HEALTH IN ETHIOPIA:
A SUMMARY OF 52 DISTRICT HEALTH PROFILES

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ABSTRACT: This paper integrates the data contained in 52 district health profiles completed during the years 1988 to 1991. These profiles encompass approximately 40% of the Ethiopian population and thus provide a summary assessment of health services and health status. Thirty percent of children were found to be attending school, 33% of children under five years of age were malnourished, and 35% of the population had access to safe water. The analysis was stratified by districts, urban versus rural populations, and hospital versus non hospital health institutions. Large disparities between districts were found in measures of health and human development. On a per capita basis, urban districts benefit from three times the number of physicians, four times more nurses, and double the number of health assistants. Nearly 70% of physicians and nurses were hospital based. Of the 1.88 birr per capita yearly health expenditure, hospital budgets accounted for 60%. This summary review of health profiles provides baseline data on the health of Ethiopians early in the establishment of district health services from which future trends can be monitored. [Ethiop. I. Health Dev. 1994;8(2):87-96].

INTRODUCTION

The planning and management of health services in lesser developed countries often proceeds within an environment of inadequate information about the health status of the populations served and the occurrence of important determinants of health. This is particularly the case at the district level where health services have traditionally been underdeveloped and information systems lacking (1,2). Recognizing these weaknesses, assignment as a district health manager and the completion of a district health profile (HP) have been cornerstones of Ethiopia's two recently established health management training programs. The first of these is a two year Masters of Public Health (MPH) course taught in the Department of Community Health, Addis Ababa University (DCH-AAU) and the second was the Accelerated District Health Managers (ADHM) course given at the Training and Demonstration Centre, Ministry of Health (TDC-MOH) (3,4). Trainees are provided with in-depth classroom instruction in the preparation of a health profile, given a detailed reporting outline, and then supervised in the field by faculty during the profile preparation. These profiles bring together existing information on the health status and occurrence of important health determinants in a district. Additional information is then gathered through interviews, surveys, and epidemiologic research. The purpose of this report is to summarize the information contained in the health profiles submitted by trainees in the two training programs. By combining the information contained in the district health profiles, a profile representative of the country as a whole is expected to emerge Collectively the analyses presented {J,.)vidt: a Cvst efficient, alternative source of national health information useful in assessing Ethiopia's progress towards national health goals .

METHODS

All health profiles completed by a trainee in either the MPH or ADHM course between 1988 and 1991 were eligible for inclusion in this review. Health profiles on file at the MOH- TDC or in the DCH-AAU were identified and checked for completeness. Next, each was reviewed according to a prearranged format and data related to health status and determinants were recorded. From Figure 1 it can be seen that 56 profiles were found. In two instances a district had had two profiles

completed; in which case the most recent was used. Due to the geographic redefinition of districts in 1989, there is some additional population overlap between profiles. Profiles were judged to be urban if more than 50% of the population with access to health institutions was urban. This included districts making up Addis Ababa and several regional capitals.

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In several instances specific data contained in a HP were rejected. Morbidity and mortality rates had to be derived from data generated by the district health service. Data were excluded in those instances where it were evident it had been extracted from national or regional statistics, such as the 1984 census, rather than from the district. Also excluded were data which seemed highly improbable and could not be verified from the information provided in the HP. On several occasions rates were calculated or corrected based upon the frequency counts and denominators provided.

One HP, following review by three individuals, was judged to be unreliable and was therefore excluded. Finally, a fourth was a profile of a military population and it was also excluded. All data were entered and analyzed using EPI-INFO version 5.0, Overall and mean figures for urban and rural districts were determined on the basis of the newnber of occurrences per total population at risk. Ringes stem from a similar calculation, but were calculated separately for each district.

DISTRICT HEALTH PROFILES REVIEW

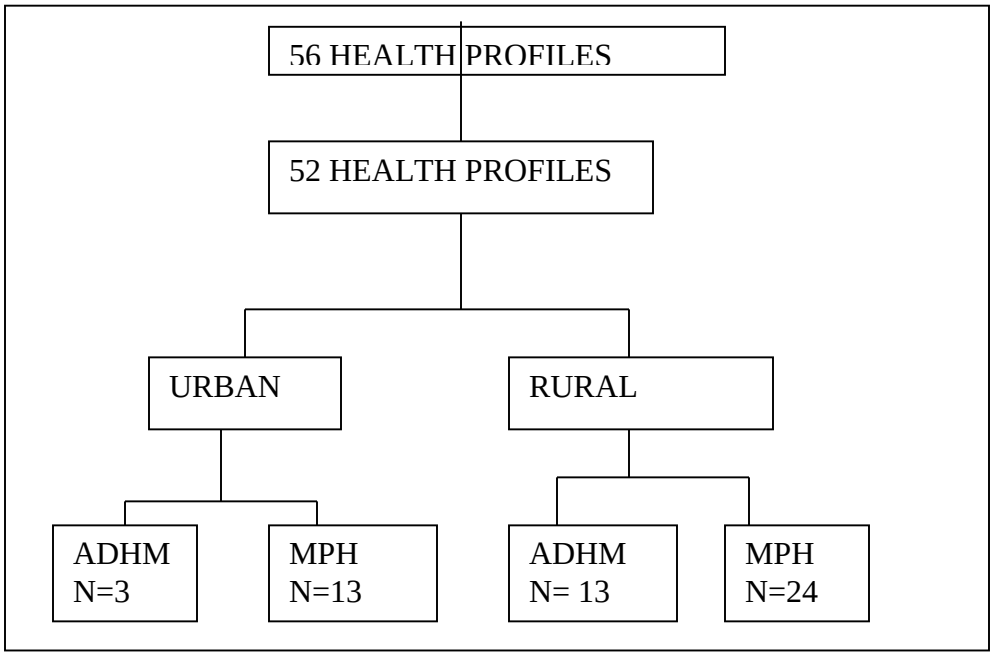

Figure 1. Results of search and inclusion of health profiles (ADHM: Accelerated District Health Managers' course MPH: Masters of Public Health Course)

RESULTS

DEMOGRAPHC: The 52 HPs covered a total population of approximately 22,970,000 people (about 40% of Ethiopia's total population), Wherever possible, the results will be presented separately for urban and rural
districts, but it is to be pointed out that in most instances districts are made up of sizeable numbers of both. The average population of a rural district was 478,000 (range 49,000 to 1,905,000) and urban 360,000 (range 41,000 to 1,399,000).

As seen in Table 1, 75% of the population resided in predominantly rural and 25% in predominantly urban districts. This urban over- representation is explained by two factors: first, urban centers tend to have better developed health institutions; and second, district health managers are more likely to be assigned to districts with the best physical facilities and therefore to the larger urban centers as opposed to remote, entirely rural districts. The age distribution is essentially the same in rural and urban districts. The median age was found to be between l8 and 19 years and the overall dependency ratio is high, at 0.83. Women of childbearing age (15 to 49 years) make up 20% of the population.

Table 1. **Age Distribution of the Population Covered by health Profiles (to nearest 1000) (1988-91)**

Age	Rural N (%)	Urban N (%)	Total N (%)
0-4	2,581,000 (15)	807,000 (14)	3,388,000(15)
5-14	4,817,000 (28)	1,499,000(26)	6,316,000(27)
15-64	9,291,100 (54)	3;287,000(57)	12,578,000(55)
>64	516,000 (3)	173,000(3)	689,000(3)
Total	17,205,000	5,766,000(25)	22,971,000(100)

Crude (unadjusted) birth, death, and growth rates are summarized in Table 2. The large difference in growth rates between rural and urban districts is almost entirely explained by the higher rural birth rate. The overall crude growth rate of 25.4 per 1000 population is high, but is. probably a conservative estimate given the bias
in district assignment previously mentioned. In contrast to the high birth rates, contraception use is exceedingly low and in many districts approaches zero.

Table 2. Summary of Crude Demographic Rates. (1988-91)

Rate	RURAL Mean (range)	URBAN Mean (range)	OVERALL mean
Crude Birth Rate*	43.8 (25.6-58.0)	33.9(12.2-46.0)	42.5
Crude Death Rate*	17.0(8.5-40.7)	17.3(12.2-22.0)	17.1
Crude Growth Rate*	29.5(6.6-45.4)	23.9(17.2-29.6)	25.4
Contraception			
Prevalence Rate**	2.29(0.3-8.0)	4.2(0.5-14.0)	2.9

*Per 1000 Population
*per 100 females 15-49 years of age

The wide ranges found among these demographic rates are to be noted. The upper crude birth rate estimate of 58.0 births/1000 population is based upon a well conducted survey carried out in an eastern Ethiopian district. The lower estimate of 12.2 is based upon a community household survey carried out in an Addis Ababa district. Given the wide inter-district disparities, the precision of national estimates will be greatly influenced by the number and spectrum of communities surveyed.

HEALTH and DEVELOPMENT: In the absence of routine reporting of vital statistics reliable district mortality figures are difficult to obtain. The most frequently occurring and best documented is the infant mortality rate (IMR). The overall IMR was 114 infant deaths per 1000 live births. As expected, the IMR was lower in urban than rural districts; urban,107 (range 38.0-155) and rural,116 (range 54.6-195). Nearly all health profiles contained a listing of the 10 most frequently diagnosed conditions seen by health centers and health stations. These tables are to be interpreted with considerable caution. First, diagnostic accuracy, capacity, and range will vary between institutions and is generally symptom or complaint focused. For example, trachoma and tuberculosis are rarely found among the top 10 diseases, yet they are known to be highly endemic throughout Ethiopia. Second, lists conform to prearranged diagnostic categories which involve an overlapping array of symptoms. Third, certain diseases will vary considerably in occurrence between districts and regions due to environmental factors such as altitude and sources of water. Finally, in many instances the actual number of cases diagnosed is not recorded or the numbers reported are not internally compatible. Table 3 includes the 10 most frequently listed d:agnostic categories.

Table 3. Ten Most Frequently Cited Outpatient Diagnostic Categories in Health Institutions (Hospitals,
Health Centers, Health Stations) (1988-91)
1. Helminthiasis
2. Respiratory Infection
3. Diarrheal Illness
4. Gastritis Diseases
5. Malaria
6. Lacerations/Injury
7. Malnutrition
8. Sexually Transmitted
9. Skin Diseases
10. Rheumatism

Table 4 summarizes three additional measures of health and development. The proportion of children in school was calculated by taking the total elementary and secondary school enrolment figures and dividing this by the total population of 5-14 year-olds. If a significant proportion of students are over 14 years old, this calculation will result in a 'generally more favourable estimation of school enrolment. The figures are fairly similar in rural and urban districts, with the overall proportion of children enroled being about 30% .In one rural district only 2% of eligibles were enroled, yet a few districts exceeded 50% .

Rates of malnutrition fluctuated widely by district and were considerably higher in the rural districts, where over one-third of children under five years of age suffer from protein-energy malnutrition. Access to safe water, defined as piped water or a protected source, was present among 27% of the population. In several urban, Addis Ababa districts access approaches 100% . These figures address access and not actual practices. Many urban poor continue to obtain water from unsafe sources.

Table 4. **Indices of health and Development (1988-91)**

Index	RURAL % (range)	URBAN % (range)	ALL %
5 to 14 year olds in school	33 (2-48)	26 (9-55)	30
Under five Malnourished	37 (3-65)	21 (15-28)	33
Access to safe water	27 (3-68)	47 (14-99)	35

HEALTH SERVICES: Table 5 lists the health institutions found in the districts and per capita or catchment population estimates for these facilities. From these figures it is evident that rural based hospitals are far fewer in number and serve much larger catchment populations. The distribution of health centers and health stations is somewhat comparable in rural and urban districts. Catchment populations, on average, for health centers and health stations in rural districts are 302,000 and 26,000, and. in urban areas are 251,000 and 29, 700, respectively. Health posts, which are constructed by communities at their own cost, were found in only one out of every 20 rural peasant associations (1:45,000 population). Access to health services can be defined either in terms of distance (within 10 kIn) or time (within lor in some cases 2 hours travel time). Using distance as the criteria, only 23 of the 52 HPs provided data on access. Of the seven urban districts providing

access data, 6 reported 100% access. Among the 16 rural districts, 51% of the population had access, with the
range between districts being 32 to 85% .

Table 5. **Health Institutions Found in the Districts (1988-91)**

Institution	Rural N (N (per capita)	Urban N (per capita)
Hospitals	18 (1:956,000)	34 (1:170,000)
Health Centres	57 (1:302,000)	23 (1:251,000)
Health Stations	672 (1:26,000)	194 (1:30,000)

Using the total population as the denominator (not just those with access), Table 6 summarizes the utilization findings for maternal and child health services. In several instances it was not possible to distinguish between total antenatal care visits and total number of women enroled, therefore the antenatal care percentages found in - Table 6 may be artificially high. From this table, it can be seen that obstetrical services are far better utilized in the urban districts, while well child care is better utilized among rural populations. This latter figure may be partially explained by the presence of private clinics in the urban districts. All three utilization rates are low, with attended deliveries the least, at less than 10% overall.

The number of OPD visits were recorded in nearly all the BPs. Taking the total number of OPD visits, the per capita annual number of visits is 0.23 overall, with the mean for urban nearly double that of rural districts; urban 0.32 (range ,08-.94) vs rural 0.17 (range .03-.46).

Table 6. **Utilization of Health Services (1988-91)**

index	RURAL % (range)	URBAN % (range)	ALL %
Antenatal care	23 (3-68)	33 (5-56)	25
Attended delivery	7 (1-32)	11 (4-15)	8
Well child care	27 (2-71)	14 (5-29)	25

Immunization coverage rates are found in Table 7. These rates can vary considerably, depending upon how the denominator is defined. The rates reported in Table 7 are based upon the total number of vaccines given over the preceding one year divided by the number of expected births. They have not been adjusted for infant mortality over the first year of life, thus inflating the denominator for DPTJ and measles by about 10% .As can be seen, coverage rates vary a great deal between districts, in particular the rural. Overall, approximately one-quarter of all children were found to be fully immunized by one year of age.

Table 7. **Immunization Coverage (1988-91)**

Coverage			
Vaccine	Rural % (range)	Urban % (range)	Overall %
BCG	49 (1-90)	65 (39-88)	51
DPT_3	25 (1-73)	42 (28-71)	27
Measles	26 (1-69)	38 (19-62)	28

HEALTH PERSONNEL: Per capita health manpower figures are summarized in Table 8. This table provides overall and rural vs urban per capita manpower ratios, as well as between district ranges. The ranges do not include districts where there are zero workers of a particular category .Secondary calculations were carried out for non-hospital need manpower ratios. These include all physicians, nurses, and health assistants employed outside a hospital; in nearly all cases a health centre or health station. Finally, for community health agents (CHA) and trained traditional birth attendants (TTBA) a secondary calculation is found which includes only fuose who are known to be functional. A community health worker is defined as functional on the basis of continued, quarterly reporting to their supervising health station. This definition is less restrictive than that of the MOH, which expects at least 6 reports per year. Therefore we may be overestimating community health worker availability.

The overall physician-to-population ratio was found to be one per 52,000 population. The ratio is nearly three times higher for rural vs urban districts and this difference is largely explained by the relatively large number of urban, hospital-based physicians. These figures do not include private clinics, which are few in number outside Addis Ababa. In total, 58% of the physicians are located in the urban districts and 83% are hospital-based. In five districts, four rural and one urban, there were no physicians at the time the HP was completed.
The nurse-to-population ratio was found to be one per 17,000 population. Again, there are large rural vs urban disparities, with the ratio nearly four times greater in the rural districts. If one includes only those nurses working outside a hospital setting, the per capita ratio is increased to I :47 ,000 population. From the total, 52% of the nurses are located in the urban districts and 63% are hospital employed. In six urban districts, there were no nurses working outside a hospital. A total of 108 sanitarians and 123 pharmacists or pharmacy technicians were identified in 49 of 52 HPs. These represent per capita ratios of 1:203,000 and 1:178,000, respectively. In Ethiopia health assistants (HA) are considered to be the first point of contact with
health institutions. They are found at all institutional levels and have been trained to carry out preventive, diagnostic, and curative activities. The overall ratio of HA to population was found to be 1:5,200. When comparing urban to rural districts, the ratio is more than doubled in the latter. This discrepancy is also largely explained by the increased number of hospital employed HAs in urban settings. From the total, 61% of HAs are located in rural districts , however the majority, 52% , are hospital based.

Community health agents (CHAs) and trained traditional birth attendants (TTBAs) are community based health workers supported by their communities. They have been nominally trained, but are not employed by the Ministry of Health. They are supervised from the nearest health station or health center by a health assistant to whom they are expected to report on a quarterly basis. The per capita ratios in urban and rural districts are similar, whether examined in terms of the total trained or those actively reporting to a health station, the latter being one per 12,000 population. Assuming the average village population to be 2,500, approximately one in three can be expected to have either a functioning CHA or TTBA.

Table 8. per Capita Distribution of health manpower (per 1000 population) (1988-91)

Profession	Rural Ratio (range)	Urban ratio (range)	Overall ratio
Physicians	1: 89 (11-571)	1:29 (3.8 - 82)	1: 52
All Non-hospital Nurses	1: 302 (25 - 1905)	1:251 (33 - 1399)	1:287

All	1:29 (4.1 -106)	1:8.0 (2.4 -36)	1:17
Non-hospital Health Assistants	1:50 (8.2 -212)	1:3.39 (5.1 - 155)	1:47
All	1:7.4 (1.3 - 19)	1:3.3 (0.9 - 13)	1:5.8
Non-hospital Community Health Agents	1:11 (2.4 -35)	1:15 (2.2 -57)	1:12
All	1:4.5 (1.1 - 16)	1:5.1 (1.1 - 22)	1:5.2
Functional Traditional Birth Attend.	1:12 (2.0 -105)	1:14 (5.0 - 60)	1:12
All	1:5.0 (1.5 - 37)	1:6.2 (1.3 -15)	1:5.2
Functional	1:13 (4.4 -244)	1:11(2.7 -29)	1:13

HEALTH SERVICES FINANCING: Health services are financed through fixed, global budgets. At the time these health profiles were completed the districts did not have budgets of their own. They were supported through a redistribution of resources from the existing health institutions in the district. The proportional breakdown by cost category is nearly identical across districts, with the current allocation found to be 69% for salaries (range 48% to 90%), 16% for drugs (range 6% to 41 %), and 12% for operational costs (range 2% to 33%). Not includes ;n these figures are costs related to the Ministry of Health central and regional headquarters, its divisions (e.g. rnatemal and child health, epidemiology, planning, etc.), and vertical programs (e.g. diarrhoeal disease, malaria and tuberculosis control programs). Also not included are funds received through multilateral (UNICEF, WHO) or bilateral contributions (including non-governmental organizations). With these exclusions in mind, the overall per capita expenditures on health in the districts is 1.88 birr (about 0.95 $US)/person/year.

Approximately 60% of total expenditures are allocated to hospitals. If one considers only those districts with a hospital, on average, 70% of government health expenditures are consumed by the hospitals. The range in per capita expenditures between districts is extremely wide. As can be seen over 20 birr/person was expended in one urban district, while in one rural district only 0.10 birr/person was allocated to health services.

Table 9. per Capita ministry of health Expenditures in Ethiopian Birr (Birr = .49 $US) (1988-91)

Expenditure	RURAL Mean (range)	URBAN Mean (range)	ALL
Hospital	0.56 (00-4.53)	2.83 (.00-20.27)	1.13
Non-hospital	0.74(.03-2.90)	0.84(.00-4.14)	0.75
Total	1.30 (10-7.79)	3.67(.54-20.27)	1.88

DISCUSSION

By combining the information contained in 52 district health profiles completed over the four year interval 1988 to 1991, it has been possible to establish a representative summary health profile of Ethiopia. District health services have been rapidly developed over the past five years i in Ethiopia and therefore much of the data presented in this paper can be viewed as baseline. As mentioned, district health managers have been preferentially placed in districts where a minimum standard of institutional facilities are in place. In relation to the country's total population, the population covered by the district health profiles is therefore relatively more urban, has greater access to health and other government services and resides in communities less directly affected by the civil war in progress at the time. For these reasons, the figures presented in this paper likely represent an

optimal assessment of the health status of Ethiopians at this time. The distribution of health indices and health system determinants were assessed by 1) district, 2) urban vs rural populations and 3) hospital vs non-hospital institutions. One of the more important findings of this health profile review is the wide disparity between district on measures of health and human development and in the distribution of human and physical resources. As an example, the prevalence of malnutrition in children ranges from 3 % to 65 % among the districts". Under such circumstances the global prevalence of 33% tends to obscure the actual situation whereby in some districts food security and nutritional status have attained high standards, while in others they remain extremely low. A good example of disparity in resource distribution is the per capita spread of health assistants which range from one per 900 to one per 57 ,000 inhabitants.

By stratifying the analyses into rural and urban districts, it has been possible to identify a consistent urban bias in the distribution of health manpower and expenditures. After adjustment for population size, it is found that urban districts benefit from three times the number of physicians, nearly four times more nurses and more than double the proportion of health assistants. Given that nearly 70% of health expenditures are salary related, it is evident that similar urban-rural disparities in the financing of health services will also be found. A nearly three-fold increase in per capita expenditures favouring the urban districts was found. By separating the analyses into hospital and non-hospital sectors one is able to appreciate the impact hospitals have on the distribution of human and financial resources within a developing country's health care system. Access to hospitals is largely limited to urban residents, which in Ethiopia reporting approximately 10 to 15% of the population. In this study. 69% of the nurses and doctors were hospital based. It is to be noted that all hospitals in Ethiopia provide primary health care services to a varying extent. It is also the case that health centers distant from a hospital typically offer in-patient services, thus blurring the distinctive roles of these institutions.

Approximately one-half of the sanitarians identified were hospital employed, yet spend nearly all their time on preventive, environmental health activities. In general , measures of health status contained in the profiles, whether it be mortality , morbidity , or human development parameters, were found to be absent or inadequate in the profiles. This reflects the absence of vital statistics recording and poorly functioning district health information systems. In nearly all instances morbidity data were passively obtained and based upon OPD diagnoses or patient complaints.

The health profiles reviewed in this paper represent an important baseline of data upon which future district health information systems can evolve. Prior to 1988 and the submission of the first of these profiles, comprehensive assessments of the state of health of Ethiopians at the district level were largely unobtainable.
All of the profiles reviewed in this paper were completed as a requirement for graduation from either of Ethiopia's two health management training programs: the MPH program - Department bf Community Health, Addis Ababa University and the Accelerated District Health Managers' training program -Training and Demonstration Center, Ministry of Health. These training programs have played a leading role in the development of health profile protocols and their conduct in Ethiopia. What is required at this point is the continued generation of health profiles, but outside the context of a training program and their integration into dynamic, up-to-date health information systems.

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