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Characteristics of Pregnant Women in Mozambique—Parity, Child Survival and Socioeconomic Status

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ABSTRACT

As a basis for improvement of maternal health care programmes in Mozambique, 1051 pregnant women were interviewed at 10 sites in 8 of the country's 10 provinces. Two-thirds of the women lived in rural areas. The average number of previous births ranged from 2.4 to 4.7 and was significantly correlated to the proportion of children lost before 5 years of age. Child survival was significantly higher when the woman had received some education, possessed a radio, or the woman or her husband had paid employment.

In the most underprivileged rural area, 56 % of the children had died before the age of 5 and 35 % of the pregnant women had undergone 6 childbirths or more.

It is concluded that in order to improve maternal and child health it is necessary to increase socioeconomic development as well as improve maternal and child health care.

INTRODUCTION

The health situation of women is affected by the process of human reproduction. Spontaneous or induced abortion, pregnancy, childbirth, puerperium and lactation all have an effect on the health of women. The extent of their effect will depend on socioeconomic factors and nutrition. The adverse effects of ill health in the pregnant or puerperal woman are ultimately reflected in the level of maternal mortality. The maternal mortality rate is several hundred times higher in some third world countries than in certain developed countries. See Table 1.

Table 1. Extreme levels of national maternal and child mortality rates. As a comparison estimated figures for Mozambique (6, 7, 11, 13).

	Highest levels	Lowest levels	Ratio high/low	Mozambique
Perinatal mortality per 1000 births	120	8-12	10-15	60-80
Infant mortality per 1000 live births	200	8-10	20-25	150
Childhood mortality per 1000 live births	500	10-12	40-50	300
Maternal mortality per 100 000 live births	1 000	5-10	100-200	300

Where maternal ill health is concerned, a high maternal mortality rate is only the tip of the iceberg, however. Preventable diseases afflict vast groups of pregnant women in the third world. For instance, 69 % of pregnant women in an Indian survey were anemic (12), 4-5 % of Mozambican gravidae had serological signs of syphilis (5) and in many parts of the world malnutrition during pregnancy is common. Where resources are scarce, optimal preventive actions require intimate knowledge of the local pattern of maternal morbidity, as well as knowledge of fertility patterns and socioeconomic conditions in the community.

Mozambique, a former Portuguese colony, gained independence in 1975. Considerable effort is presently being made to restructure the old colonial agricultural, economic and administrative system. The work is seriously hampered by South African sabotage actions. Several periods of drought and floods have lately caused food shortages in some areas.

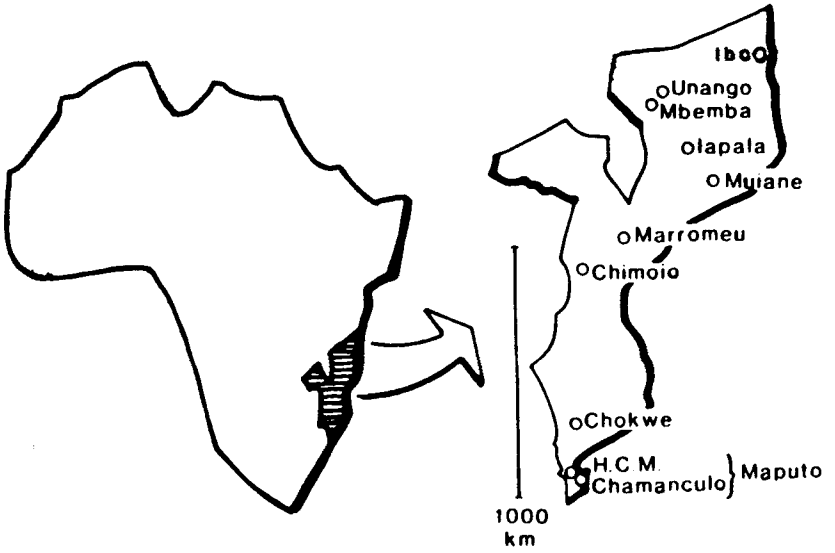
In the health sector, which was nationalized at independence, the effects of an extensive training programme can now be seen in the extension of the health care network. National vaccination campaigns have been quite successful. Primary health workers are functioning in many villages. Antenatal care services are growing and delivery care in maternity wards, now free of charge, is becoming increasingly popular. However, only few systematic studies focusing on maternal and child health have been made.

The purpose of the present investigation was to study important health problems of pregnant women living under different socioeconomic circumstances in various parts of Mozambique, as a basis for the improvement of maternal health care programmes. The present paper covers general aspects, while the

special problems of anemia, syphilis and causes of stillbirth will be dealt with elsewhere along with anthropometric data.

MATERIAL

During 1981-83, a total of 1051 pregnant women were investigated at 10 sites in 8 of the country's 10 provinces. See Fig. 1.



Site	Type of area	Women studied	Estimated coverage, %
Ibo	Islands, fishing area	120	80
Unango	Rural area, "model village"	18	95
Mbemba	Rural area	47	Antenatal unit
Iapala	Rural area, communal village	248	90
Muiane	Mining village in rural area	90	80
Marromeu	Rural area	70	90
Chimoio	Town with industries	225	60
Chokwe	Rural area, communal village	125	80
H.C.M.	Centre of capital city	87	Maternity
Chamanculo	Centre of capital city	21	Antenatal unit
		1051	

Fig. 1. Studied groups of pregnant women.

At five of the sites studied - Ibo, Iapala, Muiane, Chimoio and Chokwe -the investigation was made parallel to an inquiry on infant mortality conducted by the Ministry of Health (6). Through the intensive mobilization efforts on the part of the primary health workers and village leaders, the inquiry brought together all women over 14 years of age at meeting points in the villages. After completing the inquiry, all women who were pregnant were interviewed

and examined. Additionally, all women who were pregnant but not yet 15 years old - they were not part of the inquiry on infant mortality - had been called to participate.

At two other sites - Unango, Marromeu - all pregnant women were gathered through our own mobilization. At the three remaining sites this method was not feasable for various reasons; the study was then conducted at antenatal care units - Mbemba, Chamanculo - and a maternity unit - Central Hospital, Maputo.

As can be seen from Fig. 1, the estimated coverage was 60-95 %. This calculation is based on available populational figures for the investigated sites, information from health services and from village elders and administrative leaders. The low coverage of certain rural sites was due to fear of enemy attacks and agricultural work far away from the village. The low coverage of the studied parts of the town of Chimoio may be explained partly by a high employment rate, and partly by fear that the investigation was a military draft.

All participating women were given antenatal care in accordance with the national system. Essential drugs were available and distributed when needed.

METHODS

The pregnant women studied were carefully interviewed by a specially trained midwife as regards age, schooling, size of household, their own and their husband's occupation, possession of a radio, possession of domestic animals of nutritional value - cows, ducks, hens and pigs (cats and dogs were excluded). A detailed obstetric history, including number of antenatal care visits, was also noted down.

Clinical examination was performed by a doctor and included measurement of blood pressure, weight, height, skinfold thickness, arm circumference and uterine height. A venous blood sample was drawn for routine hematological investigation as well as for analysis of syphilis and malaria serology and ferritin assay. The results of the laboratory and clinical investigations will be published elsewhere (4, 5).

At all studied sites, information on the life of women was also gathered through informal but structured interviews with village women, covering customs and beliefs related to marriage and childbearing. Information on

health care services, water supplies, major crops, dietary habits and sewage disposal was also gathered at every site studied.

The results from the 1 051 pregnant women were recorded on special forms; the data being transferred to the computer of the Department of Statistics at Uppsala University, where it underwent statistical analysis.

RESULTS

The women's age, socioeconomic situation and utilization of antenatal care can be seen in Table 2.

Up to 10 % of the women were less than 17 years of age, and in some areas many women were above 35 years. There were considerable variations as regards schooling. The pregnant women, whose children were delivered at the Central Hospital of Maputo, had an average of 3.9 years of schooling, while in Marromeu the vast majority were illiterate. In the urban areas, around 15 % of the women had some profession, while this figure was below 5 % in the rural areas. No information on profession or economic status was gathered at the Central Hospital of Maputo.

The majority of the husbands in the rural areas were farmers but they also had some additional means of income. This was difficult to classify and was therefore omitted from the table. In the urban areas, a majority of the men were in paid employment.

Women living in urban areas owned a radio more often than rural dwellers. There were large variations as regards possession of domestic animals. More than half of the total number of women studied in the third trimester had made at least one visit to the local antenatal care service.

Parity distribution is presented in Fig. 2 and the average parities in relation to percentage of children lost before 5 years of age is shown in Fig. 3. In both these figures Chamaculo and Unango are omitted, as the numbers studied were very small.

Nulliparous women constituted between 9 and 25 % of the groups of pregnant women studied, while women with 6 or more previous deliveries, "grand multiparous women", constituted between 9 and 36 % of the groups studied.

Table 2. Age distribution, socioeconomic data and antenatal care of the pregnant women studied.

	Chamanculo	H.C.M.	Chokwe	Chimoio	Marromeu	Muiane	Iapala	Mbemba	Unango	Ibo
No. of women studied	21	87	125	225	70	90	248	47	18	120
Average age	24	-	27	24	-	26	27	26	21	24
% <17 years	9	-	<1	5	-	7	5	10	<1	6
% >35 years	10	-	18	7	-	24	20	10	<1	6
Average yrs. of school	2.8	3.9	1.1	2.1	0.3	1.8	1.4	0.8	2.1	1.4
% without schooling	33	30	60	21	81	37	40	50	17	55
% with paid employment	15	-	<1	16	<1	3	4	2	6	2
Average household size	6.5	-	6.3	5	4	5	4.5	-	3.5	4.9
% radio owners	67	-	55	65	14	31	19	-	56	38
% with domestic animals	43	-	96	35	45	43	53	-	39	53
% in last trimester with any antenatal care	-	-	77	58	32	92	75	-	100	50

Footnote: - indicates no information.

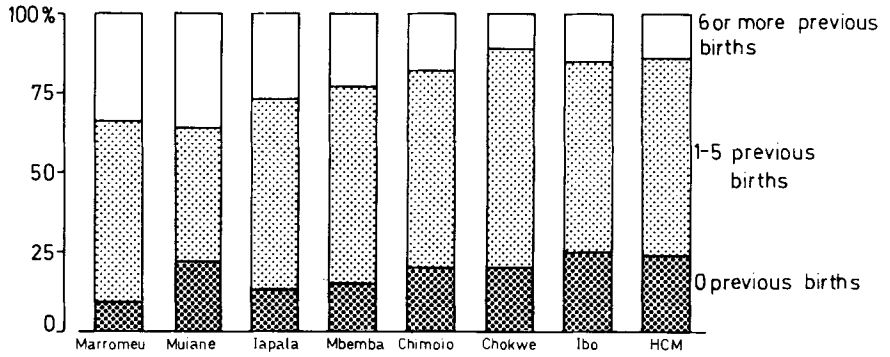


Fig. 2. Division of each group of pregnant women in parities 0.1-5.6 or more.

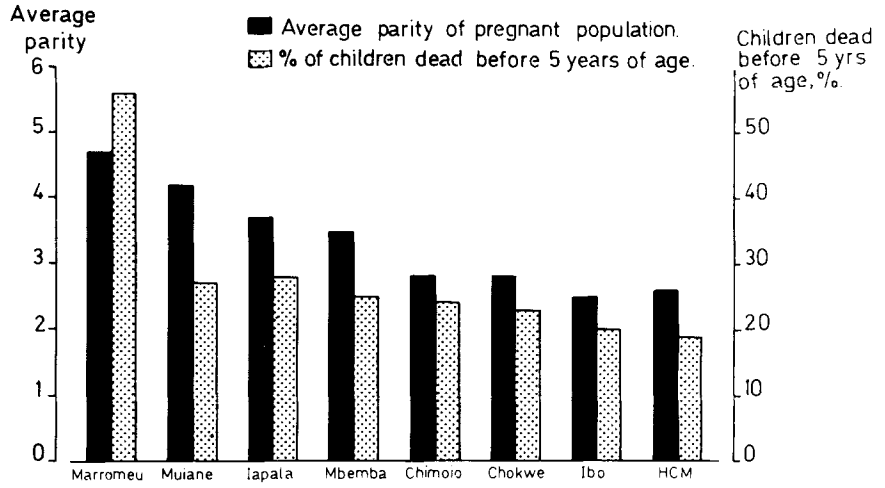


Fig. 3. Average parities and percentages of children dead before 5 years of age.

The average perinatal mortality rate was approximately 10 % for the total groups studied, but only around 5 % in the urban areas. The women reported that between 18 and 28 % of their liveborn children had died before 5 years of age, with the exception of Marromeu, where 56 % of the children had died before the age of 5 years. The average parity for a group was significantly correlated to the percentage of children lost before the age of 5 years ($p<0.001$, Spearman's rank correlation coefficient test).

When all the women studied were taken into account, the percentage of their children who died before the age of 5 years was significantly lower in families possessing a radio than in families without a radio ($p<0.001$). The same correlation could also be seen in 3 of the groups separately. Similarly, over the entire group of 1051 women, the percentage of children dead before the age of 5 was lower in the case of women who had a minimum of one year of schooling compared to women with no schooling at all ($p<0.05$). The same correlation was statistically significant in only one of the subgroups. Women in paid employment had lost less children before the age of 5 years than women who were farmers or housewives ($p<0.05$). If the family had domestic animals, the reported mortality before the age of 5 was lower, almost to the point of being significantly lower, than in families without animals ($p=0.055$). If the husband had a profession other than farmer or labourer, the under 5 mortality rate was also lower ($p<0.01$).

As far as perinatal mortality was concerned, no significant correlations were found to the socioeconomic variables for the group as a whole, except for the finding that women whose husbands were reported to be farmers or labourers had a lower perinatal mortality rate ($p<0.05$).

The informal interviews showed that the Mozambican woman carried the major responsibility for the family subsistence farming and thus the obtaining of food supplies. Hard farm work continued during pregnancy until childbirth. The value and prestige of a woman was greatly influenced by how many living children she had. Infertility or childlessness were often mentioned as important problems. Traditional values and customs had a great influence on the life of women, and varied throughout the country according to ethnic group, religion and geographic region; e.g. the tradition of bride price (the husband's family literally buys the bride) was widely practised in southern Mozambique, even in urban areas, while most groups in northern Mozambique were matrilocal. Polygamy existed in some areas. Enemy actions not only posed a constant threat to many families but also made transport and commu-

nication difficult. This in turn made it difficult to obtain many necessities such as clothes and shoes in rural areas.

DISCUSSION

The conditions in a developing country and the resources available will not permit full scale sample studies. The prevailing political strains, with threats of enemy attacks, add further to the difficulties in conducting epidemiological field studies. On the other hand, the local political system in which "mobilization" of the population groups is practised with considerable success certainly contributed to making the study possible at all. Great efforts were thus made to mobilize all the pregnant women in the defined areas. Although the estimated coverage in one site was down to 60 %, it was 80 % or more in others. The sampling in the city had to be made from health institutions for practical purposes. There is no reason to believe, however, that the women studied should not be representative of large groups of the country's population. Practically all geographical and agricultural areas were represented, even including the fishing population on the coast, the majority being rural as in the country as a whole. The study constitutes the first of its kind in the country.

Certain information is not easily obtained or may even be withheld by the women. For instance, many of the illiterate women did not know their age and an estimate was then made. The same is true for gestational age. Many women resented talking about their dead children, and the recorded number of deaths may be regarded as a minimum figure. As many children had not yet reached 5 years, they may still die before that age, which would raise the given mortality figures even further.

Adolescent pregnancies were not found to be rare in Mozambique, but women over 35 constituted a larger proportion of the pregnant population. In the latter group, the many grand multiparous women are most often found, carrying the raised obstetric risk of higher age and high parity.

The illiteracy rates were lower than the national estimate of more than 95 % in 1975, as a result of literacy campaigns. However, there were considerable differences in the country. While the parturients at Maputo Central Hospital had an average schooling of 3.9 years, the Marromeu women had only attended school for an average of 0.3 years. Evidently, there are considerable socioeconomic differences between rural and urban groups. Each subsample also contains women living under different socioeconomic conditions. The

correlations between various socioeconomic indicators and child mortality with regard to the whole group of 1051 women substantiate this.

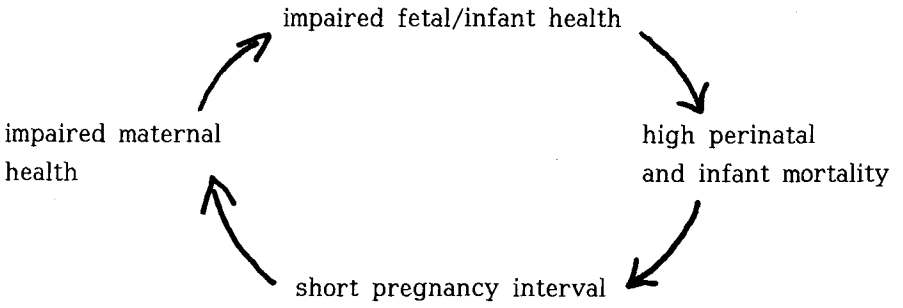
The parity figures gave no information on total fertility rates in the society as a whole, as only pregnant women were interviewed. Nonetheless, more than 25 % of the pregnant women in some rural areas had gone through 6 childbirths or more with the increased obstetric risk that this implies (9).

The mortality figures for children are in accordance with what may be expected in a developing country, except for the very high figure for Marromeu. This may be explained by the flooding of the Zambezi river in 1978, when thousands of people lost their homes. Climatic catastrophes have not been exceptional in this region of Africa during the last decade, and regions in Mozambique with similar mortality figures probably exist.

Correlations between socioeconomic factors and perinatal or infant mortality have been shown elsewhere (3, 13), and this is in line with our findings of lower child mortality, if the woman was literate, possessed a radio or was a wage earner.

While all the correlations shown between childhood mortality and socioeconomic indicators pointed in the same direction, the only significant correlation between perinatal mortality and socioeconomic situation (husband's paid employment raised perinatal mortality) was contradictory. This may be due to the difficulties in classifying the profession of the husband adequately. In a study in Ethiopia (8), no correlation between perinatal mortality and formal education could be found, while prolonged urban residence or adequate income lowered perinatal mortality. Also, in countries where infant and child mortality figures have been reduced, mortality between the ages of 1 and 4 has fallen first and most rapidly, while perinatal mortality has declined much more slowly (13).

The positive correlation shown between high average parity figures and high mortality for children under 5 corresponds with evidence from Algeria, Zaire, Rwanda (1) and Senegal (2) showing that long birth intervals are more common where infant survival is high. Infant survival normally signifies lactation, and often sexual abstinence as well, both contributing to a postponement of the next pregnancy. When a baby dies shortly after birth, a new pregnancy will soon be started and the too short birth interval will affect the health of the mother and the next child negatively. Thus, a vicious circle is formed:



Breaking the circle of poor health in areas as underprivileged as Marromeu will take time. Agricultural and socioeconomic developments will have to go hand in hand with the development of MHC services. Empirical evidence suggests that the initial acceptability of family planning programmes will be low on account of the very high child mortality.

The substantial mortality differences in the groups studied indicate very different socioeconomic circumstances in the country. Curative and preventive health services are more needed in poor rural areas than in the capital city. Redistribution of scarce national resources is a political question, however, and will not be dealt with here. The facts presented, linking socioeconomic indicators such as profession, literacy and radio ownership with childhood mortality rates, open the possibility of steering antenatal and child health care resources to risk groups in the local community: illiterate, unskilled labourers or farm workers with meagre economic resources.

The study indicates that attempts to improve national maternal health care should be modified locally to meet the different patterns of ill health of mother and child.

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REFERENCES

1. Cantrelle, P., Ferry, B. & Mondot, J.: Relationships between fertility and mortality in tropical Africa. In: The effects of infant and child mortality on fertility (ed. S.H. Preston), pp. 181-205, Academic Press, London, 1978.

2. Cantrelle, P. & Leridon, H.: Breastfeeding, mortality in childhood and fertility in a rural zone of Senegal. Pop Stud 25:503-533, 1971.

3. Harrison, K.A.: Approaches to reducing maternal and perinatal mortality in Africa. In: Maternity services in the developing world - what the community needs (ed. R.H. Philpott), pp. 59-69, Royal College of Obstetricians and Gynaecologists, London, 1979.

4. Liljestrand, J., Bergström, S., Birgegård, G.: Anaemia of pregnancy in Mozambique. In manuscript.

5. Liljestrand, J., Bergström, S., Nieuwenhuis, F. & Hederstedt, B.: Syphilis of pregnancy in Mozambique. In manuscript.

6. Mendonça, G.: Inquérito á mortalidade infantil. Ministério da Saúde, Maputo, 1982. Mimeographed.

7. Ministério da Saúde: Dados estatisticos de base 1981. Ministério da Saúde, Maputo, 1981. Mimeographed.

8. Naeye, R.L., Dozor, A. Tafari, N. & Ross, S.M.: Epidemiological features of perinatal death due to obstructed labour in Addis Ababa. Br J Obstet Gynaecol 84:747-750, 1977.

9. Population Reports: Effects of childbearing on maternal health. Pop Inf Program 8, Washington, D.C., 1975.

10. Reinius, S.: Perinatal mortality in Maputo. Mimeographed, 1982.

11. Statistics Sweden: Medical Birth Registration in 1981. Statistics of the National Board of Health and Welfare, Stockholm, 1984.

12. WHO: Nutritional anemias. Tech Rep Ser No 405. WHO, Geneva, 1980.

13. WHO: Towards a better future. Maternal and Child Health. WHO, Geneva, 1980.

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