SAMSS Site Visit Report

Faculty of Health Sciences, School of Medicine
Jimma University, Ethiopia

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Contents

Acronyms

C	Clinical
CBE	Community Based Education
CBTP	Community Based Training Program
DTTP	Development Team Training Program
EPRDF	Ethiopian People's Revolutionary Democratic Front
FDRE	Federal Democratic Republic of Ethiopia
HC	Health Center
HO	Health Officer
HP	Health Post
JU	Jimma University
MOE	Ministry of Education
MOF	Ministry of Finance
MOH	Ministry of Health
NGO	Non-governmental Organization
PC	Preclinical
SOM	School of Medicine
SRP	Student Research Program
TTP	Team Training Program

Findings

Jimma University has implemented a number of strategies to promote teaching staff recruitment and retention. JU has also been an innovator of Community Based Education (CBE) which provides service to rural communities and builds student preparedness for practice.

Ethiopia is undergoing a national level reform of the health care system to provide service to all Ethiopians. The reform appears to be built off of a national shared vision for service.

Despite reform efforts, recruitment and retention of physicians and University teaching staff remain significant barriers to the scale up of physicians in the country. Physicians continue to migrate internationally and to national private, urban and NGO opportunities which pay higher salaries than employment in the rural, public sector and provide professional and social incentives.

Jimma University

1. JU has implemented a number of strategies for teaching staff capacity building and retention.
The primary strategy appears to be the thoughtful expansion of post-graduate training to promote retention in the country, provide teaching capacity for students, and build the teaching staff workforce of the University. Additional incentives include financial (top ups) and non-financial (housing, school for staff children, recreational areas).

2. JU is undergoing a significant student expansion mandated by the MOE.
Rapid expansion, or initial "flooding," will likely further strain faculty and facilities which may threaten quality of education and competency of students.

3. Severe faculty shortages continue to promote faculty loss and are a significant barrier to capacity scale up.
Faculty shortages "stretch" current/existing faculty and promote migration to either international or national private/urban/NGO opportunities.

4. Research at JU remains in its infancy.
Limited facilities and resources limit post-graduate and faculty research. Research is also limited by high teaching and service demands on faculty. This deficiency leads to faculty loss as research is linked to career advancement.

5. CBE is a successful innovation.
CBE provides both clinical and public health service to rural communities and increases graduate preparedness, but its effect on retention is unclear.

6. Basic and advanced utilities are unreliable at the national level and negatively impact capacity and jeopardize innovation at the local level.
Basic utilities include power and water. Advanced utilities include internet and telecommunication.

Ethiopia National Level

7. The national government is investing heavily in health workforce scale up.
Investments include new facilities and equipment, a reorganization of the health service system and development of a plan for health resources "flooding and retention." It appears the national government plan is being developed through a well-coordinated, collaborative effort between Ministries, Universities and Professional societies creating a "shared vision" for health care.

8. Changes in national level compulsory service are ensuring a doctor workforce throughout Ethiopia.
While compulsory service is a "stick," the government is also offering "carrots" such as increased salary, non-financial incentives, and opportunities for post-graduate training. Compulsory service is also meant to develop the national shared vision and community commitment. The long-term effect of compulsory service on retention is currently unclear.

9. Doctor scale up is complemented with Health Officer scale up and advanced training in order to maximize health workforce in Ethiopia.

Background and General Presentation

Country Profile

Unique among African nations, Ethiopia was never colonized by the western countries, save for a brief Italian occupation from 1936 to 1941. The country was ruled by a monarch, Emperor Haile Selassie, from the 1930 until he was deposed by a military Junta called the Derg in 1974. The Junta established a Marxist military regime that ruled the country until 1991 when it was toppled by the Ethiopian People's Revolutionary Democratic Front (EPRDF). The fall of the military junta marked the beginning of a transition process into a democracy culminating in the adoption of a new constitution in December 1994 and finally the first multiparty elections in May 1995. After the success of the multiparty elections what followed was the establishment of the Federal Democratic Republic of Ethiopia (FDRE) on August 24, 1995.

The FDRE governance is based on a federal system of government in which power is decentralized and delegated to 9 regional administrations and 2 city administrations (Figure 1) with equal rights and powers.

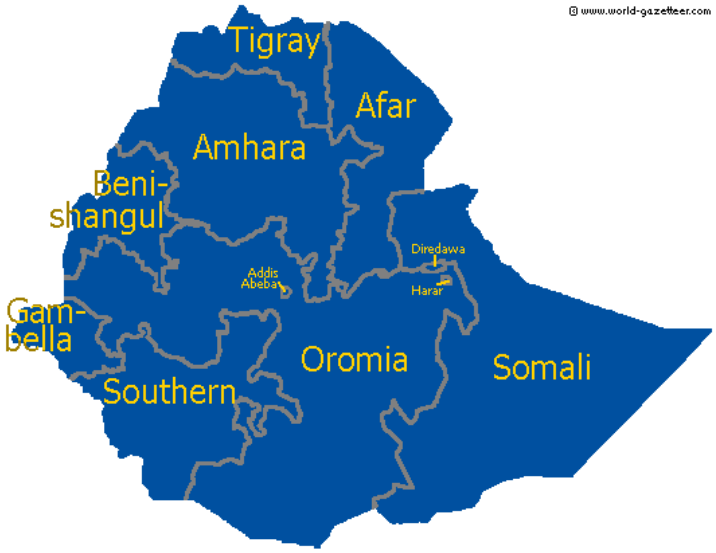

Fig. 1 Member States of the Federal Democratic Republic of Ethiopia

Power is further devolved from the regional/state to zonal to woreda/district to kebele (see figure 2).

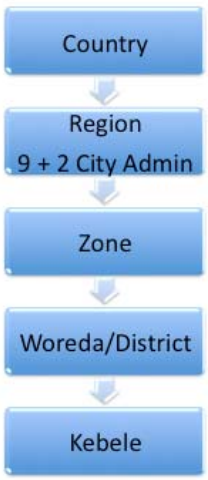

Fig. 2 Ethiopia Government System

Ethiopia has a population of about 85,000,000 of whom 83% live in rural areas. About 80% of the population depends on agricultural employment and the economy is agriculturally based. Ethiopia has median age of 17.2 years, life expectancy of 55.41 years, a birth rate of 43.97/1,000 population and a death rate of 11.83/1,000 population. The infant mortality rate is 80.0/1,000 live births. The HIV/AIDS adult prevalence rate is 2.1%.

Ethiopia is a landlocked country sharing its boundaries with Djibouti, Eritrea, Kenya, Somalia and Sudan. Most of the borders are porous allowing free movement of the people but at the same time being a source of insecurity and conflicts in the border areas. In addition to cross-border conflicts, there have been times when the country has experienced internal conflicts amongst its ethnic groupings.

Health System Profile

The Federal Ministry of Health in Ethiopia has vested powers and duties to set out and oversee policies that govern the delivery of health service in the 11 administrations that make up the federation. According to the health policy of 1993, the decentralization transfers major parts of decision making, health care organization, capacity building, planning, implementation, and monitoring to the regions with clear definition of roles.

Ethiopia is changing it health service system into a four-tier system (Figure 3).

Fig. 3 Four Tier Health Service System

A health post emphasizes disease prevention measures, provides limited basic clinical services and is to be manned by 2 female health extension workers who have completed 10th grade and undergone 1 year of health service training. The goal is to serve a population of about 5,000 people. A health centre provides in-patient and out-patient services that include laboratory services. Health centers should be led by health officers who are BSc holders trained for 4 years and serve 5 surrounding health posts. A combination of a health centre and its 5 surrounding health posts make up a primary health care unit to serve a total population of 25,000 people.

Faculty of Medical Sciences

Jimma University (JU) was established in December 1999 with the amalgamation of Jimma College of Agriculture and Jimma Institute of Health Sciences. JU is comprised of 8 faculties and 1 college (Figure 4). The Faculty of Medical Sciences has 20 departments and offers training at BSc, MD, DMD, MSc and Specialty levels. At the undergraduate level it teaches Human Medicine, Medical Laboratory Technology, Pharmacy, Dentistry, Anesthesiology and Cataract Surgery.

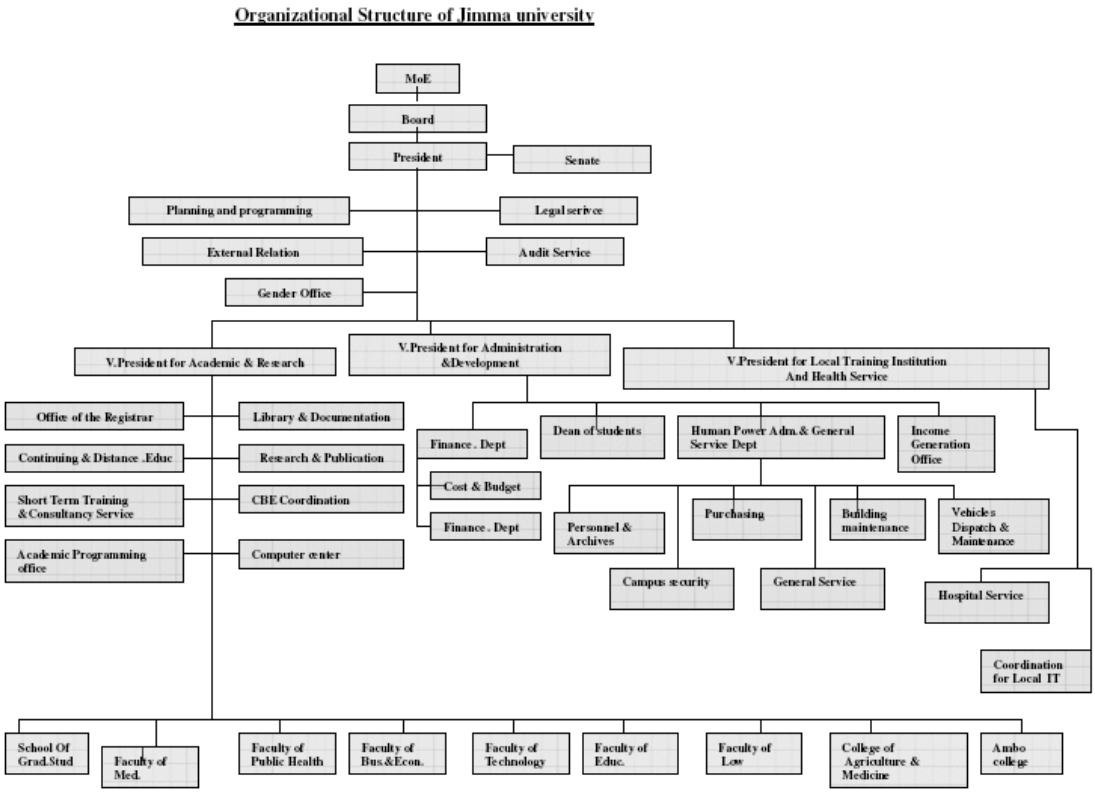

Figure 4. Organizational structure of Jimma University

As its vision, JU aspires to be the premier public institution of higher learning in Ethiopia, renowned in Africa and respected globally. The mission of JU says that it is a center of academic excellence integrating training, research and service. Furthermore, the university trains higher caliber professionals at graduate and post-graduate levels through its cherished and innovative community based education (CBE).

Overview of Medical Education System

Overview

Admission & Tuition

JU admits students through a national level competitive system where the best of the best find their way to medical school. The chance of a student being admitted at JU medical school depends on (i) the number of admission slots available at JU, (ii) the student's performance in the **university entrance examination,** taken after grade 12, (iii) the priority choice made by the student for JU in relation to the other medical schools, and (iv) the performance of other students who have made the same priority choices as the student (Figure 5).

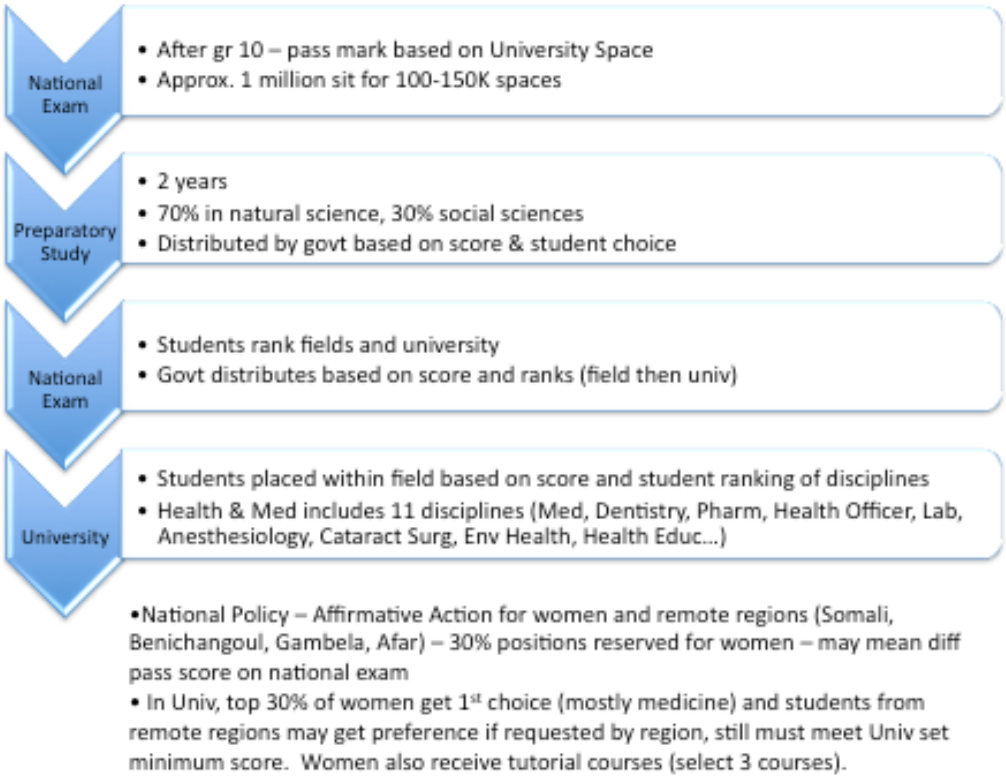

Fig. 5 National Admission System

There is an affirmative action program, meant to increase the number of female students. At the level of the MOE, women are evaluated and distributed to the Universities on a separate national university entrance exam scoring scale. The goal is to have at least 30% women entering University. Effectively, this means that a passing score for a woman could be lower than for a man. At JU level, the top 30% of women are given their first choice in discipline - usually medicine although they

must still meet the minimum passing score set by the University. In medical school, women can also receive additional tutoring in 3 courses. Such policies notwithstanding, female students are still grossly under-represented on campus making up only 30% of the total student body (32,000) and only 14% of graduates to date. Similarly, women are very under-represented in the SOM faculty with only two current appointments out of 56 total.

The Ministry of Education (MOE) determines how many students JU, and others, need to admit for a particular year. JU has no option but to comply.

School	Year	Number
School of Medicine	Pre-medical	200
	PC I	167
	PC II	114
	C I	152
	C II	98
	Interns	66
	Total	**797**
School of Dentistry	1st Year	53
	2nd Year	32
	3rd Year	31
	4th Year	37
	Intern	38
	Total	**191**
Department of Anesthesia	1st Year	30
	2nd Year	27
	3rd Year	14
	4th Year	18
	Total	**116**
School of Pharmacy	1st Year	81
	2nd Year	60
	3rd Year	93
	4th Year	127
	Total	**361**
School of Medical Laboratory and Technology	1st Year	74
	2nd Year	105
	3rd Year	120
	Total	**299**
Overall	**Total**	**1764**

Table 1 Jimma University Faculty of Health Sciences Enrollment

Tuition, room and board is given for six years free of charge to the students.

Curriculum

The Curriculum is divided into premedical, preclinical, clinical and intern years (Figure 6). At the MOE level, a Medical & Health Sciences Curriculum Development & Implementation Council (comprised of representatives from the MOE, MOH and all Universities) set a detailed medical education curriculum for all Universities one year ago. The Council has also created a task force to examine different modalities of teaching, for example the shortened training provided by medical schools in the US and Canada is being examined to determine if health science students can be trained on a shortened medical school curriculum.

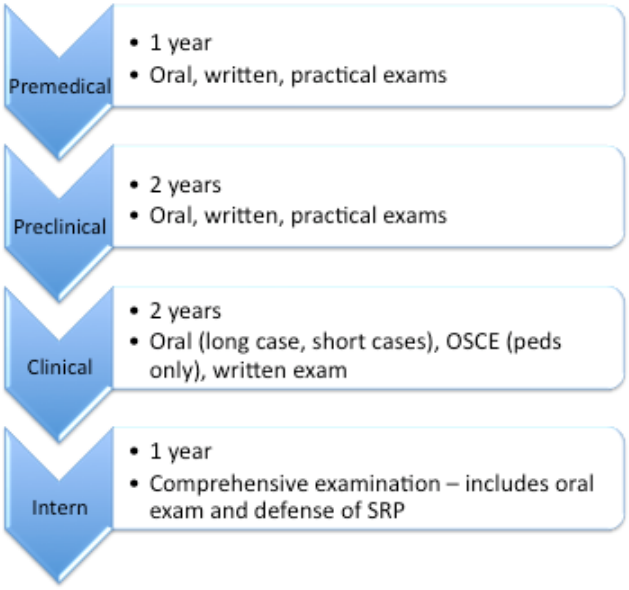

Fig. 6 Jimma University Curriculum and Evaluations (Preclinical I and II and Clinical II also undergo external examinations by all major departments)

JU has established a reputation in Ethiopia as a leading innovator in higher education. The single most important element in developing innovative approaches across all disciplines has been the foundational concept of Community-Based Education (CBE). While this concept translates directly to discreet, recurrent curricular activities, many other innovative approaches are derived indirectly from this philosophy as well. CBE at JU is thus best understood as a pervasive institutional culture rather than simply an innovative pedagogical overlay. CBE has three components: Community Based Training Program (CBTP), Team Training Program (TTP), and Student Research Project (SRP).

- **CBTP** is **discipline based**. Medical students from JU shuttle daily to rural and urban sites 30-40 km from the university during all but their last year of training, moving through a progression of tasks including tool development, data collection, community diagnosis, analysis, and development of a solution proposal. The University does attempt to implement student proposals when appropriate and if the University's budget can cover the cost of the project. Examples include the building of toilets and water wells in local communities.
- **TTP** is currently limited to the **health sciences** students**.** Medical, dental, pharmacy, nursing and health officer students go to the village health centers, as a team, for two months during the final year of their studies and apply the knowledge they have been taught at JU. They work as a team to provide public health and clinical services. The team leader is generally a medical intern, but may be a dental student or a pharmacy student if one category is not in the group. Students usually give service under guidance of resident health officers. A group of staff from each discipline visits them once (for 2 days; Thursday and Friday) every two weeks.
- **SRP** is **individual student based.** Each student writes a report based on the data he/she has collected from the rural/urban community on a subject of his/her interest. This report is part of the defense during the **comprehensive examination** done at the end of internship.

There are 7 health centers involved in CBE and participating communities have appreciated the service. Additional communities have applied to be involved but due to logistical reasons they are yet to be served.

Fig. 7 Jimma University Community Based Education Site

Teaching Faculty & Post-Graduate Training

Biomedical Sciences Teaching Staff

Department	Educational Level			
	PhD	MD+MSC	MD	BSC
Anatomy, Embryology and Histology		1	1	2
Biochemistry		3		1
Physiology	1	1	1	6
Pharmacology			1	3
Microbiology, Immunology, Parasitology		7		2

Table 2 Biomedical Sciences Faculty

JU offers post-graduate programs primarily to build capacity for faculty, but also to satisfy needs expressed by the Ministry of Health or Regional Governments.

The clinical post-graduate programs currently offered include:

Specialty	Faculty #	Residents/yr	Training Yrs	Started
Internal Medicine	9	4	3	2004
Pediatrics	7	3-4	3	2004
OB-Gyn	5	4-5	3.5	2004
Surgery	2 (+4*)	5	4	2006
Ophthalmology	3 (+2*)	1-2	4	2006
Dermatology	2	--	--	Post-grad available at Addis (8/yr)
Psychiatry	1	1 post-grad sponsored at Addis	--	Post-grad available at Addis (7/yr)
Radiology	1			

* contract/expatriate staff

Table 3 Jimma University Clinical Faculty and Post-Graduate Programs

Additional post-graduate programs include masters programs in: Physiology, Microbiology, Health Monitoring & Evaluation, Hospital Administration & Health Education, Reproductive Health and Environmental Science.

The Post-Graduate programs planned for the (near) future include: PhD in Physiology, Masters programs in Pathology, Anatomy and Biochemistry, and clinical post-graduate training in Psychiatry.

SWOT Analysis

Strengths
CBE curriculum addressing community problems
A shared national vision for health
Significant physical Infrastructure investment from the government level
Staff retention schemes

Weaknesses
Lack of adequate faculty
Lack of adequate opportunities for further training
Less competitive salaries
Dependence on government funding

Opportunities
Government decision to flood the health professional workforce
Fewer medical schools within the region

Threats
Overburdened curriculum both for staff and students
CBE is resource intensive with significant logistical demands

Linkages

Internal
TTP Health centers

External

Partner	Activity
Columbia University - ICAP	HIV/AIDS
Johns Hopkins University/PEPFAR – Jhpiego	Pre-service HIV training curriculum integration
Copenhagen University	Pediatrics research
Johns Hopkins University – US	Advanced Clinical Monitoring in HIV/AIDS (in IRB stage)
VLIR- Belgian University Association – 7 Belgian Universities	6 University-wide programs (1 focus child health), includes PhD training and library development components
Ludwig Maximillian University - Germany	
Nottingham University Hospital – UK	
Tropical Health Education Thrust (THET) – UK	Initially service focused, now training and research

Table 4 Jimma University Linkages

Capacity Building

Ethiopia currently has eleven medical schools (nine public, one private, one military). Estimates for the current number of physicians in practice vary, but the total physician workforce is 2,000 by all accounts for a population of 85 million or about 3 per 100,000 inhabitants. To address this shortage, the Ethiopian government has adopted a strategy of rapid expansion for medical education or "flood strategy." All medical schools have a mandate from the Ministry of Education (MOE) to expand their class sizes in the coming year; Jimma University is expected to augment its matriculate intake from 200 to 350 for the next class arriving in fall of 2009.

Infrastructure

Most of the SOM teaching, research, and clinical facilities were built over 70 years ago by the Italian military for service to troops. These buildings have undergone some renovations over the years but have never been fully modernized. Fortunately, JU is in the midst of a massive expansion and upgrade of existing campus facilities across all faculties. Across campus, construction is apparent and active. For the SOM, this expansion includes construction of a modern teaching hospital with 530 beds, new outpatient departments, multiple specialty-focused libraries and teaching or conference rooms.

Fig. 8 JU New Hospital Construction

At present, classroom space is generally adequate with 30-40 students present for most lectures in rooms equipped to seat as many people. While blackboards are still frequently used, recent improvements include availability of LCD projectors for most lectures. Laboratory facilities are more problematic: while space is adequate in the dissection lab, 40 or more students must share one cadaver. The microscopy lab is slightly better off, again with adequate space but only 20 microscopes. Library facilities are currently insufficient for demand – textbooks are scarce and electronic resources are few but many upgrades are in process (see "Technology" in Innovation section). Student accommodations, by contrast, are quite generous (4-6 students per modern dorm room), located within short walking distance from cafeterias, a student lounge, libraries, classrooms, and the hospital.

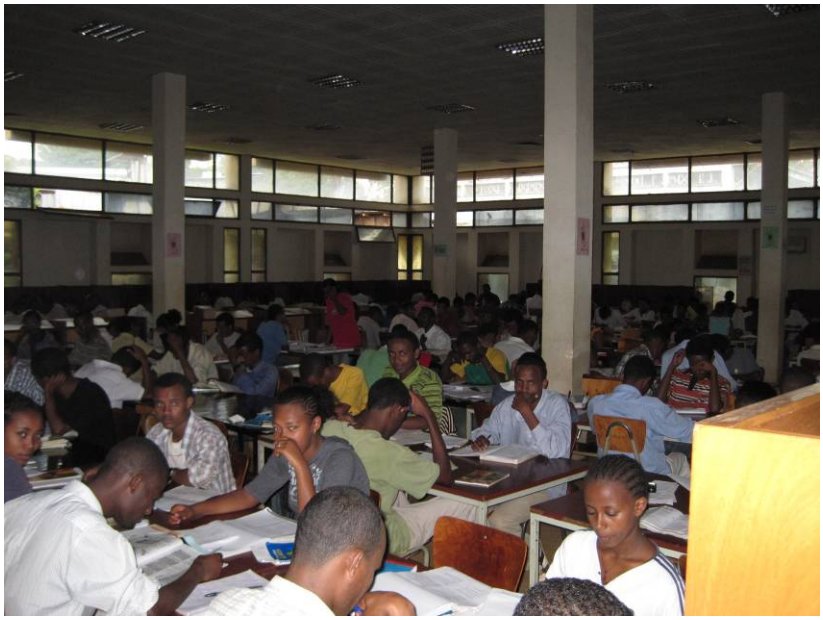

Fig. 9 Students Studying in the Health Sciences Library

Clinical Training – Undergraduate

Practical experience at JU is a study in contrast. While exposure to real-world rural practice settings is much greater than other traditional curricula in Ethiopia (see "Community Based Education" in Innovation section), students complain that special skill sets such as surgery, cesarean section, and other procedures are neglected even in the teaching hospital on campus. This has only worsened in recent years due to the increased number of undergraduates and the success of post-graduate programs: as more post-graduate trainees enter the hospital, fewer procedures are available for undergraduates to experience. While it is unknown whether this problem will improve or persist when the new hospital becomes operational, it is hoped that these new facilities will permit better learning opportunities for students at all stages of training. To help supplement students' skills in such areas, neo-graduates can opt to enroll in short 3-month training

programs focused on such topics as emergency surgery after graduation but prior to beginning their field placement for compulsory service.

These shortcomings aside, final-year students (interns) report high confidence levels in their preparedness to begin their field assignments. Students rotate through outpatient and hospital wards in core specialties with high caseloads and direct responsibility for decision making and delivery of patient care, especially during internship. The current hospital has over 400 beds, about half of which are on surgical or obstetrical/gynecologic wards, one quarter for pediatric wards, and one quarter for internal medicine or psychiatry combined.

Clinical Training – Postgraduate

Nearly all students plan to specialize after completion of their service period although it should be noted that all post-graduate training is considered specialization, including fields considered to be primary care in other regions such as internal medicine and pediatrics; currently there are no post-graduate programs for general practice or family medicine in Ethiopia. Accordingly, the foundation and expansion of postgraduate education is a major capacity-building strategy at JU. Currently, there are only 30 clinical faculty across all specialties at JU (see tables 1 and 2) but once a critical mass of 3-4 faculty are established in a given field (sometimes with assistance from guest faculty or visiting expatriate faculty), academically talented students are recruited to participate in the program and stay on as faculty. Caseloads for these residents are very large and supervision is sometimes minimal but the specialists produced are highly-regarded on campus and by the local and medical communities. Presently, there are 5 postgraduate programs (Internal Medicine, Pediatrics, Surgery, Obstetrics/Gynecology, and Ophthalmology) with a total of approximately 20 residents in training (see table 2).

Research Capacity

Although research and publication are highly valued in JU's institutional culture and are required for promotion of students and faculty alike, many faculty members are very frustrated with current limitations in scientific inquiry. Funding is the single most important barrier: the University provides only US$2,000 maximum per research project and external funding has been very limited. Most external funding has gone to build clinical capacity such as outpatient dentistry or medical/surgery wards and some has been used to create additional professional development programs such as Hospital Administration.

Beyond funding, acquisition of equipment is very difficult. Sophisticated scientific equipment is not available locally or (often) nationally and bureaucratic hurdles to purchasing on the international market are prohibitive. Moreover, a sense of technological, geographic and intellectual isolation pervades. Communication and collaboration with colleagues in other regions or countries is very difficult. Due to

geographic isolation, basic infrastructure is also problematic – outages of water and centralized power occur frequently although university generators are able to ensure power for the hospital and many key facilities. Finally, high teaching and clinical requirements limit the effort faculty can give to research.

Several strategies are being implemented to meet these challenges. First, to address funding shortages and address intellectual isolation, JU is attempting to build more linkages with outside institutions. Second, to assist students and faculty with their research efforts, a Health Service Research Institute was established in 2006. The Institute helps to generate and coordinate longitudinal data, establish clinical labs, and disseminate research findings from Jimma through publication assistance for faculty and communication with the Jimma community and policy makers at local and national levels. Finally, to increase the research workforce on campus, new post-graduate programs in biomedical sciences (such as biochemistry and pathology) are planned in addition to existing programs in physiology and microbiology. Some faculty members are also training abroad (Belgium, Germany, Israel) to obtain masters or doctorates in these fields. While funding remains the major limitation or bottleneck for more rapid expansion of research capacity, the faculty's 10-year strategic plan is to build expertise, infrastructure, and collaborative efforts both with local and international communities.

Teaching Capacity

Student to faculty ratios are already concerning to many considering current class sizes (see table 1). Given recent increases in class sizes across schools in the Faculty of Health Sciences and the MOE mandate to increase the MD program by 75% (from 200 to 350) in the next year, many faculty members worry the shortage of teaching workforce will reach critical levels and the quality of education will suffer.

Beyond student-teacher ratios, crowding in classrooms (which are currently at capacity) and learning laboratories may prevent students from acquiring fundamental skills and knowledge needed to advance from pre-clinical to clinical curricular phases. Presently, the microbiology lab can accommodate 40 students per session and the anatomy lab can accommodate up to 100 but increased traffic through these facilities will create considerable strain without any increase in support. To take one specific example, cadavers for dissection are very difficult to obtain as there is no willed-body program for donors and unclaimed bodies at the hospital cannot be used according to local laws. Furthermore, space, equipment, and staff for embalming and preparation of cadavers are already strained thus restricting the likelihood that the number of cadavers for dissection can be increased in step with larger enrollment. To make matters worse, faculty are expected to teach across multiple disciplines in all five schools within the Faculty of Health Sciences.

As discussed above, biomedical and clinical departments at JU are trying to address many teaching capacity issues by augmenting their ranks through increased participation in postgraduate programs (discussed further in Retention section). Faculty can also receive supportive training in medical pedagogy through a two-week Effective Teaching course offered through the John Hopkins Affiliated Program (Jhpiego) and a new Academic Resource Development Center provides University-wide assistance to faculty including pedagogical training in the form of short courses and a one-year course with certification. With respect to medical education or pedagogy as a subject of research, however, very few faculty members have led formal projects leading to publication.

Innovation

Community-Based Education

CBE increases service capacity in rural communities through advanced level students providing both public health and clinical services. Particularly during TTP, this service also allows health center staff to have a vacation or to take time for continuing education. It also expands teaching capacity to directors of health centers. However, CBE is highly resource intensive – requiring transportation for students, meals, housing during TTP, and staff supervision and visits while students are in the community sites.

Problem-Based Learning

While CBE applies to many concepts of PBL such as active learning, problem solving, communication and teamwork, it is not intended to teach core concepts of basic or clinical science through case discussions in small groups facilitated by faculty members. While faculty at JU have considered PBL approaches specifically for their curriculum, the lack of sufficient faculty to facilitate makes implementation unfeasible, especially in light of the coming "flood" of increased class sizes.

Library and Technology

While current library facilities for health science students are limited in terms of textbooks, study space, and computer access, JU has recently committed substantial resources to improving the capacity of library sciences on campus. Since 2007, a total of US$2 million has been spent for new library facilities across campus and renovations for the health sciences library are planned soon. An additional US$2.2 million was also recently spent for the acquisition of new textbooks, about 10-15% of which are for the faculty of health sciences (book shortages in other faculties were relatively greater than for health sciences). To augment computer access (currently 25 stations available in the health sciences library), 400 PCs were recently acquired from the University of Iran to create an "electronic university" based on intranet connectivity with access to over 10 million sources (about 65% of

which are related to health sciences) and will soon have the capacity to host local content such as lecture notes, handouts, etc. An effort to convert the library's card catalogue into a web-based catalogue is also underway. Internet connectivity is also problematic – while the university has purchased broad-band access and fiber-optic connections to Addis Ababa, technical difficulties often occur in Addis or in other links and affect Jimma's access to the internet. Fortunately, investment in information technology at the national level has been on the rise recently and plans are in place to create broader coverage for fiber-optics with redundancy built in to prevent slowing or outages. Finally, with respect to information technology and library sciences on campus, efforts are being made to forge more extra-institutional linkages to further develop the information specialists who serve the needs of health science students. Along with plans to construct new library facilities in the new hospital and in a new graduate studies center, plans are underway to develop postgraduate training for information specialists at JU so that the library and information technology capacity at JU continue to grow in a more user-centered fashion.

Student Evaluation and Curricular Assessment

Medical students at JU are evaluated by both traditional and innovative methods. While traditional examination methods such as multiple-choice exams, viva-voce exams, and unstructured clinical evaluation are dominant in the current curriculum, innovative approaches such as Observed-Structured Clinical Examination (OSCE) and formal assessment of community-oriented knowledge and skills are also employed. There is currently only one OSCE used at JU – it is a 17-station exam using mixed case material (but no standardized patients) employed for assessment of the pediatrics clinical rotation. During the final year formal assessment occurs through the Student Research Project (or senior thesis) and through direct assessment by senior faculty during examination week.

At the level of curricular assessment, the faculty undertake formal and comprehensive review every five years. Additionally, the faculty initiate periodic and comprehensive assessment of CBE by multiple stakeholders such as community leaders, course instructors, former students (JU graduates), and colleagues or peers of JU graduates. The most recent of such assessments was conducted in the late 1990s and published as a special issue of the Ethiopian Journal of Health Development in 2000. A similar comprehensive review is underway at this time.

While there is no accrediting body for medical schools specifically and university accreditation is granted by the government only when an institution is initially founded, the MOE does oversee a program of Higher Education Quality Assurance. Faculty at JU felt this program was not tremendously effective in identifying deficiencies at state-run universities like JU since the program must answer to the MOE and, thus, cannot contradict or question official positions such as the "flood" initiative of expansion or possible problems resulting from these positions (such as student overcrowding). The program may be more effective in evaluating private

institutions; however, there is only one private medical school in Ethiopia at present.

Another formal institutional assessment which originates from the central government is a process known as "Business Process Reengineering" or BPR. This process, mandated for all government agencies and employees by the Prime Minister, operates on the principle of rebuilding cumbersome processes around the recipient of services (e.g. the patient in health care or the student in higher education). While this broad initiative is not specific to JU or medical education, the concept has caught on at JU and has become part of the culture of innovation and excellence that faculty strive to achieve. Examples of how BPR is executed at JU include involvement of senior leadership in soliciting feedback from patients or students. During the SAMSS team interview with the University President, we learned he had just returned from making an un-announced, impromptu visit to the hospital to ask patients and staff about problems or barriers they might be encountering that day. At the level of curriculum evaluation, BPR might best be described as a supportive outlook that encourages faculty to question ineffective teaching or learning techniques openly and suggest innovative or learner-centered approaches.

Retention

The issue of retention – both of doctors in the country and of faculty at the University – are significant in Ethiopia. Jimma University reports that of all the graduates in their first graduating class, currently none are working in Ethiopia. The medical students at JU report that a majority of students want to go abroad after medical school. One student reported at least 60% of current students want to leave Ethiopia, another reported she had done an informal poll of her classmates and she couldn't find a single person who wants to stay in Ethiopia.

Doctor Retention Factors

One of the primary factors associated with migration is insufficient salary for medical doctors by the public sector. Students report the public service average net income of a starting doctor is 1,940 birr (US$194)/month, which is significantly lower than can be earned by those taking advantage of international, private practice and NGO opportunities. NGO's can pay up to 10 times as much as the public salary.

Students report most doctors want to be comfortable – have a standardized home, a car, modern technology – but this is impossible on the public sector physician salary, and students report there are workers who make higher salaries in the country with only a grade 10 or 12 education. Further complicating the issue is that while doctors are regarded highly in society, their salary does not match this social regard and resultant social expectations. As one student put it – when you go to coffee with someone, they will expect you to pay because you are the doctor.

Another factor is the lack of resources for practice, particularly in rural/remote areas. While doctors will work long hours, they are often faced with limited resources, which affect the care they can provide. Students and faculty also identify insufficient post-graduate training as a contributor to migration. In a room of 15+ students, when asked by the SAMSS team who wanted to specialize, every hand went up. Limited post-graduate training positions in the country means that graduates who want to pursue specialty training need to do so internationally. Finally, culture appears to contribute to retention issues. Students report that while they know their communities would benefit from more doctors, the general feeling of their families and society is that going abroad is better – that those who stay are the unlucky ones. As a result, the majority of current students continue to report they plan to leave Ethiopia.

Jimma University Faculty Retention

Faculty retention at JU faces similar challenges as overall doctor retention in the country. Challenges teaching staff identify include:

- Insufficient income – international or domestic private or NGO jobs pay significantly more and NGO's tend to recruit doctors away from Universities rather than working with Universities to achieve their goals while building teaching capacity;
- Insufficient resources and facilities – many staff know there are more resources and better facilities, both clinical and laboratory, even in Addis Ababa compared to Jimma and they want to work in an environment where they can use the skills they are trained in;
- Limited research opportunities – discussed in Capacity section.
- High teaching demands – with limited staff and increasing numbers of students, both clinical staff (who have added service requirements) and biomedical staff, both of whom teach multiple disciplines within the University, report they are overtired and have little time for other activities, such as research. They describe this phenomenon as being "stretched" and report it is a major factor in pushing faculty to leave.

Biomedical staff also report that there is a poor link between the biomedical and clinical sciences resulting in little medical student interest in the biomedical sciences.

Jimma University Retention Strategies – "A donkey gets rest when it gives birth to another one"

JU's primary retention strategy focuses largely on increasing post-graduate training, particularly clinical training – thereby addressing a contributing factor while also increasing faculty capacity by training the future trainers. As a result, JU has purposefully increased its post-graduate training with a goal of recruiting faculty from its graduates. The University strongly favors post-graduate training within their own institution as past experience has shown when they send trainees internationally, they do not return. Currently, 3 Universities in Ethiopia offer post-graduate training – Jimma, Addis Ababa, and Gondor (public health and surgery only). JU hopes to further expand post-graduate training in the future, particularly in sub-specialty training.

A barrier to expansion is the lack of existing qualified faculty to establish post-graduate training programs particularly in the biomedical sciences. For example, the University has only 1 anatomist who is trained at the masters level, limiting JU's ability to start even a masters program in this subject. Another barrier is the lack of high-level laboratories and equipment to support post-graduate research. There are currently masters level training programs in physiology and microbiology.

Faculty Retention – Salaries & Incentives

Salary is a significant barrier to faculty recruitment and retention. Within the University system, clinical teaching staff are paid on the salary scale as are University professors, set by the MOE. The base salary of a University professor is lower than that of a public sector physician set by the MOH making recruitment of physician teaching staff even more difficult. Furthermore, regional governments have begun to offer a salary "top up" which can include housing, fuel, duty and hardship payments making recruitment to the University and between regions even more competitive. Since February 2009, JU has responded with its own "top up" offering an additional 3,200 birr (US$320) per month for clinical faculty. The University pays for the top up through internal revenues generated through evening and distance education and short courses. These courses are offered across disciplines and Faculties at the University. For all revenues generated through these means, a 30% overhead is claimed by the University and the top up is paid through these funds. JU recognizes they are creating a double standard for their faculty, however they report their greatest area of need is clinical teachers.

Another significant barrier to recruitment and retention is living conditions in Jimma. The city has limited resources and inconsistent power and running water. To combat these challenges, the University offers a housing allowance (for all faculty), clinical loans to clinical faculty, all faculty are provided computers and JU opened a community school to provide primary and secondary schooling to the children of faculty. JU is also currently building a new 530 bed hospital and postgraduate training facilities which will include laboratory space and offices. This will surely improve work facilities, although it will also increase service demands of clinical staff. For the long term, the University is planning to expand to a third campus in order to reduce crowding on the main campus.

The University reports that funding is generally not an issue. The construction represents a major investment of the MOE and with the scale up in class size, if they can recruit the faculty, the MOE will generally approve a necessary increase in budget.

Rural Retention

In terms of rural retention, JU has a unique contract with the Somali region of Ethiopia - a particularly remote area with no medical school. The University was approached by the regional government due to an identified shortage of medical doctors in the region. The region requested JU to train students identified by the Somali regional government over and above the amount assigned to the University by the MOE. These students still must meet the minimum passing score set by the medical school and the contract includes payment from the regional government to the University. JU agreed, and they are currently training approximately 40 additional Somali students who will owe compulsory service to the Somali region following graduation. Ethiopia's decentralized government system allows such contracts to be made.

As there is an "affirmative action" program for women, there are also national and University policies which aid in the recruitment of remote rural students. At the level of the MOE, students from designated remote regions are evaluated and distributed to the Universities on a separate national exam scoring scale. At JU level, the University will take into account requests by regional governments in distributing students. If a region identifies a significant need and requests the school give preference to their students, the University may agree to give preference to a student for that region if comparing 2 students with equal scores.

Finally, it should be noted that while CBE is thought to increase community commitment and improve retention, feedback is mixed. Faculty report that recent medical school alumni who returned to the school to establish an alumni association appeared to have an attachment not only to the University but to the community. Students report that while they appreciate the practical experience and advanced training CBE has provided to them, it is not and is not meant to be a retention tool.

National Compulsory Service

Prior to 1991, compulsory service was required of all medical graduates. However, with the institution of a democratic government and based on the ideal of freedom, the requirement of compulsory service was loosened. While still technically required, many students would "disappear" prior to service. 2 years ago, the MOH re-instituted compulsory service with stricter requirements. Policy was implemented such that graduates receive no credentials from their medical school until they have completed compulsory service. Required service is typically 4 years, however, in designated remote regions only 2 years of service is required and doctors receive additional incentives such as a higher salary, a laptop computer and textbooks. The government also offers an additional 3-month intensive training where graduates can gain experience with basic surgical skills between graduation and beginning the compulsory service period. Doctors must apply for this additional training and spaces are limited. Students report these skills are often unnecessary as the facilities and resources are not available to perform these procedures in district hospitals where they will be placed.

Technically, graduates can "pay out" of their service requirement. However, the pay out amount of 320,000 birr (US$32,000) is generally higher than any young doctor can afford. Following compulsory service, physicians can move to different regions, go on to post-graduate training, or move to non-governmental positions or out of the country.

Compulsory service is required of all health science graduates (including pharmacy, dentistry, nursing and health officers). Because of this requirement, health science graduates are exempted from a new University cost-sharing requirement in which students following graduation and a 1-year grace period, pay back over time a

portion of the cost of their room and board (240 birr/month). Health science graduates are expected to pay back in service.

It is unclear what the effect of compulsory service will be on long-term retention. Students report the lack of choice in placement location breeds a "distrust" of the government. The MOH Director of Human Resource Development Directorate reports that when the new policies were implemented, there was an outcry by graduates whose credentials were withheld – there had been no prior explanation of the new policies. The MOH recognized their mistake and convened these graduates to explain the government's health mission and vision for Ethiopia's health care system during a 21-day training session. Following the session, the Director reports that 99% of graduates self-selected rural areas for compulsory service and the MOH has maintained close relationships with these young doctors in an attempt to address issues which would promote migration. On another promising note, the baccalaureate nurse (BSN) who was head of the health center located 18 km from Jimma reported that while she is in her final year of her compulsory service, she is planning to stay on at the health center following the completion of her compulsory time.

Post-Graduate Compulsory Service

Compulsory service is also attached to post-graduate training. Under Ethiopian national policy, all post-graduate students must be sponsored by a public institution, either a regional government or a university. Prior to sponsorship, students sign a contract requiring compulsory service of 2 years for every 1 year of training. JU sponsors a number of its own post-graduate trainees.

However, the University reports that enforcement of the post-graduate training compulsory service is not as strict as the new medical school requirement and many graduates still "disappear" after graduation. Students who do not fulfill their compulsory service cannot take a government position elsewhere in the country and they can be prosecuted – if they can be found. A concerning issue is that many of the current faculty are those serving compulsory service and appear to have a significant preference for Addis Ababa - for work and living conditions and opportunities for better private practice pay. When asked, one of the young faculty members indicated he did his post-graduate training at JU largely because he couldn't obtain a sponsored position in Addis. While compulsory service creates a faculty workforce, migration following service may mean a constant turn over of young teaching staff.

Students report the required compulsory service is a disincentive for pursuing post-graduate training in the country. However, JU reports they have had no difficulty filling their clinical post-graduate training positions. One incentive they developed to recruit trainees to JU was to admit residents to post-graduate training directly from medical school. The University was initially charged with violating national

compulsory service requirements. However, the administration argued to the Ministry of Health that these residents were providing service while also being trained, and the need for clinical staff is critical if they are to rapidly increase medical student training.

MOH Retention Plan

The MOH is currently developing its Human Resources for Health Strategic Plan. They report the plan includes a retention plan, which includes both financial and non-financial incentives as well as a strategy for innovative medical education. The plan is currently in draft format and needs to be discussed and agreed upon.

Mandated Expansion

The MOE mandated expansion of the first year medical school class to 350 for the next class will likely further stretch faculty capacity and limited resources. While JU is increasing its faculty recruitment largely through post-graduate training, the sudden significant increase in student size will exceed the capacity of this steady faculty scale up. More rapid faculty scale up is unrealistic at JU due to the high migration rate of doctors – both internationally and to more urban, NGO and private positions. In addition, while the new hospital will likely provide more patients for practical experience and improved facilities, it will also put a significant additional service burden upon the clinical staff.

Conclusions

Ethiopia is undergoing a national level reform of the health care system to provide service to all Ethiopians. The reform is the result of a collaborative effort from many stakeholders. These include the highest levels of the national government as well as Universities and health care workers. It includes changes in the health care service system, a scale up of physician and health officer training, and major investments into facilities and physical infrastructure. The reform is built off of a national shared vision for service.

Despite reform efforts, recruitment and retention of physicians and University teaching staff remain significant barriers to workforce scale up. Physicians continue to migrate internationally and to national private, urban and NGO opportunities which pay higher salaries and provide professional and social incentives.

Jimma University has been an innovator of Community Based Education (CBE) which provides service to rural communities while building student preparedness for practice. However, it is unclear what the effect of CBE is on retention of rural physicians.

JU has implemented a number of strategies to promote teaching staff recruitment and retention. The primary strategy has been to develop post-graduate training programs in order to provide career advancement opportunities within the country and to grow their own staff. There is concern that MOE directed student scale up will outpace these strategies.

The national government is currently reviewing its human resources for health strategic plan.

Appendix

Key informant interviewees:

Abdela Hayato	Medical Student
Abdi Deresu	Medical Intern
Abdurahman Edris	Medical Student
Ahuchin Arega	Medical Student
Alemseged Abdissa	Biomedical Head
Andualem Mossie	Biomedical Head
Desalegn Tadesse	Biomedical Head
Fekodu Assefa	Medical Student
Fetene Derbie	
Gebre Kibru	
Gerbi Dugums	Clinical Head
Leja Hamza	Clinical Head
Markos Tesfaye	Clinical Head
Meron Awranis	Medical Student
Mohammed Mecha	Biomedical Head
Muleta Befkeane	Medical Student
Muluneh Abale	Clinical Head
Osman Mohammed	Medical Intern
Salah Mohammed	Medical Student
Salahadin Bedru	Medical Student
Seid Mohammed	Medical Student
Sisay Bekele	Clinical Head
Teklemariam Haile Gebreyes	Jimma Library
Tilahun Yemane	Biomedical Head