

Community-Based Education Programs in Africa: Faculty Experience Within the Medical Education Partnership Initiative (MEPI) Network

Damen Haile Mariam, MD, PhD, MPH, Atiene Solomon Sagay, MBChB, Wilfred Arubaku, BDS, MSc, Rebecca J. Bailey, MSPH, CEEd, Rhona K. Baingana, MSc, Aluonzi Burani, PhD, Ian D. Couper, MBBCh, MFamMed, Christopher B. Deery, MPH, Marietjie de Villiers, MBChB, PhD, MFamMed, Antony Matsika, MBA, Mpho S. Mogodi, MBChB, MPH, Kien Alfred Mteta, MD, MMed, MSc, and Zohray M. Talib, MD

Abstract

Purpose

This paper examines the various models, challenges, and evaluative efforts of community-based education (CBE) programs at Medical Education Partnership Initiative (MEPI) schools and makes recommendations to strengthen those programs in the African context.

Methods

Data were gathered from 12 MEPI schools through self-completion of a standardized questionnaire on goals, activities, challenges, and evaluation of CBE programs over the study period, from November to December 2013. Data were analyzed manually through

the collation of inputs from the schools included in the survey.

Results

CBE programs are a major component of the curricula of the surveyed schools. CBE experiences are used in sensitizing students to community health problems, attracting them to rural primary health care practice, and preparing them to perform effectively within health systems. All schools reported a number of challenges in meeting the demands of increased student enrollment. Planned strategies used to tackle these challenges include motivating faculty, deploying students across expanded centers, and adopting innovations. In most

cases, evaluation of CBE was limited to assessment of student performance and program processes.

Conclusions

Although the CBE programs have similar goals, their strategies for achieving these goals vary. To identify approaches that successfully address the challenges, particularly with increasing enrollment, medical schools need to develop structured models and tools for evaluating the processes, outcomes, and impacts of CBE programs. Such efforts should be accompanied by training faculty and embracing technology, improving curricula, and using global/regional networking opportunities.

Community-based education (CBE) is an approach whereby students learn and acquire professional competencies in a community setting, including basic clinical, research, and communication skills. Such an approach can provide contextual learning that addresses workforce scarcity by enabling trainees to acquire the competencies and values needed to provide care in local communities. Through CBE, students can contribute to the quality of life in a particular community while

acquiring hands-on understanding of the problems they will face in future professional practice and developing the skills for solving them.¹ CBE elements often include training in primary health care, comprehensive care, continuity of care, health promotion, and disease prevention. CBE also often includes examining the social determinants of health, the impact of illness, the health care team, and patients' interaction with the health care system. One of the goals of CBE is to address the problem of inequity in service delivery by producing health professionals who are willing and able to work in underserved areas, particularly rural communities.²⁻⁵ As a learning strategy, CBE is part of the curricula of many African medical schools, but few of these institutions have completed a formal evaluation of their CBE programs. One study conducted by Dan K. Kaye and colleagues⁶ in 2011 evaluated 22 CBE programs in Uganda

and identified deficiencies in the design and implementation among several of them that included gaps in curriculum content, supervision of trainees, assessment of student progress, and trainees' welfare, as well as underuse of existing opportunities for contextual and collaborative learning.

The Medical Education Partnership Initiative (MEPI) is a U.S. government effort to support local institutions in 12 Sub-Saharan African countries to increase the quantity, quality, and retention of medical graduates with specific skills to address the health needs of their populations. MEPI has convened technical working groups (TWGs) in areas of common interest, one of which is CBE. CapacityPlus is a USAID-funded global project focused on strengthening the health workforce and is collaborating with the CBE TWG. The focus of the collaboration is to examine the models, challenges, and needs of CBE programs

Please see the end of this article for information about the authors.

Correspondence should be addressed to Dr. Haile Mariam, Addis Ababa University, School of Public Health, PO Box 11950, Addis Ababa, Ethiopia; telephone: (+251) 911 228981; e-mail: damen_h@hotmail.com.

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in the MEPI network of schools and to develop responsive interventions. This paper describes the various models, challenges, and evaluative efforts of CBE programs at MEPI schools and makes recommendations to strengthen CBE in the African context.

Methods

Study procedures

All schools engaged in the MEPI CBE TWG were invited to participate in the study, and 12 schools agreed to. The study team consisted of leadership of the MEPI CBE TWG, representation from CapacityPlus, and school representatives selected by the principal investigator for each school. Representatives were selected based on the strength of their knowledge of their CBE programs. A standardized questionnaire (see Supplemental Digital Table 1, <http://links.lww.com/ACADMED/A211>, for survey instrument) was developed, composed of open-ended questions about goals, activities, challenges, and evaluation components of each school’s program. Based on interviews from previous needs assessments of CBE programs at MEPI schools, the questionnaire used in this study was first populated by a member of the study team and then sent to the school representatives for additional comment

and revision; school representatives also completed the questionnaire. The questionnaires were developed and distributed at the beginning of November 2013, and responses were collected and analyzed by mid-December 2013. Results were collated, and two authors reviewed the answers to each question, analyzed the findings, and then drafted the corresponding section of the manuscript. The analysis involved descriptive and qualitative comparisons of the responses from the schools.

Ethical considerations

Data used to inform this paper were provided by faculty members from participating schools using a structured questionnaire. All study participants provided written informed consent. This study was determined as not meeting the requirements of human subjects research and therefore did not require institutional review board approval.

Results

Goals of CBE

Schools were asked to describe the overarching goal of their CBE programs. The goals they described demonstrated that schools are using CBE programs to influence career choices by teaching the clinical and nonclinical skills necessary

for the provision of relevant, high-quality community health care (Table 1). Although most of the programs have a priority goal, many of the schools also described secondary goals. A goal was considered common if it was reported by at least three of the responding schools. The majority of respondents reported that their primary goal is to prepare students to work in rural or underserved areas by sensitizing them to the health needs of those populations. The next-most-common goal is to train and develop an interest among students in the practice of high-quality primary care. Two schools also mentioned that CBE provides an opportunity to train students in specialty care related to underserved populations. Other respondents described their goal as developing effective community physicians, defined in detail by one as the ability to plan and implement activities in collaboration with the community, appreciate factors that influence the health of a community, conduct community diagnoses, and provide clinical care. For many schools, community rotations also aim to develop nonclinical competencies such as research, leadership, and management skills.

CBE programs at MEPI institutions

CBE rotations among schools surveyed were described in terms of the range in

Table 1
Goals of Community-Based Education Programs in Participating MEPI Schools, 2013

Goals described by the schools	School ^a												
	1	2	3	4	5	6	7	8	9	10	11	12	
Prepare students to work in rural and/or underserved areas		X		X	X	X	X	X				X	X
Train students in primary health care					X	X	X		X	X			X
Prepare students to work in and with communities		X	X	X				X					X
Train students as leaders, managers, and change agents			X					X	X				X
Prepare students for country-specific research		X								X		X	X
Social accountability		X							X				
Prepare students to work in resource-constrained settings					X							X	X
Training in specialized care for community-level or underserved populations						X	X						
Train students to incorporate public health principles into health services		X											
Provide training appropriate to national context and relevant to population health needs									X				X
Enable students to transform theoretical knowledge into practice				X									X
Acquaint students with real-life situations				X									X
Enable students to work in teams to develop a habit of cooperation				X									X
Encourage a holistic approach to preventive and curative health services		X											

^a1. Addis Ababa University, Ethiopia; 2. University of Botswana School of Medicine, Botswana; 3. Haramaya University, Ethiopia; 4. Hawassa University, Ethiopia; 5. University of Jos, Nigeria; 6. Kampala International University, Uganda; 7. Kilimanjaro Christian Medical Center, Tanzania; 8. Mbarara University of Science Technology, Uganda; 9. Stellenbosch University, South Africa; 10. University of Zambia, Zambia; 11. University of Zimbabwe College of Health Sciences, Zimbabwe; 12. Makerere University, College of Health Sciences.

their duration, the types of activities, and location of the attachments (see Supplemental Digital Table 2, <http://links.lww.com/ACADMED/A211>, for a complete list of CBE components for each school). Most schools offer block rotations ranging from 2 to 10 weeks in multiple years of training, while one school offers CBE longitudinally throughout the year. Many CBE rotations, particularly in the early years of training, focus on working directly with the community, conducting needs assessments, and designing interventions to address community health problems. Training in clinical skills is a component of most CBE rotations through conducting home visits or working in health centers and/or district hospitals. The majority focus clinical training on primary care skills, while one school offers specialty training, such as surgery and obstetrics–gynecology, in community hospitals. Supervision is provided by faculty of the medical school and by health facility clinicians and managers. Faculty from the medical school includes those working in community health or general medical faculty. Although CBE rotations tend to be focused on underserved populations, the sites range from urban community clinics to rural attachment sites.

Challenges to implementation and continuous improvement

The challenges facing institutions' CBE programs can be organized into four areas: staff; infrastructure and logistics; students; and curriculum.

Staff. The schools reported a general shortage of available supervisors at CBE sites, with very few trained in teaching. Supervisors were commonly overburdened with clinical and other service-related work and lacked the time to take on student training, and some also lacked the motivation. In addition, there were insufficient numbers of medical school faculty who could take the initiative to develop and coordinate CBE. The schools identified a need for capacity building to increase the number and motivation of faculty and supervisors, as well as the engagement of other stakeholders.

Infrastructure and logistics. Major challenges were experienced in providing space for students in health facilities

that had not been planned for teaching, and there was little or no Internet connectivity at most sites. Student accommodations were often not readily available or were in need of urgent renovation. Inadequate transportation from facilities into communities was another constraint that limited students' outreach coverage. Inadequate funding for CBE was reported to underpin the infrastructure and logistics challenges, and these have become magnified as student enrollment has increased.

Students. Many schools reported that the scaling up of medical training with increased medical student enrollment places a severe strain on limited CBE sites. Students are not always aware of the benefits of CBE and sometimes lack interest in this aspect of their education.

Curriculum. Some schools reported that a lack of clear objectives, innovation, and adaptability caused the CBE initiative not to be recognized for its important role in training medical students. Feedback and assessment needed to be standardized and synchronized with the central curriculum, and simple evaluation tools for CBE were also needed.

Future activities of CBE programs

Certain common themes emerged from school representatives when they were asked what CBE areas they planned to strengthen. These included strengthening faculty development, developing new technologies, enhancing curriculum and course materials, and periodically evaluating the CBE program itself. Faculty development—specifically training in curriculum review, assessment techniques, and evaluation methods—was identified as a major goal for improving CBE. Support is needed at the institutional level and from senior educators to strengthen CBE preceptorship.

Many institutions are proceeding with plans to develop new technologies to enhance teaching and learning at CBE sites. Schools intend to develop mobile platforms and online technologies, such as eLearning, to support students and preceptorships during CBE rotations. Most programs need to expand the number of sites that require innovative approaches and additional resources, including accommodations and transportation.

Schools also indicated a need to develop relevant CBE course material, learning from each other and from international models. For established programs, curriculum review and renewal are priorities. Implementation of appropriate assessment methods is an important part of this process. One universally cited area for improving CBE was to initiate or improve program evaluations. Among the CBE schools surveyed, evaluation frameworks and tools are being developed, and schools intend to share these resources through the CBE TWG.

Evaluation components

Of the 12 schools in the survey, 5 referred to student assessment in their response, which resulted in a lack of clarity as to the status of their overall program evaluation, and 1 school indicated that it was undertaking informal evaluation only through feedback from students and community preceptors. The remaining 6 schools were engaged in evaluation. One involved an external evaluation process conducted by the MEPI consortium in which it participated but lacked an internal evaluation. Of the 5 schools undertaking their own evaluations, the focus of 1 was on students only, but the other 4 looked at the broader picture. Among these, one has developed a five-year longitudinal study examining the outcome and impact of the implementation of a rural clinical school, which includes focus groups, individual interviews, and surveys among current and past students, clinical supervisors, and faculty involved in training the students, patients, and community members. Another school was engaged in an ongoing evaluation that included student perspectives, effects of the program on communities, and views of health care facility staff and core faculty. Two schools were undergoing an evaluation process at the time of this survey, using a range of tools that included focus groups, key informant interviews, and a household survey.

Discussion

This study provides an overview of the current status of CBE in 12 schools across Sub-Saharan Africa and demonstrates that these schools are using different strategies to support expanded health workforce training. Retention of health workers in rural areas is a priority for

medical schools in the region and drives investment in CBE. In Uganda, for example, three out of nine nationally developed core competencies for medical graduates target increased retention of the health workforce in rural settings.⁷ Moreover, in most of the schools surveyed, CBE aims to sensitize students to community health problems, prepare them to perform effectively within the health system after graduation, and encourage their interest in primary health care and rural practice. In this way, CBE seeks to improve health worker retention in underserved populations and reduce their migration to urban centers and specialized practice, or movement abroad (“brain drain”). That said, most of the schools surveyed have not conducted rigorous evaluations of CBE, so there are few data on the impact of these programs on the schools’ long-term goals.

There is clearly diversity in CBE models among MEPI schools. Many of the schools conduct CBE in rural villages and district-level health settings far from medical schools. A few schools offer one community rotation during training, others provide repetitive short rotations (2–5 weeks during various years), while others provide longer rotations of 5–10 weeks during the final year. One school provides a year-long rotation during the final year, investing in longitudinal

integrated clinical experiences.^{7,8} Future research will be needed to determine how well the various models of CBE achieve their goals.

As schools respond to the World Health Organization’s call to increase the number of doctors in Africa,⁹ training in the community is hampered by insufficient faculty, inadequate incentive structures for new and existing faculty, as well as limited infrastructure and logistics for deploying students to CBE sites. Three schools are adopting information and communications technology and other educational innovations to address these challenges. Four schools are also planning to invest in curriculum reform, which will help to transform static CBE programs into dynamic curricula that respond to frequently changing health systems. Health facility leadership and staff will need to be engaged in CBE programs to bridge the gaps in the supervision of students. This relationship between medical schools and government (which has already been strengthened in some countries involved in the MEPI grant) should be of great mutual benefit because the health system is the eventual employer of prospective graduates and thus should be vested in their training.^{10,11}

A recent systematic literature review emphasized the need for robust

evaluation of undergraduate clinical placements in underserved areas¹² in such countries such as Australia and the United States, yet half of the schools in the MEPI survey were not evaluating their CBE programs. Instead, their evaluation activities were largely limited to student performance, mini-surveys, and informal feedback from community preceptors. Almost all of the schools mentioned in the systematic review plan to integrate evaluation components based on research that includes community-level impact. Although multiple approaches to evaluation are available,¹³ some of which are better suited to assessing CBE programs than others,¹⁴ there are few published examples of CBE evaluations in Africa and elsewhere and only a small number of published tools for such evaluations. The foundational article by Coles and Grant¹⁵ on curriculum evaluation in medical education is a very good resource for program evaluation and has been applied successfully in evaluating a CBE program in Indonesia.¹⁶ Given the gaps in the literature and the lack of evidence linking CBE to its intended goals, medical schools that do undertake evaluation stand poised to make a significant contribution to future investments aimed at strengthening CBE.

Even though this study involved only 12 universities, the findings shed light

Table 2
Recommendations Based on Best Practices, Challenges, and Trends

Specific area	Recommendations
Faculty	Medical schools should ensure there is a critical mass of faculty and staff to supervise and coordinate community-based education (CBE) activities, including training staff from health facilities and/or providing sustainable incentives to academic staff.
Infrastructure	Engage relevant stakeholders and provide them with evidence that demonstrates the benefits of CBE to health facilities, population health, and overall standard of care, with the aim of securing funding of key infrastructure needed to deliver CBE programs (such as transportation and housing). This is true particularly for programs that bring specialty training/practice to poorly staffed hospitals in rural communities. Expand the number of sites and improve student accommodations and transportation in order to meet the need for increased enrollment of students.
Students	Engage students to ensure a positive experience in CBE through mechanisms such as student feedback into curriculum redesign and mentoring opportunities with community physicians as well as making CBE examinable.
Curriculum	Leverage networks, such as the Medical Education Partnership Initiative network, to revise CBE curricula based on changing health educational approaches and international experiences. Include nonclinical competencies such as research, leadership, and management skills in CBE curricula. Integrate evaluation into the routine programming of CBE using simple, standardized tools that evaluate the processes, outcomes, and impact of CBE programs. Leverage communities of practice to share existing tools or to jointly develop tools that can be used across programs.
Learning from others	Studies should be undertaken to compare different models of CBE and identify those that are successful in achieving goals. Such studies could include <ul style="list-style-type: none"> • Comparing the duration of CBE attachments in terms of achieving the goals. For example, comparing single versus multiple brief experiences, versus longer longitudinal attachments • Comparing the activities and competencies taught through CBE rotation and their impact on student experience, performance, and career choices

on key challenges facing schools across Sub-Saharan Africa. These include faculty shortages, infrastructure constraints, variable student experiences, and the need for curriculum reform. Table 2 lists recommendations drawn from our findings and validated by the CBE experts engaged in the study. For example, to enhance the quality and sustainability of CBE programs, special efforts should be made to engage relevant stakeholders, including students and governments. Early and frequent stakeholder engagement should aim to secure key infrastructure and resources needed to implement CBE programs, including the development of a pool of qualified CBE supervisors. Medical schools should also draw from academic networks such as MEPI in the development, evaluation, and regular updating of CBE programs that are similar to the ones included in the current survey. One important example of a CBE network is the Collaboration for Health Equity through Education and Research in South Africa, where a group of nine faculties of health sciences have been working together to conduct evaluations of CBE programs in a mutual peer review process.¹⁷

Conclusions

The CBE programs in the surveyed schools aim to produce a more robust and relevant health workforce, yet all of them face similar challenges in meeting the demands of increased student enrollment with constrained faculty, infrastructure, and logistics. There is a need to have a more structured approach to evaluate the processes, outcomes, and impacts of the programs. For CBE to be a high-quality educational experience that leads to the intended outcomes, schools will need to invest in faculty development, new technologies, curriculum reform, and leveraged global and regional networks to learn from best practices.

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Dr. Haile Mariam is professor of public health and health economics and program coordinator for MEPI, Addis Ababa University, Addis Ababa, Ethiopia.

Dr. Sagay is professor of obstetrics and gynecology, College of Medical Sciences, University of Jos, Jos, Nigeria.

Dr. Arubaku is senior lecturer of dental surgery and curriculum chair, Faculty of Medicine, Mbarara University of Science and Technology, Mbarara, Uganda.

Ms. Bailey is team lead for health workforce development for the USAID-funded CapacityPlus Project led by IntraHealth International, Chapel Hill, North Carolina.

Ms. Baingana is a lecturer, Makerere University College of Health Sciences, and coordinator, MESAU Consortium Community-Based Education, Research, and Service Evaluation, Kampala, Uganda.

Dr. Burani is director of academic affairs, Kampala International University Western Campus, Bushenyi, Uganda.

Dr. Couper is professor and director, Centre for Rural Health, Faculty of Health Sciences, University of the Witwatersrand, Johannesburg, South Africa, and a consultant to MEPI for the CapacityPlus Project led by IntraHealth International.

Mr. Deery is a health workforce development officer for the USAID-funded CapacityPlus Project led by IntraHealth International, Chapel Hill, North Carolina.

Dr. de Villiers is deputy dean of education, professor in family medicine, and principal investigator of MEPI, Faculty of Medicine and Health Sciences, Stellenbosch University, Stellenbosch, South Africa.

Mr. Matsika is senior administrator, University of Zimbabwe College of Health Sciences MEPI Program, Harare, Zimbabwe.

Dr. Mogodi is a lecturer and MBBS Phase I public health coordinator, School of Medicine, Faculty of Health Sciences, University of Botswana, Gaborone, Botswana.

Dr. Mteta is professor and chair, Department of Urology, and dean, Faculty of Medicine, Kilimanjaro Christian Medical University College, Moshi, United Republic of Tanzania.

Dr. Talib is assistant professor of medicine and of health policy and faculty, MEPI Coordinating Center, George Washington University, Washington, DC.

References

- Magzoub ME, Schmidt HG. A taxonomy of community-based medical education. *Acad Med.* 2000;75:699–707.
- Starfield B. Primary care and health. A cross-national comparison. *JAMA.* 1991;266:2268–2271.
- Erney SL, Allen DL, Siska KF. Effect of a year-long primary care clerkship on graduates'

selection of family practice residencies. *Acad Med.* 1991;66:234–236.

- Abdel Rahim IM, Mustafa AE, Ahmed BO. Performance evaluation of graduates from a community-based curriculum: The housemanship period at Gezira. *Med Educ.* 1992;26:233–240.
- Magnus JH, Tollan A. Rural doctor recruitment: Does medical education in rural districts recruit doctors to rural areas? *Med Educ.* 1993;27:250–253.
- Kaye DK, Muhwezi WW, Kasozi AN, et al. Lessons learnt from comprehensive evaluation of community-based education in Uganda: A proposal for an ideal model community-based education for health professional training institutions. *BMC Med Educ.* 2011;11:7.
- Talib ZM, Baingana RK, Sagay AS, Van Schalkwyk SC, Mehtsun S, Kiguli-Malwadde E. Investing in community-based education to improve the quality, quantity, and retention of physicians in three African countries. *Educ Health (Abingdon).* 2013;26:109–114.
- Hirsh DA, Ogur B, Thibault GE, Cox M. "Continuity" as an organizing principle for clinical education reform. *N Engl J Med.* 2007;356:858–866.
- World Health Organization. Transforming and Scaling Up of Health Professionals' Education and Training: WHO Guidelines 2013. Geneva, Switzerland: World Health Organization; November 2013. http://www.who.int/hrh/resources/transf_scaling_hpnet/en/. Accessed April 17, 2014.
- Worley P, Prideaux D, Strasser R, Magarey A, March R. Empirical evidence for symbiotic medical education: A comparative analysis of community and tertiary-based programmes. *Med Educ.* 2006;40:109–116.
- Couper I, Worley P. Evaluation of the parallel rural community curriculum at Flinders University of South Australia: Lessons learnt for Africa. *Afr J Health Prof Educ.* 2010;2(2):14–16.
- Crampton PE, McLachlan JC, Illing JC. A systematic literature review of undergraduate clinical placements in underserved areas. *Med Educ.* 2013;47:969–978.
- Patel VL, Yoskowitz NA, Arocha JF. Towards effective evaluation and reform in medical education: A cognitive and learning sciences perspective. *Adv Health Sci Educ Theory Pract.* 2009;14:791–812.
- Kalishman S. Evaluating community-based health professions education programs. *Educ Health (Abingdon).* 2002;15:228–240.
- Coles CR, Grant JG. Curriculum evaluation in medical and health-care education. *Med Educ.* 1985;19:405–422.
- Kristina TN, Majoor GD, van der Vleuten CP. Does CBE come close to what it should be? A case study from the developing world. Evaluating a programme in action against objectives on paper. *Educ Health (Abingdon).* 2005;18:194–208.
- Reid SJ, Cakwe M; Collaboration for Health Equity through Education and Research (CHEER). The contribution of South African curricula to prepare health professionals for working in rural or under-served areas in South Africa: A peer review evaluation. *S Afr Med J.* 2011;101:34–38.