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

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Encuesta autoreportada sobre dominio del idioma y su influencia en la educación sanitaria global

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ABSTRACT

Objective Literature has reported that language is the most common barrier in a 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.
Method An observational cross-sectional study was performed among nursing students from five Ontario universities. A survey was designed to measure knowledge, skills and learning needs in global health.
Results Students who speak more than two languages are more likely to have more interest in learning global health issues, such as health risks and their association with travel and migration (p=0.44), 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.

Key Words: Global health, health education, language, cultural competency, nursing *(source: MeSH, NLM).*

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RESUMEN

Objetivo De acuerdo con la literatura, el idioma es el obstáculo más común en el contexto de la atención médica y un factor de riesgo asociado con resultados negativos. El objetivo de este estudio es presentar las diferencias percibidas entre los estudiantes de enfermería que hablan un idioma y aquellos que hablan dos o más (competencia lingüística reportada por ellos mismos) y sus habilidades y necesidades de aprendizaje en salud global.
Método Estudio observacional de corte transversal entre estudiantes de enfermería de cinco universidades de Ontario. Se diseñó una encuesta para medir el conocimiento, las habilidades y las necesidades de aprendizaje en salud global.
Resultados Se observó que los estudiantes que hablan más de dos idiomas tienen mayor probabilidad de interesarse más en aprender sobre problemas de salud global, los riesgos para la salud y su asociación con los viajes y la migración (p=0,44), así como sobre los determinantes sociales de la salud (p=0,042).
Conclusión Es necesario que se brinde capacitación en aprendizaje de otros idiomas a los estudiantes de enfermería para que puedan afrontar las barreras impuestas por el lenguaje en los contextos de atención médica y mejorar la salud global, de manera local e internacional.

Palabras Clave: Salud global, educación para la salud, idioma, competencia cultural, enfermería *(fuente: DeCS, BIREME).*

The world is experiencing major political, economic and social changes as a result of globalization. The impact of these changes is most evident in terms of communication, transportation and human migration (1). Globalization has significant implications not only for health and international issues, but also for nursing practice (2). Furthermore, it has created new challenges and opportunities for nursing and health care (3).

Specifically, the multicultural aspects of the Canadian population bring challenges for nursing practices, since 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 (4), of whom 80 % came from Asia, South America and Africa (5). Most immigrants have a native language other than English or French and 3 % of the Canadian population reports a Chinese language as their native language (6). The city of Toronto, with 2.48 million people, is considered as one of the most multicultural cities in the world. In 2006 only, 47 % of the population was reported to have a native language other than English or French; in fact, there are over 140 languages and dialects spoken there (7). Diversity is evident even among Canadians, since nearly 25 % of them are Francophone and live mostly in Quebec, while only 4 % of people who live in other provinces outside of Quebec speak French as a native language. (6)

Several studies have demonstrated differences in health conditions and use of health care according to immigrant status (8). Recent immigrants (less than 10 years) generally have a health status comparable to the Canadian population, although, their health status changes over time (9). The process of acculturation has a significant impact on the diet, physical activity and stress levels of immigrants through multi-faceted pathways, not all of which are completely understood. However, it is unclear how these factors are affected by acculturation (10).

Additionally, poor language proficiency is associated with poor self-reported health (11). 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. Another finding of this study is that persistent limited official language proficiency was associated with poor health among male and female immigrants who had previously reported good health (11). Immigrants report more barriers to health care compared to non-immigrants, especially language barriers (12).

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 more likely to report being in poorer health condition compared to Anglophones and Allophones (13). Some explanations for differences in access to health care include barriers in terms of language, socioeconomic status, culture and social network (14).

Language is considered one of the most important barriers in any health care system and is a risk factor with adverse outcomes (15). In linguistically diverse countries such as Canada, the United States and India, which provide equitable health care in many languages, care can be a challenge (16). 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 (17) and compromise health care quality (18).

Communication between health professionals and patients is positively associated with improved health outcomes (19). The College of Nurses of Ontario states that nurses are responsible for developing an effective communication plan for their clients in order to facilitate their role as informed partners (20). Working with a multicultural multilinguistic population demands global health skills to address local and international health issues. In the absence of a definition for global health skills, they are defined here as "the skills required for developing health practice and research to promote health and achieve equity for all people in the world through interdisciplinary and collaborative action." Our definition incorporates the main elements of the global health definition by Koplan et al. and Beaglehole and Bonita (21,22).

Some nursing programs in Canada have responded to this need and have added global health to their nursing curricula (23). For example, in Ontario, the University of Toronto (Bloomberg Faculty of Nursing) has an international office for global health issues (23), and a pre-departure course for overseas experiences is offered to nursing students; the course covers preparation, placement expectations, support and post-trip debriefing (24). 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 (25). However, 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 (26).Language fluency is also a barrier for internationally educated nurses working in Ontario and they represent 11% of the total nurse workforce (27).

Regarding nursing education, the majority of nursing undergraduate programs lack essential global health issues in their curricula (28). Although there is an increased inclusion of elective global health experiences in nursing programs (29), the role of the nurses in these international experiences has received little attention (24). There is also a growing interest in health communication (30), especially when patients and caregivers do not share the same native language (31), but few studies have investigated communication among nurses and their perception of language barriers in their care (32). Moreover, no studies have investigated if there are differences between language abilities (bilingual or multilingual) of nurses and global health skills. This study aims to address this gap in the literature.

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 in nurses, family physicians residents, physiotherapists and occupational therapists students in Ontario. This paper describes the results of the survey applied to the nursing programs of Ontario in relation to nursing skills and learning needs in global health and their association with students' abilities to speak one or two or more languages (self-reported language ability).

Study population and setting
A total of 906 nursing students from five universities of 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) being a final year undergraduate nursing student, considering that at that point most of the course load has been completed and students have more practical, hands-on experience with patients; b) being a student from Canadian Universities in Ontario; c) being 18 years or older, and d) signing an online informed consent.

Survey
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 (33); b) items from a global health competency skills survey for medical students (34), and c) the Canadian Medical Education Directives for Specialists (CanMEDS) competencies (35). 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.

Good internal consistency was demonstrated with a Cronbach's alpha >0.8. Factor analysis was conducted using principal factor analysis with varimax rotation and five factors accounted for 95 % variance (36). The validated survey contained 30 questions classified 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, and; 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 web link to access the online survey and consent form. Online surveys have demonstrated to be superior compared to postal surveys in several ways, mainly in response speed, response rate, and cost efficiency (37,38). Reminders were sent after two and four weeks. Data were collected from April 2011 until October 2011.

Data analysis
Descriptive statistics were computed to describe the sample. 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 —confidence level in global health issues, global health skills and learning needs in global health— were analyzed separately. 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 all the universities involved.

Participants' characteristics

The survey was sent to 906 students from five universities and was completed by 97 students (response rate: 10.70 %). Partially completed surveys were not included in the analysis. Overall, the sample was predominantly female, mean age of 25 years, white, from the 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, namely, English and French. Additional languages reported were: Romanian, Chinese, Vietnamese, Polish, Dutch, Punjabi, Hindu, Amharic, Tigrigna, Polish, Tagalog (Filipino), Spanish, German, 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.

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 languages or more	3	3.0

Perceived knowledge in Global Health and Global Health Skills

Table 2 shows 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. After Bonferroni correction, the results showed that there was a significant difference in the median learning need in global health across language ability [nursing students who speak one language, two languages and three or more languages (p=0.0049)]. Differences were observed in "global health skills" across levels of global health activities (being active, non-active and neutral) and global health skills (p=0.004).

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 as a very important and extremely important (68.2 % and 78.6 %, respectively) issue to learn in global health compared to nursing students who spoke one language (31.8 % and 21.4 %, respectively) (p=0.044). Moreover, nursing students who spoke two or more languages were more likely to rate the correlation between health and social determinants of health (SDH) as extremely important (71.1 %), and how SDH varies across world regions compared to nursing students who spoke one language (extremely important=28.9 %) (p=0.042).

Regarding learning needs in global health related to cultural competency (understanding 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 as not at all important in contrast with none of the 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 correlation 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

The response rate obtained in this study is comparable to similar surveys with nursing students and health professional students described in the literature (39). Although there is an increased interest in global health among students and faculties (40), a low response rate was observed. The survey was representative for some universities in Ontario, although low participation from other universities affected the overall response rate. More than 90 % of our sample was constituted by female students, since historically, nurses have been predominantly female (41). According to the College of Nurses of Ontario report, in 2011, 90.9 % of new registered nurses in Ontario were female while 9.1 %

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 Languages	27 (24-30)	14 (11.7-16)	35 (31-38)
Three or more languages	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

were male. This data is also compatible with gender imbalance in other Canadian jurisdictions (female 91.0 %; male 9.0 %) and internationally (female 85.0 %; male 15.0 %) (42). Indeed, the "feminization" of the health workforce is well documented in the literature (43).

Approximately 30 % of 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 (44) and support the hypotheses that minority health professionals are more likely to serve minorities and disadvantaged populations when compared with non-minority health professionals (45). Diversity in the health care workforce can improve 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 (45). Ethnicity and language concordance are associated with better patient-practitioner communication and relationships. Ethnicity concordance occurs when patients and practititioners have the same ethnicity (46), while language concordance occurs when patients and practitioners speak the same language (47). Both concordancies may also increase the probability of the patient receiving appropriate care (45).

This study shows that participants reported language ability in many other languages besides English and French. However, we are unable to know if these language abilities are a result of foreign language training in Canada or of working, studying overseas, 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. Our research revealed that nurses who speak two or more languages are more likely to be interested in learning about global health issues, but despite the demographic changes and the increasingly diverse population in Canada, nursing students who spoke one language considered that cultural competency was not important. The American Nurses Association's Code recognized the need to provide culturally competent care (48), while the Aboriginal Nurses Association of Canada, the Canadian Association of Schools of Nursing and the Canadian Nurses Association highlight the importance of providing culturally competent care (49).

Lack of culturally competent care can increase the stress experienced by patients and result in inappropriate care by health professionals, therefore, nurses must have expertise and skills to provide culturally competent nursing care (49). The practice guideline of the College of Nurses of Ontario highlights the need for culturally competent care between nurses and patients, and states that when commu-

Table 3. Leaning needs in Global Health self-reported by nursing 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	

nication barriers exist, nurses are responsible to develop a communication plan which encompasses working with interpreters, preferably with a professional interpreter (50). Cultural competency is an important global health component in nursing practice due to the increasing complexity of health issues that arise in a globalized world. These additional issues often relate to language and equity issues and require a better understanding of the influence of cultural background in health outcomes.

An exploratory survey to identify the perception of nurses about global health competencies applied in nursing faculties 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 for a second language" and "fluency in second language", respectively (51). In Canada, some universities encourage students to take language courses prior to beginning their elective subjects

(52), while others require a mandatory language course (the Dalhousie University Faculty of Medicine). Learning or improving a foreign language is one of several benefits of working in global health (40). Research has shown that, among the students who took international electives, less than 30 % attended preparation training for their international experience (53).

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 (54) 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 (54). The same problem is found in Anglophones in predominantly French settings. This study also shows that nursing students who are involved in activities related to global health develop more skills to work with global health, although the kind of activities related to global health that influenced them positively in their global health skills are unknown.

The educational implication of this study is that there are gaps in awareness about global health and cultural competency that may have negative consequences on the nurses' ability to practice. Knowledge in cultural competency, for example, is important to prevent misunderstandings regarding diagnoses and alternative and Western treatments that can lead to inappropriate medication use and poor health outcomes. This suggests a greater focus on global health and that cultural competence is needed in nursing programs. Also, it was possible to identify that nursing students who spoke only one language were significantly less aware of global health issues, which 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, this study has some limitations. First, it was a cross-sectional survey, thus causality cannot be established. Second, the response rate was relatively low, limiting the level in which these results can be generalized to other groups. Student recruitment was the main challenge of this study and some universities were more represented than others. Several reasons might have influenced the low response rate, including that the survey was delivered to some universities during the exams period. 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, our results are defined based on self-reported language ability.

The sample size was not sufficient 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 gaps in their education in relation to global health, and whether they also differ according to language abilities.

In conclusion, 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 activities related to global health in their programs may develop more global health skills. Based on the results of the survey, the following are three policy recommendations suggested to address this issue.

a) Encouraging and supporting 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 better 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 topics, in the ongoing courses and support international internships. Global health institutions and global funding agencies may work in partnership to engage students in ongoing projects overseas, with appropriate pre-departure training.

b) Training could also focus on cultural competency for healthcare professionals. Students and educators should articulate practices engendered by cultural competency designed to be accomplished by an interdisciplinary and multicultural team, which can enrich the experience with diversity of knowledge and cultural background. The development and use of linguistically and culturally appropriate educational materials is also recommended as part of the educational activities for nurses.

c) Modifying 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 (55). The Commission on Education of Health Profes-

sionals for the 21st Century points to the need to have a diversity. of cultural, ethnic and linguistic backgrounds in health programs. Historically, admission to health professional programs is based on a competitive merit-based policy to recruit the best students (43). Institutions that intend to advance health equity should create recruitment policies that seek to balance geographic regions (rural/ urban), ethnicity, and sociocultural and socioeconomic composition (56) ◆

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