

TANZANIA

Health Sector Strategy



February 1980
USAID/Tanzania
Dar es Salaam

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Prologue

A year ago, after spending time contributing to the Mission's 1981 Country Development Strategy Statment (CDSS), I travelled to AID/Washington to present the Project Paper for the new Tanzania School Health Project. I had worked hard on the designing of the project and was surprised when my colleagues who reviewed the project said that they thought the project was excellent but that they couldn't see how it fit into our development strategy. The problem was that the USAID/Tanzania CDSS did not give a good understanding of the Mission's health sector strategy. A sector strategy had been prepared, but it was unrecognizable after it had been dismembered and incorporated into the document according to the CDSS guidelines. I resolved then that I wouldn't be caught again in the position of not having a clear health sector strategy against which our project proposals could be appraised.

The Health, Nutrition and Population Office of USAID/Tanzania, aided by Ms. Ann Vander Stoep, a free-lance epidemiologist, began work on this sector strategy document in August 1979. Our work was interrupted for several months while our attention was given to the 1982 CDSS drafting, and again the CDSS, with its different objectives, did not permit clear expression of the health sector strategy including a description of how specific project activities fit that strategy.

This document, with Annex I, presents the best collection of data available on the health sector in Tanzania at this time, which is possible only through the excellent cooperation received from our Tanzanian colleagues and the other donors in Tanzania. The analysis is presented to serve as a background against which the strategy can be judged, projects can be designed and the USAID/Tanzania health nutrition and population program can be evaluated. As improved data becomes available, in part as a result of AID programming, this document will have to be updated.



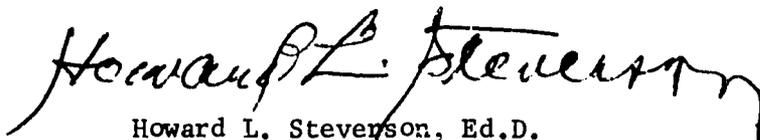
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Introduction

The Health Sector Strategy (HSS) is organized to provide a comprehensive description of the health situation in Tanzania, an analysis of the principal constraints of the sector with respect to their being relieved through foreign assistance, and a strategy for the effective application of AID resources in the sector. The strategy is expressed both in terms of broad objectives and specific projects designed to contribute to the achievement of those objectives. The HSS is written to be complementary to the USAID/Tanzania Country Development Strategy Statement (CDSS) which attempts to take a non-sectoral approach to describing the needs of Tanzanians and the Tanzanian economy, and which expresses an assistance strategy in general terms without commenting on how specific projects are used to effect that strategy. This HSS takes as its point of departure the CDSS decision to involve AID in health sector assistance as a way of relieving some of the constraints to individual productivity which are undermining development efforts and as a way of realizing some short-term benefits to the poor of Tanzania while the long-term development interventions are attempted.

The data which serve as the basis for the HSS are presented and discussed in Annex I, "Health in Tanzania - 1979," completed by Ann Vander Stoep in February 1980. The HSS does not repeat the presentation of this information but refers to it frequently in establishing the rationale for the Mission's sector assistance programming strategy. Annex II presents what information is available regarding the health sector in Zanzibar. It was not used in developing the HSS but is useful background for the Zanzibar Malaria Control Project discussed in Chapter VIII.

This Sector Strategy has already secured one of its important purposes. That is, its review in AID/W, in conjunction with the HNP staff's PID's for new FY 80 and FY 81 health sector project interventions, was extremely beneficial in facilitating the review and approval of these PIDs. Its availability for review by all USAID/T personnel, particularly those newly assigned to the HNP staff, is an essential step to fuller understanding of this Mission's role and objectives in the project sector. I commend all to read on.



Howard L. Stevenson, Ed.D.
Mission Director
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Summary

Although the Government of Tanzania recognizes that increased revenue generation is necessary for the achievement of its goal of self-reliance and economic growth with equity, it has made a strong commitment to investing in social services designed to bring benefits to the people quickly and to contribute to development only in the long run. Such services include the education and health systems. In health, Tanzania has elected to develop a hierarchical system which relies heavily upon paramedical personnel to provide health services to the largely rural population. In addition, specific programs are planned to control the major communicable diseases, and activities are encouraged which draw villagers into taking direct action to confront their priority health problems. Increasingly, the health services developed and supported by the Tanzanian Government are of a preventive nature rather than curative.

Along with the Scandinavian countries and UNICEF, USAID has been one of the principal donors active in the health sector. The other donors have contributed to Tanzania's development of the health sector by supporting specific training programs, building and equipping health facilities and aiding specific health programs such as immunization, nutrition planning and mental health. AID has made its greatest contribution to the Maternal and Child Health Program, for which we provided technical assistance and set up the system for training Maternal and Child Health Aides all across the country.

In addition to the fact that there are still numerous facilities to be built and health workers to be trained to develop the Tanzanian health services delivery system to the point where it is effectively serving the people, there are a number of constraints which are interfering with the efficient use of what already exists. Principal among these constraints are logistics and maintenance problems, poor communication and transportation, inadequate data to plan and evaluate with, and generally poor management at all levels. In addition, there are problems of health workers' quality deteriorating with their prolonged isolation once initial training is achieved and with there being so few supplies at peripheral health facilities that health workers cannot effect what they are capable of doing. Similarly, sufficient resources for the people to take the initiatives suggested by health education, i.e., boiling drinking water, are often lacking.

Because USAID/Tanzania is in agreement with Tanzania's refusal to ignore the immediate needs of the people in favor of revenue-generating investments, it has decided to include health sector support in its development assistance program, although the overall program may emphasize revenue generation and directly productive projects. The rationale for the specific project activities to be included in the Mission's health sector program is presented in the following pages, however, the projects are essentially selected on the basis of their relevance to

Tanzania's master plan for sector development, their attention to the principal existing constraints within the sector, their complementarity to the other projects in the sector, their vulnerability to American resources and expertise, and there having been specific requests from the Government of Tanzania to AID for assistance.

This document presents the general mission sector strategy into which projects must fit and the rationale for the undertaking of each of the projects in the Mission's proposed sector program. Until such a time as the quality of management within the sector will permit consideration of providing Tanzania with a single sector support project, USAID/Tanzania intends to effect its health sector strategy by developing discrete health, nutrition and population projects as they are requested and appear to offer appropriate targets of opportunity for the effective application of American resources to the health sector problems of Tanzania.

Briefly, the USAID/Tanzania health sector strategy is to respond to the health needs of the rural poor by providing:

- 1) support to efforts to enhance communities' understanding of their health problems and how to deal with them;
- 2) support to community-initiated health interventions;
- 3) training and support of community level health workers;
- 4) assistance to any effort to respond to the problems presented by Tanzania's rapid population growth; and
- 5) assistance to strengthen the administration and management capabilities of the health services delivery system at all levels.

The first two categories are intended to increase the self-reliance and productivity of the people by making them better able to deal with their own health problems. The third is aimed at relieving people of their health problems through preventive services and simple cures. The fourth addresses the population issue, and the fifth addresses the current principal constraint to the development of a comprehensive national health services system - the lack of management ability within the existing system and its corollary lack of absorptive capacity. The specific projects through which the Mission will address its objectives are discussed in the final section of this paper. In general, the Mission will employ a combination of centrally funded and bilateral projects to further these health sector objectives.

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Annex I - Health in Tanzania - 1979

Annex II - A Review of Zanzibar's Health Sector - 1979

I. Setting Relevant to Health Status

A. General

As the most prominent example of socialism in sub-Saharan Africa, Tanzania is recognized as a nation in which the government has made a conscious decision to sacrifice the possibility of more rapid economic development through free enterprise in favor of a model of growth with equity in which the welfare of the peasants is a primary concern. This political commitment to the welfare of the people is reflected in a heavy build-up of the services sector in Tanzania and is an important factor influencing the current and future health status of Tanzanians.

B. Geographic Characteristics and Health

Tanzania is a large, tropical country with a variety of topographical characteristics ranging from wet coastal lowlands to near desert conditions in the central plain and to fertile highlands across the north and scattered throughout the south. Much of the country is infested with the disease vectors which transmit malaria, trypanosomiasis, schistosomiasis, filariasis, and onchocercosis. From a health standpoint the climate is favorable all year, but there are several areas of the country in which rainfall and groundwater are sufficiently scarce that hygiene and sanitation are compromised and drinking water is contaminated. The country raises sufficient food crops to be self-reliant, but the poor rainfall in the central plains causes these areas to have a food deficit, and the communications and transport networks are inadequate to relieve these deficits by bringing food from surplus areas. The state of communication and transportation in Tanzania also interferes with the operation of the health sector, as planning, coordination, supervision and logistical support are dependent upon them.

C. Demographic Characteristics

Tanzania's 1978 census puts the national population at 17,500,000 which indicates a current growth rate of 3.3% per year. Nearly half of the population is under 15 years of age, and the dependency ratio, corrected for disability due to illness, is much greater than 1. Average family size is 7, and several areas of the country are "overpopulated" with respect to the carrying capacity of the land and employment opportunities. While there is still a net migration from rural areas into cities or into the fertile highlands where living standards are generally higher, many people are beginning to respond to overcrowding in these areas by moving back into the rural countryside. In spite of having one of the fastest growing populations in the world, Tanzania eschews the elaboration of an official government population policy.

D. Education

With the remarkable implementation of Tanzania's Universal Primary Education (UPE) policy, roughly 75% of potential primary school starters are being enrolled each year. Few of these (4%) reach secondary school and only 0.4% reach the University. Nevertheless, with respect to health, a very high proportion of the population is available to receive health education through the school system, and there are sufficient numbers of educated Tanzanians to meet the intake requirements of health worker training programs.

E. Economic Status of the Population

Few rural Tanzanians are sufficiently involved in the money economy to be able to provide their families with health care on a fee-for-service basis so there are no real alternatives to the government health system for modern care. The current economic crisis has Tanzania in the situation of not having sufficient foreign exchange to keep its rural dispensaries stocked with basic medications and supplies, hence people often must resort to traditional healers as their only source of services. On the basis of per capita GNP, Tanzania is one of the world's 25 poorest nations, and diseases associated with poverty are frequent.

F. Cultural Characteristics

Tanzania has a wide variety of tribal or cultural groups which influences how people in different parts of the country feel about health, disease, death and fertility. These local characteristics must be understood in planning appropriate health services, especially health education and community motivation. Nevertheless, there is sufficient homogeneity of values and health problems that the Tanzanian Government is able to plan a hierarchical national health services system which is standardized, yet can respond to different local cultures.

II. The Health Status of Tanzanians

Annex I presents a description of the major health problems of Tanzania both at the national level and at the regional level. With respect to morbidity and mortality, the population groups at greatest risk are women in the reproductive age range and children under five. With the exception of malnutrition, the diseases that these groups suffer from are infectious or communicable in nature. They result from "tropical" disease vectors (such as mosquitos and flies), contaminated water and other phenomena of poverty such as pollution, poor sanitation, etc.

Annex I also presents a detailed portrayal of the relative health status of the population in each of Tanzania's twenty administrative regions. Sixteen factors are used to establish an index of health status, and the analysis shows that there is a strong correlation between those areas of Tanzania which this study shows to be least healthy and those areas in which the people were found to be least well-off in the CDSS analysis. To the extent that AID health sector assistance is directed toward sub-national or pilot projects, there will be an attempt to concentrate these projects in those regions of greatest need, i.e., the central, semi-arid plateau area and Kigoma Region. A similar analysis indicates that the health status of urban populations is better than that of rural populations, and this is reflected in both Tanzania's and AID's determination to concentrate on rural health programs.

III. Tanzania's Health Sector Organization

The Tanzanian Government is organized with a large number of substantive ministries operating under the Presidency and the Prime Minister's Office. Additional central ministries with coordinating and managing functions are the new Ministry of Planning and Economic Affairs and the Ministry of Finance. The Ministry of Health is responsible for managing Tanzania's health sector activities, and there is collaboration in this from other ministries such as Agriculture (for nutrition); Lands, Housing and Urban Development (for housing); Water, Minerals and Energy (for water); and Education (for preventive health education).

Annex I presents the administrative structure of the Ministry of Health. Organizationally the Ministry appears sound, yet it suffers from a number of operational problems considered below:

A. Planning and Information System

There is a Planning Unit within the Ministry which has been severely hampered in its efforts by the lack of a reliable information or reporting system and by a lack of communication between the various parts of the Ministry. The situation which has existed until recently has permitted various sections of the Ministry to deal independently with donors and to develop projects without central coordination. Recognizing the problems of this situation, the Ministry of Health has just placed the Planning Unit in charge of coordinating all donor-supported projects, and the Ministry has just undertaken a six-month resources inventory followed by a six-month sector evaluation to establish a data base for planning. Much of the data in Annex I derives from the inventory which has not been published. The sector evaluation is still under analysis. This new data base will have to be kept current, and the Ministry is studying alternative approaches to designing a simple, working information system.

B. Financing

The Ministry of Health's budget is analyzed in Annex I. In brief, the health sector receives about 6% of the total government budget, and this now amounts to about \$6 per capita/yr. Although the recurrent costs of the health sector are met almost entirely with Tanzanian funds, over 70% of the development budget comes from external donors. Within the health sector budget, an increasingly large percentage is allocated to rural and preventive health services. The current financial crisis in Tanzania has left the country with so little foreign exchange that most health facilities are experiencing serious shortages of medications and equipment.

C. Administration and Management

The Ministry of Health has well-trained Tanzanian professionals in most of its senior positions, yet they have so little qualified assistance and are faced with such overwhelming communication and transportation constraints that the overall quality of management within the Ministry is very poor. The same situation exists at the rural levels of the regions and districts.

D. Logistics Support and Maintenance

The high cost of vehicles and gasoline and the difficulty in obtaining spare parts has resulted in the country's health services system operating at only a fraction of its capacity. Supplies sometimes spoil before they are ever distributed, and most rural health facilities suffer from a lack of both medicines and equipment. A large proportion of the health sector's vehicles and equipment is inoperable because of lack of skilled repair personnel or lack of necessary spare parts.

E. Personnel

The hierarchical structure of the Tanzanian health sector facilities and personnel is presented in Annex I. Realizing that it is not possible to staff the health system with costly physicians, Tanzania has made wide use of paramedical health workers to extend services to the people.

F. Facilities

Tanzania employs a three-tiered system of health facilities ranging from referral hospitals, to rural health centers and finally to rural dispensaries. It is the long-range objective of the government to have a dispensary in every village. However, even with the current construction rate of over 100 dispensaries per year, it will require more than sixty years to reach this objective. For this reason the Ministry of Health has elected to establish Village

Health Posts as a "temporary expedient" to serve the villages. A Village Health Post is essentially a first-aid and preventive medicine kit which is used by two trained, community-selected, volunteer Village Health Workers, one man and one woman.

D. Decentralization

Like the rest of the Tanzanian Government, the health sector has been affected by the government's policy of "decentralization." In each of Tanzania's twenty regions and nearly one hundred districts there exists a health sector administrative office. These offices are directed by Regional Medical Officers and District Medical Officers respectively, and have additional staff in proportion to their level of activity and patterned after the organization of the central ministry. The regional and district offices are responsible for maintaining their own information systems, identifying their own needs and planning their own programs. They submit their program plans through the system to the ministry where they are assimilated into the national plan for which the ministry negotiates a budget from the government. Each of these regional and district offices then receives a budget and has the responsibility for determining how to use it to meet its objectives. This system has not yet reached its operating potential because of a lack of resources, poor communication and transportation, irregular recording and reporting of information, and the fact that many of its key managers have heavy clinical as well as administrative responsibilities. Throughout the system, from the central ministry to the dispensaries, one of the greatest problems is the quality of management and the administration of day-to-day activities such as maintenance, inventory control and recording.

IV. Tanzania's Health Sector Policies and Programs

A. Policies and Priorities

Since independence Tanzania has had a policy of emphasizing rural preventive services in preference to urban and curative services. At the same time, Tanzania has recognized the fact that it is difficult to interest the population in preventive measures while the need for basic curative services remains unmet. President Nyerere's commitment to applying appropriate health technology to the needs of the people was evident in 1973 when he said, "We must not again be tempted by offers of a big new hospital, with all the high running costs involved -- at least until every one of our citizens has basic medical services readily available to him."

The broad objectives of the government are to:

- 1) improve the health of the people, i.e., decrease infant mortality and increase life expectancy, through the control of diseases;

- 2) insure that health care is accessible to all people; and
- 3) move toward government self-sufficiency in providing health services and personal self-sufficiency in basic health management.

To obtain these objectives the government has emphasized:

- 1) decentralization of the health system with emphasis on rural facilities, personnel and planning;
- 2) development of preventive rather than curative services; and
- 3) assuring that donor support to the health sector is consistent with self-determination in health care.

B. Programs

Annex I describes the major programs of the Ministry of Health in Tanzania. They include the expansion of the basic health services delivery system through the construction and equipping of new rural health facilities and the training of additional rural paramedical personnel. In addition, special emphasis is being placed on maternal and child health, environmental sanitation, immunization, health education, and communicable disease control. Although there are specific parastatal organizations in Tanzania to deal with nutrition (Tanzania Food and Nutrition Center) and population (UMATI) problems, neither of these subsectors has emerged as an area of priority for programming by the government. The provision of safe water to the population is a national priority which is being addressed by the Ministry of Water, Minerals and Energy.

C. Performance Record

With the exception of the current year in which the post-war financial crisis has resulted in critical shortages of all imported medical supplies, there has been a consistent allocation of between 6 and 7% of the national budget to the health sector. The proportion of the total health budget allocated to rural health facilities and preventive services has increased from 15% to 34% between 1970 and 1978. Nevertheless, rapidly rising prices, inefficiencies and waste within the health system have often resulted in programs having insufficient funds to meet their initial objectives. Poor communication and transport interfere with supervision and logistics, and the system is further compromised by a lack of information for planning and evaluation. These constraints hamper all attempts at good management, and nearly all programs in the sector are subjected to lengthy delays and inefficiencies.

In spite of these problems Tanzania has made remarkable progress in using paramedical personnel to extend its health

services system throughout the country. Annex I presents data which shows how the indices of health status, such as life expectancy and infant mortality, have improved during the development of Tanzania's rural health system. Since the concomitant economic growth has only been 4.8% per year, it is not unreasonable to attribute much of the improvement in health status to the development of the health services system.

With respect to AID-supported health projects, Tanzania has an excellent record as attested by the Maternal and Child Health Aide project (621-0121) in which AID initially assumed responsibility for 100% of the program's recurrent operating costs and gradually turned them over to Tanzania. The project has met its objectives of establishing an MCH Aide training program throughout the country and an MCH Unit in the Ministry of Health, and Tanzania has taken over responsibility for program costs on schedule without asking that AID assistance be extended beyond the expected end of the project. Such a record is unusual with any AID project in any sector in any country.

V. Other Contributors to Tanzanian Health Sector

A. The Role of Foreign Assistance

The principal donors of health sector assistance are the Scandinavians, AID and UNICEF. Annex I presents the health sector activities of over 20 donors. In addition to supporting the training and facilities construction programs, providing equipment and aiding in the prevention of specific diseases, many donors provide direct support to the curative medicine system. Such support is also realized from a large number of missionary groups in Tanzania which have built, staffed and sustained over 150 rural health facilities. Several years ago most missionary hospitals were designated by the government as part of the national health services delivery system. As designated hospitals they receive a fixed level of financial support from Tanzania. This mixing of government and missionary funds makes it very difficult to evaluate the degree to which recurrent costs of the health sector are borne by foreign assistance; however, most donors invest most of their health assistance in Tanzania's capital expenditures of which over 70% are derived from the donor community.

C. The Role of the Private Sector

Although a number of government employees are also engaged in private practice, Tanzania has made 1980 the last year during which individuals can be engaged solely in private practice. This being the case, the private sector will hardly be significant in the practice of modern medicine. Similarly, since Tanzania is a

socialist state, there are few Tanzanian commercial interests which can be involved in health-related activities such as the promotion of weaning foods or the distribution of contraceptive materials. Tanzania is concerned about the effect of the many multi-national drug companies and baby food manufacturers competing for the Tanzanian market.

C. The Role of Traditional Medicine

The most active private sector health workers in Tanzania are traditional healers and traditional birth attendants; they are the only health workers immediately available to the people in two-thirds of the villages of Tanzania. As such their contribution and importance to the Tanzanian people must not be underestimated. Both traditional healers and traditional birth attendants will be considered for possible training to become Village Health Workers for their own villages, and the government maintains the Traditional Medicine Research Unit to explore modern applications of traditional medications.

D. The Role of Private Voluntary Organizations

Very few truly indigenous PVOs exist in Tanzania, as nearly all such institutions have been incorporated into the government, either directly or as parastatal organizations. One exception is UMATI, the national family planning association. There are a number of expatriate PVO's in Tanzania, and many of these are active in the health sector. They include the Catholic Relief Service, OXFAM, CODEL and numerous missionary groups. The aggregate level of assistance provided by these organizations is relatively low compared to bilateral donors.

E. Tanzania's Ability to Absorb Foreign Assistance in Health

Tanzania's health personnel training program and its policy of self-reliance have resulted in Tanzanians taking over nearly all of the leadership positions within the sector during the past ten years. However, the Tanzanians now directing the programs of the health sector have such shortages of qualified personnel to support their work that few health sector activities are undertaken according to the planned schedule, and some are abandoned before reaching their objectives.

Tanzania's lack of funds for the service sectors and lack of foreign exchange combine to limit the country's ability to bear the recurrent costs associated with development of the health sector services system. Each proposed new activity must be carefully evaluated in terms of its recurrent costs, and if they exceed

Tanzania's ability to meet them, the activities should not be undertaken unless the immediate benefits are so great that they would warrant even a short-lived project, or the donor is prepared to make a long-range commitment.

VI. Review of Health Sector Problems/Constraints

The problems and constraints which the Government of Tanzania's health system must address, and which should be the targets of the combined support derived from foreign assistance, have been cited above and are summarized as follows:

A. Resources Shortages

A lack of sufficient quantity of nearly every resource needed to develop the health sector system in Tanzania exists.

1) Money:

Declining exports and the effects of the costly war with Uganda have deprived Tanzania of the foreign exchange needed to purchase medications, equipment and gasoline. The slow growth of the economy, combined with the effects of inflation, has also reduced the level of funding available for local costs within the health sector.

2) Personnel:

At all levels of the health system, from community health workers to planners and managers, there are critical shortages of qualified personnel. Those health workers that have been trained are often posted to isolated health facilities and have little opportunity for refreshing their knowledge and skills as necessary to remain effective. Nevertheless, Tanzania has made remarkable progress in the use of paramedical personnel to extend the health system into the villages to the people.

3) Facilities and Equipment:

There is still a shortage of all levels of health facilities in Tanzania, and most existing facilities lack a full complement of personnel or equipment which keeps them from realizing their service potential. There is also no adequate provision for maintenance of existing facilities or equipment so that there is a great deal of resource loss due to disrepair.

4) Transportation and Communication:

Deriving from both insufficient funds and disrepair, the lack of transportation and communication makes it impossible to maintain an adequate supply logistics support system or to establish the referral and supervision relationships essential in a hierarchical health services system.

B. Administration and Management

The above resources constraints are largely responsible for the poor quality of management within the health sector; they are partially the cause of the lack of information needed for management and planning. However, this problem, which is perhaps the greatest operational constraint within the health sector, also derives from the fact that few Tanzanian health workers have received training in administration, management and supervision. At every level of the system, personnel are in such short supply that they have more responsibilities than they can effectively discharge, and there is no one to keep things moving during the frequent absences of senior level health officials. Effective supervision is lacking in most rural health facilities.

C. Community Involvement

Most rural communities have a poor understanding of the determinants of health and have not yet learned to use sanitation, nutrition and other basic preventive health care measures which can be taken to protect their health. Tanzania's objective of self-reliance depends upon having a population which can recognize its problems and initiate its own corrective interventions.

D. Population Growth

Although not a constraint of the health system per se, Tanzania's population is growing at a rate unofficially put at 3.3% per year, making it one of the fastest growing populations in the world. This growth rate exceeds the rate of growth in many of the productive sectors, which underlines the fact that Tanzania's unrestrained population growth is undermining efforts to stimulate economic development and improve the level of well-being of the population. Tanzania does not have an official population policy, and several government leaders, including the Minister of Health, feel that children are the future of the country and no attempt should be made to reduce fertility until the high infant and child mortality rates have been brought under control.

The remainder of the issues being addressed by the Tanzanian health sector are not faults of the system but problems which must be overcome. These include, inter alia, the continual need for extending the reach of the system, the need for safe water and improved sanitation throughout the country, and the problems posed by specific, endemic, communicable diseases such as malaria, schistosomiasis and even cholera.

VII. Tanzania's Plans for Health Sector Development

A. Tanzania's Approach to Health Planning

The Ministry of Health and the donors have each found that the information ordinarily collected and retained by the Ministry is not sufficient for planning purposes. In the past, each donor has attempted to assemble whatever planning data it required on its own. This was very distracting to the Ministry which had to collaborate with each donor's planning team. To end this sporadic, donor-initiated approach to data gathering, and to establish the information base needed for its own input into the Fourth Five-Year Development Plan, the Ministry of Health is engaged in a two-year health resources inventory and health services evaluation exercise. The results of this effort should be published before the end of 1980, and they will include the country's plans for the health sector during the next five years. Annex I represents another donor-initiated health sector study (AID's), however, it required less input from Ministry of Health staff since it was undertaken by USAID/T personnel already working regularly with the ministry and who could go themselves to primary data sources.

The role of regional and district health officials in the sector planning process is described in Annex I, and since the health problems of Tanzania have changed little in the past ten years, the priorities for the next five year plan will probably be similar to those expressed in Tanzania's Third Five-Year Plan and the 1982 CDSS.

B. Major Programs of Tanzania's Health Strategy

The main activity of the Tanzanian Government in the health sector will be the continued expansion of the basic health services system to reach all of the people. This will entail continued construction and equipping of rural health facilities and training of paramedical health workers to staff them. The training will emphasize preventive programs as opposed to curative and the direction of services to the high-risk population of mothers and children. A key feature of the expansion effort will be the establishment of Village Health Posts and the training of Village Health Workers for each of Tanzania's 8000 villages. In addition to providing the initial training for its rural health workers, Tanzania plans to establish a continuing education program for all of its health workers designed to provide them with frequent in-service training to maintain their knowledge and skills at currently acceptable levels.

The Ministry of Health also intends to engage in a variety of approaches to health education designed to make the population more aware of the determinants of health. These approaches will involve the use of other sectors' programs as vehicles for health education, i.e., the primary school system. In addition, community members will be encouraged to analyze their own health problems, and support will be given whenever possible to those communities which plan to undertake appropriate health interventions on their own, particularly in the areas of water and sanitation.

In recognition of the magnitude of the problems which have led to the 1980's being designated the UN Decade of Water and Improved Sanitation, Tanzania places a high priority on the provision of safe water and effective sanitation facilities to the entire population. The Ministry of Health is presently developing a sanitation strategy and is collaborating with the Ministry of Water, Minerals and Energy in the development of master water plans for each region.

With respect to communicable disease control, Tanzania is committed to developing an expanded immunization program, but apart from the TB and leprosy program and periodic campaigns against cholera outbreaks, there are no major specific disease programs. Malaria remains the greatest threat to health and life in Tanzania, but because of the lack of an effective technology for eradication, this problem is mainly being handled through the prophylactic use of chloroquine in parts of the country.

The Ministry of Health is increasingly aware of the need to improve the quality of its health services system through better planning and management. Tanzania is now engaged in a health sector inventory and evaluation which has been two years in planning and implementation. The final report is expected within the next three months and will serve as the information base for planning the development of the health services system. One of the first steps in this planning process will be preparing the health sector portions of the Fourth Five-Year Development Plan (1982-1986) which will begin to be drafted this year.

Neither the population sector nor the nutrition sector are being addressed as priorities by the Tanzanian Government at this time, but the results of the recent census and the health sector evaluation may help convince the government that population growth and malnutrition are priority problems.

C. Future Foreign Assistance

The many donors whose health sector activities are listed in Annex I will continue to play a crucial role in the realization of

Tanzania's development of its health services system, yet the Tanzanian Government is increasingly uninterested in accepting health sector assistance for projects which are designed and proposed by the donors because these have a way of diverting scarce local resources and distracting the Ministry of Health from its own priorities.

Tanzania will continue to rely upon foreign financing of the majority of its development budget in health, while retaining primary responsibility for recurrent costs. Being careful to maintain a broad and balanced source of foreign assistance, Tanzania requests specific donors to participate in specific projects according to the donor's demonstrated interests and expertise in certain areas. The major health sector donors, led by Denmark, are expected to continue their current support of health system expansion through facilities construction and manpower training. Denmark is also increasing its assistance in the Expanded Immunization Program and in mental and dental health programs.

Many donors and missionary groups will continue to play an important role in sustaining the recurrent costs of the system through direct provision of medical personnel and operation of rural health facilities.

AID has been formally requested by the Government of Tanzania to continue its role as a major donor in the health sector by helping to develop the school health program, the village health worker training program, and the continuing education for health workers program. In addition to helping with the launching of these new programs, we have been asked to continue our support of the maternal and child health program by helping to develop training for district level maternal and child health coordinators. We have also been asked to collaborate in the development of projects relevant to the water, sanitation and health education needs of the people and the administration and management needs of the system itself.

VI. USAID/Tanzania Health Sector Strategy

The Mission's strategy for providing assistance in the areas of health, nutrition and population has been presented briefly in the FY 82 CDSS and will be elaborated upon here. The decision to continue assistance in this sector derives from the CDSS establishment that the welfare of the poor is largely defined by their health status. Both because improved health results in an immediate improvement in individual welfare and productivity, and because this increased productivity can contribute to our broader, long-range objectives of stimulating economic growth and making self-reliance a reality, the Mission has elected to develop its health sector program as a major part of its assistance to Tanzania. This decision is reinforced by the fact that the Government of Tanzania sees the United States as having particularly relevant expertise in health and wishes us to remain one of the major donors in this sector.

The strategy for developing a sound health sector program involves maintaining a sufficient mission staff of resident health professionals to sustain a continuous working relationship with Tanzanian planners and other officials responsible for health, population, nutrition, water and environmental programs. These mission professionals will, through close collaboration with their Tanzanian colleagues, be responsible for bringing American resources into as effective a relationship as possible with Tanzanian health sector needs, being guided by the Mission strategy to provide:

- 1) support to efforts to enhance communities' understanding of their health problems and how to deal with them;
- 2) support to community-initiated health interventions, particularly in rural water supply and sanitation;
- 3) training and support of community level health workers;
- 4) assistance to any effort to respond to the problem presented by Tanzania's rapid population growth; and
- 5) assistance to strengthen the administrative and management capabilities of the health services delivery system at all levels.

For the present, the implementation of this strategy results in the elaboration of several related, yet discrete, projects. Each project results from the continuing dialog between USAID and the Tanzanian Government and is consistent with both Tanzania's and AID's health sector priorities. To minimize the staff support required during project implementation, USAID/Tanzania health projects will be designed so contractors are responsible for providing their own support.

The current support of several discrete health, population and nutrition projects is seen only as a temporary expedient, necessary because the Tanzanian Government has not yet developed adequate management systems or numbers of skilled administrators to be able to undertake the same spectrum of activities under a single sector support program. However, the fifth element of the strategy presented above is intended to improve Tanzania's health sector management capacity which could have the extra benefit of permitting AID to consolidate its health sector activities from several projects into a single host country-managed program. It is expected that the AID Health Sector Support Program in Tanzania will begin in FY'82 or '83 with the initial phase designed to strengthen the management capacity of the Tanzanian health system. This program will also incorporate other activities or projects such as the follow-on phases of the projects to be cited later in this section.

The selection criteria which have been applied to projects proposed for AID support will continue to be applied in selecting from proposed activities to receive support under the Health Sector Support Program. They derive directly from the five-point strategy

presented above and from the listing of the major constraints to health sector development presented in Section VI. Hence, the Tanzanian requests for health sector assistance which are considered by the mission will be those which present an opportunity to contribute effectively to the systematic improvement of the administrative and management needs of the sector, to help Tanzania appreciate and move to counter the undermining of development efforts caused by population growth, to meet the manpower development needs of the system, and to provide direct support to villagers trying to learn about their health problems and do something about them.

In addition to these criteria are those which apply to all AID activities: to what extent does the activity reflect host country priorities and appear feasible for the host country to undertake within the context of its infrastructure and its resource constraints; to what extent can one guarantee that the experience gained will be incorporated into future health sector planning; and how well does the activity complement the other activities of AID, of other donors, and of the host government in the sector. Impact upon the environment, the role of women, and desired family size are also duly considered.

Although it is more efficient to meet Tanzania's needs with bilateral assistance originating with the Mission, centrally-funded AID projects will continue to be used whenever they are deemed particularly appropriate and when they can contribute to the collaboration that is necessary for the identification of good bilateral assistance activities. Multi-donor cooperation is highly desirable in dealing with the sector as a whole, but with few exceptions, specific projects should be designed as bilateral assistance efforts because it is so difficult for donors to coordinate the arrival of their respective project inputs.

It is the intention of the Mission to explore every opportunity for collaboration with the Peace Corps in programming health sector assistance. Because it takes AID much longer to begin a project than the Peace Corps, and the actual starting dates of AID-supported projects are difficult to predict, Peace Corps volunteers should never begin training for an AID project until all of the critical AID inputs are in place.

The main projects which have developed and are developing as this sector strategy is being implemented are presented in the following sections under the headings of health, population and nutrition.

A. Health

The greatest number of Tanzanian requests for project development in this sector have come in the category of health, as opposed to population or nutrition. Subsequent phases of the first three projects listed below may be incorporated into the Health Sector Support Program expected to begin in FY'83 with an effort to improve the system's administration. Projects nearing completion are not discussed below although most of them are consistent with the strategy.

1) Tanzania School Health Project (621-0150) Phase I (TSHP)

This project was requested by the Tanzanian Government as a way of extending the reach of the health system's preventive services, particularly health education, to a large and important segment of the population without requiring any additional facilities or personnel. It responds to the objective of helping communities (through their school children) understand the determinants of health and gain experience in undertaking health activities in provision of safe water and improved sanitation. This pilot project introduces the School Health Program into the regions of Dodoma and Singida and will be used to establish the viability of the program before it is expanded nationally.

A. Pilot Phase (1980-1983) \$5,744,000

1. Tanzania School Health program operating at national, regional and district levels
2. Comprehensive school health services being provided at 80 pilot CSHP schools.
3. School Health Program curriculum used in all 35 national education colleges.
4. Health, Education, Water and Agriculture development programs integrated at primary school level.
5. Plan accepted for extending comprehensive school health services throughout country.

B. Subsequent Phases (1983-)

Comprehensive school health services expanded to cover all of the Tanzanian primary schools.

2) Village Health Workers Training Project(621-0157) Phase I (VHWT)

AID has been asked to help Tanzania embark upon the national program to train and support those community

level health workers who will serve the majority of Tanzanian villages which have no dispensaries. This phase of the project expands the Village Health Workers Program throughout the regions of Dodoma, Singida and Arusha and will be used to establish the viability of the program before it is expanded nationally.

A. Pilot Phase (1981-1985) \$9,975,000

1. Training program tested and ready for expansion
2. 3000 VHWs trained and posted
3. 1500 Village Health Posts established
4. Detailed plan for next expansion phase developed
5. Impact of VHWs on beneficiaries evaluated

B. Subsequent Phases (1985-)

1. Training program expanded sufficiently to maintain a level of 17,000 active VHWs.
2. Village Health Posts established in all 8000 villages

3) Continuing Education for Health Workers (621-0154)Phase I(CEHW)

Recognizing the problem created when trained paramedical health workers are posted to isolated communities, Tanzania has asked AID to help it develop its program to insure that every health worker receives the regular in-service training needed to remain effective. This project will be undertaken in the Arusha Region to test continuing education methodology and materials. It will also monitor the needs for in-service training throughout the nation.

A. Pilot Phase (1981-1983) \$2,206,000

1. All levels of rural health cadre evaluated at their work to define necessary content of in-service training.
2. Curriculum developed for each paramedical category of health worker using a variety of training vehicles.
 - a. didactic/practical courses
 - b. correspondence courses
 - c. self-instruction
3. Methodology field tested with 600 rural health workers in pilot area.
4. Plan for program expansion developed and incorporated into Tanzania's Fourth Five Year Development Plan.

B. Subsequent Phases (1984-)

1. Provision of regular in-service training to every level of paramedical health workers in the Tanzanian rural health system.

4) Arusha Village Health Project (621-0159) (AVHP)

This project addresses the objectives of enhancing communities' understanding of their health problems and how to deal with them and supports community-initiated health interventions. It will be undertaken in selected areas of the Arusha Region and will be complementary to the AID-funded Arusha Regional Planning and Village Development Project.

A. Life of Project (1981-1985) \$6,070,000

1. 450 villages actively confronting local health issues.
2. 1000 health workers actively supporting village health projects.
3. X village water systems built/improved.
4. Y village latrines built/improved.

5) Public Health Nursing School (621-0166) (PHNS)

Tanzania is very pleased with the role that AID has played in developing the Maternal and Child Health Training Program (621-0121) for the staffing of the country's dispensaries, and we have been asked to follow up this activity by providing support to establish a training program to upgrade outstanding MCH Aides to the role of District MCH Coordinators. Both the proposed project and its predecessor address the objective of training and supporting community-level health workers.

A. Life of Project (1982-1986) \$5,090,000

1. Public Health Nursing School established in Morogoro.
2. District MCH Coordinator training program operating.

6) Health and Environmental Monitoring Project (621-0165) (HEMP)

Tanzania has asked AID to support the evaluation research of the sanitation portion of a World Bank-financed sewerage and sanitation project. Tanzania would not include the evaluation in the IBRD project because of the need to limit the demands on the country's scarce foreign exchange, but it is very anxious that the opportunity for operational research not be lost because of its relevance to the need to improve sanitation throughout the country. This project is consistent with the Mission objective to support community-initiated health interventions in sanitation.

A. Life of Project (1981-1985) \$3,435,000

1. Impact of alternative latrine types on health status measured and results incorporated into national sanitation strategy.

7) Zanzibar Malaria Control Project (621-0163) (ZMAL)

The Government of Zanzibar has requested a wide variety of assistance projects from AID in the health sector. Because there are 500,000 people on the islands who do not benefit from the Mission's mainland health assistance program, and because there is no other official U.S. assistance to Zanzibar, USAID and the Embassy are interested in a discrete health project which would respond to Zanzibar's priorities and be of value to AID health programming for the rest of Africa. This project is appealing because it deals with the single most important disease in Africa and employs community education and participation in attempting disease control. Annex II presents the background data available regarding the health sector in Zanzibar.

A. Life of Project (1981-1985) \$8,871,000

1. Community participation control program reaching 475,000 population of Zanzibar.
2. Malaria Unit of Ministry of Health functioning.
3. MOH Health Education Unit functioning.
4. X% drop in malaria prevalence.

B. Population

The population problem in Tanzania will be impossible to address directly with a substantial assistance program until there is a change in the prevailing attitudes of government leaders. Nonetheless, in view of the major development implications of the present population growth rate, USAID/T intends to take an active role in persuading the Government of Tanzania to develop a population policy and accept greater assistance in the development of its family planning services. The Mission population assistance program consists of the following elements:

- 1) an active campaign to sensitize government leaders to the significance of Tanzania's present population growth rate and to the availability of assistance for a variety of alternative approaches to reducing it;
- 2) provision of training and supplies to those individuals and institutions engaging in family planning or population-related activities;
- 3) incorporation of family planning components into the curricula of all appropriate USAID-supported training programs;
- 4) design of other Mission activities to maximize their impact upon attitudes of beneficiaries toward reducing their desired family size; and
- 5) a quick response to any government request for family planning

program support.

Until it is possible to develop bilateral population assistance projects, the Mission will make broad use of centrally-funded projects to sustain the above program. To insure that every opportunity is benefitted from, the Mission is adding a Population Officer to its health sector staff who will be thoroughly knowledgeable of the wide variety of centrally-funded population activities and the many vehicles for bilateral support which may be responsive to Tanzania needs. In addition AID will continue to make population assistance available to Tanzania through a variety of alternative sources such as UNFPA, IPPF, FPIA, Pathfinder, etc. Although much of this support will continue to be offered to UMATI, the national family planning association, the focus of the Mission's population strategy will be the government policy makers.

The Mission has just arranged for the RAPID presentation of the interaction between population growth and development objectives to be shown to most of Tanzania's senior planners and cabinet members. The Prime Minister reacted that the "time had come for Tanzania to include population factors in her planning," and several of the ministers expressed an interest in learning about developing countries, especially in Africa, which had experienced some success in dealing with the problem of unrestrained population growth. The Mission will take advantage of the interest created by the RAPID presentation to provide these government leaders with appropriate study materials and opportunities to discuss the variety of assistance programs available to help the country determine what type of policy and actions are most suited to its development needs and the needs of its people.

Outside the population sector, the Mission will continue to explore ways in which its projects can affect the population problem. The Mission has selected the Arusha Regional Planning and Village Development Project for a special study to evaluate the project's influence on desired family size.

C. Nutrition

The area of nutrition is dealt with briefly in Annex I. Tanzania is essentially self-sufficient with respect to food production except in times of drought which occur every five or six years. The incidence of clinical malnutrition is often high in children in relatively well-off areas of the country i.e., Kilimanjaro, implying that malnutrition may be attributable more to social factors than to absolute poverty.

A parastatal organization, the Tanzania Food and Nutrition Center (TFNC), has been established to coordinate nutrition-related activities. The TFNC is a well-managed organization and appears to be in a position to be of real service to the rest of the Government of Tanzania and to neighboring African countries. It already has a regular program of nutrition planning training for regional and district government officials, and it would like help with expanding its training programs and laboratory capacity.

As with population programming, the Mission's strategy for nutrition calls for full use of the programs and resources of the DS/Nutrition Office of AID until such time as there is a basis for providing direct bilateral support. DS/N has recently sent a representative to TFNC to discuss Tanzania's nutrition needs and alternative assistance programs, and there seems to be some TFNC interest in the Maternal and Infant Feeding Project as well as the possibility of having a national nutrition survey done. The Mission will continue to keep the nutrition dialog open with TFNC and the Ministry of Health so opportunities to make a valuable contribution in this area will not be lost.

The interrelationship which exists between the AID supported health sector activities and those of the Tanzania Government are presented in Figure I on the following page.

FIGURE I

PROGRAM RELATIONSHIPS OF HEALTH SECTOR PROJECTS IN TANZANIA

General Goals	<u>DEVELOPMENT/ECONOMIC GROWTH</u>						
	<u>INCREASED INDIVIDUAL PRODUCTIVITY</u>			<u>IMPROVED WELFARE</u>			
Sector Goals	<u>IMPROVED HEALTH/REDUCTION OF DISEASE</u>						
	<u>INCREASED COMMUNITY ACTIVITY</u>	<u>IMPROVED HEALTH SERVICE SYSTEM</u>	<u>SPECIFIC DISEASE REDUCTION</u>	<u>IMPROVED ENVIRONMENT</u>	<u>REDUCED POPULATION GROWTH</u>		
TanGov	<u>INCREASED PUBLIC AWARENESS</u>	<u>ADMINISTRATION</u>	<u>PERSONNEL</u>		<u>SAFE WATER</u>	<u>SANITATION</u>	
	Villagization MOH Health Education Unit Radio Campaigns School Health Program	Health Sector Inventory Health Sector Evaluation	MD Training MA " RMA " MCHA " HO " PA " VHW " Continuing Ed.	TB/Leprosy Malaria Schisto Cacho EPT	Regional Plans	MOH Sanitation Unit	UMATI
USAID Cent-Bilateral	School Health Project	Participant	MCHA Training	ZMAL		HEMP	
	Arusha Village Health	Training Continuing Ed.	VHW " PHN " Continuing Ed.				
Other Donors					ET&M*	RAPID	

(see table XXII in Annex I for a 9 page listing of donor activities in the health sector)

* Environmental Training & Management (698-0427)

IX. Conclusion

In most countries in the developing world the CDSS approach to program planning by defining what is wrong and deciding what AID is going to do about it is unduly presumptuous because the countries are not ours to direct, and the decision regarding which problems take priority and which donors will be asked to work in which programs belongs with the host governments. Tanzania is no exception. The analysis done for the CDSS is valuable to the agency because it provides a background for deciding how to allocate scarce resources in responding to Tanzanian requests, but much more attention needs to be given to Tanzania's analysis of what is wrong and Tanzania's plans for improving its situation. If our studies lead us to believe that Tanzania is on the right track, as they do in the health sector, AID's role should be to be prepared to help when we have the resources to make a valuable response to a request for assistance. It is appropriate for the agency not to respond to all requests, e.g., building or equipping tertiary care centers or providing highly specialized curative training, if our analysis indicates that the requests are not relevant to Tanzania's sector priorities as we see them. And it is equally appropriate for AID to bring to Tanzania's attention problems which we feel are not given sufficient consideration by government leaders, i.e., the rapid rate of population growth. Nevertheless, the determining factor in shaping AID's assistance program to Tanzania must be the nature of the requests that we receive from the Tanzanian Government, and these requests will reflect both Tanzania's priorities and the degree to which Tanzania perceives the United States as the appropriate recipient of specific requests. How Tanzania perceives the United States as a donor is determined both by the quality of the Mission personnel engaged in daily collaboration with their Tanzanian colleagues and by the performance of AID-supported projects. It is essential that AID recognize the importance of this host country perspective in determining its strategy for providing assistance.

Because the health sector strategy described in this document derives from Tanzania's priorities, although it only calls for AID support to a portion of the sector development plan of Tanzania, the broad targets of the AID health program are the same as those of Tanzania's national program, i.e., a fixed drop in infant mortality and an increase in life expectancy during the period of the next five-year plan. Each individual AID-supported project will continue to set its specific targets according to the objectives of the project, and these are expressed in the project's documentation. The level of funding of the aggregate Mission health sector program has increased slightly with respect to the overall program, and because of the presence of several pilot projects and the ubiquitous need for rural water supplies and improved sanitation, the health sector program has a potential absorptive capacity for expanding to the IPL funding level with a concomitant increase in impact.

HEALTH IN TANZANIA

1979

**The Health Nutrition and Population Office
United States Agency for International Development
Dar es Salaam, Tanzania**

HEALTH IN TANZANIA - 1979

Preface:

The purpose of this document was to provide a basis for planning for the Health, Population and Nutrition Office of USAID/Tanzania. An objective description and analysis of Tanzania's health care system, its achievements and problems, was attempted. It is hoped that Health in Tanzania - 1979 will be of use to the Ministry of Health and other agencies involved in health planning in Tanzania.

Deep appreciation is due members of the Planning Unit of the Ministry of Health and the Commissioner of Statistics and staff of the Central Statistical Bureau for providing health-related data. Staff members of a number of organizations including Muhimbili Medical Center, Tanzania Food and Nutrition Center, Bureau of Resources Assessment and Land Use Planning, the Christian Medical Board of Tanzania, UMATI, UNDP, UNFRA and various donor agencies were generous in their willingness to discuss their activities in the health sector.

The support and critical evaluation given by Dr. Albert Henn, Director of the Health, Population and Nutrition Office of AID/Tanzania was essential, as well as the editorial and secretarial assistance of Mrs. Elieshi Kombe and Mrs. Kay Pickett.

Finally, this is an incomplete document. It represents four months of information gathering and compiling. There is much more to learn both in terms of breadth and depth about health in Tanzania. Day to day, changes are occurring, and new information is released. This report should serve as a basis to which yearly additions and revisions can be made.

Ann Vander Stoep, Epidemiologist

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I. HEALTH STATUS OF THE TANZANIAN POPULATION

A. General Introduction

Tanzania, with a population of over 17.5 million, is one of the world's poorest 30 nations. Poverty is reflected in the likelihood of early death among the Tanzanian people. At least one child in seven dies before age one, another 120 out of 1000 births die between the ages of one and five. Fewer than three out of four children born survive to school age. Life expectancy at birth is estimated at 47 years.^{1,2}

The major causes of morbidity and mortality are diseases associated with poor sanitation, poor nutrition, and lack of health knowledge. About 1/3 of childhood deaths in Tanzania have malnutrition as a contributing cause. Approximately 16% of reported deaths in children under five years old are attributable to diseases for which immunization is available. Debilitating parasitic diseases are prevalent throughout the country.

Between 1967, the year of the last published census, and 1973, the year of the National Demographic Survey (see Annex 3), many encouraging demographic changes occurred in Tanzania:

- Life expectancy at birth rose from 41 to 47 years.
- Infant mortality declined from 161 to 152/1000 live births.
- The crude birth rate decreased from 47/1000 to 45.6/1000 population.
- The crude death rate decreased from 23/1000 to 17.7/1000.
- The proportion of children surviving from birth to five years of age remained about the same (approximately 75%).
- The total fertility rate decreased from 6.6 to 6.2 live births/women during reproductive period.

Although information is not yet available to update these demographic measures, preliminary 1978 population census data show the current rate of population growth to be 3.3% per year compared to 2.8% per year in 1973 (see Annex 5 for 1978 district population data).

Within Tanzania, demographic characteristics vary dramatically among the 20 regions. (Fig. 1). Table 1 gives an analysis of regional demographic estimates for 1967 and 1973. The 1973 Demographic Survey reported fertility rates varying from 5.2 in Singida to 7.2 in Tanga. In four regions (Tanga, Coast, Mtwara, Kigoma) total fertility increased between 1967 and 1973. Average rural family size in 1973 ranged from 2.9 members in Coast Region to 6.7 members in Iringa. Both life expectancy and infant mortality were least favorable in Kigoma (38 years; 255/1000) and most favorable in Dar es Salaam (56 years; 88/1000). Both a marked increase in life expectancy and decrease in infant mortality occurred in four regions between 1967 and 1973. These regions were Ruvuma, Mbeya, Mtwara, in the Southern Zone, and Mara, a northwestern region.

The Physical Quality of Life Index

The Physical Quality of Life Index (PQLI) is a measure of relative development status introduced by the Overseas Development Council. It is used to compare nations with regard to general well-being. To calculate the PQLI, infant mortality, life expectancy at age one year, and adult literacy are combined in a formula to produce a single index score. The ideal PQLI score is 100, which is achieved when infant mortality is 7/1000 live births, life expectancy is 77 years, and adult literacy is 100%.* Tanzania's PQLI score is 35.5. This is an average score among African nations, but the African continent rates lower in physical quality of life than any other continent.

The Disparity Reduction Rates (DRR) are the rates at which development indices used in the PQLI are progressing towards the ideals. The disparity between Tanzania's life expectancy at birth and an ideal of 77 years was reduced at a rate of 2.8% per year between 1967 and 1973. Less remarkable reduction in disparity between infant mortality rates and the ideal of 7/1000 was noted during this period; 1% per year. Adult literacy information has not been collected systematically over time, so that Literacy and PQLI Disparity Reduction Rates can not be calculated.

Table I shows regional PQLI scores. A discussion of the use of PQLI for intracountry comparisons in Tanzania is found in Annex 7.

B. Major Health Problems

Tables II and III list the most frequent causes of admission to government and voluntary agency hospitals and attendances at hospital out-patient departments between 1974 and 1977. Nearly half of the inpatient admissions and outpatient visits to hospitals reporting in 1977 were persons with infectious or nutritional disorders. Table IV shows pneumonia, measles, and gastroenteritis to be the most frequently recorded causes of mortality in hospitalized persons between 1974 and 1977. The total proportion of hospital deaths attributed to nutritional and infectious disorders exceeded 60% in 1977 for those hospitals reporting to the Ministry. (In 1976 only 67% of hospitals reported morbidity and mortality.)

*At PQLI = 97, Norway, Sweden and Iceland have the highest PQLI scores world wide.

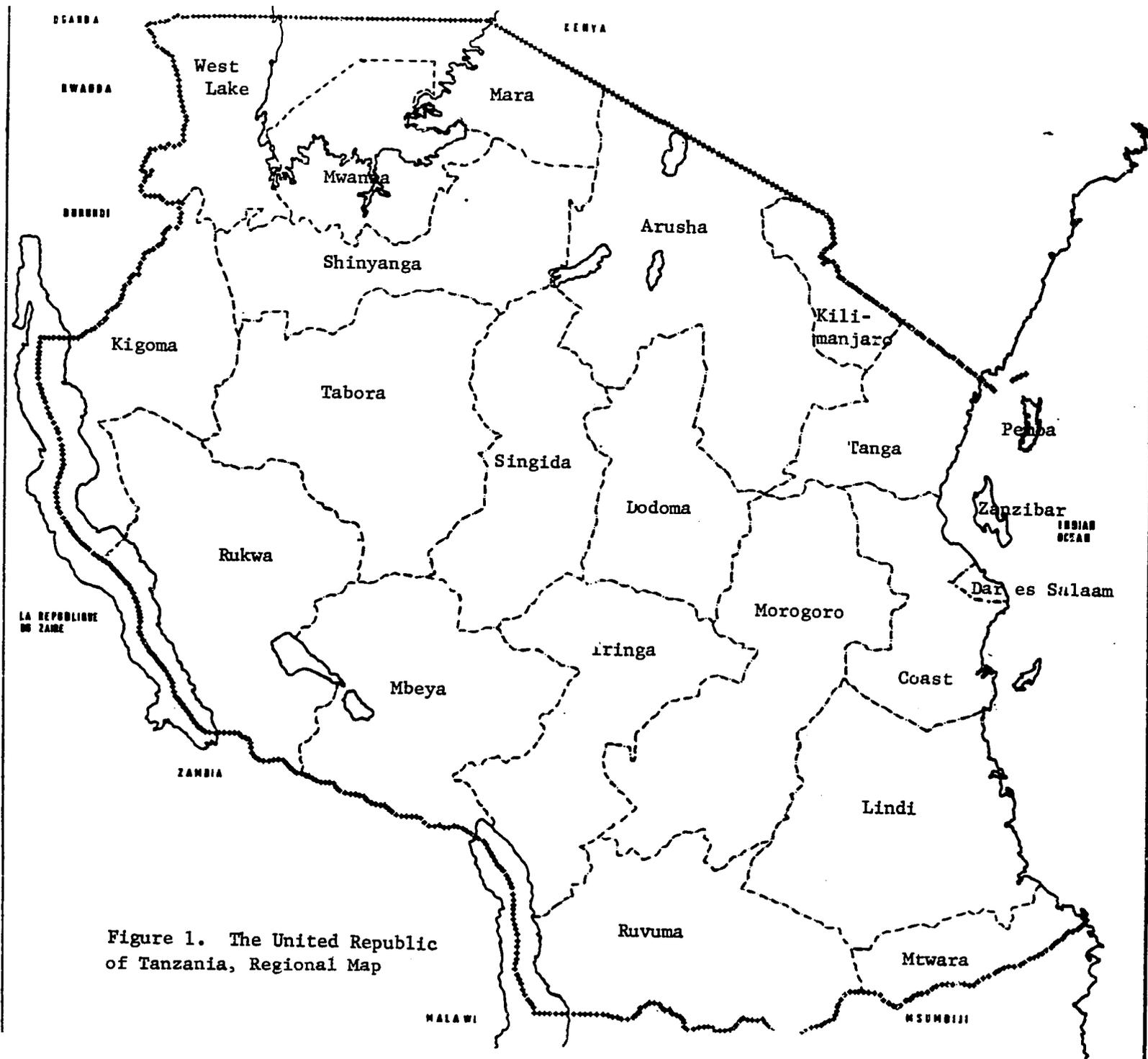


Figure 1. The United Republic of Tanzania, Regional Map

TABLE I

DEMOGRAPHIC ESTIMATES FOR TANZANIA 1967 and 1973

	Expected Life Time at Birth (Years)		Infant Mortality Rate (/1000)		Crude Birth Rate (/1000)		Crude Death Rate (/1000)		Total Fertility Rate		Adult Literacy (%)	PQLI **
	1967	1973	1967	1973	1967	1973	1967	1973	1967	1973	1977	
Iringa	38	43	170	178	55	51	26	20	8.4	7.0	41	32
Mara	36	51	186	130	52	49	28	16	7.1	6.8	21	31
Kigoma	41	38	155	215	43	46	23	25	5.9	6.0	22	15
Singida	36	41	186	196	45	43	27	28	6.1	5.2	38	27
Shinyanga	43	48	140	145	51	40	21	16	7.5	5.2	35	35
Mbeya	34	46	203	162	52	47	31	18	7.6	6.8	33	31
Mwanza	41	48	155	145	49	44	23	16	6.9	5.9	30	33
Rukwa	--	--	--	--	--	--	--	--	--	--	33	--
West Lake	41	48	155	145	50	47	23	19	7.1	6.4	42	39
Dodoma	41	48	155	145	48	47	23	17	6.9	6.7	36	36
Coast	46	41	127	196	37	46	19	25	4.9	6.2	27	22
Mtwara	38	48	170	145	38	44	25	17	5.0	6.0	25	30
Lindi	--	48	--	145	--	39	--	17	--	5.2	27	31
Morogoro	38	43	170	178	44	46	25	20	6.0	6.0	36	29
Tabora	46	48	127	145	40	40	19	17	5.5	5.3	34	35
Tanga	48	48	115	145	46	50	17	17	6.9	7.2	25	30
Ruvuma	36	48	186	145	48	45	28	16	6.7	6.2	60	49
Arusha	53	51	93	130	47	46	15	15	7.1	6.5	37	40
Kilimanjaro	55	51	93	139	51	48	14	16	7.9	7.1	42	43
Dar es Salaam*	51	56	104	38	33	--	16	--	4.3	--	51	55
TANZANIA	41	47	155	152	47	45.6	23	17.7	6.6	6.2	--	35.5

* In 1967 Rukwa, Lindi and Dar es Salaam had not yet become Regional entities. Rukwa was included in Mbeya and Tabora Regions; Lindi was part of Mtwara; and Dar es Salaam part of Coast Region.

** Physical Quality of Life Index

Sources: Central Statistical Bureau, 1967 Population Census
BRALUP, 1973 National Demographic Survey

TABLE II

MOST FREQUENT CAUSES OF ADMISSIONS TO GOVERNMENT AND V.A. HOSPITALS
1974 - 1977 TANZANIA MAINLAND *

Causes	Admissions				% To all Admissions			
	1974	1975	1976	1977	1974	1975	1976	1977
1. Deliveries, complications of pregnancy, childbirth & Puerperium	69,289	57,137	87,995	77,529	16.0	18.50	19.22	16.16
2. Malaria (All forms)	29,162	28,922	34,789	43,044	6.7	9.36	7.59	8.97
3. Pneumonias	28,417	26,840	36,423	40,429	6.6	8.69	7.96	8.42
4. Gastroenteritis and other diarrhoeal diseases	10,952	10,561	9,473	33,986	2.5	3.42	2.07	7.08
5. External causes of injuries	13,507	5,874	7,536	6,932	3.1	1.90	1.67	1.44
6. Ankylostomiasis	13,887	7,635	11,291	11,426	3.2	2.47	2.47	2.38
7. Measles	11,567	14,651	22,073	23,242	2.7	4.64	4.82	4.84
8. Iron-deficiency anaemias	18,509	4,758	9,631	8,901	4.3	1.54	2.10	1.85
9. T.B. (All forms)	5,670	6,321	8,454	6,829	1.3	2.05	1.85	1.42
10. Bronchitis, emphysema and asthma	17,385	8,149	11,184	10,430	4.0	2.64	2.44	2.17
11. Neoplasm (All forms)	4,136	4,889	2,798	5,977	1.0	1.58	0.61	1.24
12. Ascariasis	9,975	4,688	7,199	7,464	2.3	1.52	1.57	1.55
13. Other Anaemias	3,148	6,093	8,790	7,681	0.7	1.97	1.92	1.60
14. Acute respiratory infections	4,413	2,606	6,688	7,826	1.0	0.84	1.46	1.63
15. Dysenteries	3,909	1,798	3,673	7,616	0.9	0.58	0.80	1.59
16. Infections of skin and subcutaneous tissue	4,693	5,212	5,152	7,258	1.1	1.69	1.13	1.51
17. Bilharzia	6,307	2,880	5,491	5,491	1.5	0.93	1.19	1.11
18. Hernias	5,227	6,905	4,786	4,155	1.2	2.24	1.05	0.86
19. Protein malnutrition	4,171	945	5,887	5,258	0.9	0.31	1.29	1.09
20. Other nutritional diseases	2,625	2,464	2,172	4,229	1.6	0.80	0.47	0.88
21. Whooping cough	2,514	1,735	3,197	2,162	0.5	0.56	0.69	0.45
22. Nutritional marasmus	3,790	2,928	4,585	3,920	0.9	0.95	1.00	0.81
23. All other causes	160,153	94,921	167,980	148,232	37.0	30.72	36.69	30.89
Totals	433,400	308,912	457,774	479,845	100.0	100.00	100.00	100.00

Source: Planning Unit, Ministry of Health

* Yearly variability in admissions may reflect real changes in disease occurrence or variation in counting or reporting diseases.

TABLE III

MOST FREQUENT CAUSES OF ATTENDANTS AT OUT PATIENT HOSPITALS * 1974 - 1977 TANZANIAN MAINLAND

Causes	No. of O.P. Cases				% of total O.P. Cases			
	1974	1975	1976	1977	1974	1975	1976	1977
1. Malaria (all forms)	707,709	458,031	603,017	630,000	10.3	14.63	11.00	12.97
2. Symptoms and ill defined conditions	541,577	434,368	496,500	389,460	1.1	11.03	9.10	8.02
3. Other diseases of respiratory system	306,782	205,072	299,846	277,796	5.2	5.21	5.50	5.72
4. Other diseases of digestive system	260,349	207,633	246,668	307,187	4.5	5.27	4.50	6.33
5. Accidents, poisoning and violence	354,186	176,474	248,333	235,705	6.0	4.48	4.50	4.85
6. Ulcers	284,887	212,896	22,009	308,422	4.8	5.41	0.40	6.35
7. Gastroenteritis	330,494	258,327	346,420	328,865	5.6	5.56	1.60	6.77
8. Bronchitis	284,545	142,961	252,542	215,546	4.8	3.63	4.60	4.44
9. Nutritional deficiencies	214,797	202,841	259,621	255,022	3.6	5.15	4.70	5.25
10. Inflammatory disease of eye	140,795	79,067	110,803	74,656	2.4	2.01	2.00	1.54
11. Ankylostomiasis	169,050	52,059	101,447	103,990	2.9	1.32	1.80	2.14
12. Scabies	64,469	10,493	55,714	47,376	1.0	0.27	1.00	0.97
13. Diseases of Genito-urinary system	114,133	71,015	75,954	68,075	2.1	1.80	1.40	1.40
14. Pneumonias	225,133	167,271	235,302	177,097	3.8	4.25	4.30	3.65
15. Gonococcal infections	98,416	39,138	117,963	117,992	1.5	1.00	1.07	2.43
16. Enteritis and diarrhoeal disease	152,458	108,652	240,626	122,493	2.9	2.76	4.40	2.52
17. Schistomiasis	81,092	51,826	17,119	65,776	1.4	1.32	0.30	1.35
18. Dental caries	115,545	86,332	52,603	52,013	2.0	2.19	0.90	1.07
19. Measles	58,912	52,921	77,388	70,566	1.0	1.34	1.40	1.45
20. Otitis Media and mastoiditis	50,296	35,144	49,643	39,509	0.9	0.89	0.90	0.81
21. All other diseases	1,439,663	884,427	1,538,285	967,662	21.0	22.46	28.30	19.93
Totals	5,887,618	3,937,660	5,423,978	4,855,229	100.0	100.00	100.00	100.00

Source: Planning Unit, Ministry of Health

* (See footnote, Table II)

TABLE IV

MOST COMMON CAUSES OF DEATH IN HOSPITALS* 1974-1977 TANZANIA MAINLAND

Causes	No. of Deaths caused by diseases in hospitals				% to the total number of deaths in hospitals			
	1974	1975	1976	1977	1974	1975	1976	1977
1. Pneumonia (All forms)	3,923	861	828	1,144	14.1	13.4	11.09	11.61
2. Gastroenteritis (All forms)	704	88	162	1,039	10.2	2.70	2.40	10.55
3. Malaria (All forms)	274	71	188	480	3.9	2.18	2.80	4.87
4. Tuberculosis (All forms)	338	126	417	374	4.8	3.87	6.30	3.84
5. Defective Nutrition (All forms)	554	167	486	751	7.8	5.13	7.40	7.62
6. Anaemia (All forms)	312	255	400	459	4.5	7.83	6.10	4.66
7. Condition of early infancy	552	32	431	526	7.9	0.98	6.60	5.34
8. Measles	620	860	562	1,448	8.9	26.41	8.60	14.70
9. Tetanus	134	430	132	211	1.9	13.21	2.00	2.14
10. Diseases of the heart	315	151	301	377	4.6	4.64	4.60	3.83
11. Meningitis	39	11	198	141	0.6	0.34	3.00	1.43
Totals	6,904	2,551	4,105	6,950	68.5	78.38	62.90	70.59

Source. Planning Unit, Ministry of Health

* (See footnote, Table II)

Prevalence, incidence and geographical distribution of major disease problems are discussed using data from the Ministry of Health Communicable Disease Surveillance Unit and the Community Medicine Division of Muhimbili Hospital.*

Malaria

The most widespread tropical disease in Tanzania is malaria. As noted in Tables II and III, 13% of hospital outpatients and 9% of hospital admissions were persons with malaria. The disease is endemic throughout the country (Fig. 2), but most severe in lowland areas near Lake Victoria and the coast. The most common forms of malaria are Plasmodium falciparum (about 90% of cases) and Plasmodium malariae (10%).³

Measles

Between 1969 and 1977 measles was recorded as the second most common cause of death on the Tanzania mainland. Measles is the most common childhood infection, usually occurring in children between the ages of four months and six years. Complications of measles often lead to mortality in undernourished infants and children. The hospital mortality rate for measles in Tanzania has been reported to be 10%.⁴

Protein Calorie Malnutrition

It has been estimated that at any time 25% of Tanzanian children under five years of age are malnourished and that 50% will suffer from malnutrition sometime before adulthood. Inadequate nutrition inhibits immune responses to infectious disease, thereby increasing the risk of mortality from common childhood diseases. Surveys in hospital pediatric wards indicate that 50% of all admissions are malnourished and over 50% of all children dying in hospitals have severe or underlying malnutrition. Approximately 10,000 children die of PCM annually.⁵ Table V shows by regions the proportion of children's attendances to MCH clinics from 1976 to 1978 who were underweight and the proportion with kwashiorkor or marasmus in 1978. Although there is much inconsistency from year to year, it appears that the proportion of underweight children in Lindi is consistently low and in Singida is consistently high.

Pneumonia

Pneumonias constituted approximately 8% of hospital admissions between 1975 and 1977 and between 11 and 14% of hospital deaths. In children pneumonia often occurs as a complication of measles or other acute infections.

* Morbidity and mortality data are not available by region or district. Only the MCH Unit publishes non-hospital disease data. (See Annex 4).

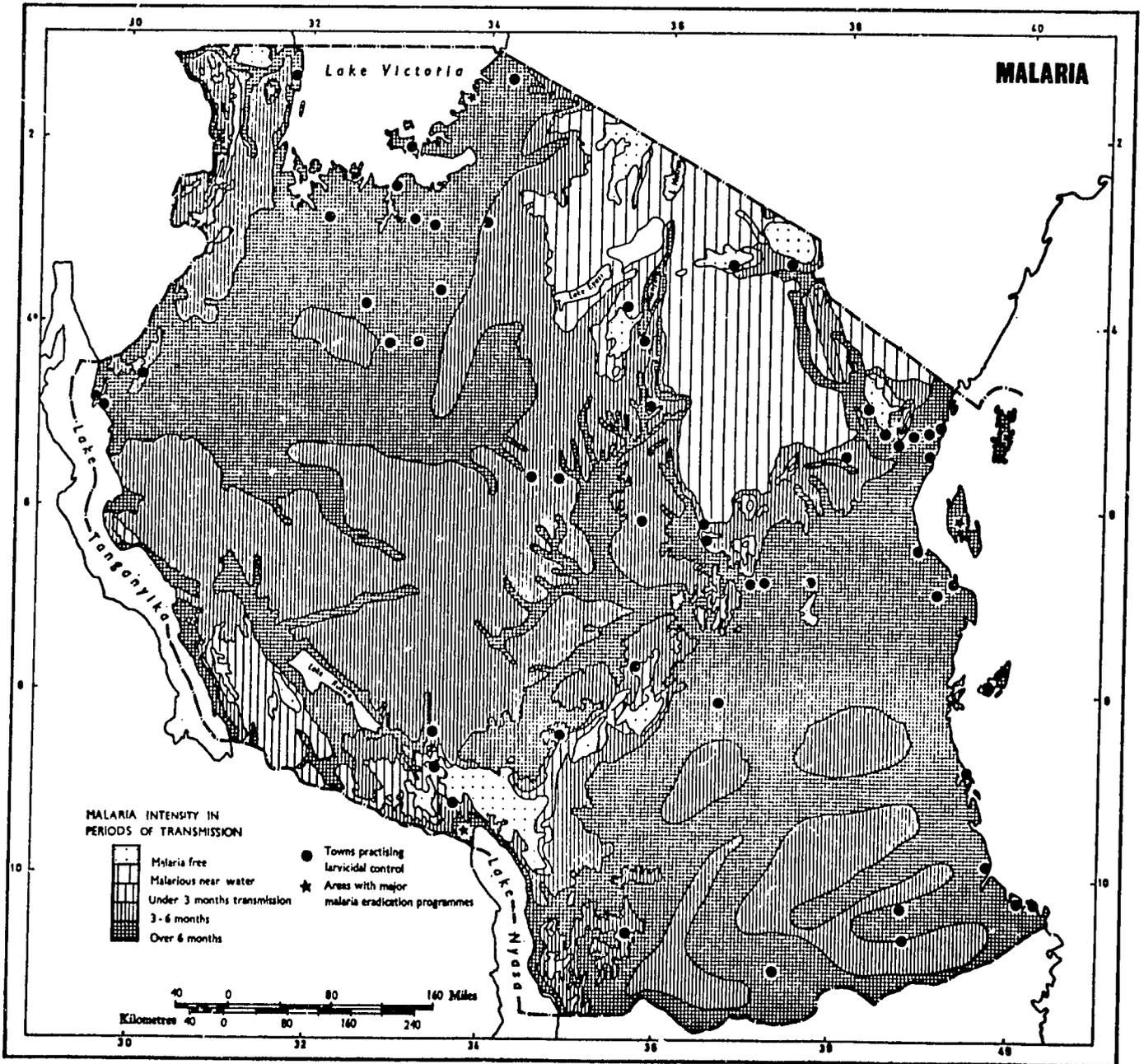


Figure 2. Malaria Transmission in Tanzania

Source: Berry L. Tanzania in Maps

TABLE V

MALNUTRITION IN MCH CLINICS * 1976-78

Region	Percentage of Total Attendances		Number of Attendances			Percentage of Attendances		
	1976 <u>Underweight</u>	Jan.-June 1977 <u>Underweight</u>	<u>Underwt.</u>	<u>Kwashiokor</u>	January - June 1978 <u>Marasmus</u>	<u>Underwt.</u>	<u>Kwashiokor</u>	<u>Marasmus</u>
Iringa	2.1	7.3	16,577	2,723	4,983	7.5	1.2	2.3
Mara	6.5	5.7	5,200	1,108	1,487	5.3	1.1	1.5
Kigoma	1.2	8.1	4,524	519	998	3.2	0.4	0.7
Singida	8.8	14.2	10,323	1,015	2,571	9.6	0.9	2.4
Shinyanga	6.8	3.7	8,087	1,767	1,901	2.1	0.5	0.5
Mbeya	2.5	3.7	10,012	5,039	3,415	3.8	1.9	1.3
Mwanza	10.8	5.1	16,058	1,779	2,037	4.7	0.5	0.6
Rukwa	19.7	20.0	3,191	502	343	5.7	0.9	0.6
Ziwa Magharibi	4.1	6.9	9,880	2,773	2,394	6.5	1.8	1.6
Dodoma	5.4	6.0	7,881	1,340	1,943	6.5	1.1	1.6
Coast	5.2	5.6	3,278	605	916	5.4	1.0	1.5
Mtwara	2.6	2.7	6,306	639	1,185	5.9	0.6	1.0
Lindi	1.8	1.8	5,148	1,002	1,098	0.8	0.8	0.8
Morogoro	3.5	6.3	6,018	612	844	7.9	0.8	1.1
Tabora	1.4	4.6	8,738	983	2,978	3.9	0.4	1.3
Tanga	3.9	11.2	8,004	2,362	2,666	4.1	1.2	1.4
Ruvuma	7.2	7.1	5,406	901	709	5.4	0.9	0.7
Arusha	3.6	7.2	16,312	1,941	2,766	6.1	0.7	1.0
Kilimanjaro	11.3	11.9	10,894	1,343	1,723	4.9	0.6	0.8
Dar es Salaam	4.5	5.7	8,336	888	959	10.1	1.1	1.2
TANZANIA			170,173	29,842	37,916	5.1	0.8	1.1

Source: Maternal and Child Health Unit, Ministry of Health

*(See footnote, Table II)

Gastroenteritis and Diarrhea

From 1974 to 1977, gastroenteritis and other diarrheas ranked fourth in percentage of hospital admissions and were among the five most common causes of deaths in hospitals. These disorders also accounted for a large proportion (10%) of outpatient visits. In over 2/3 of all cases of diarrhea in young children, the etiology remains undetermined after bacteriological, virological, and parasitological examination of stools. Introduction to contaminated foods, poor sanitation, malnutrition, and loss of maternal immunity causes weaning diarrhea in many infants.⁶

Schistosomiasis

In 1976/77 the East African Institute of Medical Research reported that 20% of Tanzanians were infected with schistosomes (3,000,000 individuals). Urinary schistosomiasis (*S. haematobium*) is the most common form with prevalence exceeding 70% near Lake Victoria. It is found throughout Central Tanzania (Fig. 3). *S. Mansoni* is prevalent along the eastern coast and on Zanzibar and Pemba.⁷

Tuberculosis

In 1969 the East African Medical Research Council estimated the prevalence of TB to be 112/100,000 in Tanzania. The number of newly diagnosed TB patients was 15-20,000 per year in 1977 and 1978. A survey of 550,000 persons in Dar es Salaam, Bagamoyo and Kisawe Districts in 1971 found 40.7% to be tuberculin positive.⁸ By age group the percentages were as follows:

<u>Age in years:</u>	0-4	5-9	10-14	15-19	20-29	30-39	39+
<u>% Positive:</u>	4.5	12.2	15.9	15.9	67.8	81.7	81.7

Trypanosomiasis

Only 40% of Tanzania's land area is tsetse-free. Trypanosomiasis is particularly prevalent in the Northwestern part of the country (Fig. 4). Six hundred twenty-three cases were reported to the Ministry of Health in 1976.⁹

Onchocerciasis

In 1978/79 an estimated 500,000 Tanzanians were infected with *O. volvulus*. Two percent of persons infected suffer visual impairment, and blindness is most likely to occur in the elderly. Prevalence rates in Tanga are thought to be as high as 40%; Morogoro, 35%; and Ruvuma, 20%. Other regions with high prevalence are Mbeya and Kigoma (Fig. 5).¹⁰

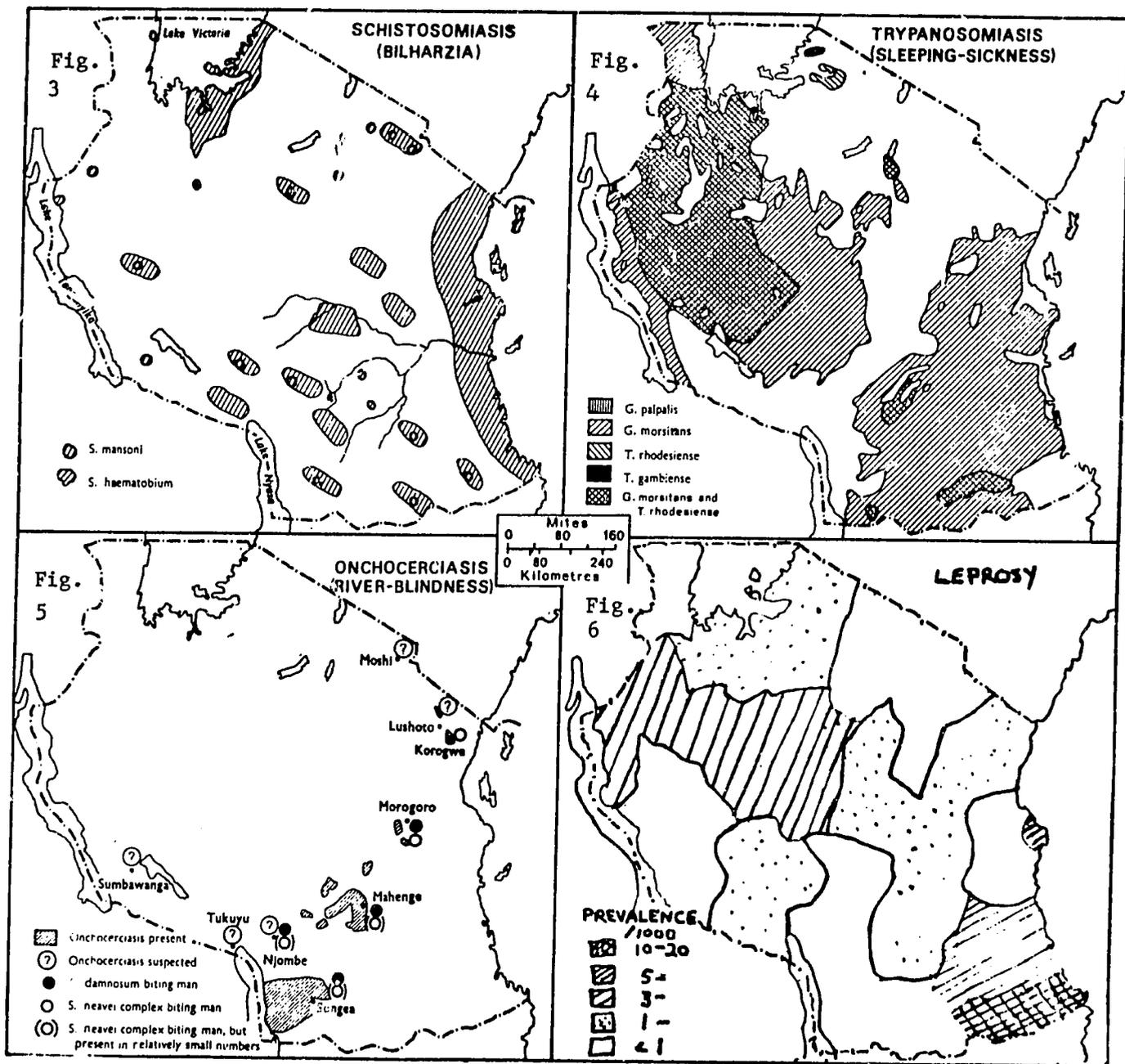


Figure 3 (Upper Lt.). Schistosomiasis Distribution in Tanzania.

Figure 4 (Upper Rt.). Trypanosomiasis Distribution in Tanzania.

Figure 5 (Lower Lt.). Onchocerciasis Distribution in Tanzania.

Figure 6 (Lower Rt.). Leprosy Prevalence in Tanzania.

Sources: Figs. 3, 4, and 5. Berry, L. Tanzania in Maps.
 Fig. 6. Meyerson, E. Un Atlas de la Lepre.

Tetanus

Prematurity and tetanus are the most common causes of deaths in newborns. Case-fatality rates for tetanus vary from 40-80% depending upon the proximity to, and standard of, health facilities.¹¹ The incidence of this disease reflects medical attendance of births, sanitation, and education. Incidence may be highest in cattle-raising areas.

Cholera

Seventeen thousand Tanzanians were treated for cholera during an outbreak between October 1977 and June 1979. This disease caused more than 1500 deaths during the epidemic.¹² Relationships were found between affected areas and waste disposal practices, type of water source, and religious and cultural practices.

Leprosy

In 1978/79 there were an estimated 150,000 persons with leprosy in Tanzania, or 10 per 1000 population.¹³ Figure 6 shows high prevalence areas to be the southern and middle coastal regions.

Venereal Diseases

Gonorrhoea and syphilis are both major causes of morbidity in Tanzania. Although no data are available by region, it is thought that incidence of venereal diseases is highest in urban areas.¹⁴

Others

Other major causes of morbidity in Tanzania include ankylostomiasis, ascariasis, filariasis, cerebral meningitis, trachoma, rabies, typhoid fever, hepatitis and goiter.

II. STRUCTURE OF THE HEALTH CARE SYSTEM IN TANZANIA

A. Policy and Organization

The health infrastructure left by colonial governments in Tanzania was predominantly curative-oriented and urban-based.

Since independence, the government has stated as priorities:

- 1) to improve the health of the people, i.e., decreasing infant mortality and increasing life expectancy, through the control of communicable diseases;

- 2) to insure that health care is accessible to all people; and
- 3) to move towards government self-sufficiency in providing health services and personal self-sufficiency in basic health management.

In keeping with these priorities, government policy has been directed towards:

- 1) decentralizing health resources with emphasis on rural rather than urban-based facilities, personnel and planning;
- 2) developing preventive, rather than curative services; and
- 3) insuring that donor contributions to health services and programs are consistent with self-determination in health care.

Since 1967 there has been a steady expansion of the rural dispensary and rural health center program with development of services to improve nutrition, environmental sanitation, and maternal-child health, and to control communicable diseases. Government hospitals have been expanded to increase intake capacities and availability of services. Various types of health personnel with a wide diversity of skills have been trained to manage health problems in villages as well as large urban centers. Jurisdiction over rural health planning has been given to regional development committees.

Planning and implementation of health policies occurs at all government levels. Each registered village in Tanzania has a village development committee. This committee charts the needs of the village, arranges its priorities, sets production targets, and identifies which projects can be carried out within the resources of the village and which ones will require external assistance.

The Divisional Committee is comprised of representatives from a group of villages. This committee verifies needs, priorities and goals of each village and relates them to the resources available within the division and what the region allocates to the division. The District Planning Committee coordinates all divisional plans, assesses the feasibility of projects and the availability of resources and manpower necessary to implement projects, and draws up a final district plan.

The Regional Planning Committee evaluates district plans and formulates the regional plan. The regional plan consists of projects, priorities, and goals for all villages, divisions, and districts of the region and the elements of projects that are to be carried out regionally. This plan is sent to the Prime Minister's Office.

The Office of the Prime Minister coordinates regional plans, balances projects against resources expected from the government, and passes these plans to the Ministry of Finance and Planning. The Ministry has a number of planning committees composed of members of the National Assembly. The committee for regional planning scrutinizes regional plans and submits

them to the National Planning Commission, which evaluates plans and submits them with suggestions and adjustments to the executive committee of the Party. The executive committee sends the plans to the National Assembly where they are debated. (Fig. 7).

The objectives of Tanzania health policy are carried out through an integrated national health service utilizing facilities and manpower made available by the central government, the local authorities, and voluntary and other agencies. The Ministry of Health has the overall responsibility of coordinating health activities. The Ministry is headed by a cabinet minister. Although the Ministry is responsible for national planning and health care programs, much of the implementation responsibility lies in the regional and district directorates. The Principal Secretary of the Ministry is the chief administrative executive. In 1973 the Ministry was re-organized into three divisions: The Preventive Services Division, Manpower Development Division, and Hospital Services Division. (Fig. 8).

B. Facilities and Manpower

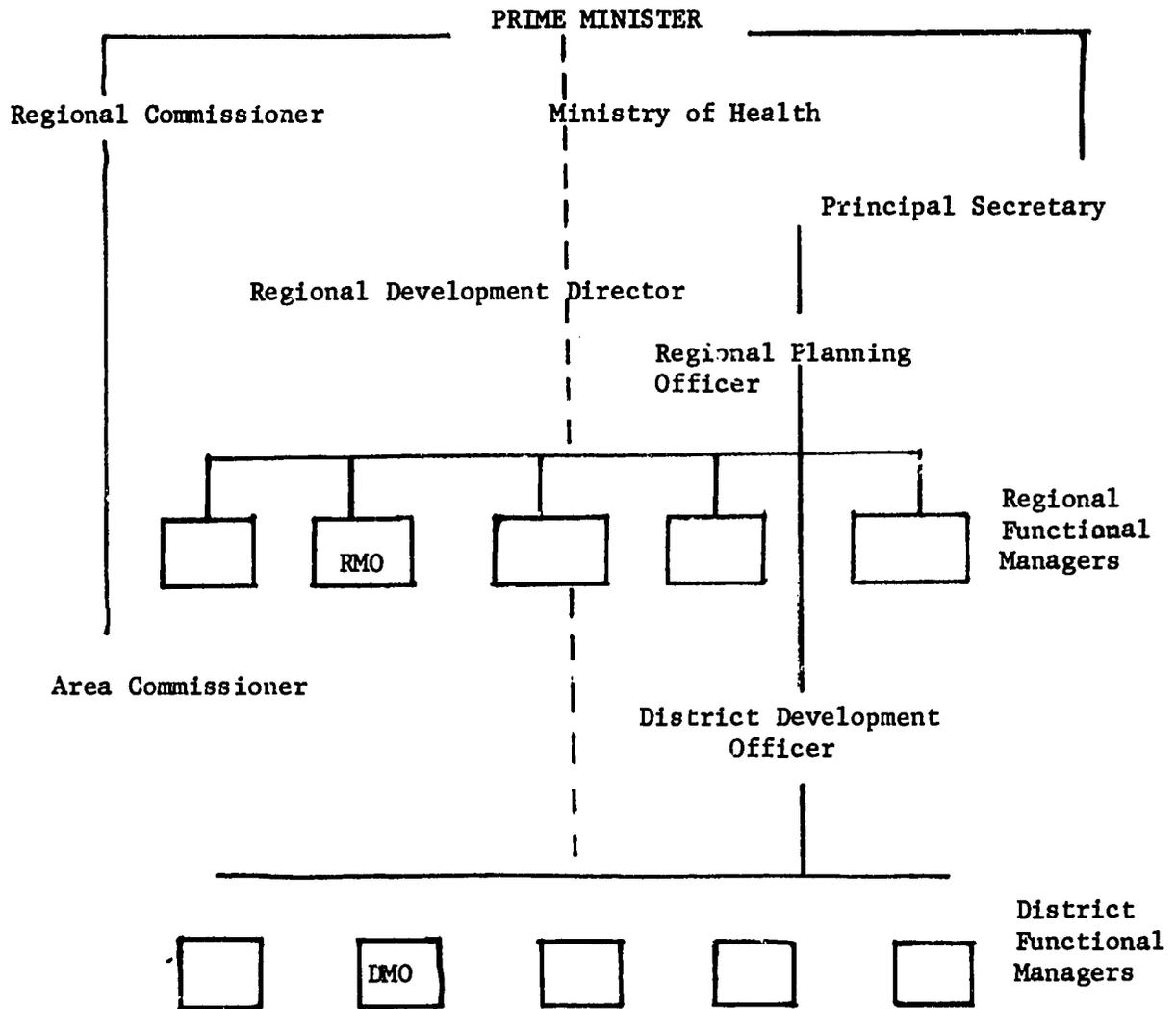
In Tanzania a hierarchy of primary health care facilities and workers has been established. The smallest health care unit at the village level is the Village Health Post. This post is the basis for village health campaigns and is equipped to provide first aid treatment for minor ailments. The VHP is usually staffed by a volunteer who has had some first aid training.

The Rural Dispensary serves as a center for out-patient treatment, MCH and child spacing services, and organization of health campaigns. It was planned that by the end of the 3rd Five Year Plan period (1981) rural dispensaries would provide services for a population of about 6000 (a ward) and would each be staffed by one rural medical aide, one MCH aide, or village midwife and one health auxiliary or health assistant.

Rural Medical aides are Form IV or Standard VII graduates with 2-3 years of basic health training. MCH aides are village midwives who receive 18 months of training in personal, family, and community health, maternal health, child spacing, child health, immunization and health education. Health auxiliaries are Standard VII graduates with 18 months of training in rural environmental sanitation.

The Rural Health Center is a referral unit for 4-5 rural dispensaries and is organized to provide preventive and curative medical care at a divisional level. The center consists of outpatient clinics for the treatment of common diseases and injuries, initial management of more serious cases, and 20-30 beds for uncomplicated deliveries and short-stay in-patient care. Preventive services are offered through the Center's MCH unit.

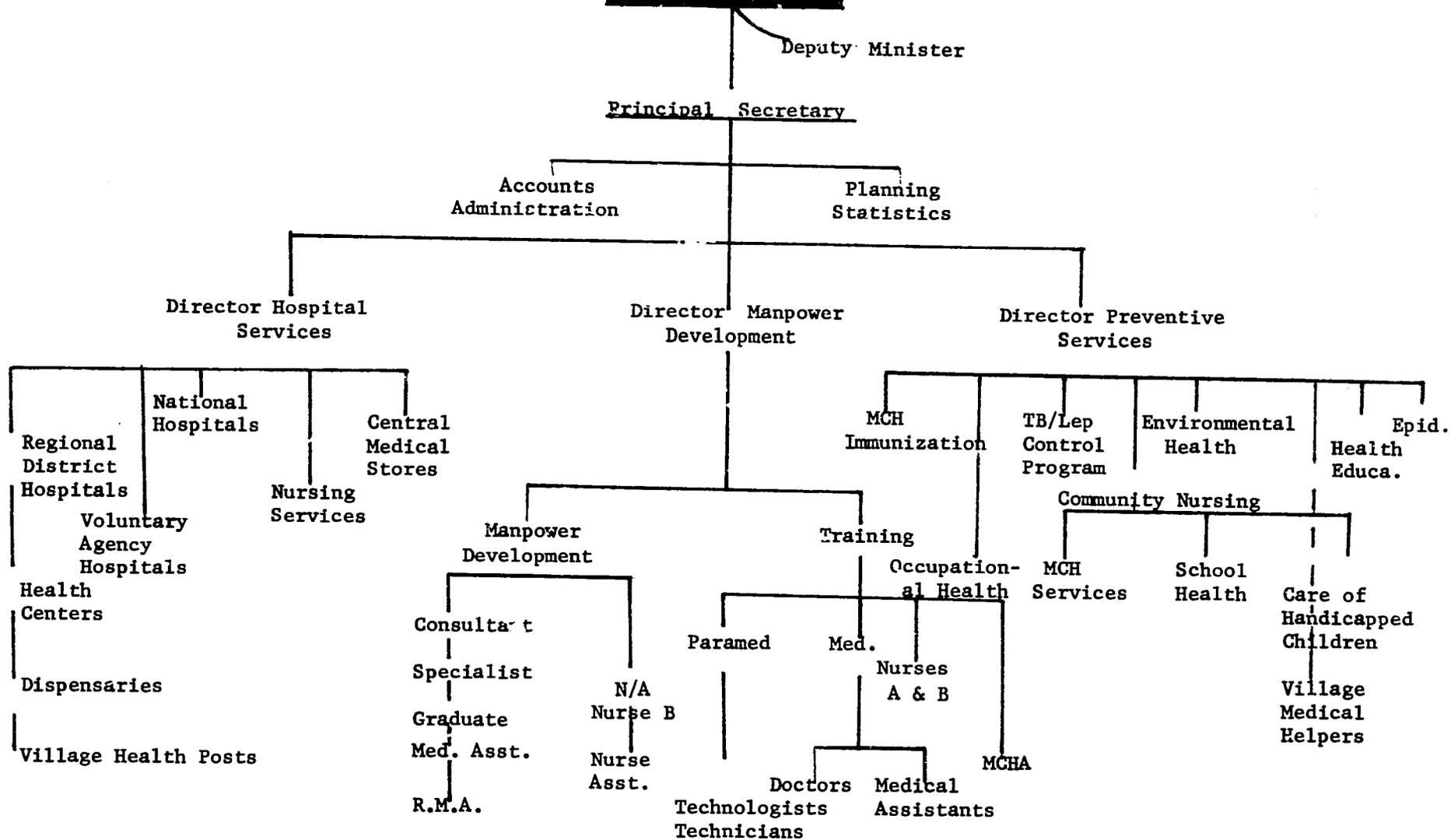
1981 staffing goals for the Rural Health Center include one medical assistant, two rural medical aides, one nurse-midwife, two MCH aides, one health auxiliary/assistant and one lab auxiliary or microscopist.



RMO - Regional Medical Officer
DMO - District Medical Officer

Source: Ministry of Health Report, Primary Health Care in Tanzania.
(Unpublished).

Figure 7. Administrative Structures of Regional and District Directorates



Source: Ministry of Health

Figure 8. Organization Chart - Ministry of Health

A medical assistant is a health worker with three years of training after completing Form IV or two years after Form VI. A Nurse-midwife Grade A, has had 3³/₄ years of post-secondary school study at a referral hospital. A Nurse-midwife Grade B, receives 3-4 years of hospital training after completion of primary school.

Urban health services are provided by Urban Dispensaries and Urban Health Centers, both of which are generally larger than their rural counterparts, due to their accessibility to greater numbers of people. Urban health centers are designed for staff consisting of one Medical Officer or Assistant Medical Officer, three medical assistants, two MCH aides, six nurse midwives and two health auxiliaries.

Assistant medical officers receive 18 months of training in general medicine, Ob/Gyn and surgery after four years of practical experience as medical assistants. Medical officers undergo a 5-year undergraduate university medical course and may continue in a post graduate specialty area.

Government Hospitals are classified according to jurisdiction: there are District, Regional and Consulting hospitals, each with increasing specialization of staff and equipment. Government goals are to provide curative services by establishing a 100-150 bed hospital in each district, one regional hospital per region, and 5 zonal (consulting) hospitals (Fig. 9).

Hospitals may be staffed by medical officers, AMO's, MA's, nurse/midwives, health officers, pharmacists, dentists and dental assistants, laboratory technicians and assistants, radiographic technicians and assistants, and medical records personnel.

Health care is given free of charge in all Government facilities.

III. COMMITMENTS TO HEALTH CARE

A. Budget Expenditures

The degree to which the Tanzanian Government is committed to health care is evaluated in terms of expenditures within the health sector and distribution of health care workers and health facilities.

Government budgets include development and recurrent expenditures. Development expenditures are initial investments such as planning and building costs of facilities or additions and capital expenditures on equipment. Recurrent expenditures are those which are ongoing and are made periodically. They include salaries for operative personnel, maintenance of buildings and equipment, procurement of supplies, and transportation.

Tables VI - VIII show Government of Tanzania development, recurrent and total health budgets from 1970/71 to 1978/79. In 1978 Parliament approved an amount of 747 million TShillings (US \$91 million) to the Ministry of Health, 125 million (17%) to be used for development projects and 622 million (83%) to cover recurrent costs.

STRUCTURE OF HEALTH SERVICES IN TANZANIA

LEVEL	UNIT	CHIEF OFFICER
A. NATIONAL	Consultant Hospitals* Special Hospitals Training Institutions	Consultants and other, Teachers
B. REGIONAL	Regional Hospital	Regional Medical Officer
C. DISTRICT	District Hospital	District Medical Officer
D. DIVISIONAL	Rural Health Center	Medical Assistant
E. WARD	Rural Dispensary	Rural Medical Aide
F. VILLAGE	Village Health Post	Village Health Helper

* The consultant hospitals are all under the Ministry of Health except Muhimbili Medical Center in Dar es Salaam which was established as a parastatal in 1976, incorporating the Medical Faculty of the University of Dar es Salaam.

Figure 9. Structural and Administrative Framework for the Delivery of Health Services.

TABLE VI

GOVERNMENT HEALTH EXPENDITURES *

	<u>1970/71</u>		<u>1971/72</u>		<u>1972/73</u>		<u>1973/74</u>		<u>1974/75</u>		<u>1975/76</u>		<u>1976/77</u>		<u>1977/78</u>	
	<u>000</u> <u>Shs</u>	<u>%</u>														
Administration and General	3,323	2.1	2,210	1.4	2,243	1.1	1,137	.43	2,632	.71	2,481	.61	2,967	.58	2,893	.44
Hospital Services	119,779	75.9	124,244	78.2	141,977	68.2	150,788	57.2	190,655	51.3	219,096	53.5	276,326	54.4	382,864	50.0
Rural Health Centers	11,182	7.1	9,985	6.3	14,794	7.1	38,338	14.5	40,143	10.8	50,366	12.3	56,872	11.2	77,247	11.8
Dispensaries	6,500	4.1	8,300	5.2	25,856	12.4	25,443	9.6	35,329	9.5	39,622	9.7	49,759	9.8	59,791	9.1
Preventive Services	6,978	4.4	8,388	5.3	27,389	13.2	26,603	10.0	41,106	11.1	50,057	12.2	69,601	13.7	85,970	13.1
Manpower Training	8,097	5.1	5,337	3.4	9,475	4.6	37,697	14.3	58,481	57.7	44,507	10.9	53,274	10.5	51,569	7.8
Medical Production and Supplies	1,933	1.2	2,776	1.7	4,438	2.1	4,372	1.7	3,638	.98	5,450	1.3	5,731	1.1	9,491	1.4
TOTAL	157,792	100	158,905	100	202,922	100	263,693	100	371,982	100	409,355	100	508,245	100	657,112	100

Source: Public Expenditure Consolidated Fund Services and Supply Votes (Ministerial - Treasury)

* Approved estimates (i.e., budgets approved by Parliament)

TABLE VII

NATIONAL AND REGIONAL HEALTH DEVELOPMENT EXPENDITURES 1970/71 - 1977/78 *

Item	1970/71		1971/72		1972/73		1973/74		1974/75		1975/76		1976/77		1977/78	
	000 Shs	%	000 Shs	%	000 Shs	%	000 Shs	%	000 Shs	%	000 Shs	%	000 Shs	%	000 Shs	%
Hospital and Auxiliary facilities	11,450	52	2,280	52	4,139	27	8,700	15	8,860	12	16,184	22	29,975	25	31,619	26
Rural Health Centers	5,288	24	1,447	33	5,365	35	19,140	33	17,727	24	24,647	34	22,510	23	37,995	32
Preventive Services	220	1	88	2	1,533	10	1,160	2	5,787	8	10,435	14	19,842	21	26,179	22
Training and Manpower	4,848	22	570	13	2,759	18	27,840	48	39,635	55	22,111	30	29,700	31	23,999	20
Manufacturing	220	1	-	-	1,533	10	1,160	2	360	1	-	-	300	-	120	-
TOTAL	22,035	100	4,385	100	15,328	100	58,000	100	72,369	100	73,377	100	102,335	100	119,912	100
* * * * *																

TABLE VIII

NATIONAL AND REGIONAL HEALTH RECURRENT EXPENDITURES

Item	1970/71		1971/72		1972/73		1973/74		1974/75		1975/76		1976/77		1977/78	
	000 Shs	%														
Administration and General	3,323	2	2,210	1	2,243	1	1,137	1	2,632	1	2,481	1	2,967	1	2,893	1
Hospital Services	108,321	80	121,964	79	137,850	72	142,088	69	181,793	60	202,912	60	246,351	61	351,245	65
Rural Health Centers	5,894	4	8,530	6	9,429	5	19,198	7	22,416	7	25,719	8	34,354	9	39,252	7
Dispensaries	6,500	5	8,300	5	25,856	13	25,443	12	35,329	12	39,622	12	49,759	12	59,791	11
Preventive Services	6,750	5	5,965	4	7,587	4	8,758	5	37,600	12	37,396	11	43,482	11	47,078	9
Manpower Training	3,249	2	4,767	3	6,716	4	9,857	5	18,876	6	22,396	7	23,574	6	27,570	5
Medical Production & Supplies	1,317	1	2,776	2	2,905	2	3,212	2	3,338	1	5,450	2	5,431	1	9,371	2
TOTAL	135,757	100	154,520	100	192,594	100	205,693	100	301,882	100	335,978	100	405,910	100	537,200	100

Source: Planning Unit, Ministry of Health

* Approved estimates (i.e., budgets approved by Parliament)

During the last decade, the proportion of the total health budget allocated to hospital services decreased from 75.9% in 1970/71 to 50% in 1977/78, while proportions of allocations to rural health centers and dispensaries increased from 11 to 21%. There also were considerable gains in the relative percentage of budgets designated for preventive services (4 to 13%). (Fig. 10).

Figure 11 shows the percentage of Government of Tanzania development and recurrent budgets allocated to health from 1965/66 to 1978/79. As might be expected, the development proportions to health are variable, but never constitute more than 4% of the total government development Budget. Since 1970/71, health has received between 8.1 and 9.5% of the government's recurrent funds. In 1978/79 the total expenditure on health (development plus recurrent budgets) was 5.84% of the Government of Tanzania budget.¹⁶

In 1972/73 the Tanzanian Government spent approximately 12 TSh. per citizen on health. This amount has increased yearly and in 1978/79 government health expenditure per capita was 47 TSh. (US \$5.70).

Beginning in 1972 the Treasury allocated funds directly to the regions. Figure 12 illustrates the proportions of government health development and recurrent budgets which were administered at the regional level between 1972/73 and 1978/79. Throughout this period, over 70% of the total health development budget has been provided by foreign donors;¹⁵ therefore, annual budget fluctuations may reflect the status of various aid programs. The regional recurrent budget allocations have been approximately 60% of the total recurrent budget since 1972.

Table IX shows regional development and recurrent health expenditures per capita from 1975/76 to 1977/78. Expenditures vary tremendously among regions. In 1977/78 four regions (Kilimanjaro, West Lake, Mara and Lindi) received less than 20 TShillings/capita (\$2.42) whereas Dar es Salaam was allocated 49.8 TShs/capita (\$6.04) for health.

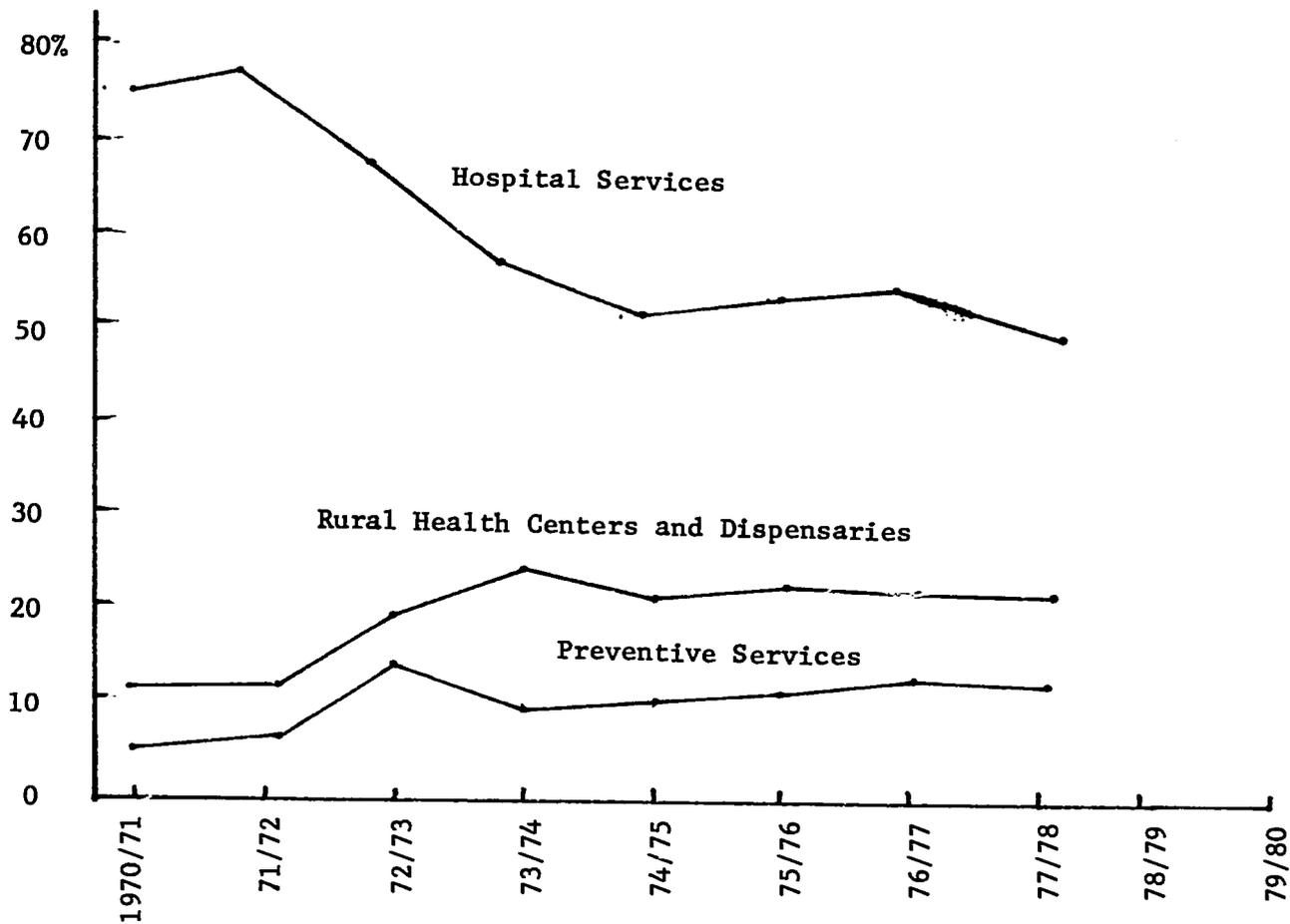
The Regional Health Expenditures presented in Table IX do not reflect all of the government expenditure on health in the regions. Three important categories of government health expenditures for regional services are included under National Health Expenditures. These are:

- 1) annual grants given to designated district hospitals (selected voluntary agency hospitals);
- 2) annual subvention to voluntary agencies as well as monies from voluntary agency donors to facilities which provide health services in the regions; and
- 3) budgets of consulting hospitals in which 80% of services is primary care to the people in their immediate vicinities.

Manpower and Facilities

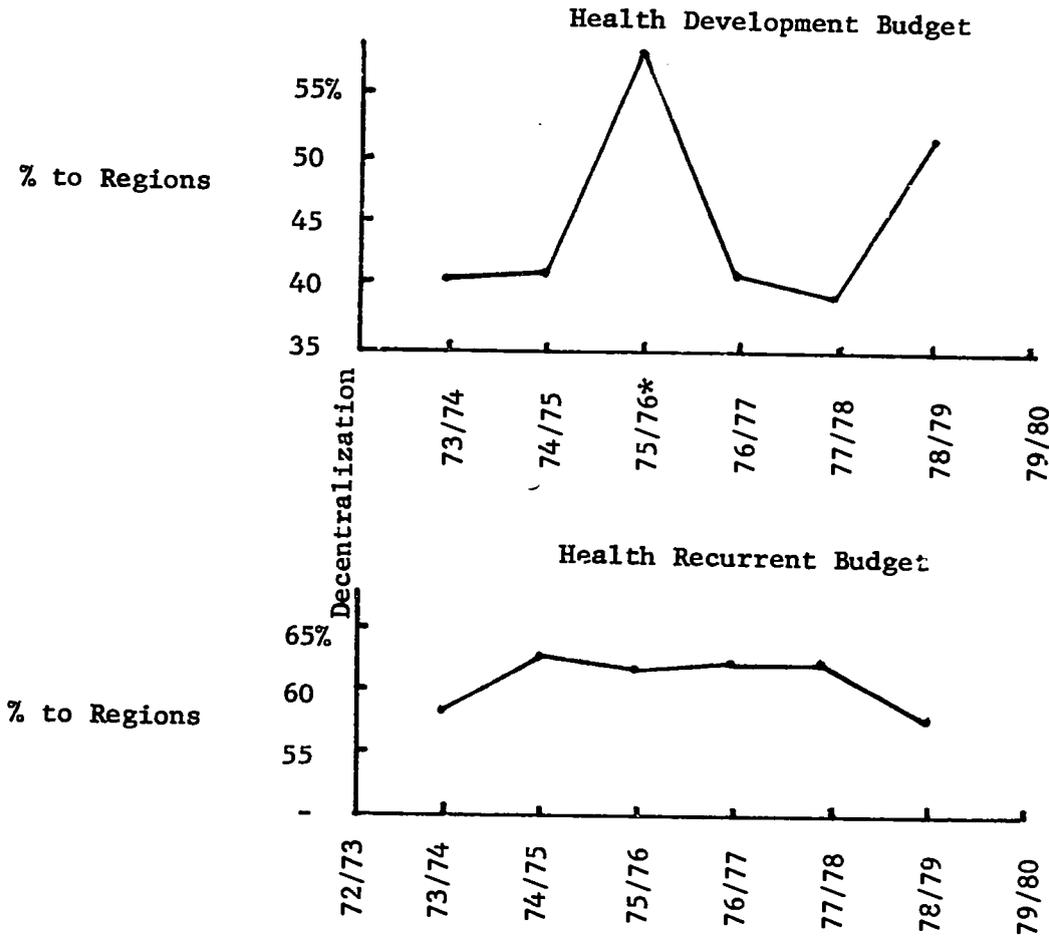
Tables X-XII present regional data regarding the number of existing health care facilities and the number of people per facility from 1972 to 1978. In 1978 there were a total of 2,547 dispensaries in Tanzania or 6,700 population per dispensary. By region the ratio of population to dispensary ranged from 5200:1 (Coast and Morogoro) to 8600:1 (Shinyanga). Only six regions had achieved the desired 6000:1 ratio.

Tanzania had 200 rural health centers in 1978, or 1;92,000 population. Regionally, Ruvuma had the lowest ratio (1:63,000) and West Lake, the highest (1:126,000). The total number of hospitals in the country was 151; hospital beds numbered 21,482 yielding a population to bed ratio of 791:1. Five regions (Coast, Rukwa, Kigoma, Mara, and Shinyanga) had yet to meet the goal of 1000 population per bed.



Source: Planning Unit, Ministry of Health

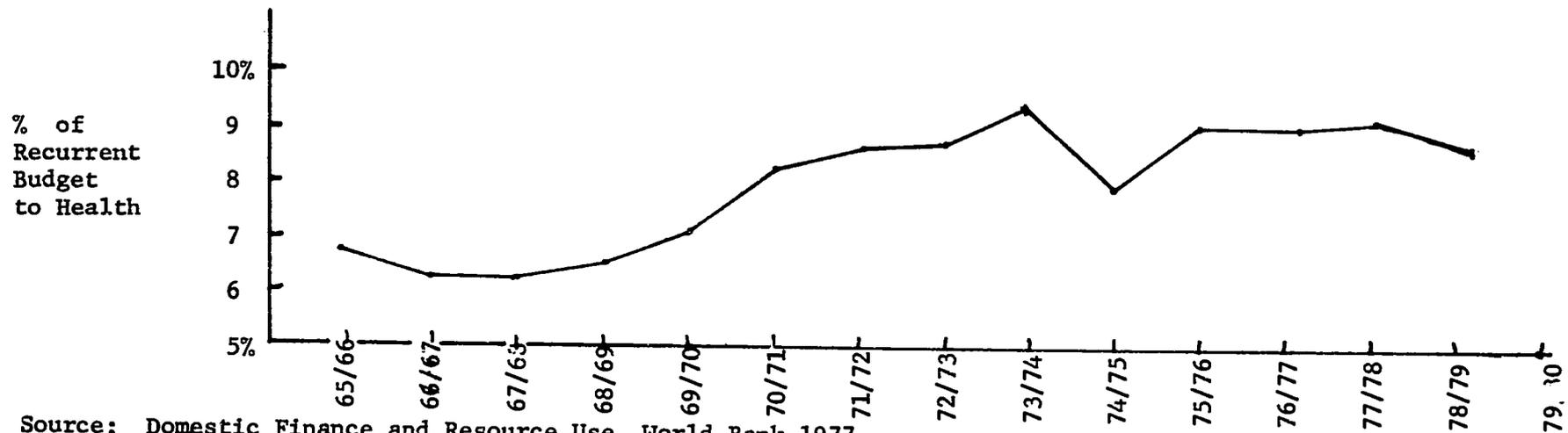
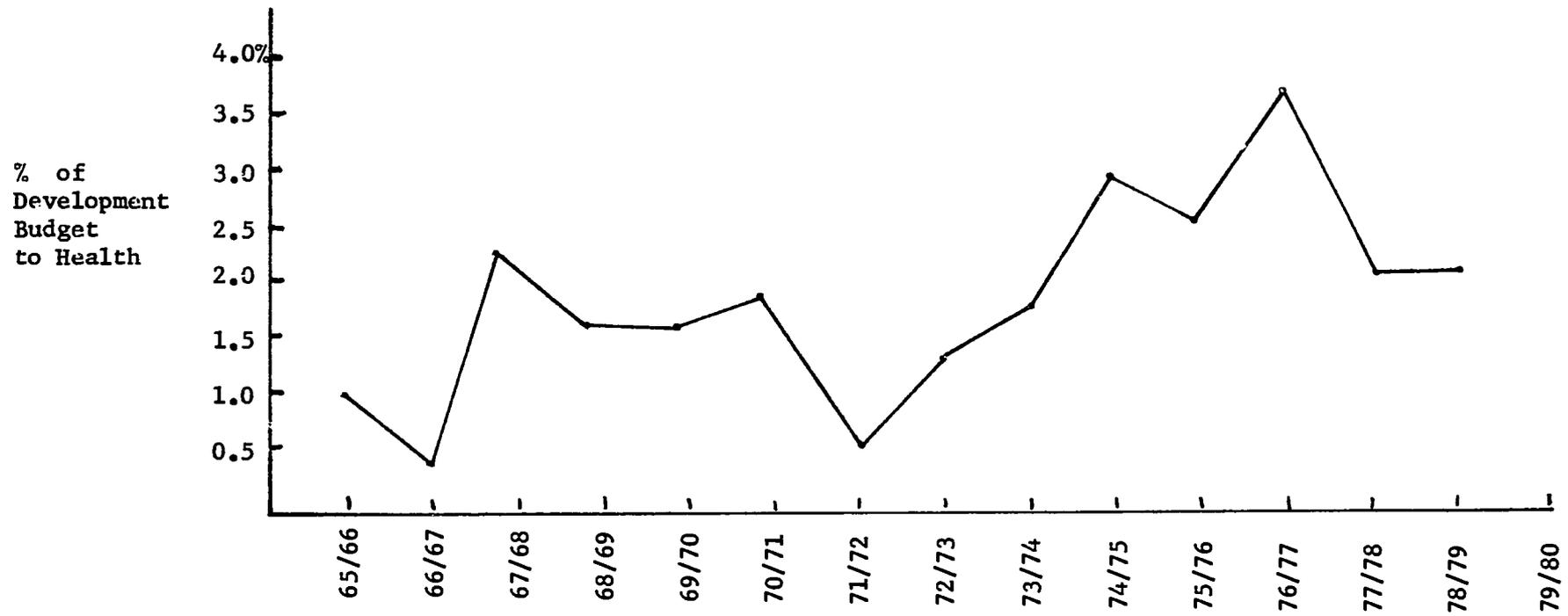
Figure 10. Percent of Total Health Budget Allocated to Hospital Services, Rural Health Centers and Dispensaries, and Preventive Services, 1970/71 - 1977/78.



* 17.6 M. Shs. from U.S.A. to MCH Program

Sources: Domestic Finance and Resource Use, World Bank 1977
Ministry of Health Budget Speeches 1976/77, 1977/78, 1978/79

Figure 11. Percentage of Health Budgets Allocated to the Regions, 1972/73 - 1978/79



Source: Domestic Finance and Resource Use, World Bank 1977
 Ministry of Health Budget Speeches 1976/77, 1977/78, 1978/79
 Economic and Operations Reports, Bank of Tanzania, 1976/77, 1977/78, 1978/79

Figure 12. Percentage of Government of Tanzania Annual Total Budget Expenditures on Health

TABLE IX

REGIONAL HEALTH EXPENDITURES

	DEVELOPMENT 1975/76		RECURRENT 1975/76		TOTAL 1975/76	DEVELOPMENT 1976/77		RECURRENT 1976/77		TOTAL 1976/77	DEVELOPMENT 1977/78		RECURRENT 1977/78		TOTAL 1977/78
	Actual Expend. 000Shs.	Shs/Cap	Actual Expend. 000Shs.	Shs/Cap	Shs/Cap	Approved	Est. Shs/Cap	Actual Expend. 000Shs.	Shs/Cap	Shs/Cap	Estimates 000Shs.	Shs/Cap	Actual Expend. 000Shs.	Shs/Cap	Shs/Cap
Iringa	1,735	2.0	6,635	13.5	15.5	1,337	1.5	7,098	14.1	15.6	1,760	1.9	10,003	20.0	21.9
Mara	2,687	3.7	12,112	9.6	13.3	1,945	2.6	16,704	12.5	15.1	3,113	4.2	13,862	10.4	14.6
Kigoma	1,298	2.4	5,507	15.3	17.7	1,885	3.5	5,401	20.1	23.6	1,267	2.3	7,433	26.6	28.9
Singida	1,682	3.3	14,374	15.4	18.7	1,557	3.0	15,855	16.7	19.7	1,300	2.5	19,231	20.2	22.7
Shinyanga	4,223	3.8	7,482	14.3	18.1	3,550	3.1	9,631	17.8	20.9	3,380	3.0	11,500	21.3	24.3
Mbeya	1,631	1.8	10,582	11.9	13.7	2,964	3.1	12,796	14.1	17.2	2,710	2.8	15,745	17.4	20.2
Mwanza	3,668	2.8	10,351	13.7	16.5	1,507	1.1	11,228	14.3	15.4	3,355	2.5	14,251	18.1	20.6
Rukwa	1,297	3.6	9,033	15.3	18.9	1,104	4.1	10,441	15.4	19.5	1,284	4.8	12,055	17.8	22.6
West Lake	1,014	1.3	11,211	10.5	11.8	2,575	3.3	15,314	13.6	16.9	2,114	2.7	17,706	15.7	18.4
Dodoma	3,391	4.0	16,643	20.1	24.1	2,090	2.4	15,333	17.6	20.0	540	0.6	19,691	22.7	23.3
Coast	2,415	4.1	6,994	12.0	16.1	1,799	3.2	7,993	14.4	17.6	2,040	3.7	12,642	22.8	26.5
Mtwara	1,383	1.6	8,155	16.9	18.5	1,578	1.9	10,448	21.3	23.2	2,705	3.3	12,871	26.3	29.6
Lindi	1,986	4.1	8,331	12.1	16.2	2,303	4.7	9,014	12.2	16.9	1,273	2.6	11,304	13.3	15.9
Morogoro	925	1.2	11,034	13.7	14.9	1,065	1.3	12,346	15.1	16.4	1,731	2.1	17,001	20.8	22.9
Tabora	1,012	1.7	8,612	17.1	18.8	1,067	1.6	10,199	19.7	21.3	2,289	3.4	12,764	24.6	28.0
Tanga	2,260	2.4	24,393	25.5	27.9	2,325	2.4	25,174	25.8	28.2	4,453	4.6	26,052	26.7	31.3
Ruvuma	1,504	3.1	11,034	12.6	15.7	2,055	4.1	11,062	13.5	17.6	2,570	5.1	13,862	16.9	22.0
Atusha	765	1.0	16,103	20.1	21.1	1,680	2.0	17,025	20.7	27.7	1,877	2.3	20,912	23.5	27.8
Kilimanjaro	1,434	1.7	13,525	15.9	17.6	1,989	2.3	15,376	17.6	19.9	1,970	2.3	13,720	15.7	18.0
Dar es Salaam	102	0.2	22,352	43.2	43.4	2,215	3.7	20,524	34.4	38.1	3,648	6.1	26,026	43.7	49.8
TANZANIA	36,432	2.4	234,465	15.7	18.1	38,590	2.6	258,979	17.1	19.7	45,379	3.0	208,642	20.3	23.3

Source: Kitabu cha Nne, Treasury, 1st July 1977 - 30th June 1978

TABLE X

REGIONAL DISTRIBUTION OF DISPENSARIES

	<u>1972</u>		<u>1974</u>		<u>1976</u>		<u>1978</u>	
	<u>Disp's</u>	<u>Pop/Disp (000's)</u>	<u>Disp's</u>	<u>Pop/Disp (000's)</u>	<u>Disp's</u>	<u>Pop/Disp (000's)</u>	<u>Disp's</u>	<u>Pop/Disp (000's)</u>
Iringa	92	8.7	102	8.4	134	6.8	161	5.7
Mara	71	8.9	80	8.6	101	7.5	109	6.6
Kigoma	61	7.1	71	7.4	77	7.6	87	7.4
Singida	65	7.5	66	7.6	77	7.7	84	7.3
Shinyanga	101	10.1	109	9.9	137	8.6	154	8.6
Mbeya	99	11.5	92	10.2	119	6.9	136	7.9
Mwanza	108	11.2	122	11.0	151	8.9	188	7.7
Rukwa *	0	--	51	7.8	56	6.6	72	7.0
West Lake	80	9.0	85	8.9	95	10.0	121	8.3
Dodoma	100	7.9	108	7.7	133	7.1	148	6.6
Coast	98	9.3	78	6.1	95	5.0	100	5.2
Mtwara	42	17.2	59	12.7	88	9.3	96	8.0
Lindi	63	7.9	74	6.4	89	5.9	98	5.4
Morogoro	109	6.9	120	6.5	158	5.2	181	5.2
Tabora	67	9.3	73	7.9	87	9.0	111	7.4
Tanga	117	6.9	118	7.8	171	6.9	214	4.9
Ruvuma	62	7.2	64	7.4	77	6.9	94	6.0
Arusha	71	10.0	87	8.8	109	7.3	142	6.5
Kilimanjaro	85	9.0	105	7.8	110	8.0	145	6.2
Dar es Salaam *	0	--	6	86.1	34	16.9	106	8.0
TANZANIA	1,491	9.1	1,670	8.7	2,098	7.5	2,547	6.7

Source: Planning Unit, Ministry of Health (1972-76) and Health Inventory 1978

* In 1972, Rukwa and Dar es Salaam were not separate regions. Rukwa was part of Tabora and Mbeya Regions and Dar es Salaam was included in Coast Region.

TABLE XI

REGIONAL DISTRIBUTION OF HEALTH CENTERS

	<u>1972</u>		<u>1974</u>		<u>1976</u>		<u>1978</u>	
	<u>RHC's</u>	<u>Pop/RHC (000's)</u>	<u>RHC's</u>	<u>Pop/RHC (000's)</u>	<u>RHC's</u>	<u>Pop/RHC (000's)</u>	<u>RHC's</u>	<u>Pop/RHC (000's)</u>
Iringa	3	267	2	284	7	130	11	83
Mara	5	126	5	138	8	95	10	72
Kigoma	3	168	4	131	5	117	7	93
Singida	4	122	4	126	6	99	6	102
Shinyanga	9	113	10	108	10	117	14	95
Mbeya	5	228	9	104	9	91	12	90
Mwanza	13	93	16	84	18	74	19	76
Rukwa *	0	--	2	198	4	93	6	75
West Lake	4	123	7	108	7	136	8	126
Dodoma	9	88	11	75	12	79	14	69
Coast	7	131	2	237	5	95	5	103
Mtwara	6	120	6	125	7	117	7	110
Lindi	4	125	4	118	6	87	7	75
Morogoro	6	125	7	111	9	92	10	94
Tabora	5	124	4	144	6	130	8	102
Tanga	9	90	12	153	12	99	12	87
Ruvuma	3	149	4	118	8	67	9	63
Arusha	4	178	9	96	10	80	11	84
Kilimanjaro	6	127	6	136	7	125	11	82
Dar es Salaam*	0	--	5	103	5	115	8	106
TANZANIA	105	129	129	112	161	99	184	92

Source: Planning Unit, Ministry of Health (1972-76), Health Inventory, 1978

* (See footnote Table X)

TABLE XII

REGIONAL DISTRIBUTION OF HOSPITAL FACILITIES

	<u>1974</u>			<u>1976</u>			<u>1978</u>		
	<u>No. of Hospitals</u>	<u>No. of Beds</u>	<u>Pop/Bed</u>	<u>No. of Hospitals</u>	<u>No. of Beds</u>	<u>Pop/Bed</u>	<u>No. of Hospitals</u>	<u>No. of Beds</u>	<u>Pop/Bed</u>
Iringa	9	1,101	774	9	1,092	836	-	1,383	667
Mara	4	484	1,423	4	582	1,300	4	658	1,099
Kigoma	5	499	1,050	5	620	946	5	540	1,202
Singida	5	593	849	4	593	1,005	5	728	843
Shinyanga	5	654	1,654	6	439	2,672	6	923	1,434
Mbeya	11	1,047	896	12	1,333	616	11	1,320	818
Mwanza	6	1,323	1,011	7	1,267	1,057	9	1,490	969
Rukwa	3	222	1,784	3	225	1,648	3	290	1,558
West Lake	10	1,391	580	9	1,555	614	11	1,636	617
Dodoma	6	828	1,000	4	858	1,101	7	1,795	542
Coast	6	398	500	5	400	1,161	6	447	1,156
Mtwara	7	883	850	7	1,122	727	6	1,056	731
Lindi	6	599	789	7	707	739	-	717	736
Morogoro	9	1,174	626	9	1,300	636	10	1,440	652
Tabora	5	847	680	5	853	917	7	1,135	721
Tanga	11	1,446	638	12	1,950	609	11	1,549	670
Ruvuma	7	1,036	457	7	1,215	440	7	1,214	465
Arusha	8	1,019	754	9	1,019	786	9	960	957
Kilimanjaro	11	1,154	707	12	1,394	629	13		727
Dar es Salaam	5	1,287	401	5	1,428	1,101	5	959	888
TANZANIA	139	17,985	804	141	19,960	794	151	21,482	791

Source: Planning Unit, Ministry of Health (1974, 1976), Health Inventory, 1978

Table XIII shows the average distance of households to the nearest dispensary and hospital in 1976. Utilization of facilities is illustrated in Table XIV by the average number of attendances per person per year in hospitals, health centers and dispensaries; the average percentage daily occupancy of hospital and health center beds; and the percentage of births which occurred in health facilities. These are preliminary data from the 1978 Health Inventory (See Annex 1). Attendances/population ranged from 2.9 per year in Mbeya to 6.6 per year in Morogoro region. Percent daily bed occupancy was lowest in Mara (60%) and Iringa (70%) and highest in Dar es Salaam (126%) and Kigoma (101%). The proportion of births in a health facility ranged from 29% in Kigoma to 81% in Dar es Salaam.

The numbers of health personnel in Tanzania from 1972-1978 and estimated for 1980 are presented by type of worker in Table XV. Table XVI illustrates the proportion of total primary health workers in each category during the same period. The relative proportion of physicians and nurses to the rural, primary-health care-oriented workers has declined considerably. Population/primary care staff in 1978 is presented by region in Table XVII. Dar es Salaam, Arusha and Kilimanjaro regions had the lowest ratios (less than 1500:1), whereas, in Coast and Shinyanga regions, there were over 3,600 persons/staff.

Though there has been an effort to emphasize primary health care in Tanzania through the establishment of rural health centers and dispensaries and the training of rural health auxiliaries, a Ministry of Health official recently noted a tendency for hospitals to consume a large share of available health resources to provide mainly curative services. Also due to problems of referral and transport, they mainly treat persons in their immediate districts.¹⁷

Assessing progress in the building of rural dispensaries, a 1976 donor-Ministry of Health evaluation noted that delays in construction were common.¹⁸ These delays were attributed to shortages of building materials, transportation problems, stoppage of funds and non-adherence to building plans resulting in inefficient or inadequate buildings. Once facilities were completed there was often insufficient supply of equipment due to exhaustion of funds during construction.

Despite government efforts to distribute health care staff in areas of greatest needs, the Ministry has noted a tendency for the urban centers to attract health personnel at the expense of more remote regions. Health workers undergo frequent job transfers, creating problems of continuity of experience and services delivery.

Training programs have not been evaluated systematically, and continuing education for health workers is generally not available, particularly in remote rural areas.¹⁹ Quality of training suffers as teachers in most schools have had no orientation to teaching methodology. The Ministry of Health has recently established an Education Unit which will be responsible for improving deficiencies in health worker training programs.

TABLE XIII

AVERAGE DISTANCE OF HOUSEHOLDS TO HEALTH FACILITIES

	<u>Dispensary</u>		<u>Hospital</u>	
	<u>Urban</u>	<u>Rural</u>	<u>Urban</u>	<u>Rural</u>
Iringa	1.45 kms	3.06 kms	1.68 kms	23.9 kms
Mara	.95	4.66	2.14	7.5
Kigoma	.92	3.73	3.85	28.6
Singida	11.50	3.12	11.50	28.3
Shinyanga	3.72	5.86	9.65	27.1
Mbeya	2.25	2.97	3.02	14.7
Mwanza	3.13	4.38	12.49	16.6
Rukwa	1.65	4.06	1.65	29.7
West Lake	1.32	3.26	1.36	13.3
Dodoma	.89	6.95	7.17	32.21
Coast	-	2.37	-	37.91
Mtwara	6.59	8.21	6.11	26.7
Lindi	1.39	4.59	2.74	19.3
Morogoro	.96	6.42	3.10	17.13
Tabora	2.04	3.09	3.27	17.7
Tanga	1.66	3.39	4.19	21.68
Ruvuma	1.76	7.67	1.76	45.7
Arusha	.31	4.30	3.30	31.91
Kilimanjaro	2.75	4.61	4.26	18.43
Dar es Salaam	2.59	--	7.66	--

Source: Household Budget Survey, 1976, Central Statistical Bureau

TABLE XIV

HEALTH FACILITY UTILIZATION

	<u>Average Yearly Attendance/ Population</u>	<u>% Daily Bed Occupancy</u>	<u>% Births in Health Facilities</u>
Iringa	3.8 visits year	72% Occupancy	36% births
Mara	3.7	60	30
Kigoma	3.0	51	29
Singida	3.9	83	35
Shinyanga	3.6	76	47
Mbeya	2.9	79	35
Mwanza	3.7	91	40
Rukwa	3.9	66	60
West Lake ^{1/}	4.9	75	27
Dodoma	3.6	79	30
Coast	4.4	89	51
Mtwara	5.1	73	44
Lindi	6.3	75	57
Morogoro	6.6	72	44
Tabora	4.5	83	49
Tanga	5.5	75	46
Ruvuma	6.2	78	75
Arusha	3.8	91	39
Kilimanjaro	4.9	85	60
Dar es Salaam	6.1	126	81

^{1/} Bukoba District not included

Source: Health Inventory, 1978, Ministry of Health, August 1979

TABLE XV

HEALTH PERSONNEL

	<u>1972</u>	<u>1974</u>	<u>1976</u>	<u>1978</u>	1980 (Targets)	<u>Training Facilities</u>
Medical Doctors (Total)*	494	603	683*	772	830	Dar es Salaam University: 64/year/35/year on Cuba and 15/year elsewhere
% Tanzanians	39.5%	53.7	52.1	55.0	84.0	
Assistant Medical Officers	140	160	193	250	300	KCMC Upgrades 35 MA's per year
Medical Assistants	335	485	770	1,176	1,200	6 Schools with 250/year
Rural Medical Aides	578	506	1,049	1,736	2,800	15 Training Centers - 450/year
Nurse/Midwives "A"	877	1,000	1,100	1,300	540	KCMC, Bugando, Muhimbili - 120/year
Nurse/Midwives "B"	2,382	3,000	3,720	4,900	5,025	21 Training Schools (Vol. Ag.) 500/year
Health Auxiliaries	290	370	455	545	800	5 Training Centers - 150/year
MCH Aides/Village Midwives	700	850	960	1,900	2,700	19 Training Centers - 560/year

* 25 Cuban and 60 Chinese doctors are excluded from each year's figure

Source: Planning Unit, Ministry of Health

TABLE XVI

DISTRIBUTION OF HEALTH MANPOWER BY LEVEL OF TRAINING

	1972	1974	1976	1978	1980 (est)
Health Officers/ Assistants	6.4%	7.2%	6.6%	5.8%	7.6%
MCH Aides	12.2	12.5	10.4	15.2	17.7
Nurse-Midwives Grade B	41.5	40.3	40.2	39.2	33.0
Nurse-Midwives Grade A	15.3	13.7	11.9	10.4	10.1
Rural Medical Aides	10.1	10.4	11.3	13.9	18.4
Medical Assistants	5.8	7.1	8.3	9.4	7.9
Medical Officers	<u>8.6</u>	<u>8.8</u>	<u>7.4</u>	<u>6.1</u>	<u>5.3</u>
TOTAL	100%	100%	100%	100%	100%

Source: Mkumbwa, Z.M. Evaluation of Health Manpower Development and Training, 1979

TABLE XVII

POPULATION PER PRIMARY HEALTH CARE STAFF*

Iringa	1835 population/1 staff
Mara	2395
Kigoma	2412
Singida	2067
Shinyanga	3646
Mbeya	1696
Mwanza	1886
Rukwa	1844
West Lake	2146**:
Dodoma	1936
Coast	3615
Mtwara	2052
Lindi	2137
Morogoro	1692
Tabora	1925
Tanga	2377
Ruvuma	1576
Arusha	1495
Kilimanjaro	1051
Dar es Salaam	791

* Medical Officers, Assistant Medical Officers, Medical Assistants, Rural Medical Aides, Nurse-Midwives, MCH Aides, Village Midwives, Health Officers

** Bukoba District not included

Source: Health Inventory, 1978; Ministry of Health, August 1979

For the existing hierarchy of health care delivery facilities to function efficiently, it is assumed that persons will be treated at the lowest level capable of managing their problems adequately. The referral system often fails due to lack of confidence in the less sophisticated facilities and personnel, long distances, poor communication, bad weather and poor transportation.²⁰

IV. TANZANIA'S HEALTH PROGRAMS

A. Preventive Services

The Preventive Services Division of the Ministry of Health includes a diversity of program areas (See Fig. 8). A number of these areas are described and assessed in the following sections:

Maternal-Child Health

In 1951 Maternal and Child Health clinics, focusing mainly on nutrition, were established in four Tanzanian provinces. In the 1960's "minibus" mobile MCH clinics provided health education, immunization and some primary health care services. These clinics had no central coordination and were unevenly distributed throughout the country. A National MCH Committee was set up by the Ministries of Health and Social Welfare in 1971. Recommendations were made for the provision of comprehensive curative and preventive services at all clinics.

A pilot project, offering comprehensive Maternal and Child Health services in three districts, Bagamoyo, Moshi, and Dodoma, was begun in 1973 under the Young Child Protection Program. A baseline survey carried out in these districts in 1974 showed that of 2100 reproductive age women interviewed, 99% had been pregnant in the past five years, 80% in the past two years, and 20% had never attended an antenatal clinic. Of recent pregnancies, only 43% were attended by a trained midwife or physician, and 58% were delivered outside a health facility. Seventy-eight percent of the 750 women who responded to questions regarding child spacing said they did not know methods of preventing pregnancy. Forty-one percent of these women reported that they did not take their children to MCH clinics; forty-seven percent said they did not know why children were weighed at the clinic; thirty-one percent did not know why immunizations were given. Levels of health knowledge with regard to recognition of diseases and methods of prevention were low for many common health problems.²¹

In 1974 the current MCH program was begun. Integration of Maternal and Child Health services whereby immunizations, nutrition evaluation and education, antenatal and postnatal care, malaria suppression, family planning services and the treatment of minor health problems can be discharged in one visit, has been attempted. All mothers and children coming to a health center for any reason are advised to pass through MCH clinics before they are seen by the medical assistant or receive medicine.

MCH services are organized under the Preventive Services Division of the Ministry of Health. The MCH Unit defines policies, conducts MCH training, and develops and tests methods of delivering services effectively. Guidelines for this unit are developed by an MCH coordinating committee. There are Zonal committees in Mwanza, Moshi, Mtwara, Mbeya, and Dar es Salaam. The responsibilities of the MCH zonal committees are to oversee the general MCH work

in the area, to advise regional and district MCH coordinators and conduct seminars for them. At the regional and district levels, MCH coordinators work under their respective medical officers. These coordinators are expected to ensure adequate functioning of MCH work throughout their areas, to assist in field training of MCH Aide students, to maintain adequate supplies and equipment, to conduct MCH seminars, compile and use statistical reports, and to send reports to the Ministry.

Goals in MCH services are to reach 90% of eligible women and to immunize 90% of persons in vulnerable age groups against measles, polio, diphtheria, pertussis, tetanus, tuberculosis and smallpox by 1980. By 1979, 70-80% of child-bearing women in Tanzania were thought to be attending MCH clinics and the Expanded Immunization Program had registered a coverage of about 60%. Reported attendances at MCH clinics have increased yearly.²²

Year	Attendances and Reattendances	
	Pregnant Women	Children
1975	1,996,737	
1976	2,088,961	2,630,031
1977	2,388,169	5,036,783
1978	3,193,184	6,800,302

Tanzania is still 1,310 short of reaching the 1980 target of 2,500 MCH Aides. 1978 regional data on the percent of health facilities with daily integrated MCH programs are found in Table XVIII. In Coast, Mtwara and Iringa Regions, 50% or more of health facilities held daily-integrated clinics, while in Rukwa and Kigoma, the proportion was less than 20%.

At a recent Community Medicine Conference in Moshi, problems affecting the expansion and quality of MCH services were discussed.

- 1) MCH Aides have not been selected from rural inhabitants of villages in which they will work. Many have left the rural areas to which they have been assigned.
- 2) Equipment is scarce. Fewer than 50% of MCH clinics have working refrigerators, vaccination kits, maternity beds or child scales.
- 3) Village leaders have not been involved in MCH planning. Because of this, they are often not as useful as they could be in encouraging villagers to adopt suggestions.
- 4) Quality of training of MCH Aides has not been emphasized or evaluated.
- 5) The funding of the MCH program from a donor agency has meant that program changes or procurement of equipment have to pass through many administrative channels, locally and abroad.
- 6) Vehicles designated for MCH workers, have in some instances been used for other purposes, leaving coordinators unable to supervise facilities and carry out field work.

As mentioned above, family planning is an integral part of MCH services. The following section reviews the history and present state of family planning services in Tanzania.

TABLE XVIII

PERCENTAGE OF HEALTH FACILITIES WITH DAILY MCH CLINICS

Iringa	50%
Mara	23
Kigoma	18
Singida	37
Shinyanga	43
Mbeya	39
Mwanza	22
Rukwa	15
West Lake	46
Dodoma	46
Coast	55
Mtwara	54
Lindi	25
Morogoro	22
Tabora	33
Tanga	38
Ruvuma	24
Arusha	35
Kilimanjaro	30
Dar es Salaam	21

Source: Health Inventory, 1978; Ministry of Health, August 1979

Family Planning

Currently in Tanzania, the rate of population growth (estimated 3.3% per year) exceeds the annual rate of growth in the agricultural sector (3.2% per year). In many areas of the country, increasing population exerts pressure on land, soil fertility is depleted, and erosion and desertification ensue.

Child spacing remains a controversial topic in Tanzania where children are valued as sources of labor, wealth, and security for old age. The history of child-spacing services in Tanzania goes back to 1959 when the Family Planning Association was established by a group of medical and paramedical workers who offered advice on contraceptive usage to Dar es Salaam residents. In 1967 the association began operating as a national voluntary organization. By 1972 it was legally born and became a registered member of the International Planned Parenthood Federation (IPPF). In 1973 TANU, the national political party, issued a directive endorsing the Family Planning Association's activities in Tanzania. Child spacing was felt to be "of utmost importance to reduce human misery, and disease and accelerate socio-economic development in Tanzania."³⁹ In 1974 the Minister of Health encouraged RMO's to offer family planning services in all health facilities.

In 1972 the National Family Planning Association became UMATI (Swahili for "a crowd"). UMATI is the central Tanzanian agency providing child spacing services. Its headquarters is in Dar es Salaam where it is organized under four departments. The Executive Department oversees the functioning of the organization; the Medical Department supervises medical, clinical and field work development and conducts research; the Training Department trains doctors, nurses, midwives and layworkers and prepares appropriate child spacing curricula for health personnel training programs; and the Information and Education Department disseminates information through mass media, public relations and printed materials.⁴⁰

Regional UMATI officers organize and educate villagers who may, for the cost of 1 TSh, become UMATI members and receive family planning materials. In 1978 there were approximately 100,000 members in more than 500 UMATI branches in 67 Tanzanian districts. This is a considerable increase from 1974 when UMATI membership numbered 50,000 persons in only 42 branches.⁴¹

Figures of acceptors of different contraceptives acquired from UMATI show that the success of family planning programs in Tanzania has been minimal, especially in rural areas. The fertility ratio of the population remains high, 6.2 live births per woman of child bearing age, nationally. All types of contraceptives are donated to UMATI by the IPPF, imported duty free, and supplied to the dispensaries and health centers by regional and district medical officers. USAID also imports and distributes contraceptives, mainly pills and condoms. 95% of contraceptive demand in Tanzania is for the pill.⁴² At the current rate of usage, present contraceptive stocks should last several years.

Family planning training centers are located in the three main consulting hospitals. Regional and district UMATI staff teach family planning in MCH Aide training schools. Six four-week courses per year are held for nurse-midwives and MCH aides, and six two-week courses are held for village midwives. Physicians receive in-service family planning training, and medical students are introduced to family planning in their curriculum.

Sex education training is given to youth leaders and religious leaders in Dar es Salaam by the Christian Council of Tanzania. It is intended to expand this program to teaching religious leaders and youth in the regions. At present, infertility seminars are held for clinicians, and in the future UMATI plans to extend these seminars to include nurse educators, MCH Coordinators, DMO's and RMO's.

The idea of family planning is still met with disapproval by many of the country's leaders and citizens. National laws dating back to the last century prohibiting abortions and sterilization are still enforced. UMATI staff are planning to engage in legal research into precedents for changing these laws. More acceptable traditional methods of family planning will be investigated. Other research plans include examination of the relationship between unwanted adolescent pregnancy and health knowledge, and causes of infertility.⁴³

The United Nations Fund for Population Activities has recently established an office in Dar es Salaam. UNFPA has defined its primary role in Tanzania as one of increasing the general level of awareness of policy makers and planners of the implications of demographic trends for development planning and the effects of development policies on demographic processes.

The UNFPA assistance strategy stresses improving data collection and analysis activities, strengthening statistical and demographic skills in Government Ministries and the University, and improving child spacing knowledge and skills of MCH aides who now provide the majority of family planning services to the rural population within the context of the MCH Unit.⁴⁴

Environmental Health (Water, Sanitation, Housing)

The main objectives of environmental health programs are to encourage people through health education to build hygienic and permanent dwellings, to build appropriate and durable latrines and to use them, as well as to ensure the availability of safe water.²³

The Government of Tanzania's rural water policy has been directed toward:

- 1) providing a source of clean and dependable water within reasonable distance (less than 4 km) of each village by 1981; and
- 2) providing a piped water supply to the rural areas so that all people will have ease of access (less than 400 meters) to a public water point by 1991.

1973/74 figures for the proportions of regional populations served by water supply systems and 1976 Household Budget Survey Data (See Annex 2) on the type of household water sources are found in Table XIX. The proportion of population served by water supply systems varied from 8% in Iringa to 38% in Dodoma. In 1976, 21.6% of Tanzanian households reported tap water as the source of supply; 56.2% reported lakes, rivers, streams, or rainwater. Eighty-two percent of Dar es Salaam households had tap water sources, compared to .1% in Singida.

Efforts have been made to provide facilities for excreta disposal in rural villages and urban areas. The Ministry of Lands, Housing and Urban Development and the World Bank are planning sewage disposal schemes in five urban centers which will provide water-borne sewerage in commercial and upper socio-economic areas and pit latrines in poorer areas.²⁴ The Ministry of Health is in the process of establishing a Rural Sanitation Unit. Pilot schemes testing different latrine models in rural villages have begun.

Housing conditions for many Tanzanians are crowded and unsanitary. In 1976, 33% of Tanzanians were living in households with seven or more members, and 29% of these households had only one or two rooms.²⁵ Houses in rural areas are commonly built of mud or clay and poles with mud floors and thatched roofs. Wealthier families build houses of bricks with corrugated iron roofs and concrete floors. Regional data on types of excreta disposal facilities, costs of building materials, and types of foundations, walls and roofs of houses will be available when the 1976 Household Budget Survey is analysed.

1980 MOH targets for environmental health personnel are 350 health officers and 800 health assistants. To date, only 260 health officers and 500 health assistants are registered. Lack of program preparation, training facilities, personnel, transportation and funds are cited as factors inhibiting the implementation of environmental health programs.²⁶

TABLE XIX

REGIONAL WATER SUPPLY

	Proportion of Population Served by Water Supply, 1973/74 <u>1/</u>	Proportion of Households Reporting Water Source, 1976 <u>2/</u>	
	<u>% Households</u>	<u>River, Lake Stream & Rain</u>	<u>Tap</u>
Iringa	8%	59.1%	8.9%
Mara	10	29.7	25.2
Kigoma	20	61.6	14.5
Singida	17	13.1	.1
Shinyanga	.6	54.6	4.1
Mbeya	10	44.3	26.3
Mwanza	10	26.0	5.0
Rukwa*	-	54.9	6.6
West Lake	25	52.2	7.5
Dodoma	38	14.7	20.1
Coast	12	22.0	23.2
Mtwara	15	30.9	19.7
Lindi	18	41.9	19.4
Morogoro	15	45.0	26.5
Tabora	35	6.7	12.1
Tanga	17	43.2	27.7
Ruvuma	19	7.3	11.8
Arusha	28	17.9	68.7
Kilimanjaro	30	60.1	24.6
Dar es Salaam	12	10.3	82.9

Sources: 1/ IBRD. Tanzania: Fiscal Aspects of Decentralization, 1975
2/ Household Budget Survey, 1976; Central Statistical Bureau

*Rukwa was not yet a regional entity, but was included in Tabora and Mbeya Regions

Health Education

Two recent mass health education campaigns, Mtu ni Afya (Man is Health) in 1973 and Chakula ni Uhai (Food is Life) in 1975, were implemented by the Institute of Adult Education to promote public awareness of the relationships between sanitation, nutrition and disease. Both campaigns had radio-listening groups as their basis of dissemination. The aims of Mtu ni Afya were:

- 1) to increase people's awareness of actions they could take to achieve a healthier lifestyle;
- 2) to provide clear and simple information about symptoms of specific diseases (malaria, water-borne diseases, dysentery, hookworm, schistosomiasis, tuberculosis) and methods of disease prevention; and
- 3) to encourage those who had participated in the national literacy campaign to maintain their skills by reading campaign materials designed especially for the newly literate.

Approximately 2,000,000 persons between the ages of 16-40 years participated. 93% of the participants were farmers and 49% were women. Radio-listening groups averaged 18 members. These groups listened twice a week to broadcasts of a total of 12 radio programs and discussed various health issues using printed study guide materials. Activities resulting from the campaign included mosquito eradication programs, construction of latrines, digging of wells, and provision of individual drinking vessels in public places.²⁷

The Chakula ni Uhai campaign emphasized:

- 1) the education of rural villagers on methods of household farming and preparation of nutritional food;
- 2) the education of workers in urban communities on matters of food availability and nutritional diets; and
- 3) the teaching of basic information about the causes, cures and prevention of disease caused by malnutrition.

Goals of the campaign were the intensification of agricultural production, the provision of meals in industries, public institutions, schools, day-care centers, and the expansion of fishing activities. Broader objectives were to decrease mortality caused by malnutrition, to decrease reliance on food imports, and to increase food productivity.²⁸

The overall purposes of health education are directed toward improving individuals' health and increasing self-reliance in maintaining it. Rather than promoting health education as the first step in self-reliance, government health policies instead have, for the most part, pursued the training of health workers for practice of simplified medicine in rural areas. The brief training being given to local health workers strongly suggests that many of the functions they are performing could be performed by households for themselves if proper educational activities

were devised. Self-care offers the prospect of continuous care, improved compliance with therapy, and reduction of health costs. Institutionalizing responsibility for health creates dependence on curative services offered by the health care system.²⁹

Village Health Services

At the village level most health services are delivered by traditional healers and traditional birth attendants. The Government of Tanzania has established a Traditional Medicine Research Unit at the University of Dar es Salaam to explore ways of integrating traditional and modern medicine. The current five-year development plan expresses the Government's intention to extend the modern services delivery system to the villages through the training of Village Health Workers and the establishment of Village Health Posts.

Although the demands of other program development have kept the Ministry of Health from starting the national Village Health Worker training program, many missionary hospitals and districts have begun their own programs, and there are around 2,000 Village Health Workers in Tanzania's 8,200 villages. These VHWs have come from a variety of separate training programs. The national program is scheduled to begin in 1980.

Control of Communicable Diseases

Health workers are required by law to report cases of TB, leprosy, typhoid fever, dysentery, cholera, ankylostomiasis, schistosomiasis, onchocerciasis, trypanosomiasis, malaria, filariasis, meningitis and smallpox to the Communicable Diseases Unit in the Ministry of Health. In practice, reporting is often neglected. On-going disease control programs coordinated by the unit are:

- TB and leprosy (detection, treatment, education, prevention);
- Malaria Control (chemosuppression, spraying, larval control, research);
- Trypanosomiasis (Tse-tse control);
- Schistosomiasis (molluscicide application and chemotherapy); and
- Onchocerciasis (entomological and epidemiological surveying).

Cholera Control

During the 1977-1979 cholera epidemic, health personnel throughout the country were mobilized to investigate the sources of infection and to control the spread of the disease. Although cholera was widespread throughout the country, the causes of transmission were found to vary from area to area. In the Rufiji Delta, the first cases were associated with waste disposal near a drinking water source. Thereafter disease

spread from village to village through the handling of victims and food in Moslem funeral ceremonies.³⁰

The focus of transmission in Dar es Salaam was Muhimbili Hospital. Patients in infectious wards, particularly children, and visitors to wards contracted cholera. Other factors likely to have caused spread were eating with hands, improper latrines and travelling to and from infected areas up country.³¹

Health authorities in Iringa Region attributed cholera spread to poor environmental sanitation, mobility of the population, and lack of knowledge concerning the spread and prevention of communicable diseases.³²

In Bagamoyo town, as in Dar es Salaam, many cases could be traced to the District Hospital. Many days elapsed between suspicion of the arrival of cholera in the town, transport of cultures to Dar es Salaam, laboratory confirmation and the implementation of control measures.³³

In controlling the cholera epidemic, teams of health workers directed efforts to treating the diseased and preventing spread. Oral and intravenous replacement liquids were administered. Tetracycline courses were given to cases and contacts, although vibrio strains developed which proved resistant to available antibiotics. Schools, homes, dispensaries and other public buildings were transformed into cholera wards. Sanitation and health education classes were given, and preventive measures such as the building of latrines, restriction of travel, and restriction of participation in burial ceremonies were carried out. A total of 12.1 million TShillings was spent by the Government of Tanzania in response to the cholera epidemic between October 1977 and May 1979.³⁴

B. Nutrition

As previously discussed, malnutrition affects millions of Tanzanians, particularly children. According to the Ministry of Agriculture, the amount of consumables produced in the country has improved substantially since 1972. Nationwide, both the total available calories and grams of protein per capita per day have increased. In nine regions, however, a decrease in available calories per capita per day was noted between 1974/75 and 1976/77, (Table XX), and in seven regions there was a decline in grams of protein per capita per day (Table XXI). Regions where decreases in both calories and protein availability were noted were Coast, Mtwara, Ruvuma, Iringa, Singida and Mara.

In 1962 the Tanzanian National Freedom from Hunger Committee was established. This committee rendered support to a number of nutrition schemes with financial aid from other Freedom from Hunger Committees and voluntary organizations.

The Tanzanian Nutrition Committee was an offspring of the TNFHC and was given an advisory role to the technical ministries concerned (Health and Agriculture). Such issues as agricultural production, social

TABLE XX

REGIONAL FOOD BALANCE SHEETS - ENERGY (KCAL/CAPITA/DAY) 1974/75-1976/77

	1974/75			1975/76			1976/77		
	Veg.	Animal	Total	Veg.	Animal	Total	Veg.	Animal	Total
Dodoma	1,743	51	1,794	2,118	56	2,174	1,277	56	1,333
Mara	2,525	165	2,690	2,332	148	2,480	2,280	147	2,427
Kigoma	4,059	248	4,307	2,856	194	3,049	4,508	189	4,698
Singida	1,541	156	1,697	1,386	171	1,557	1,468	163	1,631
Shinyanga	1,535	152	1,687	2,110	135	2,245	2,736	131	2,867
Mbeya	1,911	87	1,998	2,076	75	2,150	3,026	95	3,120
Mwanza	2,504	122	2,626	2,875	141	3,016	2,566	140	2,706
Rukwa	2,613	197	2,810	2,475	147	2,623	5,394	205	5,599
West Lake	2,135	41	2,176	1,532	46	1,578	2,655	48	2,703
Dodoma	1,357	136	1,493	1,452	133	1,585	1,340	128	1,468
Coast	1,902	106	2,008	750	72	822	785	82	867
Mtwara	2,327	8	2,335	3,154	9	3,163	1,877	8	1,885
Lindi	1,631	36	1,667	1,852	62	1,914	3,107	60	3,167
Morogoro*	1,982	29	2,011	2,570	21	2,591	2,145	21	2,166
Tabora	3,341	142	3,483	2,472	143	2,615	3,463	140	3,603
Tanga	3,193	49	3,242	2,994	51	3,045	2,948	49	2,997
Ruvuma	4,747	167	4,914	4,912	163	5,075	4,466	159	4,625
Arusha	2,218	274	2,491	2,018	248	2,266	3,533	285	3,818
Kilimanjaro	2,055	42	2,097	1,698	91	1,789	2,184	82	2,286
Dar es Salaam	1,902	106	2,008	750	72	822	785	82	867
TANZANIA			2,638			3,084			3,030

*sugar not included in Morogoro

Source: Ministry of Agriculture estimates. Detailed data available at Tanzania Food and Nutrition Center.

TABLE XXI REGIONAL FOOD BALANCE SHEETS - PROTEIN (GRAM/CAPITA/DAY) 1974/75 - 1967/77

	<u>1974/75</u>			<u>1975/76</u>			<u>1976/77</u>		
	<u>Veg.</u>	<u>Animal</u>	<u>Total</u>	<u>Veg.</u>	<u>Animal</u>	<u>Total</u>	<u>Veg.</u>	<u>Animal</u>	<u>Total</u>
Iringa	39.76	4.01	43.8	49.43	4.27	53.70	31.86	4.41	36.3
Mara	28.80	15.12	43.92	28.00	12.96	40.96	27.66	12.80	40.5
Kigoma	64.07	31.42	95.49	75.83	24.23	100.10	92.95	23.64	116.6
Singida	41.34	9.26	50.60	39.44	13.05	52.49	38.01	12.20	50.2
Shinyanga	41.08	11.77	52.85	56.66	11.05	67.71	70.81	10.70	81.5
Mbeya	48.90	7.81	56.71	47.70	6.00	53.70	76.81	7.63	84.4
Mwanza	35.93	11.31	47.24	44.40	13.16	57.60	43.74	13.01	50.1
Rukwa	82.44	25.41	107.80	82.50	18.99	101.49	168.47	26.15	194.62
West Lake	36.74	4.17	40.90	28.60	4.50	33.10	49.43	4.65	54.01
Dodoma	55.29	10.46	55.56	41.01	10.16	51.17	36.18	36.32	72.50
Coast	39.78	9.12	48.9	13.25	6.31	10.56	17.09	7.10	24.14
Mtwara	57.12	0.82	57.9	66.88	0.95	69.8	45.06	0.90	46.0
Lindi	32.72	4.42	37.1	42.96	7.87	50.8	69.32	7.54	76.9
Morogoro	46.26	2.16	48.4	60.19	1.58	61.77	56.35	1.56	57.9
Tabora	68.57	11.25	79.82	52.60	10.86	63.46	90.46	10.65	101.1
Tanga	64.06	4.28	68.3	61.55	4.16	65.71	64.94	4.29	69.2
Ruvuma	110.17	21.28	132.0	122.75	20.72	143.5	103.16	20.28	123.4
Arusha	94.10	20.24	114.34	85.62	16.76	102.38	128.55	20.44	149.0
Kilimanjaro	18.23	5.69	23.92	19.18	7.08	26.26	27.80	6.50	34.3
Dar es Salaam	39.78	9.12	48.9	13.25	6.31	19.56	17.09	7.05	24.14
TANZANIA			63.0			64.5			72.4

Source: Ministry of Agriculture estimates. Detailed data available at Tanzania Food and Nutrition Center.

and economic policy, research and training in nutrition were addressed. Progress of the committee was apparently hindered by lack of coordination between representatives of the Ministry of Health and the Ministry of Agriculture.³⁵

In 1968 a human nutrition project plan was formulated by the Human Nutrition Unit in the Ministry of Health and was submitted to the Ministry of Development and Planning. At the same time the Ministry of Agriculture began a nutrition research project in Ilonga studying production, storage and conservation of indigenous food and development of high protein weaning foods. An "under-fives" clinic team was also organized.

The Government of Sweden had shown an interest in establishing a national nutrition institution in Tanzania as early as 1967, and with its assistance the Tanzania Food and Nutrition Center (TFNC) was founded in 1974.³⁶

TFNC is a parastatal organization, which works closely with the Ministry of Health. Its professional staff, numbering about 30, covers areas of food science and technology, nutrition planning, food statistics, chemistry and engineering, agricultural economics, food processing and marketing, and medical and agricultural nutrition. Staff also include two nutrition teachers, a home economist, nutrition nurse, sociologist, editor, photographer and an artist.

Activities of TFNC are cited as nutrition policy-making and planning, project appraisal and evaluation, development and production of weaning foods, food storage, the setting of food standards, food and nutrition surveillance, nutrition education, research and training.

The Center presents a joint bi-weekly program with the Ministry of Agriculture on Radio Tanzania. It publishes a quarterly food and nutrition journal (Lishe), a food preservation manual, weaning manual, and health education texts. The weaning, storage and education publications have been distributed to all districts, to DMO's and Education Officers, and are widely used.

Two Nutritional Planning courses, covering four regions, have been given to agriculture and planning officers. Nutrition education seminars are also offered to home economics teachers. Because of limited resources, these educational programs have been aimed at district leaders and teachers rather than villagers. Food storage, weaning foods, and salt-iodization seminars have, however, been directed towards villagers as well as extension workers and politicians.

In 1978 and 1979, Nutrition Assessment Teams from TFNC made 2 to 3-week visits to each region. Over the years, however, the number of visits by TFNC staff, and hence the extent to which nutritional information has been disseminated, has varied from region to region. Determinants of the frequency of visits include ease of transport, reception by officials,

presence of existing nutritional programs, and occurrence of interesting nutritional phenomena.

Regional authorities send proposed nutrition programs to TFNC where they are evaluated. Because of constraints of funds and personnel, the regions suggest many good plans which cannot be carried out.

Two research projects in which TFNC is involved are a cross sectional survey studying the relationship between diet and income in Dar es Salaam and a pilot nutritional surveillance project in Iringa District. Preliminary results of the Dar es Salaam survey indicate that above an income level of 800 Shs. per month, the diet composition varies little, whereas below 800 Shs., the rate is related to diet.³⁷ The minimum wage is 380 Shs. per month and only 17% of wage earners in Dar es Salaam earn more than 800 Shs.³⁸

C. Traditional Medicine

In 1973 the Faculty of Medicine of the University of Dar es Salaam designated a committee to explore the possibility of studying medicines used by Tanzania's traditional healers (estimated to number 50,000 in 1979). The Traditional Medicine Research Unit (TMRU) was established in 1974 for the purposes of conducting both botanical studies of substances used by traditional practitioners and ethnocultural studies of factors relating to the acceptance and practice of traditional medicine.

Surveys have been conducted throughout the country to collect botanical samples. Plants which are used by healers will be analyzed to determine the chemical structure and pharmacologic properties of their bioactive agents. Modern practitioners will screen patients of traditional healers to determine which diseases are being treated by which drugs. Substances of particular interest are those used in the treatment of diseases for which there is a scarcity of alternative drugs or for which only expensive drugs are available.

Investigations will be made of substances used in the treatment of organic and psychoemotional illnesses as well as substances and practices used by traditional birth attendants.

At present TMRU staff include a pharmacist director, two chemists, a lab technician, a botanist, a sociologist and two field assistants. A pharmacologist is needed. A building to be used for laboratory analysis of plant substances and other unit activities is under construction at Muhimbili Medical Center. No funds have been allocated for purchasing laboratory equipment.⁴⁵

D. Mental Health

There are 1.7 million Tanzanians estimated to have psychoemotional disorders, 7,000 of whom are receiving treatment in psychiatric facilities.⁴⁶ Half of the country's psychiatric inpatients (1,000) are admitted to Mirembe Hospital in Dodoma. Over 75% of these are forensic patients, i.e., persons who, after committing a crime, are judged to be mentally unsound. Kidonguchekundu Hospital admits patients from Zanzibar and Pemba. There an average 320 patients occupy 186 beds. Inpatient psychiatric wards are planned for each of the regional hospitals, but at present only five regional hospitals, Moshi, Tabora, Mbeya, Mwanza and Dar es Salaam, have psychiatric beds. Two psychiatric rehabilitative villages have been established, Hambolo near Dodoma and Mwera near Dar es Salaam. These villages provide a rural lifestyle where about 50 patients can live in huts and grow and sell food while participating in rehabilitative therapy.⁴⁷

There are four psychiatrists in the country, three in Dar and one in Moshi, and about 30 nurses with psychiatric training. Medical students receive 84 teaching hours of psychiatry, and psychiatric nursing is taught in Dar es Salaam and Dodoma. Paramedical trainees are not introduced to mental health issues in their curricula. Most mental health care is provided by the country's 50,000 traditional healers. A national Mental Health Program is projected to begin in 1980 with the collaboration of WHO and funding from DANIDA.

E. Dental Health

In 1979 an oral epidemiological survey was conducted in Dar es Salaam. Included in the survey were 600 subjects, 400 school children and 200 adults. The standard of oral hygiene was found to be very poor in all age groups with soft deposits, calculus and gingivitis in nearly 100% of the sample group. While at present there is a relatively low prevalence of dental caries, it is felt that they are on the rise, especially in urban areas.⁴⁸ This survey was carried out in anticipation of a DANIDA-sponsored National Dental Health Program which will begin in 1980.

Currently, Tanzania, like most developing countries, is faced with a dental manpower shortage. There are twenty dental surgeons practicing in Tanzania. This means 1/1,000,000 population compared to the 1/20,000 ratio recommended by WHO. All dental surgeons are trained abroad.

Dental Assistants receive 3 years of training at Muhimbili Medical Center. Approximately 52 were working in Tanzania in 1979. Twenty-five experienced assistants have received further training and have been up-graded to Assistant Dental Officers.

Chairside assistants are trained on the job for one year by dental officers and, after passing a national examination, are qualified as dental auxiliaries. There are at present about 30 working in dental surgeries throughout the country.

V. DONOR INPUTS TO THE HEALTH SECTOR

In recent years foreign government and voluntary agency donors have contributed over 70% of Tanzania's national health development budgets.⁴⁸ Table XXII presents summaries of Tanzanian health programs which were funded by donor agencies between 1976 and 1978. Major donor countries are Denmark (primarily training), Norway (rural dispensaries), and Sweden (rural health centers and TFNC). Others with health sector input included Japan, China, USA, Finland, UK, FRG, Netherlands, Switzerland, Austria, India, USSR, GDR, Bulgaria, Hungary, Italy, Cuba, UNICEF, and WHO.^{49,50}

The 1979 Annual Report from the Christian Medical Board of Tanzania stated that ten major church denominations and a number of small groups were also providing staff and monetary aid to health facilities in Tanzania. These groups include the African Inland Church, the Catholic church

Table XXII

FOREIGN DONOR CONTRIBUTIONS TO HEALTH SECTOR

<u>DENMARK</u>	<u>Year</u>	<u>Budget Levels</u> <u>1976-78</u>	<u>Description</u>
Medical Assistants Training	1973-79)))	9.3million Shs. 1978 ¹ 6.3 " " 1977 8.4 " " 1976	Construction and equipment for 3 MA Schools
Health Auxiliary Training	1973-79))		Construction and equipment for 8 HA Schools
Dar es Salaam Health Centers	1976-81	4.34million Shs. 1978 ¹ 5.6million Shs. 1977 3.2million Shs. 1976	Construction of 3 urban health centers
Onchocerciasis Project	1973-80	.65 million Shs. 1978 ¹ .77 million Shs. 1977 .4 million Shs. 1976	Experts for planning,,pilot control programs, drug testing
Hospital equipment	1973-78	.7 million Shs. 1978 ¹ .96 million Shs. 1976	Construction of hospital equipment maintenance unit Mwanza; technical assistance.
Expanded Immunization	1977-78	4.2 million Shs. 1978 ¹ 4.0 million Shs. 1979	Procurement of vaccines & equipment
District Hospitals	1973-76	(\$857,000) 1976 ²	Construction & equipment Bariadi & Bagamoyo
Bilharzia Control Project	1976-77	.84 million Shs.1977 ¹ .8 million Shs.1976	
Mental Health	1978-	.650 million Shs. 1978 ¹	Planning of Mental Health Services

TABLE XXII (CONT.)

<u>FINLAND</u>	<u>Year</u>	<u>Budget Level 1976-78</u>	<u>Description</u>
Rural Medical Aide School	1972-79	\$2.0 million Shs.1978 ¹ 4.84 million Shs.1977 7.0 million Shs.1976	Construction of 11 RMA Schools
Pharmaceutical Factory	1974-81	\$80,740 ²	Planning, supervision for construction of factory
Personnel	1976-77	(\$900,000) ²	Dentists, Red Cross, RMC
<hr/>			
<u>SWEDEN</u>			
TFNC	1974-82	3.63 million Shs.1978 ¹ 4.7 million Shs.1977 6.4 million Shs.1976	Experts, equipment, running costs
Rural Health Centers	1973-82	"Contract withdrawn" 1978 ¹ 14 million Shs.1977 15.3 million Shs.1976	Construction & equipment for 9ORHC's 4 experts in Planning Unit
Medical Auxiliary Hostels	1976-79	1.23 million Shs.1978 ¹ 3.5 million Shs.1977 3.6 million Shs. 1976	Construction
Hospital Construction	1978	.8 million Shs. 1978 ¹	
<hr/>			
<u>NORWAY</u>			
Rural Dispensaries	1973-79	.93 million Shs. 1978 ¹ 4.2 million Shs. 1977 15.25 million Shs. 1976	Construction & equipment of 400 new rural dispensaries to 1977; program continuation Inventory (1978) contingent on inventor.
Young Child Protection Program (W/UNICEF)	1976	\$143,000 ²	Fund in trust financing
Vaccination (W/UNICEF)	1976	\$269,000 ²	Fund in trust financing

TABLE XXII (CONT.)

<u>UK</u>	<u>Year</u>	<u>Budget Levels</u> <u>1976-78</u>	<u>Description</u>
Personnel	1976-79	N/A	5 medical specialists to KCMC
	1978-80	N/A	1 medical specialist Mbeya 1 project coordinator; health sector
Village Health Service Project	1977-	7.24 million Shs. 1978 ¹ .45 1977	20 landrovers 1,000 microscopes, 1000 bicycles
Training	1975-80	N/A	Awards for training in U.K.
<hr/>			
<u>USA</u>			
Maternal-Child Health	1973-82	1.6 million Shs. 1978 ¹ 6 million Shs. 1977 9.4 million Shs. 1978	Construction of 18 MCH training centers; 3 experts to train 2500 MCH aids; 40 trainees in U.S., equipment
Hanang Ujamaa Village Health Scheme	1975-79	\$443,898 1978 ²	Health care delivery at village level
Cancer Control Program	1978-82	\$498,000 1978 ²	Curative & preventive tx
Ndoleleji Mobile Health Program	1977-78	\$20,636 ²	Curative & preventive tx
Food Assistance	1976-	\$6,000,000 ²	Food for primary school lunches & MCH program.

TABLE XXII (CONT.)

<u>NETHERLANDS</u>	<u>Year</u>	<u>Budget Levels</u> <u>1976-78</u>		<u>Description</u>
Dar es Salaam Group Occupational Health	1973-78	\$ 73,719	1978 ²	Construction of clinic, two houses, extension; financing of training program
		\$300,000	1977	
		(\$143,100)	1976	
Upgrading Medical Aux. Training Centers	1978	\$26,158 ²		
X-ray equipment	1976-78	\$903,954	1976 ²	For regional & district hospitals
Personnel	1976-ongoing	\$2,300,000	1977 ²	~50 Medical Doctors
		255,000	1976	
Hospitals	1976	(\$ 2,070,000) 1976 ²		Rebuilding, extension & new construction of 5 hospitals
Mwanza Public Health Program	1976	\$50,847 ²		Equipment

TABLE XXII (CONT.)

<u>SWITZERLAND</u>	<u>Year</u>	<u>Budget Levels 1976-78</u>	<u>Description</u>
National TB Control	1978	\$319,767 ²	Personnel
Hospital	1974-78	\$174,418 ²	Ifakara School
Central Pathology Lab.	1974-78	\$56,680 1976 ² (137,650)	Construction, equipment, personnel and training
Land Rovers	1976	N/A	20 Leprosy vehicles
<hr/>			
<u>AUSTRIA</u>			
Personnel	1964-78	\$75,000 1978 ²	1975 - technician & nurses Loliondo 1964 - MD Loliondo 1978 - MD Nachingwea
<hr/>			
<u>FEDERAL REPUBLIC OF GERMANY</u>			
Central Pathology Lab.	1972-80	(\$2,950,000) 1977 ²	Personnel, equipment - Dar and construction of 17 labs. up-country
Equipment Maintenance Workshop	1976-77	N/A	Manager

TABLE XXII (CONT.)

<u>JAPAN</u>	<u>Year</u>	<u>Budget Levels 1976-78</u>	<u>Description</u>
Tuberculosis Control	1975-79	\$18,000 1978 ² \$248,000 1977 \$134,000 1976	Expert for TB control project at Kibongoto; training of TB prev. auxiliaries
Equipment	1972-80	N/A	Electronic microscopes
<hr/>			
<u>INDIA</u>			
Hospital Equipment	1977	\$125,000 ²	Theatre equipment for hospital planned on Zanzibar
Personnel	1977	N/A	6MDs/nurses, 1 hospital planner for planned hospital in Zanzibar
Training	1973-78	N/A	2 4-5 yr. fellowships for pharmacy training in India
<hr/>			
<u>USSR</u>			
Personnel	1974-78	N/A	14 MD's in Dar & Mbeya hospitals
<hr/>			
<u>PEOPLE'S REPUBLIC OF CHINA</u>			
Personnel	1972-80	N/A	11 Health Teams (currently 60 MD's)
Mabibo Pharmaceutical Plant	1973-80	N/A	equipment, including freeze - dry machine
Vaccine Institute	1973-80	N/A	technical & advisory assistance

TABLE XXII (CONT.)

<u>GERMAN DEMOCRATIC REPUBLIC</u>	<u>Year</u>	<u>Budget Levels 1976-78</u>	<u>Description</u>
Personnel	1970-78	N/A	MD, Dar es Salaam
	1974-78	N/A	Teacher, Muhimbili
Training	1975-80	N/A	Post graduate scholarship MD's, Public Health
<hr/>			
<u>BULGARIA</u>			
Personnel	1974-78	N/A	1 surgeon, 1 x-ray technician, Mwanza 1 x-ray technician, Dodoma
<hr/>			
<u>HUNGARY</u>			
Personnel	1973-76	N/A	2 MD's, Mwanza
Training	1972-78		3- 6 year Medicine fellowships 4- " Dentistry 3- " Pharmacy
<hr/>			
<u>ITALY</u>			
Personnel	1977-80	(\$620,000) -1977 ²	24 MD's & Paramedical Aides, Dodoma, Masasi Kahama, Songea 4 - vehicles provided
<hr/>			
<u>CUBA</u>			
Personnel	1975-80	N/A	35 doctors + 18 nurses, X-ray technicians Muhimbili, Dar es Salaam, Pemba, Tanga, Arusha
Training	1976-		Postgraduate medical scholarships in Cuba.

TABLE XXII (CONT.)

<u>WHO</u>	<u>Year</u>	<u>Budget levels</u> <u>1976-79</u>	<u>Description</u>
Health, Manpower Development	1972-78	\$450,000 - 1978 ² \$220,500 - 1977 \$326,000 - 1976	<u>Teachers Muhimbili MD's</u> <u>Auxiliaries, nurses, fellowships</u> <u>supplies & equipment</u>
Health Services Development	1976-79	\$132,200 - 1978 ² \$201,200 - 1977	Health services planning & management, consultants, supplies, equipment, local costs.
Communicable Disease Prevention & Control	1972-79	N/A	EPI, Filariasis (1976) Malaria (1977), Measles (1977) supplies, equipment, consultants
Personnel (UNDP/WHO)	1972-80	\$44,000 - 1978 ² 2,552 - 1977 6,338 - 1976	Faculty of Medicine, Muhimbili; lecturers, equipment, fellowships
Fellowships, Zanzibar	1977-79	\$35,413 - 1978 ² 37,194 - 1977	Public Health, Medical fellowships
General Program Development & Management	1978-79	\$218,500 - 1978 ²	WHO personnel

TABLE XXII (CONT.)

<u>UNICEF</u>	<u>Year</u>	<u>Budget Level 1976-78</u>	<u>Description</u>
Health Services	1977-79	\$ 596,800 - 1978 ² 1,149,200 - 1977	Financial and material assistance to promote rural health services and water supply.
MCH/Child Spacing (UNICEF/UNFPA)	1976-78	(\$327,589) ²	Supplies of vehicles, MCH cards, assistance to local training, vaccines
NIM training (UNDP/UNICEF)	1976-79	\$250,000 ²	Training of NIM health personnel
Nutrition	1977-79	(\$474,000) ²	In-country training, supplies, transport seeds & materials
Day Care Center	1976-79	(\$1,962,900) ²	Training of D.C. Workers & material assistance to 21000 Day Care Centers
Young Child Protection Program	1975-78	.9million shs. 1976 ¹	
Bicycles	1978	N/A	325 for village health workers

Sources:

1. From Budget Speeches - Ministry of Health
2. From UNDP Reports on Development Assistance

the Christian Mission to Many Lands, the Church of Christ, Church of the Province of Tanzania, Lutheran Church, Memmonite Church, Moravian Church, Seventh Day Adventist Church and the Swedish Free Mission. Other denominations sponsor a few dispensaries only. 51

The Voluntary Agencies:

- 1) are represented on the Medical Advisory Committee to the Ministry of Health, the Tanganyika Medical Training Board, and other MCH committees;
- 2) run most of the country's training program for nurses;
- 3) assist MCH and TB - Leprosy programs;
- 4) staff and administer 17 designated District Hospitals; These hospitals are funded by the government and provide free medical services to patients;
- 5) provide staff and 1/3 of the running costs for 48 other hospitals. (Fees charged =1/3, Donations .1/3, and TanGov= 1/3); and
- 6) operate 400 dispensaries.

Table XXIII presents statistics regarding Voluntary Agency assistance.

In 1977, volunteers working as MD's, nurses, and technicians in the field of health in Tanzania were sponsored by the governments of Canada (3 volunteers), Denmark (8), Federal Republic of Germany (11), Italy (8), Netherlands (10), Norway (6), Switzerland (8), UK (11) and Austria (4). 52

Parastatal Organizations and Private Practitioners:

Other non-government health facilities include hospitals and dispensaries of parastatal agencies and private practitioners. Parastatal facilities are hospitals and dispensaries providing occupational health services to workers in parastatal organizations. The private sector includes practitioners who practice both modern and traditional medicine. An estimated 50,000 persons practice traditional medicine in Tanzania. At present there are an estimated 64 doctors who are practicing modern medicine privately within the country.

In 1978 Parliament passed a law prohibiting the private practice of modern medicine after March 1, 1979. In March 1979 an extension was made, and the present law reads that by March 1, 1980, all private practitioners must report to the Ministry of Health their planned alternatives to practicing medicine privately. The Private Hospital Regulation Act of 1977 restricts the management of private hospitals to approved organizations, controls fees and other charges payable for medical services, and regulates the scale of emoluments payable to medical practitioners employed at private hospitals.

TABLE XXIII

VOLUNTARY AGENCY CONTRIBUTION TO HEALTH SECTOR*

<u>Form of Assistance</u>	<u>Year</u>					
	<u>1973</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>
<u>Medical Officers</u>						
Tanzanian	6	10	6	11	11	12
Non-Tanzanian	105	105	104	108	121	120
<u>Asst. Med. Officer</u>	14	22	16	28	23	22
						(45%)
<u>Nurses Grade "A"</u>						
Tanzanian	51	77	63	83	67***	-
Non-Tanzanian	189	163	113	109	107	-
<u>Nurses Grade "B"</u>	680	926	726	951	726	-
<u>Paramedical</u>						
Medical Asst.	50	68	69	87	75	-
R.M.A.	57	67	67	100	77	-
<u>Facilities</u>						
<u>Hospitals</u>	62			65	65	65****
	(44.6%)					(43.9%)
<u>Beds</u>	8202			9032		
	(45.7)**					
<u>Dispensaries</u>	232					400
	(15%)					(18.1%)

* Figures for Kilimanjaro Christian Medical Centre - Moshi, and Bugando Hospital - Mwanza, (Church related Referred Hospitals) and 100 of 400 V.A. dispensaries NOT included.

** Although 45.7% of hospital beds are in Voluntary Agency Hospitals, bed utilization is much lower than in government facilities (71% vs. 110% average bed occupancy) so VA hospitals carry only about 35% of the inpatient work load.

*** Figures from 3/4 of Hospitals and 1/2 of Dispensaries only.

**** Includes 17 Designated District Hospitals.

Source: Janet Craven, M.D, Secretary CMBT

VI. RELATIVE HEALTH STATUS WITHIN TANZANIA

A. Regional Analysis of Health Status

Introduction

So far discussion has focused on national health issues with references made to regional variation in disease problems and accessibility to adequate nutrients and health and sanitation services. A regional analysis was carried out by combining health related data from various sources. The purpose of this analysis was to differentiate relatively well-off from relatively poor health status regions so that areas of greatest need could be identified,

Methodology

The methodology used in the regional analysis is simple and straight forward. It included two steps: 1) the identification of useful measures reflecting relative health status from among available regional data and 2) the compilation of these measures into regional health status ranks.

1. Factor Identification

First, regions were ranked on each of thirty-two factors related to health status. These factors covered areas of nutrition, sanitation, health services' accessibility and usage, and demographic and economic characteristics.* For each variable the lowest ranking (1) was assigned to the region with the most favorable status, and the highest ranking (20) was given to the region with the least favorable status. Where more than one region had the same real value for a factor, a mean ranking was assigned to each of them.** The 32 rankings were totaled and divided by the number of factors to produce an average rank score for each region. The average regional scores were then ordered from one to twenty, giving composite ranks.

Next, each of the factor rankings comprising the overall score was examined, and the five factors in each region which were most discrepant from the regional composite rank were noted. The ten least discrepant factors were also noted. Table XXIV shows the number of times each of the 32 factors was found to be among the ten least discrepant or five most discrepant from the regional composite rank. A factor was considered

* Average income per capita is an obvious measure of well-being. In Tanzania, however, farm income data on a regional basis were last published in 1971. At that time there was a significant positive correlation between regional farm income/capita and gross regional production/capita. Therefore, 1978 GRP/capita data were used as a proxy for 1978 income data.

** For several factors, more than one year's data was available on a regional basis. Whenever possible, 1973 data were used, as this was the year of the National Demographic Survey, when the most recent infant mortality, life expectancy, fertility, and other demographic rates were determined.

32 FACTORS THOUGHT TO REFLECT HEALTH STATUS

	A	B	B-A		
	No. of Regions in which factor rank was among 5 most discrepant from <u>composite rank</u>	No. of Regions in which factor rank was among 10 least discrepant from <u>composite rank</u>			
DEMOGRAPHIC	Infant Mortality	2	4*		
	Life Expectancy	2	4*		
	Adult Literacy	5	1		
	Crude Birth Rate	3	4*		
	Crude Death Rate	3	4*		
	Total Fertility Rate	4	2		
	Average Rural Family Size	3	2		
	% of Population less than 15 years	2	5*		
	Population Density	6	-2		
	% of Adult Women Practicing Traditional Religion	1	9	8*	
	HEALTH SERVICE AVAILABILITY & USAGE	Population/Hospital Bed	0	9	8*
		Population/Health Center	5	6	1
		Population/Dispensary	3	2	-1
Population/Primary Care Staff		1	7	6*	
% Population less than 10 km from HC		2	7	5*	
Health Facility Attendances/ population/year		3	8	5*	
% Daily Bed Occupancy in Hospitals and HCs		3	8	5*	
% of Births in Health Facilities		2	11	9*	
Average household distance to hospital		6	6	0	
Average Household Distance to Dispensary		5	3	-2	
ECONOMIC	Health Expenditure/Capita	0	5	5*	
	Gross Regional Product/Capita	3	11	8*	
	Total Government Expenditure/Capita	2	5	3	
	Livestock Privately owned/ household	9	3	-6	
ENVIRONMENTAL	% Population with Water Supply	2	8	6*	
	% Hh with water source - lake, river, stream, rainwater	4	5	1	
	% Hh with tap water	0	9	9*	
	% Households with 7+ members in 1-2 rooms	5	4	-1	
NUTRITIONAL	Kcal/Capita/Day	3	6	3	
	Grams, Protein/Capita/Day	3	5	2	
	protein as % of Caloric Intake	4	5	1	
	% Child Attendances to MCH Clinics Who are Underweight	3	5	2	

*Selected factors for final regional ranking

to correlate with health status when the difference between the number of times it was among the 10 least discrepant ranks and the number of times it was among the five most discrepant ranks was greater than or equal to +4. The sixteen health status factors identified by this method included:

- | | |
|---|--|
| 1. infant mortality | 9. population/primary care staff |
| 2. life expectancy | 10. attendance/population/year |
| 3. crude birth rate | 11. % daily bed occupancy in hospital and health centers |
| 4. crude death rate | 12. % of births in health facilities |
| 5. % of population under 15 years | 13. gross regional product/capita |
| 6. % of adult women practicing traditional religion | 14. health expenditure per capita |
| 7. population/hospital bed | 15. % of population with water supply |
| 8. population < 10 km from RH center | 16. % of households with tap water |

It should be noted that, besides reflecting state of health, differences between factor ranks and the composite scores might be explained by variability in the quality of data, changes over time where data were gathered in different years, and chance variation.

2. Regional Health Status Ranks

After selecting health status indicators, wherever possible, updates were made using the most recent data available. For each region again rankings were assigned for the 16 indicators. The ranks were totaled and averaged.

Results

The final ranking of twenty regions on 16 factors reflecting health status is found in Table XXV. A map illustrating good and poor health status regions is presented in Figure 13. The regions which were found to have the relatively least favorable health status were Iringa, Mara, Kigoma, Singida, and Shinyanga. All of these regions are relatively isolated from urban centers. All except Iringa, are relatively untraveled with few all-weather roads. Iringa, Singida, Shinyanga, and Mara are regions with large areas of dry, unproductive land. Much of Kigoma Region is tsetse infested.

The methodology used in the regional analysis of health status was also used to measure relative general well-being in Tanzania's regions in the 1982 Country Development Strategy Statement (See Annex 6). For this analysis a broader variety of factors reflecting productivity, the status of women, education, and infrastructure was included. The regional ranks for health status are similar to regional ranks for general well-being. Because of the crude analytical method used and the nature of the data available in Tanzania at this time, both the ranks of well-being and of health status can only be used as estimations of relative regional status. (A discussion of the Regional Analysis of Relative Levels of Well-Being is found in Annex 7.)

Factors which contributed to poor health status scores in the five regions with the worst status are examined in Table XXVI. Contributing to poor scores in Iringa Region were demographic and environmental factors; Mara Region, factors related to health services availability and utilization and economic characteristics; in Kigoma Region, demographic and health services characteristics; in Singida Region, demographic and environmental factors; and in Shinyanga Region, contributing factors were environmental and related to health services availability. This would indicate that improvements in health status may require concentration on different program areas in different regions.

TABLE XXV

HEALTH STATUS FACTOR

	DEMOGRAPHIC								HEALTH SERVICES DISTRIBUTION AND UTILIZATION						ECONOMIC		ENVIRONMENTAL	
	Average Rank	RANK	Infant Mortality (/1000)	Life Expectancy (yrs.)	Crude Birth Rate (/1000)	Crude Death Rate (/1000)	Population less than 15 years (%)	Adult Women Practicing Traditional Religion (%)	Population/Hospital Bed	Population within 10 km of Rural Health Center (%)	Population/Primary Health Care Staff	Attendances to Health Facility/Population/Year	Daily Hospital + H.C. Bed Occupancy (% Beds)	% Births in Health Facility	Gross Regional Product/Capita (TSh)	Regional Health Expenditure/Capita (TSh)	Population Served by Water Supply (%)	Households with Tap Water (%)
			1973	1973	1973	1973	1973	1973	1978	1972	1978	1978	1978	1978	1978	1978	1973	1976
Iringa	14.3	20	178	43	51	20	47	30.0	667	68.1	1835	3.8	72	36	1190	21.9	8	8.9
Mara	14.2	19	130	51	49	16	48	42.5	1099	60.0	2395	3.7	60	30	748	14.6	10	25.2
Kigoma	13.4	18	215	38	46	25	46	53.2	1202	90.0	2412	3.0	101	29	990	28.9	20	14.4
Singida	13.3	17	196	41	43	28	41	37.8	843	75.2	2067	3.9	83	35	640	22.7	17	.1
Shinyanga	13.0	16	145	48	40	16	43	75.9	1434	64.0	3646	3.6	76	47	1055	24.3	6	4.1
Mbeya	12.5	15	162	46	47	18	45	26.1	818	76.1	1696	2.9	79	35	1294	20.2	10	26.3
Mwanza	12.1	14	145	48	44	16	44	61.6	969	72.9	1889	3.7	91	40	800	20.6	10	5.0
Rukwa	11.9	13	-	47	--	--	--	--	1558	--	1844	3.9	81	60	814	22.6	--	6.6
West Lake	11.1	12	145	48	47	19	42	9.1	617	84.0	2146	4.9	75	27	1041	18.4	25	7.5
Dodoma	10.8	11	145	48	47	17	43	40.0	542	78.0	1936	3.6	79	30	689	23.3	0	20.1
Coast	10.6	10	196	41	46	25	37	.1	1156	79.5	3615	4.4	89	51	1280	26.5	12	23.2
Mtwara	9.6	9	145	48	44	17	37	1.0	731	79.8	2052	5.1	73	44	552	29.6	15	19.7
Lindi	9.4	8	145	48	39	17	36	.2	736	69.0	2137	6.3	75	57	678	15.9	18	19.4
Morogoro	9.3	7	173	43	46	20	39	1.3	652	83.7	1692	6.6	72	44	1275	22.9	15	26.5
Tabora	8.8	6	145	48	40	17	40	36.0	721	62.5	1925	4.5	83	49	1026	28.0	35	12.1
Tanga	8.3	5	145	48	50	17	43	.3	670	93.3	2377	5.5	75	46	1849	31.3	17	27.7
Kuvuma	8.3	4	145	48	45	16	42	.3	465	68.7	1576	6.2	78	75	689	22.0	19	11.8
Arusha	7.5	3	130	51	46	15	44	63.5	957	79.9	1495	3.8	91	38	1300	27.8	28	68.7
Kilimanjaro	7.4	2	130	51	48	16	46	2.8	727	97.4	1051	4.9	85	60	1093	18.0	30	24.6
Dar es S'm	3.3	1	88	56	33	16	37	.1	888	--	791	6.1	126	81	6060	49.8	12	82.9

Source: (See Part I of 1982 CDSS)

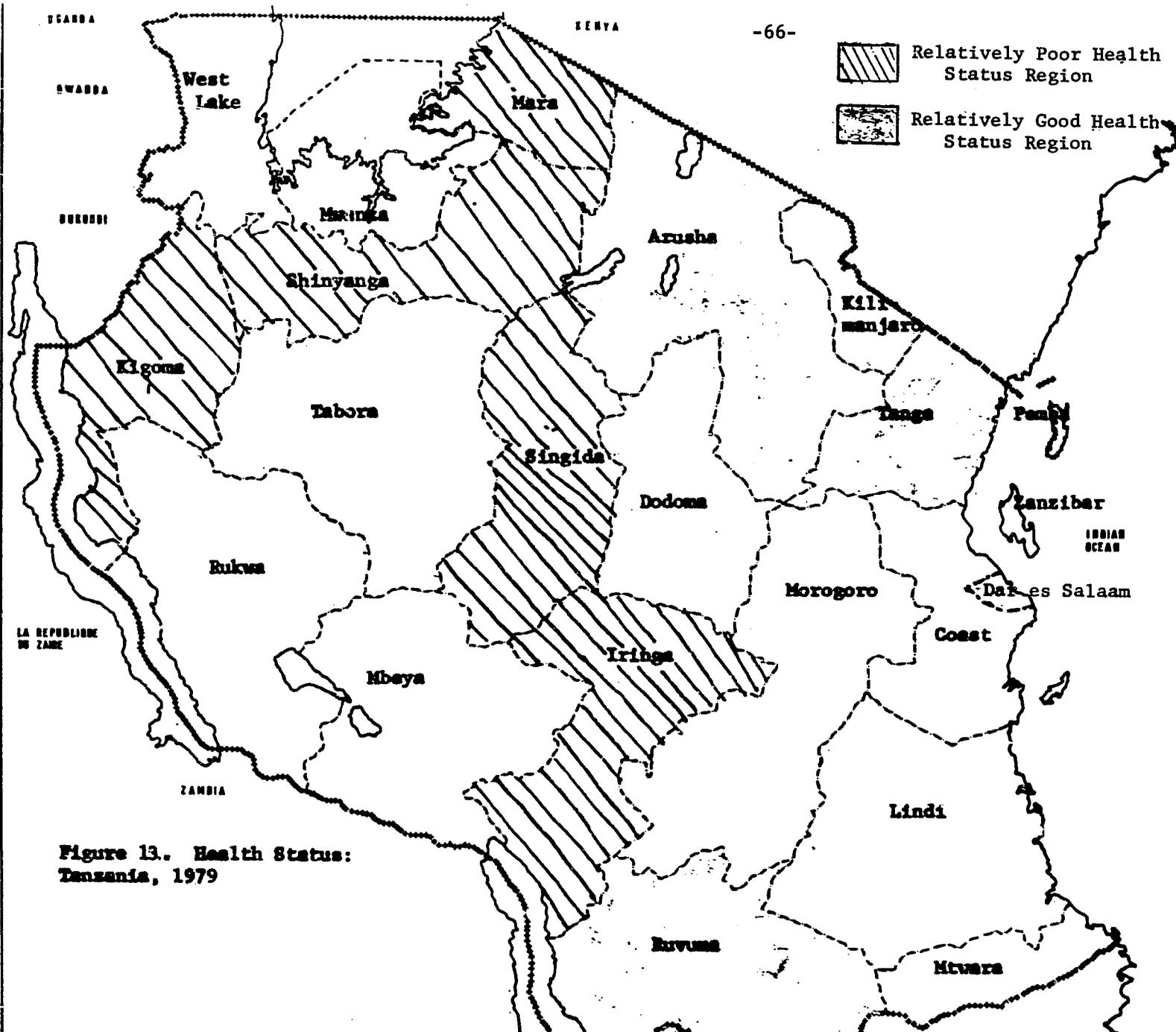


Figure 13. Health Status:
Tanzania, 1979

TABLE XXVI:

FACTORS CONTRIBUTING TO POOR HEALTH STATUS SCORES IN POOR
HEALTH STATUS REGIONS.

<u>REGION</u>	<u>FACTORS</u>
<u>IRINGA</u>	
+++ Demographic	Hi Infant Mortality; Lo Life Expectancy; Hi Crude Birth Rate; Hi Crude Death Rate; Hi Proportion of Population less than 15 years
+++ Environmental	Lo % population w/water supply Lo % Households w/Tap Water Hi % of Health Facility Admissions for Fecal-Oral Transmitted Disease
+ Health Services Availability & Utilization	Hi proportion of population less than 10km from HC. Hi population/health care staff Lo % Daily Bed Occupancy
Economic	
<u>MARA</u>	
+++ Health Services Availability & Utilization	Hi population/hospital bed; Hi population/health Care Staff Hi proportion of population less than 10km from HC. Less than % Daily bed occupancy Lo % Births in Health Facilities Lo Health Facility attendances/population/year
++ Economic	Lo Health Expenditure/Capita Lo GRP/capita
+ Demographic*	Hi crude birth rate Hi proportion of population less than 15 years Hi % practicing traditional religion
Environmental	
<u>KIGOMA</u>	
+++ Demographic	Hi Infant mortality Lo life expectancy Hi crude death rate Hi proportion of population less than 15 years Hi % practicing traditional religion
++ Health Services Availability and Utilization	Hi population/hospital bed Hi population/health care staff Lo attendance/population/year Lo % births in health facilities
Environmental	
Economic	

SINGIDA

Demographic	Hi infant mortality
++	Lo life expectancy
	Hi crude death rate
++Environmental	Lo % households w/tap water
	Hi % MCH attendances underweight
	Lo kcal/capita/day consumed
+ Health Services	
utilization	Lo % births in health facilities
+ Economic	Lo GRP/capita

SHINYANGA

+++ Environmental	Lo % population w/water supply
	Lo % households w/tap water
	Hi % MCH attendances underweight
	Lo Kcal/capita/day consumed
++Health Services	Hi population/hospital bed
availability	Hi population/health care staff
	Hi proportion population less than 10km from HC.
	Lo Health facility attendance/population/yr.
Demographic	Hi % practicing traditional religion
Economic	

- +++ Very significant contribution
- ++ Significant contribution
- + Some contribution
- Little or no contribution

District information was available from the 1978 Health Inventory for measures pertaining to accessibility to and usage of health facilities. Difference in these measures at the district level for the five regions with poorest and best health status ranks are presented in Table XXVII. Much intra-regional variation for all measures is noted. Examining District data for the regions with relatively good health status, it appears that, with regard to accessibility to and utilization of health services, there are a few district which are as deficient as district in poor health status regions. These districts are Handeni in Tanga Region and Arumeru, Hanang, and Kiteto in Arusha Region. Low population to staff and facility ratios and low usage of facilities in Arumeru District are likely to reflect proximity to health care services of Arusha Urban District. Hanang, Kiteto and Handeni are adjacent Districts on the dry, sparsely populated Masai Steppe.

B. Urban/Rural Analysis

The 1967 census estimated infant mortality, survival to age five, and life expectancy for six socio-economic groups in Tanzania (Table XXVIII). These measures of general well-being and health status were most favorable for all classes of urban workers and less favorable for farmers and agricultural laborers. For urban top-level white collar workers, infant mortality was only 62/1000 live births compared to 155/1000 for farmers. Life expectancy of urban white-collar workers was 10-20 years higher than for farmers. Although national improvements in life expectancy and infant mortality were noted in the 1973 National Demographic Survey, urban/rural discrepancies were still marked.

Urban/rural differences for 1978 Health Inventory data were analyzed by comparing the main urban district in each region to the rural districts. In the case of Dar es Salaam, the data were compared to Coast Region. Information is presented by number of regions where the health status indicator is more favorable to the urban district and the number of regions where the indicator is more favorable for the rural districts (Table XXIX). Population/staff ratios and facility usage are decidedly more favorable in urban areas. Population/facility ratios are more variable. Data from the 1976 Household Budget Survey were analyzed on a regional basis for urban/rural or farm/non-farm households. Average distances to health facilities were consistently shorter for urban households, and the percentage of households supplied with tap water was consistently higher.

Since Dar es Salaam is the only region which is almost totally urban (96%), health indices for this region compared to all other regions may reflect urban/rural discrepancies. In fact, of all 20 regions, Dar es Salaam had the lowest infant mortality rate, the highest life expectancy, the lowest crude birth rate, the lowest fertility ratio, the lowest population/hospital bed ratio, the highest gross regional product/capita, the lowest population/health staff ratio, the highest % daily occupancy of beds, the highest % of births in a health facility, and the highest % of households with tap water. In general, health indicators are more favorable in urban areas.

TABLE XXVII

HEALTH SERVICES DISTRIBUTION AND UTILIZATION BY DISTRICT¹

LOW HEALTH STATUS REGIONS

-73-

REGION	DISTRICT	Population/ Hospital Bed	Population/ Health Center	Population/ Dispensary	Average Yearly Attendances to Health Facility	Pop/ Staff	% Daily Bed Occu- pation	% Births in Health Facilities
IRINGA								
	Iringa U +R	944	115,761	6,093	3.8	1977	111	33
	Ludowa	283	37,805	5,041	3.5	1260	35	49
	Mafindi	1,121	57,941	5,267	3.8	1931	79	26
	Njombe	550	108,695	5,823	3.8	2038	70	42
MARA								
	Musoma	247	23,000	1,353	4.8	331	82	34
	Bunda	1,572	72,330	10,850	3.1	4340	33	35
	Tarimo	756	84,171	6,645	2.6	2551	65	19
	Serengeti	no hospitals	104,000	12,235	4.8	7172	13	21
KIGOMA								
	Kigoma U +R	1,593	126,654	8,171	2.8	2129	108	26
	Kasulu	852	127,826	8,815	2.6	2113	83	29
	Kibonda	1,728	46,664	5,000	4.2	2916	78	34
SINGIDA								
	Singida	939	89,875	10,370	4.5	2012	86	30
	Irumba	682	121,002	7,118	2.9	2220	76	36
	Manyoni	753	102,403	4,267	3.5	1347	90	46
SHINYANGA								
	Shinyanga	826	143,641	7,304	4.2	2304	81	75
	Bariadi	2,651	98,978	9,279	3.7	4713	61	27
	Kahama	2,193	145,829	9,722	3.3	3314	93	44
	Mawa	1,949	60,793	9,211	2.4	3707	56	31

¹ 1978 Health Inventory, Ministry of Health, August 1979

(Continued Next Page)

TABLE XXVII
(Cont.)

HEALTH SERVICES DISTRIBUTION AND UTILIZATION BY DISTRICT¹

HIGH HEALTH STATUS REGIONS

REGION	DISTRICT	Population/ Hospital Bed	Population/ Health Center	Population/ Dispensary	Average Yearly Attendances to Health Facility	Pop/ Staff	% Daily Bed Occu- pation	% Births in Health Facilities
KILIMANJARO								
	Moshi U & R	443	91,044	6,871	5.2	655	96	56
	Rombo	1,314	78,870	7,887	5.9	1,997	72	52
	Hai	342	88,159	7,492	3.6	1,149	75	87
	Pare	1,051	69,388	4,248	4.7	1,436	74	50
ARUSHA								
	Arusha U	370	86,845	3,102	8.6	511	76	53.5
	Arumeru	2,975	119,010	8,501	1.9	2,052	72	53.5
	Monduli	990	59,378	6,598	3.4	1,583	77	17.2
	Mbulu	474	96,888	8,074	5.4	1,457	75	38.6
	Hanang	1,836	77,097	8,260	4.0	2,011	183	36.0
	Kiteto	no hospital	59,790	3,737	3.2	1,616	0	18.6
RUVUMA								
	Songea U & R	538	46,480	6,281	5.6	1,452	98	71
	Mbiga	345	196,167	5,944	4.1	1,497	76	84
	Tunduru	636	45,183	5,648	10.3	1,576	79	69
TANGA								
	Tanga	315	47,959	5,755	13.8	620	100	99
	Pangani	451	33,340	2,778	6.0	901	104	68
	Muheza	672	199,674	3,120	6.0	1,331	56	48
	Korogwe	613	95,558	3,185	4.4	1,459	71	60
	Handeni	1,677	61,505	7,381	4.0	1,827	52	12
	Lushoto	963	143,035	10,217	2.5	1,987	62	27

TABLE XXVIII

1967 MORTALITY ESTIMATES FOR SOCIO-ECONOMIC GROUPS, MAINLAND

Socio-Economic Group	Infant Mortality per 1000	Survival to age 5 per 1000	Life Expectancy at Birth
Urban top-level white collar workers	62	904	61
Urban middle-level white collar workers	82	868	56
Rural top-level white collar workers; urban blue collar workers	104	829	51
Rural middle-level white collar workers; rural blue collar workers	115	808	48
Agricultural laborers; persons without occupations	140	762	43
Farmers	155	739	41

Source: The Population of Tanzania, 1967. Egero, B. and Henin, R.A.,
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TABLE XXIX

NUMBER OF REGIONS WHERE FACTOR IS MORE FAVORABLE
TO URBAN AND RURAL AREAS

		<u>Favorable to Urban</u>	<u>Favorable to Rural</u>
1978 Health Inventory	Population/health staff*	17	0
	% daily bed occupancy	15	3
	Population/hospital bed	10	7
	Population /Dispensary	7	5
	Average attendances to health facility/ person/year	12	5
1976 Household Budget Survey	% births in health facility + + + + + + + + + + + + + + + + + +	11	4
	Average distance to hospital	20	0
	Average distance to dispensary	18	2
	% households with 7+ persons in 1-2 rooms	13	7
	% households reporting stream, river, lake, rainwater source	18	2
	% households reporting tap water source	20	0

* Where total urban/rural comparisons = 17, information is missing for West Lake and Mara Regions. Birth information is not available for Iringa, Mbeya, Mtwara, and Bukoba Districts.

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ANNEXES I - IV

SOURCES OF HEALTH DATA

INVENTORY OF HEALTH FACILITIESPLANNING UNIT, MINISTRY OF HEALTH
1978INTRODUCTION

A report on rural dispensaries in Tanzania by a joint Tanzanian/Norwegian team in 1976 recommended that part of Norway's assistance to the rural health sector be used to finance a survey of existing rural health facilities.

Plans for the inventory were discussed in the MOH in 1977/1978 Budget Speech and funds were allocated in 1978/79 from the Norwegian Government to the MOH.

The inventory was designed to meet the following objectives:

- a) To provide baseline data on all health institutions run by government, voluntary agencies, occupational health services, private practitioners and others in the country.
- b) To give the parties involved the proper basis of locating new facilities in areas where access to health services is poor or where existing facilities are inadequate for the catchment population.
- c) To identify the needs of existing institutions as to improvement and upgrading.
- d) To involve officials responsible at district and regional levels in the inventory in order to make them personally acquainted with this type of exercise and the needs revealed.
- e) To establish a method for collecting information on health institutions which could be used in future by health officials as an up-dating process.
- f) To provide donor agencies involved in the health sector with information as a basis for further support to areas that require additional resources.
- g) To provide basic information for the planned "Joint Evaluation" of the health sector which begins in mid-1979.¹

DATA COLLECTION

In October 1978, four teams from the Ministry of Health, each consisting of two officers, began the data collection.

Team 1 visited Dar es Salaam, Coast and Morogoro regions.

Team 2 visited Tanga, Kilimanjaro, Arusha, Mara, Singida, Dodoma Regions

Team 3 visited Tabora, Shinyanga, Mwanza, West Lake and Kigoma Regions

¹ MOH Bulletin No. 2 Project: 937:5486z; Inventory Health Facilities

Team 4 visited Lindi, Mtwara, Ruvuma, Iringa, Mbeya, and Rukwa Regions.

Data were gathered by means of questionnaires which were of four types, for dispensaries, health centers, hospitals, and training institutions.

Teams made an initial visit to regional and district headquarters where authorities were introduced to the questionnaires. Regional and district planning officers, medical officers, and hospital administrators participated in the information sessions.

The DDD's appointed a District Coordinator (usually a DMO) and a District Data Collector, an RMA, TB-Leprosy and/or another health worker familiar with district facilities. These persons were briefed as to the purposes of the inventory and methodology. The team and the District Data Collector visited a nearby institution for a trial questionnaire administration.

Sufficient questionnaires were left with the District Coordinators and Data Collectors to cover all existing government, V.A., parastatal and private institutions. The questionnaires were administered at each facility by the Data Collector within 2 1/2 months of the initial visit, at which time the teams from the MOH returned to collect a copy of the questionnaires. Data collection period ended in April 1979.

The questionnaires were filled in triplicate; one copy was kept with the DMO, one with the RMO and one taken to the Ministry planning office.

Yearly updating of certain important data is planned.

COMPILATION

Compilation of questionnaire data by type of facility at the district, regional and national levels was carried out between May and September 1979 in the Planning Unit. Data were hand tabulated and the following information was compiled:

JOINT HEALTH EVALUATION

A comprehensive examination of the dynamics of the health care delivery system in Tanzania was carried out by the Ministry of Health in mid-1979 in six regions. The evaluation report will be published in mid-1980.

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HOUSEHOLD BUDGET SURVEY

CENTRAL STATISTICAL BUREAU 1976

INTRODUCTION

In 1969 the first comprehensive year-long household budget survey covering a cross section of all households was carried out in mainland Tanzania. The aims of the 1976 HBS were the following:

- 1) to provide data for measuring living standards and differences in living standards among groups of a given household universe to make income and employment policies.
- 2) to supply data for computing national accounts aggregates and for national accounts analyses.
- 3) to provide numerical information for forecasting demand for consumer items.
- 4) to supply data needed in calculating weights for compiling consumer price indices.
- 5) to provide data at regional and sub-national levels which can be used as a basis for other similar surveys.

Although the 1969 HBS analysis was done on a zonal basis, it was possible to make some measure of comparison over time between the two surveys.

METHODS

Early in 1976, a list was drawn up for each district of their wards and estimated ward populations. The first stage sampling units for the survey were two wards randomly selected from each district. Ten-cell leaders in the two selected wards then convened to enumerate all households and arrange them into four strata according to estimated annual household income: Stratum I = 0-1000 Sh/annum; Stratum II = 1001 - 2500 Sh/annum; Stratum III = 2501-6000 Sh/annum; Stratum IV = over 6000 Sh/annum. Stratified random sampling yielded 28 households in each ward, seven from each income group. Households samples = 6042, approximately .2% of the mainland total.

Survey personnel included supervisors from the Central Statistical Bureau who were trained in Dar es Salaam and interviewers who were recruited in the regions from among Form IV and Form VI leavers. Field training of interviewers consisted of an introduction to the purposes of the survey, sampling techniques and questionnaire administration.

Actual data collection began 1 September, 1976. Two questionnaires were used for the survey. The first (MA) was administered to the head of household in twenty-eight households sample ward. Included in this questionnaire were 1) demographic information,

2) housing, 3) distances to important centers, 4) availability and source/nature of important facilities (water, toilet, bath, refuse, kitchen), 5) animal rearing and fishing, 6) crops grown privately or collectively, 7) household manufacturing activities, 8) household services activities, 9) ownership of household, farm and fishing items. At the end of the first interview, the interviewer introduced to the heads of households a food purchase notebook which had been designed by the TFNC. In the notebook, contents (ingredients), quantities, sources, and costs of food for daily meals, as well as number of people partaking of each meal were recorded for fifteen days. Throughout the two-month period post-interview, all household purchases were recorded. Each household was then revisited at two-month intervals for one year. At each visit after the first, questionnaire form MB was administered. This questionnaire collected information of a 1) demographic nature, 2) crops grown, 3) animals reared, 4) fishing activities, 5) capital investment in private farming and fishing, 6) investment and production costs in private enterprises, 7) consumption of food, drink, clothing, and housing supplies, 8) income and other cash receipts. A new food purchases notebook was distributed with data to be recorded as in the first period.

In the case of households which could not be traced after the beginning of the study period, substitutes in the same income stratum had been previously identified and were interviewed.

After one year's time, pre-coded information from the questionnaires were entered into computer data banks. Analyses were done for most measures on a regional basis, by urban/rural dichotomies, and often by farm/non-farm households. Due to problems in information storage and shortage of personnel, analysis has been slow and by 1979, data have yet to be published.

Regional estimates of total numbers of households were made by extrapolating from sample to ward to districts to regions with supplementation by 1975 projected population figures from the CSB and lists of registered voters.

NATIONAL DEMOGRAPHIC SURVEY

DRAULUP 1973

Between 1967, the date of the National Census, and 1973, the population of Tanzania underwent dramatic economic and social changes. The 1973 Demographic Survey was designed to measure the extent to which these changes affected demographic characteristics. Characteristics to be measured included:

- 1) fertility levels by region
- 2) mortality levels by region
- 3) fertility differentials
- 4) mortality differentials

SAMPLING METHODS

The plan for the 1973 Survey was to cover the non-institutional, mainland urban and rural population of mainland Tanzania. The population was divided into three basic strata.

- I. Large Towns - this group included the eleven largest towns in the country, those with a population of 20,000 or more in 1967. In each of these towns, a list of ten-cell leaders was obtained and a systematic 1/20 sample of cells stratified by election ward was selected. All households in each selected cell were surveyed. Twelve thousand six hundred thirty-seven households were interviewed in this stratum, 6,468 from Dar es Salaam.
- II. Small Towns (less than 20,000 pop.) - Eleven of the 24 towns falling in this stratum were selected. A similar systematic sample of ten-cell units was selected with an increased sampling fraction of 1/10. A total of 3,608 households were included.
- III. Rural Areas - In each of the 18 Tanzania regions, the sample design called for the selection of four clusters of households. For eight regions each cluster was about 800 households in size, for the remaining ten regions, the clusters ranged from about 400-600 households.
 - (i) A sampling interval was calculated for each region by dividing the total 1967 rural population for the region by four (e.g., in a region with 800,000 population, the sampling interval was 200,000).
 - (ii) A random start laying between 1 and the sampling interval was determined (in one example, say 125,250).
 - (iii) Using the random start and the sampling interval, four random points were determined within the region (e.g. the 125,250th person, the 325,250th, the 525,250th, and the 725,250th). Then from the 1967 Census list of rural EA's (enumeration areas) it was determined which four EA's

contained these random points (or persons). These EA's were defined as the "core" EA's for the purpose of defining the four clusters.

- (iv) Using the "core" EA as the starting point, rules were devised which built up an appropriate size cluster by adding neighboring EA's to the core EA.
- (v) At the time of the Survey the original cluster of EA's was further adjusted to the proper size by applying rules which would either add in additional households or reduce the number of households as appropriate so as to reach the desired cluster size for that particular region. All households within a cluster were to be interviewed.

The total households for the rural portion of the Survey numbered 47,938.

The 3,200 selected households in each of the eight regions with 800 household clusters were used to study fertility and mortality levels as well as fertility trends, fertility and mortality differentials on a cluster basis. Different SES characteristics are found among these 32 different clusters. It was intended to study each cluster as if it represented a population with its SES characteristics. Altogether 64,183 households were interviewed. This is approximately 2% of the Tanzanian total.

PERSONNEL

Personnel for the survey consisted of seven teams of 2 urban and 5 rural zones. Each team was made up of 25 interviewers, 5 supervisors, 2 field inspectors, a zonal chief and 5 drivers.

The zonal chief had overall responsibility for all aspects of work; the field inspectors were responsible for the quality of data collected and one was designated as logistics officer. These constituted the senior staff and came from the CSB office.

Interviewers and supervisors were recruited as temporary employees from regional lists of Form IV leavers. Special recruiting of women was attempted, unsuccessfully, so that all teams except the DSM urban team and one rural team (Zone IV) were staffed entirely with male recruits.

Senior staff trained junior staff with an introduction to survey methods, the administration of schedules. Pre-survey practice administrations were done in rural and urban areas. During the field work, supervisors monitored interviewers, discussing techniques, problems, errors.

QUESTIONNAIRE ADMINISTRATION

The survey was carried out between August and October 1973, An average of 3-4 days were spent in small clusters and 6-8 days in large clusters.

Questionnaire No. 7 (p. 89-90 Vol IV) was administered to each head of household, or in his/her absence, a responsible member of the household. Questionnaires were written in Kiswahili.

For each district, an attempt was made to gather together the Area Commissioner, the DDD, the District Planning Officer, Division Secretary, TANU Chairman and Ward Officers. Interviewers obtained from the gathered group of leaders information regarding cultural practices, attitudes and other characteristics of the overall cluster (Questionnaire No. 2, Comprehensive Questionnaire, p. 95-126 Vol. IV).

Response rates to the Comprehensive Questionnaire items varied according to nature of questions (range 100- 19%). These rates are given on p. 129 Vol. IV.

ANALYSIS

Analysing was done by BRALUP. Information published by cluster, by mode-of-life, by tribe, by educational level, on regional and national levels is available in Vols. I, II, III, VI.

PROBLEMS

Problems encountered in the survey procedure are discussed on p. 343-360 in Vol. IV.

MORBIDITY AND MORTALITY STATISTICSHEALTH FACILITY DATADATA COLLECTION PROCEDURE

Medical institutions in Tanzania Mainland; hospitals, health centers and dispensaries, are required to send monthly morbidity and mortality reports to the Ministry of Health. Hospitals submit disease-specific data by sex, whereas dispensaries and health centers report total attendances only. These reports are sent to District Medical Officers who send compiled reports to Regional Medical Officers and to the Ministry of Health. Copies of reports are generally kept by the original institutions.

The Planning Unit of the Ministry of Health compiles statistical reports of disease frequency (without sex differentiation) for the twenty most common causes of attendances to out-patient departments, in-patient admissions and deaths in hospitals (Tables II-IV).

ESTIMATION OF DISEASE PREVALENCE

Using hospital data only, incidence and prevalence of most diseases is greatly underestimated. In 1977 there were 1,568,000 inpatient admissions in hospitals out of 98,568,000 cases of illness, in all out- and in-patient facilities that reported. Twelve million ninety-five thousand cases (16%) were treated in health centers, and 54,150,000 (53%) in dispensaries. Thirty-two million, three hundred twenty-three thousand were treated in hospitals. In 1973 a BRALUP Survey showed that only 75% of the population lived within 10 km of any health facility; of those persons who would be able to walk to a facility, many seek services from Traditional Healers.

Community surveys of prevalence of common diseases such as malaria, schistosomiasis, tuberculosis, hookworm and filariasis indicate that hospital data show only a small proportion of the yearly morbidity. On the other hand, using hospital data may exaggerate the severity of illnesses or the relative amount of fatal or serious diseases.

COMPLETENESS OF REPORTING

In 1976 only 81 (60%) of 141 Tanzanian Mainland hospitals actually submitted reports to the Ministry of Health, representing an estimated catchment population of 2,240,000. Reporting rates varied by region, ranging from 20% of hospitals in Dar es Salaam to 100% in Mwanza and Rukwa Regions.

1978 DISTRICT POPULATIONS

1978 POPULATION CENSUS

Iringa Region	922801	Mwanza Region	1443418
Iringa Rural	290101	Ukerewe	138729
Mufundi	173824	Magu	258780
Njombe	326084	Mwanza	169660
Ludewa	75610	Kwimba	325380
Iringa Urb	57182	Sengerema	243636
		Geita	307233
Mara Region	723295	Rukwa Region	451897
Tarime	252513	Mpanda	146322
Serengeti	207675	Sumbawanga Rur	247773
Musoma Rur	43980	Sumbawanga Urb	57802
Musoma Urb	219127		
Kigoma Region	648950	West Lake Region	1009379
Kibondo	139991	Karagwe	185013
Kasulu	255631	Bukoba Rur	256354
Kigoma Rur	194520	Muleba	217493
Kigoma Urb	58788	Biharamulo	165580
		Ngara	107917
Singida Region	614030	Bukoba Urb	77022
Iramba	242003	Dodoma Region	971921
Singida Rur	213732	Kondoa	275082
Manyoni	102403	Mpwapwa	261525
Singida Urb	55892	Dodoma Rur	276737
		Dodoma Urb	158577
Shinyanga Region	1323482	Coast Region	516949
Bariadi	296935	Bagamoyo	136059
Maswa	303967	Kisrawe	222455
Shinyanga Rur	362177	Rufiji	135334
Kahama	291657	Mafia	23101
Shinyanga Urb	68746		
Mbeya Region	1080241	Mtwara Region	771726
Chunya	89119	Mtwara Rur	144354
Mbeya Rur	256472	Newala	307385
Kyela	114553	Masasi	271477
Rungwe	235314	Mtwara Urb	48510
Ibeje	71228		
Mbozi	235444		
Mbeya Urb	78111		

Lindi Region	527902	Kilimanjaro Region	902394
Kilwa	114032	Rombo	157739
Lindi Rur	245089	Pare	208164
Nachingwea	102067	Moshi Rur	311951
Liwale	39406	Hai	172317
Lindi Urb	27308	Moshi Urb	52223
Morogoro Region	939190	Dar es Salaam Region	851522
Kilosa	274478	Kinandoni	364706
Morogoro Rur	344081	Ilala	228235
Kilombero	133007	Temeke	258581
Mahenge	113510		
Morogoro Urb	74114		
Tabora Region	818049		
Nzega	225027		
Igunga	189486		
Tabora Rur	187063		
Urambo	149081		
Tabora Urb	67392		
Tanga Region	1039592		
Lushoto	286069		
Korogwe	191115		
Muheza	199674		
Tanga	143878		
Pangani	33340		
Handeni	184516		
Ruvuma Region	564113		
Tunduru	135548		
Songea Rur	183095		
Mbinga	196167		
Songea Urb	49303		
Arusha Region	928478		
Monduli	118756		
Arumeru	238020		
Arusha	86845		
Kiteto	59790		
Banang	231292		
Mbulu	193775		

RELATIVE LEVELS OF WELL-BEING IN TANZANIA REGIONS

Annex 6

Annex 6

FACTORS
RELATED TO
WELL-BEING

Date of Data	1973	1973	1973	1973	1973	1976	1978	1978		1971	1976	1976/77	1978	1978	1977	1978	1974		
	Life Expectancy At birth (year)	Infant Mortality /1000 live births	% Population - Under 15 years of age	% Women with 9+ Years of Education	% Women-Age of 1st Maternity 23+ years	% Household with Tap Water	% Births in Health Facility	Gross Regional Product/Capita (TSh)	Land area with 90% Rainfall Prob. greater than 750mm/yr.	Export Crop Value on Peasant Farms (TSh)	Extent to which carrying capacity of Land is exceeded	Production in Kcal/ cap/day	Population/Primary Health Care Staff	Attendances to Health Facility/Population/Year	Adult Literacy (%)	Population/Primary School	Km Roads/Km ² Area	Average Rank Score	Rank (1-20) of Well- Being (Best-Worst)
REGIONS																			
Kigoma	38	215	46	.2	12.0	14.4	29	990	99	800	87	4697	2412	3.0	22	2636	.2	15.0	20
Singida	41	196	41	.4	16.5	.1	35	640	0	4240	1370	1631	2067	3.9	38	2029	.5	14.7	19
Dodoma	48	145	43	.5	15.7	20.1	30	680	1	0	2904	1468	1936	3.6	36	2169	.7	13.7	18
Iringa	43	178	43	.6	11.6	8.9	30	1190	53	12669	923	1333	1835	3.8	41	1726	.6	12.1	17
Mwanza	48	145	44	.3	15.8	5.0	40	800	42	52450	3782	2706	1889	3.7	30	1926	1.3	11.9	16
Mtwara	48	145	37	.2	13.0	19.7	44	552	35	20000	763	1885	2052	5.1	25	1961	.6	11.8	15
Mara	50	130	48	.6	15.3	25.2	30	748	50	44840	1440	2427	2395	3.7	21	1778	.6	11.5	14
Shinyanga	48	145	43	.1	17.0	4.1	47	1005	37	82500	2784	2867	3646	3.6	35	1704	.7	11.5	13
Mbeya	46	162	45	1.1	10.0	26.3	35	1294	33	31694	1500	3120	1696	2.9	33	1348	.5	10.9	12
Tabora	48	145	40	.3	14.9	12.1	49	1026	27	48480	1235	3603	1925	4.5	34	3325	.4	10.8	11
Coast	41	196	37	.4	20.4	23.2	51	1280	32	23427	517	867	3615	4.4	27	1544	1.0	10.3	10
Lindi	48	145	37	.6	12.3	19.4	57	678	4	20000	808	3167	2137	6.3	27	1670	.6	10.1	9
Morogoro	43	178	39	.6	9.9	26.5	44	1275	75	1720	1214	2166	1692	6.6	36	1571	.4	9.8	8
West Lake	48	145	42	.5	14.0	7.5	27	1041	43	89560	1666	2703	2146	4.9	42	1493	.8	9.8	7
Tanga	48	145	43	.7	18.6	27.7	46	1849	40	23341	2506	2887	2377	5.5	25	1931	1.2	9.2	6
Arusha	51	130	44	1.6	17.3	68.7	38	1300	5	10707	1784	3818	1495	3.8	37	1919	.5	8.6	5
(Rukwa)*	47	--	--	--	--	6.6	60	814	45	--	443	5599	1844	3.9	33	1437	--	8.3	4
Ruvuma	48	145	42	1.1	11.8	11.8	75	689	65	61162	564	4625	1576	6.2	60	1611	.4	7.4	3
Kilimanjaro	51	130	46	.8	23.1	24.6	60	1093	25	102500	2465	2289	1051	4.9	42	1500	1.8	6.7	2
Dar es Salaam	56	88	--	10.4	15.9	82.9	81	6060	--	--	1740	--	791	6.1	51	5511	--	4.3	1

*Rukwa Region was formed from portions of Mbeya and Tabora Regions in 1976, so that only the most recent data are available.

Regional Analysis of Relative Levels of Well-Being

Introduction:

The purpose of this analysis was to differentiate the relatively poor from the relatively well-off regions of Tanzania. Measurement of absolute well-being was not attempted. From a total of over fifty regional factors, for which data were available in recent years, seventeen were chosen which were thought to reflect well-being and which could be used to identify particular problem areas in each region.

1981 CDSS Analysis

In the 1981 CDSS, regional PQLI's were calculated using infant mortality rates and life expectancy at birth* obtained from the 1973 National Demographic Survey and 1978 Adult Literacy rates obtained from the Ministry of National Education. Examining the PQLI factors (Table 7-1) we find that for each factor there is relatively little spread (range); for example, in nine regions life expectancy was 48 years; the same nine regions had infant mortality rates of 145/1000 live births. This leaves adult literacy to differentiate quality of life among those nine regions. (Adult literacy rates, from information obtained from the Ministry of Education, were based on estimates of numbers of adults participating in adult literacy courses, and are, admittedly, rough estimates.) As a result these nine regions have relative ranks of PQLI between second highest, where adult literacy was reported as 60% and fifteenth, where adult literacy was reported at 25%. It appears that, due to the nature of the data available in Tanzania, there is reason to be hesitant in relying solely on PQLI as a differentiator of relative quality of life at a regional level.

The second problem which we found with the PQLI, and which our chosen analytical method attempted to address, was that none of the factors used in the PQLI are direct problem area indicators, except for adult literacy. Therefore planning of strategy based on PQLI results is difficult.

Methodology of 1982 Regional Analysis

As implied in the critique of the 1981 regional analysis, what was sought for the 1982 analysis was a broader-based, problem-area oriented method for determining relative levels of well-being. During August and September of 1979, national Ministries, research organizations, the Central

* Strictly speaking, life expectancy at age 1 year should be used in the PQLI so as not to give double emphasis to infant mortality.

TABLE 7-1 - TANZANIA PQLI BY REGION

$$PQLI = 0.6484 (LX) - 0.0977 (IM) + 0.5278 (L)$$

	<u>LE¹</u>	<u>IM²</u>	<u>L³</u>	<u>PQLI</u>
Tanzania	47	152	34	34
Arusha	51	130	37	40
Coast	41	196	27	22
Dodoma	48	145	36	36
Iringa	43	178	41	32
Kigoma	38	215	22	15
Kilimanjaro	51	130	42	43
Lindi	48	145	27	31
Mara	51	130	21	31
Mbeya	46	162	33	31
Morogoro	43	178	36	29
Mtwara	48	143	25	30
Mwanza	48	145	30	33
Ruvuma	48	145	60	49
Shinyanga	48	145	35	35
Singida	41	196	38	27
Tabora	48	145	34	35
Tanga	48	145	25	30
West Lake	48	145	42	39
Dar es Salaam	56	88	51	55
Rukwa			33	

¹ Life Expectancy, 1973 National Demographic Survey, BRALUP

² Infant Mortality

³ Adult Literacy, 1978 Ministry of National Education

Statistical Bureau, the university, parastatal organizations and donor agencies were visited, and a broad range of regional data were gathered. Each factor was evaluated on the bases of 1) ability to reflect relative well-being; 2) reliability; 3) completeness for the 20 regions; 4) recentness of data collection; 5) ability to discriminate among regions (i.e., range and relative distance between high and low values). It was decided that the factors chosen to measure well-being should directly reflect:

economic status, agro-ecological characteristics, health and sanitation, education, the status of women and demographic characteristics.

The seventeen factors which were chosen included:

1. Gross Regional Product/capita, a measure reflecting the overall productivity of the region, in agriculture, industry, fishing and handicrafts.
2. Production in Kcal/Capita/Day, a measure reflecting, specifically, availability of food and ability of region to be self-sufficient.
3. Export Crop Value on Peasant Farms. This measure was used as a complement to food production, with the rationale that if a region wasn't self-sufficient in food production, its people might be well-off if they could generate capital, from sale of export crops with which food and other necessities could be purchased.

The staff agricultural economist estimated the number of hectares planted in export crops in each region which were farmed by peasants. Estimates were based on data from Tanzania Food and Nutrition Center and the Ministry of Agriculture. The number of hectares for each crop was multiplied by 1978 price indices to give the export crop value estimates in each region.

4. Percent of Land areas with Rainfall Probability Greater than 750 mm/Year, an agro-ecological factor which in Tanzania reflects habitability and productivity of the land.
5. Extent to Which Carrying Capacity of the Land is Exceeded, reflects ability of the region to support its present population and to cope with rapidly growing population.

A 1971 BRALUP study differentiated Tanzania's districts into three groups, those which had not yet reached carrying capacity (relatively under-populated with regard to capacity of the land), those which were at carrying capacity and those which were over-populated. A score of 1,2, or 3 was assigned to each district, respectively.

District populations, as estimated by preliminary analysis of the 1978 population census, were multiplied by the district carrying capacity score and then combined into regional totals. a resulting

number was used to show the relative number of persons affected by relative over-population.

6. Population/Primary Health Care Staff (medical officers, assistant medical officers, medical assistants, rural medical aides, nurse/midwives, maternal/child health aides and health officers). This factor reflects the ability of people to obtain medical treatment, and to some extent, health education. In a separate analysis of health status variables, this factor best correlated with measured overall health status.
7. Attendances to Health Facility/Population/Year, a measure reflecting accessibility and acceptability of health care facilities to the population.
8. Adult Literacy, previously discussed. This factor reflects the success of the adult literacy campaign, and, presumably, level of development and self-sufficiency.
9. Population/Primary School, a measure of the accessibility of education facilities.
10. Percentage of Women with 9 + Years of Education, reflects the well-being of women and general level of literacy and development.
11. Percentage of Women Whose Age at First Maternity is 23+ Years , a measure of fertility, rate of population growth, and opportunity for women to assume other than child-bearing roles.
12. Percentage of Births in Health Facility (hospitals, health centers, dispensaries), the total number of births in health facilities in each region in 1978 was determined by the 1978 Health Inventory. Crude birth rates for each region were multiplied by 1978 population estimates and a total number of estimated births was determined. The births in health facilities divided by the estimated total births give measure used.

This measure reflects the accessibility and acceptability of the health system, safety of the delivery with consequent effect on health of infant and mother. (In the Tanzanian health care system there are no mid-wives trained to do home deliveries.)
13. Percentage of Households with Tap Water Source, reflects to some degree distance to water source, hence time spent by women in fetching water; also a measure of sanitation.
14. Km Roads/Km² Area, this measure, while it doesn't fit into any one category, reflects the degree of isolation of the people in the region

or conversely, their accessibility to buying and selling goods, health care and educational facilities.

15. Percentage of Population under 15 Years of Age, a measure of the dependency ratio, level of fertility and rate of population growth.
16. Infant Mortality Rate and 17. Life Expectancy at Birth, widely accepted as reflections of overall well-being and level of development.

For each of these seventeen factors, regional data were used to rank each region from 1-20. For each variable the lowest ranking (1) was assigned to the region with the best status and the highest ranking (20) was assigned to the region with the worst status. Where more than one region had the same real value for a factor, a mean ranking was assigned.

Example: In nine regions life expectancy was estimated at 48 years. There were four regions with longer life expectancies. Therefore the nine regions, which would have been assigned ranks of 5-13 were given an average rank of $(5 + 13) \div 2 = 9$.

For some factors, data were available for fewer than 20 regions. In this case, each consecutive rank (i.e., 1-18 if data from only 18 regions were available) was multiplied by 20, then divided by the number of regions (i.e., 20 + 18). By doing this we assumed that the missing regions would have had an equal chance of falling anywhere in the rankings, with the result that the worst off region was given a rank of 20 and the relatively well-off region, a rank of 1.

Once the regional ranks had been assigned for each factor, the ranks for each region were totaled and divided by the number of factors used to give an average rank score for each region. Relative well-being in the regions was determined by a final ranking on the basis of the average rank scores.

Discussion of Methodology

There are discrepancies in this analysis which illustrate the disadvantage of using regional data. Arusha Region is comprised of six districts; two are fertile mountainous areas, and four are dry steppe savannah. In the highland districts, food and export crop production, hence GRP, is so high, and the concentration of health and educational facilities and personnel so great, that the relative well-being enjoyed by these districts masks the relative poverty in the other four districts. In Iringa Region we find the opposite occurring. Whereas Njombe and parts of Ludewa and Mufindi Districts are high altitude, export and food crop-producing areas, the relative poverty in districts lying with the central ecological zone outweighs the relative well-being in other districts, leading to an overall poor regional ranking. These intra-regional discrepancies are reflected in the district Health Inventory data which are presented in Table XXVII. Other than the 1978 Health Inventory and the 1978 population census,

nationwide data disaggregated on a district level basis are not available in Tanzania.

The method of analysis used for the regional ranking of relative well-being is broad-based, but quite unsophisticated. Absolute differences in regional values for each factor were not taken into account. Because of the crude analytical method used and the nature of the available data, the rankings themselves give only an estimation of relative regional status.

The individual factors used were not weighted. It was felt that the most important determinant of relative well-being was regional productivity. Therefore several factors were included which directly reflected various aspects of economic productivity. Otherwise it was felt that each of the 17 factors represented important facets of well-being and that, used together, they presented a complete and satisfactory picture of the region.

The arithmetical, non-parametric methodology used to derive the average rank scores was simple, pragmatic and communicable. It employed an appropriate level of sophistication in incorporating a variety of data of varying, unmeasurable degrees of reliability.

An advantage of combining a broad range of directly manipulatable factors in a simple analysis is that changes in these indicators can easily be incorporated into the analysis and their effects on the composite well-being score assessed. Thus we have a good working tool for measuring both the impact of specific development interventions and improvement in relative well-being.

A REVIEW
OF
ZANZIBAR'S
HEALTH SECTOR

Office of International Health

U.S. Dept. of Health, Education and Welfare

October 1979

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PREFACE

This review of the health sector in Zanzibar was conducted at the request and with the cooperation of the Ministry of Health and Social Welfare of the Revolutionary Government of Zanzibar; the Office of the Resident Representative in Tanzania of the World Health Organization; and the Office of Health, Nutrition and Population Affairs of the USAID Mission to Tanzania. The paper's purpose is to establish an initial information base, for on-going background use in subsequent project development activity.

The bulk of the contents derived from a stay in Zanzibar by the authors from August 30 to September 21, 1979, during which interviews with appropriate sector officials and examination of relevant documents could be carried out. Prior to going to Zanzibar, the authors were also able to talk in Washington with a number of persons familiar with the Islands, and to read pertinent general background literature. Discussions with communicable disease specialists at the World Health Organization's headquarters in Geneva also led to the obtaining of otherwise unobtainable information. All such sources are cited at the back of the review.

Discussions among officials of the Ministry, WHO/Tanzania and USAID/Tanzania had led all concerned to an initial judgement that assistance to existing anti-malaria efforts in Zanzibar would be the most sensible way for USAID to relate to the health sector there. Consequently, this review gives special attention to the malaria area. The basic intent, though, is to see the malaria situation in the wider context of Zanzibar's health sector, in the belief that effective project planning requires a broad familiarity with (at least) the larger development sector within which a project will take place.

The text was prepared by John Gallivan and Dawn Liberi, staff in the Office of International Health (OIH), U.S. Department of Health, Education and Welfare. OIH's assistance in health sector analysis and project development is funded through an interagency agreement with the Office of Health, Development Support Bureau, USAID/Washington. The authors express their appreciation to the many Ministry officials listed at the end of this document who facilitated their efforts in Zanzibar. They especially wish to thank the Honorable Thaabit Kombo, Minister; the Honorable Ali Mwinyigogo, Deputy Minister; Ndugu Dr. Uledi Mwita, Director of Preventive Services; and, most especially Ndugu Hafidh Thaabit Ahmed, Planning Officer. On the AID side, thanks are due to Dr. Albert Henn, of the Tanzania Mission; Dr. Thomas Georges and Brian Kline, of the Africa Bureau; and Irving Taylor, of the Office of Health. A draft was reviewed by Karen Lashman and Dr. James King of OIH, and the current text reflects many useful suggestions and comments which they provided. Typing of the several versions of the manuscript was done by Nurgehan Ebrahim in Zanzibar, and by Ginni Caviness and Charlene Galanty in Washington.

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INTRODUCTION

The two small islands off the northeastern coast of the Tanzanian mainland, which, from 1890 to 1963, comprised the British Protectorate of Zanzibar, today form one of the two political units which make up the United Republic of Tanzania. The southern island - referred to both as "Zanzibar" and "Unguja"¹ has a land area of 1658 sq. km; it is 87 km long and 39 km wide. The northern island, Pemba, has a land area of 984 sq. km; it is 64 km long and 23 km across. The islands have a mild tropical climate. Their equatorial location is tempered by almost continual ocean breezes, and the mean maximum temperature is 29° C. Annual rainfall in Unguja is 155 cm and on Pemba it is 193 cm.

A combination of the mild climate, moderate rainfall and arable soil furnish an excellent environment for the cultivation of clove trees. The bulk of Zanzibar's foreign exchange revenues are derived from the export of cloves. Zanzibar has become a heavy importer of domestic foodstuffs, including main staples, such as rice and fish.

Zanzibar's annual per capita gross domestic product was estimated in 1978 to be about U.S. \$230 at current prices.²

Development assistance work in Zanzibar's health sector --or in any sector-- needs to be sensitive to the administrative structures formalized by the April 1977 amendments to the Constitution of Tanzania. Under these amendments, two separate entities comprise the Union --"Tanzania Bara"-- the Tanzanian Mainland, and "Tanzania Visiwani", - the Tanzanian Islands. For certain Union matters such as the currency, defense and foreign policy, the Mainland and the Islands are served by one governmental agency. Most domestic matters, though are administered by separate agencies; non-union matters for the Islands and for the Mainland each are deemed by the constitution to have their own "Government"; Zanzibar's domestic agencies thus comprise the "Serikali ya Mapinduzi Zanzibar" - the Revolutionary Government of Zanzibar. In the health sector, the responsible body of the Island's Government is the Zanzibar Ministry of Health and Social Welfare. This Ministry administers the decrees and laws relating to health passed by the "Bazara la Mapinduzi Zanzibar - the Revolutionary Council of Zanzibar. The Mainland Ministry of Health administers only health legislation passed by the "Bunge", or Mainland Parliament. Both ministries are in constant consultation with each other, and on good working terms, but each is autonomous in fulfilling its separate responsibilities. Each establishes its own priorities, and determines its own way of proceeding to meet the health needs of the separate populations.

In the larger area of development planning a similar arrangement prevails. Zanzibar's Planning Commission develops a separate plan for Zanzibar, which is approved by the Zanzibar Revolutionary Council and

1 "Unguja" will be used throughout this report, for purposes of clarity.

2 Serikali ya Mapinduzi Zanzibar, Statistical Bulletin, Nov. 1979.

the National Executive. The current 3-year plan, covering the period of July, 1978 - June 30, 1981, was published in Zanzibar as a free-standing document. Its first chapter is titled "The State of the Islands," and its focus is exclusively on the Islands. It is intended, for the planning period subsequent to 1981, to publish the Islands' plan within the same document as the Mainland Plan but as a separate section of that document.

Zanzibar's autonomy within the Union is also reflected in its retaining control of its foreign exchange earnings from its exports, which include cloves and copra.

In the health sector, a significant difference exists in the presence on the Mainland of large numbers of foreign voluntary and religious organizations engaged in health service delivery. There is no such presence in the Islands.

DEMOGRAPHICS

The current population of Zanzibar, according to an (unpublished) government census conducted in 1978, is 475,655. The population of Unguja was reported to be 270,736 with 135,834 males and 135,902 females; for Pemba, the population figure was 204,919, with 101,362 males and 103,557 females.

The last previous official census of the Islands was conducted in 1967. It reported a total population of 354,360, of which Unguja had 190,117 and Pemba 164,243. This would indicate a 3.5% annual rate of natural increase for Unguja, and a 2.2% annual rate of increase for Pemba, or an average of 2.9% for the two islands. The natural population increase for the two islands over the 1967-1978 period is 34.2%.

The rather high rate of natural increase for Unguja may reflect a certain amount of underreporting in the 1967 census. On the other hand, government population policy hinders general population access to contraceptives. Contraceptives are only available on the islands through a doctor's prescription for medical reasons to be filled at the pharmacy section of one of the hospitals.

According to the 1978 census figures the overall population density for Unguja is 163 persons/sq. km, and for Pemba 208 persons/sq. km., or an average population density of 180 persons/sq. km for the Islands.

The age distribution of the population is presented for Unguja and Pemba

	<u>Unguja</u>	<u>Pemba</u>
less than 15 years	46%	53%
15-45 years	38%	34%
greater than 45 years	16%	13%

With half the population under 15 years of age, the Islands have the high economic dependency levels characteristic of developing countries. The number of males and females is almost equal. (See Tables 1 and 2 for fuller detail on age and sex distribution).

An examination of population distribution by district, as shown in Tables 3 and 4, shows 41% of the population of Unguja residing in one district - the "Town." On Pemba, only 16% of the population is urban, with total population much more equally divided among the four districts.

This population distribution pattern has significant implications for health planning. It is reflected in the present distribution of medical facilities servicing the Islands. Unguja has a major 363-bed hospital in Zanzibar Town (V.I. Lenin Hospital); there are 34 rural dispensaries throughout the island; while Pemba has three smaller hospitals located in Chake Chake, Mkonai, and Wete (with 65-76- and 122-beds respectively) and 29 rural dispensaries servicing the rest of the island.

HEALTH AND NUTRITIONAL STATUS

Health Status Overview

Reporting of vital statistics in Zanzibar, as in many areas of the developing world, is incomplete, and existing procedures for the centralized aggregation and analyses of what is reported are generally unsatisfactory. The available data are simply too inconclusive to utilize for analytic purposes. Consequently, crude birth and death rates, infant and maternal mortality rates, and average life expectancy have not been computed for this report.

Despite the serious underreporting of deaths and diseases, hospital admission and outpatient clinic records, and rural health center logbooks do provide some mortality and morbidity information. Additionally, the review team spent much time interviewing health personnel throughout the islands' facilities. While these workers' views are necessarily impressionistic and anecdotal, what they said was reasonably consistent among the various facilities. It is predominantly from these sources that the following health profile was developed (the names of the workers interviewed are listed at the back of the report).

Malaria is generally cited as the most serious health problem, both at the hospitals and in the rural centers. It is the virulent P. falciparum strain of malaria that is prevalent in Zanzibar. The falciparum parasite may develop in major organ systems of the body. When there is cerebral involvement, the disease is frequently fatal. Several deaths due to cerebral malaria had recently been seen by physicians with whom the team met.¹

¹ The next chapter of this report, "Malaria: Status and Program," discusses the malaria situation in much greater detail.

TABLE I
UNGUJA AGE/SEX DISTRIBUTION - 1978

<u>AGES</u>	<u>MALE</u>	<u>FEMALE</u>	<u>TOTAL</u>	<u>% OF TOTAL</u>
Under 1	4,226	4,546	8,772	3
1-4	19,291	20,153	39,444	15
5-9	22,524	23,795	46,319	17
10-14	15,518	15,000	30,518	11
15-24	23,214	24,904	48,121	18
25-34	15,742	16,572	32,314	12
35-44	11,479	11,335	22,814	8
45-54	9,231	8,256	17,487	6
55-64	6,639	5,647	12,286	5
65 and over	<u>6,970</u>	<u>5,691</u>	<u>12,661</u>	<u>5</u>
Total	<u>134,834</u>	<u>135,902</u>	<u>270,736*</u>	100

* The discrepancy between this figure and the figure cited in Table 3's breakdown of the Unguja population by district is attributable to mathematical errors. Original age-sex distribution data were not available to be checked for purposes of this report. Table figures of 134,834 Males, 135,902 Females, and 270,736 Total, are used for Unguja.

Source: Government of Zanzibar

TABLE 2
PEMBA AGE/SEX DISTRIBUTION - 1978

<u>AGES</u>	<u>MALE</u>	<u>FEMALE</u>	<u>TOTAL</u>	<u>% OF TOTAL</u>
Under 1	3,775	3,802	7,577	4
1-4	17,400	17,460	34,860	17
5-9	19,967	20,142	40,109	20
10-14	13,213	11,264	24,477	12
15-24	14,118	17,463	31,581	15
25-34	10,075	12,593	22,668	11
35-44	7,865	8,276	16,141	8
45-54	5,808	5,350	11,158	5
55-64	4,281	3,439	7,720	4
65 and over	<u>4,860</u>	<u>3,768</u>	<u>8,628</u>	<u>4</u>
	<u>101,362</u>	<u>103,557</u>	<u>204,919</u>	100

Source: Government of Zanzibar

TABLE 3

UNGUJA POPULATION, BY DISTRICT - 1978

<u>DISTRICT</u>	<u>MALE</u>	<u>FEMALE</u>	<u>TOTAL</u>	<u>% OF TOTAL</u>
1. <u>Northern (a)</u> 27 Villages	23,441	24,684	48,125	18
2. <u>Northern (b)</u> 23 Villages	14,880	14,063	28,943	10
3. <u>Central</u> 36 Villages	15,540	14,197	29,737	11
4. <u>Western</u> 22 Villages	16,769	14,767	31,536	12
5. <u>Town</u> 18 Villages	53,890	56,614	110,504	41
6. <u>Southern</u> 17 Villages	<u>10,669</u>	<u>11,274</u>	<u>21,943</u>	<u>8</u>
Total	135,189	135,599	270,788*	100

* See note to Table 1

Source: Government of Zanzibar

TABLE 4

PEMBA POPULATION, BY DISTRICT - 1978

<u>DISTRICT</u>	<u>MALE</u>	<u>FEMALE</u>	<u>TOTAL</u>	<u>% OF TOTAL</u>
1. <u>Chake Chake</u> 12 Villages	23,320	23,878	47,198	23
2. <u>Mkoani</u> 16 Villages	25,388	26,171	51,559	25
3. <u>Konde</u> 9 Villages	23,482	23,829	47,311	23
4. <u>Wete</u> 15 Villages	<u>29,172</u>	<u>29,679</u>	<u>58,851</u>	<u>29</u>
Total	101,362	103,557	204,919	100

Source: Government of Zanzibar

In order of magnitude, the following other conditions were cited by health workers as those most frequently treated in adults: gastroenteritis and other diseases of the G.I. tract (including ulcers); anemia due to bilharzia, hookworm, or other helminthic infections; liver diseases--the most prevalent of which is infectious hepatitis--including cirrhosis and hematoma; diseases of the upper respiratory tract, especially bronchitis, asthma, pneumonia and tuberculosis; sickle-cell anemia; diabetes mellitus; and filariasis. Yaws is not common, but is still seen. Traffic accidents and falls from trees by clove-pickers are the two major causes of trauma generally reported. The Zanzibaris have also been noted to have a congenital pre-disposition for weaknesses of the muscles of the abdominal wall, resulting in a high level of corrective surgery for hernias.

According to a brief and incomplete compilation of data done for the review team by the Ministry of Health, major causes of infant mortality are measles, cerebral malaria, pneumonia and anemia. Measles deaths can in part be attributed to acute shortages of kerosene, and a consequent spoilage of measles vaccine kept in kerosene-powered refrigerators in the rural health centers.

Causes of morbidity in children under five are reported in order of magnitude, as gastro-enteritis; pyrexia thought to be caused by malarial infection; bilharzia, hookworm and other helminthic infections; protein-energy malnutrition and anemia; conjunctivitis; and measles, chickenpox, mumps and whooping cough.

A significant proportion of maternal mortality and morbidity may be linked at least indirectly to multiparity and inadequate prenatal care. Many women marry young, some as early as 13 reflected by a high average fertility rate of between 6 and 8 children/woman of childbearing age. Ectopic pregnancies are frequently seen, and are thought to be related to pelvic inflammatory disease (PID). Spontaneous abortions are common (induced abortions are prohibited by the Government). Post-partum hemorrhage is the major cause of maternal mortality. In addition, protein-energy malnutrition and anemias are quite prevalent among this population.

Nutritional Status Overview

Although reliable data on Zanzibar's nutritional status does not exist, there would be no reason to expect major differences from the dominant pattern in developing countries. Food scarcity resulting from poverty, erroneous food-related beliefs, and poor food distribution within the community and the family, comprise this pattern with resulting deficiencies in protein and energy intake, particularly in children.² It is the impression of some clinicians in Zanzibar that protein-energy malnutrition has been increasing in recent years. They report seeing weaning marasmus and kwashiorkor occasionally in both urban and rural settings. Anemia is commonly seen both in children

² See, for example, Baunslag et al, "Nutrition Problems in Africa," Office of International Health, 1979.

and pregnant women. Many of the anemias are thought to be due to high levels of hookworm, bilharzia and other helminthic infections, as well as to a general protein-intake deficiency. Other nutrition-related problem areas include dental caries - caused by the action of free acids released from the bananas and coconuts dominant in the Zanzibari diet and constipation and related gastrointestinal disorders.

Outside of clove production for export, the major food crops produced are cassava, coconut, bananas, maize, potatoes, millet and rice. Shortages of various foodstuffs, particularly of the rice and flour which Zanzibar must import, are reportedly common. Local fishermen reportedly take their protein-rich catches to the mainland, where they can command higher prices than are possible in the Islands. Small-scale poultry and dairy production efforts in the Islands do not meet the needs for protein-rich foods.

Infants are breastfed until two years of age, and then weaned on rice, maize or cassava. Current prices affect what type and how much food children receive. African children generally fall behind better-nourished reference populations in height and weight gain after about six months of age.³ The pattern in Zanzibar may well be similar.

Within the Ministry of Health and Social Welfare, most nutrition activities are integrated with maternal and child health (MCH) services. Nutrition education for mothers is the responsibility of MCH Aides (The MCH program is described in the "Delivery System" section of this report). For the public in general, it is carried out by the Health Education Unit. The frequency of these educational efforts appears to be intermittent.

In striking contrast to the lack of general mortality and morbidity data, several specific disease areas have a significant information base, which the following sections attempt to synthesize. (The most prominent such disease is malaria, the discussion of which is omitted here and will be dealt with separately in the next chapter.)

Bilharzia

The term "bilharzia" is used more frequently in Zanzibar than the term "schistosomiasis." Therefore bilharzia is used in this report.

There have been several studies of bilharzia in Zanzibar, dating back to as early as 1925. They are cited, summarized and expanded upon by McCullough and Krafft (1975)⁴, who found Schistosoma hematobium (the urinary type) to be endemic on Unguja and Pemba, while identifying only a few sporadic cases of Schistosoma mansoni (the intestinal type). They found S. hematobium to be four times more prevalent on Pemba than Unguja, with the highest rates in the 8 - 16 year age group. They estimated that 20% of the people of Unguja and 60% of the people of Pemba

³ Ibid.

⁴ Full citations for this and similar references in the text may be found in the "Other Documentary Sources" section at the end of the report.

presently have, or have suffered from bilharzia. It was reported that very young children (under five years) did not contribute significantly to transmission. However, it should be noted that in the team's visits to some rural health clinics, anemia due to bilharzia infections was cited as one of the major clinical ailments of pregnant and lactating women.

Although the snail hosts (Bulinus physopsis) appear to be widespread, the sites of transmission are focal rather than extensive. Rice fields apparently do not contribute much to transmission.

Climate, topography and seasonal variations of rainfall are evidently favorable to the maintenance and continuation of the schistosome cycle. Some washing, bathing and swimming is done in swamps, streams and ponds. Consequently children 6-18 years of age who play in the water, and mothers who do their washing in streams, are the groups at greatest risk of infection.

Distribution of the infection on Unguja is restricted almost exclusively to the northwest portion of the island (with highest endemicity at Donge and Chaani); while on Pemba the distribution of endemic foci is widespread.

Based upon these findings, McCullough and Krafft proposed recommendations for a control program which included: chemotherapy (the drug of choice being Bilarcil) mollusciciding (the drugs of choice being Bayluscide or Frescon), environmental sanitation, health education and legislation.

There is now no active bilharzia control program on Zanzibar or Pemba, due to lack of resources and trained personnel. However, subsequent to an August 1979 visit by a WHO team, the possibility was projected that an operational research and control project for Zanzibar would soon be established, and would run for a period up to two years. At the end of this initial project, it is estimated, a large-scale bilharzia control program could be implemented. Because of the relative specificity of the endemic foci of transmission, a drastic lowering of the prevalence of bilharzia infection to the point where it no longer constitutes a major public health problem is thought to be feasible within a decade. Cohen (1974), using the findings of Forsyth (1969), indicate that a significant reduction of bilharzia morbidity could potentially increase the life expectancy by an average of three years.

Filariasis

In May and June 1975, a random survey was conducted for the Ministry over a 40-day period by Professor Kilama of Dar es Salaam University to determine: (a) the clinical prevalence of filariasis; (b) parasitological representation, based on night blood examination; and (c) the local mosquito species involved in transmission, and their susceptibility to various insecticides.

The areas of Zanzibar Town district, Jambiani, Chwaka and Chaani on Unguja, and Wete, Chake Chake and Mkoani on Pemba were chosen as the sites to be surveyed. The clinical surveys were limited to males over 15 years of age. A total sample of 6,000 people were examined. Clinical results indicated the following: (a) 6,000 blood samples were taken, with a microfilarial rate for Unguja of 14.8% and 13.2% for Pemba; (b) the most common lesions found were funiculitis followed by hydrocoele; prevalence of such lesions increased with age so that while only 10% of the men aged 15-24 showed any signs, almost 20 percent of those 50 years and older showed signs; (c) the two areas of highest endemicity were Makunduchi and Zanzibar Town district, both on Unguja; and (d) the vector was identified as Culex pipiens fatigans, which was shown to be resistant to DDT and susceptible only to organophosphorous compounds, Benocide being the present insecticide of choice.

Kilama's conclusion was that the prevalence rate of filariasis in the adult male population was alarmingly high and constituted a significant public health problem. This is the only known study done on filariasis in Zanzibar. Recommendations for its containment included: (a) continuation of insecticiding as a measure aimed both at malaria and filariasis transmission; (b) continuation of larviciding with Dursban, particularly in areas of high endemicity; and (c) improvements in excreta disposal arrangements, given that pit latrines, septic tanks, and sullage pits are excellent Culex breeding sources.

Although aware of these findings and recommendations, the filariasis unit within the Ministry of Health is unable to carry out any large-scale preventive work due to a lack of funds and other resources; and must, of necessity, confine itself to treatment of positive cases. The filariasis unit works primarily through the malaria surveillance agents and rural health assistants for collection of blood samples and treatment of positive cases. Unfortunately, none of the staff either in the filariasis unit or in the rural health centers have had any formal training in filariasis control, and this severely limits their capabilities. A monthly recording system for filariasis has been established, and the following information is collected: number of slides taken at each health center; number of presumptive cases; number of cases positive; number treated; number of contacts treated and the number who have died from filariasis (though the latter is rare).

Tuberculosis

There are about 910 known cases of tuberculosis in the Islands - or a prevalence rate of 1.9 per thousand. Five hundred sixty are registered on Unguja, and 350 on Pemba.

A treatment center for Unguja is located at Dole, eight miles from Zanzibar Town. It has a staff of five: one physician, one program officer, two staff nurses and an orderly. The Dole Hospital has a bed capacity of 92; there were 40-45 in-patients at the time of the visit.

Patients are usually referred from V.I. Lenin Hospital or the rural centers, and are sent to Dole for chest X-rays and sputum analysis. All positive cases are admitted into the hospital where they are treated for an average of three months. Upon discharge they are then referred to the nearest health center for follow-up treatment. A rural health assistant makes rounds to the various centers to check on tuberculosis patients and investigate any defaulters from the treatment regimen. This follow-up is often difficult due to lack of transport to the rural areas. Procedures are similar on Pemba. The only difference is that, instead of a separate treatment center, there are special tuberculosis wards in general purpose hospitals, one for males at the Chaka Chake Hospital, and one for females at the Wete Hospital.

In 1969, the tuberculosis unit of the Ministry conducted a case finding and treatment campaign. Since then, the BCG vaccine and health education which increased the awareness of the people of the need to report chest problems, have all contributed to reducing the incidence of the disease. In addition, examination of patient contacts is becoming more extensive, and early detection has prevented the development of advanced stages.

Zanzibar participates in the Medical Research Council of East Africa's Tuberculosis Research project (directed from London). Fifty Zanzibari patients are part of the ongoing research each year. To date all patients have responded favorably to their treatment. The patients involved in this process are supplied drugs directly through the Medical Research Council; all other drugs are obtained through regular Ministry channels.

Leprosy

There are about 490 known cases of leprosy in Zanzibar - or a prevalence rate of a little over 1 per thousand. Three hundred are registered on Unguja, and 190 on Pemba. There are 74 in-patients at the Wellezo leprosarium on Unguja, and 128 in-patients at the Makondeni leprosarium on Pemba. The remainder of the cases are treated on an out-patient basis once a month, with the present drug of choice, Dapsone. Defaulters receive follow-up visits from a case worker.

Officials at both leprosaria state that many leprosy victims, though cured, are reluctant to leave the facilities because of their disfigurements. These persons simply continue to reside on the grounds. They, along with the formal in-patients, engage in cultivation of land and some small-scale handicrafts.

Cancer

Though previously not regarded as such, cancer (of all forms) is now regarded by some to be a significant health problem in Africa. Zanzibar was the first African area to request a WHO consultation on

cancer. In response, Dr. Alexandre Ohin was sent by WHO in July-August 1974 to survey the cancer situation in the Islands.

Accurate estimation of cancer prevalence rates for Zanzibar and Pemba was impeded by several major factors, and the results reported by Ohin were illustrative of the cancer problem in Zanzibar rather than definitive. At the time of his report, there was no resident pathologist on Zanzibar or Pemba and all biopsies had to be sent to Dar es Salaam for histological evaluation (waiting time was between 4 - 8 weeks). In addition, much of the reporting on cancer was dependent upon the interest and cooperation of the ward physicians of the four hospitals.

Ohin found cervical cancer to be the most prevalent form of cancer on Unguja, representing 16.3% of all cancer cases from 1967-73 and 55.2% of all cancer of the female genital tract. The finding included only reported and diagnosed cases during that time.

The mean age group affected was 35-30 years, but a few cases were reported in women 19-25 years. Reasons cited for the occurrence of cervical cancer were: (a) women marry young (some as early as age 13) and have many pregnancies; (b) polygamy is frequent; (c) the incidence of venereal diseases is high; and, probably of most significance, (d) insertion of traditional medicinal preparations into the vaginal cavity to cure pelvic diseases, induce abortion, ameliorate cases of sterility, or aid in post-partum treatment and recovery is practiced.

The second most commonly diagnosed cancer on Zanzibar was found to be in the gastro-intestinal tract, particularly the esophagus, nasopharynx and buccal cavity. Reasons cited for this were tobacco and betel nut chewing, as well as the ingestion of a Zanzibari alcoholic drink "Tende," which is reported to contain carcinogenic nitrosamine compounds.

For Pemba, the relative incidence rates of these two types of cancer were somewhat inverted, with incidence of gastro-intestinal (particularly esophageal) being somewhat higher than cervical cancer.

Combined cancer rates for the two islands resulted in the following distribution:

Female Genital System	29.1%
Gastro-Intestinal	24.2
Miscellaneous	21.2
Skin	13.3
Lympho-Haemopoietic	7.9
Male Genital System	4.2
	<hr/>
	100.0%

Source: Ohin (1974). (See "Sources" for full citation)

There is one psychiatric facility in Zanzibar, Kidongo-chekundu Hospital which admits patients from both Unguja and Pemba. The present staff consists of 50 persons, primarily orderlies, the majority of whom have had no psychiatric training. There are no psychiatrists or psycho-therapists on the staff and consequently, no psycho-therapy is given. The patients are treated by a general practitioner primarily with tranquilizers. The bed capacity of the Hospital is 185, and according to a 1978 DANIDA report, occupancy may reach 200%. By far the greatest number of admissions are persons between ages 10-20, the next most frequent age group admitted is adults over 45 years. Many of the young admissions are first seen as truants and are either reported to authorities by their parents or picked up by the police.

Once a patient is released, follow-up is difficult and many are eventually readmitted. It is believed by hospital staff that the magnitude of this problem is growing, and they point out that there are not enough social workers, psychiatric nurses, or community counselors to deal with it.

MALARIA: STATUS AND PROGRAM

The Malaria situation in Zanzibar is widely perceived as the Island's most serious public health problem. Despite a steady increase in its seriousness, the current efforts to control malaria remain constrained by human and financial resource limitation. While the present Ministry staff is carrying out key programmatic activities to the best of its abilities --including an impressive record-keeping effort-- the levels of technical and administrative expertise available are not commensurate with the threat which malaria poses to the Islands' population.

Historical Overview

Malaria has historically been endemic to Zanzibar, as it has been in most of sub-Saharan Africa. Prior to a WHO-supported anti-malaria campaign begun in 1950, parasitism rates¹ among children two to nine years old had been recorded at levels as high as 52.8% on Unguja and 68.4% on Pemba.

The WHO campaign was conducted from 1950 to 1968, with substantial success. Although the initial goal of eradication was not attained, the parasitism rate was reduced to a level which no longer represented a public health hazard -- 7.8% on Unguja and 1.7% on Pemba. These results were achieved through substantial technical and financial inputs by WHO, including the presence on the Islands of a series of project leaders,

1 Developed through microscopic examination of blood samples of persons with fever, the malaria parasitism rate (or "positivity rate") is the percentage of all such blood slides in which the malaria parasites are found. It is neither a prevalence nor an incidence rate.

malariologists, sanitary engineers, entomologists, over 40 vehicles, and adequate supplies of drugs and equipment. The formal project was terminated at the request of the Government although some small-scale anti-malarial activities, including house spraying and single dose mass drug distribution, were continued on a random basis for the next five years.

Recent Status

In 1972, a malaria control program was re-initiated by the Government, without external support. As shown in Table 5, the number of blood slide examinations under the reactivated program increased 15-fold from 1973 to 1978. Table 5 also indicates that, from 1975 to 1978, Unguja had steady increase in its rate of malaria prevalence, while Pemba experienced an initial increase followed by a slight decline.

Both islands' figures, however, must be interpreted cautiously. A dependence on passive, rather than active case detection permits a possibility of large-scale underreporting. More importantly, work done by a WHO team, Chayabjora and Payne (1974), found considerable errors in the delared positivity rates on blood slides analyzed at the V.I. Lenin Hospital on Unguja. Rather than the 30-40 positive blood slides per day previously recorded by the hospital laboratory, the WHO team found only 4-5 truly positive slides per day. This difference alone would account for the ten-fold decrease in incidence rates indicated in 1974 for both Unguja and Pemba. The transfer of malaria laboratory diagnosis responsibility to the malaria unit of the Ministry of Health, with its more highly trained microscopists, has improved the situation. Nevertheless, determination of the accuracy of blood-slide analysis is a crucial area for investigation by any technical team offering further assistance to the malaria program, if the real magnitude of the malaria problem in the Islands is to be ascertained and used as a baseline for future programming.

A 1978 WHO review of the malaria situation (Giri, 1978) concluded: "Although no malariometric surveys have been undertaken recently in the population, and although health institutions' records are incomplete and somewhat unreliable, observations show that there is an overall increase in the prevalence and severity of malaria. The probability of severe under-reporting of cases is also very high." This statement, along with informal random examination of rural health center records, which list "Pyrexia of unknown origin" as a frequent diagnosis, would tend to support the malaria figures recorded by the Ministry from 1973 through 1978. Interviews with rural health center and hospital staff also indicate that the frequency of treatment for fever, much of which is believed to be caused by malaria, is on the increase.

Monthly passive case detection rates for Unguja and Pemba for 1979 show a high level of malaria parasitemia within the population, as well as a number of deaths due to malaria for Unguja. (See Table 6)

TABLE 5

Malaria Blood Slide
Examination Results, 1973 - 1978

<u>Year</u>	<u>Blood Slides</u> <u>Examined</u>	<u>Number</u> <u>Positive</u>	<u>Positivity</u> <u>Rate</u>
1973			
Unguja	4,279	2,311	54.0%
Pemba	351	27	7.7%
1974			
Unguja	60,381	3,240	5.4
Pemba	5,057	37	.7
1975			
Unguja	23,365	3,458	14.8
Pemba	7,519	464	6.2
1976			
Unguja	32,499	6,859	21.1
Pemba	23,393	3,991	17.0
1977			
Unguja	38,231	11,211	29.3
Pemba	28,905	4,701	16.3
1978			
Unguja	58,728	21,618	36.8
Pemba	21,831	3,372	15.4

Source: Malaria Unit Internal Records
Ministry of Health and Social Welfare, Zanzibar, 1978

TABLE 6
MALARIA BLOOD SLIDE
EXAMINATION RESULTS, 1979

<u>UNGUJA</u>				
<u>Month</u>	<u>Examined</u>	<u>Positive</u>	<u>Deaths</u>	<u>Positivity Rate</u>
Jan.	7803	2840	6	36.4
Feb.	4949	2055	7	41.5
Mar.	5333	1843	1	34.5
Apr.	4378	2024	3	46.2
May	5276	2524	6	47.8
June	5024	2499	-	49.7
July	3792	1274	-	33.6
<u>PEMBA</u>				
Jan.	3516	837	0	23.8
Feb.	3429	1074	-	31.3
Mar.	5023	1519	-	30.2
Apr.	3653	1332	-	36.4
May	5414	2262	-	41.8
June	5822	2772	-	47.6
July	3295	1450	-	44.0
Aug.	3300	1662	-	53.0

Source: Malaria Unit Internal Records, Ministry of Health and Social Welfare, Zanzibar, 1979.

The Current Program

The existing anti-malaria program consists of four major components: (1) mass distribution of preventive dosages of chloroquine (2) residual spraying of residences and other structures, (3) larviciding, and (4) passive case detection and follow-up.

The preventive dosages of chloroquine are supposed to be distributed throughout the entire population during the rainy seasons -- April to June, and October - November. The tablets are to be consumed once a month, in the following dosages:

<u>AGE</u>	<u>Chloroquine (150 mg)</u>
0-1 year	½ tablet
2-4 years	1 tablet
5-8 years	2 tablets
9-13 years	3 tablets
14 years and above	4 tablets

According to Giri (1978), the drug distribution activity on Unguja has been rather ineffective in recent years, while the efforts on Pemba have achieved much broader coverage of the population as outlined:

	Year	No. of People Given Drug	% of Population (based on 1968 Census)
UNGUJA			
	1975	27,908	10.9%
	1976	85,113	33.3
	1977	74,942	29.3
PEMBA			
	1975	145,509	82.2
	1976	162,678	91.9

Giri was also critical of the program's limiting chloroquine distribution to the rainy seasons, and recommended that, in addition, the drug should be distributed throughout the year, every two weeks, (rather than monthly) to all children 5 years old and under, and to pregnant women.

The most recent test of chloroquine efficacy in Zanzibar -- performed in 1974 -- indicated that the Falciparum parasite in the Islands was still susceptible. Recent increases in malaria, coupled with some recent reports of patients not responding to curative doses of chloroquine, underscore a need for new sensitivity testing. Also, there are frequent complaints of severe itching as a result of the preventive dosage of chloroquine.

Residual spraying is conducted throughout the year, but with more intensity during the months of January through March and August through October, before the two rainy seasons, when the Anopheles gambiae and Anopheles funestus vectors breed most heavily. The insecticide in use is DDT, 75% water disposable powder, at a suggested application rate of two grams DDT per square meter of wall space.

Monthly records of number of houses and other structures sprayed are kept by the malaria unit and used to compute monthly average and yearly totals. Table 7 provides a sample of this carefully maintained record system. The table indicates that in 1978 a monthly average of 2,987 permanent residences on both islands were sprayed. This represents a level of activity considerably below previous years, as indicated:

<u>Year</u>	<u>Monthly Average of Residences Sprayed</u>
1975	5,946
1976	3,928
1977	3,463
1978	2,987

Insufficient funds, lack of equipment and reliance on voluntary sprayers -- whose schedules tend to be erratic-- are cited by malaria program staff as reasons for the recently decreasing spraying levels.

The chloroquine distribution and residual spraying components of the anti-malaria program are, of course, managed by the Ministry of Health and Social Welfare's malaria program unit. But the effectiveness of the front-line contact between these activities and the people of the Islands requires the active involvement of the Chama Cha Mapinduzi, the Revolutionary Party. The Party organization, throughout both Mainland Tanzania and the Islands, consists of local-level Branch offices, which are in turn sub-divided into groups of ten families, called ten-cell units. The leader of a ten-cell unit is called a balози. The actual insecticide spraying of dwellings is done on a voluntary basis by members of the ten-cell unit; the chloroquine is distributed by the balozis to the population of his ten-cell unit. The Malaria Surveillance Agents of the Ministry's Malaria Program, thus, play only an intermediate and advisory role in these activities. Their primary responsibilities are facilitating the transportation of insecticide, equipment and drugs to the party Branch headquarters; instructing volunteers in spraying techniques; and keeping records on the number of structures sprayed and drugs delivered.

There are 197 Party Branch offices in Zanzibar (143 on Unguja and 54 on Pemba), and the Ministry has 84 malaria surveillance agent

TABLE 7

ZANZIBAR, RESIDUAL SPRAYING ACTIVITIES, 1978

Month	Residences Sprayed	Other Structures Sprayed	Partially Sprayed Houses	Houses Locked, Not Sprayed	DDT 75% Used (kg)	SUPA Dill Insecticide Used	Clove Sheds Sprayed	Rice Huts Sprayed	Coral Area Sprayed
Jan.	28	--	--	--	--	50 LTS	--	--	--
Feb	3003	1735	--	33	589	7 LTS	339	14	73
Mar.	1749	816	--	--	445	---	242	14	1
Apr.	3875	2151	15	15	697.5	72 LTS	204	8	26
May	3560	2085	2	13	824.3	12 LTS	415	298	165
June	1550	983	2	2	308	---	67	3	4
July	1484	984	7	28	186.15	18 LTS	41	3	--
Aug.	4661	2903	--	31	850.03	67 LTS	59	185	107
Sept.	4169	1610	9	126	956.5	98 LTS	179	551	248
Oct.	5396	2153	16	295	1020	12 LTS	602	1298	201
Nov.	5534	1362	8	19	1199	91 LTS	130	23	2
Dec.	837	152	--	--	288.05	161 LTS	--	--	--
TOTAL	35,846	16,934	59	562	7363.53	588 LTS	2278	2397	827

Source: Ministry of Health, Malaria Unit, Zanzibar

positions (49 for Unguja and 35 for Pemba). Each malaria surveillance agent is therefore responsible for an average of 2.3 Branches; in practice, with staff shortages in the rural districts, this figure can increase to three or four Branches per agent. Individual agents can, thus, become responsible for maintaining anti-malaria activities for a population base of up to 10,000 persons in the worst cases. Figured as an average on the basis of the total population, each agent serves 5,663 people. Bicycles are sometimes available to the agents for branch drug distribution purposes. Only two vans, one for each island, are available for bulk distribution of drugs, and for transport of spraying equipment to the health centers where the agents are based.

Ministry program operating procedures call for house spraying twice yearly, and, during the two rainy seasons, monthly individual chloroquine prophylaxis. The community participation approach being attempted in Zanzibar is a crucial factor in achieving these objectives and represents one important sub-set of the community activities centered around Party Branch headquarters. Successful implementation of the program has been hampered by several factors. In 1976, only 414 persons volunteered for spraying work, or an average of a little over two per branch, an insufficient number to reach all dwellings. Ministry malaria staff have suggested that institution of a small day-rate compensation for this difficult and often dangerous work might increase the number of volunteers upon which the program depends. Also, while many balozis are reportedly conscientious about their chloroquine distribution responsibilities, there are some reports of their maintaining the drug supplies for curative use only.

The larviciding component of the program is conducted now on Unguja in Zanzibar Town and some rural areas and in four towns on Pemba. The Ministry intends to expand this work to include all areas of the islands. The six Ministry-trained larviciders use pumps mounted on their backs to spray into pit latrines, drainage pits and other common small-scale breeding places.

Monthly records are kept, indicating larviciding targets, the actual operational activities, and the areas of larviciding within residences. While the present larvicide of choice is Dursban, the malaria unit has begun recently to use crude oil. Yearly totals of larviciding activities for Zanzibar from 1976-1978 are provided in Table 8.

Table 8 indicates that larviciding operations have improved over the 1976-78 period, in terms of closing the gap between targeted and actual levels reached. However, it is important to note that the actual number of larvicided houses had decreased drastically over that period. What is not represented in the chart, is the total number of houses, pit latrines, etc., in Zanzibar, so that actual coverage rates can not be computed. It can reasonably be assumed that, at least as of 1978, only a small percentage of the urban population was being protected through larviciding.

TABLE 8

LARVICIDING ACTIVITIES, ZANZIBAR, 1976-1978

<u>Year</u>	<u>Houses Targeted for Spraying</u>	<u>Actual Houses Sprayed</u>	<u>Houses Closed</u>	<u>Pit Latrines Sprayed</u>	<u>W.C.'s Sprayed</u>	<u>Sullage Pits Sprayed</u>	<u>Drains Sprayed</u>
1976	17,658	16,355	1243	10,258	8,706	20,251	3175
1977	8,244	7,078	1114	3,588	10,248	11,213	5462
1978	3,337	3,323	14	2,097	765	9,328	725

Source: Ministry of Health, Malaria Unit, Zanzibar

The passive case detection component of the program is the primary source of data regarding the extent of Zanzibar's malaria problem. Hospital and health center patients who are febrile undergo blood tests for malaria. Only four laboratories have the capability to analyze blood samples -- the Malaria Program's own laboratory in Zanzibar Town, and the three hospital laboratories on Pemba. Blood slides from the rural health centers, therefore, must be sent to these laboratories. In July, 1979, 78% of the 3,792 blood slides examined in the Zanzibar Town laboratory were referrals from V.I. Lenin Hospital, probably indicating that logistical constraints in transmitting blood slides from the rural areas to the laboratory were preventing accurate assessment of overall parasitism levels in the population as a whole. In the case of a positive reading, the appropriate referring facility is informed. In the rural districts, health center staff are responsible for case follow-up and education.

It is realized by the Malaria Program staff that an active case detection component in the program, in which agents would seek out possible malaria cases through home visiting activities, would be desirable, but the current workload precludes such outreach.

The Malaria Program is not presently undertaking any source reduction activities with regard to the Anopheline vectors, primarily due to manpower and financial resource limitations. Giri (1978) indicates that effective source reduction could be undertaken to eliminate many breeding places as part of the overall self-help scheme.

SECTOR INFRASTRUCTURE

Organization

Zanzibar's Ministry of Health and Social Welfare is responsible for the delivery of health services, free of charge, to all citizens of the Islands. The Ministry is headed by a Minister and a Deputy Minister (both of whom are currently members of the Zanzibar Revolutionary Council). Inter-Ministerial relations and general management are the responsibility of an Assistant Minister, whose role is likened to that of a permanent secretary in the British administrative system. The three health-related operational divisions of the Ministry--Preventive Services, Curative Services, and Planning and Administration--report directly to the Assistant Minister (who also has responsibilities for a Division of Social Welfare). The Minister, Deputy Minister, Assistant Minister and the Division Directors comprise the High Council of the Ministry --Halmashauri ya Wizara--which is the Ministry's major policy development forum. An unofficial organization chart of the Ministry is presented as Figure 1.

Under the present organizational structure, a diversity of officials at Ministry headquarters on Unguja, and a single official based at Wete

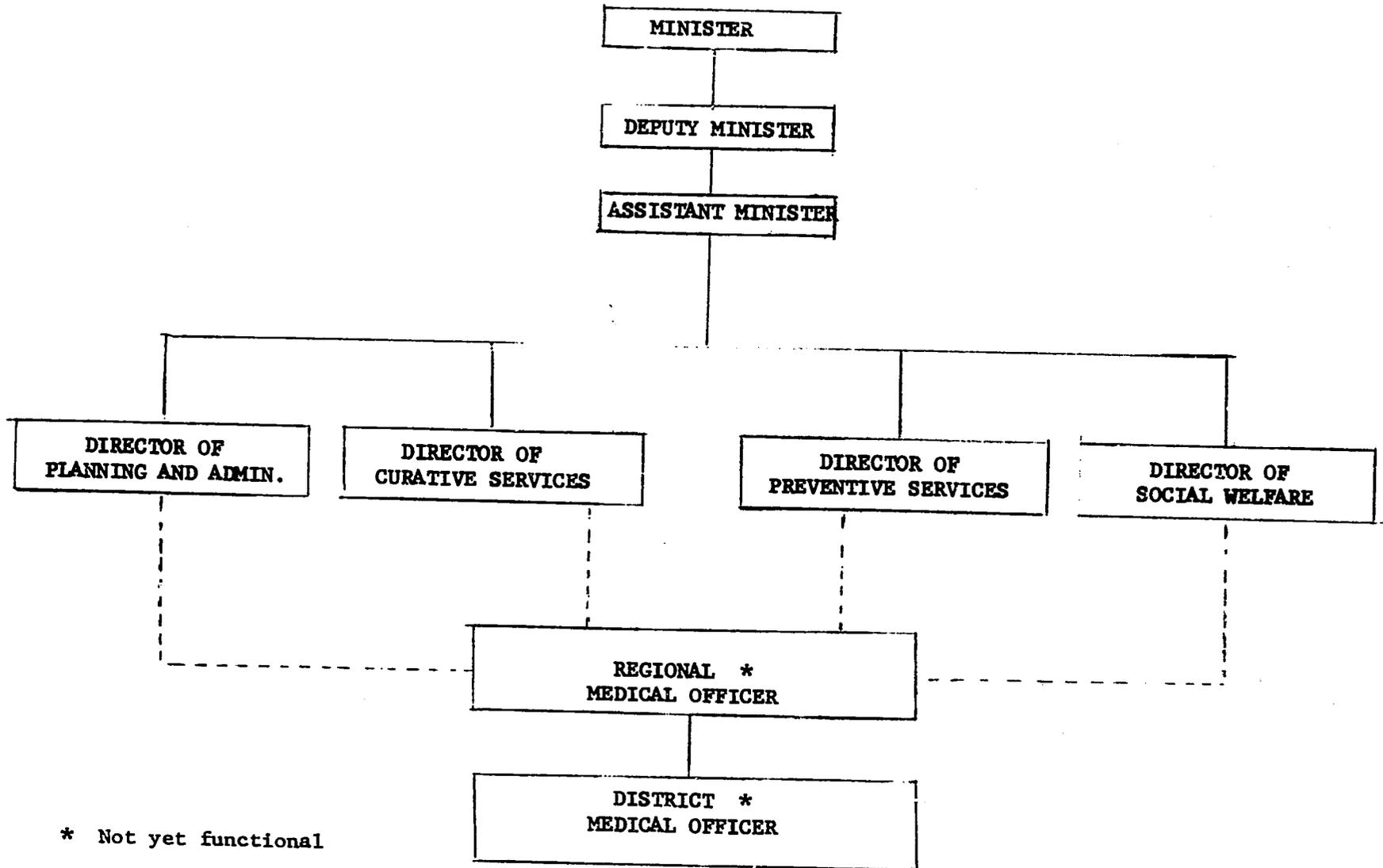


Figure 1. Unofficial Organization Chart, Ministry of Health and Social Welfare, Revolutionary Government of Zanzibar.

on Pemba, exercise management responsibilities for the Islands' health services system. In an attempt to distribute these management responsibilities more evenly, a policy of decentralization of service delivery has been adopted. Thus, the Ministry was, during the review team's visit, in the process of creating and staffing "Regional Medical Officer" and "District Medical Officer" positions. When they become active, these officials would supervise all Ministry activities within their areas. Unguja will have three regions, each comprised of two districts; and Pemba two regions, each also encompassing two districts. Five regional Medical Officers will be selected, and ten District Medical Officers. The major purposes of instituting these new levels in the Ministry's organization are to enhance, through decentralization, distribution of pharmaceuticals to the Islands' rural health centers, and to exercise a closer supervision over the daily activities of the centers. (The program of work at these centers is described in the next section of this report.)

Current Planning Policies

The Government of Zanzibar's Planning Commission published the Three Year Social and Economic Development Plan - Zanzibar in June, 1978, covering the period, July 1978 - 30 June 1981. This time frame was used in order to allow post-1981 planning efforts to coincide with development planning work for Mainland Tanzania.

Table 9 consolidates information about the activities projected for health sector financing over the Plan Period. The projects cover a broad range of curative, preventive and promotive activities, and vary widely in terms of (1) the level of expenditures required to support them; (2) their need for foreign exchange financing; and (3) the extent to which external support would be required or available, ranging from zero to 84% of a project's total financing needs.

The order in which the projects are listed in Table 9 is consistent with that of the Plan document, which does not, however, clearly cite the criteria used for their order, but it has been stated by Ministry officials that the order does not indicate a priority listing. Of note is the fact that 67% of the money allotted for this plan is concerned with improvement or expansion of hospital facilities (projects 1, 8, 9, 12, 13, 15).

The plan does not specify whether the projects listed are intended to be completed within the planning period, or merely initiated. Construction activity in the pharmaceutical plant project was well behind schedule in September 1979. As of this date, also, implementation of project number 2, a training institution for nursing and paramedical personnel, was delayed, pending a decision on construction of a new hospital facility at Binguni to complement V.I. Lenin. Such a new facility would include the training institution. Detailed information on implementation levels of the

TABLE 9

PROJECTS INCLUDED IN THE THREE YEAR DEVELOPMENT PLAN FOR IMPLEMENTATION DURING 1978-81

PROJECT	A	B	C	D
		Projected Total Cost in TSh (8.2 TSh = US\$1)	% of B Requiring <u>Foreign Exchange</u>	Projected External Support Source (if any)
<u>I. Projects to be implemented during 1978/79</u>				
1) Pharmaceutical Plant Expansion		4,187,522	84%	DANIDA & UNIDO
2) Construction of new Facility for Nurse and Paramedical Education		14,778,243	7	UNICEF
3) Maintenance of Social Welfare Services		2,411,324	unknown	unknown
4) Control of Malaria and Filariasis		977,667	-	-
5) Environmental Sanitation		4,548,936	52	-
6) Expansion of MCH Activities		159,760	-	-
7) Expansion of Rural Health Services		7,344,015	18	DANIDA
8) Expansion of Optical Services (V.I. Lenin Hospital)		1,252,019	21	-
9) Construction of Four Cottage Hospitals		48,260,000	unknown	DANIDA
<u>II. Two Projects to be implemented during 1979/80</u>				
10) Expansion of Health Education Activities		27,932	-	-
11) Health Statistical Services		43,280	unknown	unknown
<u>III. Five Projects to be implemented during 1980/81</u>				
12) Construction of Increased Ancillary Services at V.I. Lenin Hospital		6,514,750	-	-
13) Control of Schistosomiasis and Worm Diseases		200,000	67	UNICEF
14) Control of Tuberculosis (Expansion of Tuberculosis Ward)		2,409,364	-	-
15) Expansion of V.I. Lenin Hospital Services		949,688	84	-
16) Expansion of Immunization Program		1,301,500	21	-
TOTAL		95,386,000		

other activities projected in the plan was not available. Overall, there seemed to be a lack of systematic follow-up to the planning exercise; the review team was unable, at least, to identify any concerted effort at implementation monitoring.

Financing

The Ministry's finances are handled by the Director of Planning and Administration.

Budgeting is input - oriented. Typical line items under the various departments are "salaries," "travel," "repairs," "uniforms," "water," or "electricity." This approach prevents a ready identification of financial resource allocations by specific program activities and objectives, and inhibits the determination of how well policy objectives are reflected in actual resource flows.

The following rough outline of the Ministry's recurrent health budget for 1978/79 financial year shows the Ministry's significant commitment to curative services.

<u>Division</u>	<u>Budget Allocation</u>		<u>% of Total</u>
	<u>Tanzanian Shillings</u>	<u>U.S. Dollars*</u>	
Curative Services	26,784,766	\$3,266,435	63
Prevention	9,384,248	1,144,420	22
Administration and Manpower Development	6,490,724	791,552	15
TOTAL	42,659,738	\$5,202,407	100

* At the currently used rate of 8.2 Shillings per U.S. Dollar

Source: Zanzibar Ministry of Health

The Ministry's operating (health-related) budget for the 1978/79 fiscal year -- 42.659 million Tanzanian shillings, or U.S. \$5.2 million-- represents about 15.7 percent of the total 1978/79 operating budget of the Islands' government -- about 271 million Tanzanian shillings, or about U.S. \$33 million. In round numbers, the Ministry is spending just slightly less than U.S. \$11. per person per year to run Zanzibar's health system -- a substantial input in comparison with many other African countries. Decision making about the actual utilization of these resources within the sector appears to be highly centralized, with line officials functioning amid considerable uncertainty with regard to the level of their operating budget.

The Ministry's projected capital budget for the 1978/79 fiscal year was estimated in the Three-Year Plan to be 10.6 million Tanzanian shillings (US \$1,134,146). Only 12% of this amount was to derive from external sources, all of which was to be earmarked for the development of a new pharmaceutical plant in Zanzibar Town. Only 23% of the total capital investment projected in the Plan is designated to be disbursed in the 1978/79 fiscal year; the remaining 77% is designated as scheduled to be disbursed in the final two years of the planning period.

The Islands thus appear to be following a somewhat more traditional course in their health sector resource allocation than their Mainland compatriots. Where the Mainland is altering traditional resource flows to implement its radically innovative health care system emphasizing prevention and access to health services by the totality of the population¹, the Islands have as yet been unable to divert funds from the curative to the preventive side, although it is now professed government policy to emphasize prevention more heavily in future years. But as will be seen in the next section of this report, accessibility to health services in the Islands is not anywhere near as difficult to effect as on the relatively vast Mainland area.

Pharmaceuticals

The Ministry of Health is the sole distributor of pharmaceuticals in Zanzibar. Private pharmacies are not allowed. Although the bulk of the drugs and other medical equipment and supplies used in the Ministry's facilities are imported in final form, a limited Zanzibar capability for processing imported raw materials into tablets, syrups and sterile medicaments exists at the V.I. Lenin Hospital. Expansion of this manufacturing capability is ranked as the first priority in the health sector in the Islands' Three-Year Plan, and construction is presently underway. The large two-story facility, when fully operational, will reportedly allow the Ministry to reduce its expenditures on imported pharmaceuticals by 40%. As one of only three large-scale drug processing units in Tanzania, it will likely export some of its products to the Mainland. Of note is that chloroquine is one of the drugs which the pharmaceutical unit plans to produce.

Manpower

The lack of sufficient numbers of trained health manpower, as highlighted in Table 10, is a major impediment to effecting better health system coverage in the Islands over the immediate future.

1 See "Tanzania Health Sector Report," The World Bank, January 1978.

TABLE 10

ZANZIBAR HEALTH MANPOWER,
BY TYPE AND STATUS, 1979

<u>Cadre</u>	<u>Now in Service</u>	<u>Now in Training</u>	<u>Projected Annual Intake for Training (through 1982)</u>
Medical Doctor	25*	19	16
Medical Assistant	35	18	10
Nurse/Hospital Assistant**	87	56	30
Rural Health Assistant	30	8***	4
Midwives	40	6	-
MCH Aides	24	41	42****

* This figure is for Zanzibari doctors. There are also about 20 expatriate physicians serving in the hospitals.

** This cadre serves alternatively as ward nurses in hospitals, as managers of hospital out-patient clinics, and as officer-in-charge of rural health centers.

*** These eight trainees are pursuing a Mainland diploma as a "Health Officer." There is no other training now in progress for the "Rural Health Assistant" cadre as it exists in Zanzibar.

**** It is intended that further upgrading of MCH aides will be initiated as larger numbers of graduates come into service in this cadre.

Source: Zanzibar Ministry of Health

Further, there are at present no formal training institutions for health professionals within Zanzibar.

Most of the approximately 25 practicing Zanzibar medical doctors received their training in the Soviet Union or in the People's Republic of China. Currently, 19 Zanzibari students are in various phases of a seven-year medical training program in the Soviet Union. The government's intention, at least in the short-term, is to continue to send three to six medical students per year abroad for training. The Ministry's objective is the development of a cadre of well-trained medical officers to make Zanzibar self-sufficient in this area. It is anticipated, though, that this will be a long process, and continued use of expatriate doctors in the hospitals will be necessary. Zanzibar has recently begun to accept such assistance from non-socialist as well as socialist countries, reflecting the Island's current general receptivity to all development assistance. A medical team from the People's Republic of China has been in residence at the V.I. Lenin Hospital for 15 years (individual team members stay for two years). A Chinese team has also served at the Abdulla Mzee Hospital in Mkoani on Pemba since it was constructed (with PRC support) in 1970. A team of six Italian physicians began service at Chake Chake Hospital in September 1979. It is expected that smaller groups of physicians from Cuba and from India will also be serving in the Islands.

There are several major categories of paramedical personnel in the Islands' health system:

The Hospital Assistant, with three years' post-secondary school training, and the Medical Assistant with two additional years of training at the Mainland institution are key curative care providers. On the preventive side, Rural Health Assistants with two years post-secondary training in public health, and the Malaria Surveillance Agents, with on-the-job training serve as important members of the community-focused health team. The maternal and child health program is staffed principally by trained Midwives, Assistant Midwives, Nurse Auxiliaries with on-the-job training and the newly emerging cadre of MCH Aides. The numerous Orderlies perform basic first aid and serve as support staff to all paramedical workers.

A Zanzibar Nurses' School which had, since 1937, produced several paramedical cadres was closed in August 1977. Among the reasons for the closure were an inadequate physical structure and a lack of dormitory facilities for students. It is the intent of the Ministry to create a new paramedical school as one component of a proposed new hospital for Unguja. A Canadian team conducted a feasibility study for such a hospital in 1979. The possibility of re-opening the old school has also been discussed, which would necessarily involve extensive improvement and expansion of the present unused facility. Reinstitution of a paramedical training capability has been allotted 15% of the available funds in the 1978-81 three-year development plan.

In the interim, training is widely dispersed. Some Zanzibari students are being trained in various Mainland schools; the Chinese medical team at V.I. Lenin is conducting a training activity for medical assistants, and groups of 29 and 13 students have been sent to North Korea and Syria, respectively, for training in curative hospital nursing.

Within recent years, several mid-level Ministry staff have taken advantage of short-term 4-6 week courses given by the WHO/AFRO training center in Lagos in environmental health and communicable diseases, malaria control techniques, supervision for senior nurses, and management for health center officers-in-charge.

Traditional birth attendants attend many normal deliveries in the rural areas, and it is Ministry policy that its maternal and child health staff work cooperatively with the local midwives. There are also dispensers of herbal remedies in the rural areas, but no linkages exist between them and the Ministry. According to a July 1979 inventory of health facilities throughout Tanzania conducted jointly by the Mainland and Zanzibar Ministries of Health, there were 337 local midwives and 185 herbalists active on Pemba at that time; similar figures for Unguja were not obtained for the inventory.

DELIVERY SYSTEM

The delivery of health services in Zanzibar resides almost entirely in the hands of the Ministry of Health and Social Welfare. There are no privately operated health facilities in the Islands, and the private practice of modern medicine by individual physicians was banned in 1970. The present system consists of the two levels of care described below.

Primary Health Care

Zanzibar's primary health care network consists of 63 health centers located in the rural and peri-urban districts, including 34 on Unguja and 29 on Pemba. With a current ratio of one such center for every 7,551 citizens, and their geographic dispersion within a five to ten mile distance of almost all residential sites, primary health care can be said to be universally accessible in Zanzibar. In 1960, there were only 22 centers in the Islands -- 13 on Unguja and 9 on Pemba.

Variously referred to in English as "health centers," "health posts," "dispensaries," or "lock-ups," the Swahili term predominantly used by the Ministry in referring to dispensaries is "kituo cha Afya" (the term "Kituo cha Siha" is also used in some places on Pemba.) These facilities differ widely in physical makeup, depending on the date and circumstances of their construction. Many of the 47 structures

which have been added to the network since the 1964 Revolution were not originally built to be health facilities, and do not comply with the Ministry's specifications for a new kituo, but priority attention is focused on enhancing the quality, and thereby the utilization, of the services already provided rather than improving the physical structures themselves. Thus no new construction or renovation is envisaged for the immediate future.

Kituo level services involve a combination of curative and preventive activities. The officer-in-charge is either a Hospital Assistant (with three years of training at the Zanzibar Nursing School) or a Medical Assistant (who has had three additional years of paramedical training in a Mainland facility). This officer is responsible for diverse functions including: registration of patients, initial diagnosis, and delivery of basic curative services, including prescribing drugs to those whose needs can be met within his area of competence. Complicated cases are referred either to V.I. Lenin Hospital on Unguja, or to one of the three town hospitals on Pemba. Ambulance services are sometimes available to the hospitals. In the absence of alternative communications, centers are dependent on the nearest police station for telephone linkage to higher levels of care. Many centers also are without electric power, and maintenance problems with the water supply are not uncommon.

In July, 1979, according to the inventory of all medical facilities in Tanzania, the following availability of basic drugs (as defined in the evaluation) prevailed in Zanzibar's health centers:

<u>Basic Drugs</u>	<u>No. of Health Centers with this Drug in Stock</u>	<u>As % of All Centers</u>
Chloroquine (treatment dose)	50	79%
Penicillin (injection)	59	94
Thiazine	35	55
Tetrachlorethylene	2	3
Ferrous Sulfate	23	37
Pheonobarbitone (known as phenobarbital in the U.S.)	41	65
Aspirin	35	55
Codein	1	2
Tetracyclene	16	25
Mexaform	24	38
Valium	6	10

Preventive services in the community covered by a kituo are handled by a Rural Health Assistant. He is responsible for health and nutrition education work, dealing with environmental sources of health problems, and followup work on communicable disease cases. The Rural Health Assistants were, until August 1977, trained in the Zanzibar Nursing School.

The health centers also include a maternal and child health services component. Most centers have either a Midwife or an MCH Aide on the staff. These cadres are responsible for implementing the MCH program at the community level. This is explained in detail later in this chapter. A serious constraint to the effectiveness of this work in the rural health centers in September 1979, was an inability to obtain kerosene to power the kerosene-run refrigerators. Although no quantitative data on this problem were available to the team, it was clear that the cold chain for vaccines against childhood diseases was being broken and that many vaccines were spoiling.

The inability of staff to find suitable residences near the centers also has hampered productivity. Many of the Hospital Assistants and Rural Health Assistants commute daily between the centers and their urban residences, lessening the amount of time during which they are available to provide services. In contract MCH staff and Malaria Surveillance Agents usually reside in the communities they serve.

There are no secondary level health facilities in Zanzibar. There is a project under active discussion through which, with assistance from the Government of Denmark, four 30-bed cottage hospitals would be built -- two on Unguja and two on Pemba.

Hospital Care

The highest level of curative services in Zanzibar is provided by four hospitals -- the V.I. Lenin Hospital in Zanzibar Town, and three town hospitals on Pemba at Wete, Chake Chake and Mkoani. Most of Zanzibar's physicians are based at these hospitals.

The V.I. Lenin Hospital, Unguja's major medical unit, is a complex of older buildings occupying 37,000 square meters on the coast on the southwestern outskirts of Zanzibar Town. Its 10 wards have a total of 363 beds. It is staffed by 397 Zanzibaris (including eleven physicians), and a Chinese medical team which in July 1979 included five physicians and a dental surgeon. Current average daily bed occupancy is 268 or 75%. Its ten out-patient clinics handled 4,720 visits in June 1979, or over 180 per working day. These clinics are run by medical assistants, who treat routine problems and refer complications to the physicians. Approximately 20 major surgeries are performed weekly, as well as 20 x-ray examinations.

The Ministry is dissatisfied with the physical layout of the hospital. In light of unsuccessful attempts to modify existing buildings to better meet current needs, the Ministry plans to expand the present facility at V.I. Lenin.

The three Pemba hospitals at Wete, Chake Chake, and Mkoani serve as referral centers for the northern, central and southern sections of the island, respectively. A Chinese medical team at Mkoani conducts an acupuncture clinic, which recorded 239 patient visits in July 1979. Table 11 presents some basic data on these hospitals.

TABLE 11
SELECTED DATA ON
PEMBA'S HOSPITALS

<u>DATA</u>	<u>FACILITY</u>		
	<u>Wete</u>	<u>Chake Chake</u>	<u>Mkoani</u>
(a) Date of construction	1929	1914	1970
(b) Number of beds	112	79	82
(c) Average daily bed occupancy	92	76	53
(d) (c) as % of (b)	82%	96%	65%
(e) Number of deliveries/month	62	46	30
(f) Number of out-patient visits/day	72	240	212

Source: Ministry of Health and Social Welfare, Zanzibar, 1979.

Maternal and Child Health Services

In 1976, according to Ministry records, 5,821 pregnant women registered for ante-natal services; 3,644 infants were registered for post-natal care; and the following numbers of immunizations were given to children:

DPT	1286
BCG	2120
Polio	1055
Smallpox	648
Measles	162
Tetanus	3268

All of the above figures represent only small fractions of the total number of mothers and infants in Zanzibar in 1976.

In 1977, the disparate maternal and child health (MCH) activities were organized under a formal program office within the Ministry (see Figure 1). This office was headed by an MCH coordinator and was under the overall supervision of the Director of Preventive Services. The MCH Program currently employs 60 staff, including 21 MCH aides who recently completed a two-year AID-supported training program in Mainland Tanzania. A second group of 41 aides is now in training.

With the exception of special MCH clinics held at the V.I. Lenin Hospital and each of the Pemba hospitals and the two independent MCH clinics in Zanzibar Town, MCH activities are integrated into rural health center services. On Unguja, of the total of 33 centers, eight have midwives and nine have MCH aides. The centers without assigned MCH staff are served by mobile units from Zanzibar town. Twelve of Pemba's 29 centers have MCH aides.

The MCH program provides a broad range of services including ante-natal, post-natal and under-five care, health and nutrition education, and immunizations. Routine immunizations include BCG shortly after delivery, polio and DPT at three months, measles at nine months, and small pox at three months. Many of the rural health centers have been provided with kerosene-powered refrigerators to ensure maintenance of the cold chain for the vaccine component of the MCH program. As noted earlier, though, increasingly common problems with procurement of kerosene are rendering the refrigerators inoperative and seriously hampering program implementation. MCH staff occasionally receive requests for birth spacing advice from program clientele, but the unavailability of contraceptive materials (except on prescription for medical reasons) in the Islands constrains the level of activity in this area; those persons desiring to regulate their fertility must obtain contraceptive materials from the Mainland.

Health Education

The health education unit within the Division of Preventive Services is staffed by four health education officers. The unit has its own center in Zanzibar Town. The Ministry intends to establish a similar center on Pemba. An officer is in training who will assume the post, but no facility has been obtained or constructed to date.

The health education unit's responsibility is to deliver health information to a variety of audiences, ranging from primary, secondary, and teacher training schools to CCM Party branch meetings, and Young Pioneer army camps. The education officers also make numerous mass media presentations on diverse subjects according to the availability of program material from other sections of the Ministry, and changing needs and priorities. During the 1978 cholera epidemic, there was a heavy emphasis on preventive measures. Currently, malaria prevention and the MCH program are receiving increased attention.

A lack of resources seriously constrains the health education program. In the absence of a vehicle designated for use by the Health Education officers they must arrange for other forms of transport to rural areas. The existing film projector is in disrepair. The unit does not have a printing nor a pamphlet generating capability. Posters of excellent quality are developed at the unit for the health education officers' own use, and for use by the rural health assistants at the Kituo cha afya level.

Environmental Sanitation

The environmental sanitation activities of the Ministry are confined mainly to the Zanzibar Town area of Unguja, and the three towns on Pemba. Most of the staff of 248 for Zanzibar Town and approximately 25 each for Wete, Chake Chake and Mkoani are engaged in solid waste disposal activities. The two trucks available for solid waste disposal in Zanzibar Town carry refuse to a landfill area three miles from the town. There is no incineration or sea dumping of waste material.

Water supply in Zanzibar Town and in the Pemba towns is the responsibility of the Ministry of Water and Electricity. In the urban areas an estimated 75% of dwellings have piped water, with the remaining people dependent on standpipes for water supply. A limited piped water supply in the rural areas is concentrated largely in villages near the main roads where piping systems have been easy to install.

The Ministry of Health and Social Welfare is responsible for examining the bacteriological quality of the water supply in the piped water systems. This is done through twice monthly sample taking in the various administrative districts and use of a laboratory of the Ministry of Agriculture for fecal coliform counts. Where samples are found to exceed safe limits, the Ministry of Water and Electricity is notified to increase chlorination or undertake other corrective measures. No cumulative records are kept, however, on the water quality situation.

The sanitary sewer system in the "Stonetown" area of Zanzibar Town was constructed early in this century and has not been adequately maintained. It is estimated that large-scale upgrading of the system would be necessary for it to serve its purpose. The majority of the island's population depends on septic tanks and pit latrines for excreta disposal purposes. Given Zanzibar's high water table, these areas easily become breeding places for disease vectors.

The Health Inspector's offices on both islands inspect and license hotels, restaurants, bakeries, dairies, cinemas, and food storage warehouses, and are responsible for health screening of visitors at the port and airport. They are also responsible for rodent control work which had been hampered by the unavailability of rat poison during most of 1979. The Government of Zanzibar intends to re-establish a municipal government for Zanzibar Town early in 1980. Unguja's Health

Inspectorate would become part of this new government entity at that point. The current Chief Inspector on Unguja holds a Public Health certificate, but there is no fully-qualified sanitary engineer in the Islands.

EXTERNAL ASSISTANCE

This chapter lists the various sources and kinds of external assistance provided to Zanzibar's health sector since the 1964 revolution. Multilateral organizations are cited first, followed by bilateral agencies.

W.H.O.

The World Health Organization has been actively supporting several disease-specific activities in the Islands, as chronologically listed:

1950-1968

W.H.O. provided extensive assistance to Zanzibar's malaria eradication program.

March 3 - April 13, 1974

A malaria team, composed of Dr. S. Cheyabajara, a W.H.O. Epidemiologist and Mr. David Payne, a W.H.O. Technical officer, visited Unguja and Pemba to (1) conduct a preliminary study of the malaria situation in the islands, (2) assess existing malaria activities, and (3) recommend a control program. This resulted in the W.H.O. report "Malaria Situation in Zanzibar/Pemba," ICP/MPD/04 Tanzania (EX AFRO 2004), Brazzaville.

July 8 - August 7, 1974

Dr. Alexandre J. Ohin, a WHO consultant (Head of the Cancer Department, University Hospital Center, Lome, Togo), provided technical assistance to the Ministry of Health in (1) determining the extent of the cancer problem on the islands and (2) formulating priority objectives for a national cancer control policy, including diagnosis and treatment. His report was published Sept. 11, 1974, as ICP/CAD/001/AFRO 8101, Brazzaville.

April 1 - June 7, 1975

Dr. F. S. McCullough, a WHO schistosomiasis consultant, and Mr. S. G. Kraft, a WHO sanitary engineer assisted the Zanzibar authorities in planning an extended inter-agency program for controlling

schistosomiasis utilizing local resources, financing, and personnel, with a built-in component for self-reliance and inter-departmental cooperation. This visit resulted in a report published in 1976, "Schistosomiasis in Zanzibar and Pemba, Tanzania" - AFR/SCHIST/34 Brazzaville. Based on this report, a second unpublished report was written by Dr. W.R. Manning, discussing programmatic dimensions of such a project.

March 26 - May 5, 1978

WHO Malariologist Dr. R. Giri, visited Zanzibar to (1) assess the then present malaria situation on both islands, (2) assess resources available for a malaria program, (3) clinically test sensitivity of malaria parasites to chloroquine, and (4) propose a feasible program and projects for malaria control. The findings are contained in a report by Dr. Giri - ICP/MPD/02/Brazzaville.

May 1978

During a two-day visit requested by the WHO Resident Representative in Tanzania, Dr. Hans Kupferschmidt, WHO, and Dr. Stanley Scheyer, Family Health Care, Washington D.C., discussed the malaria program on Zanzibar, as well as the efficacy of a village-based chloroquine distribution scheme.

August 1979

Dr. McCullough re-visited the Island to further discuss the possibility of conducting an operational research project on schistosomiasis. As a result, a project may begin sometime late 1979 or early 1980. At this writing, Dr. McCullough's trip report and specific recommendations were still being developed.

Country Health Programming

WHO will shortly undertake a Country Health Programming exercise with the Zanzibar Ministry of Health. The precise timing of this exercise is still unclear.

Vehicles

WHO has provided the Ministry with several small cars for administrative purposes. The Ministry has requested that WHO provide 8 Landrovers, 2 lorries, 15 scooters and 25 motor bicycles (the latter for its malaria and filariasis control field staff; and 2 Landrovers for tuberculosis and leprosy control work.

UNICEF

At the present time UNICEF is supplying the Ministry of Health with BCG, DPT, and tetanus vaccines, as well as bicycles and cars for

the MCH program. UNICEF also provided kerosene-operated refrigerators for each rural health clinic. In addition, the Ministry has asked UNICEF to provide a bus, scooters, and Landrovers for its health education and MCH program as well as equipment and materials for its bilharzia and helminthic control programs. A UNICEF decision is pending.

USA

USAID has no prior experience with Zanzibar-specific health sector projects. Zanzibari students are participating in the USAID-sponsored MCH Aide training project on the Mainland.

The U.S. Peace Corps received a request in September 1979, for a group of volunteers with high levels of technical training in various curative areas.

Denmark

DANIDA -- the Danish Aid Agency -- recently has conducted a feasibility study with the Ministry of Health on the construction of two cottage hospitals on Unguja and two on Pemba. Site appraisals have been completed, initial costs computed and DANIDA has approved the project. No construction has begun. In addition, DANIDA will fund two medical specialists to work on Zanzibar, as well as provide four Nursing Fellowships to Zanzibar nurses for study abroad. The Ministry of Health has also approached DANIDA for assistance in their Pharmaceutical Unit -- namely, purchase of laboratory equipment; funding of research on indigenous herbs and roots; and assistance in pharmacological staff training. It is not known whether these additional projects will be undertaken by DANIDA or if approval will be given to a Ministry request for equipment for the Statistical Unit.

People's Republic of China

Teams of Chinese physicians have been providing medical services to Zanzibar since the revolution in 1964 and currently constitute the majority of the medical staffs at V.I. Lenin Hospital on Unguja, and at Abdullah Mzee Hospital on Mkoani on Pemba (this facility was built in 1970 with PRC support).

Italy

The Government of Italy is supporting six Italian physicians to work for two years in the Chake Chake Hospital on Pemba. The physicians began work in September 1979.

Sweden

SIDA --the Swedish Aid Agency -- assisted in the funding of a hospital feasibility study, which was conducted and also partially funded by

the Canadian Commercial Corporation (CCC). The total cost of the project was U.S. \$40,000, with \$25,000 funding from SIDA, and \$15,000 from CCC. Two CCC staff members and contractors, Cluff & Cluff, Architects and Planners (Canada), made an initial visit to Zanzibar in July 1979 to examine the feasibility of establishing a 200-bed hospital at Binguni, Unguja; a 50-bed T.B. hospital at Chake Chake, Pemba; as well as two medical libraries, one each in Zanzibar and Pemba. The team is scheduled to develop a report and return to Zanzibar in October 1979 to discuss its review and recommendations with the Ministry. SIDA is also considering possible funding of a physician to conduct a new bilharzia control component of an irrigated rice production project which the U.N. Food and Agriculture Organization (FAO) has been conducting in Zanzibar for the past seven years.

India

In October 1978, the Ministry and a delegation from the Government of India held meetings to discuss the possibility of assigning Indian physicians to Zanzibar. Final negotiations have now been completed, and it is expected that several Indian physicians will be assigned to the Islands.

Cuba

The Ministry has requested several Cuban physicians to serve in Zanzibar and a number had already arrived at the time of this writing.

Wete Hospital:

Nd. Dr. Juma A.A. Muchi, Superintendent
Nd. Juma Maalim, Chief Nursing Officer

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Chake Chake Hospital:

Nd. Dr. Omar Juma, Superintendent
Nd. Muhammed Khatib, Chief Nursing Officer
Doctors Paolo, Renata, Stefano, Lorenzo, and Giovanni, Members
of the Italian medical team serving at the hospital

Abdulla Mzee Hospital, Mkoani:

Nd. Ali Khamis Ibrahim, Chief Nursing Officer

V.I. Lenin Hospital:

Nd. Burhani Saadat, Chief Nursing Officer
Nd. Mohammed Abdullah, Secretary

Members of the Chinese medical team serving at the hospital:

Dr. Yan, Team Leader
Dr. Lui, Internist
Dr. Zhang, Surgeon
Dr. Huang, OB/GYN
Dr. Lu, Dental Surgeon
Dr. Gu, Radiologist
Mr. Yang, Pharmacist
Mr. Gu, Interpreter

Unguja Mental Hospital:

Nd. H.S. Nondo, Superintendent

Deputy Director, Department of Social Welfare - Bibi Ayesha Suleiman

Chief Health Inspector, Unguja - Nd. Musa Juma

Acting Chief Health Inspector, Pemba - Nd. Seif Masoud

Chief Health Inspector, Chake Chake Town - Nd. Khalid Abdullah

Pharmacist-in-Charge, Zanzibar Pharmaceutical Plant - Nd. Talib
Mahadhi

Training Officer, Office of Planning - Nd. Mohammed Shabani

Project Officer, Office of Planning - Nd. Kassim Salim

The following persons outside the Ministry also provided useful information to the team.

Chama Cha Mapinduzi (Revolutionary Party);

Mwembeshauri Branch; Nd. Issa Mzee Belози, Mwembeshauri Branch;
Nd. Yahaya Mfaumo.

Chairman,

Department of Foreign Affairs, United Republic of Tanzania:

Counsellor, Zanzibar Branch - Nd. M.S. Mohammed

World Health Organization:

Resident Representative, Tanzania - Dr. O. Akerele
Assistant Resident Representative - Dr. Q. Qhabela
WHO Headquarters - Dr. E. Tarimo
- Dr. R. L. Kouznetsov
- Dr. D. Payne
- Dr. F.S. McCullough
- Dr. A. Davis

The following United States officials provided the team with essential support and information:

Dr. Al Henn, Director, Office of Health, Nutrition and Population Affairs, USAID Mission to Tanzania

Dr. Tom Georges, Chief, Health and Nutrition Division, Office of Development Resources, Africa Bureau, AID

Dr. Al Buck, Communicable Disease Specialist, Office of Health, Development Support Bureau, AID

Irving Taylor, Chief, Health Planning Branch, Development Support Bureau, AID

Ellen Shippey, former U.S. Consul to Zanzibar, U.S. State Department.

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