



Internationalization of Medical Education — Motivations and Formats of Current Practices

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Abstract

Purpose The COVID-19 pandemic has demonstrated the importance for medical professionals to engage in work transcending national borders and to deeply understand perspectives of health in other countries. Internationalization of medical education can play a key role to that end, by preparing culturally competent and globally conscious medical healthcare professionals.

The aim of this scoping review is to identify current practices and formats in internationalization in medical education, which to date has received sparse academic attention. The need for this review is heightened amid COVID-19 where a clearer understanding of current internationalization efforts can inform more effective practice. We also explore if the motivations driving internationalization activities in medicine align with current practice and formats based on a framework of thematic categories found in the field of international higher education. In addition, we identify gaps in existing research.

Methods Using a scoping review, an international and interdisciplinary research team employed a comprehensive search strategy to identify publications on existing efforts in IoME, published from January 1, 2000, to December 31, 2020, in Scopus, PubMed/Medline, Google Scholar, and Web of Science. Inclusion/exclusion criteria were applied to identify relevant data from publication titles, abstracts, and main texts, which were subsequently summarized. Coding schemes were developed based on models for comprehensive internationalization in higher education.

Results 350 articles met the inclusion criteria. Most articles originated from the high-income countries of the Global North and accounted for a literature base favoring perspectives and understandings that were typically representative of this region. Whereas motivations for internationalizing medical curricula in high-income countries were generally rooted in a model of social transformation/justice/health equity, drivers relating to competition and workforce preparation were common in the low- and middle-income countries.

Importantly, the motivations driving internationalization activities generally did not align well with reported internationalization formats, which included student mobility, international curricula at home, and global partnerships. There was a disconnect between what medical curricula/professionals hope to accomplish and the reality of practice on the ground.

Discussion and Conclusion There is a need for a common definition of internationalization of medical education and a more balanced and unbiased literature base, capturing the full spectrum of internationalization activities existing in both the Global North and South. International partnership frameworks need to equally benefit institutions of both the Global North and Global South. Currently, institutions in the low- and middle-income countries generally cater to the needs and interests of their high-income counterparts. There are concerns about student mobility from high-income countries to low- and middle-income countries. Finally, medical education should be more inclusive and all medical students should gain access to international perspectives and experiences.

Keywords Internationalization of medical education · Scoping review · Global Health · Formats · Motivation · Definition · Medical students

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Abbreviations

ACE	American Council on Education
GH	Global Health
HIC	High-income countries

LMIC	Low- and middle-income countries
IaH	Internationalization at home
IHE	International higher education
IoME	Internationalization of medical education

Introduction

The COVID-19 pandemic has not only impacted local communities but clearly has had an immense influence on a global scale. Communities worldwide are experiencing unprecedented disruptions to society, and importantly, the pandemic has directly and adversely impacted the well-being and health of their members. It is thus vital for medical professionals to engage with and deeply understand perspectives of health and wellness in other countries and cultures. Medical communities need to better understand the benefits and implications of international collaboration, workforce exchanges, and globally minded healthcare providers that are trained to work with diverse patient populations and colleagues. Internationalization of medical education (IoME) has a role in preparing medical healthcare professionals for transformative work transcending national borders. The need for IoME is heightened amid the COVID-19 pandemic that is having a vast influence on a worldwide scale. IoME can help medical students develop an understanding and appreciation of belonging to a global healthcare community [1], and practice medicine in their local communities with a global mindset [2, 3].

Differences Between Global Health, Public Health, and Internationalization of Medical Education

To date, the term IoME lacks a universally agreed upon understanding and definition. Such terms as internationalization of medical education, international medical education, global medical curricula, Global Health (GH), and GH education are seemingly used interchangeably when describing similar internationalization activities in medicine [4].

In the health professions, there is an emphasis on incorporating elements of social equity, diversity, inclusivity, and cultural competence into healthcare education. In this context, internationalization efforts often become intertwined and overlap with Public Health and GH [5]. It is therefore important to discern the differences that differentiate IoME from other similar practices, which may not be readily apparent.

Public Health is regarded as "...the science and art of preventing disease, prolonging life, and promoting health through the organized efforts and informed choices of society, organizations, public and private communities, and individuals..." [6]. GH may be understood as the global counterpart of Public Health. It mirrors the core principles and

thrusts of Public Health, but a key difference lies in its origin and geographic scope of focus. It historically evolved from International Health — an area that addresses local, national, and international health concerns on all levels. International Health is defined by Merson, Black, and Mills as "the application of the principles of Public Health to problems and challenges that affect low and middle-income countries and to the complex array of global and local forces that influence them" [7–9]. Unlike Public Health that may have an inward orientation, GH is very much outward in focus, and concerns the health of all people.

It is important to point out that the definition of GH varies [10]. The most commonly accepted definition describes it as: "an area for study, research, and practice that places a priority on improving health and achieving health equity for all people worldwide" [8]. Interestingly, this definition is narrowly applied in the literature base and focused on discussing educational services or programs mostly in the low- and middle-income countries (LMIC) of the Global South. Global South refers to countries with an income level defined by the World Bank as lower-middle income economies [11]. Furthermore, local programs to address health equity and social justice are often included in GH activities. GH *education* is the area of training that focuses on health issues directly or indirectly caused by transnational factors [8, 12].

The use of the term IoME in the literature may complicate the existent confusion regarding GH and Public Health. Furthermore, the definition of IoME in and of itself is ambiguous in the medical field, and is often applied inaccurately, not to mention to a narrow scope of internationalization activities that do not represent normative understandings of internationalization in the field of higher education. Thus, the term IoME needs to be defined, agreed upon, and understood by everyone — inclusive of all areas of the world, and not used interchangeably with GH education, as well as Public Health where the conflation of GH and Public Health exists. We suggest that IoME needs a definition better suited to describe formats of international educational activities — globally, in both the high-income countries (HIC) and the LMIC.

Developing a Proposed Definition of IoME and Its Connection to Concepts of International Higher Education

We define IoME as "the process of purposefully integrating international, intercultural, or global dimensions into medical education in order to enhance its quality and prepare *all* graduates for professional practice in a globalized world" [13–15]. This definition is adapted based on one commonly applied in the field of international higher education (IHE) [13–15]. IHE refers to an established and defined area of

long-standing educational research and provides frameworks for international education [16]. It includes research in the internationalization of the curriculum, referring to the incorporation of international, intercultural, and global dimensions into the curriculum in ways that are relevant to graduates' professional practice [17], with the aim to reach *all* students. It is important to point out that this definition does not exclusively refer to activities and changes relating to course content. The definition is a *concept of educational formats* and not the content of educational subjects. Thus, IoME is a process describing all aspects and functions of postsecondary education and refers to a university-wide approach that is intentional, systematic, and evidence-based. International curriculum efforts are designed to prepare students for work as interculturally proficient professionals and citizens with sensitivities to the needs of communities worldwide [13, 18, 19].

The formats of internationalization of the curriculum abound, but may be broadly organized into thematic categories established by the American Council on Education (ACE) [16]. Key formats include international institutional partnerships, student inbound and outbound mobility, and the internationalization of the curriculum through activities and content at the home campus [13, 17, 20, 21]. Motivations for higher education internationalization are determined by constantly changing political, economic, socio-cultural, and academic influences and rationales [1].

A fundamental principle of internationalization of the curriculum, and therefore IoME, is the promotion of universal access of international experiences and education for *all* students. Both medical students abroad and at home (on campus) [13, 22] ought to have access to opportunities that cultivate global mindsets. Unfortunately, international experiences to date generally appear to be limited to a select group of medical students attending prestigious institutions — making internationalized medical education a socially inequitable endeavor that excludes many subgroups of students and institutions [38]. There is a need to better reflect the tenets of IoME through a more inclusive approach wherein *all* students, irrespective of socioeconomic background and university of attendance, gain access to experiences and content that have relevance beyond national borders.

A discussion on IoME would be remiss without identifying the motivations driving internationalization activities in medical education. As in the field of international higher education, understanding the motivations for IoME may yield insight into strengths and weaknesses of programmatic efforts and can aid in the success of future endeavors in an area that is still developing. Overall, IHE identifies 3 major models for motivation that can be applied to IoME. The market model describes the positioning of a country or institution for competition in healthcare globally. Subcategories of

the market model include student competition via IoME programming such as language or mobility programs, institutional competition for students, and the positioning of institutions in the world ranking of schools in science, clinical care, and education. The second model is the liberal model, which supports international understanding between nations via internationalization efforts. It remains unclear to what extent the motivations driving internationalization efforts in medical education have ties to this model. Finally, the social transformation model is understood as driving most IoME activities and programs supporting social justice and equity in healthcare [23]. IoME activities that support social and health equity in LMIC and at home are popular in HIC, but it remains unclear to what extent these motivations align with current formats of IoME in the LMIC. There is a need to investigate if internationalization activities in medical education are indeed effective in furthering the goals of social justice and equity in practice. Further research and analysis of motivations appears timely and is important for the evaluation of interventions and expanding international activities in medical education.

A final point relates to the outcomes of medical education. It is important to differentiate IoME and GH education with respect to learning outcomes. While IoME can have overlapping outcomes of competencies seen in GH education, it should rather be understood as a medium to achieve educational international competency skills and not be regarded as an end goal in and of itself [24]. IoME should be understood as a concept of educational processes, means, and formats, derived from and closely aligned with concepts in higher education to support competencies regarding students' education. In contrast, GH education refers to teaching GH content in the curriculum. This distinction between *how* and *what* is important, so educators can focus on formalizing standardized curricula by sharing concepts and formats from an educational viewpoint and not the content of international education [25, 26].

Aim and Justification of the Study

To date, in the global literature, there appears to be a missing connection between research and application of concepts in IHE to IoME. Medical educators have not analyzed their international efforts from the viewpoint of IHE. Yet, formats and concepts of IHE can help medical educators to understand and execute international approaches in medical education in an efficient and innovative way, while learning from the progress made in other disciplines. Furthermore, an interdisciplinary approach to addressing issues around globalization and higher education in medicine appears timely — particularly in view of recent GH challenges. Finally, motivations for international activities have not been extensively studied in IoME. It is important that institutions view

their international educational activities from a motivation perspective to assess whether formats currently used are in line with their motivations.

The aim of the study was to identify and summarize current practices and formats in IoME as they relate to concepts found in IHE, and to better understand perceived motivations as outlined above for IoME that are found in the published literature. Importantly, we investigate if these formats align with the motivations. A global review in this regard has not yet been conducted.

Identifying these formats and motivations may help medical educators to better understand and implement best practices and help to initiate and standardize innovative formats in IoME. This study, which contributes to a developing area of research, may also help educators develop and establish new educational theory-based international programs.

Method

A scoping review method was selected to identify trends within the existing work on IoME, facilitate comparison among programs, and identify gaps in current practices. The scoping review is appropriate for its focus on assessing the extent and coverage of the current literature (including concepts and knowledge gaps), and not on providing detailed answers to very specific questions [27]. Thus, the objective was to conduct a comprehensive overview of the available evidence without claiming exhaustiveness and completeness. This scoping review mapped previously published studies to determine the status of knowledge on IoME in a global review.

The review was conducted following Arksey and O'Malley's [28] 5-step methodology: (1) identification of a research question, (2) identification of relevant studies, (3) study selection, (4) charting of data, and (5) summary and reporting of results (see Fig. 1 for delineation of the steps). An international and interdisciplinary team consisting of medical and international higher education faculty and students collaborated on addressing the study's research question: "What articles can be identified on IoME within published scientific journals in the past 20 years?"

Articles were identified and collected using the search terms "international," "medical education," and "global." Nonspecific search terms were used by design, for the purpose of capturing any articles that might be missed in a more focused search, considering the wide range of multinational journals that IoME articles are published in. The search term "Internationalization/internationalisation" was additionally included in queries if more than 10,000 articles were returned. Search queries were conducted in the databases *PubMed/Medline*, *Google Scholar*, *Scopus*, and *Web of Science*, from 2/1/2021 to 5/1/2021.

Identification of Relevant Studies — Selection Process

Six independent researchers (A.W., A.S., E.C., M.D., M.M., Z.R.) applied the inclusion and exclusion criteria (see Table 1). Exclusion criteria encompassed non-peer-reviewed articles, articles from osteopathic schools, other health professions (e.g., nursing, dentistry, Public Health, health sciences, pharmacy, physical and occupational therapy, and emergency medical technician), post-graduate training (e.g., residency, fellowship, and international medical graduates), physician continuing medical education, professional development, book chapters, books, websites, and lay press. Osteopathic schools were excluded because many countries only offer allopathic medical programs and do not have equivalent degrees, making it difficult to compare international educational activities from a global perspective.

Inclusion criteria comprised pre-graduate medical education, articles in peer-reviewed journals (original research and review articles), and articles published between 1/1/2000 and 12/31/2020 (Table 1). The time span of 20 years was determined based on previous work that indicated an increase in international efforts in medical education after the turn of the twentieth century [4, 29]. Articles primarily addressing Public Health and GH topics were included if they addressed medical student education.

Although we attempted to consider all languages in identifying relevant articles, non-English articles were excluded from further analysis owing to language limitations of the research team. The team members were only able to read English, German, Dutch, Korean, and French (limited). Articles written in non-Roman characters such as Arabic, Chinese, Cyrillic, Greek, Hebrew, and Japanese could not be analyzed. Nine articles had abstracts written in English, but with a non-English main text, while 31 articles had both abstract and the main text written in a non-English language. The articles with English abstracts were included in the overall numbers but not further discussed for thematic coding.

Study Selection — Data Extraction and Synthesis

664 articles were identified in the initial search to be considered for inclusion. These articles subsequently underwent title, abstract, and full-text reviews. The research team excluded articles that were deemed not relevant based on publication titles, abstracts, and main text scanning. 350 met inclusion criteria and were included in our analysis. In a second round, team members (A.W., A.S., E.C., M.D., M.M., Z.R.) independently reviewed and categorized the articles based on thematic coding schemes developed using internationalization formats established by the ACE and research on IHE [16, 20, 23]. These codes are listed in Table 2. Articles were pulled and further reviewed by the entire team in

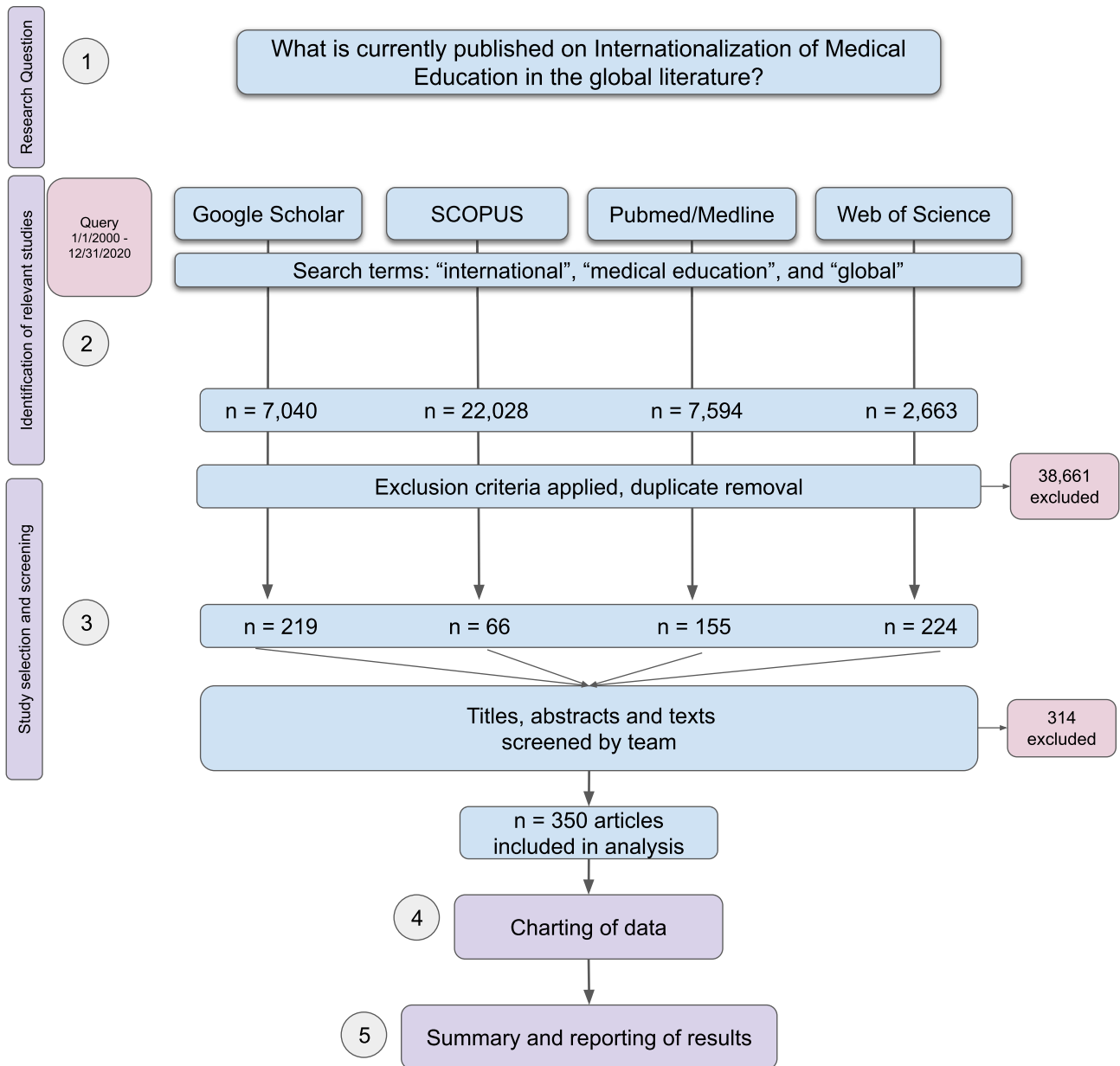


Fig. 1 The search was conducted following the 5-step methodology of Arksey and O’Malley [28] that included (1) identification of a research question, (2) identification of relevant studies, (3) study selection, (4) charting of data, and (5) summary and reporting of results

instances where team members had questions about coding and/or team members had disagreement.

With respect to identifying the motivations/purposes driving internationalization activities, we made note of them where articles explicitly mentioned them. For this analysis, motivation/purpose was defined as an explicit statement in the publication regarding the reason for creating a certain format of IoME. In instances where articles did not explicitly define these purposes, the team

members assigned motivations following Hanson’s models [23], based on the team’s interpretation of a theme agreed upon by the team in an inductive manner.

The data the authors coded facilitated the capture of trends related to formats of IoME and the relations at play for motivations regarding these programs. This type of analysis, currently absent in the literature, will advance current approaches to developing IoME programs by identifying gaps in representation.

Table 1 Inclusion and exclusion criteria

Inclusion criteria	Exclusion criteria
<ul style="list-style-type: none"> ● ► Peer-reviewed articles, including original research and review articles ● ► Pre-graduate medical education only ● ► Conference proceedings, abstracts published in peer-reviewed journals ● ► Indexed in <i>PubMed/Medline</i>, <i>Google Scholar</i>, <i>Scopus</i>, and <i>Web of Science</i> ● ► Published from year 2000 onward to 2020 ● ► All countries ● ► Language: English 	<ul style="list-style-type: none"> ● ► Books and book chapters ● ► Book reviews ● ► Lay literature/lay press ● ► Commentaries and opinion pieces published in peer-reviewed journals ● ► Website and newspaper articles ● ► Social media content ● ► Protocols ● ► Dissertations/theses ● ► Allied health professions: nursing, dentistry, public health, health sciences, pharmacy, physical and occupational therapy, emergency medical technician ● ► Osteopathic schools ● ► Post-graduate training: e.g., residency, fellowship, and international medical graduates ● ► Physician continuing medical education/professional development

Results

Charting of Data

Supplement 1 depicts the major findings with reference to originating countries, geographic regions, number of countries, year of publication, number of authors, language, names of journals, and types of articles. Formats are listed in Table 2 and detailed findings in Supplement 2. Table 3 outlines the perceived motivations that team members assigned to internalization activities. The included percentages are derived from calculating the number of articles in a certain theme or group divided by the total number of articles.

Publication Demographics

Most articles originated from HIC of the Global North (> 60% from Anglo-Saxon countries), with few articles published from the LMIC (Supplement 1A). Regardless of origination, most articles addressed activities of IoME in the LMIC of the

Global South. The articles were primarily reported by authors from the HIC in journals of HIC. The analyzed articles came from a vast variety of journals with 3 Anglo-Saxon journals leading in the number of relevant articles: *Academic Medicine* with 33 (9.4% of total articles), *BMC Medical Education* with 22 (6.3%), and *Medical Teacher* with 30 (8.6%). The majority of articles were research articles (32%) and studies about learning objectives (30%) (Supplements 1D).

The dominant language of publication was English (88%) with Anglo-Saxon journals leading in output.

Eight percent of the articles were published in languages other than English. Three percent of non-English articles had English abstracts that were included in the analysis (Supplement 1C). Non-English articles without English abstracts were excluded.

Notably, there was a steady increase in articles on the topic of IoME published over the last 20 years with a spike in the past 5 years. We identified 43 related articles (12.3% of total articles) in the period from 2000 to 2005, and 135

Table 2 Articles were coded according to elements of formats and perceived motivations that were identified in research of international higher education. Additionally, student enrichment was a theme for formats that was found and is currently not a format in IHE

Coded theme formats	Coded theme motivations
<ul style="list-style-type: none"> ● ► Institutional partnerships ● ► Student mobility <ul style="list-style-type: none"> ○ ► Inbound ○ ► Outbound ● ► International curriculum <ul style="list-style-type: none"> ○ ► Internationalization at home ● ► Student enrichment ● ► Global curricula 	<ul style="list-style-type: none"> ● ► Market model <ul style="list-style-type: none"> ○ Student competition ○ Institutional competition ○ International competition ● ► Liberal model ● ► Social transformation model

Table 3 Perceived motivations for IoME. Some articles were classified into multiple categories. The liberal model was generously applied to all reports that seemingly could have an impact on international understanding

Perceived motivations	Subcategories	Number of articles (% of total)
Market model	Students	36 (10%)
	Institutions	51 (15%)
	Countries	25 (0.7%)
Liberal model		197 (56%)
Social transformation model		174 (50%)
Student enrichment		78 (22%)

articles (38.6% of total articles) in the period from 2016 to 2020 (see Supplement 1B). While the selection and inclusion of articles is subjective, a trend of increased publishing over time was observed (Supplement 1B).

Educational Formats in IoME

Major formats consistent with those found in IHE and internationalization categories established by the ACE included institutional partnerships, student mobility, and international curriculum/activities at home (IaH; Supplement 2) [1, 16, 20, 23]. Our findings with respect to the major formats identified in medical education are reported below.

Institutional and Other International Partnerships

More than one-third of articles (132; 37.7%) reported international partnerships. Ninety-one of these articles (26.0%) described educational international partnerships that were formed between institutions in the HIC of the Global North and the LMIC of the Global South. Only 22 articles (6.3%), primarily published in journals from the Global North, described institutional partnerships between two countries of the Global South.

A third of articles (115; 32.9%) described consortia/partnerships of GH partners [30], either North–South or South–South, but there were only 19 (5.4%) articles addressing North–North partnerships [31]. Generally, articles did not discuss any perspectives on partnerships through the lens of higher education institutions in the LMIC/Global South.

Student Mobility and Exchanges

Student mobility programs included inbound and outbound exchanges, further categorized by length of program (i.e., short-term exchanges vs. long-term degree programs). Few articles (55 articles; 15.7%) addressed bilateral exchanges or inbound international student exchanges [32–35]. There were 21 (6.0%) articles on bilateral exchanges, 16 of which occurred between LMIC and HIC countries. Thirty-four articles addressed student inbound mobility (9.7%), 26 of which were written by authors from the HIC. Similarly, the number of articles addressing full degree programs, including offshore degree programs, were limited [36].

Ninety-four articles (26.9%) addressed outbound mobility and described students' clinical electives abroad, mostly written by authors of the Global North. The target countries for most of these electives were in the LMIC, a finding observed across articles focusing on case studies and describing student experiences in a specific country. Often these mobility programs were short in duration and the learning objectives were not outlined. Seventy-seven articles (22% of total) discussed clinical exchanges, whereas little was reported on mobility during the pre-clinical years (4 articles; 1.1%).

IoME and Curriculum “at Home”

Internationalization efforts “at home” (IaH) were identified in about one-third of the articles (104; 29.7%). Efforts included courses for credit, mostly GH courses, 46 (13.1%), but innovative ideas have also been reported [37, 38]. Extracurricular activities were discussed in roughly 6% of these reports. We identified 53 articles (15.1%) that addressed GH courses in medical school and 49 (14.0%) that covered issues related to GH curricula. The number of articles that addressed GH indicated an imbalance in publication of articles as the majority of them originated from authors in the HIC. Virtually, no attention in the literature had been given to IaH in LMIC. The authors suspect that IaH was either not generally practiced in the LMIC or not published.

Global Standards in Medical Education

A discussion on global standards in medical curricula was found in 37 articles (10.6%). While this format is typically excluded from internationalization research in IHE, the high number of articles with a focus on global standards in our literature review warranted their inclusion. We believe that this area of investigation can impact IoME at large. Often, medical curricula are developed in reference to global standards promulgated by the West. Thus, many medical programs globally may be designed without considerations of the needs and interests of the LMIC of the Global South.

Motivations and Purposes for IoME

Motivations for IoME may be traced to Hanson's three models of IoME [23] (Table 3). The positioning of students and institutions in the competitive landscape of the global higher education market is a key theme in some articles (market model). In other articles, discussions on internationalization centered on the themes of either promoting international understanding (liberal model) or achieving goals relating to humanitarian aid/social justice (social transformation model). Many articles were classified into multiple categories. The liberal model was generously applied; especially, to those articles whose discussions had implications for increasing international understanding. However, we did not find a single article that primarily focused on international understanding as a main purpose for IoME. We also identified articles connecting internationalization activities to student demand related to curricular enrichment.

Of note, with respect to the 174 (49.7%) articles with a theme of social transformation, 169 originated from the HIC. On the other hand, most of the articles written by LMIC scholars discussed internationalization as a way

to increase competitiveness (market model). The liberal model was not separately reported in the articles.

Discussion

Definition and Understanding of IoME Versus GH

Our research confirmed that IoME lacks a universally agreed upon understanding and definition in the literature on internationalization efforts in medical education. This was in large part evidenced by the interchangeable use of such terms as internationalization, international education, and GH in our search queries.

Particularly, we recognized that GH education, defined as improving the “health of all people” worldwide [8], is no longer applicable to describe IoME and represent internationalization activities found in medical education today. GH is moving away from exclusively describing educational activities in the medical profession [10, 39] to more broadly incorporate concepts, activities, and practices that are inclusive of the fields of Public Health and other health professions [5, 10, 39–42].

We suggest that IoME is a term better suited to describe formats of internationalization efforts in medical education — in both the HIC and LMIC. It is important that the term IoME is agreed upon and universally applied to identify international formats found globally, and is not used interchangeably with the term GH education or other terms similar to GH. While there is some overlap, internationalization activities must be distinguished from those relating to GH, so that these activities can easily be identified for research and the exchange of knowledge.

Formats

Recommendations for comprehensive internationalization in IHE include a diversity of formats, concepts, and approaches [1, 20, 21]. IoME can be integrated at the institutional, faculty, curriculum, and student levels [43]. This study focused its analysis on three major formats that are commonly applied in IHE: international partnerships, student mobility, and internationalization at home.

International Partnerships

International global collaboration as a format for IoME has a long history and remains a foundation for work in IHE [20, 44] and in GH [45]. However, one-sided partnerships as evidenced by this study mostly benefitted students from the HIC

of the Global North [4]. While international electives were often designed with the aim of promoting equity in education, questions surrounded the competency of students in their ability to effect positive change abroad.

Bilateral international partnerships were one-sided and favored Global North institutions with educational benefits disproportionately flowing in one direction [46–48].

Student Mobility — Short-Term and Long-Term

Student mobility, a main pillar of IHE [31], can expand students’ understanding of the world and introduce them to experiences that they otherwise cannot get without traveling abroad [31]. In IoME, exchange trips appeared to be very short [49–51]. While clinical exchanges were in line with the goals of social justice and humanitarian work, the narrow focus on clinical short-term trips as a mainstay for IoME limited what internationalization efforts offered. The above raised the question if such short and one-sided trips were an appropriate investment of resources. With the advancement of technology, together with the concerns regarding the general accessibility of IoME, climate change, and ethical aspects, medical faculty and leadership ought to consider novel approaches to IoME. These approaches can result in immersive international cultural and academic experiences abroad via non-clinical and/or virtual exchanges [31, 33, 52, 53]. Finally, while the number of extracurricular mobility activities appeared to be low, we speculated that there was a higher number of unreported programs because they were organized and run by either students or private and/or for-profit organizations outside of academia.

A limited number of articles addressed long-term mobility or international students obtaining a medical degree in another country (degree mobility) [54–56]. An area of controversy remains, regarding whether student mobility to the Global North for medical training will support the needs of the Global South. Indeed, brain drain, when graduates studying abroad do not return to their home countries, affects all professions [57] and can lead to an imbalance of the global workforce, with HIC hoarding talent.

Internationalization “at Home”

A new concept in IHE described international activities at home rather than those relating to student mobility [13, 17, 58]. In IoME, options for no-travel activities have been suggested but are currently not the mainstay [22, 31, 33, 52]. Our study indicated that unlike IHE, IoME currently did not provide universal access for *all* medical students. Formats of both student mobility abroad and at home (on campus) [13, 22] have been identified to provide access to opportunities that cultivate global mindsets. However,

there appeared to be an absence of educational standards that promoted international experiences for *all* medical students. It was nevertheless reassuring to observe that a third of the articles included elements of IaH. However, the majority focused on GH education, and few reported on how IaH can be realized in the Global South.

The authors of this study confirmed that IoME appeared to be limited to medical students at prestigious institutions in the HIC — making medical education a socially inequitable endeavor that excluded many subgroups of students and institutions [38]. At a time of a global pandemic, those experiences need to be expanded to more, if not all students. The exclusion of LMIC of the Global South in international activities can be addressed by increasing IaH opportunities and offerings for students living in LMIC. Also, the above can be applied to students from low socioeconomic backgrounds in the HIC. IaH is a way to implement such goals that is cost efficient and socially just [22]. We argue that IaH is a more equitable, socially just, sustainable, predictable, safer, and climate-neutral approach to bring skills to students that otherwise would be learned via international mobility programs [22].

Furthermore, while it was reassuring that a significant number of IaH programs were for credit, it is worthwhile to mention that the incorporation of international elements into many medical programs was not widespread. Generally, faculty might be hesitant to add elements of IaH to what they perceived to be an already overloaded curriculum. Further discussions among medical educators about learning objectives and priorities in IoME are deemed necessary.

Motivations for IoME

Under the *market model*, schools and their students competed for upward mobility in rankings and jobs, respectively. IoME practiced through the lens of this model was consistent with processes and formats that afforded countries, institutions, and students a competitive edge; for institutions, in terms of having cutting-edge clinical and scientific research, and for students, in terms of workforce employability. This phenomenon was evidenced by many training programs in LMIC designed to prepare students for English fluency and international careers.

Although language and workforce employability were important motivations for IoME in the LMIC, this study suggests that motivations for the Global South are underreported and not well understood in the literature [32, 59]. Furthermore, motivations rooted in the market model, and related to increasing English fluency and enhancing

workforce employability in large part through medical curricula heavily influenced by the West [60], diverted attention from priorities that may be more important. The focus of the market model [60] limited what IoME can provide to both the Global South and North (i.e., diversification, and being inclusive of practices from around the world).

The current approach ignored the need for, and purpose of IoME for medical students in the Global South. In addition, the market model of competition may not be a sustainable model in healthcare. Some countries and institutions lost interest in IoME once they reached a certain level of success and/or lost support from partners when regarded as a significant competitor to another countries' own interests (e.g., the USA and China in 2022).

This study identified *enrichment* of students' education as a motivation that was not specifically mentioned in the literature. Student mobility and GH activities were often driven by students' desires to meaningfully participate as global citizens [61]. Additionally, the perception that international activities were seen as a notable accomplishment and increased competitiveness (i.e., corresponding to the market model) when applying for residency and training positions was a reported phenomenon [62].

In contrast, we found that the goal of promoting international understanding and peace, the thrust of the liberal model, was not common in internationalization efforts in medical education compared to IHE [63]. Increased international understanding may be regarded as a byproduct of efforts to increase competitiveness rather than a key priority. Particularly, in the context of recent "COVID vaccine nationalism" [64], the little value placed on the promotion of international understanding deserves more attention. Cultural bridges formed globally can counteract nationalism that can be exclusionary, support peace, and improve healthcare globally. However, there was no evidence in the literature to date that reifying the principles of the liberal model was a priority in medical education. IoME may benefit from drawing lessons from IHE where student exchanges facilitated through, for example, Fulbright, Rhodes, and Erasmus scholarships seemingly have a role in deepening international understanding [65, 66].

The *social transformation model* emphasized cross-cultural understanding "in a spirit of mutuality and reciprocity, through networks or partnerships" for social justice [23, 67]. It appeared that this model described most IoME activities in the countries of the Global North. Curricular and institutional formats and processes were consistent with promoting awareness of social justice and preparing students for humanitarian work. Raising awareness of social justice in medicine is important and can be transformative for the future of medicine globally [67].

Alignment of Formats and Motivations

Formats for IoME, such as student mobility and international partnerships, were generally one-sided and in the direction from the Global North to the Global South. Educational partnerships, barring some cases, mostly benefitted institutions of the Global North. The social transformation model emphasizing humanitarian aspects of IoME and dominant in the countries of the Global North seemingly did not fully realize the vision of social transformation of IoME in practice. Global North-Global North exchanges for collaborative efforts can be included in IoME efforts to provide students with a broader view of healthcare in different countries, but reports addressing these exchanges are limited [31].

The format of student mobility programs is inherently unjust in another way. The burden is on the low resource countries of the Global South. In fact, concerns of neocolonialism and “voluntourism” remain an ethical dilemma for health profession educators [48, 68–71]. Several articles voiced the concern of carefully considering the social transformation goals conceived by curricula that are facilitated through the lens of Western ideologies. Such a concern is raised in some articles that discussed the negative implications of student mobility from high-income countries to low- and middle-income countries [46–48]. Practice facilitated in this way highlighted the mismatch between goals and the reality of the needs/interests of LMIC. While scores of medical students based in HIC traveled to LMIC with the aim of practicing medicine from a social justice orientation, this often created conflicts related to ethics and social inequity, and often raised concerns related to neocolonialism [48]. Therefore, student mobility as the main format of IoME is not well aligned with its motivations, which are rooted in the principles of social justice. Our observation underlines the importance of further research on learning objectives that are not specified for these service trips [70].

Another issue is the fact that student mobility programs are generally accessible to privileged students at select institutions. This is a minority of students, and the opportunity to travel internationally is limited for students of low socioeconomic status, students with disabilities, or students with family obligations [38]. Furthermore, some medical schools in the Global North, particularly in Anglo-Saxon countries, charged significant tuition rates for international students including those from the LMIC. This restricted access for many foreign students, and certainly underscored the disconnect between costly international degree programs that catered to privileged student groups and the overall goals of equity and social justice [58]. Examples of more socially equitable approaches might be aimed at sponsoring international students, supporting and improving local conditions for them to return home after graduation to prevent brain drain, and/or local joint programming. More innovative

approaches, including using technology and collaborations, can better support all students worldwide and better align motivations and mutually benefiting goals [58].

Lack of Voices from the LMIC in the Global South

Although IoME is a global phenomenon, understandings and perspectives of the Global North dominated the medical education literature, and therefore addressed a narrow spectrum of IoME activities transpiring globally. For example, discussions on mobility from the Global South to the Global North were generally missing from the literature, not to mention other formats of IoME that may exist in the Global South. There was significant attention paid to describing student mobility (e.g., short-term international electives) from HIC to LMIC. Furthermore, elements of Western education, content, and standards were pervasive in the development of medical curricula globally. [72]. This phenomenon generally mirrored the literature emphasizing and promoting Western understandings of, and practices related to IaH [73] and IoME [4]. LMIC were typically on the receiving end of medical students/faculty, perhaps a result of HIC institutions asserting their needs in partnerships that may fail to fully consider the needs and motivations of their LMIC counterparts. While certainly the one-sided mobility benefited medical communities and schools in the Global South in some ways, several articles brought to light the negative outcomes of North to South mobility. Many students were ill-prepared to navigate the complexities of cultural differences and local protocols and practices, a phenomenon that led to miscommunication and in some cases ineffective practice. Furthermore, the one-sided mobility meant that there were limited opportunities for LMIC medical students to travel to Western medical schools and experience and learn about new cultures. Giving more attention in the literature to the needs of medical communities based in LMIC may inform practice that is more equitable and inclusive [74].

Lack of Non-English Language Articles

Publications in English dominated the existing literature on IoME. The prevalence of English articles was ascribed in part to the high impact factor associated with the journals of the Global North, which required English as the medium of writing. Scholars and professionals sought to publish in these journals over those having lesser reputations. Generally, many medical journals worldwide, including those in non-English speaking countries, either required English fluency or encouraged articles reflecting submission standards and requirements of the Global North. The unfortunate situation is that these requirements and standards discouraged publications in other languages, such as Arabic, Chinese, Russian, and Greek. These articles existed but remained

generally obscure to the medical community at large, and thus limited access to important aspects of IoME discussed in these articles [75]. Support (e.g., editorial and translation services) is needed for non-English-speaking countries, to prioritize inclusivity and diversity of IoME research and practice [24, 56, 76, 77].

Lack of Reports About the Private Sector

Surprisingly, little was written about offshore education, private for-profit providers, or international medical school programs for students who either did not qualify for, or for other reasons choose not to attend domestic medical schools and courses. We found no articles on the presence or expansion of medical electives and other types of offerings by what may be a growing private sector aimed at providing students a medical education in a foreign country. Students, particularly in Europe and the LMIC, are increasingly targeted by private organizations that offer international electives involving study abroad in the USA and the LMIC [78]. These well-organized, but often costly for-profit organizations are not subject to ethical oversight or quality control by medical universities, leading in many cases to unsustainable, socially unjust, and ethically questionable scenarios of malpractice. Further investigation is needed to justify the operations of for-profit organizations in medical education, and to discuss how medical educators can participate in the oversight of these enterprises.

Conclusion

In summary, our research indicated that the term IoME is understood and operationalized in diverse ways and that published research mostly addressed formats and motivations from the perspective of the Global North. The dominance of the Global North in language and interpretation of IoME was not inclusive of what IoME might mean to the Global South. Research and results on alignment of motivations and formats in IoME is needed to support the next generation of globally minded physicians and to improve the health of all people.

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Declarations

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