

SPECIAL COMMUNICATION

Family medicine training and practice in Malawi: History, progress, and the anticipated role of the family physician in the Malawian health system

Martha Makwero, Prosper Lutala, Anna McDonald

School of Public Health and Family medicine, Department of Family Medicine

Date Received: 09 February 2015
Revision Received: 24 June 2017
Date Accepted: 28 August 2017

Correspondence:
Prosper Lutala
(plutala@medcol.mw)
<http://dx.doi.org/10.4314/mmj.v29i4.6>

Abstract

This article analyses the development and implementation of family medicine training and practice in Malawi, with special attention given to its current status and the projected role the trained family physician will be expected to play in the future. The general aim of the paper is to briefly review the role of family physicians in rural areas, as well as to discuss the history of family medicine training in Malawi. The idea of formal family medicine training and practice in Malawi started as early as 2001 but did not come to fruition until 2011, with the start of the undergraduate clerkship in the fourth year of medical school at the University Of Malawi College Of Medicine. This energy was followed by the launch of a postgraduate training programme in early 2015. The challenges encountered in this endeavour are also reviewed. The paper concludes by discussing the expected role a Malawian family physician will play in the local context, considering the key roles that family physicians play elsewhere in Africa.

Introduction

The appropriate roles of medical practitioners to meet people's emerging needs is a challenge for many medical schools in Africa, which still base their education, research, and community services on old traditions and values. African medical schools are commonly criticised for producing graduates who do not effectively consider patients in a holistic way and are not prepared to work in rural or remote settings. Several aspects vital to care provision in rural or community-based settings are not addressed in traditional service delivery environments in Africa. The main reason for this gap is that training of young doctors does not integrate the realities of healthcare provision in the context of developing countries, and the content is therefore not relevant to the social, economic, and health needs of the community where graduates will eventually work¹. Family medicine is designed to bridge this gap and equip trainees to serve in the community. The way each family medicine programme addresses this gap must be tailored to its specific setting, which includes challenges in training content (curriculum), the context (setting where training occurs), and the processes (methods used in training) specific to each school, region, or country. The aim of this paper is to discuss the role of a family physician in the community, to present a brief history of family medicine in Malawi, to review achievements related to family medicine training and practice in Malawi, and to project key roles that family physicians will play in the Malawian health system in the future.

Role of doctors and family physicians in the community

A landmark analysis (of mostly American and British data) once revealed that, in an average month, out of 1000 adults in a given community, 750 will experience an episode of illness or injury and 250 of them will seek care from a health facility, with only 1 reaching a referral hospital². It has further been reported that, among adults who report symptoms, only 1 in every 4 to 5 consult a physician³. Beyond physical symptoms, Hannay (in a study of over 1300 patients sampled from a

Glasgow health centre) found that half of his patients had 1 or more mental symptoms, 24% of children were reported to have behavioural problems, and that almost a quarter of adults had at least 1 social problem, for example⁴. Although similar data from Africa are lacking, the pervasiveness (in Africa) of delayed health-seeking behaviour—coupled with the presence of traditional and spiritual healers, and traditional birth attendants—suggests that the situation in Africa is likely more unbalanced than that depicted by these data. The nature of patient complaints, their distribution patterns, and the utilisation of different levels of care in seeking help (as illustrated by the immediately aforementioned studies) challenge the facility-based approach and call for a more holistic approach to care, based on a broader range of knowledge that encompasses social, clinical, and behavioural competencies. Therefore, family physicians or general practitioners operating in the community have to combine clinical and community skills. By “doctor with community skills”, we mean a doctor or a family physician who is able to assess the community through analysis of indicators, surveys, and community-wide sampling. That is, a physician who can identify types of health problems as well as their distributions in the community; and one who can assess the entire community or its subgroups. Treatment can then be based on community health problems, priorities, and resources—interventions based on data analysis and identification of patterns within the community. Continued surveillance can determine follow-up actions and programmes⁵. Therefore, family physicians must focus not only on the needs of an individual in the consultation room, but also on the needs of the practice population in the community, supporting the district development population to meet the needs of the whole community⁶. This community approach, if well taught and implemented, will lead to positive progress in any health district. It can help overcome fragmentation; ensure equity; offer comprehensive, effective, efficient, and quality services; and also promote local accountability, community participation, decentralisation of management, a development and intersectorial approach, and sustainability⁵.

Facility-based focus of medical practice in Malawi

Medical practice in Malawi has traditionally focused on facility-based clinical work, with the community component being left in the hands of environmental health officers and health surveillance assistants. The link between these clinical and public health personnel to integrate both components is not well established in Malawi and appropriate health cadres assigned to do this are not available in the health system. Furthermore, current clinical practice and training bear only partial reference to the real needs of Malawians. The presence of medical doctors seeing patients is still generally below the preferred level at the district level, owing at least in part to the joint clinical and managerial scope of work of district medical officers and to the current low coverage of deployed medical officers in most districts of Malawi.

Many patients are referred for higher-level care, creating an influx of emergency cases at already overburdened central hospitals. In addition, patients seeking better care often bypass the district hospital and health centres altogether, causing more congestion and raising costs for the health system. Without strengthening the district hospitals, the already difficult conditions at central hospitals will worsen. Lack of person-centredness and lack of comprehensiveness in providing care affects the equitable distribution of resources that are already scarcely available in primary health care. Improvements in the quality of care and patient satisfaction in smaller facilities are likely to attract more patients to district hospitals and health centres. Therefore, district-level physicians with competencies specific to the Malawian context—including skills in mentoring and teaching to support front-line primary care workers—are needed. Such multi-skilled providers will be socially accountable to the health needs of the population. These family physicians would be able to deal with 90% of the population and 90% of the disease burden within the context in which they emerge.

In the Malawian context, a more comprehensive mix of knowledge, skills, and attitudes is required for physicians whose responsibilities are predominantly clinical but who also must be able to engage the community for improved holistic care. Improved clinical skills and governance will invariably lead to appropriate referrals, leading to better health outcomes. Family physicians should be stationed at the district level to better serve individual communities and act as mentors in strengthening primary healthcare teams.

For district healthcare systems to effectively improve healthcare outcomes, the following practice characteristics (associated with quality and resulting in better health outcomes) are required: comprehensive care, coordination of care, family-centred and community-oriented care, first-contact care, and longitudinal care⁷. These attributes reflect patient-centredness and define a functional primary care system, in which family physicians are key.

Initiation of the family medicine programme in Malawi

The University of Malawi College of Medicine (COM), established in 1991, houses 1 of only 2 medical schools in Malawi (along with Daeyang Luke University's medical school in Lilongwe, opened in 2016). Over the COM's 26-year history, most of the graduates of its Bachelor of Medicine, Bachelor of Surgery (MBBS) programme have remained to work in Malawi⁸. Despite the COM's successes,

in 2005 the Malawi government (in partnership with international donors) initiated a 6-year Emergency Human Resources Programme (EHRP) to address what was deemed a human resource crisis in the health sector at the time⁸. As a deliberate response to the crisis, the COM has gradually increased its first-year intake to the current figure of about 120 students per academic year (compared to its first cohort of 12 students in 1991 and a first-year intake of about 30 students in 2001⁹). Similarly, efforts have been directed towards training specialists to fill available posts at central hospitals—the COM currently offers 14 postgraduate Master of Medicine (MMed) programmes (including an MMed in Family Medicine), as well as a Master of Public Health (MPH) degree programme¹⁰. Unfortunately, few trained in the current MBBS undergraduate programme are willing to go to the districts to undertake the MMed in Family Medicine. Most medical school graduates in Malawi prefer instead to pursue specialties and career paths that will lead to employment in urban centres, worsening the maldistribution of medical doctors between urban and rural Malawi.

The MMed in Family Medicine programme is an attempt to address this gap by training doctors to serve in rural and remote areas. The idea to formally train Malawian doctors in family medicine to improve medical practice in rural areas was initiated by Prof. Johnstone Kumwenda in early 2001. At that time, there was a growing consensus that doctors posted to district attachments lacked the skills to meet the challenges of working in the district hospital. Many medical officers sent to work in district hospitals became frustrated, which led to a low retention after a few months of practice. Among those who decided to remain and serve in district hospitals, anecdotal evidence revealed that many lacked the necessary support and mentorship to deal with complex clinical situations and navigate an uncertain and (in terms of primary care in Malawi) largely unpaved career path.

In 2008, a team of academics from Malawi, Scotland (University of Edinburgh), the United States (Michigan State University), and South Africa (University of the Witwatersrand and Stellenbosch University) met in Blantyre with the aim of engaging in multifaceted discussions with stakeholders to start family medicine training in Malawi. This dialogue formulated 3 main recommendations relevant to this paper:

- 1) the need for family medicine training was recognised, and it was acknowledged that the establishment of family medicine practice in Malawi could serve as a vehicle for addressing more of the health needs of the most underserved Malawians;
- 2) the recognition of the role of the other key players in primary healthcare; and
- 3) the need to integrate skills of allied health professionals to develop teams that could improve primary healthcare in Malawi.

In 2009, representatives of the Christian Health Association of Malawi (CHAM) and the Malawi Ministry of Health (MOH) met to produce a roadmap for family medicine training in Malawi and discuss how best to improve primary healthcare in the country. This forum realised that achieving the stated goal of improving primary healthcare required multiskilled doctors to improve services at district hospitals and (eventually) rural health centres. This was right in the thick of the EHRP implementation period, and despite the EHRP's positive effects, central and district hospitals

alike still lacked medically trained staff. Additionally, the few doctors posted at district hospitals still assumed mostly administrative roles and felt ill-prepared to face the clinical challenges in the district, and postgraduate medical training (after 18 months of a rotating internship) remained focused entirely on specialist training. Human resources challenges in Malawi were far from resolved—especially at the district and community levels. The committee thus confirmed their support in favour of formal family medicine training in Malawi and drew up recommended prerequisites and partnerships accordingly.

In March 2009, the Medical Council of Malawi agreed to promote family medicine in principle. Links with international family medicine organisations and networks, such as Primafamed (a pan-African network of family medicine institutions and practitioners)¹¹, later served to facilitate the initiation of family medicine teaching and training at the COM. In February 2011, 1 full-time and 1 part-time lecturer in family medicine were appointed by the COM. One year later, the COM introduced a family medicine clerkship block into the fourth year of its MBBS curriculum, with the aim of exposing undergraduate students to the principles of family medicine. Training sites were then developed and fundraising activities undertaken to secure funds for the programme. Further, collaborations with Norway, Michigan State University, and the United States' Centers for Disease Control (CDC) were initiated and ties with the University of the Witwatersrand were strengthened. These developments led to the inauguration of the postgraduate programme in family medicine at the COM in January 2015.

Successes of family medicine's early years in Malawi

The undergraduate programme has so far exposed hundreds of students to family medicine principles. Students undergo an introduction to the fundamentals of family medicine for a week and are taught about the most common complaints encountered by primary care physicians, as well as the biopsychosocial approach to patient care. Students are then attached for a 4-week guided preceptorship in an accredited rural mission or district hospital. This experience encourages undergraduates to think “family” and “community” in their contacts with individual patients. Further, it has stimulated students to explore what family medicine entails. Formal evaluation of the undergraduate programme is in the pipeline; this will help clearly define lessons from this experience that can be used to make improvements moving forward. Some preliminary results are shared here, including the endorsements below from students in their evaluations of the attachment:

“I could just go for family medicine in future as it connects me more with patients... Family medicine addresses well the concerns of the patients: clinical, psychological, and biomedical.” (Fourth-year MBBS student in 2012)

“I think one way to be beneficial to my community will be to assist many in their daily living. As a doctor, I can do it well by specialising in a field close to needy people in the district... I think family medicine will make a difference in [the] Malawi [an] district health system.” (Fourth-year MBBS student in 2014)

Using the experiences gained from the undergraduate programme as a springboard, the postgraduate programme hopes to model and brand family medicine to fill the gap in primary healthcare service delivery. While it is too early to specifically extrapolate its specific future contributions, the postgraduate programme in family medicine has started

making its mark on the Malawian health system. Detailing and quantifying these contributions should be part of future evaluations and studies.

Challenges

Many obstacles will be faced as family medicine continues its emergence towards becoming a pillar of the Malawian public health system

Establishing training sites

The decision to develop off-campus training sites in the districts resulted in negative reactions from some stakeholders, as training of specialists has previously been conducted on main campuses in urban centres. Family medicine is characterised by the delivery of care in remote settings all over the world. Despite the real and perceived inconveniences associated with running a training programme amid the scarcity of basic infrastructure and facilities in rural areas (and the potential additional costs related to addressing these shortcomings), the long-term benefits of matching the training setting with that of prospective workplace^{2,12-14} cannot be underestimated. Additionally, the presence of medical students can improve the quality of a facility's clinical services and result in higher patient satisfaction¹³, and this is especially important in the Malawian context, where the physician population continues to rise but is still far from adequate.

Trainee location preference

When considering family medicine as a possible career choice, potential registrars may perceive an inferiority of the rural training environment compared to the tertiary hospital settings of other specialties. However, for several reasons, the ecology of large teaching hospitals is inappropriate for training family physicians as specialists in primary healthcare. For example, teaching hospitals contain many patients with advanced disease and place an emphasis on sophisticated investigations that are neither available nor relevant in primary healthcare settings. Medical staff in tertiary hospitals also lack sufficient time, space, and collective motivation to deal with psychosocial problems and interact with their surrounding communities. Finally, a lack of focus on prevention and a lack of exposure to undifferentiated patients at the entry point into the healthcare system would mean that family medicine trainees would miss out on exposure to key aspects of the discipline if the bulk of their training was to be carried out at central teaching hospitals.

Fitting a family medicine career path within Malawi's existing health system structures

As the family medicine discipline is new to Malawi, a prototypical career path for family medicine trainees and graduates is yet to be clearly defined within the context of Malawi's pre-existing health service structures. This impacts the educational content and processes, as well as the morale of current and potential future registrars—some may question the practicality of committing 4 years to a programme that cannot yet assure a clear career path or clearly defined scope of work.

Trainer shortage and diversity

The small pool of trainers to cover all undergraduate and postgraduate family medicine material is a major challenge. Despite its specific ontology and epistemology as a distinct entity, family medicine cuts across several disciplines. The assistance from lecturers in other departments is a helpful

short-term strategy to alleviate this shortage in human resources. Current and past faculty members have come from a variety of backgrounds (South African, American, British, Danish, Swedish, and Dutch, to name a few) and have exposed students to different models of training. While it is true that these mentors offer the students and trainees a wealth of experience and a diversity of ideas, the risk of poor standardisation across components of the programme should not be ignored.

Future roles of family physicians in the health care system in Malawi

Family medicine fits in well alongside other healthcare teaching and training programmes on offer at the COM, Kamuzu College of Nursing, and other Malawian institutions (including Malawi College of Health Sciences and Daeyang University) offering healthcare-related certification, diploma, and degree programmes. The gradual expansion in the number of programmes and placements available will facilitate the realisation of the MOH's strategic plan¹⁵ and the implementation of the Ouagadougou Declaration on Primary Health Care and Health Systems in Africa¹⁶. The 2011-2016 Malawian Health Sector Strategic Plan¹⁵ states that Malawi has made significant strides in focus and innovation in areas of prevention, health promotion, and community participation, though much work is still needed. Malawi's Essential Health Package has been expanded, partly because of the increase in the burden of noncommunicable diseases. Characteristics of the expanded Essential Health Package that are relevant to family medicine training and practice are: the prioritisation of interventions that are cost-effective; the expansion of services to underserved groups, which will mitigate factors that negatively affect the health of Malawians (availability, quality, access to health and environmental services); and multiskilled professionals in district hospital settings where they will work and are likely to remain and function⁸.

Furthermore, in line with training policy, the curriculum of family medicine is need-based and therefore responds to the social mission of health professional training for the Malawi Health Sector Strategic Plan¹⁵. In response to African regional body recommendations, the establishment of family medicine is a health intervention that would strengthen Malawi's national health service and "redefine strategic directions for scaling up Essential Health Package] interventions to improve health outcomes using the primary healthcare approach"¹⁶⁻¹⁸.

Family physicians have the opportunity to play a variety of roles, both in the Malawian health system in general and within individual communities. Depending on available resources, health facility team dynamics, organisational or government policies, patient burden and administrative workload, personal priorities, and even time of day, family doctors may find themselves fulfilling any or all of the following roles¹⁶.

• Care provider

Family physicians should be able to deal with most of the common conditions and problems arising in Malawi. They can therefore contribute in a positive way to the health of their targeted populations. To streamline this role they need to provide care characterised by patient-centredness, using a biopsychosocial approach, skilled communication, and family-oriented thinking in the care of an individual.

Practitioners should strive for quality in all provision of services.

With family physicians having the necessary skills to provide comprehensive care in peripheral areas, people all over the country will have access to skilled personnel irrespective of their location, near their homes, without disruption of their activities, and within their cultural settings.

• Consultant

Malawian family physicians should work in multidisciplinary teams of medical assistants, nurse-midwives, environmental health officers, health surveillance assistants, clerks, and clinical and medical officers, in addition to partners in the district health system. All of these individuals interact with patients or patient data. From time to time, team members will meet problems outside of their skill set or comfort level and will need the assistance of the most senior member, which should be a family physician in district hospitals and primary healthcare facilities.

• Clinical leader and manager

Districts require team leaders who have a clear vision for programme implementation. This applies to family physicians in Malawi from whom much was expected in line with the mission of the MOH's Health Sector Strategic Plan¹⁵. This role requires—in addition to clinical skills and competencies—managerial and leadership skills.

The family physician should be a seasoned manager working beyond the gates of the facility, be it district hospital, health centre, or if the physician is primarily assigned to a project, teaching, or managerial post. For example, Malawian family doctors should be responsible for organising quality and process improvement projects, maternal and neonatal mortality reviews, incident meetings, and continuing professional development meetings to improve all activities in the district and primary care setting.

• Community-oriented primary care leader

The Malawian family physician should revitalise the link between the health facility (patients) and the community and family members. In addition, through patient interactions and observations arising from the entire primary care experience, each family physician should develop an understanding or perspective about his or her practice population (including assumptions and questions) and explore further actions. Good knowledge of the community's problems, influential people, priorities, assets, and resilience level, for example, allow the family physician to make well-informed practice decisions from a position of credibility.

• Mentor and clinical teacher

Leadership can be observed and learned¹⁹. The family medicine training programme in Malawi emphasises leadership and aims to strengthen the leadership skills of family physicians in-training in order to produce graduates who will be innovative in their respective working environments using the limited resources available to them. Family physicians are responsible for mentoring the next generation of family physicians and instilling in them these same skills and values, along with clinical and technical skills.

• Researcher

A paucity of evidence to draw upon to make clinical and practice decisions is a major challenge in primary healthcare delivery. Research remains key in producing new evidence

and attracts the interest of key stakeholders in the education and services offered in primary healthcare¹⁹. Family physicians should be at the forefront of building research capacity in the Malawian district health service; they should also be leaders in the implementation and monitoring of interventions policies based on relevant research conducted (local and international) in primary care settings. Evidence gathered from research conducted at the tertiary level of care has a low external validity and applicability when applied to the primary care setting, leading to what Pather¹⁹ called evidence-biased medicine (as opposed to evidence-based medicine).

Assuming these well-defined roles will allow family physicians to positively influence the existing health system in Malawi. A relevant and effective family medicine programme should meet the needs of the community it serves and should positively impact critical areas. Family medicine training should provide Malawian practitioners with a mix of knowledge, skills, and attitudes that enables family physicians to fulfill their predominantly clinical responsibilities, while also engaging the community for better health. Good clinical skills and governance should lead to appropriate referrals resulting in better health outcomes.

Conclusion

Family medicine as a specialty in Malawi is emerging slowly. Malawi has significant shortages in human resources for health, but we see the Malawian family medicine training programme as a strategy to combat these challenges. We are working to develop a programme with all universally accepted attributes²⁰, integrating social, behavioural, and clinical aspects and equipping family physicians to treat all ages, both sexes, each organ, and every disease entity. With well-trained family doctors, Malawi can provide quality healthcare aimed at achieving physical and mental health through accessible, cost-effective, and evidence-based medicine that is responsive to the needs and preferences of patients and populations in a way that is respectful of patients' families, personal values, and belief systems. A central component to this will be continuing to develop and improve training programmes that are appropriate to the context in which graduates will eventually practice—district hospitals in most cases. This requires innovations in teaching strategies to hone skills of physicians working with more limited resources than are available at central hospitals, as well as a shift in the traditional paradigm of care delivery being focused at tertiary care centres, to a system that focuses on community-based care with family physicians as leaders of healthcare teams. Malawian family medicine is still in its infancy, with most of the aspirations and described benefits borrowed from models developed elsewhere. The challenge ahead lies in faculties and stakeholders involved with the programme being able to transform these aspirations into reality, while monitoring the process in relation to the social needs of rural Malawians.

References

1. Inem V. The challenges of health systems in developing countries. In: Chater AB, Rourke J, Couper ID, Strasser RP, Reid S, ed. *WONCA Rural Medical Education Guidebook*. 1st ed [Internet]. Bangkok: World Organization of Family Doctors (WONCA): WONCA Working Party on Rural Practice; 2014. Retrieved 16 Jun 2016. <http://www.globalfamilydoctor.com/GetFile.aspx?oid=CCE041D3-6A0E-4B44-AC51-2B224565FAFE>

2. White KL, Williams TF, Greenberg BG. The ecology of medical care. *N Engl J Med*. 1961 ;265:885–92.
3. Wadsworth M. Health and sickness: the choice of treatment. *J Psychosom Res*. 1974 ;18(4):271–6.
4. Hannay DR. *The symptom iceberg: a study of community health* [Internet]. London: Routledge & Kegan Paul; 1979. Retrieved 21 Jun 2016. <http://www.trove.nla.gov.au/version/10621184>
5. Mfenyana K, Mash B. A different context of care. In: Mash B, ed. *Handbook of family medicine*. 1st ed. Cape Town: Oxford University Press Southern Africa; 2000.
6. Kark SL. *The practice of community-oriented primary health care*. New York: Appleton-Century-Crofts; 1981.
7. Bentham J, Burke J, Clark J, Svoboda C, Vallance G, Yeow M. Students conducting consultations in general practice and the acceptability to patients. *Med Educ*. 1999;33(9):686–7.
8. Mandeville KL, Ulaya G, Lagarde M, Gwesele L, Dzewela T, Hanson K, et al. Early career retention of Malawian medical graduates: a retrospective cohort study. *Trop Med Int Health*. 2015;20(1):106–14.
9. Muula AS. Case for clinical officers and medical assistants in Malawi. *Croat Med J*. 2009;50(1):77-8.
10. College of Medicine, University of Malawi [Internet]. Blantyre: College of Medicine, University of Malawi; c2017. Retrieved 20 Nov 2017. <https://www.medcol.mw/postgraduates/>
11. PRIMAFAMED (AFRICA) Network [Internet]. Ghent (BE): PRIMAFAMED (AFRICA) Network; c2017. Retrieved 21 Nov 2017.. <http://www.primafamed.ugent.be/>
12. Beauchamp J, Bélanger M, Schofield A, Bordage R, Donovan D, Landry M. Recruiting doctors from and for underserved groups: does New Brunswick's initiative to recruit doctors for its linguistic minority help rural communities? *Can J Public Health*. 2013;104(6 Suppl 1):S44–8.
13. de Vries E, Reid S. Do South African medical students of rural origin return to rural practice? *S Afr Med J*. 2003;93(10):789–93.
14. Yeganeh-Arani E, Chandratilake M, Muula AS. Factors affecting career preferences of medical students at the College of Medicine, Malawi. *S Afr Med J*. 2012;102(4):249–51.
15. Ministry of Health, Government of Malawi. *Malawi health sector strategic plan 2011–2016: moving towards equity and quality* [Internet]. Lilongwe: Ministry of Health, Government of Malawi;2011. Retrieved 16 Jun 2016.. http://www.nationalplanningcycles.org/sites/default/files/country_docs/Malawi/2_malawi_hssp_2011_-2016_final_document_1.pdf
16. Barry SP, Somanje H, Kirigia JM, Nyoni J, Bessaoud K, Trapsida JM, et al. The Ouagadougou Declaration on Primary Health Care and Health Systems in Africa: achieving better health for Africa in the new millennium [Internet]. *Afr. Health monit*. 2010 Apr–Jun;(12)10–21. Retrieved 21 Jun 2016. <https://www.who.int/en/ahm/issue/12/reports/ouagadougou-declaration-primary-health-care-and-health-systems-africa-achieving>
17. Sambo LG. The Ouagadougou Declaration and the challenges of strengthening health systems in the African region [Internet]. *Afr. Health monit*. 2010;(12):10–21. Retrieved 21 Jun 2016. <http://www.who.int/en/publication/65/african-health-monitor-issue-12>
18. Doherty JE, Couper ID, Campbell D, Walker J. Transforming rural health systems through clinical academic leadership: lessons from South Africa. *Rural and Remote Health*. 2013;13(2):2618.
19. Pather M. Continuing professional development. In: Mash B, ed. *Handbook of family medicine*. 1st ed. Cape Town: Oxford University Press Southern Africa; 2000. p. 321–39.
20. Jimbo M. Family medicine: its core principles and impact on patient care and medical education in the United States. *Keio J Med*. 2004; 53(2):69–73.