

# Family Medicine needs assessment: Studying the clinical work of general practitioners in Ethiopia

Jane Philpott<sup>1</sup>, Solomon Shiferaw<sup>2</sup>, Katherine Rouleau<sup>1</sup>, Donald Cole<sup>1</sup>, Eileen Nicolle<sup>1</sup>, Kevin Bezanson<sup>1</sup>, Nick Pimlott<sup>1</sup>, Christopher Meaney<sup>1</sup>, Greg Nasmith<sup>1</sup>, Marc Abbyad<sup>3</sup>, Miliard Derbew<sup>2</sup>, Amha Mekasha<sup>2</sup>

## Abstract

**Background and Objective:** Some universities in sub-Saharan Africa have initiated Family Medicine (FM) residency programs. This study was conducted by FM colleagues at Addis Ababa University (AAU) in Ethiopia and the University of Toronto, Canada to inform the FM residency curriculum at AAU. It was designed to determine the clinical problems that family physicians in Ethiopia may encounter.

**Methods:** We used a mixed methods approach: Modified time-motion study and brief interviews. We observed 46 general practitioners (GPs) across ten sites in Ethiopia. Trained observers recorded time-motion data while GPs conducted their daily work. This data was supplemented by brief interviews with the GPs.

**Findings:** Clinical encounters occupied 82% of GP work. The common symptoms were digestive-abdominal pain (21% visits), respiratory-cough (16%), and general-fever and chills (16%). The common diagnoses were infectious (22% visits), genitourinary (12%), circulatory (10%), and endocrine (10%). Challenges identified were lack of clinical resources (57% of GPs), difficulties in communication (48%) and excessive workload (33%). Most common requests were for information technology (78%) and HIV (46%) training.

**Conclusion:** The profile of common symptoms and diagnoses indicated the competencies family physicians in the regions should have. This information will be used to develop an appropriate FM curriculum at AAU. [*Ethiop. J. Health Dev.* 2013;27(2):134-140]

## Introduction

General practitioners (GPs) are a vital part of the health care system in Ethiopia. In 2009, Ethiopia had 752 active GPs or physicians with a clinical internship alone. This constituted 51% of the physician workforce (1, 2). In recent years, several countries in Sub-Saharan Africa (SSA) have developed more comprehensive postgraduate training for generalist physicians and some have formally recognized a new specialty in Family Medicine (FM) (3-7).

The development of FM as a specialty in Ethiopia has the potential to improve health outcomes, manage health care costs and achieve more equitable access to care (8-11). Family physicians have a broad scope of practice, similar to that of GPs. The additional training in FM helps to consolidate clinical skills, improve quality of care and enable family physicians to function as scholars and health system leaders. While GPs and family physicians are both generalists, FM is a distinct discipline, anchored in a set of principles that have been linked to improved health outcomes and improved health equity (4, 8, 10). While the precise scope of practice of family physicians and the role they play in the broader health system varies from setting to setting, FM typically distinguishes itself by being community-based and centred on the individual patient, family and community rather than on an organ system or a specific age group.

FM practice in SSA may be very different from other parts of the world in that it has distinct features responding to the specific role requirements of the region (6). For example, family physicians in SSA are expected to have strong skills in emergency surgery. The training must reflect this reality.

Addis Ababa University has developed a FM residency program through consultation with international FM partners by adapting international FM curricula based on national epidemiologic data. Ideally, observational studies of comprehensive care physicians should also inform the determination of competencies to be achieved during FM training, the same way that those in North America and the United Kingdom did 50 years ago in developing the first FM curricula (12-15). There are currently no trained family physicians who could be studied in Ethiopia. Therefore, this study was developed to look at the clinical practice of GPs whose work should most closely approximate the type of clinical work that a family physician would encounter. Unfortunately, no recent studies have documented the roles, activities and challenges of GPs in this region of Africa.

This study sought to address this knowledge gap and facilitate a better understanding of the practice patterns of Ethiopian GPs. In observing these GPs, we asked the following questions: What clinical and other professional activities comprise their workday? Among patient visits, what are the presenting symptoms and what diagnoses

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<sup>1</sup>University of Toronto, Canada;

<sup>2</sup>College of Health Sciences, Addis Ababa University;

<sup>3</sup>Medic Mobile.

are made? What skills, knowledge or training do GPs report being useful to improve care?

## Methods

### Design

The study used mixed methods comprising of a time-motion study and brief interview with a sample of GPs. It was approved by the Institutional Review Board of the AAU College of Health Sciences (SOP#AAUMF008) and the Ethiopian Federal Ministry of Health.

### Participants

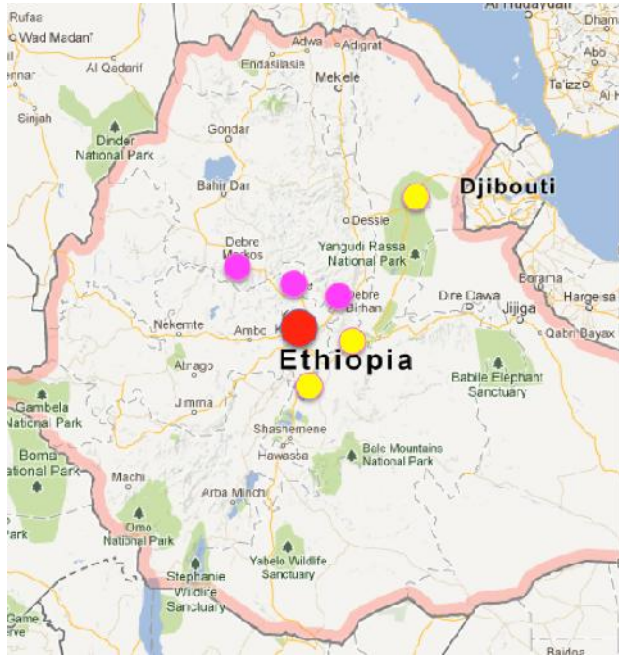


Figure 1: Study sites in Ethiopia, by region

### Legend of Study Locations

- Urban – Addis Ababa ●
  - Gandhi Hospital
  - St. Paul's Hospital
  - Tikur Anbessa
  - Yekatit Hospital
- Rural highlands ●
  - Debre Birhan
  - Debre Markos
  - Fiche
- Rural lowlands ●
  - Adama Hospital
  - Bishoftu Hospital
  - Dufti Hospital

### Time Motion Study Procedure

Six data collector- observers were selected to travel to each site to observe the GPs. They were not clinicians. They were all graduates of the Masters of Public Health (MPH) program at AAU. The data collectors completed a three-day training workshop and a pilot observation day. As past time-motion studies used a 1- to 3-day period (16-19), we sought to observe GPs practice on 2 separate full days. The study was inspired by an old observational study that was done in Canada that was used to inform the first training programs for Family Medicine in that country (12).

Thirty-three GPs were observed over two days whereas the remaining 13 GPs were observed for only one day. On four days, when fewer than 6 GPs were available for observation, observers were paired, permitting an analysis of the magnitude of agreement between pairs of observers with respect to primary symptoms of a given visit and primary diagnoses inferred by the GP.

Sites (n=9) were purposively selected in the out-patient department of government hospitals to provide a sample from different geographic regions of Ethiopia, informed by sampling approaches of past time-motion practice studies (16-19). One urban hospital setting in Addis Ababa was added to complement these sites. We sought to recruit six GPs at each site. The Ministry of Health wrote a letter to the GPs at each site to encourage them to participate in the study. One GP refused. Availability and coordination challenges reduced the sample to 46 GPs participating across 10 sites (see Figure 1).

Observers made every effort not to interfere with the work flow. They tracked the beginning and end of each change of activity by clicking a start and stop button on an electronic tablet.

### Data collection

The following data were collected:

1. The types of activities (non-clinical and clinical) in the GPs' workday;
2. The amount of time spent on each category of activity;
3. The presenting symptoms as well as their corresponding diagnoses. Data collectors had the option to select from a pre-set list of possible responses or they could add, through free text, additional symptoms and diagnoses; and
4. Selected patient management plan information including the medications prescribed, tests ordered, referrals made, and any admission to hospital.

All observations were entered directly onto Samsung Galaxy tablets, through a custom software application designed in collaboration with the Centre de recherche en informatique de Montreal (CRIM). Data were stored in a Structured Query Language database.

### **Structured Interviews**

On the first day, the observer asked each GP a series of demographic questions. At the end of each day, four brief reflective questions were asked:

1. How closely did the observation period represent a typical day of practice?
2. Did the presence of an observer change the activity at work?
3. What problems did they find most challenging in their work?
4. What additional skills, knowledge or training would be useful for them?

Responses were recorded using the same custom software.

### **Analyses**

Data management involved two Canadian physicians re-classifying presenting symptoms into 65 agreed-upon mutually exclusive groups, with iterative checking for agreement in re-classification. Similarly, diagnoses were collapsed into 21 mutually exclusive categories using the International Classification of Diseases (ICD-10) (20) diagnostic categories. For the validation days, agreement on primary symptoms and primary diagnoses were calculated. The strength of agreement between paired observers was based on the proportion of clinical observations in which concordance occurred. An exact binomial confidence interval around the estimate of concordance was used to express the precision of this estimate.

Other analyses were primarily descriptive. Continuous variables were summarized with medians and ranges as distributions were skewed. Categorical variables were described using counts and percentages. Responses to open-ended interview questions (3 and 4) were reviewed by two Canadian family physicians, who grouped responses based on emergent categories.

### **Results**

Data was collected on 18 observation days from May 30, 2011 through June 29, 2011. The median age of the 46 participating GPs was 27.5 years (range: 24-56 years). 34 of the GPs were male (76%). The physicians had graduated from medical school in Jimma (33%), Addis Ababa (18%), Gondar (18%), Mekele (9%) and 10 other schools.

In total, 79 GP-days of observation were recorded. Thirty-three observation days were made in urban settings (42%), 26 observation days in rural lowlands (33%), and 20 observation days in rural highland settings (25%). 65 observation days took place in general out-patient clinics (82%), while others were in specialized

out-patient clinics where GPs were working. Four observation days occurred in the surgical out-patient department (5%), two observations days in an anti-retroviral therapy clinic (3%), two observation days in the emergency department (3%), and the remaining six observation days were in dental, diabetes, obstetrics and gynecology oncology, outpatient pediatrics and pediatric HIV clinics, respectively. On 85% of the observation days, the GPs indicated that the workday was "completely typical" or "very typical". On 82% of the observation days, the GPs indicated that the presence of an observer resulted in "no change at all" in their practice pattern. Only one GP on one day indicated that there had been "a lot of change in activity" as a result of the presence of an observer.

The total observation time of the study was 173.3 hours. Of all the time recorded, 81.8% of the observed time was spent on clinical activities while 18.2% of time was spent on non-clinical activities. Among the non-clinical activities (n=391 events), 244 (62%) were categorized as personal communication activities, 123 (26%) as leadership or management activities, and 21 (5%) as scholarly activities.

During clinical activities, a total of 1,796 unique visits were documented. The mean duration of these visits was four minutes with a range of less than one minute up to 27 minutes. Of these visits, 52% were for new problems, 15% were same-day follow-up visits, 8% were a follow-up within a week, and 23% were follow-ups from greater than a week previously. For the remaining 2% of visits no record of the patients' follow-up activity was noted. 878 (49%) of visits resulted in pharmacotherapy prescriptions; 793 (44%) in further medical tests being ordered; and 226 (13%) and in referral to specialists. Surgical and obstetrics/gynecology were the specialists for which patients were most frequently referred. In 36 (2%) of encounters, the patients were admitted to hospitals.

For 184 of 1796 (10%) visits, data from pairs of observers were available. With respect to primary symptoms, there was agreement in 81% of visits (95% CI: 75% - 87%). For primary diagnosis, agreement was for 86% of visits (95% CI: 81% - 91%).

### **Common Symptoms**

A total of 3,495 symptoms were documented in 1,796 visits. In 848 visits (47%) the patient presented with a single symptom. In 948 visits (53%), the patient presented with 2-7 symptoms. The most common presenting symptoms were digestive-abdominal pain (21% visits), respiratory-cough (16%), and general-fever and chills (16%). The percentage of visits in which each symptom group was noted is set out in Table 1. Additionally, Table 1 reveals geographic variations in presenting symptoms across regions.



Table 1: Percentage of visits where a case presented with a given symptom (prevalence 5%), by geographic region

Presenting Symptom	% visits Overall (N=1796)	% visits Urban (n=599)	% visits Rural Lowlands (n=771)	% visits Rural Highlands (n=426)
Digestive – Abdominal Pain	21	16	23	25
Respiratory – Cough	16	12	19	17
General – Fever and Chills	16	8	22	16
Head – Pain	15	9	20	16
Asymptomatic	14	25	9	8
Chest – Pain	7	6	8	8
Digestive – Diarrhea	7	2	10	10
Genito-urinary – Urology	7	5	8	5
General – Swelling	6	8	3	7
General – Weakness	5	3	6	6
Digestive – Nausea	5	3	5	8

**Common Diagnoses**

There were 2,157 diagnoses noted over 1,796 visits. In 1,453 visits (81%) patients were diagnosed with a single condition. In 339 encounters (19%), patients were diagnosed for 2-4 conditions. In four instances, no diagnosis was made (0.2%). The most common

diagnoses were: infectious/parasitic (22% visits), genito-urinary (12%), circulatory (10%), and endocrine (10%). The overall proportion of cases with a given diagnosis is presented in Table 2, again stratified by region to demonstrate geographic variations in common diagnoses.

Table 2: Percentage of visits assigned ICD-10 diagnostic categories, by geographic region

ICD-10 abbreviated name and (Diagnostic Category)	% visits Overall N=1796	% visits Urban (n=599)	% visits Rural Lowlands (n=771)	% visits Rural Highlands (n=426)
Infectious/Parasitic (1)	<b>22*</b>	<b>13</b>	<b>26</b>	<b>28</b>
Other (18)	12	12	12	13
Genito-urinary (14)	<b>12</b>	10	<b>14</b>	10
Circulatory (9)	<b>10</b>	<b>16</b>	6	<b>12</b>
Endocrine (4)	<b>10</b>	<b>17</b>	7	5
Injury (19)	8	8	7	<b>11</b>
Respiratory (10)	8	4	<b>9</b>	<b>10</b>
Digestive (11)	8	8	7	8
Abnormal Lab Test (none)	5	2	<b>9</b>	4
Neoplasms (2)	5	<b>13</b>	1	2
Musculoskeletal (13)	3	2	3	3
Skin (12)	3	1	3	4
Nervous System (6)	1	1	0	2
Hearing (Ear) (8)	1	0	2	1
Blood (3)	1	1	1	1
Pregnancy (15)	1	2	1	0

\*Four most common diagnostic categories, overall and in each region, are highlighted in bold as they account for at least 50% of visits.)

**GP Reflections**

The most frequently cited challenges that GPs shared were around lack of clinical resources, communication and in third place, excessive workload (see Table 3).In

terms of additional skills or knowledge. GPs identified training information technology, followed by training on HIV (see Table 4).

Table 3: **Challenges faced by GPs, ranked by percentage of GPs reporting**

Challenge	% GPs reporting (N=46)
Lack of clinical resources	57
Patient communication difficulties	48
Excessive Workload	33
Limitations in Patient resources	17
Organizational issues	17
Physical environment deficiencies	13
Team communication difficulties	11
Clinical skills lacking	11
Medical-legal concerns	7

Table 4: **Additional skills or knowledge ( 2 ) which GPs reported would be useful for their work**

Areas for Skill or Knowledge development	% GPs reporting (N=46)
Information technology training	78
HIV training	46
General clinical updates, refresher courses	41
Emergency medicine	32
Leadership and management	28
Chronic diseases	24
Infectious diseases	17
Psychiatry	11
Pediatrics	11
Surgery	11
Dermatology	9

### Discussion

As far as we are aware, our study represents the first time-motion documentation of GP practice in a SSA country. As such, it has provided a unique glimpse of the GP activities and clinical problems encountered in Ethiopia.

Clinical activities took most (81.8%) of GPs' time, partly reflecting the focus of the observation period (see limitations below) but also reflecting the early stage of the GPs' careers. The Ethiopian physician workforce is generally young with 50% of physicians less than 30 years of age (21). The medical community at AAU has observed that most physicians do not see general practice as a life-long career (22). After their return-of-service period as GPs, many physicians seek specialty training or other types of work, including regional health services management and public health, something that was a minimal part of the observed non-clinical events in this study. It is hoped that the opportunity for enhanced training in the specialty of FM will encourage physicians to see comprehensive and highly competent generalism as a satisfying, long-term career choice.

The reflections of the GPs may also provide some indication of why general practice is not yet viewed as a life-long career choice. As shown in the results of the present study, 57% of respondents were challenged by the lack of clinical resources and 33% noted the excessive workload. These concerns should be explored in a follow-up study. The challenge of difficult communication with patients should be addressed through the Family Medicine curriculum.

The present study effectively documented a large volume of predominantly short visits. In contrast to the median visit duration of four minutes in this study, the average duration of visits among US primary care physicians is approximately 21 minutes (23) although the settings in the two places of are not comparable.

Most helpful for designing residency curriculum were the lists of symptoms and diagnoses generated across geographic locations. Symptoms such as fever, headache and diarrhea were documented more often in rural highlands and rural lowlands than in urban locations. Clinical visits of asymptomatic patients in follow-up (usually for chronic circulatory or endocrine conditions) occurred more often in the urban sites. Given that facilities for training may be more often based at urban sites, efforts will have to be made to educate trainees in managing patients with the symptom profiles more frequently noted in rural settings. Similarly, there were dramatic differences in the most common diagnoses across regions: diagnoses of infectious and respiratory diseases were more common in the rural settings and diagnoses of circulatory and endocrine disorders (such as diabetes) were made more commonly in urban ones, perhaps reflecting the specialized nature of some clinics in the latter.

Common morbidities noted in this study differ from recent reports of health indicators in Ethiopia. According to recently published data from the Federal Ministry of Health of Ethiopia, the top four causes of morbidity are all infectious diseases including malaria, pneumonia, acute upper respiratory infection and helminthiasis (24). By contrast, our list of most common diagnoses included several non-communicable diseases. Possible explanations for the difference include: differences in data collection methods, self-selection by patients who present themselves to GPs in a public facility (vs. private), and barriers to accessing primary care among the poor, indigent or other vulnerable groups.

An alternative explanation is that there may be changing patterns of disease burden in Ethiopia. It has been noted that "as societies modernize, they experience significant changes in their patterns of health and disease" (25). Recent reports from other countries in sub-Saharan Africa demonstrate the growing phenomenon of a "double burden" of disease. These reviews also note the

polarization of the double burden across social classes. Wealthy, urban communities confront a higher risk of chronic, non-communicable diseases while low-income and rural communities experience a higher burden of infectious diseases along with a growing prevalence of chronic, non-communicable diseases (25-28). Regardless, the fact that chronic, non-communicable diseases represent a significant portion of the GPs' clinical work in certain parts of the country means that teaching must include both infectious and non-communicable diseases.

Mental illness did not feature prominently in the common symptoms or diagnoses. Previous studies have shown a significant burden of mental illness in the country including a 5% lifetime prevalence of affective disorders (29, 30). Perhaps mental health issues are not identified in the symptoms or diagnoses related to the GP visits and therefore may be under-recorded. Further, mental health care is often institutionally based and people with serious mental illness may not routinely be managed in outpatient facilities. Finally, in the area of mental health care, the burden of care delivery has been shifted largely to non-physician health care professionals (31). For all these reasons, GPs may not deal with large volumes of mental illness thereby challenging education planners to seek information beyond this study to determine the appropriate amount of FM training that should be focused on mental health care.

### Limitations

The geographic distribution of GPs in this study (63% in urban settings) partly reflects the limited resources available for this study and the logistical constraints of observing rural practice. However, it likely also reflects the distribution of the physician workforce (1, 2, 31). Neither, unfortunately, reflects population geographic distribution in that 83.6% of the population lives in rural areas (31). However, the proportion of women GPs in the study (24%) is fairly close to the national proportion of 17.6% in 2009 (21).

For practical reasons, GPs were only observed in outpatient work. This was not the case for entire working day and only the portion of their workday that took place in the ambulatory setting. The study therefore does not reflect the full practice patterns of GPs. There are likely seasonal and daily variations in the work of GPs and the study was unable to document these. The presence of an observer could have changed the practice patterns but there was no evidence that this was the case based on their reporting.

### Recommendations

The information generated through this study will be extremely helpful in understanding the issues faced by generalist physicians in the settings observed.

Geographic variations were noted. The details about common symptoms and diagnoses will be used to ensure that FM teaching includes adequate resources for learning teaching and learning about these topics and eventually certification standards. Providing the resources for lifelong and for the development of communities of practice to support locally pertinent standards of care could also build on this study, responding to the requests for further knowledge. Further input will be required from all stakeholders regarding other important topics that need to be part of the curriculum in order to train family physicians who are competent to perform well in the full range of their roles and responsibilities in SSA countries like Ethiopia.

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