰ Furthermore, understanding that family physicians, nurses, occupational therapists and physiotherapists play an important role in providing effective health care for all populations, specifically the socially disadvantaged populations who experience persistent health disparities in Canada, we must ask the question: Are Ontario's family physicians, nurses, occupational

therapists and physiotherapists trained to provide effective care for diverse and socially disadvantaged populations in a global health context?

Many family medicine residency, nursing, occupational therapy and physiotherapy programs provide training in global health in order to help these professionals provide effective care to socially disadvantaged populations ¹¹⁻¹⁴. However, training usually consists of a short course and practicum training in an international setting ¹⁵. To our knowledge, until now, there are no tools to assess learners' needs or competency-based programs currently available to ensure the quality and effectiveness of health professionals programs ¹⁶.

Considering that health equity is one major goal of global health ¹⁰ and its focus on local health inequalities as well as cross-border issues, it is essential for health professionals to develop competences to work with global health. Hence, the purpose of this research will be to assess the family medicine residents, nurses, occupational therapists and physiotherapists' knowledge, skills and learning needs towards global health and health equity. Moving from theory to practice, the study aims to improve health care by improving family medicine residents, nurses, occupational therapists and physiotherapists' educational competencies related to global health and health equity based on the needs identified in the survey.

Current State of Knowledge

The following section reviews the literature on health systems and social determinants of health; language barriers and access to health care, global health education in Canada and global health competency for family physicians, nurses, occupational therapists and physiotherapists.

Health Care and Social Determinants of Health

Individuals living in high-income countries are among the healthiest in the world. However, even in high-income countries, the opportunity to be healthy varies by degree of social advantage, with the poor and vulnerable bearing an unequal burden of disease ^{17, 18}. Health disparities vary along with health status between certain characteristics of population groups ¹⁹. Characteristics such as social economic status, ethnicity, gender and geographic location play a crucial role in health disparities in Canada. For instance, according to geographic location, people living in Canada's northern remote areas have the lowest disability-free life expectancy (DFLE) and the lowest life expectancy compared to people who live in other areas. Additionally, these people have higher rates of smoking, obesity and heavy drinking than the Canadian average ¹⁹.

Related to gender and ethnic characteristics, men with low income live an average of five years less than men in the high-income quintile. Similarly, the gap among women is two years. Canadian men live 7 years longer than First Nation men and Canadian women lives 5 years longer compared to First Nation women ¹⁹. Aboriginal people are twice as likely to report fair or poor perceived health compared to non-Aboriginal people in the same income levels ¹⁹. One study about the communication between Aboriginal people and physicians revealed that both of them felt that it is useful for physicians to comprehend Aboriginal history and culture²⁰.

In addition to gender, ethnic and geographic characteristics, Canada has a significant number of immigrants. Between 2001 and 2006, an annual average of 242,000 individuals

were admitted as permanent residents into Canada ²¹. In 2006, both Ontario and British Columbia were home to recent immigrants and Ontario has 54.9 % of the foreign-born population and 52.3% of the recent immigrants ²². Several studies have demonstrated differences in health conditions and use of health care by immigrants' status ²³⁻²⁵. Recent immigrants (less than 10 years) generally have health status comparable to the Canadian population. However, their health status changes over time ²⁵. Some explanations for differences in access to health care include barriers in terms of language, socioeconomic status, culture and social network ²⁶

Access to and use of health care is also inequitably distributed. In the case of gender, women's lower rates of receipt of health care procedures and services are well documented. For example, women, based on need, are less likely than men to receive lipid-lowering medication after a myocardial infarction ²⁷ or be referred for total joint arthroplasty ²⁸. In the same Ontario population-based cohort study of individuals with disabling hip/knee osteoarthritis, a health care disparity based on need for total joint arthroplasty was also found among individuals with less education and lower income ²⁹.

Similarly, patient ethnicity has been shown to be a significant predictive factor in a number of treatment decisions including physicians' recommendations for cardiac catheterization ³⁰. Findings from a study involving short vignettes showed that family physicians often consider combinations of patient demographic characteristics such as race, gender, socioeconomic status and age as barriers to successful self-management of diabetes, allowing assumptions about patients' personalities and behavioural tendencies to influence their clinical decision making ³¹.

Disparities (or inequalities) in the prevention of disease, timely diagnosis of disease, and in the use of medical or surgical interventions based on patient characteristics, such as

SES, race/ethnicity/culture, or gender meet the standard working definition of health care inequities – differences that are not only unnecessary and avoidable, but also unfair and unjust.³²

The evidence of persisting health disparities in Canada emphasizes the need to assess the family medicine resident, nurses, occupational therapists and physiotherapists' knowledge and learning needs related to global health and health equity in order to reduce or eliminate these disparities.

Language Barriers and Access to Health Care

Language is considered one important barrier to access health care and is a risk factor for negative outcomes³³. In countries with increased movement of travel and immigration, it represents a challenge for health professionals³⁴. Studies have shown that patients' satisfaction with health services and health outcomes is associated with health professionals' ability to communicate with patients³⁵. The lack of efficient communication may result in numerous problems, such as low compliance with medication and misdiagnoses³⁶. Studies in North America have shown that limited literacy is associated with higher rates of chronic disease, and that socially disadvantaged populations face more barriers in accessing health care and have less awareness of health promoting behaviors³⁷. Additionally, results of the Longitudinal Survey of Immigrants to Canada have shown that poor language proficiency is associated with poor self-reported health at both six months and two years after immigrants' arrival³⁸.

There are various methods to overcoming the language barrier in health care. Some solutions used in tackling these barriers are: the use of bilingual healthcare providers³⁹, use of ad hoc interpreters (family members, friends, untrained medical and nonmedical staff, and strangers) and professional interpreters³⁵; use of pictures in printed educational material⁴⁰, videos, theatrical and other dramatic presentations⁴¹; and also by including health professionals from different backgrounds in the health system⁴²

Working with a multicultural multilinguistic population demands global health skills to address local and international health issues. Perhaps this is one of the reasons why there is an increased interest in global health. For example, nursing programs in Canada have responded to this need and have added global health to their nursing curricula⁴³. Language fluency is also a barrier for internationally educated nurses working in Ontario and they represent 11% of the total nurse workforce⁴⁴. Few studies have investigated nurses' communication skills and their perception of language barriers in their care⁴⁵. Moreover, there are no studies to investigate if there are differences between nurses' language abilities and global health skills. Furthermore, this thesis also assesses the influence of language ability in global health skills within nursing students in Ontario, Canada.

Global Health Education

Increases in travel, migration and economic integration between countries have caused a spread of several diseases and highlighted the need to understand the connection between health and a globalized world.⁴⁶ At the same time, this connection emphasizes the need to

prepare health professionals to deal with these problems, work across disciplines and find solutions within and between countries when necessary.^{10, 46}

Global health is referred here not merely as a health issue associated with location, but as an extent of the problem.¹⁰ In this context, global health can focus on domestic health inequalities, as well as cross-border problems. Therefore, every health problem that affects several countries or is influenced by worldwide determinants or demand for transnational solutions can be considered global.¹⁰

The interdisciplinary scope of global health requires professionals from many disciplines to work with prevention, treatment and rehabilitation aspects of health issues.¹⁰ Many disciplines such as medicine, nursing, physiotherapy and occupational therapy can contribute to global health. In recent years, the discussion about globalization and health has influenced students to engage in global health activities.⁴⁶

There is an increasing demand for global health training among medical students.⁴⁷ The Canadian Medical Association developed specific learning objectives addressing health care inequalities within and between Canadian borders and also emphasizes this knowledge as an essential principle for physician professionalism.⁴⁷ However, there are few data related to global health education in Canadian medical schools. There is also a lack of consensus on skills and knowledge related to global health in medical schools.⁴⁷

A study regarding global health activities in 17 Canadian medical schools showed that despite the growing demand for global health training, medical schools did not respond satisfactorily.⁴⁶ Most of the global health training in medical schools focuses on international electives and only 30% prepare their students for overseas practice.⁴⁷ According to the 2005-

2006 data, in Ontario, McMaster University, University of Ottawa and Queen's University offer elective global health courses.⁴⁷ McMaster University and University of Ottawa are the only universities that require global health lectures or modules with concern primarily in global health issues.⁴⁷ No medical schools at the universities in Ontario have a mandatory course in global health⁴⁷

Regarding nursing education, there is also a lack of training in the essential global health issues in the majority of nursing under graduate programs.⁴⁸ Although there is an increased inclusion of elective global health experiences in nursing programs⁴⁹, the role of the nurses in these international experiences have received little attention.⁵⁰ Some nursing programs in Canada have responded to the need to include global health in their nursing curricula.⁴³

In Ontario, the University of Toronto (Bloomberg Faculty of Nursing) has an international office for global health issues.⁴³ A pre-departure course for overseas experiences is offered to nursing students. The course covers preparation, placement expectations, support and post-trip.⁵⁰ McMaster University has a global health office which works in collaboration with all schools in the Faculty of Health Sciences, including medicine, nursing and rehabilitation science.⁵¹ Many universities do not have mandatory courses in global health and/or have not documented their experiences. The Canadian Nurses Association emphasizes the lack of discussion and documentation of initiatives to include global health content into nursing curricula.⁵²

Physiotherapy and occupational therapy are important disciplines for global health. The increasing risks of disabilities resulting from natural disasters and illnesses have increased the demand for these professionals worldwide.^{53, 54} The International Centre for Disability and

Rehabilitation (ICDR) at the University of Toronto has encouraged a focus on global health issues related to disability and rehabilitation within the rehabilitation sciences. The number of students who have experienced international clinical internships have increased ⁵⁵.

Some universities in Ontario have global health departments that integrate several disciplines. The Faculty of Health Sciences at the University of Ottawa has a department for developing research and training in global health with an emphasis on interdisciplinary cooperation and global citizenship and health care inequality addressing local and international issues. ⁵⁶ McMaster University has a global health office functioning in collaboration with all schools in the Faculty of Health Sciences such as medicine, midwifery, nursing and rehabilitation science. ⁵⁷

In 2006, an interprofessional student group at a Canadian University developed an extracurricular seminar on global health for nursing, medicine, occupational therapy and physiotherapy. Participants of this seminar considered global health to be an important vehicle for an interprofessional education ⁵⁸. Global health was also considered by participants as an excellent opportunity for professionals to understand the role of each discipline in health care and help to create relationships and respect between individuals ⁵⁸.

Global Health Competencies

The increasing demand in global health in the last decade has been a response to the awareness of globalization processes, that impact domestic and international health and also the challenges faced by health professionals to adjust their practices to this new reality. ⁵⁹ Despite the proliferation of global health programs in Europe and American universities, core professional global health competencies and adequate curricula have not been defined. ^{59, 60}

Currently, students of universities in Canada are likely to be inadequately trained to meet the health challenges in the globalized world.⁶⁰ A study has shown that even though 28% of US and Canadian medical students participated in a global health experience, 43% of those who graduated in 2008 considered their global health training as inadequate.⁶¹ A survey of 17 medical schools in Canada demonstrated a lack of consensus between universities and their global health training which was chaotic and without standardized guidelines.⁴⁷

A study conducted in 2010 in Canadian medical schools identified 15 competencies for undergraduate medical training in global health. The most frequently identified competencies included an understanding of travel medicine, global burden of disease, health care disparities, immigrant health, primary care; and skills to work with populations with different characteristics.⁶² However, there is no consensus among schools on what competencies are adequate for global health training.⁶²

Another study conducted with nurses from eight countries presented several competencies for nursing work with global health: 1) open-mindedness and flexibility, 2) cultural sensitivity, 3) optimism, energy, resiliency and resourcefulness, 4) honesty and integrity, 5) stable personal life (for self confidence), 6) technical and business skills; and 7) passion for the cause.⁶³

Lack of defined competency in some disciplines and the lack of consensus related to the competences in global health either in the same discipline or between are clear.^{62, 63} Despite the interest and importance of global health to face health inequalities and strength of the health systems, there is an important need to define fundamental competencies for health professionals to work with global health.⁶²

Purpose of the Thesis

Rationale

In order to improve global health training and to tailor this training to family medicine residence, nursing, physiotherapy and occupational therapy programs there is a need for tools to assess learners' needs and better competency-based tools to develop and support these education programs. To our knowledge, until now there has been no study assessing the core competences for these professionals to work in global health. Some studies provide assessment of parts of these competencies such as cultural competence and social justice among others. However, there are no studies assessing the full core competence for these professionals to work in global health and health equity. Therefore, to achieve global health and health equity competencies, an evaluation of the curricula and needs assessment survey can provide essential tools to improve the global health and health equity learning for family physician residency, nursing, physiotherapy and occupational therapy programs.

In addition to program's improvement, this research contributes to enhance health equity in the health system. The Commission on Social Determinants of Health- World Health Organization considers health care systems to be a social determinant of health. Equal access to health care is an important element for reducing social inequalities in health care. Therefore, this research contributes to population health by exploring the gaps in the medical education for family physician residents, nurses, physiotherapists and occupational therapists.

Furthermore, improving health professionals' knowledge about global health and health equity may help to reduce health inequalities.

Overview of the Thesis

Following this introductory Chapter 1, Chapter 2 presents the process of developing the Global Health Competencies Survey for family physician residents, nursing, physiotherapy and occupational therapy students in order to assess the self-perceived knowledge, skills and learning needs in global health. Results of the survey are given in chapters 3, 4 and 5. Chapter 3 provides the results of global health competencies for family physicians in Ontario, Canada. Chapter 4 assesses language abilities of nursing students and their skills and learning needs in global health. Chapter 5 elaborates on the findings of Chapters 2 and 3 including a comparison of the self-perceived competencies in global health for family physician residents, nurses, physiotherapists and occupational therapists while Chapter 6 provides a summary of the thesis and draws the conclusions, and recommendations for future research

Objectives

This study has five objectives to assess health student's knowledge in global health and health equity.

- 1) To develop and validate a questionnaire to assess Ontario's health students' knowledge and learning needs about global health and health equity.

- 2) To describe global health competency in family physician residents in Ontario in order to understand their perceived confidence in knowledge and skills in global health as well as learning needs in the major global health topics.
- 3) To assess if there is a difference between nursing students who speak one language and nursing students who speak two or more languages (self-reported language proficiency) and their skills and learning needs in global health.
- 4) To describe the global health competencies and learning needs for physiotherapy and occupational therapy students in Ontario, Canada.
- 5) To conduct a survey and analyze the needs assessment of family physician residents, nursing, occupational therapy and physiotherapy students in order to compare and evaluate their knowledge, skills and learning needs about global health and health equity.

Conceptual framework

For this thesis I built one framework “Global Health and Health Equity (GHHE)” (appendix 1) that was a result of combining two existing frameworks. The first framework used was the *W(e) Learn Framework for online interprofessional education* (appendix 2). This framework was developed by authors from the faculty of education, University of Ottawa and was used to guide design, development, delivery and evaluation of online interprofessional education in both pre and post education environments ⁶⁴. W(e) Learn Framework is grounded in socioconstructivist theories and interprofessionalism. The framework focuses on achieving improvement in care delivery and patient well-being through continuous evaluation during the

design process, development and delivery of the education which permits adaptation and improvement when necessary⁶⁴.

The socioconstructivist theory is based in the work of Vigotsky. This theory holds that a person is able to make meaning of knowledge within a social context. Knowledge is defined here as a meaning that is accepted through negotiation and social interaction within a community⁶⁵. Thus, knowledge and learning are considered not as products of observation, but of the social and interactive process among people^{66 67}. For social constructivism theory, social worlds are made as individuals interact with society and culture⁶⁸. Considering this interaction, family physician residents should have competence to understand and negotiate with the population with which they interact. Competence here is defined as “the skills, understanding, and professional values of an individual ready to begin practicing independently”⁶⁹.

The interprofessionalism theory refers to a set of values and principles of conduct related to provision of health care which incorporates the knowledge and expertise of professionals from different disciplines, patients and key stakeholders to establish common goals to develop practices in health care⁷⁰. Interprofessionalism is essential for enhancing communication between health care teams, improving quality of care and achieving better outcomes for patients⁷¹. For interprofessionalism to work, team members need to be able to understand their own discipline and the interaction of their discipline with others and with patients’ perspectives, as well as the strengths and limitations of their disciplines⁷². For building knowledge in global health and health equity, a set of disciplines and their interactions are necessary to better understand the complexity of these topics in the care and patient outcomes.

The second framework is the Global Health in Family Medicine Framework ⁷³ (appendix 3), developed by educators from six medical schools in Ontario. The Global Health in Family Medicine Framework will be used to guide development of the questions for the survey as well as the critical appraisal of the content of existing curricula and family medicine, nursing, physiotherapy and occupational therapy. The framework attempts to guide curriculum development for global health and to identify crucial values and principles for global health core competence for individuals and populations and also learning methods that aim to achieve changes in the curricula for family medicine residence, nursing, physiotherapy and occupational therapy ⁷³. Although the framework was designed for family physicians, the content can be applied to others health professionals, such as nurses, physiotherapists and occupational therapists. Additionally, the framework incorporates elements of learning methods to support the development of skills, curriculum, and leadership for health professionals interested in global health and health equity.

The principles and values of the framework are: social justice; equity; solidarity; reciprocity; honesty and openness; humility; responsiveness and accountability; and sustainability. According to this framework, social justice is described as “a fairness and impartial access to the benefits of society including the right to health”. Equity is defined as “promoting the just distribution of resources and access, especially with respect to marginalized and vulnerable groups”⁷³. Solidarity for health professional will ensure that all the objectives are aligned with those of the communities with which we are working. Reciprocity is “a multidirectional sharing and exchange of experience and knowledge among collaborating partners”. Respect is “an important element for the history, context, values and cultures of communities with whom family physicians are engaged”. Honesty and openness are essential in planning and implementation of collaborations in the work practice⁷³. Humility is “an element of family

physicians to recognize values and biases and limitations and abilities in their practices”. Responsiveness and accountability are important to students, faculty, and diverse communities with whom family medicine residents are involved ⁷³. Finally, sustainability is described as “the degree to which an innovation continues to be used after initial efforts to secure adoption are completed” ⁷⁴. The Global Health in Family Medicine Framework uses the CanMeds framework to identify competencies for global health. These competences are: Professional, Communicator, Collaborator, Advocate, Medical Expert, Scholar and Manager. The definition of these competences follows the College of Family Physicians of Canada template for CanMed enabling competencies ⁷³.

Finally, the Global Health in Family Medicine Framework has a third component that includes the learning methods. The framework includes traditional learning methods such as PBL, Lectures, reading, etc; and evaluation (formative with reflection). Additionally, two other learning methods were included that are considered essential for the acceleration of global health education: 1. mentoring and apprenticeship and 2. Service learning and alternative learning venues ^{73 16}.

Therefore, the GHHEM framework presents elements related to education from the W(e) Learn framework and global health components from the “Global Health in family Medicine” framework which are: 1) Structure: pedagogical strategies, learning and context analysis, facilitation strategies, interactivity, community reusability, ethical considerations and learner assessment; 2) Content: inclusive, evidence-based, responsive to stakeholders; 3) Service: organization and effective primary care; 4) Outcome: health equity, global health competence and knowledge translation.

Structure: It is a base for learning and essential for the followings elements of the framework. In this context, *a) Pedagogical Strategies* are crucial to develop a learning environment for

family medicine residents, nurses, physiotherapists and occupational therapists that maximizes collaboration, communication and critical inquiry to support a learning community and to provide a base to create effective pedagogical strategies ⁶⁴. *b) Learning and context analysis:* The methodology of this research will permit a better understanding of learning needs of family physician residents, nurses, physiotherapists and occupational therapists which is essential for effectively planning programs and training. *c) Ethical considerations* are an important element of design and delivery of health professional's education. *d) Facilitation strategies* are essential to guide the learning process and meet the goals. *e) Interactivity* permits feedback of the learning process and facilitates communication and collaboration in a learning context. *f) Community* is an important element for health professionals to learn with each other, become a community of practice and to stay connected. *g) Reusability* in this study refers to the potential to develop learning resources that can be adapted by different users. *h) Learner assessment:* assessment is part of the design of the study, which encourages communication and collaboration in a pedagogical strategy.

The Content of the GHHEM framework has three key characteristics: Inclusive, evidence-based, and responsive stakeholders. *a) Inclusive:* the content included in the learning should be inclusive and match learners' interests and requirements of health care services. The survey will assess if the family medicine residence, nursing, physiotherapy and occupational therapy programs provide content sensitive to global health and health equity issues; *b) Evidence-based:* The methodology of this study will assess if the family medicine residency, nursing, physiotherapy and occupational therapy programs' are developing content based on theories, with practices and skills validated; *c) Responsive to stakeholders:* the beneficiaries of the content of family medicine physician, nurses, physiotherapists and occupational therapists

are patients and their families, which include vulnerable populations. The content of these programs should consider the need of all stakeholders to provide effective health care.

The construct of Service has two elements: organization and effective primary care. a) *Organization*: refers to a supportive learning process by institutions and continuing education. b) *Effective Primary Care*: The needs assessment survey will provide information about the gaps in the knowledge of family medicine residents, nurses, physiotherapists and occupational therapists and can be used to improve the quality of family medicine residence and plan trainings and workshops. All these *pedagogical strategies* can contribute to improve the knowledge of health professionals and provide an effective primary care.

The Outcome considered by the GHHEM framework intends to achieve health equity throughout effective health care provided by family medicine residents, nurses, physiotherapists and occupational therapists. Another outcome considered for health professionals is that they can develop competences in global health to be able to deliver effective care for vulnerable populations even when they are in different contexts. Finally, the third outcome considered is knowledge translation. Moving from the theory to practice is the main goal of this study. The results of the needs assessment survey can be used in the near future to improve family medicine, nursing, physiotherapy and occupational therapy curricula based on the needs identified in the survey.

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Appendix 1. Global Health and Health Equity (GHHE) framework

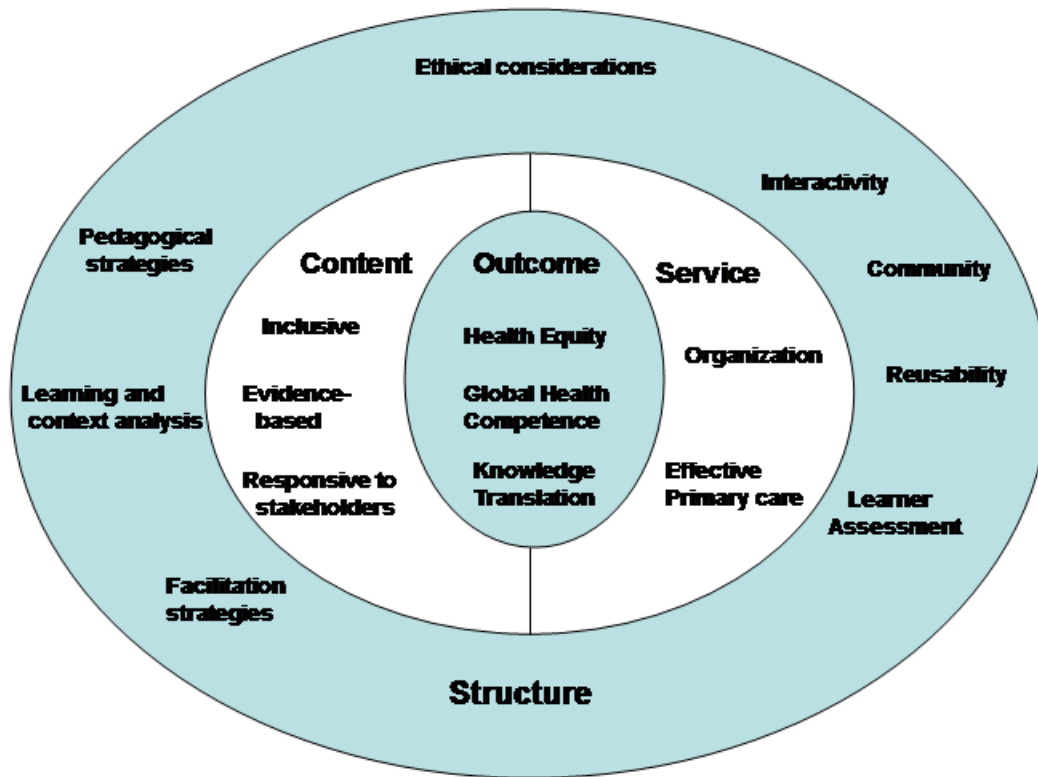


Figure 1: Global Health and Health Equity (GHHE) framework

Appendix 2 W(e) Learn Framework

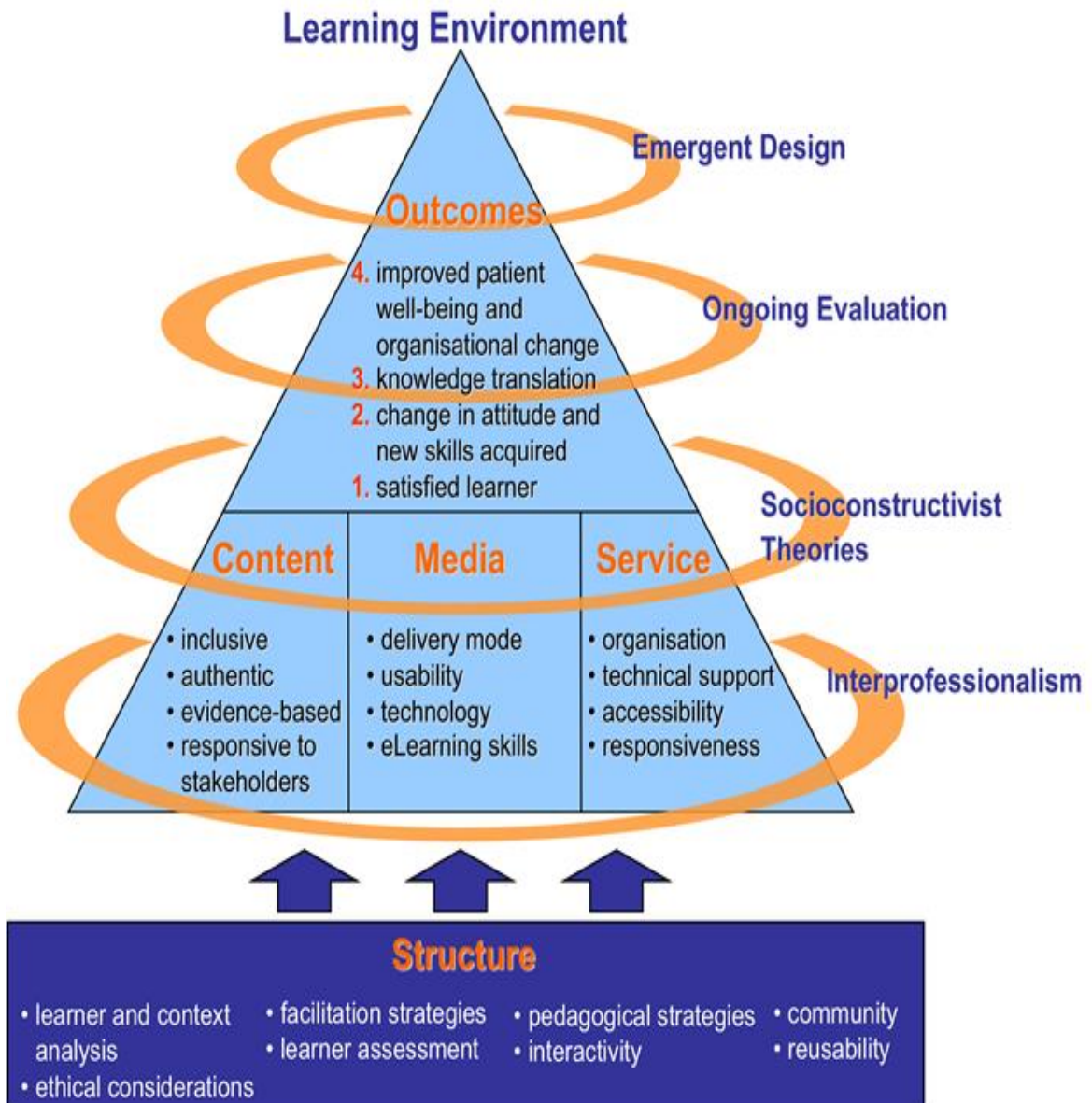


Figure 2: W(e) Learn Framework

Appendix 3 Global Health in Family Medicine Framework

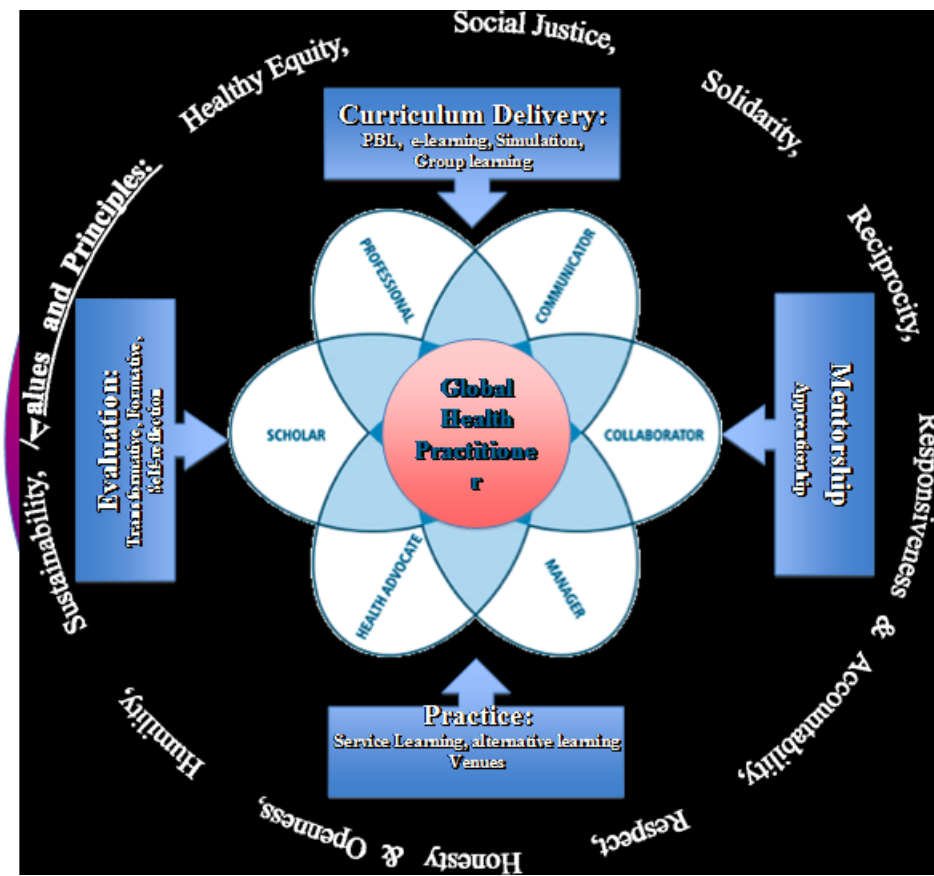


Figure 3: Global Health in Family Medicine Framework

CHAPTER TWO

Reliability and Validity of a New Survey to Assess Global Health Competencies of Health Professionals

“Knowing is not enough, we must apply
willing is not enough, we must do..”
Johann Wolfgang von Goethe

Reliability and Validity of a New Survey to Assess Global Health Competencies of Health Professionals

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Received: September, 25, 2012 Accepted: October 8, 2012 Online Published: October 22, 2012

doi:10.5539/gjhs.v5n1p13 URL: <http://dx.doi.org/10.5539/gjhs.v5n1p13>

Ethical approval was received from all five universities participating in the study

Abstract

Objective: Health professionals are paying increased attention to issues of global health.

However, there are no current competency assessment tools appropriate for evaluating their competency in global health. This study aims to assess the validity and reliability of a global health competency survey for different health disciplines.

Methods: A total of 429 students participated in the Global Health Competency Survey, drawn from family medicine residency, nursing, physiotherapy and occupational therapy

programs of five universities in Ontario, Canada. The surveys were evaluated for face and content validity and reliability.

Results: Factor analysis was used to identify the main factors to be included in the reliability analysis. Content validity was supported with one floor effect in the “racial/ethnic disparities” variable (36.1%), and few ceiling effects. Seven of the twenty-two variables performed the best (between 34% and 59.6%). For the overall rating score, no participants had floor or ceiling effects. Five factors were identified which accounted for 95% of the variance. Cronbach’s alpha was >0.8 indicating that the survey items had good internal consistency and represent a homogeneous construct.

Conclusion: The Global Health Competency Survey demonstrated good internal consistency and validity.

Keywords: reliability, survey instrument, global health, health inequalities, education

1. Introduction

Health inequalities between and within countries have increased in recent years (CSDH-Commission on Social Determinants of Health, 2008), due in part to the various impacts of globalization on social determinants of health, including health systems (Globalization Knowledge Network, 2011). Political and economic instabilities, climate change, urbanization, labour market insecurities and shifts in gender roles (despite persisting gender inequalities) are some examples of globalization-related factors that impact health and health systems worldwide (Brewer et al., 2009). Students in Canada and the United States are becoming progressively more interested in global health issues (Hagopian et al., 2008; Redwood-Campbell et al., 2011). This interest has resulted in a proliferation of electives, training and workshops focusing on global health and in programs, institutes and departments in North American and European universities developing global health initiatives (Hagopian et al., 2008). Existing literature on global health focuses largely on the new epidemiological challenges produced by the growth in international trade, travel, and immigration, and little has been written on the question of what global health ought to comprise (Hagopian et al., 2008; Urkin & Henkin, 2001; Nelson et al., 2008; Reed, 2006; Battat et al., 2010). Although there is no consensus on a definition of global health, for this paper we use a broad definition which is expansive enough to incorporate most elements identified by global health scholars: “Global health is an area for study, research, and practice that places a priority on improving health and achieving equity in health for all people worldwide” (Koplan et al., 2009). This definition implies a range of social, political and economic actors, interventions and disciplines; however, our interest lies in those disciplines working within health care settings, and the extent to which they have competencies in global health.

Existing literature suggests that global health competence for health professionals extends beyond clinical skills to incorporate, at a minimum, abilities to work in remote areas and settings with limited resources (Orbinski, 2008; Mill et al., 2010). Present global health training curricula often aim to improve students' understanding of travel medicine, the global burden of disease, health care disparities, immigrant health, health systems and primary care, as well as teaching them the skills to work with socially disadvantaged populations. Nonetheless, there is no consensus among schools and disciplines on what competencies are adequate for global health (Battat et al., 2010; Evert, 2006; Drain et al., 2007; Fox et al., 2007; Evert et al., 2007; Parsi & List, 2008).

A survey of global health curricula in 17 Canadian medical schools carried out during the, 2005 and, 2006 found that there was a growing demand for global health training, but that the training programs were not responding satisfactorily (Izadnegahdar et al., 2008). Most training programs focused on international electives and only 30% of the schools prepared their students for their overseas practice (Izadnegahdar et al., 2008). At the same time that inadequacies in global health curricula were being documented, the need to expand health professionals' knowledge of global health was increasing. In 2008; the Canadian Nurses Association, for example, recognized the need to develop nursing leadership in global health and educational programs to support global health education and international exchanges (Tyer-Viola et al., 2009). The World Confederation for Physical Therapy (WCPT) began carrying out several programs and projects for physiotherapists working overseas, as well as supporting international campaigns to endorse the contribution of the profession within global health (World Confederation for Physical Therapy, 2010). Given this interest, how should health professions be prepared in their training for work in the area of global health? Are there unique competency for such work?

To answer these questions and to improve our understanding of global health competencies we surveyed students enrolled in four health disciplines: family physicians, nurses, physiotherapists and occupational therapists. To our knowledge, there was no existing standard questionnaire to measure global health competencies in different disciplines. The instruments identified in the literature measured actual and perceived resident physician knowledge of underserved patient populations in the United States (Wieland et al., 2010), and global health competencies for medical students who participated in overseas electives (Augustincic, 2011). The previous surveys, apart from their focus on one health discipline only, neglected to measure some domains that our review of recent literature on global health identified as potentially important in an assessment of global health competencies. The cross-disciplinary focus of our survey reflects the complex nature of global health itself, with its emphasis on worldwide health issues and the need for interdisciplinary collaborations. This paper describes the development and the assessment of validity and reliability of a global health competencies instrument.

2. Methods

Our questionnaire development involved six stages: item selection; a study of the population and setting; survey administration and data collection; analysis of face and content validity; and Exploratory Factor Analysis (EFA) and reliability measurements. We conducted a small pilot test with 36 participants, and then distributed the revised final version of the questionnaire to our full survey population.

2.1 Selecting Items

To ensure that all important global health domains were covered, we identified candidate items for the Global Health Competencies (GHC)survey from 4 sources: (a) literature review

of instruments used to measure competencies related to global health and health equity for health professionals; b) in-person consultation with six global health and health equity experts; c) on-line consultation with 10 experts in education and global health from different disciplines; d) items from a global health competencies skills survey for medical students (Augustincic, 2011) which used the framework for global health in family medicine (Redwood-Campbell et al., 2011) and the Canadian Medical Education Directives for Specialists (CanMEDS) competency (Frank, 2005); and e) a validated questionnaire used to measure actual and perceived resident physician knowledge of underserved patient populations in the United States that was adapted to the Canadian population (Wieland et al., 2010).

2.2 Population and Setting

A total of, 2060 students and residents in five universities within Ontario, Canada were invited to participate in the Global Health competencies online survey. We chose Ontario because it is the country's most populous and ethnoculturally diverse province, with the highest proportion of immigrants (Townson, 2009) ethnocultural diversity and immigration being defining two aspects of contemporary globalization and, hence, global health. The students were from different disciplines: nursing, physiotherapy, and occupational therapy and family medicine residency programs. The inclusion criteria were: (a) must be a student from the University of Ottawa, University of Toronto, Queen's University, Western University, or McMaster University; b) must be 18 years or older; c) must be a 1st year student from a master's program in physiotherapy or occupational therapy, or in the last year of a nursing

undergraduate program, or a 1st year resident in a family medicine residency program; d) must provide online informed consent.

2.3 Survey Administration and Data Collection

Students were recruited by e-mail through the directors or coordinators of their programs.

They received a brief explanation about the study and a web link to access the online survey and consent form. Online surveys have demonstrated superiority over postal surveys in several ways, especially in response speed, response rate and cost efficiency (Sheehan, 2001; VanGeest & Johnson, 2011). Reminders were sent after, 2 and 4 weeks. Data collection periods in each program ranged from one to two months. Data was collected from April, 2011 until October, 2011.

2.4 Validity

Validity is defined as the ability of an instrument to measure what it is purported to measure (Swiontkowski et al.1999)Face validity concerns whether or not the instrument appears to potential test takers to be assessing what it intended to measure (Streiner & Norman, 2005).Content validity reflects the extent to which the measures cover the domains adequately (Streiner & Norman, 2005). We assessed content validity with experts' opinions, as well as ceiling and floor effects. A floor effect occurs when the respondents provide the lowest possible score for all or almost all items and receive the least desirable score (the proportion of subjects getting the lowest possible score). With a ceiling effect, the opposite occurs: the respondents report the highest score and receive the most desirable score (the proportion of subjects getting the highest possible score) (Stucki et al., 1995). An assessment with good content validity should have few categories with ceiling or floor effects.

2.5 Exploratory Factor Analysis (EFA)

Factor analysis was used to identify how many categories were sufficient to gather information contained in the original set of statements, and to explore the interrelationship among the original set of variables (De Villes, 2012). We used exploratory factor analysis to identify the number of common factors influencing a set of measures. Additionally, EFA was used to examine the strength of the relationship between each factor and each observed measure of the GHC survey.

Factor analysis was conducted using principal factor analysis with varimax rotation. First, a sample size of 348 students was included for factor analysis (a ratio of at least five subjects for each one of the variables is recommended). Second, a correlation matrix was developed to determine correlations of $r=0.3$ or greater. The cut-off point for retained factors used the Kaiser eigenvalue greater than one and Cattell's scree test rules. In case of disagreement the eigenvalue nearest to 1 was used to define the cut-off point. Finally, within the factors, retained items were selected based on factor loads higher than 0.4 and uniqueness lower than 0.6.

2.6 Reliability: Internal Consistency

Internal consistency permits judgment of the reliability of the questionnaire by estimating how well items within a domain fit together. (Streiner & Norman, 2005). Internal consistency is based on a single administration of the survey (Streiner & Norman, 2005). Cronbach's alpha was used to assess the internal consistency of our multi-item instrument. Items with item-total correlation values less than 0.2 were removed. We considered alpha values to be greater than 0.70 as a standard for adequate reliability of the questionnaire (Swiontkowski et al., 1999, Martin et al., 1997).

2.7 Data analysis Procedures

Data from the completed surveys were analyzed using the Statistical Package for the Social Sciences (SPSS) software (version 19). Analysis was performed in two steps. Firstly, we described the study participants with descriptive statistics. Secondly, we analyzed the psychometric proprieties—reliability (internal consistency of the survey). Other psychometric proprieties that were evaluated include face and content validity.

3. Results

3.1 Questionnaire Development and Pretesting

The item selection phase resulted in 86 items relevant to assess global health competencies. Pretesting was conducted to ensure the feasibility of administration. Participants were selected from universities across Canada. In total, thirty six students participated in the pilot testing (5 family physician residents, 6 nursing, 19 physiotherapy, and 6 occupational therapy students). Reviewers were asked to comment about the content of the questions, difficulty in understanding the questions, response categories for the questions, the logical sequencing of the items, and to report how much time they spent to complete the survey.

3.2 Item Reduction and Finalization of Items

Information from the pretesting was used in the process described by Hyland (Hyland et al., 1991) to reduce the number of items, eventually leading to 34 global health competencies items, and 8 demographic items. The items were further reduced after evaluating the reliability of the questionnaire, resulting in 22 global health competencies items, plus 8 demographic questions. Studies have demonstrated that short questionnaires improve response rate (Kellerman & Herold, 2001). The rationale for excluding items from the survey is discussed in Table 1 (available at:

https://docs.google.com/file/d/0BwsAlBgbpA_pQUxrMURCenFRV2c/edit). The final survey was then organized into four parts:

- 1) Knowledge in global health and health equity;
- 2) Global health skills for working with patients who have different linguistic, educational, socioeconomic, and cultural backgrounds;
- 3) Learning needs about global health;
- 4) Demographic questions. (Survey is available at Table 2 [appendix])

Table 1. Item reduction method for Global Health Competency Survey

Part of the questionnaire	Original number of questions	Number of excluded questions/number of the questions	Reason to exclude questions	Final number of questions after exclusion
Part 1 - Confidence Level	17	5 (Items: 1.3;1.6;1.4;1.15;1.17)	Problematic wording and missing more than 5% of questions. (This criterion more than 5% is not included in the Hyland criteria).	12
Part, 2- Relevance Level	17	17 *	"Poor discriminators removed (items in which 70% or more students endorsed one response- responses were dichotomous. (We only discarded infrequently endorsed items. Discarding frequently endorsed items would have led to nearly all the high impact items being removed.)". For 5 point scales we excluded questions if they were 70% or more in 2 categories (4 questions included in this case).	0
Part 3 - Global health skills	18	4 (Items: 3.1;3.4;3.7;3.10).	Overlapping concepts (in this case we took out complicated wording questions) and responses for items with the same construction and with similar percentage.	14
Part 4- Patient centered attitude	9	9 (4.3=74.2%;4.6=79.0%;4.8=75.8%)	Three questions have items in which 70% or more students endorsed one response. Even though the importance of the issue, this section is not directly related to global health education.	0
Part 5- Learning needs about GH	17	9 (Items: 5.1; 5.2;5.4;5.10;5.11; 5.12;5.13;5.14, 5.15)	Overlapping concepts (in this case we took out complicated wording questions) and responses with similar content and percentage; Questions related to didactic methods were excluded because the main propose of the survey is assessing GH competency. Accessing tools could be better addressed in another study after the analysis of the survey and maybe with qualitative methods considering the particularities of each universities resources and students learning preferences.	8
Total of questions after removing items				34

*Part, 2- Relevance Level – % of poor discrimination question:; 2.1 (75%);, 2.2(79%);, 2.4 (79%);, 2.5 (91%);, 2.6 (79%);, 2.7 (83%);, 2.8 (92.5%);, 2.9 (79.1%);, 2.10 (70.1%);, 2.11 (74.6%);, 2.13 (74.6%);2.15 (74.6%);, 2.16 (83.6%).

3.3 Study Participants

The survey was sent to, 2060 students, of whom 465 agreed to participate (response rate of, 22.6%). Surveys returned without information about the participant's program of study were excluded from the analysis, leaving a total of 429: 166 family physician residents, and 97 nursing, 68 physiotherapy and 98 occupational therapy students. A survey response rate review demonstrated that survey responses have been decreasing in past decades (Sheehan, 2001). Our study has an average response rate compared with other studies with similar

population (VanGeest & Johnson, 2011; Vangeest et al., 2007). Participants for this study were recruited from five universities in Ontario, Canada. The highest response rate was from McMaster University (30.3 %); 82.1% of respondents were female and the majority of the respondents were family physician residents (38.7%). The respondents' average age was, 26 years (range, 20 to 53years). Most respondents were predominately white (69.2%); were raised by parents who earned \$80,001 or more (38.2%), and were fluent in only one language (42.7%) (Table 3).

Table 3. Demographics characteristics of respondents (N=429)

Characteristics	N	%
Program		
Family Medicine Residency	166	38.7
Nursing	97	22.6
Physiotherapy	68	15.9
Occupational Therapy	98	22.8
University		
University of Ottawa	72	16.8
University of Toronto	88	20.5
McMaster University	130	30.3
Western Ontario University	53	12.4
Queen's University	86	20.0
Sex		
Male	77	17.9
Female	352	82.1
Age (yrs)	26.47	
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
Parent's family income		
\$20,001 to \$30,000	21	4.9

\$30,001 to \$40,000	16	3.7
\$40,001 to \$50,000	21	4.9
\$50,001 to \$60,000	35	8.2
\$60,001 to \$70,000	26	6.1
\$70,001 to \$80,000	36	8.4
\$80,001 or more	164	38.2
Don't know	110	25.6
Language able to speak		
One language	183	42.7
Two languages	171	39.9
Three languages	47	11.0
Four languages or more	28	6.5

3.4 Face and Content Validity

Face and content validity of the GHC survey was assessed by convening an expert panel that consisted of 6 global health and health equity experts and 10 experts in education and global health (3 nurses, 1 physiotherapist, 3 occupational therapists and 3 family physicians). The panel assessed the relevance of the included items and suggested additional questions, revisions to the wording of existing questions, and revisions to the sequencing and responses of some items. The intent of this exercise was to eliminate any items that were unclear or too long for participants to complete. After making the recommended changes, we returned the questionnaire for a final approval from the panel of experts.

Although there is no a consensus of cut-off point for ceiling and floor effect (Eechaute et al., 2007), many studies consider floor and ceiling effects will occur when more than one third of the total population has either the best or worst scores, respectively ($> 33\%$) (Eechaute et al., 2007; Barber-Westin et al., 1999). A floor effect was found in one variable (racial/ethnic disparities; 36.1%); seven of the twenty-two variables performed the best (between 34% and 59.6%). For the overall rating score, no participants had a floor or ceiling effect (Table 4).

Table 4. Ceiling and floor effect for each domain

Items	Completion rate (%)	% with floor effect *	% with Ceiling effect*
Language barrier	99.8	5.8	34
Income and health	99.8	1.4	59.9
Work and health	99.5	2.6	52.0
SEP and impact on health	100	4.0	50.6
SEP and environmental Health	100	14.2	30.3
Housing and health	99.8	8.4	39.4
SEP and food security	100	13.5	37.5
Racial/ethnic disparities	100	36.1	13.3
Race and clinical decision making	99.5	28	17.5
Gender and access to health care	100	23.1	22.8
Listening	98.6	.9	21.2
Patient background	98.4	1.4	10.5
Discuss sensitive issues	98.6	4	5.6
Identify needs	98.1	2.3	4.4
Health outcome disparities	100	23.8	23.1
Health risks	98.1	0	8.4
Communicable diseases	98.1	0	10.5
Social determinates of health	98.4	0	26.6
Cultural competency	98.8	.5	37.1
Access to clean water	99.1	1.2	29.4
Human rights	99.8	.5	29.4
Global health institutions	99.3	1.9	19.1

* Floor or ceiling effects are present when > 33% of the population marks best or worst score.

3.5 Factor Analysis

Five factors accounted for 95% variance (Table 5). The scree plot to determine the numbers of factors to be retained is showed in Figure 1. The items with the highest loadings for factor 1 were|: “language barrier”, “ income and health”, “work and health”, “Socioeconomic position (SEP) and impact on health”, “ housing and health”, “SEP and environmental health”, “ SEP and food security”, and “health outcome disparities”; for factor, 2: “social determinants of health”, “cultural competency”, “ access to clean water”, “ human rights” and “global health institutions”; factor 3: “listening”, “patient background”, ” discuss sensitive issues” and “identify needs”; factor 4: “racial/ethnic disparities”, “race and clinical decision making”, and

“gender and access to health care”; and for factor 5: “health risks” and “communicable diseases” (Table 6).

Table 5. Eigenvalues and cumulative variance after principal factor analysis (varimax rotation)

Factor	Variance	Difference	Proportion	Cumulative
Factor1	3.56563	0.36502	0.2566	0.2566
Factor2	3.20061	0.5871	0.2303	0.4868
Factor3	2.61351	0.26497	0.188	0.6749
Factor4	2.34854	1.39961	0.169	0.8439
Factor5	0.94894	0.0401	0.0683	0.9122
Factor6	0.90883	0.41265	0.0654	0.9775
Factor7	0.49618	0.0134	0.0357	10,132
Factor8	0.48278	0.15175	0.0347	10,480
Factor9	0.33103	0.03328	0.0238	10,718
Factor10	0.29775	0.03282	0.0214	10,932
Factor11	0.26493	0.0627	0.0191	11,123
Factor12	0.20223	0.02609	0.0146	11,268
Factor13	0.17614	0.01015	0.0127	11,395
Factor14	0.16599	0.0044	0.0119	11,515
Factor15	0.16159	0.06608	0.0116	11,631
Factor16	0.09551	0.0421	0.0069	11,700
Factor17	0.05341	0.04812	0.0038	11,738
Factor18	0.00529		0.0004	11,742

Table 6. Items included in the final version of the global health competencies survey

Factors	Items
Factor 1: Confidence Level in SEP* and Health disparities (8 items)	Language Barrier; Income and Health; Work and health; SEP and impact on health; housing and health; SEP and environmental Health; SEP and food security and Health outcome disparities.
Factor, 2: Social Determinants of Health (5 items)	Social determinants of health; Cultural competency; Access to clean water; Human rights and Global health institutions.
Factor 3: Global Health Skills (4 items)	Listening; Patient background; Discuss sensitive issues and Identify needs.
Factor 4: Health disparities (3 variables)	Racial/ethnic disparities; Race and clinical decision making; Gender and access to health care.
Factor 5: Travel and Migration (2 variables)	Health risks and Communicable diseases.

*Socioeconomic Position

3.6 Internal Consistency

Internal consistency of the GHC Survey was calculated using Cronbach's alpha coefficient, which provides information regarding the strength of inter-item correlation. The reliability analysis of the, 22 items obtained a Cronbach's alpha coefficient of 0.862 (Table 7).

Table 7. Internal consistency of the global health competencies survey

Item	Obs	Item-test correlation	Item-rest correlation	Average inter-item correlation	Cronbach's alpha
Language Barrier	428	0.4613	0.386	0.2245	0.8587
Income and Health	428	0.5632	0.4963	0.2189	0.8548
Work and health	427	0.5225	0.4522	0.2213	0.8565
SEP and impact on health	429	0.5689	0.5027	0.2186	0.8546
SEP and environmental Health	429	0.5973	0.5342	0.2172	0.8535
Housing and Health	428	0.6139	0.5525	0.2163	0.8529
SEP and food security	429	0.6109	0.5494	0.2165	0.853
Health outcome disparities	429	0.5936	0.5305	0.2175	0.8538
Social determinants of health	422	0.5583	0.4915	0.2192	0.855
Cultural Competency	428	0.4503	0.3737	0.2251	0.8592
Access to clean water	425	0.5461	0.4772	0.22	0.8555
Human rights	428	0.5254	0.4548	0.221	0.8563
Global Health Institutions	426	0.4991	0.4262	0.2226	0.8574
Listening	423	0.3097	0.2253	0.2325	0.8642
Patient background	422	0.3368	0.2536	0.2311	0.8633
Discuss sensitive issues	423	0.3561	0.274	0.23	0.8625
Identify needs	421	0.3358	0.2527	0.2312	0.8633
Racial/ethnic disparities	429	0.5581	0.4911	0.2194	0.8552
Race and clinical decision making	427	0.6024	0.5401	0.2169	0.8533
Gender and access to health care	429	0.6107	0.5495	0.2166	0.8531
Health risks	421	0.4625	0.386	0.2244	0.8587
communicable disease	421	0.4676	0.3922	0.224	0.8584
Test	scale			0.2221	0.8626

4. Discussion

Face and content validity of the Global Health Competencies Survey were considered adequate according to the panel of experts. The reviewed and approved questionnaire covered the most relevant topics of the global health literature. For content validity, we found one floor effect and few ceiling effects and for overall rating scale we did not find floor or ceiling effects. According to the literature, good content validity is considered when few floor or ceiling effects are found (De Villes, 2012).

The factor analysis confirmed the factor structure of the scale. Five factors were included in the final scale: confidence level in socioeconomic positions and its impact in health outcomes

and questions associated with health disparities; social determinants of health; global health skills to work with patients with different backgrounds and characteristics; health disparities; and travel and migration. These global health topics included in the final scale are consistent with our literature review (Battat et al., 2010; Evert et al., 2007). The internal consistency of the GHC Survey was assessed with Cronbach's alpha. The results indicated that the GHC Survey had good internal consistency (>0.8) for the entire questionnaire including the five factors and all items discriminated well.

The findings of this study showed that the GHC Survey is an appropriate tool for measuring global health competencies in family physician residents, and nursing, physiotherapy and occupational therapy students, and perhaps other health disciplines as well. It is reliable, and it provides a broad range of relevant items capable to measure confidence level in relevant global health issues, global health skills and learning needs in global health.

4.1 Implications for Research Use

The GHC Survey has practical utility in research and policy in several ways. The survey can identify knowledge gaps in global health education; contribute to faculties and educators in identifying gaps in their programs; assist in addressing changes in global health education leading to improved training programs; contribute to reduced health inequities by helping to improve global health skills in students' and residents' curricula in global health; and address the need for a tools to measure global health competency and open directions for the use and upgrading of this tool. We suggest that educators administer the survey during the first half of a program, as it would help identify progress and highlight unmet learning needs that could potentially be addressed by the program.

4.2 Strengths and Limitations

This is the first valid and reliable tool to access global health competencies for different disciplines. The survey demonstrated good internal consistency and validity. The strength of this study is that it contributes to a crucial and emerging literature on global health education by developing and testing a tool to measure global health competencies using a multi-centered and interdisciplinary sample of health professionals from different disciplines. Another advantage of the GHC survey is its administration. It is an online survey, which makes it convenient to administer, and it has a reasonable completion length (about 10 minutes). Our study also had limitations: criterion validation was not assessed, and we administered the survey in English only, despite some health professional training programs in Canada being offered only in French. Despite a low response rate, we did have good representation from a variety of health disciplines.

4.3 Implications for Future Research

Future studies are needed to examine the use of this scale to assess effects of programs to increase global health competencies. Confirmatory Factor Analysis (CFA) can be used to confirm the EFA model to evaluate adequately.

Similar analysis of the data obtained in other provinces in Canada would be desirable to assess the scope of the questionnaire performance. The use of the GHC Survey in other countries should be considered with adaptation of the instrument such as language and inclusion of domestic global health issues pertinent to the country. There is also a need for a criterion validation since there is no gold standard questionnaire to assess global health competencies across disciplines.

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Appendix

Table 2. Global health competencies survey

Part 1: Knowledge and Interest in Global Health and Health Equity (Self-Assessment)					
For each of the following topics, please indicate how knowledgeable you are in the topic and the level of relevance it has to your education.					
Confidence Level	Not at all confident	Somewhat confident	Very confident		
1.1 language barriers and their adverse impact on health and health care.					
1.2 Access to health care for low income nations.					
1.3 The relationship between ethnicity and access to health care in Canada.					
1.4 Health care models that may enhance access to care.					
1.5 The relationship between income and health.					
1.6 The relationship between health literacy (the degree to which individuals can obtain, process, and understand basic health information and services needed to make appropriate health decisions) and health.					
1.7 The relationship between work and health.					
1.8 Mechanisms of how socioeconomic position could impact health.					
1.9 Environmental health and socioeconomic position.					
1.10 Housing and health status.					
1.11 The relation between Food security, socioeconomic position and health.					
1.12 Health outcome discrepancies among different ethnicity, language, religion and cultural beliefs in Canada.					
1.13 Mechanisms for explaining why racial and ethnic disparities exist.					
1.14 Racial stereotyping and clinical decision making.					
1.15 Health equity (a health inequity is an avoidable difference in health between more and less advantaged social groups).					
1.16 Gender and access to health care.					
1.17 Patients characteristics (eg.gender/sex, language, religion, etc.) and access to health care.					
Part 2: Global health skills self-assessment work with patients with different linguistic, educational, socioeconomic, and cultural backgrounds					
Please rate how strongly you agree or disagree with each of the following statements by placing a check mark in the appropriate box.					
	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
2.1 I find it challenging to communicate effectively with my patients with different backgrounds.					
2.2 Listening actively to patients' concerns were challenging.					
2.3 I am uncomfortable consulting with other health care professionals to address issues of my patients with different backgrounds.					
2.4 Addressing team disagreements related to care for patients with different backgrounds is challenging.					
2.5 It is challenging to provide care to patients with different backgrounds.					
2.6 I am able to understand the perspectives of patients with different backgrounds.					
2.7 It is challenging to discuss sensitive issues (e.g. alcohol, drugs, sexual issues,etc) with my patients with different					

backgrounds than my own.

2.8 I find it challenging to identify needs of my patients with different backgrounds.

2.9 I am aware of the health services available to patients with different Backgrounds.

2.10 I am effective in completing my clinical responsibilities when working with patients with different backgrounds.

2.11 Helping patients with different backgrounds to set realistic goals for their health is challenging within the time available.

2.12 I know how to use the expertise of other health professionals when working with my patients with different backgrounds.

2.13 I know how to access resources to keep up to date with global health issues.

2.14 I actively participate in global health activities.

Part 3: Learners' Needs about Global Health

Please rate how important with each of the following statements by placing a check mark in the appropriate box

	Not at all important	Somewhat important	Neutral	Important	Very important	Extremely important
3.2 Development and implementation of research and scholar activities related to global health.						
3.3 Health risks associated with travel and migration, with emphasis on possible risks and appropriate management, including referrals.						
3.4 Having peer education: student led seminars and journals clubs on global health issues.						
3.5 Knowledge about how travel and trade contribute to the spread of communicable diseases.						
3.6 Relationship between health and social determinants of health, and how social determinants vary across world regions.						
3.7 Cultural competency: understanding how cultural background, socioeconomic status and language barriers can influence access to care and health outcomes.						
3.8 Relationship between access to clean water, sanitation, and nutrition on individual and population health.						
3.9 Understand the relationship between health and human rights.						
3.10 Having a mentor for Global Health training and knowing who are the local global health champions.						
3.11 Having a family physician and/or nurse, occupational therapist and/or physiotherapists supervision on international electives.						
3.12 Have frequent feedback during the learning process related to global health competencies.						
3.13 Have clinical rotations that enable work with disadvantaged or marginalized populations either domestically or internationally.						
3.14 Have a learning guide to help develop and self-evaluate personal global Health competencies.						
3.15 Have training in the social determinants of health and the health issues associated with poverty.						
3.16 Knowledge about how global health institutions (eg.						

WHO, other United Nations agencies, global institutions)
influence health in different world regions through funding and
policy.

Part 4. About you

4.1 In which program are you involved in?

- ☐ Family medicine residency
- ☐ Nursing
- ☐ Physiotherapy
- ☐ Occupational therapy

4.2 In which university are you taking your program?

- ☐ University of Ottawa
- ☐ University of Toronto
- ☐ McMaster University
- ☐ Western Ontario University
- ☐ Queen's University

4.3. Are you male or female?

- ☐ Male
- ☐ Female

4.4 What is your age?

_____ years

4.5 In what country were you born?

- ☐ Canada
- ☐ United States
- ☐ United Kingdom
- ☐ Germany
- ☐ Italy
- ☐ Poland
- ☐ Portugal
- ☐ ChinaPeople's Republic
- ☐ Hong Kong
- ☐ India
- ☐ Philippines
- ☐ Vietnam
- ☐ Other, Please specify: _____

4.6 People living in Canada come from many different cultural and racial backgrounds.

Are you: (Mark all that apply.)

- ☐ White
 - ☐ Chinese
 - ☐ South Asian (eg.East Indian,Pakistani,SriLankan,etc.)
 - ☐ Black
 - ☐ Filipino
 - ☐ Latin American
 - ☐ Arab
 - ☐ Japanese
 - ☐ Southeast Asian (e.g.Cambodian,Indonesian,Laotian,Vietnamese,etc.)
 - ☐ West Asian (e.g.,Afghan,Iranian,etc.)
 - ☐ Korean
-

☐ Aboriginal Peoples of North America (North American Indian, Métis, Inuit)

☐ Other, please specify: _____

4.7 What is the approximate average annual income of your parents/guardians?

☐ \$20,000 or less

☐ \$20,001 to \$30,000

☐ \$30,001 to \$40,000

☐ \$40,001 to \$50,000

☐ \$50,001 to \$60,000

☐ \$60,001 to \$70,000

☐ \$70,001 to \$80,000

☐ \$80,001 to \$90,000

☐ \$90,001 to \$100,000

☐ \$100,001 or more

☐ Don't know

CHAPTER THREE

How do Ontario Family Medicine Residents Perform on Global Health Competencies?

A multi-institutional self-perceived skills and knowledge survey

“If you want to know the taste of a pear, you must change the pear by eating it yourself. If you want to know the theory and methods of revolution, you must take part in revolution. All genuine knowledge originates in direct experience. “

Mao Zedong.

How do Ontario Family Medicine Residents Perform on Global Health Competencies? A multi-institutional self-perceived skills and knowledge survey¹

Authors: Mirella Veras, Kevin Pottie, Vivian Welch, Tim Ramsay, Peter Tugwell.

Abstract

Background

There is an increased interest in global health among medical students, family medicine residents and medical educators. This paper aimed to assess self-perceived knowledge and skills in global health for family medicine residents in five universities across Ontario.

Methods Web based survey was sent to one hundred and sixty-six 1st year family medicine residents from five universities within Ontario. Descriptive statistics were used to analyze residents' perceived knowledge and skills in global health. The strength of association between each self-perceived knowledge and global health self-perceived skills variables was assessed by the Spearman correlation coefficient

Results: The response rate ranged from 29% to 66% across the five universities. Self-perceived knowledge scores revealed that 34.3% of the respondents were very confident, 51.9% were somewhat confident, and 13.8% were not at all confident. Participant scores were less in relation access to health care for low income nations (44.3%) and had better scores on their global health skills related to working in a team (70.9%) and listening actively to patients concerns (64.6%).

Conclusions

The global health competency scale has identified key areas of self-perceived strengths and weaknesses of family medicine programs. This can be used to evaluate and analyze progress over time

¹ Paper formatted to The Canadian Medical Education Journal. Status: revision requested made and submitted.

Introduction

There is a marked increase in interest in global health among medical students, family medicine residents and medical educators (1;2); they are demanding more emphasis in global health teaching and international opportunities in their medical school (3;4). In these times of globalization², it is important that family physicians feel competent in contributing meaningfully to reducing inequalities; these should be in the context of both in their own practice and in the global context with the determinants of health such as socioeconomic, environmental and political factors. Hence, global health training should be part of the residency programs and be adapted according to the particularities of each specialty (6). Global health training may further stimulate students to develop a commitment to community health as well as an opportunity to work with socially disadvantaged populations. Additional benefits of global health training include an opportunity to learn or improve a foreign language (7).

Key components of global health are the social determinants of health. In Canada, health disparities are mainly related to ethnic background, gender, education level, income, geographic location and other characteristics that can bring some disadvantages in accessing health care and opportunities related to social determinants for some groups compared to other groups.(8) Family physicians have a crucial role to play in providing effective primary health care for disadvantaged populations and primary care has been shown to be an effective strategy to promote health equity in both high-income and low and middle-income countries(9).

² “Describes the ways in which nations, businesses, and people are becoming more connected and interdependent across national borders through increased economic integration, communication, cultural diffusion, and travel” (5).

The quality of education for family medicine residents plays an important role in the effectiveness of primary care (10). Improving family physicians' knowledge about global health and health equity may help to reduce health disparities and address the inequities related to treatment and access to health care for socially disadvantaged populations (11) and achieve effective primary care. Canadian health system policies put family medicine as essential in delivering comprehensive community-based health care. Canada is large, ethnically diverse, has indigenous health inequalities, a universal health care system that covers the entire population, and has primary care as a priority area in health.

Therefore, improving global health education and health equity for Ontario family physician residents has a huge potential to enhance the family medicine residence programs and consequently improve the effectiveness of primary care services for socially disadvantaged populations. This study is part of a larger assessment of global health competency in health students. This study aims to describe self-perceived skills and knowledge in global health in family physician residents in Ontario in order to understand their learning needs in the major global health topics.

Methods

Sample

All [a total of 452] family medicine residents in training year 2011 in five universities within Ontario, Canada were invited to participate in the survey. The criteria for inclusion in this study were: being 18 years or older; being in a program from the following participating universities in Ontario (University of Ottawa, University of Toronto, Queen's University, Western University and McMaster University); and being a 1st year resident in a family medicine residency program.

Design

Cross-sectional study.

Data collection

Residents who participated were identified by the directors or coordinators of their programs. They received an electronic e-mail invitation with a weblink to access the online survey and consent form (from May 2011 until October 2011). Respondents were given two weeks to respond to the survey. After two and four week intervals, additional reminders were sent to residents. The data was collected using a software web-based tool, Survey Monkey (<http://www.surveymonkey.com>).

Instrument

The instrument was adapted from : (a) a validated questionnaire used to measure actual and perceived resident physician knowledge of underserved patient populations in the United States and adapted to the Canadian population (12); b) items from a global health competency skills survey for medical students (13). C) Canadian Medical Education Directives for Specialists (CanMEDS) competencies (14) ; The instrument was assessed for validity, reliability and pretested in a previous study. The survey consisted of 30 questions subdivided into four parts: 1) About you – socioeconomic and demographic questions 2) Knowledge in global health and health equity; 3) Global health skills for working with patients who have different linguistic, educational, socioeconomic, and cultural backgrounds; 4) Learning needs about global health; and 4). This survey was previously validated and demonstrated good

internal consistency and validity with a Cronbach's alpha >0.8 . A detailed description of the survey design, execution, validity and reliability has been published elsewhere (15).

The self-perceived questions could be answered by either 'not at all confident', 'somewhat confident' or 'very confident'. These were coded as 0 (not at all), 0.5 (somewhat) and 1 (very). Thus, by averaging all respondents' answers to a given question and multiplying that average by 100, each question could be summarized by a number between 0 and 100, with 0 representing an overall complete lack of confidence and 100 representing a universal perception of being very confident. This approach to measuring self-perceived confidence was previously used by Wieland *et al.*(16)

Ethical considerations

The study was approved by the University of Ottawa, the Ottawa Hospital research Ethics Board and the University of Western Ontario.

Analysis

The data were analyzed with descriptive statistics using the Statistical Package for the Social Sciences (SPSS) software (version 19). Descriptive statistics were used to analyze self-perceived knowledge and skills in global health. The strength of association between each self-perceived knowledge and global health self-perceived skills variables was assessed by the Spearman correlation coefficient.

Results

Demographic Characteristics

Resident's surveys were completed by 166 individuals. The overall response rate ranged from 29% and 66.35% in five medical schools in Ontario, Canada. Respondents were predominantly female (68.7%), median age was 29 years, white background (58.4%), raised by parents with family income of \$80,001 or more per year (44.6%), and able to speak one language (42.8%) (Table 1).

Self-perceived knowledge

Self-perceived knowledge in Global health topics revealed that 34.3% of the respondents were very confident, 51.9% were somewhat confident, and 13.8% were not at all confident. Regarding all the topics, residents average percentage score more for self-perceived knowledge confidence in the relationship between income and health (79.52%), socioeconomic position and impact on health (75.30%), and relationship between work and health (70.90%). Their average percentage scores were less for access to health care for low income nations (44.24%), mechanisms for why racial and ethnic disparities exist (44.58%), and racial stereotyping and medical decision making (46.39%) (item scale [0-1]: 0 = not at all confident; 0.5 = somewhat confident; 1 = very confident) (Table 2).

Self-perceived global health skills related to CanMEDS framework

Residents had better scores on their global health self-perceived skills in working in a team (70.93%), listening actively to patients concerns (64.55%) and self-perceived clinical competency for working with patients with different backgrounds (64.31%). The three self-perceived skills where they score lower were: helping patients from different backgrounds

achieve realistic goals (38.16%); keep up date in global health (42.62%), and active in global health skills (42.92%) (item scale [0-1]: 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). (Table 3).

Correlation between self-perceived knowledge and self-perceived skills in global health

As shown in Table 4, sixty-four significant correlations were found between self-perceived knowledge in global health and global health self-perceived skills variables. The major positive significant correlation (greater than 3) was found for: racial and ethnic self-perceived knowledge confidence in “global health and keep up to date in global health skills” and “racial/ethnic disparities” (.380); “race and clinical decision making self-perceived knowledge” and “keep up to date in global health skills” (.348) and “gender and access to health care self-perceived knowledge confidence” and “keep up to date in global health skills” (.336); and “socioeconomic position and environmental health “and “keep up to date in global health skills” (.335).

Self-perceived learning needs in global health

These results will be published in a subsequent paper, together with the survey result of nursing students.

Discussion

Inequities in health have been increasing in Canada and worldwide and have implications for family physicians' care. An appropriated evaluation of the actual situation is necessary to

address the global health education for these professionals. This multi-institutional survey revealed that family physician residents' self-perceived knowledge in global health was low. These results corroborated with the findings of a US residents survey in actual and perceived knowledge of underserved populations which also showed low self-perceived knowledge (14% of the residents were very confident, 66.4% were somewhat confident, and 19.6% were not at all confident).(16) Table 5 below summarizes the findings of self-perceived knowledge in global health for Ontario family physician residents and their US counter parts to help us interpret our data and compare our findings with a similar study. As we can see in this table, Ontario family physicians scored more for almost all global health items except for “mechanisms for why racial and ethnic disparities exist”. Ontario residents were more confident in issues related to social determinants of health in general such as income and socioeconomic position. Perhaps the better self-perceived knowledge in global health issues arose from the tradition of Canadians in addressing the social determinants of health (SDH). Historically, since 1974 Canada has taken the lead in SDH with the publication of the landmark Lalonde Report and later in 1986 with the Ottawa Charter for health promotion. The Canadian Reference Group on SDH was established by the Public Health Agency of Canada in 2005 in support of the WHO CSDH. The Canadian Reference Group has experts and stakeholders and is co-led by government and non-government organizations. The group has established inter-sectoral partnerships and engaged sectors such as commercial, labour, social and community, education, urban planning and environment. (17) On the other hand, race/ethnicity and health is a common and important topic in the US, where persistent and well-documented health disparities exist between different racial and ethnic populations across the country. (18;19)

Table 5: Family physicians residents’ self-perceived knowledge in health equity/global health.

Self-perceived Knowledge	Ontario Family physician residents score (%)* (year 2010)	US Family physician residents Score (%)* (year 2011)
the relationship between health and income	79.52%	57.4%
Access to health care for low income nations	44.24%	35.7%
Language barriers in health system	63.25%	61.0%
Mechanisms whereby socioeconomic position could affect health	75.30%	53.2%
environmental health and socioeconomic position	58.13%	45.9%
racial stereotyping and medical decision making	46.39%	43.5%
Mechanisms for why racial and ethnic disparities exist	44.58%	45.0%

* Source: primary data for Ontario family physician residents and for US residents, data provided by the Wieland Study. (16)

Our findings were also analyzed with a loop from the Canadian Medical Education Directives for Specialists (CanMEDS) competencies. The self-perceived global health skills of our survey encompass elements of the CanMEDS.(14) The framework has important elements to be considered in global health education such as medical expert, communicator, collaborator, manager, health advocate, scholar and professional. The family physician residents in Ontario had a better score in “working in a team” (which is correlated to “collaborator” element from CanMEDS framework); “able to understand patients with different background” (which is correlated to “communicator” element from CanMEDS framework), and “listening skills” (which is also correlated with the “communicator” elements from CanMeds framework). An effective practice in global health settings demands knowledge and skills in all CanMeds

elements. Hence participation in global health activities can provide residents learn and develop their skills in several global health issues. (20) A family physician should be able to communicate effectively with patients from different background, literacy and language in order to provide effective care.(20) Skills such as “keep up date with global health” and “active in global health” (related to “health advocate” and “scholar”) were scored with less than 50%.

A biannual survey developed by the SOR Council found that 88% of family medicine programs have some formal global health curriculum and most schools devote less than 10 hours to global health during their training.(21) This survey includes two residents from each family medicine program across Canada and intent to compare programs nationally. (21) There is a need to improve global health education across program in Canada as well as global health skills related to other elements of the CanMEDS framework such as family medicine expert, manager, health advocate, scholar and professional. All these elements are essential for a family physician to provide an effective care to disadvantaged populations locally and internationally.

Self-perceived knowledge and skills are two important components in evaluation of educational competencies. Significant correlations were found in variables related to “race/ethnicity disparities” and “global health skills”. The correlation between “Gender” and “keep up to date in Global health skills” results were expected since Canada gives a lot of attention to gender disparities, including access to health care.(22;23) However, for the variables “race/ethnicity” and ”keep up to date with global health” there was a surprise result because in Canada there are limited studies on racial/ethnic groups.(24) Perhaps Canadian residents have interest in race/ethnicity because it is a demanding issue in the US. In addition,

no significant difference among others variables such as “language barriers” and “communication skills” was found which was an unexpected result since these variables seem to be very associated. Variables that are unrelated can sometimes be correlated with each other. Therefore, the reasons why some variables from self-perceived global health skills and self-perceived knowledge and ratios correlate requires further study before any conclusions can be offered. The reason for these correlations are not clear, and interpretation should be made with caution. Overall, although we found small correlations among self-perceived knowledge in global health and self-perceived skills in global health, all self-perceived knowledge variables have a correlation with some global health skills which highlight the importance of the use of this survey to evaluate and track changes in global health skills for family physician residents.

Strengths and Limitations

Overall, the strength of this study is that it contributes to improve global health education for family physician residents. It also adds to a better understanding of the self-perceived knowledge and skills in global health using a multi-centered sample of family physician residents from different universities in Ontario. The GHC survey is an online survey, which makes it suitable to administer. The results of the survey can be used to improve global health programs for family physicians in several ways by identification of academic program strengths and weaknesses. This study also had limitations: the response rate was low, even though we used several strategies to improve it such as two reminders and phone or e-mail contact with the coordinators of the programs in order to motivate and to make personal reminders for the residents. This low response rate may affect the generalizability of the

findings. Hence, the results should be interpreted with caution. Nevertheless, this study provides sufficient information for a better understanding of the weaknesses and strengths of global health of family physician residents in Ontario. Further studies, with an analysis of actual knowledge and skills of family physician residents are recommended. In addition, the study can be replicated in other provinces in Canada.

Conclusion

This study attempted to describe perceived global health confidence in knowledge and global health skills in family physician residents in Ontario. Based on the findings, this study demonstrate clearly that there is a need to improve global health curricula in family medicine residency programs in Ontario Universities. Overall, the self-perceived knowledge confidence in global health score was below 60% for six out of the twelve items. Residents scored below 60% in eight out of eleven self- perceived skills. It is an imperative to use and improve this survey tool designed to measure global health competencies. It is also important to evaluate global health skills over time to be able to track improvements in the curricula. Therefore, upon review of the survey data, workshops, trainings and courses can be developed in a short term to address areas of knowledge and skills weakness in terms of global health competence, considering local and international settings.

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Table 1: Demographic characteristics for family physicians residents in Ontario, Canada.

Demographic characteristics	N (%)
Sex	
Male	52 (31.3)
Female	114 (68.7)
Background	
White	97 (58.4)
Chinese	19 (11.4)
South Asian	22 (13.3)
Black	4 (2.4)
Latin American	3 (1.8)
West Asian	2 (1.2)
Aboriginal	4 (2.4)
Other	15 (7.7)
Parents Family Income	
\$20,001 to \$30,000	6 (3.6)
\$30,001 to \$40,000	6 (3.6)
\$40,001 to \$50,000	9 (5.4)
\$50,001 to \$60,000	18 (10.8)
\$60,001 to \$70,000	9 (5.4)
\$70,001 to \$80,000	17 (10.2)
\$80,001 or more	74 (44.6)
Don't know	27 (16.3)
Language able to speak	
one language	71 (42.8)
two languages	55 (33.1)

three languages	24 (14.5)
four language or more	16 (9.6)

Table 2. Family physicians residents' perceived global health knowledge

Domains	Score *(%)
Self-perceived Knowledge	
Language barrier and adverse impact on health and health care	63.25
Access to health care for low income nations	44.24
Relationship between income and health	79.52
Relationship between work and health	70.91
SEP and impact on health	75.30
Environmental Health and socioeconomic position	58.13
Relationship between housing and health status	67.77
SEP and food security confidence	64.46
Health outcome discrepancies among different groups in Canada	54.82
Mechanisms for why racial and ethnic disparities exist	44.58
Racial stereotyping and medical decision making	46.39
Gender and access to health care	54.22

*Average perceived knowledge and skills percentage for each domain varied for item scale between 0-1; (item scale [0-1]: 0 = not at all confident; 0.5 = somewhat confident; 1 = very confident).

Table 3: Perceived global health skills guided by the CanMEDS framework

Skills	Score *(%)
Communication skills	52.86
Listening skills	64.55
Able to understand patient with different background skills	54.22
Address team disagreement skills	55.57
Discuss sensitive issues skills	51.06
Identify needs skills	51.66
Helping patients achieve realistic goals skills	38.16
Working in a team skills	70.93
Clinical competency Skills	64.31
Keep up date in Global Health skills	42.62
Active in Global Health skills	42.92

* Average perceived knowledge and skills percentage for each domain varied for item scale between 0-1; 0-1; (item scale [0-1]: 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).

Table 4: Spearman correlation among self-perceived confidence level in global health and self-perceived global health skills.

	Communicati on skills	Listening skills	Able to understand patient background skills	Address team disagreement skills	Discuss sensitiv e issues skills	Identify needs skills	Helping patients achieve goals skills	Working in a team skills	Clinical competency Skills	Keep up date in Global Health skills	Active in Global Health skills
Language barrier confidence	.124 .112	.195* .012	.176* .023	.052 .503	.122 .118	.158* .042	-.038 .644	.094 .228	.069 .380	.213** .006	.224** .004
Access to health care confidence	-.112 .152	.149 .056	.198** .011	.083 .291	.022 .779	.178* .022	-.151 .064	.130 .097	.014 .857	.238* .002	.286** .000
Income and health confidence	.097 .216	.148 .058	.111 .154	.085 .275	.183* .018	.037 .634	-.014 .863	.162* .037	.119 .128	.201* .009	.083 .287
Work and health confidence	.150 .055	.099 .209	.136 .080	.189* .015	-.004 .958	.114 .147	.086 .295	.186* .017	.086 .271	.169* .030	.190* .014
SEP and impact on health confidence	.296* .000	.186* .017	.258** .001	.206* .008	.170* .029	.119 .126	-.034 .679	-.215** .005	.123 .114	.182* .019	.136 .081
SEP and environme	.157*	.195*	.148	.134	.158*	.166*	-.048	.237*	.073	.335**	.235**

ntal Health confidence	.043	.012	.058	.085	.043	.032	.558	.002	.349	.000	.002
Housing and health confidence	.253** .001	.233** .003	.171 .028	.220** .004	.065 .407	.198* .011	.019 .816	.238** .002	.222* .004	.229* .003	.221** .004
SEP and food security confidence	.167* .031	.145 .062	.237** .002	.177* .022	.089 .255	.162* .037	.021 .801	.131 .093	.127 .104	.277** .000	.256** .001
Outcome discrepancies confidence	.102 .192	-.005 .949	.264** .001	.136 .080	-.058 .457	.135 .083	-.056 .494	-.088 .257	.077 .327	.291** .000	.270** .000
Racial/ethnic disparities confidence	.188* .015	.167* .032	.181* .020	.050 .524	.044 .571	.161* .038	-.071 .386	.050 .522	.028 .723	.380** .000	.235** .002
Race and clinical decision making confidence	.186* .016	.071 .366	.178** .021	.075 .338	.005 .954	.103 .186	.005 .951	.008 .922	.167* .031	.348** .000	.189* .015
Gender and access to health care confidence	.239** .002	.183* .018	.177** .022	.146 .061	.057 .465	.251** .001	.076 .354	.117 .133	.028 .721	.336** .000	.258** .001

** Correlation is significant at the 0.01level ; *Correlation is significant at the 0.05 level

CHAPTER FOUR

A province wide survey self-reported language proficiency and its influence in global health

“Knowledge speaks, but wisdom listens.”

Jimi Hendrix

A province wide survey self-reported language proficiency and its influence in global health³

Authors: Mirella Veras, Kevin Pottie, Vivian Welch, Javier Eslava-Schmalbach, Peter Tugwell

Abstract

Propose: It has been reported that language is the most common barrier in health care setting and a risk factor associated with negative outcomes. The present study reports the differences between nursing students who speak one language and nursing students who speak two or more languages (self-reported language proficiency) and their skills and learning needs in global health. **Design:** An observational cross-sectional study was performed among nursing students across five Ontario universities. A survey was designed to measure knowledge, skills and learning needs in global health. **Results:** nursing students who speak more than two languages are more likely to have more interest in learning global health issues such as health risks and its association with travel and migration ($p=0.044$) and social determinants of health ($p=0.042$). **Conclusion:** Language training is needed for nursing students to be able to face language barriers in health care settings and improve global health locally and internationally.

³ Manuscript Status: revision requested submitted.

Introduction

The world is experiencing substantial political, economic and social changes as a result of globalization⁴. The impact of these changes is most evident in terms of communication, transportation and human migration (Richmond, 2002;Huynen, et al., 2005;Labonte, et al., 2009). Globalization has significant implications not only for health and international issues, but also for nursing practice (Chavez, et al., 2010). Furthermore, it has created new challenges and opportunities for nursing and health care (Austin, 2004;Davidson, et al., 2003). The multicultural aspects of the Canadian population bring challenges for nursing practices. Canada has a diverse population with a significant number of immigrants. Between 2001 and 2006, an annual average of 242,000 individuals were admitted as permanent residents into Canada (Chui, et al., 2010) with 80% of the immigrants coming from Asia, South America and Africa (Chui, et al., 2007). Most immigrants have a mother tongue other than English or French and 3% of the population reported a Chinese language as their mother tongue (Statistics Canada, 2012). The city of Toronto with 2.48 million people is considered one of the most multicultural cities in the world. In 2006, 47% of the population had a mother tongue in a language other than English or French and there are over 140 languages and dialects spoken there (City of Toronto, 2012). Even between Canadians, nearly 25% of Canadians are francophone; most of whom are living in Québec. In other provinces, outside of Québec, only 4% of Canadians speak French as a mother tongue (Statistics Canada, 2012).

Several studies have demonstrated differences in health conditions and use of health care by immigrants' status (Newbold KB, 2005;Dunn J, et al., 2000;Newbold, et al., 2003). Recent

⁴ Globalization is defined here as “ways in which nations, businesses and people are becoming more connected and interdependent across national borders through increased economic integration, communication, cultural diffusion and travel.” Labonte R, Schrecker T. Globalization and social determinants of health: Analytic and strategic review paper. Ottawa, ON: Globalization Knowledge Network, Institute of Population Health, University of Ottawa, 2006.

immigrants (less than 10 years) generally have health status comparable to the Canadian population. However, their health status changes over time (Newbold, et al., 2003). Poor language proficiency is associated with poor self-reported health (Pottie, et al., 2008;NG, et al., 2011). A study using data from Statistics Canada's Longitudinal Survey of Immigrants to Canada (LSIC) shows that women after four years of arriving in Canada had a considerable increase in the prevalence of poor self-reported health (NG, et al., 2011). Another finding of this study is that persistent limited official language proficiency was associated with poor health among male and female immigrants who reported good health earlier (NG, et al., 2011).

Immigrants report more barriers to health care compared to non-immigrants, especially language barriers (Bowen, 2001). Furthermore, differences in health between people with different languages seem to exist not only between immigrants and Canadian-born people but also between English-speaking and French-speaking people in Canada. For example, Francophone men and women living in Ontario (where they represent 10% of the population) are also more likely to report being in poorer health compared to Anglophones and Allophones (Institut Franco-Ontarien/Programme de recherche, 2005;Bouchard, et al., 2009;French Language Services Commissioner, 2013). Some explanations for differences in access to health care include barriers in terms of language, socioeconomic status, culture and social network (Bentham, et al., 1995). Language is considered one of the most important barriers in any health care system and is a risk factor with adverse outcomes (Aboul-Enein, et al., 2006;Quan, 2012). In linguistically diverse countries such as Canada and the United States who provide equitable health care in many languages, care can be a challenge (Lavizzo-Mourey, 2007;Canadian Medical Association, 2005). A study conducted among resettling refugees aimed at exploring health access issues in the state of California, USA identified

language as the most important barrier to accessing health care. Language and communication affect all stages related to health care access (Morris, et al., 2009) and compromise health care quality (Jacobs, et al., 2006; Cegala, et al., 2008). Communication between health professionals and patients are positively associated with improved health outcomes (Aboul-Enein, et al., 2006). The college of Nurses of Ontario states that nurses are responsible for developing an effective communication plan for their clients in order to facilitate clients acting as an informed partners (College of nurses of Ontario, 2009). Working with a multicultural multilingual population demands global health skills to address local and international health issues. Some nursing programs in Canada have responded to this need and have added global health to their nursing curricula (Mill, et al., 2010). In Ontario, the University of Toronto (Bloomberg Faculty of Nursing) has an international office for global health issues (Mill, et al., 2010). A pre-departure course for overseas experiences is offered to nursing students. The course covers preparation, placement expectations, support and post-trip debriefing (Chavez, et al., 2010). McMaster University has a global health office which works in collaboration with all schools in the Faculty of Health Sciences, including medicine, nursing and rehabilitation science (McMaster University, 2011). Many universities have not incorporated mandatory courses in global health and/or have not documented their experience. The Canadian Nurses Association highlights the lack of discussion and documentation of initiatives to include global health content into nursing curricula (Canadian Nursing Association., 2009). Language fluency is also a barrier for internationally educated nurses working in Ontario and they represent 11% of the total nurse workforce (Kolawole, 2009).

Regarding nursing education, there is a lack of essential global health issues incorporated in the majority of nursing under graduate programs (Ervin, et al., 2006).

Although there is an increased inclusion of elective global health experiences in nursing programs (Kirkham, et al., 2009), the role of the nurses in these international experiences has received little attention (Chavez, et al., 2010). There is also a growing interest in health communication (Candlin, et al., 2003), especially when patients and caregivers do not share the same mother tongue (Robinson, 2002). Few studies have investigated nurses' communication and their perception of language barriers in their care (Isaacs, et al., 2011). Moreover, there are no studies to investigate if there are differences between nurses' language abilities and global health skills. The current study aims to address this gap in the literature.

Objective: To investigate if there are differences between nursing students who speak one language and nursing students who speak two or more languages and their skills and learning needs in global health.

Method: This paper is part of a large study to assess perceived knowledge, skills and learning needs in global health of nurses, family physicians residents, physiotherapists and occupational therapists students in Ontario. In this paper we will describe the results of the survey from the nursing programs of Ontario related to nursing students' skills and learning needs in global health and its association with nursing students' abilities to speak one and two or more languages (self-reported language proficiency).

Study population and setting

A total of 906 nursing students in five universities within Ontario, Canada were invited to participate in the online survey. The universities are geographically representative of the province. The inclusion criteria for participants were: a) must be a final year undergraduate nursing student; b) must be from one of the following universities in Ontario: University of

Ottawa, University of Toronto, Queen's University, Western University and McMaster University; c) must be 18 years or older; d) must provide online informed consent.

Survey

The survey was assessed for validity, reliability and pretesting in a prior study. No floor or ceiling effects were found for the overall rating score. It also demonstrated good internal consistency with a Cronbach's alpha >0.8 (Veras, et al., 2013). The survey contained 30 questions in four sections: 1) Knowledge in global health and health equity (self-assessment); 2) Global health skills (self-assessment) for working with patients who have different linguistic, educational, socioeconomic, and cultural backgrounds; 3) Learning needs about global health; and 4) Socioeconomic and demographic questions.

Survey administration and data collection

Students were recruited by e-mail through the directors or coordinators of their respective programs. They received a brief explanation about the study and a weblink to access the online survey and consent form. Online surveys have been demonstrated to be superior compared to postal surveys in several ways, mainly in response speed, response rate, and cost efficiency (Sheehan, 2001; VanGeest, et al., 2011). Reminders were sent after 2 and 4 weeks. Data was collected from April 2011 until October 2011.

Data analysis

Descriptive statistics were computed to describe the sample. The chi-square statistic was used to compare frequencies for descriptive variables between nursing students who speak one language and nursing students who speak two or more languages. The three main factors of

the survey were analyzed separately: Confidence level in global health issues, global health skills and learning needs in global health. A total score for each factor was calculated and compared by income per year (less or equal to \$80,000, \$80,001 or more, don't know), number of languages (1, 2, 3 or more), country of origin (Canada vs. others), background (White vs. non white) and global health activity (non active, active, neutral). Scores did not have normal distributions, therefore non-parametric statistics were used (Kruskal Wallis and Mann Whitney U tests). Bonferroni correction was used for multiple comparisons. A significance level of $p < 0.0056$ was established. STATA 11.2 and SPSS were used.

Ethical considerations

This research received approval from the University of Ottawa, Ottawa Hospital Research Ethics Board and the University of Western Ontario.

Results

Participants Characteristics

Surveys were sent to 906 students at five university settings. The survey was completed by 97 students (response rate: 10.70 %). Non completed surveys were not included in the analysis. Overall, the sample was predominantly female, 25 years old, white, from University of Ottawa, with a parent income of 80,000 Canadian dollars or more and able to speak two or more languages (Table 1). More than 50% of the participants were Anglophones and 38% reported proficiency in both Canadian official languages- English and French. Additional languages reported were: Romanian, Chinese, Vietnamese, Polish, Dutch, Punjabi, Hindu, Amharic, Tigrigna, Polish, Tagalog (Filipino), Spanish, Germany, Korean, Somali, Croatian, Urdu, Hindi, Bosnian, Russian, Belarusian, Lithuanian, American sign language, Twi (Akan

language which is widely spoken among the people of Ghana), Kinyarwanda, Hungarian and Russian.

Perceived knowledge in Global Health and Global Health Skills

Table 2 represents the results concerning the differences in income, language, country, ethnicity, global health activity and language. The Kruskal-Wallis and Mann Whitney U tests were conducted to evaluate whether the sample medians on a dependent variable were the same across all levels of a factor. The results showed that there was a significant difference in the medians among language (nursing students who speak one language, two languages and three or more language) with learning needs in global health ($p=0.0049$). There were also significant differences among Global health activities (being active, non-active and neutral) and Global health skills ($p=0.004$). Follow-up tests were conducted to evaluate pairwise differences among groups using the Bonferroni approach.

Learning Needs in Global Health

Nursing students who spoke two or more languages were more likely to consider health risks associated with travel and migration a very important and extremely important (68.2%; 78.6) issue to learn in global health compared to nursing students who spoke one language (31.8%; 21.4%) ($p=0.044$). Moreover, nursing students who spoke two or more languages were more likely to rate the relationship between health and social determinants of health (SDH) as extremely important (71.1%); and how SDH varies across world regions than for nursing students who spoke one language (extremely important=28.9%) ($p=0.042$). For learning needs in global health related to cultural competency (understand how cultural background,

socioeconomic status and language barriers can influence access to care and health outcomes), 100% of the participants who spoke one language considered this not at all important compared to nurses who spoke two or more languages ($p=0.018$). Furthermore, more than 70% of the participants who spoke two or more languages reported that learning about the relationship between access to clean water, sanitation, and nutrition on individual and population health were extremely important for global health when compared to participants who spoke one language (25.5%) ($p=0.009$) (Table 3).

Discussion

Our response rate is comparable to similar surveys with nursing students and health professional students described in the literature (Payne, et al., 2012; Jordan, et al., 2011; Hamshire, et al., 2012). Although there is an increased interest in global health among students and faculties, (Drain, et al., 2007; Izadnegahdar, et al., 2008), we received a low response rate. The survey was representative for some universities in Ontario. The low response in other universities affected the overall response rate. More than 90% of our sample constituted female students. Historically nurses have been predominantly female (Cockrell, 2002). According to the College of Nurses of Ontario report, in 2011, 90.9% of new registered nursing in Ontario were female while 9.1% were male. This data is also compatible with the gender imbalance in other Canadian jurisdictions (Female 91.0%; Male 9.0%) and internationally (Female 85.0%; Male 15.0%). (College of Nurses of Ontario, 2013). Indeed, the “feminization” of the health workforce is well documented in the literature. (Frenk, et al., 2010)

Approximately 30% of the nursing students reported an ethnicity other than white which is also representative of the multicultural population in Canada. Several studies report the benefits of cultural and linguistic competencies on health outcomes (Goode, et al., 2006). Many studies support the hypotheses that minority health professionals are more likely to serve minorities and disadvantaged populations when compared with non-minority health professionals. (U.S.Department of Health and Human Services, et al., 2006). Diversity in the health care workforce can improve the quality, communication and trust of the health care delivery system among minority and disadvantaged populations by providing them with an opportunity to see a health professional with a similar background (U.S.Department of Health and Human Services, et al., 2006). Ethnicity and language concordance are associated with better patient-practitioner communication and relationships. Ethnicity concordance occurs when patients and practitioner have the same ethnicity. (Stepanikova, 2006) Language concordance occurs when patient and practitioner speak the same language. (Manson, 1988) Both concordancies may also increase the probability of the patient receiving appropriate care.(U.S.Department of Health and Human Services, et al., 2006)

Our findings show that the participants in the study reported proficiency in a lot of other languages besides English and French. However we are unable to know if these language abilities are a result of a foreign language training in Canada or working or studying overseas; or growing up in a setting where another language was spoken or having parents who speak another language at home.

Language abilities are required for nurses who intend to work in international settings as well as in Canada, which is a bilingual country with an increasing immigrant population. Findings from our research reveal that nurses who speak two or more languages are more likely to be

interested in learning about global health issues. Despite the demographic changes and the increasingly diverse population in Canada, our findings demonstrate that nursing students who spoke one language considered that cultural competency was not an important global health issue for nurses. The American Nurses Association's Code recognized the need to provide culturally competent care (American Nurses Association, 2001). The Aboriginal Nurses Association of Canada, Canadian Association of Schools of Nursing and Canadian Nurses Association highlight the importance of providing culturally competent care (Aboriginal Nurses Association of Canada, 2009). Lack of culturally competent care can increase the stresses experienced by patients and result in inappropriate care by health professionals. Nurses must have expertise and skills to provide culturally competent nursing care (Aboriginal Nurses Association of Canada, 2009). The practice guideline of the College of Nurses of Ontario highlights the need for culturally competent care between nurses and patients. The guideline states that when communication barriers exist, nurses are responsible to develop a communication plan which encompasses working with interpreters, preferably with a professional interpreter (College of Nurses of Ontario, 2009).

An exploratory survey to identify nurses' perceptions about global health competencies with nursing faculty from the United States, Canada, Latin America and Caribbean countries found that additional global health competencies cited by both English and Spanish respondents were "need a second language" and "fluency in second language", respectively (Wilson, et al., 2012). In Canada, some universities encourage students to take language courses prior to beginning their electives (The University of Western Ontario, 2012). Others universities require a mandatory language course (the Dalhousie University Faculty of Medicine). Learning or improving a foreign language is one of several benefits to working in global

health (Izadnegahdar, et al., 2008). Research has shown that, among the students who took international electives, less than 30% attended preparation training for their international experience (Heck, et al., 1995).

In our survey less than 30% of the nursing students were able to speak French. The inequalities reported in the literature related to minority Francophones in Canada (Bouchard, et al., 2009) who are affected by the inability of health professionals to speak French suggests the need for health professionals to use both Canadian official languages in their practices. The lack of French language knowledge in a health care setting can result in poor self-perceived health for Francophones, especially for those who live outside Quebec (Bouchard, et al., 2009). The same problem applies to Anglophones in predominantly French settings. Our study also shows that nursing students who are involved in global health activities develop more skills to work in a global health context. However we do not know what kind of global health activities influenced them positively in their global health skills.

Policy implications, limitations and future studies

The policy implication of this study is that there are gaps in awareness about global health and cultural competency that may have negative consequences on nurses' ability to practice. This suggests a greater focus on global health and cultural competence is needed in nursing programs. We also identified that nursing students who spoke only one language were significantly less aware of global health issues. It also adds to a better understanding of language abilities and knowledge and skills in global health.

The strengths of this study are the use of a validated survey tool, and the sampling of five universities representative of the province of Ontario. However, our study has some

limitations. First, it was a cross-sectional survey; thus, causality cannot be established. Second, the response rate was relatively low and limits the level in which these results can be generalized to other groups. The recruitment of students was the main challenge of this study. Some universities were better represented than others. Several reasons might have influenced the low response rate, including that the survey was delivered to some universities during the exam period which may have reduced student participation. Additionally, some director/coordinators of the nursing programs were more committed and interested in the results of the survey than others which may have influenced the students' motivation to participate. Third, we defined our results based on self-reported language ability.

We did not have sufficient sample size to compare bilingual (English/French) Canadian students and multicultural nursing students and their knowledge and skills in global health. Future research could elucidate whether there are differences in global health awareness between these groups. Furthermore, a self-report assessment of nursing professionals is also important to identify global health gaps, and whether they also differ according to language abilities.

Conclusion and future recommendations

This study suggests that nursing students who speak more than two languages are more likely to have an increased interest in global health issues. Students that are actively involved in global health activities in their programs may develop more global health skills. Based on the results of the survey, following are three policy recommendations suggested to address this issue.

- 1) Encourage and support nursing schools to incorporate global health issues into the curricula.

There is a need to review current nursing curricula to adapt them to meet the needs of the population according to national and global priorities. The global health competencies survey could be used to provide a picture of the knowledge, skills and learning needs in global health. Based on the results of the survey, programs can offer seminars, international electives and/or integrated disciplines including global health components in the ongoing courses and support for international internship. Global health institutions and global funding agencies may work in partnership to engage students in ongoing projects overseas, with appropriate pre-departure training.
- 2) Give an incentive to motivate nursing students to learn a new language. Government, universities and other institutions can provide opportunities for nursing students to learn a new language through their university language departments and government/non-government organizations that provide language courses and support for immigrants could also offer opportunities for nursing students to learn a new language through peer learning which students will also have the opportunity to experience an inter-cultural language exchange.
- 3) Modify selection criteria to aim for a balance of students from different cultural and linguistic backgrounds. A large number of studies have found that language concordance between patients and providers results in better patient understanding of diagnosis and treatment (Eamranond, et al., 2009). The Commission on Education of Health Professionals for the 21st Century points to the need to have a diversity of cultural, ethnic and linguistic backgrounds in health programs. Historically, health professional program admission has been based on a competitive merit-based policy to recruit the best students (Frenk, et al., 2010). Institutions

that intend to advance health equity might have recruitment policies that seek a balance among geographic region (rural/urban), ethnic, sociocultural and socioeconomic composition (WHO, 2013).

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Tables:

Table 1: Demographic Information of Participants

Characteristics	n=97	%
University		
University of Ottawa	41	42.3
University of Toronto	1	1.0
McMaster University	34	35.1
Western Ontario University	4	4.1
Queen's University	17	17.5
Sex		
Male	7	7.2
Female	90	92.8
Age (yrs)	25.4	
Background		
White	70	72.2
Chinese	6	6.2
South Asian	4	4.1
Black	5	5.2
Latin American	1	1.0
Southeast Asian	2	2.1
Parents Family Income		
\$20,001 to \$30,000	6	6.2
\$30,001 to \$40,000	6	6.2
\$40,001 to \$50,000	5	5.2
\$50,001 to \$60,000	7	7.2
\$60,001 to \$70,000	9	9.3
\$70,001 to \$80,000	4	4.1
\$80,001 or more	33	34.0
Don't know	27	27.8
Language able to speak		
One language	38	39.2
Two languages	47	48.5
Three languages	9	9.3
Four language or more	3	3.0

Table 2: Differences by Income, Language, Country, Ethnicity, Global Health Activity and Language

Variable	Total Score for Confidence Me (IQR) n=95	Total score for Global Health skills Me (IQR) n=96	Total score for Learning needs Me (IQR) n=93
Me (IQR)	26 (23-30)	13.5 (11-16)	35(31-39)
Income			
>80,000 \$CAD	26 (22.2-29.7)	13 (10-15)	33 (29.5-37)
<80,000 \$CAD	26 (24-29.5)	14 (12-16)	31 (36-39)
I don't know	26 (23-31)	14 (11-17)	35 (29-41)
K. Wallis test	p=0.6806	p=0.1822	p=0.3770
Language			
One language	25 (22-29)	12.5 (11-15.2)	33 (29-36)
Two Language	27 (24-30)	14 (11.7-16)	35 (31-38)
Three or more language	29 (25.2-31)	15 (12-16)	40 (37.2-42)
K. Wallis test	p=0.0531	p=0.5555	p=0.0049*
Country			
Canadian		26 (23-29)	13 (11-15.7)
Other		31 (24-33)	15 (11.2-16.7)
Mann Whitney U	p=0.0479	p=0.2298	p=0.0068
Ethnicity			
White	26 (23-29)	13.5 (11-16)	35 (31-38)
Non-white	27.5 (23.7-32)	13.5 (10-16)	36 (30.5-40.2)
Mann Whitney U	p=0.1790	p=0.7001	p=0.2816
Global heath activity			
Non- active	26 (23-29)	12 (11-15)	32 (29-36.2)
active	30 (24.5-32)	14 (10.5-16)	37 (32.5-41.5)
Neutral	27 (24-32)	16 (13.2-17)	37 (33-40)
k. Wallis	p=0.0258	p=0.0042*	p=0.0070

Note: Significance level after Bonferroni correction for multiple comparisons: p<0,0056

Table 3: Learning Needs in Global Health Self-reported by Nurses' Students in Ontario, Canada.

Learning Needs in Global Health		Nurse (%)	
Health Risks	One Language (n=38)	Two or more Languages (n=58)	p-value
Not at all important	0	0	0.044
Somewhat important	80.0	20.0	
Neutral	30.0	70.0	
Important	41.0	59.0	
Very important	31.8	68.2	
Extremely important	21.4	78.6	
Communicable diseases			
Not at all important	0	0	0.339
Somewhat important	75.0	25.0	
Neutral	33.3	66.7	
Important	22.2	77.8	
Very important	56.7	43.3	
Extremely important	28.9	71.1	
Social Determinants of Health (SDH)			
Not at all important	0	0	0.042
Somewhat important	75.0	25.0	
Neutral	33.3	66.7	
Important	22.2	77.8	
Very important	56.7	43.3	
Extremely important	28.9	71.1	
Cultural competency			
Not at all important	100.0	0	0.018
Somewhat important	100.0	0	
Neutral	0	100.0	
Important	25.0	75.0	
Very important	51.7	48.3	
Extremely important	31.9	68.1	
Access to clean water			
Not at all important	0	0	0.009
Somewhat important	100.0	0	
Neutral	50.0	50.0	
Important	31.3	68.8	
Very important	60.0	40.0	
Extremely important	25.5	74.5	
Human rights			
Not at all important	0	0	0.503

Somewhat important	50.0	50.0	
Neutral	50.0	50.0	
Important	50.0	50.0	
Very important	44.8	55.2	
Extremely important	29.3	70.7	
Global Health Institutions			
Not at all important	50.0	50.0	0.530
Somewhat important	50.0	50.0	
Neutral	50.0	50.0	
Important	36.0	64.0	
Very important	51.9	48.1	
Extremely important	28.1	71.9	

CHAPTER FIVE

Assessing Global Health Competencies in Rehabilitation Students

"Nothing is lost, nothing is created, everything is transformed."

Antoine Laurent Lavoisier

Assessing Global Health Competencies in Rehabilitation Students

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Manuscript formatted to the Journal Rehabilitation, Research and Practice. Status: under review

Abstract :

Purpose: Globalization contributes to changes in health outcomes and health care use in many ways, including health professional's practices. The objective of this study was to assess global health competencies in rehabilitation students. **Method:** One hundred and sixty-six physiotherapy and occupational therapy students from five universities within Ontario participated in an online survey. Descriptive statistics were also used to analyze students' perceived knowledge, skills and learning needs in global health. Chi-square tests were used for statistical analysis. The level of significance was taken as $p < 0.05$. **Results:** Physiotherapy students scored higher for self-perceived knowledge in global health on "relationship between income and health" (71.32%); while the occupational therapy students scored higher on the "relationship between work and health" (81.63%). Both physiotherapy and occupational therapy students scored lower in the questionnaire on "Access to health care for low income nations" (25.74% and 29.59%, respectively). **Conclusion:** This paper highlights several ways to improve rehabilitation students' knowledge and skills in global health. The increase of inequalities within and between countries suggests that professionals and educators should develop strategies to address these needs and provide more global health opportunities in rehabilitation programs as well as continuing education for professionals.

Keywords: Occupational therapy, Physiotherapy, Education, Global health, Health disparities, Globalization.

Introduction

Globalization has become a key word in the 21st century and is defined here as “the ways in which nations, businesses, and people are becoming more connected and interdependent across national borders through increased economic integration, communication, cultural diffusion, and travel” [1] . Indeed, globalization has influenced health determinants and changed health outcomes [1]. The World Health Organization defines social determinants of health (SDH) as the conditions in which people are born, grow, live, work and age; this includes the condition of their healthcare system. SDH are influenced by the distribution of money, power and resources at global, national and local levels [2,3]. Health services, for example, are increasingly influenced by globalization [4]. Knowledge, migration, and economic development through trade are some examples of the globalization issues which influence health services. Although some of these elements are perceived as improving health, certain developments can lead to adverse health impact such as the movement of health workers from the public to the private sector as well as inequitable access to health care [5].

Natural disasters such as floods, earthquakes, and volcanic eruptions as well as complex emergencies including war, civil strife and food shortages are now considered global problems which have a considerable impact on population health worldwide [6]. Evidence shows that such calamities have progressively increased the number of deaths, illnesses, and disabilities and, therefore, the economic costs of treatment and rehabilitation [6]. For instance, the earthquake that occurred in Haiti in 2010 resulted in extensive infrastructure damage; and it was estimated that there were 220 000 casualties and more than 300 000 people suffered from injuries including fractures, burns, amputations, brain and spinal cord injuries [7,8]. Additionally, there is an increase in the number of people with chronic diseases in both

developed and developing countries which may lead to their development of several disabilities [6]. These health issues highlight the role that occupational therapists and physiotherapists play in improving daily living and functional skills in people from exposure to natural disasters and chronic disease; and its implication for global health [8]. Therefore, health professionals, including occupational therapists, physiotherapists and other health professionals are facing these new century challenges in their care and it demands knowledge and skills beyond clinical competencies [9].

Presently there is an extraordinary interest in global health among students, health professionals and educators [10]. Some universities have departments or units that focus on global health and offer opportunities specifically to physiotherapists and occupational therapists to work overseas [11,12]. For example, The International Centre for Disability and Rehabilitation (ICDR) at the University of Toronto has encouraged a focus on global health issues related to disability and rehabilitation within the Rehabilitation Sciences. The numbers of students who have had the opportunity to experience an international clinical internship has increased significantly in the past ten years [13].

Occupational therapists and physiotherapists have been participating in paid and unpaid work overseas as well as international internships as part of their educational programs [8,14]. The World Confederation for Physical Therapy (WCPT) carries out several programs and projects for physiotherapists working overseas as well as supporting international campaigns to endorse the contribution of the profession for global health [15]. The WCPT highlights the commitment of the profession in global issues including primary health care, HIV-AIDS, community based rehabilitation, disaster management, female genital mutilation, infectious diseases and torture among others. In addition, the WCPT develops partnerships

with the World Health Organization (WHO) as well as governmental and non-governmental agencies to contribute towards global health [15]. Furthermore, many physiotherapists and occupational therapists working overseas in several countries across many continents are developing and supporting disability projects related to HIV and AIDS, community based rehabilitation and education to promote accessibility for people with disabilities [14,15]. The president of the World Federation for Occupational Therapists (WFOT) emphasizes the commitment of the profession to contribute to global health and the WHO initiatives. The WFOT Position Statement on Global Health highlights several topics for the global health agenda: mental health, human resource planning, healthy aging, actions for health and well-being and disability [16].

Global health training may provide students with a commitment to community health as well as an opportunity to work with socio-economically disadvantaged populations. An additional benefit of global health training includes an improved understanding of the role of the socioeconomic status (SES) and its impact on health and disease; there is also the opportunity to learn or improve on a foreign language [10]. Understanding the role of the social determinants on health may help occupational therapists and physiotherapists comprehend the impact of the SES and how it correlates with education, poverty, health status and its consequences on the lives of people with disabilities and their access to health services. Research on disability and health care suggests that people with impairments face noteworthy personal and cultural barriers to accessing health care facilities. The personal barriers are related to transportation, communication, finance and insurance. The cultural barriers include misconceptions about people with disabilities, lack of respect and reluctance to provide care for these populations [17]. Although there is an increased interest in global health little is

known about the global health competencies of occupational therapy and physiotherapy students. Hence, the purpose of this study is to assess the knowledge, skills and learning needs related to global health and health equity of occupational therapists and physiotherapists students' in Ontario, Canada.

Methods

An online cross-sectional survey was administered using Survey Monkey to physiotherapy and occupational therapy students registered in five universities in Ontario.

Instrument

A forty-seven item online survey was developed to gather information regarding self-assessment knowledge, skills and learning needs in global health. The survey was developed by adapting three other instruments : 1) Resident physicians' knowledge of underserved patients, a validated survey used to measure actual and perceived resident physician knowledge of underserved patient populations in the United States by Wieland and adapted by the research team for the Canadian population [18]; 2) A global health competency skills survey for medical students by Augustincic [19]; 3) The Canadian Medical Education Directives for Specialists (CanMEDS) competencies [20]. The survey consisted of 30 questions subdivided into four parts: 1) Knowledge in global health and health equity; 2) Global health skills; 3) Learning needs about global health; and 4) About you – demographic and socioeconomic questions. This global health survey was described previously and demonstrates good internal consistency with a Cronbach's alpha >0.8 [21].

The questions regarding self-assessed confidence in global health asked respondents whether they felt '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). Self-assessment of skills in global health could be answered by either ‘strongly agree’, ‘agree’, ‘neutral’ ‘disagree’ ‘strongly disagree’. The questions received the codes varying between 0-. ; (item scale [0-1]: 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). Therefore, by averaging all respondents’ answers to a given question and multiplying that average by 100, each question was given a number between 0 and 100. The score 0 represented a complete lack of confidence and 100 represented feeling completely confident.

Participants

A total of 702 students from five universities within Ontario, Canada were invited to participate in the study. A total of 166 participants were included in the analysis. Inclusion criteria were predefined as follows: 18 years or older; 1st year student from a master’s program in physiotherapy or occupational therapy program in one of the five participating universities in Ontario.

Data collection

From May to October 2011, directors or coordinators of physiotherapy and occupational therapy programs were contacted to collaborate with the survey. They were asked to send an e-mail- invitation to all physiotherapy and occupational therapy students to invite the prospects to participate in the survey. Then, an e-mail containing a hyperlink to the survey and

a consent form was sent to all students. Two reminder e-mails were sent at one and two week intervals.

Ethical considerations

Ethical approval was obtained for this study from the Ottawa Hospital Research Ethics Board, the University of Ottawa, and the University of Western Ontario.

Results

Participant's characteristics

All five eligible universities which offered both physiotherapy and occupational therapy programs in Ontario, Canada were represented in this study. Table 1 shows the demographic characteristics of respondents. Most of the participants in both programs were female (80.9% physiotherapy students (PTS) and 94.9% occupational therapy students (OTS). The majority of the respondents were born in Canada (86.8% physiotherapy students and 88.8% occupational therapy students). The physiotherapy participants were older (mean age = 26.47 years) than occupational therapy students (mean age = 24.91 years). The majority of participants were from a white family background (76.4 % physiotherapy students and 79.6% occupational therapy students). Slightly more than one third parents of interviewed students of both categories had parents with an annual income of CAN\$ 80,000 or greater. Physiotherapy students had relatively higher multi-lingual abilities compared to their counterparts from occupational therapy (Table 1).

Self-perceived global health knowledge scores

Students were asked to rate their knowledge confidence in several global health and health equity topics. The self-perceived knowledge scores of physiotherapy and occupational therapy students in twelve domains of global health are presented in Table 2. Self-perceived knowledge of physiotherapy students found to be highest (71.32%) in ‘relationship between income and health’ followed by ‘work and health’ (62.38%), and ‘language barrier and adverse impact on health and health care (65.67%). Similarly, self-perceived knowledge of occupational therapy students compared to physiotherapy students found to be highest in ‘relationship between work and health’ domain followed by ‘relationship between income and health’ and ‘Socioeconomic Position (SEP) and impact on health’. Also, the ‘relationship between income and health’ and ‘access to health care for low income nations’ were respectively the most knowledgeable and the least knowledgeable domain for both physiotherapy and occupational therapy students (Table 2).

Perceived global health skills for physiotherapy and occupational therapy ‘students guided by the CanMEDS framework

The scores of perceived global health skills of physiotherapy and occupational therapy students in eleven skills domains guided by the CanMEDS framework are presented in Table 3. Both physiotherapy and occupational therapy students perceived themselves to have better global health skills in (i) listening (PS=76.17% and OTS = 72.68%), (ii) clinical competency

(PS=69.62% and OTS = 67.11%), (iii) identifying needs (PS=63.28% and OTS = 56.84%), and (iv) being active in global health (PS=33.09% and OTS = 33.42%) domains.

Learning Needs in Global Health

Learning needs in global health for physiotherapy and occupational therapy students are presented in Table 4. Statistically significance relationships between variables considered for learning needs in global health were assessed using Chi² test. The results show that there is a significant result for the following topics: ‘health and social determinants of health and how social determinants vary across world regions’ ($X^2 = p < 0.05$) and ‘access to clean water, sanitation, and nutrition on individual and population health’ ($X^2 = p < 0.05$).

Almost 70% of the occupational therapy students reported that it is extremely important to learn about the relationship between health and social determinants of health and how social determinants vary across world regions’ compared to 31.1% of physiotherapy students ($p = 0.03$). Additionally, almost 80% of the occupational therapy students considered that ‘relationship between access to clean water, sanitation, and nutrition on individual and population health’ is an extremely important topic to learn in global health compared to 20.9 % of physiotherapy students. ($p = 0.05$) (Table 4).

Both physiotherapy and occupational therapy students (25 students) suggested others topics that are important to learn in global health included: 1) ‘*Understanding the different structures of health care around the world*’ 2) ‘*Access to adequate healthcare services in less developed countries*’; 3) ‘*cultural perceptions of disability, work and health*’; 4) ‘*Global health issues*

and social determinants of health; 5) *“Language Barrier & Effective Communication”*; 6) *“Potential cultural clash experiences of young immigrants, stereotyping based on religion, knowing the effects politics has on health in certain countries in the world”*; 7) *“The impact of climate change on the health of low socioeconomic classes”*; 8) *“ Specific education surrounding Aboriginal peoples and the effects that their lifestyles have on them physically, psychologically, and emotionally”*; and 9) *“WHO Millennium Development Goals”*.

Discussion

The student’s socio-demographic profile is an important component for effective care in a global health context. The recent report by the Commission on Education of Health Professionals for the 21st century refers that in many countries the competencies of graduate students might not be aligned with the new challenges and the social, linguistic, and ethnic diversity of the populations [9]. Our study showed that most of the participants were females, originally from Canada, from a higher socioeconomic background and were able to speak at least two languages.

Our findings confirm the results of the recent commission report which states that health professional students admitted in health programs come from higher social classes and dominant ethnic groups [9]. Regarding gender, our findings were consistent with those of Peplau and Cockrell [22,23]; that there is a predominance of females in health programs. Moreover, The Canadian Institute for Health Information (CIHI) 2009 report also found that occupational therapists had a higher proportion of women in their workforce (92.0%) compared to various other health professions such as physiotherapists (78.0%), pharmacists

(59.2%) and physicians (34.7%) [24]. This evidence validates that females dominate the workforce of physiotherapy and occupational therapy in all provinces of Canada [24].

Gender balance in health systems is highly recommended, as a gender imbalance is a major obstacle for access to health care [25,26]. There is extensive literature on ‘feminization’ of parts of the health workforce and high concentration of women in health professions. This trend is directly related to globalization and has consequences to global health. It can bring many consequences in health systems such as practice location and practice hours. Female professionals are more likely to practice in urban areas rather than rural areas [27]. Globally, nearly one half of the population lives in rural areas and, according to the WHO, the health professional workforce shortages in rural areas is a worldwide problem that affects almost all countries [28]. The WHO also recommends admission policies to enroll students with a rural background in order to increase the probability of these students developing their practice in rural areas [28]. Moreover, a number of studies have documented that women work fewer hours in their professional careers than do men [29].

Our study identified several issues facing rehabilitation sciences students in global health education through the analysis of several knowledge/skill domains and may need to be prioritized for policy relevance. As an example, one of the barriers to effective health care services is language [30,31]. Multi-linguistic knowledge and skills help health professionals to provide effective care for their clients. In this study, almost half of the physiotherapy students self-reported that they are able to speak at least two languages while half of the occupational therapy students reported that they are only able to speak one language. In addition, more than 60% of the physiotherapist students reported self-perceived confidence related to language barriers and adverse impact on health and health care. This finding is compatible with a

similar survey about self-perceived knowledge of underserved population topics with family physician residents in United States (Wieland Survey) where they reported 61.0% had confidence in this topic [32]. From the service provider's perspective, language may be a barrier to the health professionals in understanding the information and beliefs regarding patients' health and address the difference or incongruence in the values of patients, physiotherapists and occupational therapists [33].

On the other hand, our result in confidence in the “relationship between income and health”, differs from the Wieland study. More than 80% of the occupational therapy students assessed themselves as confident in the 'relationship between income and health' while 57.4% of US family physician residents surveyed reported confidence in the topic. We believe that this difference is related to the main role of the occupational therapists. The occupational therapy profession in itself has a crucial role in training and advice on occupational performance, including self-care, productive and recreational activities [26]. Their interventions are also very effective for reducing personal and societal costs of work-related injuries as well as reducing the duration of work disabilities [26]. Hence, knowledge in “relationship between income and health” is a crucial competence for occupational therapists in all settings and therefore their confidence in this area is not surprising.

Physiotherapy and occupational therapy students reported less confidence in “access to health care for low income nations”, “mechanisms for why racial and ethnic disparities exist” and “racial stereotyping and medical decision making”. For these topics, our results were similar to the US students survey, where all of them scored less than 50%[32]. Socioeconomic status and racial disparities are important determinants of health outcomes [34,35] and are extremely important for working with a global health perspective.

Overall, students from both programs reported less skill in “global health activity”. Physiotherapists and occupational therapists need to have extended knowledge and skills in global health in addition to their core professional training, to tackle the global burden of disease and disabilities in this multicultural world of 21st century. The complexity of global health work demands physiotherapists and occupational therapists to have not only clinical and rehabilitation abilities, but skill and knowledge regarding epidemiology, sociology, population health, geography, laws, and other disciplines. These disciplines are crucial for working in partnership with governmental and non-governmental organizations.

Another point of emphasis is that in this globalized world occupational therapists and physiotherapists must build confidence to meet the demand and quality care of international citizens from all over the world including immigrants and refugees, disable people, victims of wars and suffers from infectious diseases in order to provide equitable services. Furthermore, all the global health challenges will come to “knock on the door” of all health professionals wherever they working in different settings sectors such as clinics, rehabilitation centers, community health or in hospitals.

Strengths and limitations of the study

This study fills important knowledge gaps that have appeared in global health literature related to physiotherapy and occupational therapy and adds value, offering some relevant elements of the global health competencies to the disciplines of physiotherapy and occupational therapy. It also highlights how future students of these disciplines can address the growing needs of global health effectively and equitably. Although the findings of this study are very important, the results of this study cannot be generalized for all populations and needs to be interpreted cautiously due to the small number of sample sizes including a low response rate.

Implications for future research

The areas of further research include the following:

- 1) Studies on global health for rehabilitation students are limited, and should be expanded to assess global health competencies in other provinces in Canada and worldwide.
- 2) Use of existing data for assisting and developing interventions in order to revise and develop curricula changes in OT/PT programs in Ontario, including a posterior evaluation of the changes implemented. Future studies could also track these changes over time.
- 3) Assessing global health competencies with francophone students in Canada using a French version of the survey.
- 4) The use of qualitative and quantitative information regarding the didactic methods to improve global health skills according to student's opinions and perceptions.
- 5) More research is needed on the range of issues that relates to global health that affects PT/OT practice during their local/international training settings.

Recommendations for action

Based in our findings, we are proposing some recommendations for action to improve global health education for rehabilitation students and to address the main barriers to increase health equity.

- Improve the knowledge of physiotherapists related to language barriers and adverse impacts on health and health care by building on current initiatives, it is important to facilitate the

access of education tools for PT and OT students such as the open- access Refugees and Global Health e-Learning Module [36].

- Use targeted admission policies to recruit students from different backgrounds, socioeconomic status and origin. It would provide opportunities for needy and disadvantaged populations to be served by professionals from the same cultural groups and might decrease misunderstandings between clients and providers due to language issues. There is evidence that workforce diversity may lead to improved patient health, especially for disadvantaged populations and better connections between patients and health care providers [37].
- Provide some opportunities for physiotherapists and occupational therapists to work (short term) in a country with a different language. This would also enhance their skills to understand and solve the issue of language barriers that can affect their quality of care for patients who do not speak the same language as the professionals.
- Providing overseas global health training, seminars and workshops that could improve students' knowledge and skills in the required fields of global health. These topics could also be useful to guide curricula and to fill some of the weaknesses of the education programs in global health and cover the contents for occupational therapy and physiotherapy students.
- Revise the curriculum of all the core and elective courses in PT/OT programs and to integrate them with global health content.
- Enhance the availability of training in community-based primary health care services.
- Create the availability of global health mentors for students interested in global health.

- Develop intersectoral collaborative work with students from other disciplines and/or programs and knowledge exchange mechanisms to inform existing projects/programs related to global health among students.

Conclusion

This paper expands our understanding of the role of knowledge and skills of the occupational therapy and physiotherapy student as a future health professionals to provide a fair and equitable health care services and contribute for a better world. It also calls for physiotherapy and occupational therapy students as well as educators to be more involved in global health initiatives and develop strategies to effectively address the impact of globalization in the field of working profession and education. In this globalized 21st century, it is essential for all health professionals to understand the determinants of health (e.g. socioeconomic, environmental and political factors) and develop competency to work and to be globally interconnected to help reduce health inequalities. Considering that health equity is one of the major goals of global health, and its focus on local health inequalities as well as cross-border issues, it is essential that physiotherapists and occupational therapists to be prepared for tackling with global health issues. Therefore, improving the knowledge and skills of occupational therapists and physiotherapists on global health competency is not only essential for providing care to all socially disadvantaged and disabled population groups, but also to address the growing needs of global health effectively and equitably.

Competing interests

The authors declare that they have no competing interests.

Acknowledgements

This study was supported by the Canadian Institutes of Health Research (CIHR) as part of the Fall 2009 Doctoral research Award Priority announcement in the Area of Primary care (Grant agreement n° 200910DPC-216158-DRB-CECA-187516).

Authors' contributions

MV, KP, PT contributed to the study conception, design and methodology. MV, TR, GD performed the statistical analysis. MV contributed to acquisition of data and initiated the first and final draft paper. KP, DC, GD helped to draft the manuscript. KP, VW, DC, GD, PT commented and gave expert advice on the background, results and discussion. All authors read and approved the final manuscript.

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Table 1. Demographic characteristics of respondents (N=166)

Variables	Number (percentage)	
	Physiotherapy students n=68	Occupational Therapy students n = 98
Sex		
Male	13 (19.1)	5 (5.1)
Female	55 (80.9)	93 (94.9)
Country (of birth)		
Canada	59 (86.8)	87 (88.8)
United States	0 (0.0)	1 (1.0)
Philippines	1 (1.5)	1(1.0)
India	1 (1.5)	0 (0.0)
Honk Hong	3 (4.4)	3 (3.1)
Pakistan	0 (0.0)	1 (1.0)
Other	4 (5.9)	5 (5.1)
Mean Age	26.47 (41)	24.91 (59)
Family Background		
White	52 (76.4)	78 (79.6)
Chinese	7 (10.3)	7 (7.1)
South Asian	3 (4.4)	6 (6.1)
Black	0 (0.0)	1 (1.0)
Other	6 (8.8)	6 (6.1)
Parent's Family Income		
\$20,001 to \$30,000	8 (11.8)	1 (1.0)
\$30,001 to \$40,000	1 (1.5)	3 (3.1)
\$40,001 to \$50,000	4 (5.9)	3 (3.1)
\$50,001 to \$60,000	2 (2.9)	8 (8.2)
\$60,001 to \$70,000	4 (5.9)	4 (4.1)
\$70,001 to \$80,000	5 (7.4)	10 (10.2)
\$80,001 or more	23 (33.8)	34 (34.7)
Don't know	21 (30.9)	35 (35.7)
Languages (Spoken)		
One language	26 (38.2)	48 (49.0)
Two languages	31 (45.6)	38 (38.8)
Three languages	8 (11.8)	6 (6.1)
Four languages or more	3 (4.4)	6 (6.1)

Table 2. Physiotherapy and occupational therapy' students self-perceived knowledge in global health

Domains of Self-perceived Knowledge	Physiotherapy students Score *(%)	Occupational therapy students Score *(%)
Language barrier and adverse impact on health and health care	65.67	57.65
Access to health care for low income nations	25.74	29.59
Relationship between income and health	71.32	76.53
Relationship between work and health	68.38	81.63
SEP and impact on health	64.71	67.86
Environmental Health and socioeconomic position	47.06	53.06
Relationship between housing and health status	55.15	54.12
SEP and food security confidence	54.41	48.47
Health outcome discrepancies among different groups in Canada	39.71	40.82
Mechanisms for why racial and ethnic disparities exist	32.35	31.12
Racial stereotyping and medical decision making	36.76	38.54
Gender and access to health care	42.65	40.82

*Average perceived knowledge and skills percentage for each domain varied for item scale between 0-1; (item scale [0-1]: 0 = not at all confident; 0.5 = somewhat confident; 1 = very confident).

Table 3. Perceived global health skills for physiotherapy and occupational therapy ‘students guided by the CanMEDS framework

Skills	Physiotherapy students	Occupational therapy students
	Score *(%)	Score *(%)
Communication skills	60.00	54.34
Listening skills	76.17	72.68
Able to understand patient with different background skills	54.04	56.63
Address team disagreement skills	52.69	42.89
Discuss sensitive issues skills	49.62	48.95
Identify needs skills	63.28	56.84
Helping patients achieve realistic goals skills	55.68	47.83
Working in a team skills	55.47	53.95
Clinical competency Skills	69.62	67.11
Keep up date in global health skills	50.47	53.16
Active in global health skills	33.09	33.42

* Average perceived knowledge and skills percentage for each domain varied for item scale between 0-1; 0-1; (item scale [0-1]: 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).

Table 4. Learning Needs in Global Health for physiotherapy and occupational therapy students in Ontario, Canada.

Learning Needs in Global Health	Physiotherapy N (%)	Occupational Therapy N (%)	Pearson Chi- Square
Health risks associated with travel and migration, with emphasis on possible risks and appropriate management, including referrals			
Not important			
Somewhat important	16 (64)	9 (36)	0.12
Neutral	7 (28)	18 (72)	
Important	24 (40.7)	35 (59.3)	
Very important	16 (40)	24 (60)	
Extremely important	4 (36.4)	7 (63.6)	
Knowledge about how travel and trade contribute to the spread of communicable diseases.			
Not important			
Somewhat important	9 (42.9)	12 (57.1)	0.86
Neutral	9 (33.3)	18 (66.7)	
Important	27 (45.8)	32 (54.2)	
Very important	15 (45.8)	20 (57.1)	
Extremely important	7 (38.9)	11 (61.1)	
Relationship between health and social determinants of health, and how social determinants vary across world regions.			
Not important			
Somewhat important	3 (75)	1 (25)	0.03
Neutral	5 (62.5)	3 (37.5)	
Important	28 (53.8)	24 (46.2)	
Very important	17 (32.7)	35 (67.3)	
Extremely important	15 (31.3)	33 (68.8)	

Relationship between access to clean water, sanitation, and nutrition on individual and population health.

Not important	2 (50)	2 (50)	0.03
Somewhat important	4 (40)	6 (60)	
Neutral	5 (55.6)	4 (44.4)	
Important	18 (36)	32 (64)	
Very important	9 (20.9)	34 (79.1)	
Extremely important	30 (62.5)	18 (37.5)	

Understand the relationship between health and human rights.

Not important	1 (50)	1 (50)	0.28
Somewhat important	2 (66.7)	1 (33.3)	
Neutral	4 (50)	4 (50)	
Important	18 (43.9)	23 (56.1)	
Very important	14 (27.5)	37 (72.5)	
Extremely important	29 (47.5)	32 (52.5)	

Knowledge about how global health institutions (eg. WHO, other United Nations agencies, global institutions) influence health in different world regions through funding and policy.

Not important	1 (33.3)	2 (66.7)	0.74
Somewhat important	2 (50)	2 (50)	
Neutral	6 (54.5)	5 (45.5)	
Important	24 (46.2)	28 (53.8)	
Very important	22 (35.5)	40 (64.5)	
Extremely important	12 (36.4)	21 (63.6)	

CHAPTER SIX

Health professionals in the 21st century: Results from an interprofessional and multi-institutional Global Health Competencies Survey

We must create a kind of globalization that works for everyone... and not just for a few.
Nestor Kirchner

Health professionals in the 21st century: Results from an interprofessional and multi-institutional Global Health Competencies Survey

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Manuscript status: In review.

Abstract

Background

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 to be more connected and to rethink their strategies toward an interprofessional 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 therapy students.

Methods

A cross-sectional study was conducted in five universities across Ontario, Canada. The online survey drew from a sample frame of 429 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 were used to evaluate the quantitative data

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 themselves confident was less than 60% for all global health issues.

Conclusion

The new century requires professionals competent in global health. Improvements in the core competencies in global health can be a bridge to a more equal world. Institutions must offer interprofessional approaches and a curriculum that exposes them to a varied learning methods and opportunities to improve their knowledge and skills in global health.

Key words: Globalization, health equity, health professionals education, global health

Resumo

No novo século, os profissionais de saúde em todo o mundo enfrentam novas pressões para mudanças em relação aos cuidados de saúde mais eficazes e sustentável sistema de saúde para todas as populações. A globalização cria grandes desafios, bem como novas oportunidades para instituições e profissionais de saúde estarem mais conectados e repensarem suas estratégias para uma prática interprofissional. Embora os profissionais de saúde estão mais atentos às questões de saúde global, atualmente não existem ferramentas de avaliação adequadas para avaliar a sua competência na saúde global. Este estudo teve como objetivo avaliar as competências em saúde global dos residentes de medicina de família e em estudantes de enfermagem, fisioterapia e terapia ocupacional.

Métodos:

Um estudo de corte transversal foi conduzido em cinco universidades em Ontário, Canadá. Uma amostra de 429 estudantes e residentes participaram do questionário online, entre maio a outubro de 2011. Os inquéritos foram avaliados para face e conteúdo de validade e confiabilidade. Estatística descritiva e qui-quadrado foram utilizados para avaliar os dados quantitativos.

Resultados:

Auto-avaliação em conhecimento habilidades em saúde global foram baixas para os residentes de medicina família e estudantes de enfermagem, fisioterapia e terapia ocupacional. A percentagem de residentes e estudantes que se auto avaliaram como confiante foi inferior a 60% para todas as questões relacionadas a saúde global.

Conclusão

O novo século exige profissionais competentes na área da saúde global. Melhorias nas competências essenciais na saúde global pode ser uma ponte para um mundo mais justo e com menos desigualdades em saúde. As instituições de ensino devem oferecer abordagens interprofissionais e um currículo que expõe os estudantes a variados métodos de aprendizagem e oportunidades para melhorar os conhecimentos e habilidades na saúde global.

Palavras-chave: Globalização, Equidade em saúde, Educação dos profissionais de saúde, e saúde global.

Introduction

Interprofessional care is emerging as an important strategy to address the challenges of a rapidly changing and increasingly interconnected world.(1) The 20th Century had marked advancements in the control of infectious diseases, safety from radiation sources and reduced pollution.(2) There were also huge achievements in food safety, vaccines and antibiotics. Smallpox was eradicated, poliomyelitis nearly eradicated and significantly reduced in diphtheria, tetanus and measles.(3) The 21st century has seen the emergence of new challenges including the occurrence of new infections such as SARS and avian flu, emerging and re-emerging diseases such as HIV/AIDS, malaria and tuberculosis, and increasing rates of chronic diseases including obesity, which has reached epidemic proportions globally. Also emerging are environmental hazards such as global warming, air pollution from transport, an increased number of chemicals in everyday use such as household items and personal care products, disposal of waste at land fill sites and building on contaminated land.(3)

All these new challenges will directly impact the local, national and global practice of health professionals. The education of health professionals in nearly all countries has failed to tackle health inequalities.(1;4) 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;4) The new century demands for redesigning and implementing educational reforms for health professionals as well as to adapt core competencies to respond to population health needs and overcome professional silos.(5)

In the 21st century, nations and people are becoming more connected as consequences of travel, economy, communication and cultural integration.(6) Despite all the progress with the globalized world, huge inequalities persist, and many people have not been able to enjoy the progress of public health success or access to all the benefits of the advancements in the societal everyday life.(3) While low and middle income countries are struggling with poverty, food deprivation, illiteracy, a lack of access to clean water and sanitation, a lack of access to health care, social discrimination, migration of health professionals, and political conflict; high income countries have many challenges including, income inequalities, unequal burden of disease and poor access to health services by immigrants and aboriginal people. (7) Characteristics such as socioeconomic status, ethnicity, gender and geographic location play a crucial role in health disparities in high income countries. For instance, according to geographic location, people living in Canada's northern remote areas have the lowest disability-free life expectancy (DFLE) and the lowest life expectancy compared to people who live in other areas. Furthermore, these people have higher rates of smoking, obesity and heavy drinking than the Canadian average. (8)

Recent reports from the US (United States) , the UK (United Kingdom), 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 news challenges. (9-11) 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 as well as exploring strategies to incorporate these competencies into curricula.(12) 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. (13) 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.(14)

It is important to highlight that education systems can improve the competence and effectiveness of health professionals through competency-based education.(15) Progress in global health can also 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. (15) Therefore, to address this knowledge gap in the 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.

Methods

This cross-sectional study used a web-based survey (survey monkey) to collect data. The data analysis was performed using the software SPSS version 18.0. Statistical differences were analyzed using the Pearson's chi-square statistical test (x2). The criterion for statistical significance was ($p < 0.05$).

Instrument

The survey was developed using items from three validated questionnaires: (1) a validated questionnaire used to measure actual and perceived resident physician knowledge of underserved patient populations in the United States and adapted to the Canadian population (16); 2) items from a global health competency skills survey for medical students (17); 3) Canadian Medical Education Directives for Specialists (CanMEDS) competencies (18). 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. (19) 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 use 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.

Participants

A total of 2060 students and residents from five universities within Ontario, Canada were invited to participate in the study. A total of 412 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 following participating universities in Ontario (University of Ottawa, University of Toronto, Queen's University, Western University and McMaster University).

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.

Ethical considerations

Ethical approval was obtained for this study from all universities participants.

Analysis:

The results were coded and entered into the statistical analysis program 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.

Results and Discussion

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.

Self-reported knowledge confidence in global health issues

Overall, family medicine residents reported more confidence compared to physiotherapy, nursing and occupational therapy students for: access to health care for low income nations (42.3%; $p=0.000$); relationship between environmental health and socioeconomic position (39.9%; $p=0.014$); relationship between house and health status (39.8%; 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%; $p=0.020$); relationship between gender and access to health care (41.2%; $p=0.053$); and relationship between housing and health status (39.8%; $p=0.005$). Physiotherapy students were less confident for relationship between food security and socioeconomic position (41.4%; $p=0.001$) (Table2).

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: 9.4% ($p=0.000$)).

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).

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 (20) 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 decrease in the response rate in surveys has been demonstrated in the literature.(21;22) Most of our respondents were females. It confirms the 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. (23)

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 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.(24) 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 (20). 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.(12)

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.(25) Nursing, medical, occupational therapy and physiotherapy students who attended an interprofessional student seminar promoted by a Canadian University considered global health as an important vehicle for an interprofessional 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.(26)

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 interprofessional 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 interprofessional collaboration – social workers, nurses, physiotherapists, occupational therapists, physicians, psychologists, etc. (27) Patient management requires effective teamwork (28;29) 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.
(30)

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. (4) 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. (29)

Another important goal is changes to 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 interprofessional education.(29) 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

transdisciplinary and multischool approaches where global health skills and concepts can be more integrated and engaged with local communities and policy makers.(1)

Limitation and future research

A major limitation of this study is the low response rate. 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. Another potential limitation is that the survey was available only in English which possibly excluded the participation of many Francophone participants. 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.

Conclusion

Global health competencies are an important part of health professional's education. Knowledge and skills in global health can provide many educational, personal and health system benefits, offering a global perspective on health care delivery and enhancing clinical and professional decision-making skills. 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 interprofessional 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. Ultimately, curricula reforms must begin with a change in the mindset that acknowledges the challenges in the new century and seeks to overcome them.

Competing interests

The authors declare that they have no competing interests.

Acknowledgements

This study was supported by the Canadian Institutes of Health Research (CIHR) as part of the Fall 2009 Doctoral research Award Priority announcement in the Area of Primary care (Grant agreement n° 200910DPC-216158-DRB-CECA-187516).

Authors' contributions

MV, KP, PT contributed to the study conception, design and methodology. MV, TR performed the statistical analysis. MV contributed to acquisition of data and initiated the first and final draft paper. KP coordination and helped to draft the manuscript. KP, VW, PT commented and gave expert advice on the results and background. All authors read and approved the final manuscript.

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

Variables	N	%
Program		
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	6.5

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 (%)								
	Language barrier and adverse impact on health and health care	Family medicine residents		Nursing	Physiotherapy	Occupational Therapy	Total (%)	Pearson Chi-Square	
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	
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	

* $P < 0.01$ 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 (%)			
I find challenging to communicate with patients with different background	Family medicine residents	Nursing	Physiotherapy	Occupational Therapy	Pearson Chi-Square
Strongly agree	44.5	23.5	10.9	21.0	.229
Neutral	40.2	17.2	16.4	26.2	
Disagree	34.0	25.5	18.6	21.8	
Listening actively patients concerning is challenging					
Strongly agree	55.4	23.1	6.2	15.4	.051**
Neutral	32.1	21.4	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	19.7	25.8	
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	
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	25.2	28.8	
Disagree	43.8	25.0	11.3	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	15.4	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	9.4	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	43.1	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	25.9	

I actively participate in global health activities

Strongly agree	36.2	22.0	18.1	23.6	.001*
Neutral	27.5	26.4	17.6	28.6	
Disagree	58.3	20.2	7.1	14.3	

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

CHAPTER SEVEN

Conclusion and general discussion, implications for practice, limitations and areas for future research

“A vitória de um homem, as vezes se esconde num gesto forte que só ele pode ver...”

O Rappa

Conclusion and general discussion

The intense and speedy changes produced by globalization are creating stress on all components of health systems and impacting population health. Health professionals can make enormous contributions to the health of the population and development of equitable and efficient health systems. The determinants of health equity depend on several factors including the education of health professionals. Therefore, global health education is a crucial element to achieve health equity and improve population health. This Ph.D. project has developed an operational tool for assessing global health competencies in family physician residents, nursing, physiotherapy and occupational therapy students. In this context, the survey is a strategic instrument to contribute in promoting health equity through evaluation and adaptation of health programs in order to build global health competency-based programs and make changes in the curricula according to local, national and global priorities.

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.

The survey demonstrated good internal consistency, reliability and validity and can be used to evaluate global health competencies in health programs. 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. This thesis also highlights a need for the development of interdisciplinary education in global health. 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 interprofessional collaboration and intersectoral approaches. Much can and must be done to better address curriculum changes and to promote equitable health for all populations.

Thesis Implications

Implication for Population Health

Understanding that population health includes interventions and policies which associates the determinants of health and health outcomes, the findings described in this research contributes to better comprehend the implication of health professional education in promoting health equity, improve health system performance and patient outcomes. In this context, the education of health professionals can be considered a determinant of health professionals' practices which are linked to the health outcomes. This thesis contributes to a better understanding of this association in order to highlight the need to develop research to link education with practice.

Implication for Health Students and Health Professionals

High percentages of health students and health professionals are unaware of these research findings, suggesting that it would be beneficial to develop websites, newsletters and

disseminate the articles published about this research in order to call health students and professionals to be more engaged in global health activities.

Implication for Educators in the Academic Area

Indeed, faculties, educators and health professionals can use the survey to track changes and improvements in their health programs. Many of the issues such as lack of interprofessional practice/education, professional silos, rigid curricula and insufficient adaptation to local contexts are not tenable for issues which must be nationally addressed and adapted provincially and locally for specific needs without losing the global context.

Overall strength and limitations of the research

The strength of this research is that I developed an instrument to assess global health competencies across multiple disciplines. To my knowledge there are some tools to evaluate competencies related to global health but designed only for specific disciplines. Another strength of the study is that it highlights the weaknesses and strengths of the health programs in Ontario related to global health. Additionally, it points out the need for interdisciplinary education within programs in the participating universities. For ethical reasons and previous commitments with the health programs I didn't do any analysis of the results by university. However, a report with the results by program and university are available upon request. I believe that this strategy may contribute to the faculties, educators and directors of the programs in accessing their results and be able to make changes according to the need identified in the survey.

This study has some limitations and generalizations should be made carefully. One limitation of the research was the low response rate in the survey. I used several strategies to improve the

response rate such as e-mail and/or phone call communications with the coordinator and or/responsible for the health programs in the five universities in Ontario in order to engage them in the research and two reminders were sent to the participants within two week intervals. Unfortunately these strategies were not enough to minimize the low response rate already expected. Another limitation of the research was the availability of the survey only in English. Some health programs are offered only in French and even though I sent an e-mail invitation to the participants in French, it was not sufficient to motivate French speaking students to participate.

Areas for future research

The survey had a low response rate. For this reason, it would be recommended to repeat the study with a larger number of participants to support the findings. It is also suggested, that the survey be administrated in all universities in Canada to release a complete picture of the global health competencies for all health students. I would also suggest an extension of the survey to other disciplines that contribute or have an interest in the global health field.

A qualitative research using focal groups or interviews with health students and/or educators could also provide additional information about the knowledge, skills and learning needs in global health. It would bring to light the wealth of detailed data about health students' competencies in the field.

Another future research is developing a global health workshop based on the results of this research using patient cases (e.g. diabetes, obesity, immigrants population, etc.) to improve

knowledge and skills for health professionals such as family medicine residents, nurses, physiotherapists and occupational therapists. Additionally, interprofessional collaboration could be included as an intervention to improve global health practice in health care settings. Randomized clinical trials may be an appropriate design for this research in order to provide better evidence on outcomes of interest.

APPENDIX 1 Survey

Survey for Global Health

Global health is emerging as an important new area for curriculum development in health programs. We are conducting a needs assessment survey in collaboration with global health educators across Ontario to better understand health students' background, interests and needs to help guide programs as they develop global health curriculum. We will provide a summary of the results for all participants on request.

LEARNER'S NEEDS ASSESSMENT for Global Health

Global health is emerging as an important new area for curriculum development in family medicine. We are conducting a needs assessment survey to better understand residents' interests and needs for global health curriculum.

INSTRUCTIONS

Thank you for assisting with this survey. Please read each question carefully and mark the box that represents your best answer. All data will be kept confidential and analyzed results will be not be linked to individuals. (Note- this survey will be conducted on-line using Survey Monkey.)

Research questions:

Are Ontario's family physicians trained to provide effective care for diverse and socially disadvantaged populations?

What are the family medicine residents' interest and needs for global health curriculum?

Part 1-ABOUT YOU

Part 1-ABOUT YOU

1 –In which program are you involved in?

() Family Medicine Residency () Physiotherapy () Nursing () Occupational Therapist

2- Are you male or female?

() Male () Female

3 - What is your age?_____ years

4 – In what country were you born?

() Canada () United States () United Kingdom () Germany () Italy

() Poland () Portugal () China people's republic of () Hong Kong () India

() Philippines () Vietnam () Other, Please specify:_____

5- People living in Canada come from many different cultural and racial backgrounds. Are you: (Mark all that apply.)

() White () Chinese () South Asian (eg. East Indian, Pakistani, Sri Lankan, etc.)

() Black () Filipino () Latin American () Arab () Japanese

- () Southeast Asian (e.g. Cambodian, Indonesian, Laotian, Vietnamese, etc.)
 () West Asian (e.g., Afghan, Iranian, etc.) () Korean
 () Aboriginal Peoples of North America (North American Indian, Métis, Inuit)
 () Other, please specify: _____

6 - What is the approximate average annual income of your parents/guardians?

- () \$20,000 or less () \$20,001 to \$30,000 () \$30,001 to \$40,000
 () \$40,001 to \$50,000 () \$50,001 to \$60,000 () \$60,001 to \$70,000
 () \$70,001 to \$80,000 () \$80,001 to \$90,000 () \$90,001 to \$100,000
 () \$100,001 or more () Don't know

7 - What is the highest level of education attained by either of your parents?

- () Did not finish high school () High school diploma or equivalent
 () Some college, but no degree () Two year university degree or certificate
 () Four year college degree () Post university graduate or professional school
 () Don't know

8- What languages are you able to speak?

- () English () French () Spanish () German () Persian (Farsi) () Arabic
 () Chinese () Portuguese () Punjabi () Cree () Tagalog (Filipino)
 () Greek () Ukrainian () Hungarian () Vietnamese () Italian () Korean
 () Other. Specify _____

Part 2: KNOWLEDGE AND INTEREST IN GLOBAL HEALTH AND HEALTH EQUITY (SELF-ASSESSMENT)

For each of the following topics, please indicate how **knowledgeable** you are in the topic and the level of relevance it has to your education.

	Knowledge Confidence level			Relevance level for your education		
	Very confident	Somewhat confident	Not at all confident	Very relevant	Somewhat relevant	Not at all relevant
1. Language barriers and their adverse impact on health and health care.	☐	☐	☐	☐	☐	☐
2-The relationship between income and health.	☐	☐	☐	☐	☐	☐
3-The relationship between work and health.	☐	☐	☐	☐	☐	☐
4-Mechanisms for how socioeconomic position could impact health.	☐	☐	☐	☐	☐	☐
5-Environmental health and socioeconomic position.	☐	☐	☐	☐	☐	☐

6-Housing and health status.	☐	☐	☐	☐	☐	☐
7-The relation between Food security, socioeconomic position and health.	☐	☐	☐	☐	☐	☐
8-Health outcome discrepancies among groups with different ethnicity, language, religion and cultural beliefs in Canada.	☐	☐	☐	☐	☐	☐
9- Stereotyping regarding patient's characteristics and clinical decision making.	☐	☐	☐	☐	☐	☐
10-Patient characteristics (eg. gender/sex, language, religion, etc.) and access to health care.	☐	☐	☐	☐	☐	☐

Part 3: GLOBAL HEALTH SKILLS SELF-ASSESSMENT TO WORK WITH PATIENTS WITH DIFFERENT LINGUISTIC, EDUCATIONAL, SOCIOECONOMIC, AND CULTURAL BACKGROUNDS

INSTRUCTIONS: Please **rate how strongly you agree or disagree** with each of the following statements by placing a check mark in the appropriate box.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
11- Listening actively to the concerns related to the problems of my patients' with different backgrounds is challenging.	☐	☐	☐	☐	☐
12- I am uncomfortable consulting with other health care professionals to address issues of my patients with different backgrounds.	☐	☐	☐	☐	☐
13- It is challenging to discuss sensitive issues (e.g. alcohol, drugs, sexual issues) with my patients with different backgrounds.	☐	☐	☐	☐	☐
14- I find it challenging to identify needs of my patients with different backgrounds.	☐	☐	☐	☐	☐
15- I am effective in completing my responsibilities in the clinic when working with my patients with different backgrounds.	☐	☐	☐	☐	☐

PART 4: Learners' Needs concerning Global Health

INSTRUCTIONS: Please rate how important are the following issues related to Global Health to your education.

16- Health risks associated with travel and migration, with emphasis on prevention: risk reduction and appropriate management, including referrals.	☐	☐	☐	☐	☐	☐
17- Knowledge about how travel and trade contribute to the spread of communicable diseases.	☐	☐	☐	☐	☐	☐
18- Relationship between health and social determinants of health, and how social determinants vary across world regions.	☐	☐	☐	☐	☐	☐
19- Cultural competency: understanding how cultural background, socioeconomic status and language barrier can influence access to care and	☐	☐	☐	☐	☐	☐

health outcomes.						
20- Relationship between access to clean water, sanitation, and nutrition on individual and population health.	☐	☐	☐	☐	☐	☐
21- Understand the relationship between health and human rights.	☐	☐	☐	☐	☐	☐
22- Knowledge about how global health institutions (eg. WHO, other United Nations agencies, global institutions influence health in different world regions through funding and policy.	☐	☐	☐	☐	☐	☐

Do you have additional comments or feedback about the survey?

Thank you!!!

APPENDIX 2 Recruitment Materials

Recruitment letters for the director/coordinator of the family medicine residency program

Dear

I am a PhD student in Population Health at the University of Ottawa. My research topic is related to education in Global Health. My supervisor is Dr. Peter Tugwell and co-supervisor is Dr. Kevin Pottie. In order to help build global health training programs we feel there is a need to develop and assess tools that synthesize global health curriculum initiatives and measure resident demographics and perceived global health learning needs. We plan to survey all Family Medicine residents (1st year) in Ontario to ask about their knowledge and attitudes and learning needs regarding global health and health equity. This education research project, funded as part of a CIHR Doctoral Research Award in Primary Care, has received ethics approval from the Ottawa Hospital Research and Ethics Board. We would like to invite you to participate as collaborators in this project. Specifically, we would like to ask you to forward an e-mail invitation to all your residents and encouragement for your residents (1st year) to participate in this on-line survey (Survey Monkey). We would commit to providing you with a detailed report providing a summary of analysis from both your students and students across Ontario.

Please find attached the letter of approval and the questionnaire.

Kind regards,

Mirella.

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Policy Research, Ontario Training Centre
Université d'Ottawa-University of Ottawa

Recruitment letters for the director/coordinator of the nursing program

Dear

I am a PhD student in Population Health at the University of Ottawa. My research topic is related to education in Global Health. My supervisor is Dr. Peter Tugwell and co-supervisor is Dr. Kevin Pottie. In order to help build global health training programs we feel there is a need to develop and assess tools that synthesize global health curriculum initiatives and measure resident demographics and perceived global health learning needs. We plan to survey all your last year students in Ontario to ask about their knowledge and attitudes and learning needs regarding global health and health equity. This education research project, funded as part of a CIHR Doctoral Research Award in Primary Care, has received ethics approval from the Ottawa Hospital Research and Ethics Board. We would like to invite you to participate as collaborators in this project. Specifically, we would like to ask you to forward an e-mail invitation to all your residents and encouragement for your residents (1st year) to participate in this on-line survey (Survey Monkey). We would commit to providing you with a detailed report providing a summary of analysis from both your students and students across Ontario.

Please find attached the letter of approval and the questionnaire.

Kind regards,

Mirella.

PhD Candidate, Population Health/Doctorat en santé des populations-
Diploma in Health Services and
Policy Research, Ontario Training Centre
Université d'Ottawa-University of Ottawa

Recruitment letters for the director/coordinator of the physiotherapy program

Dear

I am a PhD student in Population Health at the University of Ottawa. My research topic is related to education in Global Health. My supervisor is Dr. Peter Tugwell and co-supervisor is Dr. Kevin Pottie. In order to help build global health training programs we feel there is a need to develop and assess tools that synthesize global health curriculum initiatives and measure resident demographics and perceived global health learning needs. We plan to survey all physiotherapy (first year master degree) students in Ontario to ask about their knowledge and attitudes and learning needs regarding global health and health equity. This education research project, funded as part of a CIHR Doctoral Research Award in Primary Care, has received ethics approval from the Ottawa Hospital Research and Ethics Board. We would like to invite you to participate as collaborators in this project. Specifically, we would like to ask you to forward an e-mail invitation to all your residents and encouragement for your residents (1st year) to participate in this on-line survey (Survey Monkey). We would commit to providing you with a detailed report providing a summary of analysis from both your students and students across Ontario.

Please find attached the letter of approval and the questionnaire.

Kind regards,

Mirella.

PhD Candidate, Population Health/Doctorat en santé des populations-
Diploma in Health Services and
Policy Research, Ontario Training Centre
Université d'Ottawa-University of Ottawa

Recruitment letters for the director/coordinator of the occupational therapy program

Dear

I am a PhD student in Population Health at the University of Ottawa. My research topic is related to education in Global Health. My supervisor is Dr. Peter Tugwell and co-supervisor is Dr. Kevin Pottie. In order to help build global health training programs we feel there is a need to develop and assess tools that synthesize global health curriculum initiatives and measure resident demographics and perceived global health learning needs. We plan to survey all occupational therapy (first year master degree) students in Ontario to ask about their knowledge and attitudes and learning needs regarding global health and health equity. This education research project, funded as part of a CIHR Doctoral Research Award in Primary Care, has received ethics approval from the Ottawa Hospital Research and Ethics Board. We would like to invite you to participate as collaborators in this project. Specifically, we would like to ask you to forward an e-mail invitation to all your residents and encouragement for your residents (1st year) to participate in this on-line survey (Survey Monkey). We would commit to providing you with a detailed report providing a summary of analysis from both your students and students across Ontario.

Please find attached the letter of approval and the questionnaire.

Kind regards,

Mirella.

PhD Candidate, Population Health/Doctorat en santé des populations-
Diploma in Health Services and
Policy Research, Ontario Training Centre
Université d'Ottawa-University of Ottawa

Letter for recruitment of students participants (English version)

Dear students,

Recently we sent you a request to participate in an important survey related to Global health education. Many so far have participated, but we still need to hear from you. We would greatly appreciate it if you would share your thoughts with us. Our survey should take about 12 minutes to complete. Please complete the survey by May, 30th.

The website for the survey is:

<http://www.surveymonkey.com/s/M3JZXR5>

Simply click on this address to go directly to the survey. If this does not work, "copy and paste" this address into the address bar of your Internet Browser. For completing the survey, you will enter into a draw to win an I PAD 2.

Thank you for participating in this important research project.

Sincerely,

Mirella Veras.

PhD Candidate, Population Health/Doctorat en santé des populations-
Diploma in Health Services and
Policy Research, Ontario Training Centre
Université d'Ottawa-University of Ottawa

Letter for recruitment of students participants (French version)

Chers étudiant(e)s,

Récemment, nous vous avons envoyé une requête de participation à un sondage important en lien avec l'éducation en santé internationale. Plusieurs ont déjà participé, mais il nous faut tout de même avoir votre point de vue. Nous apprécierions grandement si vous pouviez partager vos

pensées sur le sujet. Notre sondage prend environ 8-12 minutes à compléter.

Le site web pour le sondage est:

<http://www.surveymonkey.com/s/M3JZXR5>

Cliquez tout simplement sur cette adresse pour aller directement au sondage. Si cela ne fonctionne pas, "copier et coller" cette adresse dans la barre de navigation de votre navigateur internet. Pour vous remercier d'avoir complété le sondage, vous serez éligible pour un tirage d'un iPad 2.

Merci d'avoir pris part à cet important projet de recherche.

Sincèrement,

Mirella Veras

PhD Candidate, Population Health/Doctorat en santé des populations-
Diploma in Health Services and
Policy Research, Ontario Training Centre
Université d'Ottawa-University of Ottawa

Reminder e-mail

Dear

Thanks you very much for your support in the Global health education survey. We have received a high response rate from nursing, physiotherapy, occupational therapy and family medicine programs across Ontario. However, your program is currently far below the average. Please help us ensure that (name of the program) is well represented so we can provide you with meaningful results about your students. Could you please send and endorse the reminder below?

Mirella Veras
PhD Candidate, Population Health/Doctorat en santé des populations-
Diploma in Health Services and
Policy Research, Ontario Training Centre
Université d'Ottawa-University of Ottawa

APPENDIX 3 Participant consent form

Consent Form – Online Survey

Investigator: Mirella Veras

University of Ottawa, Institute of Population Health, Medicine Faculty

Supervisor : Peter Tugwell

University of Ottawa, Epidemiology and Community Health Department,
Medicine Faculty.

Co-supervisor : Kevin Pottie

University of Ottawa, Epidemiology and Community Health Department,
Medicine Faculty.

Students' Knowledge and Needs Relating to Global Health and Health Equity: A
Province-Wide Study

Invitation to Participate: I am invited to participate in the above mentioned
doctoral thesis project conducted by Mirella Veras, Peter Tugwell and Kevin
Pottie.

Purpose of the Study: The purpose of the study is to identify gaps related to
global health and health equity in the Nursing, Physiotherapy, Occupational
Therapy and Family Medicine programs..

Participation: My participation will consist essentially of fill out the online
questionnaire. It will take around 10 minutes.

Risks: There are no risks associated with participation in this study.

Benefits: As a participant in the study, there is the possibility of improving your knowledge in global health and health equity and helping to develop and improve programs to meet students' needs around global health and health equity. Additionally, I will be contributing to research aimed at improving the quality of global health and health equity relevant for health education programs to help future family physicians, nurses, physiotherapists and occupational therapists provide effective care to vulnerable populations.

Confidentiality and anonymity: I have received assurance from the researcher that the information I will share will remain strictly confidential. I understand that the contents will be used only for improving the students programs and that my confidentiality will be protected.

All information collected about you will be kept confidential. Confidentiality will be respected and no information that discloses **my** identity will be released or published without your consent, unless required by law. All records will be coded with a unique identification. For **my** information, the survey can be accessed by US intelligence services.

Anonymity will be protected in the following manner. My identity will be protected in publications or in any presentation related to this research.

Conservation of data: The data collected both hard copy or electronic data and tape recording will be kept in a secure manner stored and locked by my supervisor at the University of Ottawa's house. All research related records will be kept for 15 years after termination of the study and then, destroyed.

Compensation: All the participants who completed the survey will be entered into a draw to win a gift.

Voluntary Participation: I am under no obligation to participate and if I choose to participate, I can withdraw from the study at any time and/or refuse to answer any questions, without suffering any negative consequences. If I choose to withdraw, all data gathered until the time of withdrawal will be destroyed.

Acceptance: I agree to participate in the above research study conducted by Mirella Veras at the Institute of Population Health, Department of Medicine, University of Ottawa, , which research is under the supervision of Dr. Peter Tugwell, Department of Epidemiology and community Health Department of Medicine, University of Ottawa and co-supervision of Dr. Kevin Pottie, Department of Epidemiology and community Health Department of Medicine, University of Ottawa.

I understand that by completing the attached survey, my consent to participate is implied.

If I have any questions about the study, I may contact the researcher or his supervisor.

If I have any questions regarding the ethical conduct of this study, I may contact the Protocol Officer for Ethics in Research, University of Ottawa, Tabaret Hall, 550 Cumberland Street, Room 159, Ottawa, ON K1N 6N5; Tel.: (613) 562-5387; Email: ethics@uottawa.ca

I may print a copy of this consent text to keep.

APPENDIX 4 Research Ethics Board Certificates



Université d'Ottawa **University of Ottawa**
 Bureau d'éthique et d'intégrité de la recherche Office of Research Ethics and Integrity

Ethics Approval Notice

Health Sciences and Science REB

Principal Investigator / Supervisor / Co-investigator(s) / Student(s)

<u>First Name</u>	<u>Last Name</u>	<u>Affiliation</u>	<u>Role</u>
Peter	Tugwell	Medicine / Institute of Population Health	Supervisor
Kevin	Pottie	Medicine / Institute of Population Health	Co-Supervisor
Mirella	Veras	Medicine / Institute of Population Health	Student Researcher

File Number: H 03-11-10

Type of Project: PhD Thesis

Title: Students' Knowledge and Needs Relating to Global Health and Health Equity: A Province-wide Study

Approval Date (mm/dd/yyyy)	Expiry Date (mm/dd/yyyy)	Approval Type
04/26/2011	04/25/2012	Ia

(Ia: Approval, Ib: Approval for initial stage only)

Special Conditions / Comments:

This certificate is valid for the part of the research conducted at the University of Ottawa.



Ottawa Hospital Research Ethics Boards / Conseils d'éthique en recherches

751 Parkdale Avenue Suite 106, Ottawa, Ontario K1Y 1J7 613-798-5555 ext. 14902 Fax: 613-761-4311
<http://www.ohri.ca/ohreb>

August 26, 2010

Dr. Peter Tugwell
Centre for Global Health
University of Ottawa
Institute of Population Health
1 Stewart Street, 2nd Floor
Ottawa, ON K1N 6N5

Dear Dr. Tugwell:

Re: Protocol # 2010501-01H Family Medicine Resident Physicians' Knowledge and Needs Relating to Global Health and Health Equity: A Province-Wide Study

Protocol approval valid until - August 25, 2011

Thank you for the letter from email from Mirella Veras dated August 26, 2010. I am pleased to inform you that this protocol underwent expedited review by the Ottawa Hospital Research Ethics Board (OHREB) and is approved. No changes, amendments or addenda may be made to the protocol or the consent form without the OHREB's review and approval.

Approval is for the following:

- Protocol dated June 22, 2010
- English Learner's Needs Assessment Questionnaire
- English Letter to Participants
- English Participant Information Sheet and Consent Form, dated August 26, 2010

The validation date should be indicated on the bottom of all consent forms and information sheets (see copy attached). If the study is to continue beyond the expiry date noted above, a Renewal Form should be submitted to the OHREB approximately six weeks prior to the current expiry date. If the study has been completed by this date, a Termination Report should be submitted.

The Ottawa Hospital Research Ethics Board is constituted in accordance with, and operates in compliance with the requirements of the Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans; Health Canada Good Clinical Practice: Consolidated Guideline; Part C Division 5 of the Food and Drug Regulations of Health Canada; and the provisions of the Ontario Health Information Protection Act 2004 and its applicable Regulations.

Raphaël Saginur, M.D.
Chairman
Ottawa Hospital Research Ethics Board

Encl.

McMaster University- Scholl of halth Sciences

October 7, 2011

Mirella Veras

Dear Mirella,

I am pleased to inform you that your project entitled "*Students' knowledge and needs relating to global health and health equity: a province-wide study*" was approved by the Undergraduate Nursing Education Committee (UNEC). This means that you may begin recruiting participants immediately, as soon as you have Research Ethics Board approval. Please inform me of any change in your planned recruitment and data collection timeframes as this may impact on other researchers' ability to conduct research.

Please provide UNEC with a brief (250 word maximum) report of the major findings of your study within 3 months of completion of the study.

Best wishes in conducting your educational research. If you encounter unanticipated difficulties or have additional questions as you undertake this research, please feel free to contact me.

Sincerely,

Janet Landeen, RN, PhD

Assistant Dean, Undergraduate Nursing Education Programs



September 30, 2011

Mirella Veras, MSc
PhD Candidate in Population Health
University of Ottawa
Email: mvera025@uottawa.ca

Dear Mirella,

Our Department Research Committee has reviewed your request for scientific merit for your project entitled: Students' knowledge and needs relating to global health and health equity: a province wide study. We are pleased to inform you that your research proposal has been approved.

Your project requests to survey all Family Medicine residents at four of the Family Medical Centres. We have copied Ms. S. Story and Dr. E. Wong, whom you will need to contact with regards to surveying. A list of the research committee contacts at each of the Family Medical Centres is also attached.

Thank you and good luck with your project.

Maura Stewart, Ph.D.
Director, Centre for Studies in Family Medicine
and
Chair, Research Committee, Department of Family Medicine