

The Perceived Role of Community-Based Medical Education among Kenyan-Trained Medical Doctors' Choice of Specialty

Chege PM

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Chege PM

Institution

Moi University School of
Medicine, Nandi Road,
Moi Teaching and Referral
Hospital Building
P.O. Box 4606- 30100
Eldoret, Kenya

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Abstract

Background: The recruitment and retention of doctors in rural and remote areas remains a challenge that leads to inequity that favors urban populations worldwide. Sub-Saharan Africa suffers major challenges related to doctors not working in rural areas where over 60% of the population lives. Community based medical education (CBME) influence on medical doctors' choice of specialty and rural practice has been documented in a few countries but not in Kenya.

Objective: To determine the perceived role of CBME in the choice of specialty among Kenyan-trained doctors.

Study Design and Methods: An analytical cross-sectional study design was used. Medical graduates of the years 2000, 2001 and 2002 from Nairobi and Moi universities were interviewed.

Google forms were used to email the study questionnaire to the participants.

Results: The eligible number of participants for each cohort was 96, 83 and 90 for Nairobi University graduates and 49, 40 and 41 for Moi University graduates for the years 2000, 2001 and 2002 respectively. The response rates were [35.8 % (45.8, 19.3, 42.2%) and 38% (32.7, 27.5, 53.7%) for years 2000, 2001 and 2002 respectively for Nairobi and Moi University participants. Factors found to be associated with a positive perception included, the medical school, rural upbringing, parents' level of education and early rural posting. After multivariate analysis for confounders it was observed that the medical school the participant graduated from was statistically significantly associated with a positive perception on the role of CBME in the choice of specialty [Moi = 65.3(95% CI: 51.5, 79.1)] vs. Nairobi University [34.7 (95%CI: 25.1, 44.3); chi-square p-value = 0.000]

Conclusions: CBME played a positive role in the study participants' choice of specialty

Key Words

Role of Community Based Medical Education; Rural Practice; Choice Specialty; Kenyan-trained doctors.

Corresponding Author:

Mr Patrick M Chege; E-mail: chege200851@yahoo.com

Background

Across the globe there are multiple factors that have been associated with the preference and choice of specialization by medical students and young graduates. These factors range from parental level of education where those with more educated parents preferred specialties that result in practice in highly specialized facilities in urban areas while most female doctors have been reported to choose specialties that made it easier for them to work in non-demanding practices in urban areas^{1,2}.

Some medical schools in the developed economies have chosen to implement medical curricula that favor specific specialties that are associated with these schools. This has resulted in most graduates of these schools pursuing specialty in these

disciplines³. In medical schools in developing countries, departments that have vibrant collaborative clinical and research activities across the globe tend to attract more applicants for specialist training than those that do not have similar approach. It has also been noted that good supervision and mentoring that gives a student or young graduate opportunities to learn and enjoy a specific specialty during medical internship also plays a major role in choice of specialty. Also rated high is career guidance during training and after graduation from medical school⁴.

Studies on factors that mostly influenced of choice of areas of specialty among medical students and young graduates in SSA have reported that gender, prestige associated with certain specialties and

presence of role models as main determinants of choice of specialty by medical students and the young graduates^{5,6,7}. The perceived favorable in come in some specialties and prestige also influences career choices⁸.

A survey of 56 medical doctors whose medical training involve a spiral courses on community based education and service (COBES) along problem based learning (PBL) in all the years of training in Ghana reported that the majority felt that COBES may have significantly influenced their choice of specialty and also their willingness to serve in rural Ghana⁹.

The Nairobi and Moi University medical schools are the oldest in Kenya having been started in 1967 and 1989 respectively. The other approved public medical schools are in the universities of Kenyatta, Maseno, Egerton and Jomo Kenyatta University of Agriculture & Technology. Approved private medical schools are Kenya Methodist University, Uzima University and Mount Kenya University. Except for Nairobi and Moi University medical schools the rest have developed within the last decade. Aga Khan University Hospital in Nairobi offers Masters of Medicine (MMed) programs as a private university but does not have a medical school. Nairobi and Moi Universities also offer masters of medicine (MMed) and clinical fellowship programs.

The Nairobi University School of Medicine (NUSOM) and the Moi University School of Medicine (MUSOM) both offer medical training curricula that have CBME as core courses in the medical training curricula.

MUSOM offers spiral COBES courses in five of the six years of medical training. NUSOM currently offers community health rotations in level two and five of the six levels of training. NUSOM initially offered CBME only during the fourth year of medical training.

My study explored what the medical graduates perceived as the role of CBME on the individual doctor's choice of area of specialization and rural practice.

Methods

Study Site: The study was carried out in Moi University School of Medicine while data were collected from medical doctors, who are members of the selected cohorts, using their contact details provided by the Kenya Medical Practitioners and

Dentists Board (MP&DB) register. Other available medical directories were also used to complement the medical board contact details.

The implementation of the Nairobi University medical school community health course for medical students was accessed on the Nairobi University School of Public Health webpage while the Moi University medical school community based education and service (COBES) course for medical students was accessed from the School Curriculum Implementation and Evaluation Committee (CIEC) secretariat.

Study Design: An analytical cross-sectional study design was used to study both the exposure and outcome of CBME among Kenyan trained medical doctors. Six cohorts (three from MUSOM and three from NUSOM) who graduated with Bachelor of Medicine and Bachelor of Surgery (MBChB) from the two medical schools in years 2000, 2001 and 2002 participated in the study.

Target Population: Medical graduate cohorts of years 2000, 2001 and 2002 from Moi and Nairobi schools of Medicine who had been out of medical school for between 16 and 18 years. These cohorts were conveniently selected as medical doctors who were likely to have a significant degree of career stability and also beneficiaries of more innovative medical education teaching and learning methods in these two oldest Kenyan medical schools.

Inclusion Criteria: medical graduates from Nairobi and Moi University medical schools as provided by the respective offices of school deans and as appears on alumni lists on the websites of both universities for the medical graduates of the years 2000, 2001 and 2002.

Exclusion Criteria: Medical doctors who are not graduates of NUSOM and MUSOM even if they graduated in the years 2000, 2001 and 2002.

Sample Size Determination and Sampling Procedures:

All medical graduates of NUSOM and MUSOM in the years 2000, 2001 and 2002 were eligible to participate. The contact addresses and telephone numbers of the participants were retrieved from the Kenya Medical Practitioners & Dentists Board (MP&DB) register, and the Kenyan medical directories.

The study population (see table below) was small and all members of the different cohorts were

Table 1: Illustration of the cohorts

Medical school	Medical graduate cohorts of year 2000	Medical graduate cohorts of year 2001	Medical graduate cohorts of year 2002	Total
Moi University School of Medicine	49	40	41	130
Nairobi University School of Medicine	96	83	90	269
TOTAL	145	123	131	399

Data Collection Procedures

The offices of the Deans of Nairobi and Moi medical schools were approached for authority to conduct the study and also requested to provide the lists of the cohorts that graduated in the years 2000, 2001 and 2002. The MP&DB secretariat was requested to provide available contact details (email and mobile telephone) for members of these cohorts.

Google Forms were used to get consent and to send the questionnaires (**See appendix**).

The Google Forms worked well as data collection forms which the participant clicked send after responding to the last question. The data were stored in MS Excel databases.

Data Management, Analysis and Presentation of Results

The Google Form responses were saved in MS Excel database. Reminders to participants were sent in the form of repeated email reminder messages, short text messages and telephone calls within six months. It was not possible to determine who among the non-respondents were still residing in Kenya or whether they were alive or dead. The retention register of the Kenyan medical board bears only names of doctors who pay up annual retention fees.

Data were exported to International Business Machines (IBM) Statistical Package for Social Sciences (SPSS) version 21 for analysis. Fisher's exact test was used in the analysis of the categorical data. The data was categorical in 2 by 2 contingency tables. The sample sizes were small and the expected values were small. Chi-square test was used to test for association in the categorical variables. Multivariate analysis was used for confounders. The level of significance α was arbitrarily taken as 0.05 with 95% Confidence

Interval (CI). Results were presented in frequency tables.

Ethical Considerations

Ethical approval was sought and granted by the Institutional Research and Ethics Committee (IREC) of Moi University.

Permission to conduct the study was sought and granted from the Deans of Nairobi and Moi University medical schools.

Informed consent was sought from all the participants. The names of the interviewees were not revealed on the database and confidentiality was maintained.

Data are stored in password protected folders and will be destroyed as guided by the rules and regulations of IREC.

Study Limitations

Dependence on recall by participants was foreseen as a limitation. This was minimized by limiting the questions to major events and avoiding questioning details on specific CBME rotations. The tool had been pretested on medical graduates from as long as four decades before my study and compared with those of the last decade. No significant variation was noted on the responses among various cohort members during the pretest.

The response rate of less than 50% of the study was a limitation. My study did not sample but aimed to have all members of the six cohorts participate. We used the most recent available contact details as provided by the Kenya Medical Practitioners and Dentists Board. Like in all censuses records in our country, there had not been updates on this record that would delete those who died, dissented the

medical career or migrated out of Kenya. It was noted that similar studies had published findings of response rates lower than 30%. The low response rates may also be attributed to medical graduates' reluctance to participate in activities outside their clinical duties.

Use of online self-administered questionnaires may have the disadvantage of the respondents' controlling their responses without the researcher involvement. During the pretest, responses of interviewer administered interviews were compared to the online responses. There was no significant difference between the two that could affect the objectives of this study

Results

The study was conducted between February and

September 2018.

The response rate was calculated against the list provided by the respective medical schools. A significant proportion of these graduates were not on the current Kenyan medical board retention register and did not respond to our email and telephone communication that was sent every fortnight. After six months the effort to get responses from the non-responders was halted.

The eligible number of in each cohort was 96, 83 and 90 for Nairobi and 49, 40 and 41 for Moi University medical schools in the years 2000, 2001 and 2002 respectively. The response rates were [35.8 % (45.8, 19.3, 42.2%) and 38% (32.7, 27.5, 53.7%) for years 2000, 2001 and 2002 respectively for Nairobi and Moi University participants.

Table 2: Study population characteristics

Variable	Nairobi University	Moi University	Total
	Freq(%)	Freq(%)	Freq(%)
Age in years			
35-40	24 (24.5)	15 (30.6)	39 (26.5)
41-45	55 (56.1)	31 (63.3)	86 (58.5)
>45	19 (19.4)	3 (6.1)	22 (15)
Gender			
Male	67 (68.4)	28 (57.1)	95 (64.6)
Female	31 (31.6)	21 (42.9)	52 (35.4)
Marital status			
Single	5 (5.1)	11 (22.4)	16 (10.9)
Married	90 (91.8)	37 (75.5)	127 (86.4)
Divorced	3 (3.1)	1 (2)	4 (2.7)
Year of graduation			
2000	44 (44.9)	16 (32.7)	60 (40.8)
2001	16 (16.3)	11 (22.4)	27 (18.4)
2002	38 (38.8)	22 (44.9)	60 (40.8)
Employer			
Self	11 (11.2)	7 (14.3)	18 (12.2)
Private institutions	12 (12.2)	8 (16.3)	20 (13.6)
University	27 (27.6)	12 (24.5)	39 (26.5)
Ministry of Health	48 (49)	21 (42.9)	69 (46.9)
Research Institute	0 (0)	1 (2)	1 (0.7)
Post medical training			
None	9 (9.2)	15 (30.6)	24 (16.3)
Masters in Medicine	73 (74.5)	27 (55.1)	100 (68)
Masters in Public Health	11 (11.2)	2 (4.1)	13 (8.8)
Masters in Palliative Care	3 (3.1)	1 (2)	4 (2.7)
PhD	0 (0)	1 (2)	1 (0.7)
Masters in Medicine plus (Clinical Fellowship or PhD)	2 (2)	3 (6.1)	5 (3.4)
Where you grew up			
Rural	78 (79.6)	29 (59.2)	107 (72.8)
Urban	18 (18.4)	19 (38.8)	37 (25.2)
Both	2 (2)	1 (2)	3 (2)
Father's education level			
None	13 (13.3)	5 (10.2)	18 (12.2)
Primary	18 (18.4)	14 (28.6)	32 (21.8)
Secondary	35 (35.7)	14 (28.6)	49 (33.3)
College	32 (32.7)	16 (32.7)	48 (32.7)

The study population was youthful with 58.5 % of the population aged 41-45 years. Sixty-eight percent of the respondents were masters of medicine graduates majority of who worked in public service. Seventy- three percent reported growing up in rural Kenya.

Table 3: CBME role on choice of specialty

Variable	Poor Freq(%)	Good Freq(%)
Medical school		
NUSOM	64 (65.3)	34 (34.7)
MUSOM	17 (34.7)	32 (65.3)
Age in years		
35-40	24 (61.5)	15 (38.5)
41-45	45 (52.3)	41 (47.7)
>45	12 (54.5)	10 (45.5)
Sex		
Male	48 (50.5)	47 (49.5)
Female	33 (63.5)	19 (36.5)
Marital status		
Single/ Divorced	13 (65)	7 (35)
Married	68 (53.5)	59 (46.5)
Year of graduation		
2000	29 (48.3)	31 (51.7)
2001	13 (48.1)	14 (51.9)
2002	39 (65)	21 (35)
Where you grew up		
Rural	54 (50.5)	53 (49.5)
Urban	24 (64.9)	13 (35.1)
Both	3 (100)	0 (0)
Mothers education		
None	5 (26.3)	14 (73.7)
Primary	31 (58.5)	22 (41.5)
Secondary	20 (51.3)	19 (48.7)
College	25 (69.4)	11 (30.6)
Fathers education		
None	6 (33.3)	12 (66.7)
Primary	16 (50)	16 (50)
Secondary	21 (42.9)	28 (57.1)
College	38 (79.2)	10 (20.8)
Rate of rural experience		
Poor	11 (73.3)	4 (26.7)
Good	47 (47)	53 (53)
No rural	23 (71.9)	9 (28.1)
Rate CBME yr4		
Poor	18 (75)	6 (25)
Good	63 (51.2)	60 (48.8)

Summary of Findings on the Perceived Role of Community-Based Medical Education (CBME) in the Choice of Specialty by Medical Graduates

The factors associated with positive perception on the role of CBME in choice of specialty were: the medical school; where the doctor's spouse grew up; the doctor's mother level of education; the doctor's father level of education and good rating of previous rural experience in early practice.

On controlling for confounders for the five factors it was observed that the medical school in which a doctor trained was found to have statistically significant association with the positive perception of the role of CBME in the choice of choice specialty. Moi University medical graduates [65.3 (95% CI: 51.5, 79.1)] vs. Moi University medical graduates [34.7 (95%CI: 25.1, 44.3); chi-square, p-value = 0.000].

Discussion

Perception of Community-Based Medical Education (CBME) by Medical Students and Young Graduates

The positive perception on the role of CME in career growth by my study participants was higher among medical graduates of Moi University than those of Nairobi University

Students' perception and perspective of CBME has been studied in different CBME delivery contexts. There is evidence of reported perception of better preparedness for clinical roles in British young medical graduates who had CBME as part of their medical curriculum. The positive impact was in comparison with those that did not CBME in their medical curriculum. The perceived positive impact was by both the medical graduates and those who supervised their internship activities¹⁰.

Australian medical graduates who had CBME as part of their medical training were found to demonstrate more social accountability and better skills to serve disadvantaged and rural communities than those who did not have CBME as part of their medical training¹¹.

Community-Based Medical Education Versus Community Oriented Medical Education

It was observed that Moi University medical school offered Community Based Education and Service (COBES) program in the form of spiral courses from year one to five that had up to six week rotations within communities. These are communities that the medical graduates are expected to serve. Nairobi University medical school offered more of a Community Oriented Education (COE) program with a one term in the

fourth year of the medical training program. The courses are provided by the Nairobi University School of Public Health and are mainly didactic with several one-day visits to rural communities.

In Malaysia, Sahid documented a significant difference in the commitment to rural and community health care for medical students who had in medical school who offered similar programs during medical training¹².

In historical cohort comparison of three traditional medical schools in Quebec, Canada, transition from a tradition medical curriculum to one with a community oriented problem based learning component was associated with significant improvements in preventive care, continuity of care and improvement in indicators of diagnostic performance of the graduates compared to the ones before the transition. Graduates of medical curricula with CBME demonstrated improved skills and practice on disease prevention and emphasis on continuity of care¹³.

The Medical Education Partnership Initiative (MEPI) for selected African medical schools and funded by the government of the United States of America to promote medical education with emphasis on enhancing CBME has impacted positively on improved skills and interest among medical graduates to serve in rural and underserved populations¹⁴.

Factors Associated With Choice of Specialty by Medical Students

I studied the perceived role of CBME in the choice of specialty by doctors. Data on factors that influence specialty choice revealed similarity across the globe. The factors reported to influence the choice of specialty by my study population included mentoring during and after medical school, whether a doctor brought up in rural or urban settings, the parents level of education and culture in the medical school a doctor was trained in, among factors.

Harris, Gravel & Young studied the factors influencing the choice of specialty among Australian medical graduates. The highest rated factors included appraisal of own skills and aptitudes, intellectual content of the specialty and extrinsic factors such as work culture and flexibility of working arrangements. All of these were personal and not based on social accountability. CBME as a factor was not even rated in the Harris' study¹⁵.

A study on senior medical students and young medical graduates in New Zealand reported that career choice was mostly based on interest in the specialty and that individuals favored specialties that

were likely to enhance chances for a doctor to work outside New Zealand. Also favored were specialties that were likely to lead to super specialty training¹⁶.

In a medical college in southern India, Subba, et al, conducted a survey on medical students. The questionnaires enquired about the students' preferred specialty and the factors that influenced the choice. The findings were that these students rated the following in order of preference: high interest in high paying specialties, job satisfaction (including potential for high prestige) and employment opportunities for the individual doctor. Low interest in primary care specialty that offered low paying working opportunities in rural India was also observed¹⁷.

Medical students at the Jordan University of Science and Technology reported their choice of specialty to be influenced by perceived intellectual content of the specialty and the reputation of the specialty¹⁸.

Significant variation in career choices by medical students was documented in United Kingdom (UK) graduates of 1999 and 2000. It was evident in the study findings that some of these UK medical schools had a "culture" that encouraged interest in certain specialties while diminishing interests in others¹⁹.

In countries where the time period between leaving medical school and starting of specialty training is not as big as it is in Kenya (where it sometimes takes more than five years or never happens), medical students are expected to choose and compete for their choice of specialties by the time they finish medical training. Though this has the advantage of continuity in medical training and shortening the period it takes for a doctor to become a specialist, Luther documented a significant sense of unpreparedness for UK medical students who were expected to decide on area of specialization by end of medical school²⁰.

Final year medical students in public universities in Nigeria chose specialty preference because of expected better income and anticipated opportunities for career progression^{21, 22}.

In Kenya, Mwachaka and Mbugua attributed role modeling which created enthusiasm in a specialty as one of the major factors determining choice of specialty among medical students and new graduates²³.

The Role of CBME in the Choice of Specialty by Doctors

My study results showed a statistically significant

difference in reported positive influence of CBME in choice of specialty between the medical graduates of Nairobi and Moi Universities. It is noted that medical graduate cohorts of the years 2000, 2001 and 2002 had gone through a medical training curriculum that had different approaches to CBME in Nairobi and Moi Universities. While the Moi University curriculum had community based education and service courses and rotations in years one to five, the Nairobi University one had a community health course in the fourth year of training.

The South Australian Flinders University Parallel Rural Community Curriculum (PRCC) is a government initiative started in 1997 to help address the rural doctor workforce shortage in Australia. The initiative involves a one year clinical rotation in rural Australia as part of medical training in students who enroll for this program. A study on the impact of this initiative on choice of specialty by the graduates of the PRCC showed that it significantly influenced the graduates to choose a rural career path²⁴.

Similar studies in Australia have supported the importance of CBME as a strong component of the medical training curriculum to enhance choice of specialties that relate to health needs of the people^{15, 25, 26}. The same may explain the significant difference observed between Moi and Nairobi University medical graduates' positive perception on the role of CBME on choice of specialty.

Amalba, Mook, Mogre and Scherpbier interviewed pioneering graduates of Problem Based Learning/ Community Based Education and Service (PBL/ COBES) curriculum in a medical school in Ghana documented over half of the doctors reporting that COBES had positively influenced their choice of specialty. The participants in the Amalba study were doctors serving in both rural and urban parts of Ghana. The doctors reported that even students brought up in urban areas reported COBES rotations changed their perceptions of rural practice positively and a significant number had chosen career lines and specialties that favored rural practice²⁷.

Conclusions

1. The findings of this study concur with similar studies done in other contexts in the findings that community based medical education has a positive role in the medical graduate's choice of specialty
2. The difference in perceptions on the positive role of community based medical occupation from Kenyan medical graduates whose only difference was the medical school they trained

- in and the way the course delivered was noted
3. Exposure of rural Kenya to persons in early life, during training and early career posting played an important role in the choice of specialty

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Declaration of Conflict of Interest

I declare no conflict of interest

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