Title: 'To Love the Patient': A Qualitative Study of the Role of Mentorship as Part of Medical Education in Rwanda

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ABSTRACT

Background: Medical education in Africa is changing rapidly as 21st century innovations such as e-learning, expansion of simulation laboratories, and other technologies are implemented at universities across the continent. Alongside these efforts, instilling in medical students an understanding of the larger social, economic, cultural, and political dynamics that influence health is essential. In this study, we sought to understand medical students' experience with the novel curriculum at the University of Global Health Equity (UGHE) in Rwanda, with a focus on the role of mentorship.

Methods: We conducted a qualitative, in-depth interview study with 18 medical students who had experienced the liberal arts curriculum of UGHE. Interviews were conducted by three members of the research team until theoretical saturation was reached (n=18). The constant comparative method of qualitative data analysis was employed to characterize recurrent themes.

Results: Three recurrent themes emerged pertaining to Dr. Paul Farmer's impact as a role model for medical students: 1) he encouraged systems thinking in his students, 2) he taught students "to love the patient," and 3) he used practical examples to inspire action. Medical students described the medical education they received as a "mind opener." Participants recounted how Dr. Farmer's mentorship fostered their own confidence in becoming compassionate physicians who would inspire systemic change.

Conclusion: Our findings highlight the role that mentors can play in the development of future physicians and suggest that integrating effective mentorship into the medical school experience can affect medical students' approach to patients and motivation to pursue systems change.

Key Words: Mentors, Education, Medical, Social Determinants of Health, Health Equity (Source: MeSH-NLM).

INTRODUCTION.

The extensive benefits of both formal (deliberate programs with structured curricula) and informal (spontaneous mentor-mentee connections) mentorship in medical schools are well-documented in a variety of high-income settings.[1-3] Formal programs may be led by student advisors or counselors and often include official curricula and planned activities consistent across a mentor-mentee cohort. Informal, spontaneous mentor-mentee connections provide mentees with informal guidance throughout their development and may be more flexible and individualized than official mentorship.[3,4] Consistent with Social Learning Theory,[5] which suggests that people learn from observing others and emphasizes the importance of modeling behavior and reinforcement in learning, empirical literature[2-4] indicates that mentorship in which students may observe, imitate, and have an emotional connection with mentors can be pivotal to students' learning. Effective mentorship has been shown to foster skill development, meaningful participation in research, personal and professional development, and guidance regarding career choices.[1-3]

Despite potential benefits of effective mentorship to future physicians, worldwide, few studies have been conducted about mentorship in medical education in low-income countries especially in sub-Saharan Africa (SSA). One systemic review by Atlas and colleagues[9] advocated for enhanced mentorship in medical schools, but did not include empirical evidence from SSA. Studies that have included SSA[6-8] have largely focused, with one exception[7] on non-physician health professionals (e.g., nurses, social workers) and have not examined mentorship as a part of medical school education. A review by Feyissa and colleagues[6] concluded that embedding mentoring in hospitals, clinics, and laboratories could improve the clinical management of infectious diseases and maternal health concerns by non-physician providers; Manzi and colleagues[7] also evaluated mentorship and coaching as a part of health systems strengthening interventions in five countries of SSA and found improvements in clinical practices of nurses and physicians. Although helpful, this literature has not examined mentoring within the context of medical school education in SSA,[10,11] a gap which this study sought to address.

As the first Chancellor of UGHE, Dr. Farmer taught the early cohorts of the undergraduate medical degree program (MBBS). Dr. Paul Farmer has been one of the world's most well-recognized and respected global health professionals. An advocate and pioneer in global health who championed the most prolific advancements in health equity of the 20th and 21st centuries, Dr. Paul Farmer has been acknowledged as a role model for healthcare workers and global health professionals worldwide.[13] He stood for health equity, and social justice, advocated for preferential treatment for the poor, and prioritized building educational opportunities for young medical professionals to adopt the same principles. UGHE, located in Butaro, Rwanda, was born from these values, which he shared with his colleagues at Partners in Health, one of UGHE's founding institutions.

Along with his colleagues,[12,14] Farmer[15] emphasized the need for medical students to understand the larger social, economic, and political forces that contribute to health and well-being. Following these priorities, the liberal arts portion of the MBBS curriculum emphasized topics such as anthropology, critical thinking and scientific reasoning, African history, political economy, and information technology and communications.[12] Furthermore, the MBBS curriculum remains embedded in a social medicine framework, and courses are delivered with an inquiry-based pedagogy. At UGHE, faculty are enlisted to not only guide MBBS students through the liberal arts and biomedical science curriculum but also to encourage them to ask questions,

explore different perspectives, work closely with peers, and foster mentoring relationships with faculty. This approach is distinct from the hierarchical, biomedical approach that is common in medical schools in Africa.[16]

Accordingly, this study aimed to explore the experiences of medical students at UGHE with the liberal arts curriculum with focus on mentorship. To meet our objective, we conducted in-depth interviews with MBBS students at UGHE. Without prompting, the influence of Dr. Paul Farmer's approach to mentorship of MBBS students emerged as a prominent theme during the study. The aim of this paper was to explore the experience of medical students with such mentorship in the context of their MBBS medical education in the low-resource setting of Rwanda. Findings may be useful to medical educators and health policy makers seeking to strengthen medical education in Africa.

METHODS

Setting

The University of Global Health Equity (UGHE), located in the rural northern province of Rwanda, was founded in 2014 through dedicated collaboration between Partners in Health, the government of Rwanda, and other partners. Born from Dr. Paul Farmer's dream of advancing health equity through education, UGHE is dedicated to building a generation of professionals in global health dedicated to sustaining equitable health systems. While the medical school curriculum does not include an official mentorship program, UGHE's liberal arts approach to medical education emphasizes the importance of collaboration and encourages engagement between faculty and students.

Study Design and Sampling

We conducted a qualitative, in-depth interview study to explore medical students' experiences with the liberal arts phase of their curriculum at UGHE. We randomized all students who were enrolled in the MBBS program at the time of the study (n=215); we sought to attain a sample that included adequate numbers from different academic years, nationalities, and genders as we anticipated these variables may influence students' experience in the MBBS program. In order to ensure breadth relative to these potentially influential characteristics, students who were in the same academic year, gender and nationality as multiple participants who had already been chosen and included in the study were excluded. We also excluded the four students with whom we pretested the discussion guide before beginning data collection. Sample size was determined by theoretical saturation, i.e., when no new concepts emerged from successive interviews.[17] In order to assess theoretical saturation, the research team discussed the emergence of new ideas after reviewing and coding each new transcript. After coding the 18th interview, we agreed that we had not found or coded a new concept in the last few interviews and hence determined that we had reached theoretical saturation. This sample size is consistent with writing by Dworkin[18] addressing appropriate sample sizes for in-depth interview studies.

Data Collection

In-depth, semi-structured interviews were conducted in-person (22%) and online (78%) by three members of the research team (COS, EAL, CUG) between July and September, 2024. Because the modality of data collection (in-person versus online interviews) may have influenced students' responses, we examined the breadth and depth of content between the two types of interviews. No systematic patterns based on modality were detected. Open-ended, grand tour questions and related probes were used to explore students' experiences.[19] Core domains of the interview guide included students' experiences with liberal arts curriculum, campus culture, and relationships with peers, faculty, and mentors. An example of a grand tour question utilized is: Tell me, in your own words, what did you gain from the liberal arts (or prep) phase of the MBBS? We also included probes to delve more deeply into ideas raised by participants related to content of classes, teaching style, connections between instructors and students, and campus culture. Interviews lasted an average of about 30 minutes, and were audio recorded after obtaining written informed consent from participants. The software Rev was used to transcribe interviews, and all transcriptions were checked for accuracy against the corresponding recording. We acknowledge the potential for Hawthorne bias, i.e.,

participants changing their behavior or responses on account of being observed during data collection.[20] To mitigate the potential for this bias, we assured participants anonymity and confidentiality and also worked to establish a comfortable rapport with participants by beginning with general, factual questions such as “How did you first hear about the MBBS at UGHE”, and “How did you decide to apply?” Furthermore, we assured participants that the purpose of the study was to learn from their experiences in an attempt to make them feel at ease during interviews.[21]

Data Analysis

We used the constant comparative method of qualitative data analysis in our study.[17,22] The diverse team of researchers (COS, EAL, CUG, EHB) independently read early transcripts, became familiar with the data, and developed the code sheet, inductively. We identified concepts that aligned with chunks of data and assigned them codes. Similarly coded data were constantly compared throughout the process to further define the meaning of each concept. In accordance with thematic analysis, we met periodically throughout data collection to discuss patterns, interesting phrases, and emerging themes. The four researchers coded each transcript in pairs and used negotiated consensus to resolve any disagreements or discrepancies in the initial coding. After coding each transcript, the code sheet was updated to include new codes, group overlapping codes together, or refine the definition of existing codes, as is recommended in qualitative data analysis.[23] For example, when a participant mentioned ‘gaining wisdom,’ it was included in the description of the code ‘broader perspective’ as it was interpreted as expanding the ‘broader perspective’ concept rather than introducing a new theme. We repeated this process with each interview transcript until we arrived at a final code sheet. The final code sheet, consisting of 42 codes, was then used by two coders to re-code all transcripts. Although we did not calculate inter-rater reliability, differences in coding were resolved through negotiated consensus by the two initial coders and by all four members of the research team when necessary. Researchers handled discrepant cases by discussing their reasoning for assigning a particular code, weighing each explanation, and coming to an agreement before assigning a final code. We used Dedoose to organize transcripts and facilitate data access and analysis, and we kept an audit trail to document conceptual changes throughout the process.

Ethical Considerations

Ethical clearance was granted by the University of Global Health Equity (UGHE) Institutional Review Board (IRB) (IRB number: UGHE-IRB/2023/007).

Reflexivity Statement

The authors include three former UGHE master’s students (COS, EAL, CUG) who completed their master’s programs in August, 2024 and one faculty member (EHB) with teaching experience in the UGHE MBBS program. The former master’s students were not affiliated with the MBBS program during their studies. To mitigate potential bias, the author with a teaching role in the MBBS program did not participate in interviewing. Interviews were conducted by researchers who were not involved in participants’ assessment or supervision, and all student data were anonymized during transcription. The research team regularly reflected on their own biases and the way in which their connection to UGHE could have influenced the project including data

collection and analysis. We held periodic meetings in which we looked for disconfirming evidence and discussed reflections and feedback to mitigate bias.

RESULTS

Sample

The study included 18 participants, evenly split by gender (50% male, 50% female). Regarding the year of the MBBS program, 33.3% were first-year students, while the remaining participants were distributed equally across the third, fourth, and fifth years (22.2% each). In terms of nationality, the majority (66.7%) were Rwandan, followed by Ugandan participants (11.1%). The remaining participants came from the Democratic Republic of Congo, Tanzania, Lesotho, and Malawi, each representing 5.6% of the total sample (Table 1). Three recurrent themes emerged (Figure 1): 1) systems thinking, 2) empathy and compassion, and 3) inspiring action. These themes were prominent and recurring in discussions with students who were exposed to Dr. Farmer, and references to his influence were made by students across cohort years. Students of different nationalities did not differ markedly in how they discussed the reported themes. Below, we describe each of these in more depth and provide verbatim quotations to illustrate each theme.

Systems thinking

Students described that Dr. Farmer emphasized understanding patients beyond their clinical symptoms by exploring the social determinants of health, health inequities, and structural barriers to health care and other basic needs. The students characterized the liberal arts portion of their curriculum, in which Dr. Farmer described the role of a medical doctor in relation to social determinants of health, culture, and history, as a 'mind opener.'

> *My prep (liberal arts) phase was like a mind opener to the medical field and to social medicine in terms of the history and really what is the role of a medical doctor. We talked about what was the call for doctors especially in relation to health with great people that taught us such as Paul Farmer. We also discussed the key figures that go into the practice of medicine or into global health… Everything we talked about was about culture… exposing us to the culture that you should expect in medical school and even life after that.* (ID 14, 3rd year male international student).

Empathy and compassion

Students described being inspired by the value system of empathy and the love of patients from which Dr. Farmer acted. Participants reflected on how their perspectives developed regarding the role of medical doctors in the lives of patients after learning from Dr. Farmer. He emphasized the "human aspect" and the "caring aspect" of medicine in his lessons and encouraged students to love their patients as they would members of their own family.

> *I'm super grateful that I got to take social medicine and medical anthropology with Professor Paul Farmer. It was incredible in the sense that we got to hear about human nature… the human aspect of medicine, the caring aspect, the empathy that many people lack in going into medical school.* (ID 11, 3rd year female international student).

Students also reflected on how meaningful it was to learn about health inequities before they started the basic sciences part of the curriculum; they said watching Dr. Farmer taught them how to interact with their patients.

> *We had many classes that were led by Dr. Paul Farmer. [In the] clinical cases, [we learned] how we should interact with the patient. So before studying medicine, before studying BMS (biomedical sciences),[we learned] all about caring for the patient, how we can [get to]know about the patient … and about social medicine … social determinants of health … gender equity and equality, [and] health inequities within our local areas and within our healthcare systems. That's where we started loving medicine.* (ID 5, 3rd year male Rwandan student).

Students remembered that Dr. Farmer expected them to respond to patients' social needs as well as their medical ones, for instance instructing them to think about and provide patients with food alongside their medications if they were in need.

> *Thank God that I got to meet the late professor Paul Farmer… He always showed us, if your patients do not have food and you are giving them medications and you know that what you're doing to them, they're going to need food. [In addition to treating the patient,] you are in the position of also providing food.* (ID 4, 5th year female Rwandan student).

Inspiring action

In describing their experiences being taught by Dr. Famer, students emphasized the inspirational effect of seeing Dr. Farmer teach with practical examples, illustrating the role he hoped they would assume as medical doctors. By sharing and showing his own experiences and those of his colleagues, he inspired students to envision themselves as agents of change in the health sector. Dr. Farmer's persistence in his own career helped students see beyond the "difficulties and the odds of people telling you that it's not going to be possible."

> *He made us see beyond the difficulties and the odds of people telling you that it's not going to be possible, that this is never going to work out. So yes, he helped us see through things the way he persisted through all of these projects and everything to design what we see today.* (ID 4, 5th year female Rwandan student).

The way Dr. Farmer had empathy for patients and treated them with respect as well as his contributions to the remarkable recent improvements in Rwanda's healthcare system showed students that it was possible to be a caring physician who also fosters systemic change.

> *Then looking at Dr. Paul Farmer working alongside Dr. Agnes to bring Rwanda back from ashes to where it is today in terms of the health system and everything. I learned a lot of key lessons.* (ID 11, 3rd year female international student).

Several participants reported that the principles they associated with Dr. Farmer's mentorship continued to inform how they conceptualize patient care, treat patients, interact with health systems, and imagine their role as future physicians. However, some international students noted limitations in their application of clinical skills early in their education because of the language barrier between themselves and their patients and Rwandan physician mentors. This may have limited the application of the lessons learned from mentors but may have improved over time as their language skills developed.

DISCUSSION

In seeking to explore the experiences of medical students with a liberal arts approach to medical education at UGHE, the influence of Dr. Paul Farmer as a mentor for MBBS students emerged as a major theme. We did not ask specifically about Dr. Farmer during interviews; however, participants identified that his commitment to impart knowledge on systems thinking, share the values of empathy and compassion from which he treated patients, and inspire action in his students made him a role model for many. Our findings revealed the holistic development of future physicians through mentorship like the systems thinking and "loving the patient" that Dr. Farmer inspired through his connections with students and practical examples he provided. While we recognize Dr. Farmer as an example, the discussion of mentorship aims to capture the positive impact that any dedicated mentor can have on their students' development. We recognize mentorship is only one contributing factor to medical students' development and other inputs are also critical; nevertheless, our findings demonstrate that participants perceived Dr. Farmer's mentorship to be deeply influential in shaping their professional values and approaches to patient care according to their testimonies.

Previous studies in high-income countries have documented the many benefits of mentorship in medical education, but this is the first study of which we know that characterizes the qualitative impact of mentorship on medical students in a low-income country. [3,23] Our findings are notable in this setting as previous literature has described a lack of personnel and institutional support needed for providing effective mentorship opportunities in low-income countries.[11] Despite challenges to implementing effective mentorship in the medical field in low-income countries, which include limited institutional resources and support, low availability of mentors, and paternalistic pedagogy,[11] our findings show the potential for mentorship to be embedded within course pedagogy and classroom culture. The MBBS program's inquiry-based pedagogy, anchored in principles of social medicine, encourages such interactions between faculty and students and is relatively inexpensive and thus feasible in low-resource settings. It requires adequate training of faculty and a supportive culture that endorses critical thinking but does not require added resources in terms of laboratories, space, or medical equipment. Thus, with adequate commitment, adopting a mentorship approach that encourages critical thinking, reflection, and connections between faculty and students is a transferable intervention that could serve as a relatively inexpensive, sustainable approach in medical education in low-resource settings. Encouraging faculty to adopt this approach might also facilitate dynamic mentor networks in which students receive guidance from a range of professionals, an approach Ramani and colleagues[24] have suggested as a critical shift from dyadic formats that rely on a single role model.

Our study should be viewed in light of the following limitations. First, this qualitative study was undertaken at a single university. Although we continued data collection until we achieved theoretical saturation, results in other settings may differ. Second, using a qualitative study, we were unable to test hypotheses or generalize about the impact of such mentorship on medical students broadly. Nevertheless, we employed several techniques recommended by experts in qualitative research[25-27] to enhance the trustworthiness of our findings.[25,28] Credibility was supported through researcher triangulation, as multiple researchers coded transcripts independently and came together to discuss emerging interpretations. All interviews were coded independently and then together by two members of the research team. We ensured dependability through the consistent use of a shared codebook and by documenting decisions in an audit trail. Confirmability was addressed as the research team consisted of multiple researchers with varying

backgrounds. We included multiple researchers with varying backgrounds on the research team, we ensured the consistent use of the discussion code, and all interviews were coded independently and then together by two members of the research team. Additionally, audiotaped interviews were professionally transcribed, we performed comprehensive quality checks on each transcript, and we retained an audit trail to document analytic decisions. A third limitation is the lack of data on longer-term outcomes such as physician practice patterns or patient outcomes, and we did not have adequate resources to triangulate our findings with data from faculty members' or patients' experiences. Longer-term studies of clinical impacts of mentorship are warranted. Last, while Dr. Farmer's contributions to global health and medical education are undeniably transformative, relying heavily on a single role model has limitations. Overemphasizing one individual's mentorship approach may inadvertently overshadow the diverse perspectives and strategies necessary for comprehensive medical training.[29] It also inherently limits the generalizability of the findings of this study, and efforts to replicate the influence of Dr. Farmer's mentorship would have to be adjusted and tailored to fit the unique circumstances of other settings. While we highlighted Dr. Farmer's influence as a mentor in this study, future studies would benefit from examining the impact of a wide range of role models. Longitudinal studies that explore the long-term impacts of mentorship on clinical practice and patient outcomes in a variety of geographical and cultural contexts may be particularly relevant.

Our findings highlight the key role that mentors such as Dr. Paul Farmer can play in the personal and professional development of future physicians despite their relevance to a single individual and particular university setting. Even after his death, his students described that his mentorship continued to shape the way they treat patients, interact with health systems, and imagine their role as future physicians. Physicians and global health professionals committed to fostering health equity and social change may be able to widen their impact by high-impact mentoring practices employed with the next generation of health professionals. Similarly, medical schools and educators that seek to transform the delivery of health care may benefit from considering educational programs and policies in ways that not only allow for but also institutionalize effective models of mentorship. Implementing mentorship approaches that emphasize systems thinking and relational engagement may bolster the compassionate care of patients and inspire physicians to effect systemic change, although further research is needed to assess their effectiveness in other contexts.

SUMMARY - ACCELERATING TRANSLATION

Medical education in Africa is changing rapidly as 21st century innovations are implemented at universities across the continent, so it is essential for medical students to understand the larger social, economic, cultural, and political dynamics that influence health is essential. Therefore, we sought to understand medical students' experience with the novel curriculum at the University of Global Health Equity (UGHE) in Rwanda, with a focus on the role of mentorship at UGHE. We conducted a qualitative, in-depth interview study, and three recurrent themes emerged pertaining to Dr. Paul Farmer's impact as a role model for medical students: 1) he encouraged systems thinking in his students, 2) he taught students "to love the patient," and 3) he used practical examples to inspire action. Medical students described the medical education they received as a "mind opener." Participants recounted how Dr. Farmer's mentorship fostered their own confidence in becoming compassionate physicians who would inspire systemic change. Our findings highlight the role that mentors can play in the development of future physicians. Integrating effective mentorship into the medical school experience can affect medical students' approach to patients and motivation to pursue systems change.

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FIGURES AND TABLES.

Table 1. Summary of Participants' Demographic Characteristics

Demographic Characteristics		**n**	**%**
Gender	Men	9	50%
	Women	9	50%
Academic year	1st year, Prep Phase	3	16.70%
	1st year, 1st Semester	3	16.70%
	3rd year	4	22.20%
	4th year	4	22.20%
	5th year	4	22.20%
Nationality	Rwandan students	12	66.70%
	International students	6	33.30%

Figure 1. Summary of Themes Illustrating the Role of Mentorship in Medical Education