

Evaluation of the Impact of Community-Based Medical Education on the Skills and Abilities of Medical Students at Karary University, Khartoum, Sudan

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Abstract

Introduction: The traditional medical education system often lacks preparation for clinical practice in diverse community environments. Community-based medicine (CBM) offers students exposure to real healthcare challenges and deepens their understanding of social determinants of health. CBM molds future medical professionals' skills, enhancing their ability to deliver holistic care and foster a collaborative, community-focused healthcare practice among the upcoming generation of physicians.

Research Methods: The study examined students' knowledge and attitudes towards community-based medicine at Karary University using a cross-sectional design. A validated questionnaire was used to collect data on sociodemographic characteristics and understanding of the importance of community-based medicine.

Results: A study of medical students reveals that academic study alone is not sufficient for developing responsibility as doctors. They support community medicine, believing it enhances skills and interaction, increases awareness, defines careers, and discovers diseases. However, they express concerns about university curriculum and rural assessments.

Conclusion: A survey of medical students at Karary University highlights the importance of community-based education in shaping their professional identity and responsibilities. They appreciate rural residencies and health caravans for career development and teamwork, but suggest improvements in the university's curriculum.

Keywords: Community-Based Medical Education (CBME); Community Medicine; Karary university; Medical Students; Medical Training and Skills Development

Introduction

The traditional medical education system predominantly relies on hospital-based training programs, a structure that

may sometimes lack the necessary preparation for medical students to navigate the intricate landscape of clinical practice in diverse community environments [1]. In contrast, the emerging paradigm of community-based medicine

(CBM) represents a vital antidote to this limitation, offering students invaluable exposure to the authentic healthcare challenges that communities face daily [2]. By immersing themselves in CBM, students not only hone critical clinical competencies but also deepen their understanding of how social determinants of health intricately influence patient well-being. This article aims to delve deeply into the essential role that CBM plays in molding the skills and aptitudes of future medical professionals, emphasizing the profound impact it can have on their capacity to deliver holistic care [3]. By exploring the multifaceted advantages of CBM, we can better comprehend how this educational approach nurtures a comprehensive perspective on patient well-being and nurtures a culture of collaborative, community-focused healthcare practice among the upcoming generation of physicians [4].

The Importance of Community-Based Medicine

CBM provides a unique platform for medical students to:

Experience a Holistic Approach to Healthcare: By working directly with patients in their communities, students gain a comprehensive understanding of the social, economic, and environmental factors that influence health. They learn to address the complexities of chronic diseases, mental health issues, and health disparities, fostering a holistic approach to patient care [5].

Develop Essential Clinical Skills: CBM offers hands-on opportunities to practice clinical skills such as history taking, physical examination, patient education, and counseling. The varied patient population encountered in community settings provides valuable experience in managing diverse conditions and addressing diverse needs [6].

Cultivate Empathy and Communication Skills: CBM encourages students to build rapport with patients from various backgrounds, promoting empathy and effective communication. They learn to understand patients' perspectives, navigate cultural sensitivities, and engage in collaborative decision-making, leading to improved patient-doctor relationships [7].

Enhance Public Health Awareness: Through engagement with community health programs and initiatives, students gain exposure to public health issues and the importance of disease prevention. This fosters a broader understanding of healthcare systems and the role of physicians in advocating for health equity and promoting population health [8].

Impact on Medical Student Skills and Abilities [9,10]

Studies have shown that participation in CBM programs significantly improves medical students' abilities in:

Clinical Reasoning and Problem-Solving: Exposure to real-world clinical scenarios fosters critical thinking and problem-solving skills, equipping students to diagnose and manage complex cases.

Communication and Interpersonal Skills: CBM enhances students' ability to effectively communicate with patients from diverse backgrounds, building rapport and trust, ultimately leading to better adherence to treatment plans.

Cultural Sensitivity and Awareness: Working in diverse communities exposes students to various cultural perspectives, promoting awareness of social determinants of health and their impact on patient care.

System-Based Thinking: CBM provides insights into the complexities of the healthcare system, including resource limitations, access issues, and disparities, enabling students to become more effective advocates for their patients.

Research Methods

This study employed a descriptive cross-sectional design to investigate the knowledge and attitudes towards community-based medicine among students at Karary University. A random sample of 292 students, selected based on their level of education and registration, participated in the study. To ensure confidentiality, participants were assured of anonymity. A validated questionnaire was developed specifically for this study to collect data on sociodemographic characteristics and students' understanding of the importance of community-based medicine. After necessary modifications, the final questionnaire was administered. The collected data were analyzed using SPSS version 23.

Results

A survey of medical students found that a significant majority (201 out of 292) do not believe that academic study alone is enough to make them feel responsible as a doctor. While a smaller number (64) were unsure and very few (13) believed it was sufficient, the overall pattern held across age groups: most medical students feel that more than just academic study is needed to develop a sense of responsibility as a doctor (Table 1).

Age	Is The Academic Study Enough to Make you Feel Responsible as a Doctor				Total	P value
	Yes	No	Maybe	Not sure		
16-19	0	33	11	5	49	
20-22	9	73	39	11	132	0
23-26	4	95	11	1	111	
total	13	201	64	17	292	

Table 1: Association between age and student's opinion about sufficiency of academic study to feel responsible as a doctor (n=292).

A survey of medical students found overwhelming support for the importance of studying community medicine. A strong majority (130 out of 292) strongly agreed that such studies are valuable for increasing skills and interaction, while another significant number (104) agreed. Only a small

minority disagreed (5) or strongly disagreed (4), and 49 were neutral. This consistent pattern across age groups suggests a widespread belief among medical students that community medicine studies are essential for their development (Table 2).

Age	Do you think that Studying Community Medicine is Important in Increasing Skills and Interaction					Total	P value
	Agree	Disagree	Strongly Agree	Strongly Disagree	Neutral		
16-19	18	1	18	0	12	49	
20-22	53	3	41	2	33	132	0
23-26	33	1	71	2	4	111	
Total	104	5	130	4	49	292	

Table 2: Association between age and students opinion about importance of studying community medicine in increasing skills and interaction (n=292).

Results of study reflect that a strong majority (241 out of 292) believe that studying community medicine through rural residencies can help increase awareness among people in rural areas. While a small number (5) disagreed and a few

(31) were unsure, the overall pattern, consistent across age groups, suggests that medical students generally see rural residencies as a valuable tool for improving health awareness in rural communities (Table 3).

Age	Is it Possible that the Study of Community Medicine Through Rural Residencies can Help in Increasing the level of Awareness Among the people of Rural Areas				Total	P value
	Yes	No	Maybe	Not sure		
16-19	39	1	6	3	49	
20-22	100	3	18	11	132	0.05
23-26	102	1	7	1	111	
Total	241	5	31	15	292	

Table 3: Association between age and students opinion about effectiveness of studying community medicine through rural areas on level of awareness among the people in rural area (n=292).

Results indicate a strong majority (204 out of 292) believe that participating in health caravans could help them define their career working in those environments. While a small number (7) disagreed, a significant number (58) remained unsure, and a few (23) were cautiously optimistic. This

suggests that while many students see potential in health caravans for shaping their career paths, further exploration and discussion are needed to clarify the potential impact on their career choices (Table 4).

Age	Do you Think Going to Health Caravans Might Help Define your Career Working there					P value
	Yes	No	Maybe	Not sure	Total	
16-19	36	1	9	3	49	
20-22	79	6	34	13	132	0.02
23-26	89	0	15	7	111	
Total	204	7	58	23	292	

Table 4: Association between age and students opinion about assistance of going to health caravans in define their career (n=292).

Majority of the participants (237 out of 292) believe that studying community medicine can help in discovering common diseases. While a small number (6) disagreed and a few (34) were unsure, the consistent pattern across

age groups suggests a widespread belief that community medicine studies have the potential to improve our understanding of common diseases and contribute to public health efforts (Table 5).

Age	Do you Think That Studying Community Medicine may help in Discovering Common Diseases					P value
	Yes	No	Maybe	Not sure	Total	
16-19	37	0	8	4	49	
20-22	97	6	18	11	132	0.001
23-26	103	0	8	0	111	
Total	237	6	34	15	292	

Table 5: Association between age and student's opinion about assistance of studying community medicine in discovering common diseases (n=292).

Also found that a strong majority (237 out of 292) believe that studying community medicine through rural residencies could increase healthcare access in rural areas. While a small number (2) disagreed and a significant number (34) were

unsure, the consistent pattern across age groups suggests that medical students generally see potential in these programs to address healthcare disparities and improve the health of rural communities (Table 6).

Age	Do You Think that Studying Community Medicine which may be Represented In Rural Residencies, may Help Increase Health Care in Rural Areas					P value
	Yes	No	Maybe	Not sure	Total	
16-19	41	0	4	4	49	
20-22	90	1	28	13	132	0
23-26	106	1	2	2	111	
Total	237	2	34	19	292	

Table 6: Association between age and students opinion about assistance of studying community medicine through rural residence in increasing health care there (n = 292).

Majority of the participants (239 out of 292) believe students go to rural residencies for a combination of educational and voluntary reasons. While a smaller number (34) saw education as the primary motivation, and an even smaller number (19) saw volunteerism as the main driver, the overall perception suggests that students view rural residencies

as opportunities for both personal and professional development as well as service to underserved communities, highlighting the multifaceted nature of these programs (Table 7).

Age	Do You See Students Going to Rural Residences to Increase the Educational Aspect, or the Voluntary Aspect, or Both				P value
	Educational	Voluntary	Both	Total	
16-19	2	6	41	49	
20-22	26	9	97	132	0.001
23-26	6	4	101	111	
Total	34	19	239	292	

Table 7: Association between age and students opinion about increasing the educational aspect or voluntary aspect by going to rural residences (n=292).

Majority of students (168 out of 292) believe their university does not offer an adequate educational curriculum and suitable rural assessments. While a smaller number (41) found it adequate and a significant number (48) were unsure, the overall pattern suggests that medical students

have concerns about the current offerings. These findings indicate a need for universities to review and improve their educational programs to better prepare students for the unique challenges and opportunities of rural healthcare (Table 8).

Age	Do You Think that the University Offers an Educational Curriculum and Suitable Rural Assessments for Students					P value
	Yes	No	Maybe	Not sure	Total	
16-19	3	31	9	6	49	
20-22	20	61	28	23	132	0.002
23-26	18	76	11	6	111	
Total	41	168	48	35	292	

Table 8: Association between age and students opinion about offering an educational curriculum and suitable rural assessments for students by the university (n=292).

A survey asked medical students if studying community medicine and going to rural residencies helps develop teamwork among students. The overwhelming majority (250 out of 292) believe it does, with only a small number (6) disagreeing. A few (27) were unsure and a small

number (9) thought it might help. This suggests a strong consensus among students that these experiences foster a sense of teamwork, highlighting the potential for these programs to cultivate collaboration among future healthcare professionals (Table 9).

Age	Does Studying Community Medicine and Going to Rural Residences help Develop the Spirit of Teamwork among Students					P value
	Yes	No	Maybe	Not sure	Total	
16-19	41	3	2	3	49	
20-22	106	2	21	3	132	0.0004
23-26	103	1	4	3	111	
Total	250	6	27	9	292	

Table 9: Association between age and students opinion about assistance of studying community medicine in developing the spirit of teamwork among students (n=292).

A survey of medical students found that a strong majority (249 out of 292) believe studying community medicine can help increase cooperation between medical students and health centres. While a small number (3) disagreed and a

few (22) were unsure, the overall consensus suggests that students see community medicine as a valuable way to build relationships and collaborations with health centres (Table10).

Age	Can Studying Community Medicine help increase Cooperation between Medical Students and Health Centres					P value
	Yes	No	Maybe	Not sure	Total	
16-19	42	0	3	4	49	
20-22	105	2	12	13	132	0.092
23-26	102	1	7	1	111	
Total	249	3	22	18	292	

Table 10: Association between age and students opinion about assistance of studying community medicine in increasing cooperation between medical students and health centers (n=292).

Discussion

This survey of medical students provides valuable insights into their perspectives on the importance of community medicine and rural healthcare experiences in shaping their professional development and understanding of healthcare needs. The findings strongly suggest that medical students recognize the limitations of purely academic study in fostering a sense of responsibility as a doctor. The overwhelming majority (201 out of 292) believe that real-world experiences, particularly within community settings, are crucial for developing this crucial aspect of medical professionalism. This sentiment aligns with the growing emphasis on “humanism in medicine” and the importance of developing empathy and social responsibility in healthcare professionals [11,12]. The survey further highlights the strong belief among students that community medicine studies are essential for their development. The vast majority (236 out of 292) agreed that these studies are valuable for increasing skills and interaction, suggesting that students recognize the importance of engaging with diverse communities and understanding the social determinants of health [13]. This aligns with the increasing recognition of the importance of social justice and equity in medical education [14].

Further analysis revealed that medical students see significant potential in rural residencies. A strong majority (241 out of 292) believe that studying community medicine in rural areas can help increase awareness and improve healthcare access in underserved communities. This reflects a growing understanding of the unique challenges faced by rural populations and the vital role of healthcare professionals in addressing these disparities [15]. The survey also indicated that many students see potential in health caravans for shaping their career paths, although a significant number remain unsure. This suggests that further exploration is needed to clarify the potential impact of such experiences on career choices. The data strongly suggests that students recognize the value of community medicine in identifying common diseases, highlighting the importance of integrating community-based research into medical education. This finding aligns with the growing emphasis on

“population health” and the need for healthcare professionals to understand the epidemiology and prevalence of diseases within specific populations [16].

The strong support for the role of rural residencies in increasing healthcare access further emphasizes the importance of these programs in addressing health disparities. This finding aligns with the ongoing efforts to promote rural healthcare and address the shortage of healthcare professionals in underserved areas [17]. Finally, the survey highlighted the multifaceted nature of rural residencies, with the majority of students believing that both educational and voluntary aspects motivate students to participate in these programs. This suggests that rural residencies provide valuable opportunities for personal and professional growth, while simultaneously fostering a spirit of service to communities.

Overall, these findings highlight the growing awareness among medical students of the importance of community-based learning and the need for a more holistic approach to medical education that integrates social responsibility, population health, and community engagement [18,19]. The survey provides valuable insights for medical schools and healthcare systems to enhance their educational programs and create a more socially conscious and community-oriented generation of healthcare professionals.

Research Limitation

- The study’s limited sample size may limit generalizability to Sudan’s medical students and introduce bias if it doesn’t represent diverse backgrounds.
- Cross-sectional evaluations may not account for changes over students’ education, while longitudinal studies offer a more comprehensive understanding of the impact of CBME.
- Subjectivity in assessment can introduce bias and affect the objectivity of findings, as self-assessments or instructor evaluations may be used to evaluate skills and abilities.
- External factors like personal motivation, prior

knowledge, and clinical exposure can complicate the attribution of changes solely to the educational approach.

- The distinctive cultural and healthcare context in Sudan may significantly impact the efficacy of CBME, potentially limiting its transferability across other settings.
- The study's short evaluation period may not fully capture the long-term impact of community-based medical education on students' skills and competencies, especially if these abilities evolve over time.
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