THE ZONE OF INFLUENCE OF SOME RURAL HEALTH CENTRES IN MOZAMBIQUE

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ABSTRACT

To evaluate the area of influence of some rural health centres, the Ministry of Health of Mozambique surveyed a sample of outpatients who came to those health centres during the first half of 1982. The results revealed that for the five centres, the mean radius of patient activity was 8 to 13 kilo metres and 50% to 86% of the patients lived within a circle surrounding the health centre which had a radius of less than ten kilometres. Only one health centre was located in a district in which patient coverage seemed to be adequate with regard to distance.

BACKGROUND

The health care system of Mozambique is structured on four levels. The basic peripheral units are the health centres and health posts which provide and support the essential primary health care programmes. Each health centre is responsible for the supervision of four to eight health posts. Inaddition, there are two levels of hospitals.

The size of the country (800,000 km^2) and limited health infrastructure makes it difficult to provide health care coverage to all the population Inadequate transportation increases the difficulties involved.

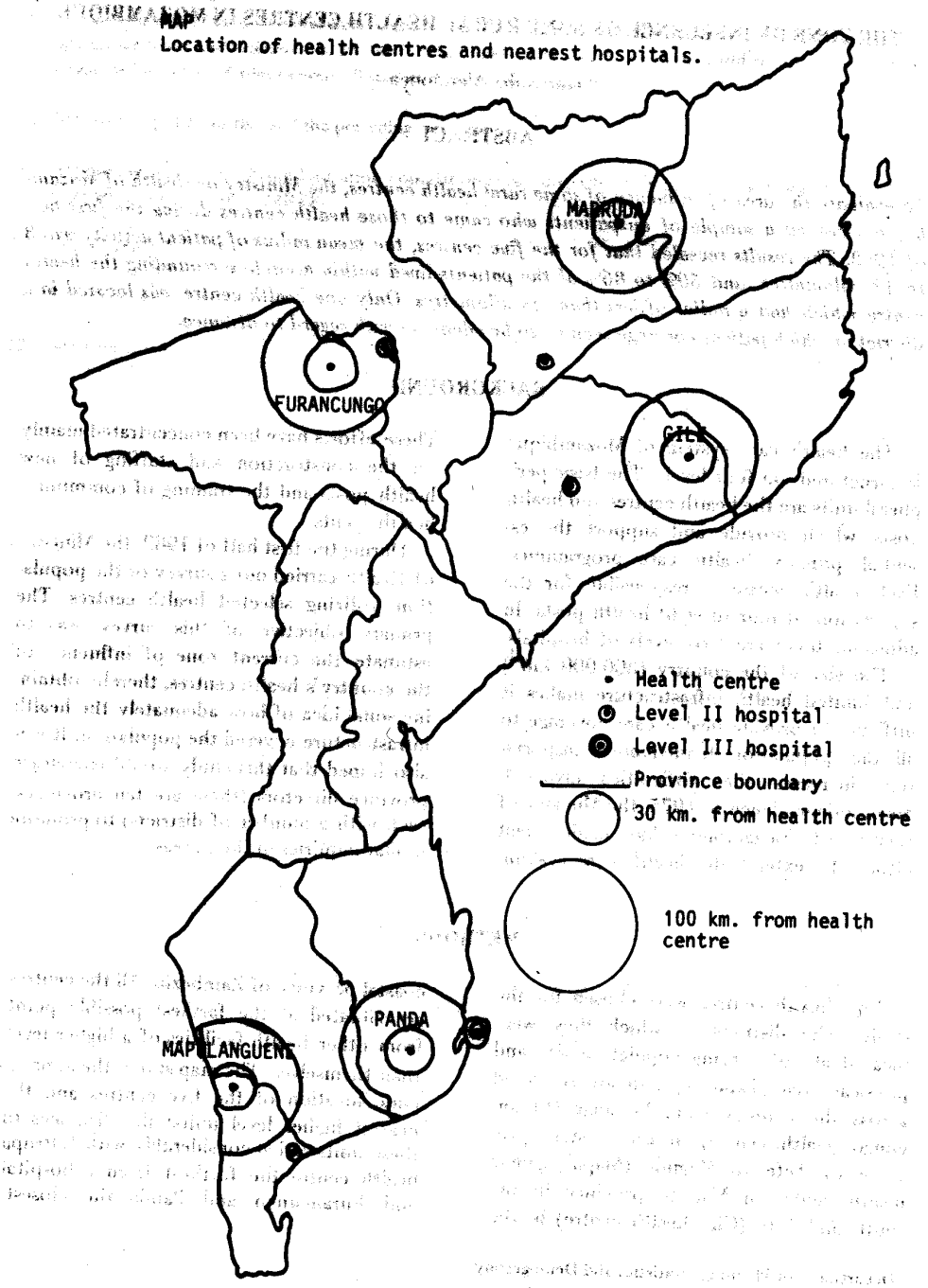
Since independence in 1975, the Ministry of Health of Mozambique has made great efforts to extend the health care system. These efforts have been concentrated mainly on the construction and staffing of new health posts and the training of community health agents.

During the first half of 1982, the Ministry of Health carried out a survey of the population utilizing selected health centres. The primary objective of this survey was to estimate the current zone of influence of the country's health centres, thereby obtaining some idea of how adequately the health infrastructure covered the population. It was also hoped that this study would encourage province directors (there are ten provinces, each with a number of districts) to promote similar inquiries in their areas.

METHODS

Five health centres were chosen for the study. The districts in which they were located are of varying population size and physical area (Table 1) and are scattered across the country from Macanga (Furan-cungo health centre) in the western province of Tete to Magude (Mapulanguene health centre in Maputo province in the south and (Gile health centre) in the Department of Planning, Statistics and Demography Ministry of Health, P.O. Box 264, Maputo, Mozambique coastal province of Zambezia. All the centres are situated at the farthest possible point from other health facilities of a higher level than themselves. The map shows the approximate location of the five centres and the nearest higher level units; the distances tothese units varied considerably with Marrupa health center the furthest from a hospital and Furancungo and Panda the closets.

MAP
Location of health centres and nearest hospitals.



The survey was based upon a form adopted from one utilized by Gish and Walker in Botswana to estimate the distance people traveled to fixed health facilities, including health centres. Health centre staff filled in
the form for every pat:ent that came to the selected health centres on the fifth, fifteenth and twenty-fifth days of each month between January and June 1982. A total of 1959 individual forms were completed as follows:
cungo -365; Panda -563: and, Mapulanguene, -511.

Table 1: Districts Surveyed

Health Centre	District	Population	Area (km^2)	Population Density
Marrupa	Marrupa	34,300	17,730	1.93
Gile	Gile	104,800	8,875	11.81
Furancungo	Macanga	64,100	18,141	3.53
Panda	Panda	58,600	7,204	8.13
Mapulanguene	Magude	104,000	6,960	14.94

Distance
Table 2 shows, based on health centre utilization, the actual mean influence radius for each health centre (col. 1), its standard deviation (col. 2), the mean influence radius for patients not utilizing any means of transportation (col. 3), its standard deviation (col. 4), and the theoretical influence radius of the district (col. 5). This theoretical radius is calculated assuming the district to be a circle with all there existing health centres uniformly distributed wjthin the district. The actual mean zones of influence varied from about 8 kilometrcs (Marrupa and Furancungo) to 14 kilomctres (Gile).

Table 2: Actual and Theoretical Health Centre Influence

	All Patients Radius		Walking patient Radius		Theoretic Radius
Health Centre	Mean	Standard Deviation	Mean	Standard Deviation	
	(1)	(2)	(1)	(4)	(5)
Marrupa	7.8	19.1	6.2	15.8	75.1
Gile	13.9	14.8	12.9	16.1	53.2
Furancungo	7.9	16.9	4.5	9.7	76.0
Panda	12.9	14.6	10.3	12.3	16.0

Mapulanguene	10.4	14.4	7.9	4.4	9.4

The method people used to reach the health centres (walking, automobile etc.) was recorded on only 1805 of the 1959 completed forms. Of these 1805 patients, only 14 walked 50 or more kilometres to one of the health centres, and half of those were at one health centre, Panda (Table 3). Panda also had the smallest percentage ofits patients living less than 10 kilometres from the health centre (Table 4) and the second high is,! mean influence radius for all patients and £or those who walked to the centre (Table 1). As indicated by Tables 2
and 3, Mapulan~ene is the only one of these health centres where coverage as judged by distance appears to be satisfactory .

Table 3: Patients Walking 50 or More Kilometres

Health Centre	50-90km	100km
Marrupa	1	2
Gile	2	0
Furancungo	2	0
Panda	7	0
Mapulanguene	0	0

Table 4: Distance Patients Lived from Health Centres

	Percentage of Patients	
Health Centre	0-90km	30+km.
Marrupa	86.2	4.8
Gile	61.7	13.5
Furancungo	83.6	9.6
Panda	50.6	9.2
Mapulanguene	62.6	1.2

Means of Transportation

Table 5 shows the number of patients who walked to each health centre and the number who utilized some means of transportation. Only 10.1% of all patients used some form of transport to reach a health centre but the proportion of patients using transportation varied from centre to centre. Only 2.1% and 2.2% of the patients at Marrupa and Gile, respectively. used transportation while 13% at Panda, 13.2% at Furancungo and 15.7% at Mapulanguene did.

Table 5: Number of P.atients According to Means of Travel1

Health Centre	Walking	Bus	Private Car	Other[2]
Marrupa	370	1	7	0
Gile	135	0	3	0
Furancungo	317	0	25	23
Panda	369	31	20	4
Mapulanguene	432	9	9	50
	1623	41	64	77

Note 1; The numbers in Table 5 do not necessarily correspond with those in other tables as the means of travel was not indicated on the all forms.

Note 2: Mostly bicycle or motorbike.

Time

The time spent on traveling by patients is higher when the maximum concentration of the population is located above 5 kilo. metres from the centre (Table 6 and 7).

Table 6: Frequency Distribution of Patients by Distance

	Distance in Kilometres							
	0-1	1-4	5-9	10-19	20-29	30-49	50-55	100+
Marrupa								
Number	93	163	70	25	10	10	3	5
Percent	24.5	43.0	18.6	6.6	2.6	2.6	0.8	1.3
(N = 379)								
Gile								
Number	7	33	47	19	16	16	3	0
Percent	5.0	23.4	33.3	13.6	11.3	11.3	2.1	0
(N=141)								
Furancungo								
Number	224	39	43	13	11	20	15	0
Percent	61.4	10.6	11.8	3.6	3.0	5.5	4.1	0
(N=365)								
Panda								
Number	187	13	85	145	81	44	7	1
Percent	33.2	2.3	15.1	25.8	14.4	7.8	1.2	0.2
(N=563)								
Mapulanguene								
Number	16	121	183	164	21	1	1	4
Percent	3.1	23.7	35.8	32.1	4.1	0.2	0.2	0.8

N=511								

Table 7: Time Spent Walking (minutes)

Health Center	Mean Time (1)	Standard Deviation
Marrupa	50	64
Gile	118	123
Furancungo	43	66
Panda	71	79
Mapulanguene	105	80

There is a strong relationship between the mean radius of walking patients (Table 2) and mean time spent on the road by the same patients (Table 7) for the Marrupa, Furancungo and Panda health centers. In Gile, the weaker relationship may be due to too small a sample. In Mapulanguene, it appears that the recorded information on travel time is not accurate i.e. since 62.6% of the patient population traveled less than 10 killimeters, mean travel time to the center should not be 105 minutes.

REFERENCE

1. Gish, O. and G. Walker. 1977. Mobile Health Sercives. London. Tri-Med Books.
2. World Health Organization. 1974 Methodes d'extension de la Courverture de Services de Sante dans les Zones Rurales. WHO Regional Office for Africa: Brazzaville Republic of the Congo.