

TEACHING ARTICLE**BRIEF HISTORY OF MEDICAL EDUCATION IN ETHIOPIA**

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“If I have seen further than others, it is by standing upon the shoulders of giants”

Sir Isaac Newton

History of medical education has never been taught to medical students. Ethiopian medical community has little knowledge about the historical developments of medical education in Ethiopia because of paucity of written documents. It is a common occurrence to hear distorted stories which have developed through time from individual ideas rather than research findings. The aim of this review is to document facts as gathered from reliable source documents, living witnesses of the time and personal observations.

The beginnings of modern medicine

Before the opening of Africa to the western cultures, Africans relied on traditional medical practitioners or witch-doctors. Herbs and roots were used some of which were effective indigenous drugs. Pankhurst R. described the Ethiopian traditional medical practices as medico-magical or medico-religious (1).

In Ethiopia western medicine was limited to the palaces of the royals. In the 1521 Emperor Lebne Dingil wrote a letter to the Portuguese king requesting him to send physicians and surgeons to cure illnesses (2). Since then several foreigners, including British, Germans, Greeks and Russians have practiced medicine in Ethiopia.

There had been no modern medical doctor of Ethiopian origin until the time of Emperor Menelik II. The first Ethiopian medical doctor was Hakim Workneh also called Charles Martin who was born in 1865 in Gondar. As a small boy he was taken by Colonel Charles Chamberlain to India after the Magdala war. When Chamberlain died, Hakim Workneh was raised by Colonel Martin who paid for his education, so he is named Hakim Charles Martin after Colonel Charles and Martin. Hakim Workneh obtained his medical degree from Lahore Medical College in 1882. He served Ethiopia as a medical officer during the Adwa war against the invading Italian army. He was also a diplomat to the palace and was the physician who attended Emperor Minilik II (3).

One of the earliest doctors was Negadras Gebrehiwot Baykedagn who was born in 1886 in Adwa. He joined a Swedish school in Minkulu near Masawa. Later he went to Germany and was adopted by a rich Austrian family. He studied medicine at Berlin University. He was a member of the medical team that was treating Menelik II (4). He is most known for his contribution in the socio-economics of the country rather than a medical doctor.

Melaku Beyan was an Ethiopian medical doctor who was born in 1900 in Wollo. He graduated as a medical doctor from Howard University, USA, in 1935. During the Italian invasion Melaku Beyan served as chief medical officer of the Ethiopian army, he was also a diplomat and activist against the Italian invasion of Ethiopia (5). Since the abovementioned Ethiopian doctors, there were no Ethiopian physicians in country as late as 1955. By 1959, some 10 fully qualified physicians of national origin trained overseas returned to the country (6).

Before the Italian invasion, there were a few hospitals in the country run by foreigners, mostly Italian doctors (7). The hospitals are listed in Box 1.

During the Italian occupation the medical services aimed to meet the needs of the Italians and other white people. The medical services for the natives was based on segregation. After the victory over the occupying Italian forces, medical service was delivered in rudimentary hospitals and private practices by Italians, and few British doctors, who were mainly serving the British army (8). All hospitals were run by the government except a few that were run by missionaries.

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Medical education in Ethiopia

Monekosso (9) divided the history of medical education in Africa into four phases namely: The Colonial Phase (1900–1960), the Independence Period (1960–1975), the Fall-Back Period (1975–1990) and the Scale-up Period (1990–Present). Though there are some similarities with these developments in colonial Africa, Ethiopia has undergone its own historic track of medical education according to the policies of the ruling regimes: the Imperial, the Socialist and the developmental democracy periods.

The Imperial period

In 1947, using available physicians and high school laboratories at Kotebe, the Ethiopian government started to train pharmacy assistants and dressers (health assistants). Later a school of laboratory, pharmacy and x-ray technicians were opened at Minilik II hospital (8). Similar to the colonial period in Africa missionary hospitals run by foreigners trained health assistants in their hospitals as medical assistants for their own consumption.

The aim of medical education in Africa during the colonial period was described as “The system of training is directed to the production of an assistant able to diagnose and treat with understanding the more straightforward and common disease conditions, to appreciate the possibilities of the major medicine and surgery in more expert hands, and to know sufficient of rare and less simple conditions to realize when to call an European superior to his aid” (10).

In 1953 the American “Point IV” program, a precursor to the United States Agency for International Development (USAID) and United Nation (UN) agencies agreed with Ethiopian government to set up a teaching project under the Ministry of Public Health i.e. The Gondar Public Health College.

The overall philosophy of the project was that:

- The training be directed primarily toward preventive medicine.
- The candidates must have some proficiency in curative medicine if they were to command the attention and respect of the people among whom they would work.

There were 28 men in the first year of the Gondar Public Health College. They were drawn from Ethiopian army, the Imperial Body Guard and from the National Police Force. Only one held a certificate of matriculation which would have admitted him to the University College in Addis Ababa (6). The Gondar Public Health College and Training Center was taken over by Haile Selassie I University in December 1961. Thus, the diploma course was upgraded to a bachelor degree program as of 1962 (11).

Higher education in Ethiopia started with the inauguration of the University College of Addis Ababa in 1950 which later was upgraded and granted a charter as Haile Selassie I University in 1961. According to Aklilu Habte (11) the Utah team recommended the “Land Grant University” model for the would be university. The model was created and structured based on priority on community service. The proposed model for the university also emphasized on transforming the traditional education models to modern methods.

In 1962, Dr. Weir of the Rockefeller foundation was requested by Lij Kasa, the president of Haile Selassie I University to study the need, desirability and feasibility of the establishment of a medical school in Ethiopia. The group consisted of Leroy Burney, Robert Moore and Milnes Walker. The recommendations of the commission were that the Gondar Public Health and training center be continued, strengthened and expanded; develop a plan for opening of medical school within the next decade (12).

The Rockefeller Commission visited hospitals in the country and Addis Ababa and recommended to teach pre-clinical years in American University of Beirut or elsewhere and the clinical years in Addis Ababa (13). In Nigeria the opposite was true in that all clinical students were transferred to teaching hospitals in the UK for their clinical training for a number of years until University College Hospital Ibadan was built and opened in 1957 (14).

The medical faculty was formally linked with universities in Edinburgh University, United Kingdom and Syracuse University, United States (8,15). A similar link was advised when the Makerere medical school was opened in Uganda (10).

The executive committee of the council of the Haile Selassie I University formally approved the formation of a Faculty of Medicine on Tuesday, March 26, 1963 based on the reports of the Rockefeller Commission and other committees (16).

Frank Howarth was approached by B. Oscar Barry, a representative of The Emperor Haile Selassie, to start a Medical school. Professor Frank Howarth, a pharmacologist from Cambridge University, was appointed as dean of the medical faculty on July 20, 1964 (15). Frank's wife Mrs. Howarth said "When approached Frank said that he had always wanted to design and run a Medical School in a third world country where with his system he could reduce the costs but still produce excellent students" (17). He was a pioneer of the integrated organ-system approach to medical education. He established medical schools in Ethiopia, Jordan, Nigeria and Yemen. After Howarth there were two British deans the last being Sir Ian Hill who was replaced by Prof Asrat Woldeyes as the first Ethiopian dean in 1973.

The following were the seven different items believed to be important for the curriculum, training program and organization of the medical faculty (18).

- Full international recognition by the promotion of links with universities abroad and invitation of external examiners.
- Clinical training especially in general medicine, general surgery, midwifery, gynecology and pediatrics. The student should particularly qualify to deal with acute emergencies of major and minor surgeries.
- Training in public health and social medicine
- Training about service in the rural areas of Ethiopia
- Integrated institute of medical sciences
- Postgraduate training
- Research

The medical school consisted of preclinical unit (Institute of medical sciences), the clinical units and medical library. Professor Howarth (20) described the teaching in preclinical units: The teaching was regional and clinically oriented. After studying an organ or system the students visit hospitals to observe in patients the changes produced by the disease and then introduced to the preventive and societal aspects of such disease. He further elaborates the intentions were:

- A reduction of course duration by elimination of teaching duplication
- Break the artificial barriers between preclinical and clinical medicine
- The presentations of data on an organ/system basis which is in accordance with the needs of the doctor at the bedside

According to Aklilu Habte (11) the first cohort of six students from 3rd year science faculty students (Teklasion Woldemariam, Shekib, Nirayo, Fisseha Teklewold, Tesfaye Gebrekidan and Asgedom) went to Beirut Sept 1963 for their preclinical education. The students returned in 1965 to continue their clinical training at Princess Tsehai Memorial Hospital (currently Armed Forces General Hospital). The first batch of Ethiopian doctors graduated in 1968. Then the faculty started to give preclinical courses at the Sidist Kilo campus until 1972.

The first full medical training started in 1966 with 22 pre-clinical students drawn from Faculty of science, graduates of public health college and science graduates from foreign universities (8). During the third batch the Ethiopian Medical students Association was formed, and its organ was "medics", Mekonen Bekele was the editor-in-chief and Mikael was the designer of the logo. Unfortunately the journal had only one issue (personal communication).

The formation of the medical school, the central medical library and the Ethiopian Medical Association (EMA) were inseparable. The EMA and the medical faculty agreed to form the central medical library in 1965 based on the agreement reached at the first annual Ethiopian medical conference. According to the terms of agreement the library offers all available services to members of the EMA while the EMA provides medical journals in exchange for the Ethiopian Medical Journal. (21) The central library was housed at Sidist Kilo campus where the Institute of

medical sciences was situated, later on it moved to the Duke of Harar Memorial Hospital second floor B wing.

The socialist period

During 1974-1976 the medical school was closed for the National Campaign program declared by the military government. Except final year medical students who were supposed to sit for qualifying examination all the other batch of students were deployed to the rural areas for two years. All students from the school of medicine were expected to treat patients. Thus, preclinical students were given a one-day training on how to give intramuscular injections at St. Paul's Hospital and a one-week course on first aid treatment. The preclinical I students had already completed pharmacology course (Later the pharmacology course was moved to preclinical year II).

In 1975 the clinical departments of the Medical Faculty moved from Princess Tsehai Memorial Hospital to the former Duke of Harar Memorial Hospital. The Hospital was built by the contribution of the Ethiopian people at a cost of just above 21 million Birr as a memorial for Prince Mekonen Haile Selassie. The hospital was inaugurated by Emperor Haile Selassie on October 1973. Before the hospital became functional its 6th floor served as a head quarter for the Rehabilitation Commission of Ethiopia during the famine of 1973/1974. The hospital started to function with 120 beds and was run by the Swiss Red Cross until the revolution of 1974. In addition, the clinical teaching was conducted at St. Paul's Hospital; psychiatry and ophthalmology were taught at Minilik II hospital. Dormitories for the medical students were at the Building College until a three story building was constructed at Tikur Anbesa Hospital premise in 1978.

In July 1977 Addis Ababa University (AAU) and the Karl Marks University (KMU) of East Germany signed an agreement on scientific and cultural cooperation which paved the way for a latter agreement in 1978 for KMU to provide Gondar medical faculty with academic staff, teaching materials and laboratory supplies. The Gondar Public Health College (GCMS) was renamed Gondar College of Medical Sciences. The first batch 107 students enrolled in 1978 in the basic sciences department which was staffed by graduate assistants. The preclinical and clinical courses were taught by East German professors (22). There were few Ethiopian doctors led by Dr. Birru Mengesha. The most distressing was the hostile learning environment when the city of Gondar was under Major Melaku Tefera reign of red terror.

During the socialist government the medical schools at Addis Ababa and Gondar continued to enroll more students from around maximum of 50 to 100 students. In 1980 the AAU medical school initiated the so-called phase curriculum, which did not go for even a year.

The 1980s were problematic political and economic time for Sub-Saharan Africa, and medical schools did not escape the general difficulties (9). On return from the National campaign after two years in 1976 almost all of the expatriate teachers left without replacement especially for preclinical courses. Only Drs. Getachew Bolodia (biochemist), Yoseph Assen (physiologist) and Messele Gedebe (microbiologist) were the remaining Ethiopian teachers for pre-clinical departments. Thus, a contingent of teachers was sent to USSR to recruit teachers. There was no single teacher for obstetrics and gynecology, though there were few from east European countries in the department as non-teaching staff. The department was run by general practitioners (Drs. Seyoum Yosef, Assefa Gebresellasi and Mekonen Bekele) who had extensive experience in gynecology and obstetrics. Later on, more Cuban and Russian professors were recruited and filled the gaps to run the learning teaching process. Furthermore, the enrollment of premedical students was double of the previous years. After the National Campaign some students did not return to the medical school; some fled to neighboring countries, imprisoned or killed and others joined the rebel groups. The students from foreign countries including Southern Rhodesia (Zimbabwe), Uganda, and India left the country due the political upheaval. The rest of the medical students had to undergo their education under the most terrifying condition popularly known as 'red terror'.

One of the important activities of the School of Medicine at Addis Ababa University was the establishment of the rural program as was emphasized from the very initiation of the medical training. Initially the rural training program was in Nekemt, Wollega until it moved to Zwai in 1978. The program further progressed to Butajira Rural Health Program, which started in 1986 with the aims to develop and evaluate a system for continuous registration of birth and deaths to generate data on fertility and mortality to provide a study base for health related researches. It started as a PHD study project of Desta Shamebo and later it grew to departmental collaboration with Umea University, Sweden.

In 1979 the AAU took a step to open postgraduate programs with the aim to meet the manpower demand for higher education (23). The objectives of specialty training included:

- Producing adequate number of doctors and other human resource for health
- Producing specialists (teachers) to train doctors in large numbers
- Improving the level of medical practice and research in hospitals
- Filling vacant posts and replacing expatriates
- Meeting the basic expectations of physicians for professional advancement and avoid “brain drain”.

Postgraduate programs were opened in Internal medicine, Surgery, Anatomy, Pediatrics and Pathology. Subsequently, the other departments including gynecology & obstetrics, ophthalmology and psychiatry followed the same path. Biomedical sciences started Masters in physiology, anatomy, biochemistry, pharmacology and microbiology in the first half the 1980s. These master’s program progressed to PhD programs in the early 1990s.

In 1991, spearheaded by Prof Edemariam Tesga, a new curriculum was proposed to obtain a bachelor’s degree and continue with the remaining four years in clinical medicine. The aim was to create an opportunity for employment of those who could not succeed in the pre-clinical courses and also to allow the young medical school graduates to mature enough to shoulder the expected heavy responsibilities.

The third medical school was opened in Jimma with a new educational philosophy as Jimma Institute of Health Sciences (JIHS). Taking the national and international scenario into account the Ministry of Health decided to open a new school whose training should integrate training, service and research and should train different health professionals as a team (24). It was established as a school of health assistants in 1983 nursing school started. It enrolled its first medical students in 1985. The medical school started in a dilapidated military barrack and an old 150 beds hospital built by the Italians without major renovation for decades.

When the JIHS was opened there were few medical doctors Drs. Teklasion Woldemariam as the dean and an all-round teacher including biomedical sciences and Amha Mekasha as hospital director and head of clinical programs while Esayas Berhanu (biochemist) was preclinical coordinator and Mr. Mekonnen Asefa (public health specialist) as head of Community Health Department. The rest of the staff members were young Ethiopians who were bachelor degree holders. The teaching was mostly carried out by Cuban professors sometimes through interpreters. For the second batch of clinical students four polish professors were recruited to teach medical students in internal medicine, surgery, gynecology and obstetrics. The JIHS graduated the first batch of 67 medical students in December 1990 where President Mengistu Hailemariam was the guest of honor. Soon after the Socialist government was overthrown in May 1991 all the Cubans left the country and there was severe shortage of staff in teaching biomedical sciences. Later on through the agreement with the Japanese technical Cooperation to African countries Egyptian professors filled the gap in biomedical sciences.

The developmental democracy period

The major change that happened during the developmental democracy period was to increase the intake of medical students, increase in staff development and opening of new programs. With the change of the socialist government the relation with western universities was increasing paving the way for many of the staff members to go abroad for further training. A number of specialty and sub-specialty programs initiated in the early 2000 in various fields. The development of the residency program has improved the availability of specialists in cities and towns out of Addis Ababa. Newer medical schools also increased the number of their clinical staffs which later started their own residency programs.

In 1999 JIHS was amalgamated with the Jimma College of Agriculture to form Jimma University. Even after the formation of the University the medical education was under severe strain of getting adequate number of teaching staff. The clinical teaching was carried out in a hospital built by Italians which was on the verge of collapse. A new hospital was built after nearly 30 years of the medical school. However, the community based program was going well and became an example to many medical schools in Ethiopia and elsewhere in the world. The school of medicine established several international connections in due course, one of the most important being the Gilgel Gibe Field Research center. Currently the school of medicine runs both undergraduate and graduate programs in various health fields.

Recent decades have witnessed proactive measures by many governments around the world to transform their higher education from 'elite' to 'mass' systems. When the Socialist government was overthrown there were three medical schools as mentioned above. During the developmental democracy system new medical schools were opened to address the manpower need of the country at universities of Haramaya, Hawasa and Mekelle.

In 1996 Haramaya University started the medical education program in the former Harar Military Academy but without its own teaching hospital and very few young staff, though there are four general hospitals in the city of Harar.

Hawasa medical school was established as Dilla College of Teachers Education and Health Sciences under the leadership of the then dean Dr. Solomon Dimamu. In 2000 the health faculty has been moved to Hawasa University. When the medical school opened in Hawasa it had a newly constructed hospital but poorly equipped and few consultants to run specialty services.

Mekelle medical school founded in 1995 also had the opportunity to use the newly built Ayder hospital with few specialists but attempts were made to alleviate the staff shortage through international collaborations.

In 2007 St. Paul's Millennium medical school was opened with the aim to admit 30% of students from rural areas and 30% women students. The unique feature is that students must take an entrance examination and are not assigned like other university entrants by the Ministry of Education. The curriculum was designed to be initially problem based but could not take off well and was discontinued soon. Prof Gordon from Hammersmith hospital in London was responsible to lead the formation of the school with close support by the then minister of health Dr. Tedros Adhanom who was the originator of the idea of opening the school.

The mass demand for higher education and the inability of the government to cope with led to the emergence of the private sector in higher education. Private medical schools started to function including Hayat medical school, Bethel Medical School, Gambe medical school, Africa Medical School, Myungsung Christian Medical School and Sante Medical School. However, many of the newly opened private medical schools run the teaching through part-time teachers.

A New Innovative Medical Education Initiative (NIMEI) was initiated by the Federal Ministry of Health and the Federal Ministry of Education in 2008 in order to scale up and transform the doctor population ratio to meet the health care needs of the people. It aimed at educating medical doctors by enrolling graduates of health sciences and natural sciences in a shorter time than the traditional program. NIMEI was launched in February 2012 and the training is conducted in ten universities and three hospitals. The NIMEI curriculum is different in terms of uptake of students with first degree in science subjects, four years of education and is competency based and integrated (25).

Along with the massification programs for the undergraduates the number of medical schools have reached to 32. Postgraduate programs were also initiated at most of the medical schools. In addition, some medical schools have started fellowship programs in clinical medicine.

During all these years of development medical education has been facing several challenges. Many of the challenges were related to the policies of governments. Infrastructure remains to be a major challenge for almost all the schools where many medical schools were opened in hospitals that are poorly equipped. The constructions of buildings and information technology facilities are severely lagging behind schedules. Faculty recruitment, retention and development is very poor in that many schools do not have adequate staff in number and educational level to run the medical schools. The internal and external brain drain remains as a major obstacle.

In conclusion, the history of medical education in Ethiopia in its half a century existence has expanded immensely. It is recognized that written records are lacking to give more information. Hence, it is imperative that updates in the documentation of the developments of medical education should be maintained.

REFERENCES

1. Pankhurst R. An Historical examination of traditional Ethiopian medicine and surgery. *Ethiop Med J* 1965;3:157-172.
2. Pankhurst R. Ethiopia's Historic Quest for Medicine Series:01.
3. Pankhurst R. An introduction to the medical history of Ethiopia. Red Sea Press, Trenton, New Jersey, 1990.
4. Zewde B. The works of Negadras Gebrehiwot Baykedagn. AAU Press, Addis Ababa, 2010.
5. Asfaw Z, Alemayehu E. Hakim Workneh Eshete and Melaku Beyan: Pioneers. In Mehari E, Gebeyehu K, Asfaw Z. *The Manual of Ethiopian Medical History*. 2013. pp 12-14.
6. Webb AH. The beginnings of medical education in Ethiopia. *J Nat Med Assoc* 1957;49:160-64.
7. Berhan Y. Medical doctors profile in Ethiopia: production, attrition and retention. *Ethiop Med J* 2008;46 (suppl):1-77.
8. Woldeyes A. The postliberation period (1941–1973). In Pankhurst R. *An introduction The Medical History of Ethiopia*.; Trenton, New Jersey: Red Sea Press; 1990, pp.241-64.
9. Monokosso GL. A Brief History of Medical Education in Sub-Saharan Africa *Academic Medicine* 2014, 49: S11-S14.
10. Odong A. The first Fifty Years of Makerere University Medical School. Kampala; Marianum Press. 1989. P 35.
11. Habte A. The History of Haile selasie I university: Development and expansion of higher education in Ethiopia. CHAI-CHIN Press, Taiwan, 2017. (in Amharic).
12. Barry BO. Conference on medical education Policy. *Ethiop Med J* 1964, 2: 144-48.
13. Ellis JR, Vahlquist B, Agren G, Ritchie AE. Second Rockefeller Commission Report. *Ethiop Med J* 1964;2:154-169.
14. Ibrahim M. Medical Education in Nigeria. *Medical Teacher* 2007, 9-10: 901-05
15. Barry BO. Haile Sellasie I University Medical Faculty. *Ethiop Med J* 1964;3: 40.
16. Barry BO. Report of the Medical Faculty. *Ethiop Med J*. 1964, 2: 170-73.
17. Clegg W. My Story. P 101.
18. Barry BO, Mannheimer E. The aim of the medical faculty of Addis Ababa. *Ethiop Med J* 1964;2:174-8.
19. Rendle-Short J. People visit Addis for a variety of reasons. *The Reporter*. August 9 2014.
20. Howarth F. Undergraduate Medical Training in Ethiopia. *Lancet* 1969;293:359-62.
21. Allen PM. Central medical library. *Ethiop med J* 1965;3:192.
22. Maru M. Report of the historic Gondar College of Medical Sciences. *The Alumni Voice* 2014;11-14.
23. Kitaw Y, Teka GE, Meche H. Lessons from the evolution of human resources for health in Ethiopia: 1941-2010. *Ethiop J Health Dev* 2013;27 (Special Issue) 1:6-28.
24. Woldemariam T, Assefa M. Historical perspective of Jimma Institute of Health Sciences. *Bull JIHS* 1990;1 (2):11-19.
25. Abraham Y, Azajh A. The new innovative medical education system in Ethiopia: Background and development. *Ethiop J Health Dev*; 2013;27 (Special Issue)1:36-40.

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