Original Research Paper

Education of U.S. primary care physicians at the Latin American medical school in Cuba

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Abstract

Background: Growing global health disparities have led to an international call for reform in physician education to meet the need for more responsive providers, emphasizing social accountability, with its four main criteria being *relevance, quality, cost-effectiveness, and equity.* In contrast to traditional models, Cuba's Latin American Medical School (*la Escuela Latinoamericana de Medicina, ELAM*) promotes primary healthcare for disadvantaged populations by providing free medical education to foreign students from low-income communities, including United States (U.S.) citizens. This study examines the processes and standards by which the Latin American Medical School provides socially accountable education, with an emphasis on current and former students from the U.S. The objective of this study is to assess the efforts of ELAM to educate medical students in socially accountable and ethical ways. **Methods:** Guided by the four abovementioned criteria of social accountability, we thematically analyzed survey comments from 56 past U.S. graduates of the ELAM and interviews with four current U.S. students and eight instructors. **Results:** *Relevance* of the ELAM´s training was reflected in the integration of public health practices (e.g., community assessments) and medical care relevant to local and international health concerns. *Quality* is manifested in the school's promotion of evidence-based care through tailored academic content for the U.S. students, expanded educational facilities throughout Cuba, and extensive clinical experiences. ELAM exhibits *cost-effectiveness* via free education and other financial assistance. Promoting *equity* in healthcare is evident in students' desire to care for underserved populations with whom they identify. Graduates, current students, and instructors demonstrate that educating physicians from marginalized communities helps to answer the call for social accountability; this was supported by the educational processes and achieved outcomes. **Discussion:** These findings indicate that the Latin American Medical School's mission and core activities meet the WHO's criteria for social accountability and advance current understanding of such programs.

Key Words: Cuba, U.S., medical education, social accountability

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Background

There is a shortage of primary care physicians in the United States (U.S.),[1] with a projected shortfall of 37,800 to 124,000 physicians by 2034.[2] Escalating medical school costs and student loan debt often lead graduates to choose residencies associated with higher paying specialties instead of primary care.[3] There is a culture of medical education that encourages students to choose medicine specialties instead of primary care.[1]

The Latin American Medical School (*la Escuela Latinoamericana de Medicina,* or ELAM) in Cuba addresses these concerns by providing free medical education to foreign students and promoting primary healthcare as a socially accountable and equitable way to meet patients' health needs regardless of their ability to pay.[4] La Escuela Latinoamericana de Medicina is the largest medical school in the world. Since 1999, ELAM has trained more than 30,000 physicians from 103 countries, including the U.S.[5] ELAM´s education model

promotes community-oriented primary care, prevention, and the belief that health care is a fundamental human right.[6] A recent survey study revealed that 90% of U.S. graduates of ELAM who reported current employment in clinical practice, were physicians in primary care specialties.[7]

ELAM's education lasts six or seven years, depending on whether the student elects to take an extra pre-medical year for basic sciences and Spanish language acquisition. Students study medical science for the next two years at the ELAM campus and then spend the next four years at Salvador Allende hospital. Graduates of ELAM then return to the U.S. for residencies.

The WHO has identified four previously mentioned principles that medical schools should address to meet social accountability: *relevance, quality, cost-effectiveness,* and *equity*.[8] *Relevance* is the degree to which the medical school's mission and core activities are in synchrony with the communities served. Aspects of relevance are universal, including access to care, primary health services, and public health functions.[9] *Quality* invokes a reliance on evidence-based data to deliver comprehensive health care to individuals and populations, considering their social, cultural, and consumer expectations. The definition of quality morphs across time, responding to various aspects of the sociocultural context, including the availability of resources.[9] *Cost-effectiveness* refers to the best use of resources having the greatest impact on the health of a society. Health promotion and disease prevention measures must be used as cost-effective alternatives to curative measures whenever possible.[9] *Equity* is central to a socially accountable healthcare system and requires making high-quality healthcare available to all people in all countries. Every person should have access to primary health care and to all required specialty services of a comprehensive health system.[9] A medical school can be evaluated against these principles across education, research, and service.[8] ELAM exemplifies each of these principles by providing access to quality healthcare to the Cuban population by providing free medical education to students from around the world, and by providing all this in the most cost-effective ways possible.

Little is understood about ELAM's methods in preparing students to become physicians in the U.S. health system, but it is important to understand the elements of this model to inform medical education in the U.S. and the world. The objective of this study is to assess ELAM's efforts to educate medical students in socially accountable and ethical ways. Specifically, we apply the World Health Organization (WHO) criteria for social accountability —relevance, quality, cost-effectiveness, and equity— to determine if and how ELAM prepares its students to work as primary care physicians, to then return to the U.S. to promote health equity.

Understanding non-US medical education is timely and relevant. Increasing disparities in global health have led international groups to call for reforms in medical education to meet the need for more responsive providers.[10] Many Western medical education models do not uniformly address the social roots of inequalities that contribute to widening disparities.[11] In 1978, the International Alma Ata Declaration (AAD) pointed to community-oriented primary care (COPC) as a way to mitigate disparities and promote healthcare rights.[12] This mandate emphasized social accountability in medical schools.[10] Social accountability fosters equity through ethical principles and practices that primary healthcare provides. Social inequity may be the most important determinant of ill health worldwide. As such, health professionals are responsible for addressing social inequity and its negative effects on individual and population health.[13] Therefore, this study aims to determine whether ELAM provides education to U.S. students that promotes and instils social accountability in primary medicine, using the WHO criteria of relevance, quality, cost-effectiveness, and equity.

Methods

Theoretical Framework and Design

The theoretical framework of social accountability guided this study. The social accountability framework has been used in differing medical education contexts, but the main commonalities include responding to local health needs, identifying public health needs, caring for various communities, addressing physician shortages, increasing diversity in the admissions process, producing competent physicians, and crafting a curriculum that reflects priority health needs.[14]

This research used a descriptive case study design. A case study is conceptualized as a number of data sources studied intensively, using multiple methods of data collection and in-depth analysis.[15] Case studies are helpful to examine and gain insight into complex and multi-dimensional phenomena in

which context is important and changing. To better understand ELAM's potential contributions to health equity through socially accountable training strategies, it is optimal to consider all relevant perspectives. First, the viewpoints and experiences of matriculated U.S. students of ELAM provide insight into the current curriculum and procedures. Second, the opinions of U.S. graduates of ELAM allow us to discern whether they acquired the necessary skills and ethical mindset to become primary care physicians who embrace social accountability in their practices. Finally, the perspectives of ELAM instructors can provide insights into the process of physician development and also the ethical commitment to have social accountability guide ELAM's structure and content. Together, these data inform our understanding of ELAM's promotion of social accountability across education, research, and service.

Sample

The study sample included 56 graduates, four current students, and eight faculty members, for a total of 68 participants. Inclusion criteria were: ELAM graduate, current student, or ELAM faculty member. Exclusion criteria included: lack of Cuban government permission or participant agreement. Institutional Review Board (IRB) approval from the University of Tennessee, Knoxville, was obtained prior to data collection (UTK IRB-18-04400-XP).

Instruments

The three sources of data included in this case study were qualitative portions of the survey responses of ELAM graduates;[7] interviews with current students of ELAM; and interviews with ELAM faculty. The 18 open-ended survey questions supplemented closed-ended survey questions and reflected graduates' ELAM-related experiences and perceptions. The first author and a senior researcher developed the survey with input from a focus group.

The first author and a senior researcher developed the interview guides, composed of open-ended questions to encourage participants' reflection during interviews with current students and faculty. The student interview guide included 14 open-ended questions and the faculty interview guide had 11 open-ended questions. The questions were designed to expand upon the survey data. Emphases were on residency, supports, and challenges of becoming physicians in the U.S. All interviews were conducted by a team member (DAK), and interviews with Spanish-speaking faculty (n = 8) were facilitated through an interpreter provided by the School of Public Health (La Escuela de Salud Publica) in Cuba. Prior to the interviews, all participants provided written consent in English or Spanish, as appropriate.

Data Collection

The qualitative survey responses were collected between February and May 2018. The respondents were 56 U.S. ELAM graduates who had returned to the U.S. to complete residencies and establish practices. Interviews with four current U.S. ELAM students, who were in their fourth year of study and doing supervised clinical rotations at Salvador Allende Hospital in Havana, were conducted in March 2019. Interviews with six professors of ELAM were conducted at the ELAM campus in October 2018. The six ELAM professors taught the U.S. students in the first two or three years of study at the ELAM campus, including basic sciences and medical science courses. In addition, independent interviews were conducted with two supervising physicians who oversee the U.S. student's clinical experience at Salvador Allende Hospital. Both interviews occurred in March 2019. Completion times averaged 30 minutes for ELAM graduates, and 45 minutes each for current students and faculty.

Data Analysis

All interviews with faculty and current students were recorded as digital audio files and transcribed verbatim, including idiosyncrasies of speech, false starts, and filler words (um, uh, like). The names of the participants mentioned were redacted in the transcripts. The participants received no incentives for their contributions. The open-ended survey data were entered into NVivo, along with the responses from current students and faculty interviews. These three data sources contributed to assessing the social accountability criteria of relevance, quality, cost-effectiveness, and equity. [8]

Two authors (DAK, LLM) used NVivo to conduct thematic analysis to identify and organize patterns and common themes across the three data sources, guided by the four WHO principles of social accountability. Each author independently coded for the four primary themes. The interrater reliability by data source ranged from 42% to 82% with a mean of 62%. Given the nuances of the principles and the failure to exceed interrater reliability of 82%, independent coding by both researchers continued across all data sources. Following the code comparison between the two coders, they then discussed all coding discrepancies until 100%

agreement for the four primary themes was achieved.

The two coders independently coded the four primary theme datasets to identify and code for subthemes. The subthemes between the two coders were then compared to determine the final subthemes. Applying the agreed upon subthemes, the coders then independently reanalyzed the data. This intensive process was justified given the limited data and the nuances within each of the social accountability criteria. The two reviewers discussed all inconsistencies in coding until 100% agreement was reached for each subtheme.

Relevance

The relevance theme emphasized the prioritization of communities, major health issues, and community factors to provide medical care that was responsive to the needs of the patients and their communities. This integration of public health (e.g., assessment and prioritization) and medical practices (e.g., holistic examination and patient contribution) was attractive to both enrolled students and graduates. Across the three data sources, 17 quotes addressed prioritization procedures and training designed to enhance the relevance of practice, both at the patient and community level. Students provided all quotes except for one faculty quote.

Table 1: Select Quotations

Criteria	Representative Quotes
Relevance	"It's sort of like is your community doctor who knows everything about your community." Another shared, "It's sort of like all of these interconnected factors that it's just impossible for me to look at and be a doctor for these identities. It's more like I need to be able to expand my view."
Quality	"the critique that lets you know this how you could have been doing better . . . or what questions you could have asked that would have made the diagnosis even simpler to get to . . . it's really positive . . . it's very good feedback . . . worked for me and that I'm very satisfied with." "if there is any skill or knowledge, I wish I had been better prepared for at ELAM it wouldn't be from any lack of curriculum . . . all immediate and primary care skills are very emphasized."
Cost effectiveness	"A big barrier for me, for my family, was definitely cost. And I think it's one of the most positive parts about Cuba or studying here. Because it gives students a possibility to come to school and not be in debt for the rest of their life". "the full-scholarship that will allow me to (serve the underserved in primary care) without the pressures of crippling debt that pushes many U.S. graduates into higher-paying specialties and demographics."
Equity	"There's a lot of discrimination against people like me. And I think it's … because Cuba, of its unique point, where it is; it allows us, our people – people who are Latino, people who are black, people who are queer – it gives us what's good – priority – that's it. It gives priority to students that come from these backgrounds to be able to empower them to practice medicine in their communities that are usually the most underserved when it comes to health care."

Results

Overview

Participants included 56 graduates of ELAM, four current students, and eight current faculty members of ELAM, for a total of 68 participants. The graduates attended ELAM between 2005 and 2018, the current students were in their fourth year of study, and the faculty members were employed at ELAM. There were 50 (74%) females, and 18 males. Twenty-two (32%) self-identified as Hispanic. The ages of the graduates and students ranged from 18 to 30. The themes explored included the four criteria of social accountability: relevance, quality, cost-effectiveness, and equity, with representative quotes listed in Table 1.

Two subthemes emerged: *community assessment* and *individual assessment*. Community assessment emphasizes the importance of analyzing community strengths and challenges in relation to individual or community health promotion. Community assessment, specifically the community survey that students conducted under supervision, was raised in 14 quotes across five participants. The community survey was described as an extensive project of interviewing each family in the community, with an emphasis on health history. Survey topics discussed included water sources, electricity, agriculture, occupation, geographic location, and religion. Individual assessment emphasizes the importance of patient contributions and the physical exam in

identifying the presenting health challenges. Some students focused on the importance of the patients' contributions to their care through thoughtful dialogue that emphasized doctor–patient partnerships—not power differentials. These approaches and the knowledge gained were associated with becoming skilled physicians.

Quality

The quality theme focused on using evidence or data to provide comprehensive healthcare to individuals and communities, taking into consideration sociocultural context and patient expectations. In total, 150 quotes were associated with quality, and these were subsequently coded across five subthemes: *academic education, clinical education, patient care practices, cross-national comparisons,* and *support*. Collectively, professors provided 25 quotes, students shared 33 quotes, and 91 quotes were attributed to ELAM graduates.

Academic education primarily included classroom learning and was designed to train students in evidence-based medicine. This subtheme included 16 quotes from professors, eight from students, and 26 from graduates. The students mentioned specific coursework but also emphasized the methods used in the classrooms that were unfamiliar to them, mentioning 'directed questions' that were answered orally instead of written exams.

The clinical education subtheme refers to promoting evidence-based practice via educational activities in the hospital or community setting, where students learn clinical practices. Clinical education characteristics include location, timing, experience, student supervision, and training to effectively serve marginalized communities. The clinical education subtheme included 40 quotes, including five from professors, six from students, and 29 from graduates.

Patient care practices focused on whether ELAM's education promoted student appreciation of the nuances of direct service provision to communities of varying cultural backgrounds. Four current students contributed seven quotes to this subtheme. One student spoke of their discovery that privacy is different in Cuba, where a kiss on the cheek is informally expected, rather than something more formal in the U.S. However, they explained how this difference resulted in learning to adapt to the needs of different patients, regardless of where they come from.

The cross-national comparison subtheme refers to differences and similarities between Cuba and the U.S. in the professionalization process, and resources that either increase or decrease the likelihood of becoming providers of evidence-based medicine. A total of 39 quotes are included in this subtheme, including five from professors, eleven from current students, and 23 from graduates. Students made the point that the ELAM curriculum was just as rigorous as U.S. programs, with the same subjects—although the pace at ELAM is much slower and spaced over several more years, a significant difference that may enhance learning. A key difference between curricula was that, at ELAM, the students must stand while being evaluated orally, which some students found "nerve-wracking," but which prepared them for answering patient questions at the bedside. Graduates also mentioned the quality of the education, which they described as "Cuban-style," with strong emphases on prevention and diagnostic skills, rather than relying on technology.

Finally, the support subtheme refers to the physical, emotional, and academic support within ELAM, or from the greater Cuban community, which affects the students´ ability to achieve optimal professional development, such as nutrition, supportive relationships, and internet access. Graduates were more likely to suggest areas for improvement. Nutritious food was cited five times, noting limited access to, and/or availability of, satisfying and nutritious food. Graduates also noted poor internet access eight times.

Cost-Effectiveness

The cost-effectiveness theme highlighted the best use of resources to have the greatest impact on student education and community health. One professor, 15 graduates, and four current students contributed 27 quotes that addressed how ELAM provides financial support for its students and how other needs were met or not met. Two subthemes, internal considerations and external considerations, emerged from the cost-effectiveness data.

Internal considerations refer to the financial support that students received during their time at ELAM. This subtheme included 17 quotes reflecting the importance of free tuition and other financial support. All four current student interviewees spoke of economic considerations and that ELAM's free tuition was key in their decision to enroll. One current student said, "A big barrier for me, my family, was cost. And I think it's one of the most

positive parts about Cuba or studying here. Because it gives students a possibility to come to school and not be in debt for the rest of their lives". A graduate confirmed, citing the full scholarship that ELAM provides. It means students graduate with little debt, allowing them to choose primary care instead of higher-paying specialties if they so wish.

External considerations included cost-effectiveness factors associated with the expenses students must manage independently during their ELAM years. Expenses included preparation costs and fees associated with the United States Medical Licensing Exam (USMLE) tests, living expenses, and other external financial stressors. Eight quotes comprised external considerations, including four related to USMLE testing, two about student budgeting, and two about external financial stressors. External stressors are also important factors outside of ELAM's control that influence the quality and quantity of student resources while enrolled. As one graduate relayed, the country's situation in general was stressful because of frequent power outages, lack of basic needed materials, and a disrupted supply of water.

Equity

The equity theme refers to efforts to provide high-quality health care to all people, regardless of economic resources, via access to primary care and a comprehensive health system. Four subthemes were identified in the 42 quotes related to equity, including *student diversity*, *educational elements*, *student treatment*, and *communities served*.

Student diversity captures student characteristics that are underrepresented in the medical profession. These characteristics typically align with those of underserved communities. Twenty quotes met this definition, with eight shared by professors and twelve from current and former students. Various underrepresented characteristics of students were discussed by faculty, students, and graduates alike, including poverty, race, chronic disease, sexual orientation, country of origin, homelessness, and being uninsured. An ELAM graduate shared, "I grew up poor, uninsured and later underinsured. My family is still suffering the after-effects of being medically underserved in the past, of being 'medically homeless'."

Educational elements captured pedagogical approaches—both in the classroom and community—to enhance mastery of equity promotion skills, including practicing in underserved communities during ELAM and intended practice after graduation. Seven quotes met this definition. Three quotes were from one professor, and four graduates each provided a quote. Four quotes emphasized the importance of learning and practicing in Spanish. Language was acknowledged as a critical factor in building a cohesive cross-national cohort.

Student treatment refers to the support and accommodations that American students received while enrolled in ELAM, either within the program or in the greater community. Optimally, students' experience related to equity promotion may impact their likelihood of promoting equity in practice. Seven quotes from six unique respondents addressed student treatment, representing three faculty, one student, and two graduates. Faculty consistently touted the equity of treatment across students from all nations. In contrast, some female graduates expressed feeling unsupported by ELAM or the greater community in circumstances of domestic violence and access to family planning services.

Communities served included references to underserved communities that the ELAM students had served or intended to serve. This subtheme also incorporates how patients are or will be treated. Matriculated and graduated students provided 14 quotes, with the majority (n=10) focusing on future intentions. The graduates shared who they had been serving since graduation, and in what capacity. Their patients included Native Americans, women, and individuals who are involved with the justice system, the homeless, those who identify as LGBTQ+ or non-binary, and those experiencing mental health or substance abuse concerns. Current students also intended to practice in underserved communities, identifying a commitment to people of color, Spanish-speaking immigrants, older adults, persons without a primary care physician, and those who are homeless and uninsured. Students intended to provide bilingual care, geographic accessibility, and a sense of solidarity. Of those who shared their intended specialization, the majority selected family or internal medicine (14 graduates and two current students), while one graduate and one current student selected emergency medicine.

Discussion

This exploratory study aimed to determine whether ELAM provides education to U.S. students that promotes social accountability, using the four WHO criteria of relevance, quality, cost-effectiveness, and

equity. Our findings about shared experiences at ELAM, as well as similar backgrounds and practice intentions, suggest that the views of the current students and the U.S. graduates were consistent with each other. They also shared many of the same concerns and the commitment to providing primary health care to disadvantaged people. The comments of both groups indicate that their education at ELAM, especially their clinical experiences, helped them form views regarding the practice of medicine, including the importance of primary care and the populations they wanted to serve. This finding is similar to other studies in which medical school experiences have been found to influence the choice of specialty,[16,17] including a wide-ranging study of medical schools in Australia in which having Rural Clinical School medical experience increased the student interest in general practice.[18] Evidence suggests that the emphasis medical schools place on a particular specialty has an influence on students choosing that specialty in which to practice. However, there is also some contradictory evidence, as the 2018 Medical School Graduation Questionnaire showed over 55% of medical school graduates in the U.S. said that medical school debt had no influence over their specialty choice.[19]

Our case analysis revealed that equity was displayed in the ELAM model of medical education, primarily in the admission of minority population students who receive the opportunity to become physicians who will provide care to disadvantaged populations. Educating a workforce that reflects population demographics is important in promoting health equity.[20] The students spoke freely about their perceptions that ELAM had given priority to them because of their minority status and about their desire to provide care to people who were like themselves, or to whom they could relate. Students indicated that ELAM provided a welcoming environment, one of inclusion, and equity was seen in the ELAM model of medical education in the ways that students were exposed to the needs of many different populations, such as the urban and rural poor, and ethnic and racial minorities. Exposure of students to practices that deliver care to people like those who may be underserved in the U.S. increases sensitivity to these groups and may lead students to choose primary care specialties working with them.

Other findings related to cost-effectiveness are evident in both how ELAM operates in a low-resource environment, and provides a free education to the students. While the benefits to the students are self-evident, this system also helps to supply a workforce to provide care to the Cuban population. Students see patients under the supervision of physicians, but they carry out a myriad of tasks and responsibilities that expand the capacity of the workforce. There is precedent for this approach. For example, Rural Clinical Schools in Australia allow third-year students to take part in year-long programs of core clinical rotations where they see patients and perform procedures in rural settings. This approach has been shown to be successful in recruiting aspiring physicians to rural practice[21] and expanding the physician workforce.

Another example is found in New York University's new program. In 2018, New York University's medical school initiated free tuition to qualified students without regard to ability to pay or minority status. Although initiated in hopes of attracting students to primary care medicine, this program exclusively covers tuition, and it is not yet clear if their students will choose primary care after graduation.[22] Future research might examine a critical question: If U.S. medical schools emphasize the importance of primary care, would that increase the selection of those residencies?

Limitations

There were several limitations of this study to note. First, this study was conducted in a single country and institution, so findings cannot be generalized to other populations. Second, the use of interpreters may have caused some limited understanding of the questions and/or responses. Third, there was a limited selection of current students and faculty who were available for interviews, and constraints were placed regarding preferred methods of conducting interviews. Qualitative data have limitations in that they are often open to interpretation, and there is a potential for interviewer bias and subjectivity. There is also a potential for confirmation bias on the part of the researcher, and social-desirability bias by the subjects. Also, U.S. graduates and current students may be predisposed toward social accountability for unclear reasons or unknown influences.

Conclusion

Each of the four WHO criteria of social accountability was exemplified by ELAM's free medical education for minority and low-income US students in Cuba, its responsiveness to student needs, the student's work in the community while

learning from the experiences, the patients in the community receiving excellent care, and the student's desire to provide care for the disadvantaged. Although medical education at ELAM is free, many students shared their experiences with poverty due to other remaining costs. They also spoke extensively about the opportunity that ELAM presented. The students validated their identification with people for whom they had unique insights. ELAM faculty members also had insight into equity when they acknowledged the hardships many students face regarding their minority status and economic circumstances.

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