



Alternatives to Student Outbound Mobility—Improving Students' Cultural Competency Skills Online to Improve Global Health Without Travel

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Abstract

Introduction Student outbound mobility is a major element in internationalization of medical education and global health education. However, this approach is often criticized, as it is inherently inequitable. Internationalization *at home* is a newer concept that aims to provide students with international skills and experiences without exchange travel. We report detailed outcomes of an international online program during the COVID-19 pandemic, which aimed to include acquisition of cultural awareness and competency—similar to what the students would have obtained if they had travelled abroad.

Method Sixty-eight students from 12 international universities participated in international small peer group collaborative work, and online networking. Perceived improvement of cultural competency using Likert scale and open-ended questions was used as a measure of success. Furthermore, students' definition of cultural competency in the different countries was obtained.

Results Students improved their cultural competency skills. Data analysis supported statistically significant improvement of the above skills after the program, in comparison to the start of the program.

Discussion Internationalization of medical education can be achieved *at home*—via structured online peer exchanges—and can provide students with intercultural skills and networking opportunities that are typically achieved via international in-person travel. The above represents a socially just and equitable way to reach *all* students and can result in improvement of their cultural competency, preparing them for their work in global health, and thereby resulting in improvement of global health.

Keywords Cultural competency · Internationalization · International collaboration · Medical students · Internationalization of medical education · Internationalization at home · Global health education

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Introduction

Internationalization of Medical Education at Home

Internationalization of medical education (IoME) can improve global health by providing future physicians with international competencies to practice medicine with a global mindset [1]. To date, particularly in the Global North, IoME primarily involves students' international outbound mobility—preferably to the low- and middle-income countries (LMICs) [1–4].

This approach appears to be insufficient, as these programs are unpredictable, unsafe during a pandemic, untimely, and are offered only at a limited number of institutions, accessible to only a few privileged students. These programs by their very nature prevent the participation of students from low socio-economic backgrounds, and others—for example, students with physical disabilities—are inherently inequitable, and not available to *all*. Expansion of international travel programs to include all students is not sustainable, and suggesting that it would ever be possible to extend existing IoME programs focused on mobility to all students is not ethical either. Consider for example, the impact of the increased carbon footprint on the climate if there was a large increase in these programs. Furthermore, the impact of expansion of mobility programs on the less privileged host countries would be significant and raise concerns about resource distribution and sustainability, and initiate ethical deliberation about social justice and equity, including medical volunteerism and attitudes of neo-colonialism [6].

There is no doubt that travel to a foreign country has its place in higher education and can expedite the acquisition of skills that can promote students' competencies for international collaboration and international understanding.

However, in 2021, in view of the recent global COVID-19 pandemic, one must consider alternative ways to teach international skills, and attempt to reach a larger number of students without unpredictable, and resource draining travel abroad programs.

Recently, literature in the emerging field of “internationalization of higher education at home” (IoH) has surfaced. IoH is a newer concept, primarily found in research of international higher education [7–9], which evolved around educational research to achieve objectives in international education at home including student curricular activities. In medical education, recent formats for international medical learning have been questioned [10]. Particularly in the USA, published reports about local programs that aim to acquire international skills are overall limited to date [11–18]; specifically, working with international peers or patients online without associated travel [5].

To date, reports about local programs that aim at learning international competencies without associated travel

are limited [1]; often offered via Global Health education programs that are associated with schools of Public Health [2]. While international preparatory courses are often part of international student travel programs [19–21], dedicated local international teaching without associated travel is overall limited [12, 22–24].

Although calls have been made to shift IoME locally [25], to date, there is limited reported literature on successful IoME at home programs in undergraduate medical education [11, 12, 16, 23].

Over two decades ago Ostbye et al. [18] proposed that medical students use the internet as a cost-saving alternative for medical electives [18]. Since then interest in internationalization of medical education (IoME) and global health has risen significantly [2] but programs in IoME have not included many online activities.

The authors assert that certain expertise such as learning cultural competency, international networking, leadership, and collaboration skills can be achieved via structured international programmatic efforts *at home*, and contribute to the improvement of global health without associated travel. For medical and global health education, internationalization at home curricula are an efficient and socially equitable way to introduce global health related topics to students who are disadvantaged and are unable to travel, or to students who study at institutions that do not offer travel opportunities.

Cultural Competency

Cultural competency is an important element in medical education to help improve Public and Global Health [26, 27]. Definitions of cultural competency in healthcare vary, with most of the definitions focused on improving clinical patient care and addressing health disparities [27]. Despite different definitions, cultural competency skills education is included in the curricula of most health professions and the topic has been extensively investigated [28–33].

In medical education, cultural competency skills are often aimed at preparing students to work with an increasingly diverse patient population in clinical patient care settings [33, 34] and/or to raise awareness of working with a diverse workforce at home. Little emphasis has been placed on preparing students for future international leadership roles and/or collaborative work with international colleagues—in a multilateral direction. At a time of global interconnectedness and an increasing need for international collaboration in healthcare—highlighted by recent global health events and the COVID-19 pandemic—acquiring cultural competency skills that provide future physicians with the ability to work together appears to be a high priority [35] and ultimately improves the global healthcare world.

Teaching frameworks for cultural competency education vary—including lectures, discussion groups, case-based learning, readings, videos, and more [33]. Frequently, it is introduced via self-reflection [36]. Brottman et al. reports that about 30% of reported teaching models include immersion experiences [33]. Particularly in the Global North, cultural competency training is often one-sided and geared towards educating the visitors and not the host [6, 37]. At a time of concern regarding global social justice and equity, and in an era of sensitivity to decolonization, one needs to rethink current practices.

In order for medical and global health educators to reconsider Ostbye's online approach as a replacement for student exchanges, details of learning outcomes of such IoME at home programs are deemed necessary.

Recently, the authors shared a brief communication with the dental educator community about an online IoME at home program that was designed as a replacement for travel exchanges during the COVID-19 pandemic. Learning objectives of this program included the acquisition of cultural competencies, networking skills, and scientific knowledge.

Details of the learning outcomes regarding cultural competency or what cultural competency meant to students in the different countries were not presented [38]. Cultural competency learning included the improvement of skills such as “Knowledge” about, and “Attitudes” toward different cultures.

The focus of this current study was to demonstrate that online exposure to international peers via short-term structured international online programming improved intercultural competencies. Furthermore, as part of this study, the authors include an international comparison of students' definitions of cultural competency as a baseline.

Results from this study will add to the body of literature on teaching methods and definitions regarding cultural competency learning; to improve students' understanding of global and public health. In addition, the study aids in the understanding of the novel area of internationalization *at home* programs in medical education, and furthers research about whether this approach can serve as a low cost alternative and/or as enrichment to international travel and immersion programs—building on Ostbye's proposal in 1995.

Methods

During the COVID-19 pandemic of 2020, an 8-week online program was created to replace international exchange travel, in order to provide students with learning competencies similar to those expected to be acquired during international internships. The online program's goal was to set up a framework for international peer networking and exchanges—resulting in educational objectives that included

acquisition of cultural competency expertise among other skills.

Specific learning objectives for cultural competency included learning about other countries and differences in their cultures (e.g., customs, history, beliefs, stereotypes), including self-awareness of other countries and cultures in comparison to one's own culture and country, and appreciation of diversity. For detailed questions see Supplement 1.

While networking, leadership, and collaboration skills can be acquired via exposure to local peers, the multi-lateral international exposure introduced students to skills needed for working internationally—e.g., learning about differences in various cultures that can be a barrier to international communication, working across time zone differences and across language barriers, experiencing different international healthcare systems, ethics and laws, and learning about socio-cultural or geo-political differences during the COVID-19 pandemic—leading to global literacy (see Supplement 1). Through international comparison of customs, attitudes about ethics, and stigmas the students were exposed to different viewpoints and cultures that could not have been achieved via exposure to local peers at home.

The framework of the program was designed by a collaboration of faculty and selected student leaders. It consisted of weekly small group and large group online meetings, for student networking and discussion sessions. Small and large group discussion topics that were selected by faculty and student leaders centered on the timely theme of COVID-19 (Supplement 1). The student leaders were prior participants of an international exchange program and facilitated the discussion sessions under the supervision and presence of faculty with public health background. How to facilitate the discussions was discussed at faculty meetings with the senior students. The networking sessions included virtual small group breakout sessions where students from different countries discussed their experiences with the pandemic, and how their countries handled the situation.

The program was a voluntary activity for students who were scheduled for international summer exchange travel but were unable to do so during the COVID-19 pandemic in 2020. Students who participated joined for all 8 sessions. The students acquired intercultural skills by learning about different healthcare systems and socio-political differences in the partner countries, and during dedicated sessions covering various topics relating to cultural competency. Themes and guided questions are attached in Supplement 1.

The students worked in small peer groups based on the faculty-led guided themes, conducted online large group student discussions and debates about selected global health, public health, and health ethics topics, and participated in student online networking meetings—as previously described [38].

Students' self-assessment of cultural competencies, after interacting with their international peers utilizing the online international exchange platform at 12 medical schools, was used as a measure of success and evaluated whether learning objectives were achieved.

Initially recognizing the complexity of what cultural competency meant to the students, before analyzing the students' self-assessment of their learning of cultural competencies in the program, was deemed an important sequence. The next step evaluated whether cultural competency can be improved via "online immersion" with peers from different countries.

Likert scale, multiple choice questions, and open-ended questions using Qualtrics© captured the students' perceptions pre- and post-program. In order to capture the students' self-perception of cultural competency Likert scale questions focused on, and were loosely adapted from themes described by Gierke et al. [39]. Details of the questions are delineated in Supplement 2.

Data was analyzed via a mixed method using qualitative data and limited quantitative analysis.

Transcriptions of the students' submissions of their definitions of cultural competency were analyzed for thematic content using a deductive coding approach. Themes were based on definitions of cultural competencies reported by Gierke et al. [39] and included "Knowledge," "External Outcomes," "Attitudes," "Internal Outcomes," "Intrapersonal Skills," and "Interpersonal Skills," with associated subthemes [39].

The study by Gierke was selected because of the international comparison aspect regarding the definition of cultural competency. However, an identical replication of Gierke's study was not the intent of this current study. Therefore, the focus was on those themes that the authors felt were most important to investigate the current topic with this limited group of participants.

To study students' self-perception of changes in cultural competency, the authors focused on 2 main themes; "Knowledge" (i.e., "awareness of diversity and cultures"), and cultural "Attitudes" (i.e., "appreciation of cross-cultural differences") were the focal points of investigation.

In order to appreciate and acknowledge different cultures as part of the cultural competency skills, appreciation and knowledge of one's *own* country and cultural humility were deemed important.

Three coders (A.W., J.S., V.M.) independently reviewed each submission and applied relevant themes. If students supplied more than one theme, portions of the sentences or paragraphs were treated as separate themes. The themes were repeatedly analyzed and discussed until agreement was achieved. To compare the frequency of each response a semi-quantitative analysis was performed by calculating the percent occurrence in the different schools.

All data was analyzed using Excel©. Statistical analysis for the Likert scale and multiple-choice questions was performed using *t*-test to compare data from before and after the program.

Ethics approval was obtained by Columbia University (IRB protocol AAAO3715).

Results

Student Demographics

A total of 68 preclinical medical and dental students from 12 international universities participated in the program (Table 1). Ninety-four percent ($n=64$) responded to the pre-program and 63% ($n=43$) to the post-program questionnaires; 62.5% ($n=40$) were female and 37.5% ($n=24$) were male. Seventy-one percent ($n=47$) were medical and 23% ($n=15$) were dental students. Because there were disproportionately more medical than dental students no comparison between these two groups was performed. In addition, several students were premedical college students. Nineteen percent ($n=12$) were under the age of 20, 73% ($n=47$) were between 20 and 25 years of age, and 8% ($n=5$) were older than 25. Seventy-seven percent ($n=49$) were preclinical students (see Table 1).

Students' Definition of Cultural Competency

In order to capture the students' self-assessment regarding their learning of cultural competencies a baseline of students' definitions of cultural competency was collected and analyzed first.

Themes identified included "Knowledge," "External Outcomes," "Attitudes," "Internal Outcomes," "Intrapersonal Skills," and "Interpersonal Skills," with associated subthemes, as outlined by Gierke et al. [39] (see Fig. 1).

It appears that after the program proportionally more students included additional themes in "Knowledge," rather than "Attitudes" or "External Outcomes." However, fewer students responded to the post-program questionnaire. Therefore, only an increase in percentage (not total numbers) was noted.

Examples of how cultural competency (with reference to two themes) was defined in different countries are shown in Table 2.

The majority of students felt that it was important that healthcare providers be culturally competent (73% felt that it was extremely important, and 19% felt it was very important, on a scale of 1 to 5). Furthermore, the majority of students felt that cultural competency is important for scientists and international collaborators (38% felt it was extremely

Table 1 Participating schools and countries. A total of $n=68$ students participated in the program; $n=64$ students submitted their responses

| University | Gender | | Ages | | | Medical/ dental/ under- graduate | Total | Percent of total |
|---|--------|--------|----------|-------------------|----------|---|-------|------------------|
| | Male | Female | Under 20 | Between 20 and 25 | Above 25 | | | |
| Columbia University, New York, USA | 7 | 9 | 2 | 12 | 2 | 5/9/2 | 16 | 24 |
| Kings College London, London, UK | 3 | 3 | 3 | 3 | 0 | 6/0/0 | 6 | 9 |
| Kyoto University, Kyoto, Japan | 0 | 1 | 0 | 1 | 0 | 1/0/0 | 1 | 2 |
| Ludwig Maximilians University, Munich, Germany | 1 | 6 | 3 | 4 | 0 | 7/0/0 | 7 | 10 |
| Martin Luther University, Halle-Wittenberg, Germany | 3 | 3 | 0 | 6 | 0 | 6/0/0 | 6 | 9 |
| McGill University, Montreal, Canada | 1 | 2 | 0 | 2 | 1 | 1/2/0 | 3 | 4 |
| Medical University of Vienna, Vienna, Austria | 2 | 5 | 1 | 5 | 1 | 3/4/0 | 7 | 10 |
| National Taiwan University, Taipei, Taiwan | 6 | 5 | 0 | 10 | 1 | 11/0/0 | 11 | 16 |
| Tokyo Women’s Medical University, Tokyo, Japan | 0 | 1 | 0 | 1 | 0 | 1/0/0 | 1 | 2 |
| University of Cambridge, Cambridge, UK | 2 | 3 | 2 | 3 | 0 | 5/0/0 | 5 | 7 |
| University of Copenhagen, Copenhagen, Denmark | 1 | 2 | 0 | 3 | 0 | 3/0/0 | 3 | 4 |
| University of Paris, Paris, France | 0 | 2 | 2 | 0 | 0 | 2/0/0 | 2 | 3 |
| Total | 26 | 42 | 13 | 50 | 5 | 51/15/2 | 68 | 100 |

important, and 49% felt it was very important, with no students thinking it was unimportant—on a scale of 1 to 5).

Improvement in Areas of Cultural Competencies

The majority of students felt that their level of intercultural awareness had improved after the program (Fig. 2).

A comparison of self-rated skills in cultural competency (on a scale of 0 to 5, “none” to “very well”) from pre and post-program responses demonstrated a statistically significant increase in several perceived skills in the post-program

group. The comparison focused on 2 main areas of cultural competency—“Knowledge” and “Attitude,” with sub-themes “awareness of diversity,” “appreciation of cross-cultural differences,” “appreciation of other countries,” and “appreciation of one’s own country” (Fig. 3A–D).

Before the start of the program students were asked what skills they hoped to improve on during the program. The post-program results confirmed that there was improvement in various areas that were deemed important to support cultural competencies, and none of the students felt that they did not learn anything new (Fig. 4).

Fig. 1 Themes regarding students’ definitions of cultural competency. Themes were based on Gierke et al. [39]

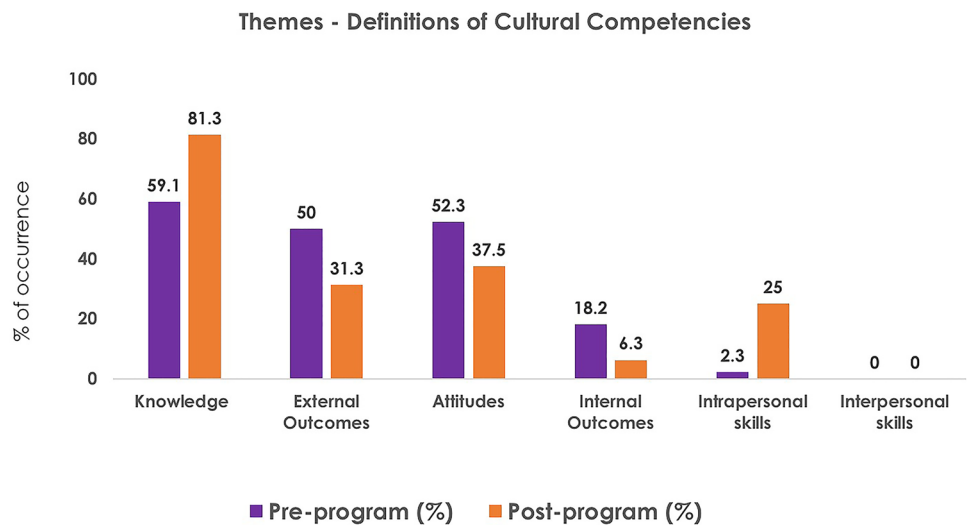
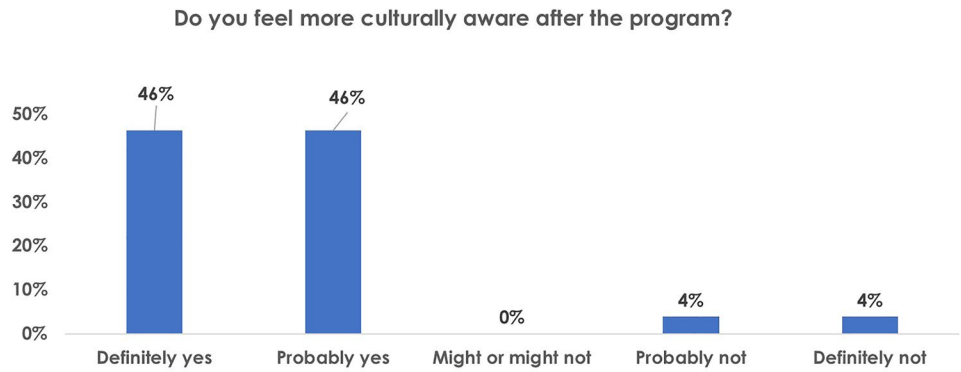


Table 2 Sample student quotes regarding definition of cultural competencies for themes “knowledge-awareness of diversity” and “attitude-appreciation of cross-cultural differences,” sorted by countries before and after the program

| Country | Knowledge-awareness of diversity | | Attitude-appreciation of cross-cultural differences | |
|---------|---|--|--|--|
| | Pre-program | Post-program | Pre-program | Post-program |
| Austria | “Cultural competency is knowing about other cultures and customs [sic].” | “For me cultural competency is the knowledge of a countries heritage, political situation, language and more to fit the comfort zone [sic].” | “Difference between cultures of folks and countries and what some do better than others [sic].” | “Feeling competent in your ... understanding of a culture, your own or not, ... [sic].” |
| Canada | “Ability to understand ... other cultures [sic].” | “It is about knowing the history, traditions, values, lifestyle, etc. of different cultures [sic].” | “Interact appropriately with other cultures [sic].” | N/A |
| Denmark | “Understand different cultures in a proper manner while still keeping/expressing your own culture [sic].” | N/A | N/A | N/A |
| France | “Understanding others people culture and to adapt ourself to it [sic].” | N/A | N/A | N/A |
| Germany | “... Cultural competence means to be able to understand people from different backgrounds [sic].” | “For me its the ability to learn about different cultures, talk with people about similarities and differences [sic].” | “It is about understanding opinions or conventions [sic].” | “Be inspired and opened minded about different traditions and mentalities, ... [sic].” |
| Japan | “Requires knowledges of cultural differences, history and politics etc., ... [sic].” | “To be carefully aware of cultural differences and your ignorance about them [sic].” | “Today, we Japanese knew how important cultural competency is [sic].” | “Ability to respect what you might not understand or what you might not know, with imagination ... about social issues, history, economy, religion, culture, et cetera [sic].” |
| Taiwan | “Cultural competency is the ability to learn, understand different culture, ... [sic].” | “The ability to be aware of one’s own cultural values and world view ... [sic].” | “The ability to learn, understand different culture, and learn to tolerate the differences [sic].” | N/A |
| UK | “... being familiar with different cultures beyond your own [sic].” | “Feeling competent in your knowledge and understanding of a culture, your own or not ... [sic].” | “Being aware that cultures are different and having a keenness to learn about other cultures are important to this ... [sic].” | “The ability to understand how someone from another society interprets the world [sic].” |
| USA | “Cultural competency is the ability to understand, communicate, ... and interact with members of different cultures than your own [sic].” | “I define cultural competency as the ability for one to understand the differences of cultures different from our own [sic].” | “Understanding what beliefs and customs are the norm in other countries [sic].” | “You need to be aware of cultural differences and have a respectful and positive attitude towards these differences [sic].” |

Fig. 2 Students’ perceptions of cultural awareness after the program. Cultural awareness was based on the students’ definitions in the submitted essays



Discussion

In this article, the authors studied the learning outcomes of a short-term international online program for preclinical medical and dental students that was introduced as an alternative, or enrichment, for students to improve intercultural competency skills without the need for travel abroad. The students felt that they improved their cultural competency skills and achieved the learning objective of the program.

Students’ Definition of Cultural Competency

There is a vast literature on recent definitions and importance of cultural competencies in health sciences students [26, 33, 40–48].

The current study confirms findings by Gierke et al. [39] that students’ definitions of cultural competencies focus on several themes including “Knowledge,” with the subtheme of “Intercultural Awareness.” Two other frequently mentioned themes “External Outcomes” (i.e., “Effective/Appropriate Interaction”) and “Attitudes” (i.e., “Respect” and “Tolerance/Acceptance”) were also found in the pre-program definitions. The least frequent themes were “Internal Outcomes,” and “Intra- and Interpersonal Skills” [39].

The results from this study confirm that definitions of cultural competency vary in different countries [26]. For example, in a two country comparison between the USA and Germany, Gierke et al. [39] identified the predominance

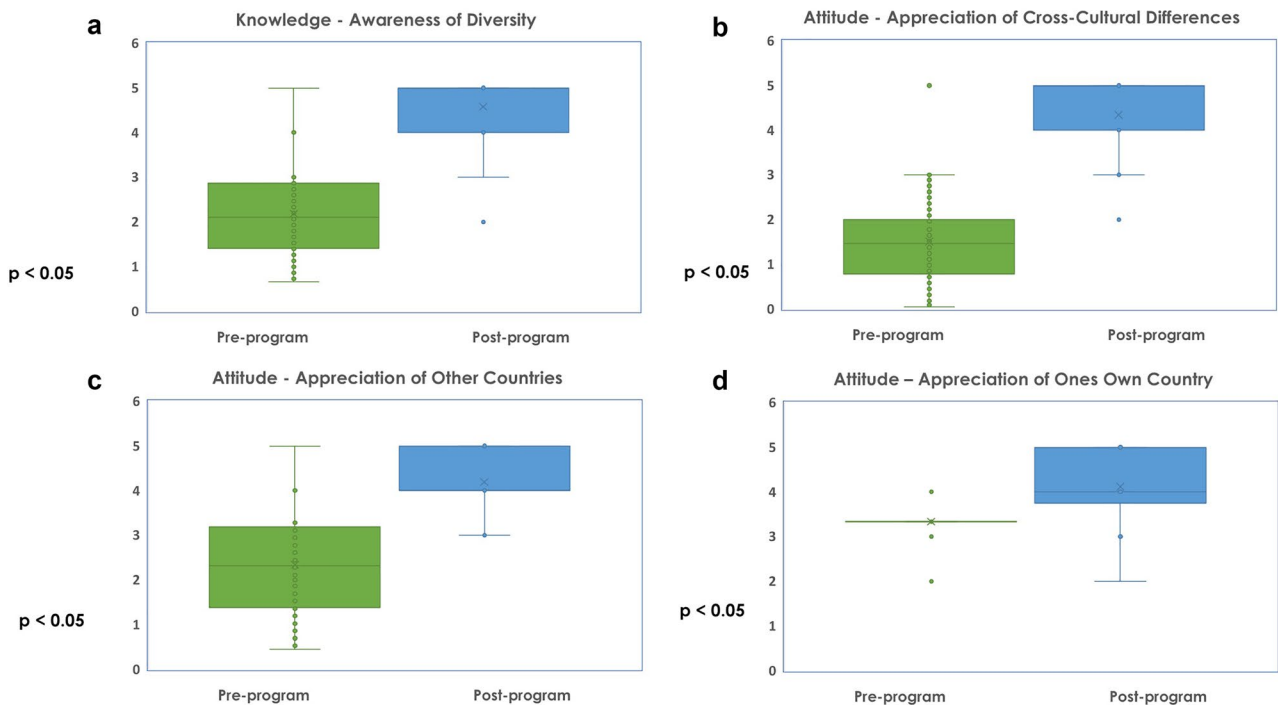


Fig. 3 **A** Comparison of the theme “knowledge–awareness of diversity,” pre- and post-program. **B** Comparison of students’ recognition of “attitude–cross-cultural differences,” pre- and post-program. **C**

Changes in “attitude–appreciation of other countries,” pre- and post-program. **D** Changes in “attitude–appreciation of one’s own country,” pre- and post-program

Areas of Cultural Learning

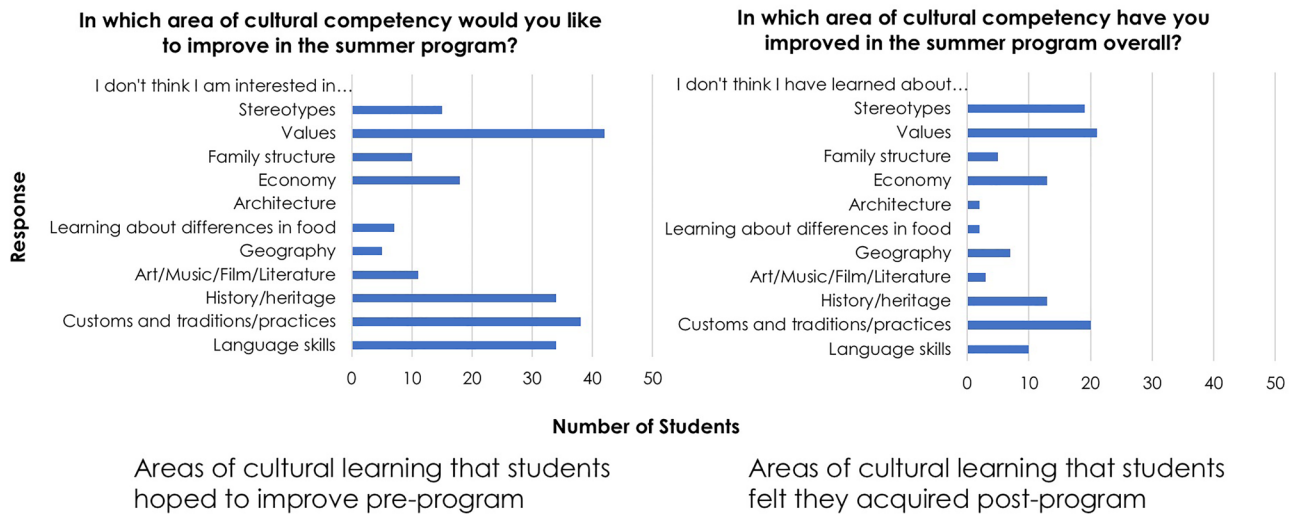


Fig. 4 Learning objectives. Students’ expectations and outcomes of cultural learning

of “Knowledge” (“Cultural Awareness”) in a sample of US students while “External Outcomes” (“Interaction” and “Communication”), “Attitudes” (“Respect” and “Tolerance”), and “Intrapersonal Skills” were more common in the German sample.

Furthermore, in this current study, after students interacted with their peers a change in their definition of cultural competencies with a shift to emphasize “Knowledge” as the most prevalent theme was noted. Due to the small number of participants it cannot be ascertained if the interaction with international peers itself caused the change, or if the students simply became more aware of the topic after being asked to reflect on it after the program. This finding warrants further investigation with larger cohorts.

Improvement of Intercultural Competency

The authors observed an overall increase in students’ perception of improved cultural competency skills after the program. Of note the students self-rated their baseline cultural competency at a relatively high level before the program, presumably due to social desirability bias. These high ratings are consistent with other studies in junior healthcare students [36, 49]. The focus of the study was on the increase of their perceived skills after the program. Our results demonstrate that students increased their level of self-awareness (i.e., in reference to country and culture), which is deemed important in studies of cultural competencies [50]. Given that the students had limited time with each other (twice per week) it is remarkable

that even these few times appear to have increased their perception of cultural competencies. However, further investigation with larger cohorts is needed to support these findings.

In medical education, intercultural competency training primarily aims at preparing students to work with diverse patient populations and workforces [51, 52]. However, international exchange programs in higher education additionally focus on learning and appreciation of international societal and academic differences [53]. This aim is often not addressed in the medical curriculum, and the majority of students in our program supported the importance of cultural competencies for international collaborations.

IoME at Home and Implications for IoME

The authors suggest that limiting IoME to international student travel exchanges is not timely in 2021.

This study has demonstrated that in times of crisis cultural competency and literacy can be acquired online—in a socially equitable, sustainable, safe, and predictable way.

Medical education online training in cultural competency exists [54, 55], with some instruction involving multi-cultural patients [46, 56]. Others report on intercultural training as part of pre-departure instruction for international travels [57]. However, it is not typical to expose students to international peers. Our program connected students with future colleagues and faculty from other countries in order to receive first-hand “online immersion.” The concept of international

peer exposure for IoME is not new but is rarely reported and researched. Although Ostbye and colleagues proposed online email interactions as a low-cost replacement for international medical education electives in 1995 [18], today in 2021, limited published articles on international peer interactions exist. Liauw et al. [58] is one of the few reports that describe international Global Health education at home, via internationalization of the medical campus through interaction with Haitian medical peers [5, 58]. Ambrose et al. [17] uses the term internationalization *at home* [17]. Over the span of 25 years only a few groups reported on online exposure to international peers as a way to internationalize the curriculum [5, 13, 17, 18, 58–60], despite a significant increase in globalization during this time period.

Learning objectives for IoME programs are currently not agreed upon and vary—and mainly have a focus on Global Health education in the LMIC [1–4]. Published literature on the success of these programs is typically measured qualitatively based on students' perceptions [61, 62]—including self-reported acquisition of cultural competency [63]. Much more rigorous investigation is needed on the effectiveness of teaching, learning, and assessment methods to engage more, if not all students, in IoME.

This program focused on multi-lateral virtual exchanges with peers who studied in high-income countries. However, the student bodies in the partner countries were very diverse due to the presence of international students and included peers from Southeast Asia, Eastern Europe, the Middle East, and South America.

The authors postulate that if awareness of cultural differences and diversity can be achieved online by interaction with peers living in countries of similar economic background, effects on learning should be augmented if the students were to meet peers from a more economically diverse background (i.e., from the LMIC). However, in times of crisis, online exposure can offer alternatives to travel.

Future comparative studies will shed light on whether the above assumption holds true.

There is undoubtedly a place and a reason for student outbound mobility, aside from cultural competency learning [53, 64–67]. Although current formats of international medical workforce outbound mobility have been at the center of recent critical discussion [6, 68], clinical placement of senior medical students can be of value to underserved regions and countries. This study deliberately focused on international education for preclinical medical and dental students whose travel is not aimed at humanitarian services and patient care in low-resource settings.

One of the main goals of IoME at home is internationalization for *all*, which is in line with goals in IoHE—to ensure that society produces graduates who work in their professions with a global mindset and as global citizens. In IoME, this translates into physicians who practice

locally with a global reference and/or improve healthcare via future global collaborations. The recent COVID-19 pandemic is an example of how global health events can impact local practice.

However, offering IoME to all in its current form—an extracurricular outbound mobility activity offered at a few select institutions [2, 4]—appears unrealistic. This study supports the goal that learning objectives such as intercultural competency can be achieved online, via peer exposure, therefore increasing options for international experiences. For IoME, it could have significant implications due to a higher participation of students in international exchange activities.

This study hopes to inspire other educators to evaluate current approaches to IoME and include at home activities within the curriculum.

Future work, preferably in collaboration with the social sciences in International Higher Education [69], will be of value to establish competencies, so quantitative studies can support the findings of this study.

Limitations and Future Directions

The small number of participants in this pilot study limits the generalizability of the approach. Due to its voluntary nature, the self-selection of students could lead to a bias in reference to acquisition of cultural competencies by the students.

One limitation is the self-rating bias of the students after they participated in the program. Therefore, measuring competency skills via a standardized methodology will be of advantage in assessing learning outcomes, and will be the next step after this pilot program.

In 2020, due to the lockdown of most countries, the program did not have comparative data from students who travelled abroad that could serve as a control group.

Furthermore, it will be of value to study continuous international peer exposure for a longer period of time, and include a larger cohort, to confirm these preliminary findings.

Conclusion

Internationalization of medical education *at home* can improve cultural competency skills and prepare students for work in the field of global health, thereby leading to improvement of global health. While not a replacement, it can serve as a low cost alternative to, or enrichment for student travel. IoME provides the opportunity for an international experience to all students, if travel is not an option.

Supplementary Information The online version contains supplementary material available at <https://doi.org/10.1007/s40670-021-01332-9>.

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Author Contribution All authors listed had a role in writing the manuscript. All authors listed have read and approved the requirements for authorship. Each author believes that the manuscript represents honest work.

Declarations

Ethical Approval IRB AAAO3715 (Columbia University).

Informed Consent As part of IRB protocol AAAO3715 (Columbia University).

Conflict of Interest The authors declare no competing interests.

References

- Wu A, Leask B, Choi E, Unangst L, De Witt H. Internationalization of Medical Education – a scoping review of the current status in the United States. *Medical Science Educator* 2020;1–13.
- Khan OA, Guerrant R, Sanders J, Carpenter C, Spottswood M, Jones DS, et al. Global health education in U.S. medical schools. *BMC medical education*. 2013;13:3.
- Peluso MJ, Forrester AK, Hafler JP, Rohrbaugh RM. Structured global health programs in U.S. medical schools: a web-based review of certificates, tracks, and concentrations. *Acad Med*. 2013;88(1):124–30.
- McKinley DW, Williams SR, Norcini JJ, Anderson MB. International exchange programs and U.S. medical schools. *Acad Med*. 2008;83(10 Suppl):S53–7.
- Wu A, Noël GPJC, Wingate R, Kielstein H, Sakurai T, Virantakovanen S, Chien C-L, Traxler H, Waschke J, Vielmuth F, Sagoo MG, Kitahra S, Kato Y, Keay KA, Olsen J, Bernd P. An International Partnership of 12 Anatomy Departments – Improving Global Health through Internationalization of Medical Education. *Annals of Global Health* 2020;86(1):27. <https://doi.org/10.5334/aogh2665>
- Bauer I. More harm than good? The questionable ethics of medical volunteering and international student placements. *Tropical diseases, travel medicine and vaccines*. 2017;3:5.
- Leask B. Diversity on campus- An institutional approach: a case study from Australia. In: Teekens H, editor. *Internationalisation at home: Ideas and ideals*. Amsterdam, The Netherlands: European Association for International Education; 2007. p. 33–9.
- Leask B. Using Formal and Informal Curricula to Improve Interactions between Home and International Students. *J Stud Int Educ*. 2009;13(2):205–21.
- Beelen J, Jones E. Redefining Internationalization at Home. *The European Higher Education Area: Amsterdam University of Applied Sciences*; 2015. p. 59–72.
- Brouwer E, Frambach J. Solutionism across borders: sorting out problems, solutions and stakeholders in medical education internationalization. *Med Educ*. 2020.
- Finkel ML, Fein O. Teaching medical students about different health care systems: an international exchange program. *Acad Med*. 2006;81(4):388–90.
- Griswold K, Kernan JB, Servoss TJ, Saad FG, Wagner CM, Zayas LE. Refugees and medical student training: results of a programme in primary care. *Med Educ*. 2006;40(7):697–703.
- Goldner BW, Bollinger RC. Global health education for medical students: New learning opportunities and strategies. *Med Teach*. 2012;34(1):e58-63.
- Groen CM, McGrath C, Campbell KA, Götherström C, Windebank AJ, Landázuri N. Promoting international collaboration and creativity in doctoral students. *eLife*. 2017;6.
- O’Shea J, Berger R, Samra C, Van Durme D. Telemedicine in education: bridging the gap. *Educ Health (Abingdon)*. 2015;28(1):64–7.
- Knipper M, Baumann A, Hofstetter C, Korte R, Krawinkel M. Internationalizing Medical Education: The Special Track Curriculum ‘Global Health’ at Justus Liebig University Giessen. *GMS Zeitschrift für medizinische Ausbildung*. 2015;32(5):Doc52.
- Ambrose M, Murray L, Handoyo NE, Tunggal D, Cooling N. Learning global health: a pilot study of an online collaborative intercultural peer group activity involving medical students in Australia and Indonesia. *BMC Med Educ*. 2017;17(1):10.
- Ostbye T, White M, Hoffer G, Bojan F. The electronic medical-student exchange: a low-cost alternative to overseas electives. *CMAJ*. 1995;153(9):1327–8.
- Haq C, Rothenberg D, Gjerde C. New world views: preparing physicians in training for global health work. *Fam Med*. 2000;32.
- Esfandiari A, Drew CR, Wilkerson L, Gill G, Drew CR. An international health/tropical medicine elective. *Acad Med*. 2001;76(5):516.
- Aldan TJ, Morie M, Lee J, Withy K. Student perspectives on international/rural experiences in medical education. *Hawai’i journal of medicine & public health : a journal of Asia Pacific Medicine & Public Health*. 2013;72(1):23–6.
- Nelson BD, Saltzman A, Lee PT. Bridging the global health training gap: Design and evaluation of a new clinical global health course at Harvard Medical School. *Med Teach*. 2012;34(1):45–51.
- Griswold K. Refugee health and medical student training. *Fam Med*. 2003;35(9):649–54.
- Haagedoorn EM, Oldhoff J, Bender W. Report of an international summer school—oncology for medical students—in 1996 in Groningen, The Netherlands. *J Cancer Educ*. 1997;12(1):56–8.
- Martimianakis MA, Hafferty FW. The world as the new local clinic: a critical analysis of three discourses of global medical competency. *Soc Sci Med*. 1982;2013(87):31–8.
- Mews C, Schuster S, Vajda C, Lindtner-Rudolph H, Schmidt LE, Bosner S, et al. Cultural competence and global health: perspectives for medical education - position paper of the GMA Committee on Cultural Competence and Global Health. *GMS J Med Educ*. 2018;35(3):Doc28.
- Truong M, Paradies Y, Priest N. Interventions to improve cultural competency in healthcare: a systematic review of reviews. *BMC Health Serv Res*. 2014;14:99.
- McElfish PA, Moore R, Buron B, Hudson J, Long CR, Purvis RS, et al. Integrating Interprofessional education and cultural competency training to address health disparities. *Teach Learn Med*. 2018;30(2):213–22.
- Ocegueda DR, Van Ness CJ, Hanson CL, Holt LA. Cultural competency in dental hygiene curricula. *J Dent Hyg*. 2016;90(Suppl 1):5–14.
- Prescott GM, Nobel A. A multimodal approach to teaching cultural competency in the Doctor of Pharmacy curriculum. *Am J Pharm Educ*. 2019;83(4):6651.
- Reed C. Cultural Competence. *Am J Nurs*. 2017;117(7):13.
- Abrishami D. The Need for Cultural Competency in Health Care. *Radiol Technol*. 2018;89(5):441–8.
- Brottman MR, Char DM, Hattori RA, Heeb R, Taff SD. Toward cultural competency in health care: a scoping review

- of the diversity and inclusion education literature. *Acad Med.* 2020;95(5):803–13.
34. Kuper A. When I say... cultural knowledge. *Med Educ.* 2014;48(12):1148–9.
 35. Wu A, Noel GPJC, Leask B, Unangst L, Choi E, De Wit H. Internationalisation of medical education is now vital. *University World News.* 2020.
 36. Thompson BM, Haidet P, Casanova R, Vivo RP, Gomez AG, Brown AF, et al. Medical students' perceptions of their teachers' and their own cultural competency: implications for education. *J Gen Intern Med.* 2010;25 Suppl 2(Suppl 2):S91–4.
 37. McMahon D, Shrestha R, Karmacharya B, Shrestha S, Koju R. The international medical elective in Nepal: perspectives from local patients, host physicians and visiting students. *Int J Med Educ.* 2019;10:216–22.
 38. Wu A, Maddula V, Kieff MR, Kunzel C. An online program to improve international collaboration, intercultural skills, and research knowledge. *Journal of dental education.* 2020:1–4.
 39. Gierke L, Binder N, Heckmann M, Odağ Ö, Leiser A, Kedzior KK. Definition of intercultural competence (IC) in undergraduate students at a private university in the USA: A mixed-methods study. *PLoS One.* 2018;13(4):e0196531.
 40. Deliz JR, Fears FF, Jones KE, Tobat J, Char D, Ross WR. Cultural competency interventions during medical school: a scoping review and narrative synthesis. *J Gen Intern Med.* 2020;35(2):568–77.
 41. Domenech Rodríguez MM, Phelps PB, Tarp HC. Baseline cultural competence in physician assistant students. *PLoS ONE.* 2019;14(4):e0215910.
 42. Goyal R, Martin S, Garbarski D. Perceptions of cultural competency among premedical undergraduate students. *J Med Educ Curric Dev.* 2020;7:2382120520934823.
 43. Nair L, Adetayo OA. Cultural competence and ethnic diversity in healthcare. *Plast Reconstr Surg Glob Open.* 2019;7(5):e2219.
 44. Sorensen J, Norredam M, Suurmond J, Carter-Pokras O, Garcia-Ramirez M, Krasnik A. Need for ensuring cultural competence in medical programmes of European universities. *BMC Med Educ.* 2019;19(1):21.
 45. Feldman NL, Lewis JL, Patel CK, Ackerman SF, Howe AK, Harari DY, et al. The other side of medical student mistreatment: teaching cultural competency across the generational divide. *MedEdPORTAL : the journal of teaching and learning resources.* 2019;15:10847.
 46. Walldorf J, Jähnert T, Berman NB, Fischer MR. Using foreign virtual patients with medical students in Germany: are cultural differences evident and do they impede learning? *J Med Internet Res.* 2016;18(9):e260.
 47. Betancourt JR. Cultural competence and medical education: many names, many perspectives, one goal. *Acad Med.* 2006;81(6):499–501.
 48. Echeverri M, Dise T. Racial dynamics and cultural competence training in medical and pharmacy education. *J Health Care Poor Underserved.* 2017;28(1):266–78.
 49. Te M, Blackstock F, Fryer C, Gardner P, Geary L, Kuys S, et al. Predictors of self-perceived cultural responsiveness in entry-level physiotherapy students in Australia and Aotearoa New Zealand. *BMC Med Educ.* 2019;19(1):56.
 50. White AA 3rd, Logghe HJ, Goodenough DA, Barnes LL, Hallward A, Allen IM, et al. Self-awareness and cultural identity as an effort to reduce bias in medicine. *J Racial Ethn Health Disparities.* 2018;5(1):34–49.
 51. Hordijk R, Hendrickx K, Lanting K, MacFarlane A, Muntinga M, Suurmond J. Defining a framework for medical teachers' competencies to teach ethnic and cultural diversity: Results of a European Delphi study. *Med Teach.* 2019;41(1):68–74.
 52. Hallock JA, McKinley DW, Boulet JR. Migration of doctors for undergraduate medical education. *Med Teach.* 2007;29(2–3):98–105.
 53. Teichler U. Student mobility in the framework of ERASMUS: findings of an evaluation study. *Eur J Educ.* 1996;31(2):153–79.
 54. Carpenter R, Estrada CA, Medrano M, Smith A, Massie FS Jr. A web-based cultural competency training for medical students: a randomized trial. *Am J Med Sci.* 2015;349(5):442–6.
 55. Lee AL, Mader EM, Morley CP. Teaching cross-cultural communication skills online: a multi-method evaluation. *Fam Med.* 2015;47(4):302–8.
 56. Roh H, Nirta L. Medical students interact with multicultural patients to learn cultural diversity. *Korean J Med Educ.* 2018;30(2):161–6.
 57. D'Ignazio T, Lavoie G, Pomerani T, Lachapelle A, Gaucher N. Pre-exchange training - Developing ethical and cultural competencies in medical students. *Med Teach.* 2019;41(12):1399–403.
 58. Liauw SSL, Kuper A, Noel G, Richardson L. Global health education at home: canadian medical students' perspectives after learning alongside Haitian peers. *Acad Med.* 2018;93(12):1865–71.
 59. Hinojo-Lucena F-J, Aznar-Díaz I, Cáceres-Reche M-P, Romero-Rodríguez J-M. Use of social networks for international collaboration among medical students. *Educacion Medica.* 2020;21(2):137–41.
 60. Tillmanns RW, Ringwelski A, Kretschmann J, Spangler LD, Curry RH. The profession of medicine: a joint US-German collaborative project in medical education. *Med Teach.* 2007;29(9):e269–75.
 61. Cherniak WA, Drain PK, Brewer TF. Educational objectives for international medical electives: a literature review. *Acad Med.* 2013;88(11):1778–81.
 62. Khan OA, Pietroni MP, Cravioto A. Global health education: international collaboration at ICDDR, B. *J Health Popul Nutr.* 2010;28.
 63. Martinez-Mier EA, Soto-Rojas AE, Stelzner SM, Lorant DE, Riner ME, Yoder KM. An international, multidisciplinary, service-learning program: an option in the dental school curriculum. *Educ Health (Abingdon).* 2011;24(1):259.
 64. Harman G. Internationalization of Australian higher education: a critical review of literature and research. *Internationalizing Higher Education CERC Studies in Comparative Education.* Dordrecht: Springer; 2005.
 65. Yang S, Chen HC, Chen WC, Yang CH. Forecasting outbound student mobility: a machine learning approach. *PLoS One.* 2020;15(9):e0238129.
 66. Laubscher MR. *Encounters with difference: student perceptions of the role of out-of-class experiences in education abroad.* Westport, Conn.: Greenwood Press; 1994. xvii, 126 p. p.
 67. Rezhake R, Hu SY, Zhao YQ, Zhang L, Zhao XL, Dominguez AZ, et al. Impact of International Collaborative Training Programs on Medical Students' Research Ability. *J Cancer Educ.* 2018;33(3):511–6.
 68. Adams LV, Wagner CM, Nutt CT, Binagwaho A. The future of global health education: training for equity in global health. *BMC Med Educ.* 2016;16(1):296.
 69. Wu A, Noel GPJC. How to Internationalize Medical Education using Concepts in Internationalization of Higher Education. *Med Ed Publish.* 2020. <https://doi.org/10.15694/mep.2020.000151.1>

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