3.8 TRANSPORT

Malawi is a landlocked country with no direct access to the sea. It shares common borders with Mozambique and Tanzania through which Malawi accesses the sea for exports and imports. In addition to the ports of Nacala and Beira in Mozambique and Dar-es-Salaam in Tanzania, Malawi makes use of the port of Durban in South Africa for some of its trade.

Malawi's land transport network comprises 16,451 kilometres of roads, 19 percent (3,117 kilometres) of which is of bitumen standard, and 810 kilometres of rail. The rail network is operated by Malawi Railways Limited which until now, was fully owned by the government. The company is technically insolvent and the government is in the course of privatising it. There are four commercial airports, and Lake Malawi along the eastern border of the country provides a passage for water transport mainly for passengers.

3.9 LIVING ENVIRONMENT

The majority of the population in Malawi lives in poor quality houses. According to the 1987 census, 84 percent of the dwelling units were grass thatched and 47 percent had walls made of mud while 31 percent had walls made of unburned bricks. Associated with the poor housing, only 5.5 percent of the population had access to adequate sanitation and 72 percent had access to sanitary facilities with a minimum of a pit latrine. In terms of safe water, only half the population has access to a safe water source within one kilometre walking distance.

The housing and living environment situation has shown a marked deterioration since 1987 especially in the urban areas as a result of increasing urbanisation and delay on the part of those responsible for town planning. According to recent estimates, more than 50 percent of the population in the cities of Lilongwe and Blantyre live in unplanned settlements or squatter camps within the boundaries of the cities. In these camps, there is marked overcrowding and no provision of water or waste disposal including latrines.

3.10 EDUCATION

Malawi's present education system evolved from that started by the missionaries. In 1875, Dr. Robert Laws of the Free Church of Scotland opened the first missionary school at Cape Maclear with four pupils. By 1924, the number of mission schools had increased markedly and school enrolment reached 130,000.

Government became involved with education in 1926 with the establishment of the education department. Before 1961, the government schools opened were almost

exclusively for the children of the white settlers. After independence, the University of Malawi was opened.

Literacy rates are currently estimated at 48 percent for females and 69 percent for males. With the gradual increase of schools, school enrolment improved from about 5 percent in 1964 to 50 percent in 1995. With the increase in enrolment, the literacy rate improved from an estimated 12 percent in 1966 to 23 percent in 1977. In 1995 free primary education was introduced as a result of which enrolment figures increased further to 60 percent for the 5 to 15 years age group.

Malawi's formal education system is based on an 8-4-4 non-compulsory education system with eight years of primary education, four years of secondary education and four years of tertiary education (Fig. 3.10). Average primary school enrolment is at age six. Due to the high teacher/pupil ratio of 85 to 1, classrooms are overcrowded. Textbooks are also scarce with just one textbook for four pupils. Consequently, the schools experience a high dropout rate with only a quarter of pupils reaching standard eight. When examined along gender lines, the dropout rate for girls is almost twice that of boys.

In addition to the high dropout rate, the repetition rate is also high especially for standards one, two and eight. In standard eight, repeaters account for nearly half of the classroom as a result of stiff competition for selection to secondary school where less than 11 percent of the standard eight pupils are selected to go to secondary school through the Primary School Leaving Certificate examinations. Similar competition exists at form four whereby only about 9 percent of the form four pupils are selected for university education through the Malawi School Certificate of Education examinations.

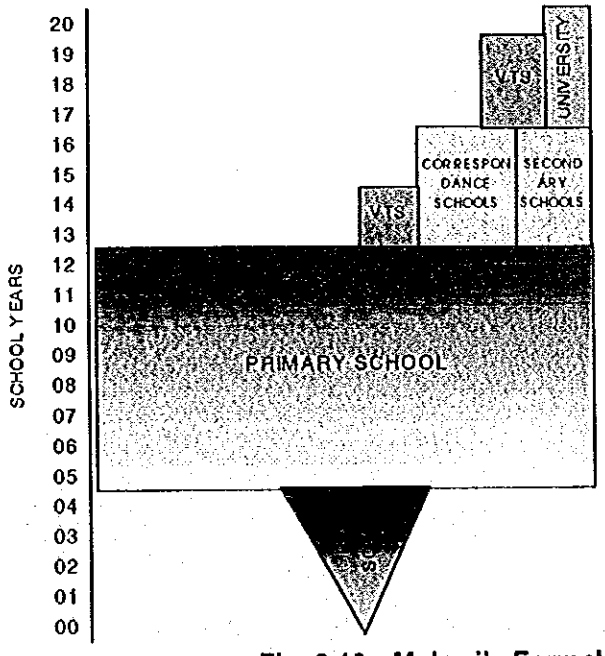

Fig. 3.10 Malawi's Formal Education System

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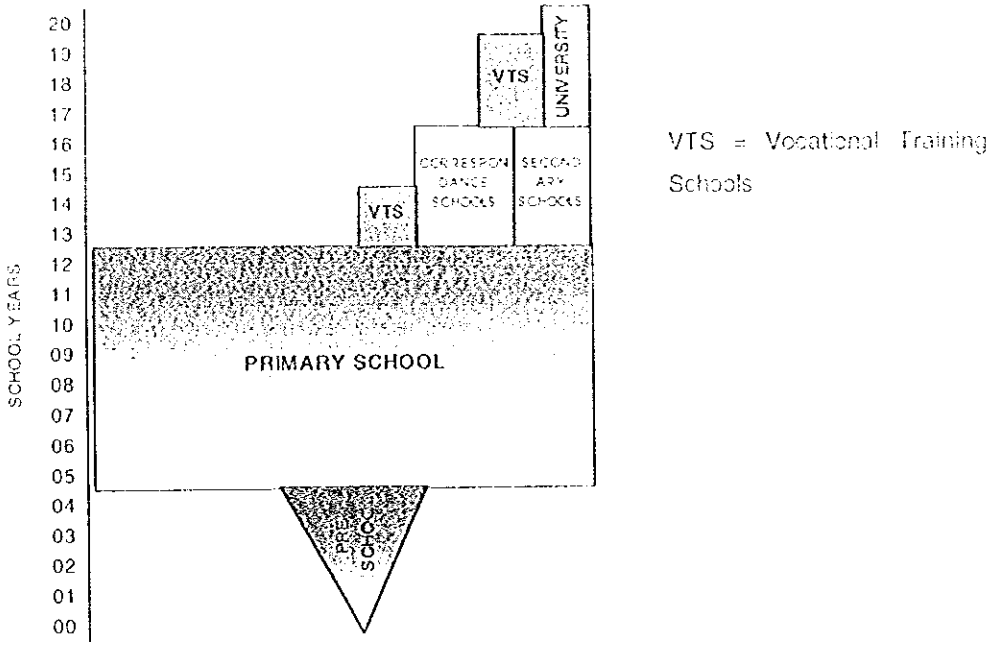

Fig. 3.10 Malawi's Formal Education System

Education for the handicapped is not well established in Malawi. Despite the government's promotion of those with disabilities to go to normal schools, in 1991 a study in six districts showed that only 19 percent of children with disabilities had enrolled in the primary schools. Only two special (mission) primary schools exist in Malawi for the blind and the deaf at Montfort Catholic Mission in Chiradzulu district.

3.11 HEALTH SERVICE DELIVERY STRUCTURE

Health services in Malawi are provided at four main delivery levels: community, health centre, District/CHAM hospital, and central hospital (Fig. 3.11). Only the central hospital or the tertiary care level falls outside the jurisdiction of the district health care delivery system. As such, the district is the main system for the delivery of health care in Malawi.

At the community level, community members largely provide health services themselves through community initiatives such as Drug Revolving Funds, Traditional Birth Attendants and other volunteer programmes. However, liaison is provided between the community and health centres through Health Surveillance Assistants (HSAs) who assist communities in providing some services such as growth monitoring, immunisation, food supplementation for malnourished children, environmental sanitation. They also help facilitate community initiatives. HSAs reside in the rural areas, one for every 2,000 population. In areas where a health post exists, the HSA runs the health post and uses it as the central point for the provision of community based services.

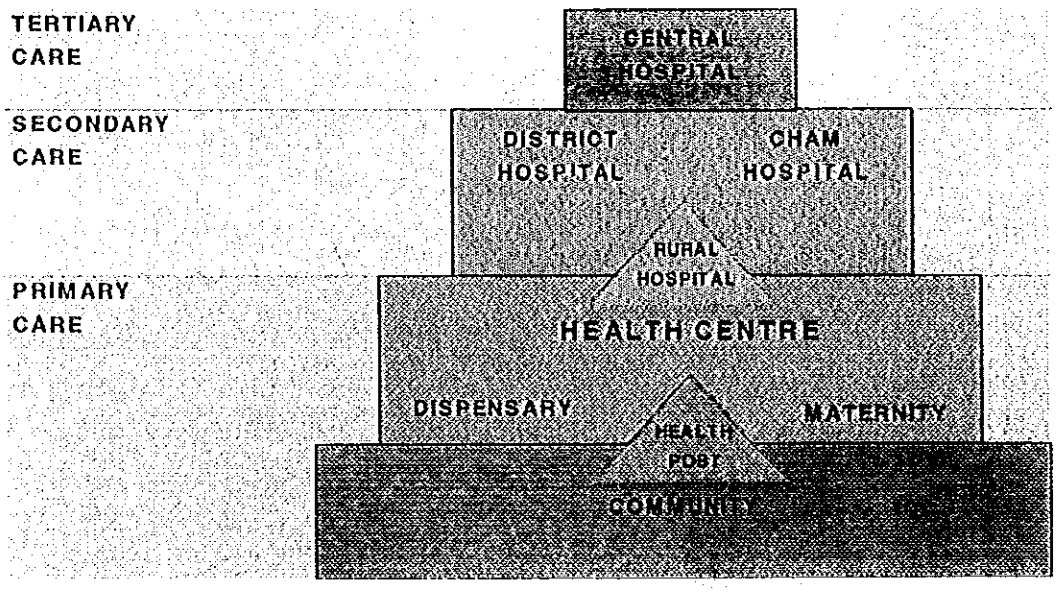

Fig. 3.11 Health Services Delivery Levels and Their Relationship

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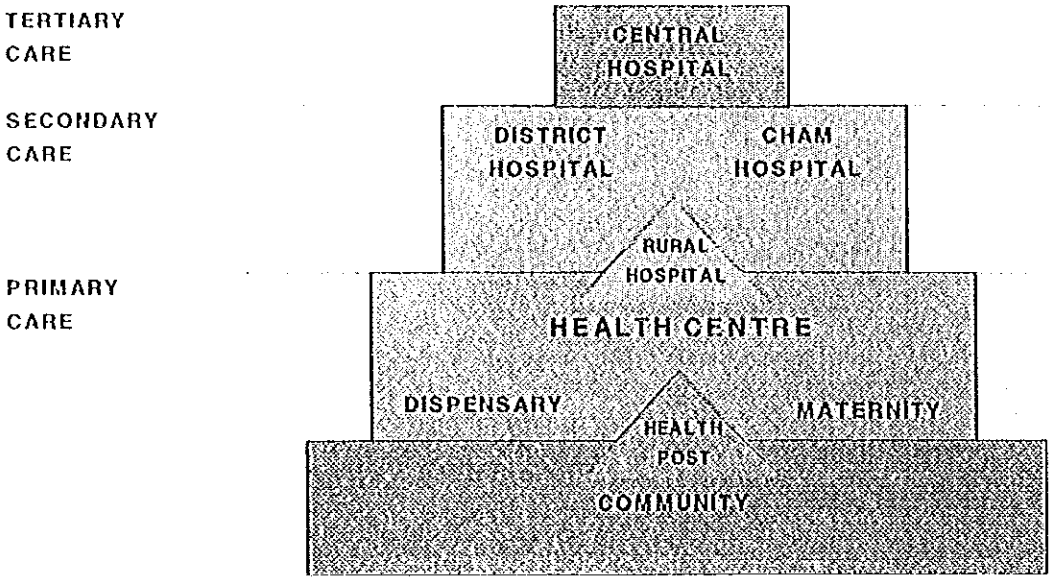

Fig. 3.11 Health Services Delivery Levels and Their Relationship

The health centre is the first level of contact between the communities and the formal health care system. It serves as the central point for the provision of facility based primary services such as maternity and dispensary. It also serves as the central point for co-ordination of HSAs and community health activities in the surrounding community. However, some of the facilities, namely the dispensary and maternity units, provide just some of the health centre activities but all the same function as the co-ordination point for HSA and community health activities.

Above the health centre in a few areas is the rural hospital, which largely functions as a large health centre providing all the typical health centre services for its surrounding communities. Rural hospitals also provide limited in-patient care for very simple medical and paediatric conditions, but do not provide acute care like blood transfusions and emergency surgery. As a result, rural hospitals are not considered to constitute a unique level of care but rather an extension of the health centres, providing limited hospital services.

Secondary care services are provided by the district hospitals, which are mainly government-owned with some CHAM-owned. These hospitals provide acute care services for all patients referred from the health centres and rural hospitals in the district. They also serve as backup points for primary health care providing some of the more specialised preventive and promotive services such as tubal litigations, microscopy and other diagnostic services for health centre clients. In addition to providing services, they also serve as co-ordination points for the provision of services at the primary care level. Government district hospitals also co-ordinate all other district level health initiatives, such as those under CHAM and NGOs through the District Health Office. In districts that have no government district hospital, the District Health Office exists independently for co-ordination duties.

Above the secondary level hospitals are central hospitals, which by design are supposed to provide tertiary care services for patients referred from secondary level hospitals. However, the districts in which central hospitals are located do not have district hospitals and the central hospitals are located in the largest urban areas. As a result of these factors and due to a shortage of appropriate staff and equipment, central hospitals largely provide a combination of primary and secondary care for the surrounding urban populations.

Parallel to the formal health delivery system are the private-for-profit clinics and hospitals mainly in the three cities of Malawi. Some CHAM hospitals also serve as private-for-profit and therefore do not follow the formal referral system.

3.12 HEALTH SERVICE PROVIDERS

The government through the Ministry of Health and Population largely provides health services in Malawi. CHAM, an association of health institutions owned by Christian religious organisations, provides the second largest volume of health services. Assisting these two organisations are NGOs who largely participate in the provision of community-based

services while the private sector provides services through their clinics and hospitals. Some organisations such as the Army, Police and private companies provide health care to their employees.

Only the government provides comprehensive services, that is care at all levels of the health services delivery structure. CHAM provides services at all levels below the central hospital except at the community level where services are provided through HSAs who belong to government. In total, the government owns some 358 health facilities while CHAM owns 146 facilities (Table 3.3).

Table 3.3 Health Facilities and Beds by Type and Ownership

	Government		CHAM		Total	
	Facilities	Beds	Facilities	Beds	Facilities	*Beds*
Central Hospitals	3	*1,890*	0	*0*	3	*1,890*
District Hospitals	22	*3,968*	0	*0*	22	*3,968*
CHAM Hospitals	0		22	*2,996*	22	*2,996*
Rural Hospitals	17	*516*	18	*711*	35	*1,227*
Mental Hospitals	1	*128*	1	*25*	2	*153*
Health Centres	248	*2,017*	88	*1,212*	336	*3,229*
Maternity Units	12	*94*	4	*81*	16	*175*
Dispensaries	55	*63*	13	*162*	68	*225*
Total	***358***	***8,676***	***146***	***5,187***	***504***	***13,863***

Source: Draft Health Facilities Plan

Malawi has 8,854 hospital beds (not counting the rural and mental hospitals), which represents a ratio of 1,220 people per hospital bed. If health centre beds, maternity unit and dispensary beds are added, the bed ratio increases to one bed for every 788 people. However, this would be misleading since except for maternity beds, health centre level beds are used for patient observation while waiting for the arrival of referral transport and therefore do not qualify as hospital beds.

The bulk of health services in Malawi are provided by clinical paramedical officers and enrolled nurses (Table 3.4). Doctors and registered nursed are very small in number and are mainly deployed at central hospitals and secondary level hospitals. The health personnel to population ratio shows that Malawi still requires a substantial number of health personnel in various cadres to reach the WHO recommended minimum staff ratios for developing countries. However, training outputs are currently very low with around 15 doctors, 230 nurses, 55 clinical paramedical officers and 15 dental and pharmacy paramedical officers annually. Pharmacists, dentists and radiographers can only be trained outside Malawi.

Table 3.4 Selected Health Personnel Numbers and Ratios

	MOHP	Local Govt.	CHAM	Banja la Mtsogolo	Police	Army	Others	Total	Population Ratios
Doctors	81	0	28	0	0	1	20	130	1 : 83,000
Nurses	1,979	68	534	71	18	5	145	2,820	1 : 4,000
Paramedical Clinicians	635	16	154	31	7	14	87	944	1 : 11,000
Dentists	1	0	0	0	0	0	5	6	1: 1,800,000
Paramedical Dentists	41	0	30	0	0	0	3	74	1 : 146,000
Pharmacists	4	0	0	0	0	0	4	8	1 : 1,350,000
Paramedical Pharmacists	98	8	19	0	0	2	0	127	1 : 85,000

Source: 4th National Health Plan, 1999 – 2004

3.13 HEALTH SYSTEM ADMINISTRATION

Administration of Malawi's health system is largely based on the Ministry of Health and Population's administrative structure. MOHP provides a central liaison point for co-ordination of all service providers and stakeholders. Until recently, the administrative structure of MOHP had three levels—national, regional and district. The regional administrative level has now been scrapped and only the national and district levels remain.

The Secretary for Health and Population (SHP) is the most senior manager responsible for the functioning of the ministry. Above the SHP are the Minister and Deputy Minister of Health and Population. Below the SHP are six technical departments each headed by a controller—Nursing, Clinical & Population, Health Technical Support, Preventive, Finance & Administration and Planning & Physical Assets Management.

Also falling under the SHP are the five central hospitals and 26 district health offices (Fig. 3.12).[11] District health offices are managed by District Health Officers who are delegated certain authority by the ministry to locally manage some of the affairs of the district. They are assisted by four or five line officers and together they form the District Health Management Team (DHMT), which is the decision making body for those local health care issues delegated by the ministry as being amenable to a local decision making process.

The relationship between the ministry and DHO will change with the implementation of the recently passed decentralisation bill that has laid the foundation for a devolution of powers from the central government to the district assemblies. Under this bill, the DHO will fall directly under the authority of the local assemblies and only technical liaison will be maintained with MOHP.

[11] Zomba Mental Hospital and Mzuzu Central hospitals inclusive

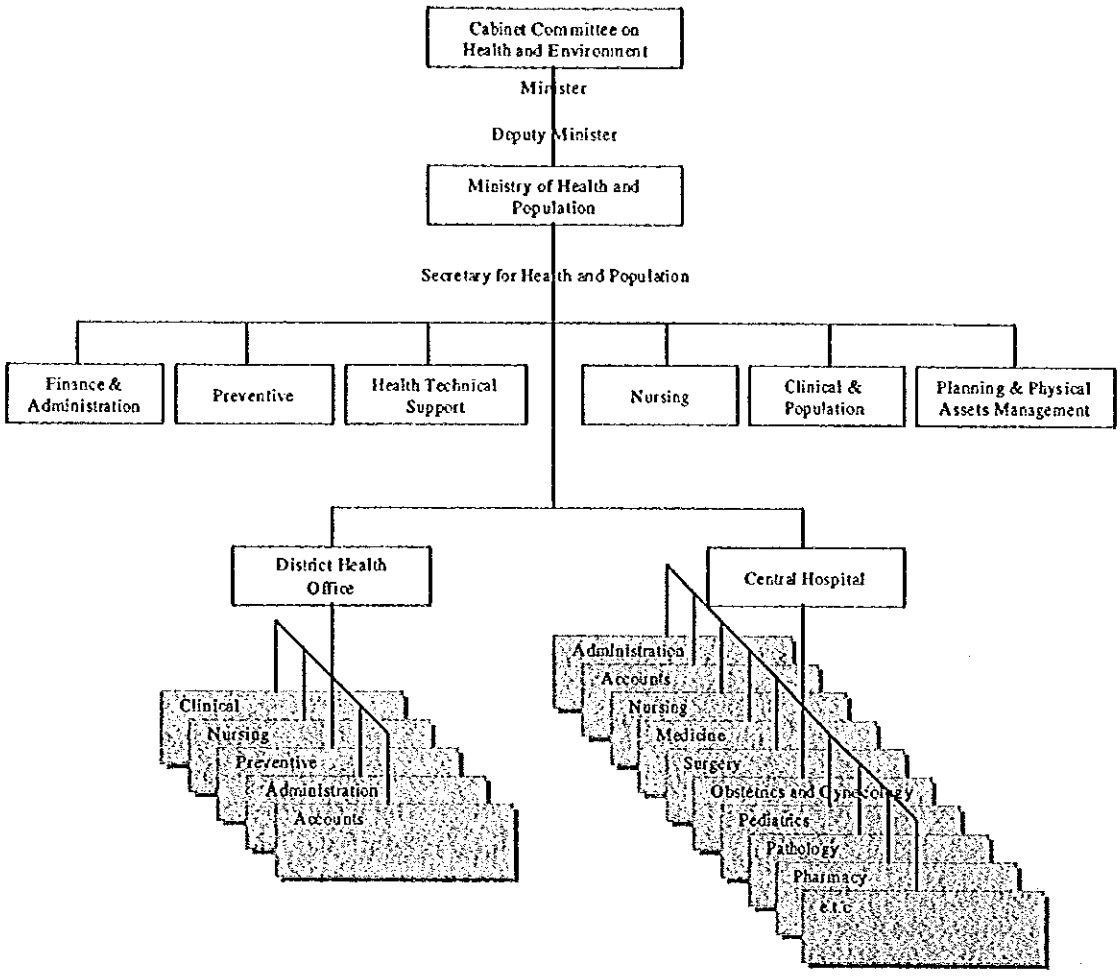

Fig. 3.12 Organisational Chart of Ministry of Health and Population

The district assemblies will receive their funding from the central government on a capitation basis. District assemblies will therefore determine the budget for health care at the district level following the guiding principles issued by parliament from the advice of MOHP. However, health sector policy development, co-ordination of donors, international representation, service standards setting and regulation and pre-service/post-basic and specialist training will remain the responsibilities of MOHP.

The relationship between the central hospitals and MOHP will also change with the implementation of the Hospital Autonomy Initiative aimed at promoting self-management in the hospitals in order to improve efficiency. At present, central hospitals are managed by a Hospital Director who is similarly given some delegated authority for local decision making. The Director is assisted by heads of departments and the administration in the day to day management of hospital affairs.

3.14 STATUS OF CHILDREN'S HEALTH

Childhood remains the most risky age period in Malawian's life with as many as one in every four children dying before their fifth birthday. This high risk gradually rises from one in 25 during the neonatal period to one in seven during the infantile period.

The high neonatal mortality rate is largely a result of poor access to maternal care services with only 55 percent of pregnant women nationally delivering at health facilities with the rest delivering at home mostly with relatives in attendance.[12] Of the 55 percent, three fifths of the deliveries are at a hospital while the remaining two fifths are at a health centre. These statistics appear contradictory since of the 80 percent of the population who live within an 8 kilometre radius of a health facility, more than 90 percent of the facilities are health centres. Concerning who assists in deliveries, it was found that medically trained personnel assist in only 40 percent of the deliveries implying that non-trained persons assist in some of the health facility deliveries. The Malawi Social Indicators Survey of 1995 found a positive correlation between children's risk of death at birth and birth assistance by non-trained personnel.

This situation implies that rural women are most likely to deliver at home rather than a health facility, and reflects poor accessibility and communities' low confidence in the maternity services offered at health centres as a result of poor staffing, equipment, materials and mechanisms for referring patients to hospital when the need arises.

After the neonatal period, the incidence of diarrhoea and respiratory infections starts to rise culminating in the increase of the infant mortality rate. The rise in children's vulnerability to infectious diseases continues up to five years of age with malaria becoming the main infectious disease accounting for almost half all morbidity figures and causing almost a quarter of the deaths, especially in those who are malnourished through the worsening of anaemia.

Malnutrition is thought to be the main factor that exacerbates children's vulnerability to infectious diseases because it promotes anaemia and weakens the child's resistance and capability to fight infection. The current rates of malnutrition are indeed very high with 48 percent of under five year old children being chronically malnourished (stunted), 7 percent wasted and 30 percent underweight.

With the high HIV sero-prevalence rate of 7 percent across the population or 13 percent among the 15 to 45 years age group, children are not spared. Conservative estimates of the number of orphans is that about 27 percent of all children under the age of 15 are orphans and 70 percent of these are due to HIV/AIDS. The rate of orphanage is projected to continue increasing and by 2010, 36 percent of all children below the age of 15 years will be orphans with 86 percent of these being a result of HIV/AIDS (Fig. 3.13). The mortality rate among children born of HIV positive mothers is also very high with more than two thirds being affected. It is envisaged that the high orphanage rate coupled with growing poverty will have

[12] Malawi Demographic and Health Survey, National Statistical Office, 1992

a negative toll on the current reputable immunisation coverage of more than 80 percent by 24 months of age in the coming five years.

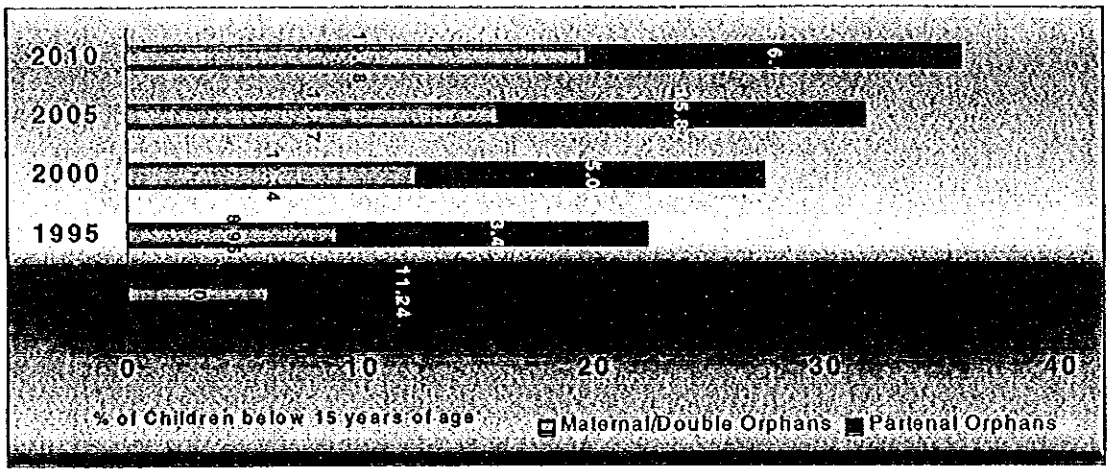

Fig. 3.13 Proportion of Children Under 15 Years of Age that are/will be Orphans
Source: Susan Hunter and John Williamson, Children on the brink, USAID

In the recently launched 4th National Health Plan, plans have been laid to improve the health status of children by putting focus on integrating child health services through the Integrated Management of Childhood Illnesses (IMCI) initiative. The programme also looks at promotion of communal feeding in the rural communities in order to combat malnutrition. It is obvious that the plans are ambitious and the required inputs will be substantial in order to make a difference on the current health status of children.

3.15 STATUS OF WOMEN'S HEALTH

Females account for 51 percent of the population in Malawi of whom almost half are in the childbearing age band. However, this is a gross under estimate of childbearing women considering that pregnancies below the age of 15 and above 45 are still common as shown by the high fertility rate of 6.7 children born to each woman on average.

The high fertility rate is thought to largely reflect communities' reliance on children for the subsistence economy and women's lack of negotiating power on family planning due to illiteracy. Considering this background, family planning has not been very successful. Awareness of family planning by husbands and wives is around 90 percent, but the contraceptive prevalence rate was only 14 percent in 1995. This is despite substantial targeting of family planning over the last five years with almost every clinic and NGO implementing a family planning programme and the introduction of community based volunteer contraceptive distributors.

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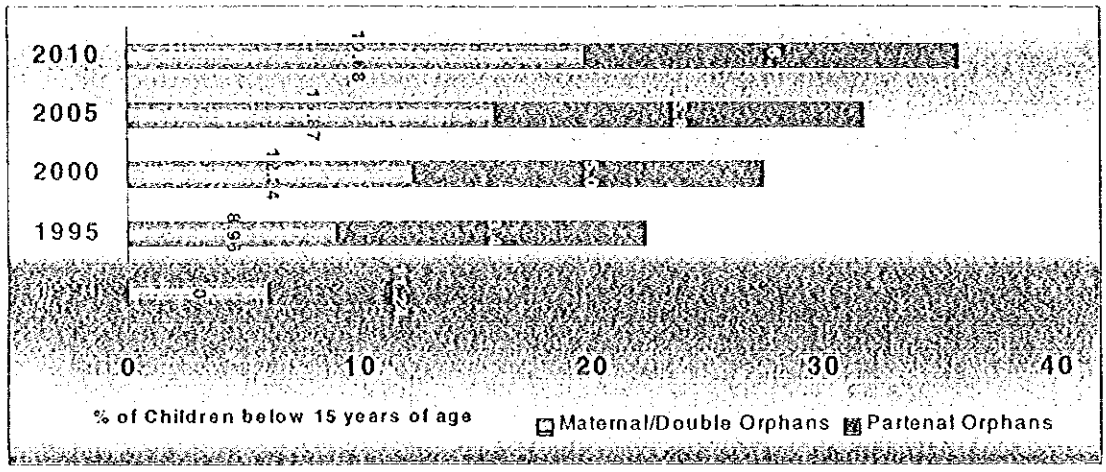

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High fertility coupled with an ineffective delivery system for maternal services resulted in maintaining a maternal mortality rate of 620 per 100,000 live births over the last ten years. Long-term childbirth related disabilities are estimated to affect three times more women than those who die.

The main causes of maternal death are complications of abortions, ante/postpartum haemorrhage, puerperal sepsis and complications of obstructed labour. These complications are largely a result of poor maternal health deriving from inadequate nutrition and poor access to basic maternity services, the reasons for which have been elaborated in section 4.2 of this report.

Maternal malnutrition is exemplified by the high prevalence of anaemia among pregnant women estimated at more than 60 percent and the high degree of stunting—13 percent of all pregnant women being shorter than 150 centimetres, which results in cephalo-pelvic disproportion and obstructed labour and bearing of low birth-weight babies. In the hilly areas of the central and northern regions, iodine deficiency is quite common and the total goitre rate is at 6 percent resulting in a high incidence of cretinism.

Although only 55 percent of women deliver at health facilities, over 90 percent of all pregnant women use health facilities for antenatal care with over 60 percent making four or more antenatal visits starting from the second trimester. As a result of this encouraging patronage of antenatal clinics, 70 percent of all pregnant women receive at least two doses of Tetanus Toxoid Vaccine.

In the communities, the National Safe-Motherhood Initiative promoted the training of Traditional Birth Attendants (TBAs) in safe delivery methods and provided equipment and materials to them to facilitate such practices. By 1992, almost 2000 TBAs had been trained although the majority remained untrained. A survey in the same year estimated that both trained and untrained TBAs assisted 18 percent of all deliveries. However, since beginning this programme, the clear impact of TBAs training and assisting has not been demonstrated, that is, there has been no significant change in the maternal mortality rate.

Plans to halve the current maternal mortality rate in the coming five years are reflected in the 4th National Health Plan, mainly through expanding and strengthening the health delivery infrastructure in order to improve access. Other strategies are focused on increasing the number and quality of personnel, as well as equipment and supplies.

3.16 GENERAL TREND FOR SELECTED DISEASES

The burden of infectious diseases in Malawi remains very high. It is estimated that 70 percent of those who seek care at a health facility do so as a result of an infectious disease, among which malaria is ranked number one accounting for a third of the morbidity figures.

Other diseases are upper respiratory infections (12%), diarrhoea (7%), and diseases of the eye (4%) (Table 3.5).

Table 3.5 Top Five Leading Causes of Out-Patient Attendance for All Age Groups, 1995

Diagnostic Category	Number of Patients (millions)	Percentage (%)
Malaria	6.1	33
Upper respiratory infections	2.3	12
Diarrhoeal diseases	1.3	7
Ill defined abdominal complaints	0.9	5
Diseases of the eye	0.8	4
All other diseases/conditions	7.1	38

Source: Malawi Government Basic Health Statistics, 1995

1) Malaria

Malaria is one of the most serious public health problems in Malawi especially among children under five years old. In this age group, it accounts for 38 percent of all out-patient visits to health facilities. Malaria also accounts for 30 percent of all hospital admissions and 20 percent of in-patient deaths in under five children. Seasonal variation in malaria morbidity shows that malaria infection is most prevalent in April and least prevalent in July, mainly reflecting the influence of the rainy season on mosquito breeding (Fig. 3.14).

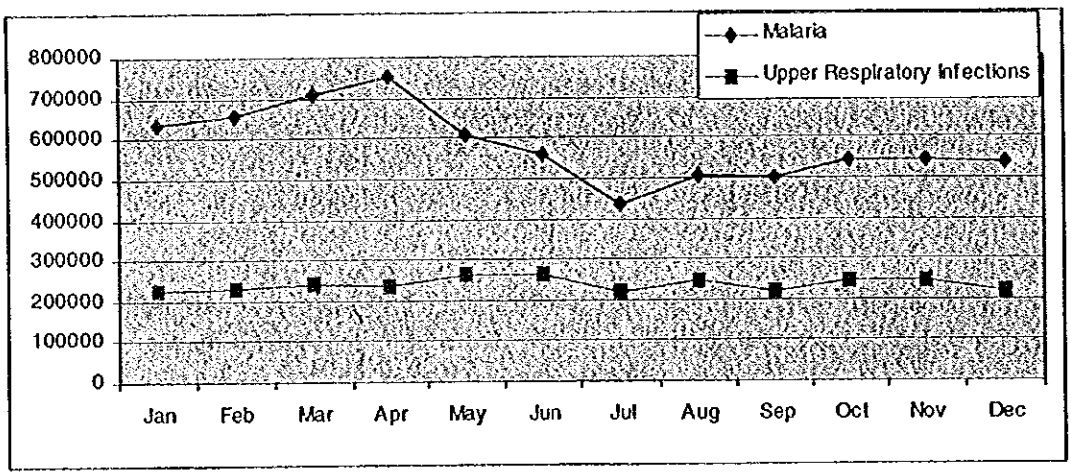

Fig. 3.14 Seasonality of Malaria and Upper Respiratory Infections
Source: Malawi Government Basic Health Statistics, 1994

The incidence figures for malaria show that there is very minimal geographical variation, indicating that Malawi is a highly endemic country for malaria. Since 1993, the first line treatment for malaria was changed form Chloroquine to Sulfadoxine/Pyrimethamine (SP) due to Chloroquine resistance. SP continues to be highly effective with less than 2 percent primary resistance.

Malaria control services are focused on strengthening clinical management of malaria at health centres, hospitals and the community level. In communities, the main interventions are through Drug Revolving Funds (DRFs) and promotion of mosquito nets. Both community initiatives are largely donor funded, have been introduced by NGOs in only a few communities, and remain at the experimental stage. SP is also available from local groceries at about three Kwacha (US $ 0.07) per tablet.

2) Respiratory infections

Respiratory infections include all infections of the ear, nose, throat, trachea bronchioles and lungs. Acute Respiratory Infections (ARIs) are infections with less than 21 days duration (14 days for ears). In Malawi, respiratory infections are the second most important cause of morbidity and cause about 600 deaths among under five children annually. ARIs are common in infancy and decline steadily after the second year of life. The case fatality rate of ARIs is the highest at between 7 to 10 percent compared to all other infections.

The mean duration for admission due to ARIs is very short at about 3.5 days. As a result, the ARI control initiatives are focused on strengthening clinical management at health centres, hospitals and the community level. In the community, ARI control initiatives are focused on promotion of DRFs and IEC on early recognition of symptoms so as to promote prompt health seeking behaviour.

3) HIV/AIDS

The HIV/AIDS situation in Malawi is one of the worst in the world with a sero-prevalence rate of 13 percent among the 15-49 age group. Among adults, AIDS is slowly becoming the number one cause of death and already accounts for more than half of all hospital admissions. However, mortality due to AIDS is projected to peak at 70,000 per annum by the year 2004. This increase in deaths due to AIDS has resulted in reducing life expectancy which was projected ten years ago to go above 50 years by the year 2010 but is now at 44 years and projected to decline further until mortality due to AIDS peaks in the year 2004.

Activities to arrest the situation have largely been implemented through NGOs under donor funding. Within government, a National AIDS Control Secretariat under the guidance of a Cabinet Committee on HIV/AIDS co-ordinates all HIV/AIDS control activities. The main strategy in HIV/AIDS control has been IEC at the community level. To date, awareness on HIV/AIDS is at more than 90 percent but behaviour change continues to lag behind.

4) Tuberculosis

The incidence of tuberculosis increased from around 5,000 in 1988 to 20,000 ten years later. Almost 60 percent of TB cases are HIV positive. TB is therefore one of the main causes of death for those who are infected with HIV. Cure rates have slowly decreased from over 75 percent ten years ago to around 65 percent.

Control activities have been refocused in the last two years with adoption of the Direct Observed Treatment, Short-course (DOTS) as the standard TB management strategy.

Treatment centres have slowly been decentralised with the introduction of DOTS so as to facilitate contact and defaulter tracing.

3.17 HEALTH SECTOR POLICY AND STRATEGIC DIRECTION

The Ministry of Health and Population in conjunction with its partners finalised the 4th National Health Plan in May 1999, which details the policies to be followed and programmes to be implemented between 1999 and 2004. Alongside this plan is a long-term vision titled *'To the year 2020: Vision for the health sector in Malawi'* which details long-term policies up to the year 2020 alongside the government's vision 2020 policy document.

Both policy documents focus on implementing radical changes in the way health services are delivered and managed in order to improve efficiency and effectiveness in light of resource constraints. The framework for health sector reform has focused on seven core areas:

1) Decentralisation and capacity building
2) Sector-wide approaches
3) Strengthening of user fees
4) Introduction of Essential Health Packages and rationalisation of service delivery support structures
5) Strengthening of public/private partnerships
6) Health Management Information System
7) Bakili Muluzi Health Initiative (BMHI)

3.17.1 Decentralisation

The Local Government decentralisation Act 42 was passed in early 1999 and paves the way for the devolution of authority from the central government to local governments at the district level. The local assemblies will be charged with the responsibility of directly providing social services including health services to their communities. Implications of this reform will result in the refocusing of MOHP's mandate from service provision to a normative role of policy formulation, regulation and resource mobilisation for the health sector. At present, capacity building, both in terms of personnel training and strengthening the district management systems, is the most challenging task in order to successfully transfer responsibility.

The second form of decentralisation to be implemented is giving autonomy to two central hospitals—Queen Elizabeth and Lilongwe—over the next five years.

3.17.2 Sector-wide Approaches

In an attempt to resolve the fragmentation of the health sector that has resulted from the current project approach in delivering and managing health care services, MOHP has adopted a long-term policy to move towards sector-wide approaches. Sector-wide approaches (SWAps) have been proposed as a long-term strategy aimed at enhancing collaboration between health sector partners, especially donors and government by harmonising their service delivery and management approaches. It is envisaged that it will take at least ten years for SWAps to become fully operational in Malawi. In the coming five years, the focus will be on building consensus among the health partners and starting to bring the health delivery arrangements closer together.

3.17.3 User Fees/Cost Recovery

With almost 10 percent of the government recurrent budget being allocated to the health sector, the prospects for a further increase in total resources from government is not very promising. As such, strengthening the current user fee schemes and introducing new user fee schemes will be the main strategies for supplementing the health sector resource basket. The user fee schemes being considered are cost sharing, health insurance and community financing schemes. Under cost sharing, the intention is to strengthen and expand the current OPD1 scheme (paid outpatient clinics where patients can make advance appointments) and to introduce new schemes for implementation. With regard to health insurance, the set target is to introduce social insurance schemes for civil servants and full-time employees in the private sector. In the area of community financing, there is no definite direction that has been decided. Instead, focus has been put on promoting localised experimental schemes and Drug Revolving Funds. The policy decision in the area of community financing has been a very difficult one for the government to make. Although there have been several studies to estimate the public's ability to pay, the conclusions have at times been contradictory. One study that used land holding capacity as a proxy measure of ability to pay showed that the majority of people in the rural areas would not be able to pay for health care.

3.17.4 Essential Health Package

Introduction of an Essential Health Package (EHP) which incorporates all basic cost-effective services at the community and health centre level will be the main strategy implemented for rationalising service delivery. To define the package, studies will be carried to determine its composition, implementation framework and monitoring systems. Following the National Health Plan, priority has been given to the following areas:

- Safe delivery services (both primary and backup)
- HIV/AIDS and STD prevention and treatment services
- Family planning services

- Childhood immunisation services
- Growth monitoring and other malnutrition services
- Management of common childhood illnesses including hospital backup services
- Rehabilitation of severely malnourished children
- Health promotion services
- Disease prevention services
- Acute rehabilitation services, and
- Treatment of common medical and surgical conditions

Adoption of the Package will require a more integrated delivery system and is likely to result in the elimination of some of the vertical health delivery arrangements. The main challenge will be to provide support training to health workers and district health managers in their roles as providers and managers of EHP respectively.

3.17.5 Public/Private Partnerships

The private sector's share in the provision of formal health care services in Malawi has been minimal, however it has grown substantially over the past five years. To provide a framework for both regulating and increasing the private sector's share in the provision of formal services, two main strategies are proposed in the National Health Plan, namely strengthening of the regulatory framework and the development of contracts. The main tasks planned are to review the Public Health Act, draft a Health Services Act and design agreements and mechanisms to enhance collaboration between government and CHAM, and between autonomous hospitals and training institutions. In addition, non-core services in the public institutions will either be privatised or contracted out.

3.17.6 Health Management Information System

In order to monitor all planned initiatives, Health and Management Information Systems will be developed for the collection, analysis and dissemination of health information. The first task to be carried out will be to define sector-wide indicators for monitoring the implementation process of the 4th National Health Plan. The second task will be to strengthen those information systems concerned with the collection and management of routine data e.g., HIS, PPP, IFMIS. The third task will be to strengthen the health system research capacity at all levels for routine monitoring. The fourth task will be to use the information from the routine data and research and publish annual progress reports. The last task will be to maintain a resource centre at the national level for storage and dissemination of information.

3.17.7 Bakili Muluzi Health Initiative

In line with the WHO strategic direction of "Health for All", President Bakili Muluzi proposed a new health initiative that would make essential drugs available to communities within walking distance in order to reduce the burden of common illnesses. The initiative also aims to implement focused community based feeding programmes to combat childhood malnutrition, and to employ retired health personnel to render health services within the community.

3.18 CONCLUSION

Malawi faces daunting challenges in meeting the health care needs of its growing population. Health indicators are among the worst in the world. The already tight health service system will be further stretched as a result of the AIDS epidemic, which is one of the most severe in Africa. In order to tackle the challenges, MOHP launched its 4th National Health Plan 1999 – 2004 in May 1999. The Plan contains very ambitious targets, and if realised, would mark a turning point for the health status of the country.

The health system in Malawi largely relies on government and donors for its financing. Donor support is channelled through various projects, which often strain the limited management capacity of MOHP. Lack of donor co-ordination and competition among donor agencies aggravates the situation. With a dim prospect of an increase in resources from these two sources, MOHP is planning to introduce schemes of cost sharing and cost recovery. At the same time, MOHP must utilise its available resources more efficiently.

As spelled out in this situation analysis, health status will not improve from efforts made by the health sector alone. The concerted efforts of line ministries, local governments, non-governmental organisations, and, most importantly, communities themselves are crucial to attain health for all.

Chapter 4

SUMMARY OF STUDY FINDINGS

CHAPTER 4: SUMMARY OF STUDY FINDINGS

4.1 CHILDHOOD MALNUTRITION

4.1.1 Situation of Infant Mortality and Under Five Mortality

In Malawi, IMR and U5MR are extremely high: 134 and 234 per 1,000 live births respectively in 1992—among the highest in the world. The government plans to improve the situation, with the aim to reduce them to 100 and 150 respectively by the year 2004. High childhood mortality is a result of many factors. Several global studies have found a close association between a high childhood mortality rate and low economic status, as indicated by GNP per capita, national health expenditure per capita, income per household, and so on. Parental education level also affects children's health and mortality. The direct causes of childhood deaths are varied, but predominantly infectious diseases.

4.1.2 Findings on Mortality and Morbidity in the First Cycle Study (see Vol.4, Part 1, Ch. 2)

1) Morbidity pattern and causes of mortality among inpatients

The top five common diseases at the paediatric ward were malaria, malaria with anaemia, pneumonia, malnutrition and trauma, in that order. These are also the main causes of in-hospital mortality for children. The number of paediatric inpatients was much larger in January than in July, chiefly because the incidences of malaria and malnutrition markedly increase during the rainy season (Fig.4.1).

2) Morbidity pattern among outpatients

Common diseases at U5 clinics were malaria, lower respiratory tract infections (LRTIs) including pneumonia, upper respiratory tract infections (URTIs), diarrhoeal diseases, diseases of the eye, malnutrition, scabies and other skin disorders. This pattern of leading diseases among U5 outpatients in Salima District was similar to that in the Central Region in 1994. Malaria is generally diagnosed on a clinical basis at OPDs, and therefore its prevalence seems to be overestimated. On the contrary, malnutrition appears to be underestimated because malnourished children are usually followed up by GMPs rather than at U5 clinics (Fig.4.2).

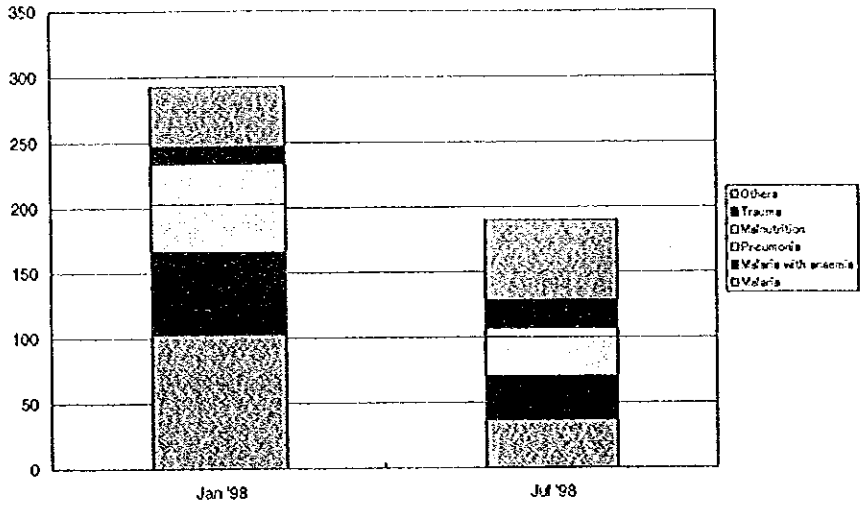

Fig. 4.1 Common Diseases among Paediatric Inpatients, Salima District Hospital, 1998

c.f. The number of adult inpatients did not change between January and July. The top five common diseases except for obstetrical/gynaecological disorders at the adult wards were trauma, malaria, pneumonia, tuberculosis and diarrhoea. Another main cause of mortality was AIDS-related complex (ARC).

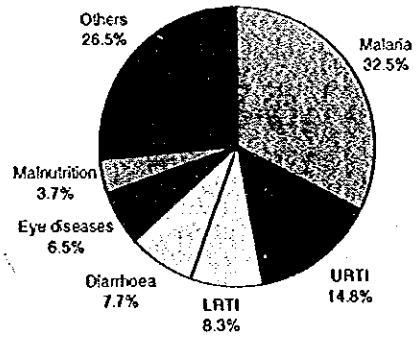

Fig. 4.2 Common Diseases at Paediatric OPD, Salima District Hospital, 1998

c.f. Common diagnoses at general OPDs were malaria, LRTI, URTI, diarrhoeal diseases, trauma, abdominal complaints, diseases of the eye, and muscular/skeletal disorders, among others. The prevalence of Bilharzia (schistosomiasis) is estimated at between 40 and 50 percent in Malawi, nevertheless it accounts for only 2.4 percent at OPDs. These leading diagnoses in Salima District were not much different from those of the Central Region in 1994.

4.1.3 Impact of Nutrition on High Childhood Mortality

Malnutrition is a chronic and pervasive problem in Malawi. According to the 1992 Malawi Demographic and Health Survey (DHS) conducted by the National Statistical Office, the nutritional status of Malawian children is one of the worst among sub-Saharan African countries: one in two (49%) children under five years is stunted (i.e., chronically undernourished), more than one in four (27%) children is underweight for age, and one in 20 (5%) is wasted (i.e., acutely undernourished).[1]

As already mentioned, IMR and U5MR are extremely high in Malawi. WHO estimates that more than half of the child deaths in developing countries are related to undernutrition. The high prevalence of undernutrition in Malawi has a greater impact on childhood mortality than any other single disease such as malaria, anaemia, or ARI. Therefore, mortality rates will not be reduced until there is a dramatic improvement in nutritional status.

In order to control childhood malnutrition, a clinic-based growth monitoring programme (GMP) was started in 1973, and a community-based GMP has been introduced gradually in selected villages since 1987. The World Food Programme (WFP) started providing food assistance to vulnerable groups through these channels from 1972, and also promotes the rehabilitation of severely malnourished children through feedings at Nutrition Rehabilitation Units (NRUs) or paediatric wards along with their mothers.[2] In October 1998, WFP stopped providing food to clinic- and community-based GMPs, but it continues to supply food to NRUs and paediatric wards. The WFP food support to GMP was found to have had little impact on the prevalence of malnutrition, but the change has created a challenge for MOHP to maintain the food support programme on its own (see Vol.4, Part 1, Ch. 2).

4.1.4 Focus of the Childhood Nutrition Study

In one village where in the first cycle the study team conducted an anthropometric survey, more than half (57.7%) of children under five years were stunted and one in four (25.2%) was underweight for age. In that village, the coverage by the community-based GMP was less than half (48.0%), and a third of the infants and more than 70 percent of children older than one year missed the occasion for a check-up.

In the second cycle study, the prevalence of undernutrition during the pre-harvest period was investigated on a much larger scale and precipitating factors were investigated. Although the total quantity of food consumed by a child is considered a critical factor in malnutrition, this information was not sought due chiefly to time limitations and the difficulty in getting accurate information. Instead, the study focused on the frequency of eating particular foods. Coverage by GMPs was calculated for a larger population.

1 Nutrition of Infants and Young Children in Malawi, Macro International Inc., 1994.
2 WFP Malawi Activity Report: First Quarter Report 1998, World Food Programme

MOHP has introduced a communal gardening programme as an alternative to the supplementary food from WFP, because 50 percent of under five children remain malnourished. The study team visited several project sites where the communal gardening programme or other projects related in some way to childhood nutrition are underway.

The focus of the present study was placed on prevention and management of mild to moderate cases through PHC rather than acute care or nutritional rehabilitation of severe malnutrition at secondary and tertiary health facilities.

4.1.5 Objectives of the Childhood Nutrition Study

- To investigate childhood nutrition in the pre-harvest period
- To investigate food consumption by under five children
- To investigate the type of foods available in the local markets
- To explore further activities of active growth monitoring programmes
- To explore the possibility of self-help nutritional programmes

4.1.6 Methodologies Employed in the Second Cycle

Both quantitative and qualitative methodologies were used, with details provided in the supporting report (Vol. 4, Part 2, Ch. 1):

(Quantitative)
- Anthropometric survey of children under five
- Household survey: food consumption questionnaire on children under five
- Market food availability survey

(Qualitative)
- Observation of childhood nutrition projects
- In-depth key informant interviews with people implementing nutrition projects
- FGDs with villagers: mothers, GMVs and Village Health Committee members

The anthropometric and household surveys were conducted in Mzimba and Nkhata-bay Districts (hereafter called the survey in the Northern Region), and also in Zomba, Blantyre and Mwanza Districts (hereafter called the survey in the Southern Region). Further details about each survey along with results and analyses can be found in Vol. 4, Part 2, 1.1.

4.1.7 Summary of Findings

Previous studies have indicated that the nutritional status of Malawian children is dire, even in relation to other sub-Saharan African countries. The present study confirmed the fact that more than 50 percent of under five children are undernourished.

1) Results of anthropometry (see Vol. 4, Part 2, 1.1)
The survey in the Northern Region revealed the prevalence of undernutrition as follows: 39.0 percent of the studied population was underweight for age, 64.2 percent was stunted, and 5.7 percent was wasted. The results of the survey in the Southern Region are as follows: 44.9 percent was underweight, 64.2 percent was stunted and 14.6 percent was wasted. Wasting and underweight were much more common in the Southern Region than in the Northern Region at the time of the study (during the rainy season).

2) Importance of breast feeding (Vol. 4, Part 2, 1.1)
Exclusive breast feeding is important to protect babies from diarrhoea and provide sufficient nutrition in the first months of life. The survey in the Southern Region showed that the late introduction of complementary foods has helped protect against becoming underweight, stunted or wasted.

Even after complementary foods are introduced, breast feeding is still advantageous for infants to receive minimal protein, fat, vitamins and trace elements. This is particularly true in areas where the complementary foods for young children are mainly monotonous bulky carbohydrates such as plain maize porridge, a common weaning food in Malawi. According to the study, prolonged breast feeding for more than 24 months remarkably protects against wasting and becoming underweight. Promotion of family planning will help encourage prolonged breast feeding, because pregnancy or the birth of the next child is a major reason for the short duration of breast feeding.

3) Food intake (see Vol. 4, Part 2, 1.1)
Food security for the studied households is an issue. Many households must buy maize during certain periods in the year. Both the frequency and variety of food fed to the studied children is very limited.

According to the food market research, the markets had an abundance of foods for sale (see Vol. 4, Part 2, 1.2). This is probably a result of the study being conducted in the rainy season. Anyhow, for at least part of the year, a variety of foods are available for purchase, so people should be given practical knowledge on what kind of foods to buy and eat in order to maintain their health. However, it is always a challenge to change people's taste in food and buying behavior because these are the result of a multiplicity of factors such as perception/ understanding of nutrition, socio-economic status, access to markets, and traditional beliefs.

4) Effect of recurrent episodes of infectious diseases (see Vol. 4, Part 2, 1.1)
Recurrent diarrhoeal or febrile episodes are strongly correlated with childhood undernutrition. Therefore, prevention and proper management of infectious diseases is also essential to reduce the undernourished population.

5) People's understanding on the causes of childhood malnutrition (see Vol. 4, Part 2, 1.4)
The causes of childhood malnutrition are complex, including both immediate and underlying causes. What the villagers suggested as the causes of childhood malnutrition during FGDs in the study is probably fairly accurate.

6) Community leaders' interest and prioritisation (see Vol. 4, Part 2, 1.4)
Some village leaders referred to "hunger" or "food shortages" as either the biggest or the second biggest concern in their community.

7) Family planning (see Vol. 4, Part 2, 1.4)
Many villagers realise that family planning is important to sustain the nutritional status of their children. The problem is that many husbands won't allow their wives to practice family planning. This situation implies that men need to be targeted in both nutrition and family planning programmes, and that it will be difficult to improve childhood malnutrition without improving women's status in the family.

8) Women's responsibility (see Vol. 4, Part 2, 1.4)
Both male and female FGD participants stated that women are fully responsible for childcare. Men are conspicuously absent from the childcare role. Therefore, mothers are the ones who feel the shame and guilt of having malnourished children. Although GMPs have fairly good attendance rates, some children are not brought for care because their mothers are concerned about what others think: an unhealthy child reflects poorly on the mother.

9) Projects directly or indirectly related to childhood nutrition (see Vol. 4, Part 2, 1.3)
Generally, strategies have been developed in view of the actual situation, and to use the available resources in the most efficient way (Table 4.1). In some projects, participants are the key actors rather than just the passive beneficiaries of services.

Table 4.1 Summary of the Projects Visited

Type of Project	Communal Gardening		Communal Goat Herding	Horticultural
Site visited (District)	Kajawo (Chikwawa)	Puli (Blantyre)	Gola (Chikwawa)	Lobi (Dedza)
Start date	Dec. '98	Dec. '98	1997	1990
Objectives	Children's nutrition		Children's nutrition	IGA
Main activity	Production of maize/soy		Milk production	Vegetable growing and selling
Other activities	(Community-based feeding)			
Planner	MOHP		Villagers	MOA
Actors	Village head VHC Villagers		Villagers	Women's group
Women's participation	Yes	Yes	?	Yes
Supervisors	MCH co-ordinator/D.O.			JOCVs
Donor's contribution	Seeds, fertilizer technical support		(-)	Technical support
Problems	Distribution of harvest Financial management			
Dynamism	Top-down	Top-down	Bottom-up	Bottom-up
Sustainability	+ or -	+ or -	+	++

10) Distribution of the harvest in communal gardening projects

Since this is the first planting season since beginning the communal gardening programme, distribution of the harvest has not yet occurred. However, the plan is to keep the harvest at the chief's residence as was previously done with the WFP donated *likuni* and soya flour. The foods would then be distributed to malnourished children at under five clinics, following the grinding process (for soya and maize). Nurses and GMVs would be responsible for identifying appropriate recipients in line with the criteria set by the clinic.

11) Future plans and sustainability of communal gardening programme

Most villagers interviewed did not know the long-term plans of their community garden, but intended to discuss the matter. Some men however expressed their personal idea that the garden would continue as long as they received sufficient seeds and fertiliser from donors.

4.1.8 Conclusion

Precipitating factors for the poor nutritional status among Malawian children are multiple:

- the failure of GMPs to effectively prevent the mildly undernourished from manifest malnutrition despite their covering a reasonable proportion of the under five population
- early timing of introduction of complementary food
- insufficient quantity and improper quality of oral food intake
- frequent bouts of infectious diseases which rob the appetite and obstruct the absorption of nutrients

MOHP introduced the communal gardening programme when food to GMPs was phased out, but further development and training is needed for the programme to expand and be successful.

4.2 MATERNAL MORTALITY AND MORBIDITY

4.2.1 Situation of Maternal Mortality and Morbidity

The estimated maternal mortality rate (MMR) in Malawi varies from as high as 1452 per 100,000 live births (LBs) down to 456 per 100,000 LBs. MOHP generally quotes data from the Malawi Demographic and Health Survey, 1992 (DHS 1992), which is 620 per 100,000 LBs. According to the same survey, 21 percent of females aged 15 to 49 years die due to pregnancy and childbearing. The estimated number of maternal deaths exceeds 2700 per year. The international disparity in maternal mortality is greater than that of child mortality—MMR in Malawi is 200 times greater than that of some developed countries. Malawi's MMR is one of the highest in the world, but close to the average of other sub-Saharan African countries.

World-wide estimates are that for each maternal death, there are 10 to 15 women who suffer morbidity. If this is the case in Malawi, then approximately 10 percent of all pregnancies result in some sort of maternal morbidity.

4.2.2 Significance of Maternal Mortality in Malawi

The main target groups for this Development Study are children under five years old and women of reproductive age. In Malawi, women of reproductive age are considered to be between 15 and 49 years old. Although maternal deaths are not the only cause of death in women of this age group, they do account for the majority at 21 percent. Previous studies have revealed that even with limited resources, many maternal deaths could have been avoided if proper interventions had been carried out.[3]

Definition of Maternal Mortality:

Maternal mortality is the death of a woman while pregnant or within 42 days after termination of a pregnancy irrespective of the duration or site of the pregnancy; from any cause related to or aggravated by the pregnancy or its management but not from accidental or incidental causes.1

Maternal deaths may result from obstetric complication(s) of pregnancy, labor, puerperium and from any intervention or sequelae of the above. These deaths are classified as Direct Maternal Deaths. Death may be a result of aggravation of existing conditions/diseases by pregnancy or delivery; these deaths are classified as Indirect Maternal Deaths.

Death of a mother has an enormous impact on the well being of the surviving family. The 1993 World Development Report states that the likelihood of death among children under five years old without a mother increases by 50 percent in comparison to that of children with a mother. In Malawi where childcare is more or less the sole responsibility of mothers, the impact of death of a mother on the health of her children could be even greater. The same factors which influence maternal death also determine maternal morbidity and to a large extent perinatal mortality and morbidity. Therefore, addressing maternal mortality can be considered to have a large impact on the overall primary health care situation in the country.

4.2.3 Focus of the Maternal Health Study

Past studies repeatedly demonstrated that use of antenatal care among pregnant women was high. Yet, this supposed preventive activity is not leading to the reduction of MMR. Two hypotheses for this discrepancy were tested during the development study. One hypothesis is that despite the high use of antenatal care, the prevalence of facility delivery is low, thus many women with complications are not saved. The other is that the quality of care provided at health facilities is substandard, thus women with complications are not treated properly.

3 L.A.R. Mtimavalye, *Maternal Mortality and Morbidity in Malawi*, March 1999 (study included in vol. 4, Part 2, Appendix 2.10)

Although some causes of maternal mortality exist even before pregnancy, the focus of the study was placed on post-pregnancy causes (based on consultations with MOHP). This was not because pre-pregnancy causes were deemed less important, but because with the high MMR all pregnancies are potentially at risk and because interventions against post-pregnancy causes have been given less priority and donor support in the past compared to interventions related to family planning.

4.2.4 Objectives of the Study on High Maternal Mortality

- Identify causes of high maternal mortality with an emphasis on the use of antenatal care (ANC), facility delivery, and the quality of care provided to pregnant women and women in labor
- Describe relationship between choice of delivery place and antenatal care
- Based on the findings, draft a master plan of operations to reduce maternal mortality in Malawi

4.2.5 Methodologies Employed in the Second Cycle

Both quantitative and qualitative methodologies were used with details provided in the supporting report (Vol. 4, Part 2, Ch. 2):

(Quantitative)
- Household surveys
- Exit interviews with ANC clients
- Analysis of causes of maternal death at Mzimba District Hospital
- Health facility catchment area analysis

(Qualitative)
- Focus group discussions with village women, village volunteers, and health care providers
- Key informant interviews with health care providers and community leaders
- Observation of antenatal and delivery care

(Other research)
- Accessibility analysis
- Referral system analysis
- Health facility assessments
- In-depth Interviews with women who recently delivered
- Literature review on maternal mortality and morbidity in Malawi

Further details about the surveys and others forms of research, including results and analysis, follow in this chapter.

4.2.6 Summary of Findings

The findings were classified into two main groups: 1) pre-pregnancy related factors and 2) post-pregnancy related factors. Additionally, the findings related to pre-pregnancy factors were divided into two groups: 1-a) family planning and frequent pregnancy and 1-b) general health status of women. And the findings related to post-pregnancy were grouped into three: 2-a) factors related to antenatal care, 2-b) factors related to essential obstetrics care, and 2-c) factors related to emergency care. This classification corresponds to the contributing factors to high maternal mortality, which are discussed in the Problem Analysis section of the Master Plan of Operations for Reducing Maternal Mortality.

1) Pre-pregnancy factors

Women are exposed to the risk of maternal deaths only after they become pregnant, but the problems exist before conception.

1-a) Family planning and frequent pregnancy

The trend in Malawi is for women to start reproducing at an early age, and continue until their later reproductive years. In the Northern Region, more than 23 percent of ANC clients were less than 20 years old and 8.5 percent were more than 35 (Vol. 4, Part 2, 2.1-2.2). The total fertility rate of 6.7 indicates the high number of pregnancies most women experience during their lifetime (MDHS, 1992). Fertility among rural women is higher than that among urban women. Fertility is also associated with level of education.

Women are aware of the high risk of pregnancy. In the Chichewa language, the word *pakati* is translated as pregnant, but it can also mean "in-between". The sense of this latter meaning is that when a woman is pregnant, she is actually in a state between life and death (Vol. 4, Part 1, 12.2).

Study results demonstrate that people are aware of family planning but contraceptive use remains low (Vol.4, Part 1, 3.3). Qualitative research in Salima District found that men are not supportive of wives who want to practice family planning (Vol. 4, Part 1, 12.2). Further details on people's knowledge, attitudes, and practices related to family planning can be found in the report on KAP study, 1997 and MDHS, 1992. A summary of findings for both studies can be found in chapter 5, Interim report, P54.

1-b) General health status of women

As discussed elsewhere in this report, chronic malnutrition is epidemic among all age groups in Malawi. Chronic childhood malnutrition can lead to stunting of women by reproductive age. A total of 13 percent of women are less than 150 cm in height (MDHS 1992). Stunting can adversely impact obstructed labour due to cephalo-pelvic discrepancy.

A total of 56 percent of women attending ANC were found to be anaemic (Interim R, P48). In addition to iron deficiency, Malawian women are frequently deficient in iodine and vitamin A, and many are classified as protein energy malnourished (Vol.4, Part 1, Ch. 3). HIV/AIDS is also prevalent among women of reproductive age.

2) Post-pregnancy factors

2-a) Antenatal care

Use of antenatal care: Since the early 80s, studies have repeatedly shown that the majority of women visit antenatal care clinics at least once during their pregnancy. Household surveys in the Northern and Southern Regions in this study confirmed this fact: more than 99 percent of women who delivered in the last six months reported that they visited ANC at least once (Vol. 4, Part 2, 2.1). Even among women who did not deliver her last child at a health facility, 90 percent visited ANC at least once (Vol. 4, Part 2, 2.3).

Use of outreach services for ANC was lower than expected in the both regions, but particularly in the north where only 2.6 percent of respondents used outreach services (Vol. 4, Part 2, 2.1). Due to difficult physical access in the Northern Region, the use of outreach was expected to be higher. But combined with other evidence from the study, it became apparent that women in the north are more determined to obtain formal health services than their counterparts in the Central and Southern Regions.

Only 2.2 percent of women in the north and 3.6 percent in the south reported that they used ANC provided by a trained TBA. None of the respondents reported receiving ANC from untrained TBAs (Vol. 4, Part 2, 2.1). These findings question the value of the role of TBAs in providing preventive health services at the village level, and the issue deserves further attention. The vast majority of ANC was provided by nurse/midwives.

About 65 percent of respondents in both the north and south reported that they had received ANC at MOHP health facilities, while 30 percent in the north and 25 in the south reported receiving ANC at non-governmental health facilities. Most NGO health facilities belong to CHAM (Vol. 4, Part 2, 2.1).

Although the high utilisation of ANC is encouraging, the actual situation is far from ideal. The average number of visits by women at 36 to 40 weeks of pregnancy was 5.3, but the number of visits per woman varied from one (first time) to more than nine time. About 8 percent of ANC clients at 36 to 40 weeks were visiting ANC for the first time. This group of women who receive ANC care only once or twice and start their visits at a very late stage of pregnancy should be considered high risk because they have less chance of having their complications detected (Vol. 4, Part 2, 2.2).

Distinct characteristics emerged for women who never attended ANC during their last pregnancy. Women who were more than 35 years old and have more than five children (Vol. 4, Part 2, 2.2) had the highest chance of not attending ANC, even though they are more at risk of maternal mortality and morbidity. Educational messages targeting these women are needed.

Access to ANC: In the Southern Region, about 40 percent of women traveled more than one hour to reach ANC. In the Northern Region, that percentage increased to nearly 60

percent (Vol. 4, Part 2, 2.2). For 24 percent of women in the Northern Region and 13 percent in the Southern, travel took more than two hours (Vol. 4, Part 2, 2.1).

The shortest travel time was reported by women who received ANC from trained TBAs or outreach services. In the north, 36 percent of women who used non-government facilities traveled more than two hours. In the south, the distribution pattern of travel time was not found to be related to facility ownership.

The influence of distance on choice of location for ANC was examined by using Geographical Information System. In the household survey in the Northern Region, those women who live in clusters located more than two kilometers from the closest health facility more frequently used NGO health facilities and outreach services in comparison to women within two kilometers from health facilities. In the south, women who live more than two kilometers away used central hospitals twice as often as those who live near health facilities, suggesting a perceived added benefit of central hospitals (unpublished report on household survey). Women make decisions regarding location of ANC by proximity to home and cost of ANC service. The quality of service or quality of facility (size of facility) were found to be far less important than distance and cost (Vol. 4, Part 2, 2.2).

Quality of ANC: The study found that a number of women with risk factors were sent home undetected from ANC. While 80 percent of primagravida women were advised to go to a health facility for delivery, only 56 percent of women with their fifth or higher pregnancy were given the same advice (Vol. 4, Part 2, 2.3). While observing ANC, some health workers were found not taking any action on women with a history of vaginal bleeding, signs of sexually transmitted diseases, twin pregnancies, and previous caesarean sections (Vol. 4, Part 2, 2.4).

Health workers also often failed to provide advice on diet/nutrition, complications likely to occur during pregnancy, and the appropriate action to take when unexpected complications happened (Vol. 4, Part 2, 2.2 & 2.4). The lack of proper advice coupled with limited interpersonal communication skills further reduces the benefit of ANC (Vol. 4, Part 2, 2.6).

After a long walk to an ANC clinic, most women are required to wait a long time for a short examination and counseling. The average waiting time observed was 104 minutes for a four-minute individual examination and counseling session combined (Vol. 4, Part 2, 2.4). In total, women spend about four hours (140 minutes commuting and 100 minutes waiting) to obtain 14 minutes of group health education and a four-minute examination.

Most ANC checked blood pressure and weight and conducted abdominal examinations including the foetal heartbeat. Consistently, pelvic examinations and measuring height were omitted. Blood and urine examinations were rarely provided even at initial visits to ANC (Vol. 4, Part 2, 2.4).

About 60 percent of women received iron tablets and anti-malaria medication (Vol. 4, Part 2, 2.4). Tetanus Toxoid immunisation was provided to 45 percent. An inadequate supply of essential supplements and vaccines was frequently observed.

Expectation of pregnant women regarding ANC: Even the long hours of walking and waiting to obtain often incomplete assessment and abbreviated counseling do not prevent women from coming back for ANC. The study also investigated the expectations of pregnant women regarding ANC.

Women using ANC expect to be told how they and especially the foetus are doing. They also expect to be told their due dates and one of main disappointment with ANC is when the due date they are told is not correct (Vol. 4, Part 2, 2.2, 2.3, 2.6). Receiving iron tablets and being checked for existing problems were other frequently mentioned expectations (Vol. 4, Part 2, 2.2).

2-b) Essential obstetrics care

Use of health facility for delivery: The place of delivery is important for both maternal and perinatal survival, particularly in cases where acute problems arise. The 1992 Malawi Demographic and Health Survey indicated that health facility deliveries stood at 68 percent in the north, 51 percent in the centre and 56 percent in the south. The household surveys of the first and second cycles also looked at the use of health facility for delivery. In Salima District, 40.3 percent of deliveries took place at either hospitals or health centers, much lower than the data for the Central Region in 1992 (Vol. 4, Part 1, 3.2). Due to the differences in sampling methods, data between the two studies are not easily compared, yet this low use of health facilities in Salima deserves further investigation. Data for the Southern and Northern Regions showed 67.2 percent and 73.6 percent (Vol. 4, Part 2, 2.1). Again, the study design does not allow proper comparison to past data. The only conclusion that one can derive from the study is that use of health facilities is consistently higher in the Northern Region than the Southern. The data was verified for Mzimba District by manually compiling the number of deliveries at health facilities and comparing it with the estimated total number of deliveries taking place in the district. The result of the verification exercise was 72 percent, substantially close to the household survey data.

In both the north and south, about 15 percent of women delivered outside of health facilities, including own, relative's or friend's house. The importance of TBA in the north is less than the south: about nine percent of deliveries took place with TBA in the north while 15 percent in the south (Vol. 4, Part 2, 2.1). The largest number of deliveries took place at MOHP health facilities (47 percent) in both regions followed by non-governmental health facilities (25.4 percent in the north and 20 percent in the south).

Though small in number, the prevalence of precipitated delivery was unexpectedly high: approximately two percent of deliveries happened on the road to health facilities (Vol. 4, Part 2, 2.1). The majority of women who delivered outside of a health facility claimed that they had intended to go to a health facility, but the sudden onset of labor prevented them from

doing so in time. Many also complained that an inaccurate due date given at ANC was responsible for the delay (Vol. 4, Part 2.3 & 2.6).

The influence of access on the choice of delivery place was investigated by reanalyzing household survey data for the Northern and Southern Regions. In general, women who live in clusters located further than two kilometers from the closest health facility had a higher chance of delivery outside of health facilities. Once examined more carefully, there were marked differences in the influence of distance on the choice of delivery place between the north and the south. In the north, women who had difficult physical access to a health facility tended to deliver at home, while in the south those women were more likely to choose the TBA home. The use of MOHP facilities was highly influenced by access in the north: women without easy access did not choose MOHP facilities. In the south, due to the existence of central hospitals, which are favoured by women in distant clusters, the influence of distance on MOHP facilities was not as strong as in the north. Non-governmental facilities (mainly CHAM) were not influenced by physical access (Vol. 4, Part 2, Ch. 2)

Access to delivery place: The majority of women reported that they had to walk more than one hour to reach a health facility during labor. One in five women in the north claimed that they had walked more than two hours (Vol. 4, Part 2, 2.1). Access to delivery place was generally worse in the north than the south representing sparse population density and fewer health centres per area.

Ninety percent of women who delivered at TBAs traveled less than one hour. Almost 70 percent were less than 30 minutes (Vol. 4, Part 2, 2.1). In the north, access to non-governmental facilities required more travel time than that to MOHP facilities. In the south, they were about the same.

Similar to findings of ANC access, women in the north appear to have more determination to use formal health services than women in the other areas who are less prone to deliver at a health facility despite easier physical access.

Factors influencing decision on delivery place: Women were found to be less concerned about physical distance in deciding delivery place in comparison to place of ANC. Although distance is still the primary factor, the importance of other factors grows considerably. Quality related factors such as advice given at ANC, reputation of the facility, and perceived quality of care were given more weight (Vol. 4, Part 2, 2.1 & 2.2). Other factors emerging from the qualitative research were transport availability, concern over care of small children, financial situation, uncertainty about due date, attitude of health workers, influence of husband and parents-in-law, and cultural beliefs such as *mapinga*[4] in rural Mzimba (Vol. 4, Part 2, 2.6). The weight of these socio-cultural factors on the decision making process varies depending on the community, tribe, religion, districts, and other factors. This local variation suggests that in order to develop effective educational materials, studies must be carried out to understand the customs and culture of the target area.

[4] Mapinga is the belief that infidelity is the cause of problems during delivery (such as obstructed labour and heavy bleeding). It is strongly believed in the rural areas of Mzimba.

Characteristics of women who delivered at home: Women who deliver outside of health facilities tend to have the following characteristics:

- do not know their age (Vol. 4, Part 2, 2.1)
- no formal education (Vol. 4, Part 2, 2.1)
- have four or more children (Vol. 4, Part 2, 2.1)
- attended ANC at outreach service, TBA, or MOHP health centre (Vol. 4, Part 2, 2.1 & 2.2)

Lack of knowledge of own age is strongly related to education status. Location of ANC is related to physical access—MOHP facilities tend to be located in more rural areas than non-governmental facilities. Surprisingly, socio-economic status did not appear to be a significant factor in choice of delivery place. The characteristics are useful for designing and targeting health messages promoting facility delivery.

Quality of delivery care: The study revealed a low compliance among health workers with standard care protocol for delivery. A general assessment of women in labor on an hourly basis was only made in a third of cases, hourly blood pressure in only a quarter, and a check on pulse rate which is a sign of distress and exhaustion was never done. No interventions were provided to deal with anxiety and pain and various mismanagement was observed including lack of infection control and failure to wash hands (Vol. 4, Part 2, 2.4).

A large majority of health workers had no opportunity to refresh their knowledge and skills. Only one in five nurse/midwives in Mzimba district were trained in lifesaving skills. Even fewer workers were trained in communication and counseling skills in the same district.

Physical condition and basic infrastructure of health facilities: The study revealed that a large number of health workers do not wash their hands while working with clients. One possible reason for this unhygienic practice is the lack of proper water supply at health facilities. Only 44 percent of MOHP health facilities had water systems working as designed. Among health facilities that use a borehole as the water source, however, only 29 percent had a system that was working as designed. Many health centres rely on a climax pump to transport water from the borehole to a designated water tank. A disturbing fact discovered is that among 132 climax pump systems, only 16 were operational (12 percent).[5]

Many health facilities rely on paraffin lamps to provide illumination during night deliveries, which increases difficulty and danger. Just over 30 percent of MOHP health facilities were found to have a functional electricity supply (Vol. 4, Part 2, 2.5). Ninety-five percent of health facilities connected to a lined power supply had a functioning system, while only 60 percent of solar systems were functioning. About 60 percent of problems with the solar systems were related to a lack of consumables—batteries (many of which were stolen) and replacement bulbs in equal number. The remaining solar systems were not functioning due to incomplete installation or disconnection.

[5] These data are unpublished yet, it will be in the facility plan report.

2-c) Emergency care

Referral from village to health facility: As many complications are difficult to detect and act upon at ANC, emergency referral is essential in the event of an emergency during delivery at home, TBAs or even at health centres. An analysis of maternal death cases revealed that most women who died had first attempted their delivery outside of health facilities. This phenomenon confirms the importance of an emergency referral system.

Assuming that emergency obstetrics service is provided only at the hospital level, almost 80 percent of women of reproductive age were over ten kilometres from the service in Salima District. Furthermore, 76 percent of villages in Salima are classified as difficult to access during the rainy season (Vol. 4, Part 1, 5.6). On average, reported travel time from village to health facility increased by 27 percent during the rainy season. In some areas, it increased by more than 100 percent. Due to lack of telephones, many villages rely on a messenger (either on foot or bicycle) to communicate to the health centre or hospital that an ambulance is needed.

Referral between health centres and hospitals: Where available, primary health facilities use a radio or telephone to call for an ambulance from a district or referral hospital. However, many health facilities still lack a radio system or telephone. Though steadily improving with the help of donors, many districts still lack an effective referral communication system (Vol. 4, Part 2, 2.5). At the time of the survey, seven districts did not have any radio system installed.

In Salima District, the average transfer time by ambulance between health centres and the district hospital was 56 minutes (Vol. 4, Part 1, 5.6). A preliminary analysis of the referral system in the pilot study indicates that a shortage of mobile ambulances, the concentration of ambulances at district hospitals, and the lack of a fleet management system have created pockets of areas where emergency referrals are non-existent (unpublished data).

Emergency care provided at hospitals: The fact is, save for a few rural hospitals operated by CHAM, only district hospitals provide some degree of emergency obstetrics care. The majority of rural hospitals or primary health centres owned by MOHP are not capable of providing the range of essential care required to save the lives of women. For example, Mponela Rural Hospital does not have the facilities to conduct caesarean sections despite the large catchment population.

Another great concern is the lack of blood banks even at the district hospital level. A review of maternal deaths at one district hospital in 1998 indicated that nearly a third of the women could have been saved if sufficient blood had been available. Cultural beliefs, fear of HIV, and the poor health condition of guardians of patients who are generally requested to donate blood all aggravate the shortage of blood available for transfusions.

Although one cause of maternal deaths are complications related to an incomplete abortion, very few health workers have been trained to utilize manual aspiration for managing incomplete abortions.

4.2.7 Conclusion

Due to the different study designs between the first cycle for the Central Region and the second cycle for the Northern and Southern Regions, a proper comparison of the regions was not possible. Although some findings were consistent throughout the country, more factors showed geographical variations such as socio-cultural influences, reliance on the formal health system, the working conditions for health workers, and access to health facilities.

Two hypotheses on the causes of high maternal mortality were tested: one was related to the prevalence of facility delivery and the other to the quality of care. Both hypotheses turned out to be true. Though facility delivery rate was higher in our study areas, still a large number of women failed to go to a facility for delivery. The quality of care during both ANC and delivery needs a lot of attention to meet the standards set by MOHP. But, more importantly, the present study and other past studies suggest that there is no single factor influencing maternal mortality. The causes of high mortality are very complex and linked to each other.

In the Master Plan of Operations for Reducing Maternal Mortality, the findings of this study were generalised to some extent in order to present the national situation. The various factors were also reanalysed to identify relationships and hierarchy to one another in an attempt to identify the environment which causes high maternal mortality in Malawi.

4.3 FINDINGS OF SECOND CYCLE STUDY ON SELF-MEDICATION USING DRUGS FROM GROCERIES

4.3.1 Access to Basic Drugs

The rural population of Malawi has very limited access to basic medicines in times of illness. As discussed in other sections, over half of the villages are located more than an hour's walk from a government or CHAM health facility. Even if a mother carries her sick child to a facility, often she has been unable to receive the medicine needed, since public spending on drugs has averaged only US$0.80 per year. Mothers therefore most often seek treatments that are available closer to home. This habit can lead to serious problems, such as when the correct medicine is not available or chosen and the condition worsens. Admissions for cerebral malaria are associated with the non-use of the correct antimalarial drug, for example (Vol. 4, Part 2, 3.1). The establishment of village drug revolving funds was meant to

solve this problem, but this programme has been troubled and so far there are only about 250 DRFs in existence, out of Malawi's 46,000 villages. The alternatives for a majority of the population have been to use herbal remedies, or, more often, to purchase basic medicines from small village grocery shops which exist nearly everywhere and have reliable access to medicines through well-established commercial channels. However, with a limited range of medicines available at these establishments and the absence of any trained health provider, mothers often buy the wrong medicine and get little or no advice about dosage and the appropriate management of the child's illness. In addition, while these shops can legally sell several useful medicines in pre-packaged form, they often also handle drugs which have been diverted from the public sector or smuggled into the country, such as antibiotics for which there is high demand but which are usually misused with potentially dangerous consequences.

4.3.2 Why Focus on Groceries?

This project has focussed on groceries rather than other modes of drug supply such as DRFs because of the already well-established infrastructure and personnel (Vol. 4, Part 2, 3.1). The project aims to increase the effectiveness of this existing supply network through several relatively inexpensive components: training for shopkeepers, a media campaign for increasing awareness among the general public about drug use and child illness management, and a monitoring system. The project will also link with and reinforce the activities of other national programmes such as malaria control and social marketing, but will not be dependent on them.

4.3.3 Study on Drug Sellers

The objective of the second cycle field study on drug sellers was to assess training needs, develop workable strategies for cost-effective implementation, and detect possible obstacles to a successful outcome of the proposed project. The study had four major components which were designed to provide more information on knowledge, attitudes and practices, both of shopkeepers and the general population (Vol. 4, Part 2, 3.2):

1) A module of the household survey, in which questions were included about recent drug purchases and advice received from drug sellers
2) A module of the qualitative research study, in which community groups and individuals were asked about their attitudes toward drug vendors and shopkeepers
3) In-depth interviews with shopkeepers, to assess their knowledge, attitudes, and practices regarding the selling of medicines
4) A simulated patient survey, in which a trained interviewer pretended she had a sick child and asked the same shopkeepers for medicines and advice.

In the third phase of activities in Malawi, additional information was obtained from other programmes, MOHP, and the major manufacturer of General Sale drugs in Malawi.

4.3.4 Summary of Study Findings

1) Results of household survey (Drug seller module) (Vol. 4, Part 2, 3.3)

Utilisation of groceries: Nearly 60 percent of all households had bought some type of medicine for a child under five years since Christmas (an approximate 2-month recall period) at a village grocery. Of the entire random sample, 495 households (49.5%) had purchased one or more drugs from a shop within the recall period. The use of groceries as a source did *not* depend on the presence or absence of a health facility in the village.

Advice received: Of those mothers who purchased drugs, 27.1 percent said that they had received advice from the shopkeeper. This ranged from only 19.3 percent in Zomba to 36.4 percent in Mwanza. Of those who received advice, 90.3 percent said they trusted the shopkeeper's advice completely and 9 percent said they trusted it only a little or not at all.

Causes for purchasing drugs: Of the 495 households that bought drugs from a grocery for a child, 200 had a child with two or more symptoms, and 36 with three or more distinct symptoms. Normally a different drug was purchased for each symptom. Of the 495 households, 223 (45.0%) purchased two or more drugs, 41 (8.2%) purchased three or more drugs, five households purchased four drugs, and one purchased five items.

Forty-five and a half percent of all drug purchases was for a child with fever. Another 21.5 percent gave malaria as the main symptom and another 4.2 percent claimed fever plus another symptom (stomachache, malaria, cough). Cough/pneumonia was the reason for drug purchase in 14.3 percent of cases, with another 4.7 percent giving stomach pain or diarrhoea as the reason. The remaining 9.9 percent was due to a variety of symptoms. Thus, over 70 percent of all cases bought drugs because their child had a fever or presumed malaria.

Drugs purchased: The drugs most commonly purchased were analgesics/antipyretics, by 97.2 percent of households, either alone or together with another drug.

Of all households purchasing drugs, 27.4 percent bought at least one antibiotic. The most common were penicillin (17.0%) and Bactrim (8.4%). Antibiotics were bought in 51.7 percent of cases when fever and another symptom were both present, in 44.9 percent of cases of cough or pneumonia, in 42.9 percent of cases of stomachache or diarrhoea, in 27.3 percent of cases of headache, in 26.8 percent of cases of malaria, and in 23.9 percent of cases of fever. Antibiotic purchases were highest in Mzimba and Zomba Districts.

The rate of purchase of Sulfadoxine/Pyrimethamine (SP) was much less than the use of antibiotics. Fansidar was purchased from groceries by only 11.5 percent of households: in 17.6 percent of cases reported to be malaria, in 10.3 percent of cases reported as fever plus another symptom, in 6.6 percent of cases which were reported as "fever", and in 3.0 percent of cases of cough or pneumonia.

Amount spent on drugs: The average amount spent on grocery drugs was MK6.0[6], which was less than the average purchase from peddlers or health centres. Considerably more was spent on drugs purchased at hospitals or private clinics. Low socio-economic status (SES) households spent less on average (MK5.0) for drugs purchased from groceries than did middle (MK7.5) or high (MK6.0).

As mentioned above, for malaria and fever episodes, antibiotics were used much more frequently than Fansidar. The possibility that the high price of SP is inhibiting purchase is being considered in this design. Novidar (SP), the leading commercial GSL SP product, costs about MK22 per three tablets. A single-tablet "child packet SP" could be marketed by Pharmanova for about MK5.0.

2) Results of focus group discussions and in-depth interviews (Vol. 4, Part 2, 3.3)

Reasons for choosing a shopkeeper as a drug provider: Most people indicated a preference for going to a health centre or hospital, where they trust providers and receive drugs free of charge. The main reason why informal providers are used is that the distance to formal health facilities is too great. While some villages have no grocery, in general one or more shops are located closer than a health facility. In the event of a serious illness, people sometimes buy an analgesic from a grocery for immediate pain relief, and then go to a health facility the following day.

Groceries are also convenient because they carry other necessities and tend to be open longer hours than the health facilities. In this sense, they are more socially accessible than health facilities for most people.

Where DRFs have been established, they are favoured over groceries because of lower prices and, perhaps, greater respect for the knowledge of the VHVs. In addition, the DRFs sell Bactrim, and sometimes eye ointment, both popular medicines.

Information about the medicines sold: Most people said that shopkeepers never gave advice. Instead, customers request certain drugs and shopkeepers simply sell the medicine. People understand that children require smaller doses, but otherwise there seemed to be a great deal of misinformation regarding dosage. In most cases it appears that the amount of the drug purchased depends on the amount of money available to spend. On the other hand, several people mentioned that when they get drugs from health facilities, they also receive advice on how to take the drugs.

Choice of medicine: When individuals decide on their own which medicine to buy in the event of illness, rather than relying on a shopkeeper's advice, the choice is based on past experience with the same illness or on what drug was given at the health facility.

[6] MK45 = $US 1.00

Price acceptability: Grocery drugs are considered expensive and unaffordable by poor people. Prices at DRFs are thought to be less, even if the differences are rather small, such as 30t vs. 50t per tablet[7]. Drugs with a price of more than MK1.5 were described as expensive. In one village, the price of Fansidar was only MK1.0 per tablet.

In summary, the focus group discussions generally confirmed that groceries are a widely used source of medicines, but that many people are not satisfied with them in terms of the product, price, or the service received. People buy from groceries as a second choice when a government health facility or DRF are not within proximity. Yet, the typical level of knowledge about medicines is minimal, with attitudes still leaning towards traditional concepts of illness and healing. These perceptions can be dangerous when modern drugs enter the scene. DRFs are popular due to the low price of drugs, and the amount of knowledge possessed by VHVs would seem to be a desirable and achievable standard for training shopkeepers.

3) Results of in-depth interviews with shopkeepers (Vol. 4, Part 2, 3.3)

Type of store and ownership: Of 30 shops visited, 23 were groceries and 7 were kiosks. In 90 percent of cases, the person interviewed was the owner of the shop, who were equally men and women. Most (90%) of the interviewees reported that other people also worked in the shop at times.

Medicines sold: Groceries sold from 2 to 22 different medicines, with an average number of 9.9. Kiosks generally sold fewer, ranging from one to 15 items, with an average number of 5.7. By far the most common medicines sold were analgesics/antipyretics, with a total of 9 different brand names identified for sale. Every shop visited sold at least one product in this class. According to the suppliers, retail prices of these products range from 30 tambala to MK4.4 per tablet. Consumption is high: the average number of analgesic/antipyretic tablets sold in the previous month was about 700.

In terms of profitability, most items including bulk aspirin were marked up 60 to 90 percent. Although retailers sell fewer of the higher-priced strip-packed brands, these generate around 90 percent of the income from analgesics.

Cough remedies are the second largest class of medicines sold by groceries and kiosks: 77 percent of shops sold at least one of these products. In terms of sales volume and estimated grocery profits, cough medicines bring in about one fourth of that of analgesics. Stomach remedies are the third largest class, with 60 percent of shops selling at least one product.

Demand for antimalarials is low, and only 30 percent of shops sell them. This is divided almost equally between the strip-packed Novidar and bulk SP. At MK21 for three tablets, the retail price of Novidar is high which is probably a deterrent to stocking by retailers.

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[7] 't' stands for tambara.(MK1.00=100tambara)

Finally, many shops sold antibiotics though it is illegal. Eight out of ten shops in Mzimba and five out of ten in Zomba carried them, including Bactrim, penicillin, chloramphenicol, and tetracycline. In fact, large quantities of these were sold, with four shops reporting selling more than 1,000 tablets or capsules in the last month.

Packaging and labelling: Nearly all drugs found in the shops were distributed in point-of-sale containers and strip-packaged. Identification and dosage information was found printed on the strips, in all cases in English except for one item in Mzimba that had come from Tanzania with instructions in Swahili.

Source of medicines: Nearly all retailers obtained their (legal) medicines from local wholesalers. In Mwanza District the large retailers Chipuku and McConnel's were the dominant suppliers, while in Zomba the main sources were the smaller wholesalers. In Mzimba, some drugs were obtained from Zambian or Tanzanian "dealers", and in a few instances the shopkeepers obtained drugs from private clinics or a retail pharmacy. Most shops mentioned two sources, usually two different wholesalers. The most common source of antibiotics was private clinics, but some admitted getting drugs from "government" or a vendor from town.

Storage: Most shops were selling strip-packed medicines in point-of-sale cartons displayed on shelves. In about 10 instances, open bottles were also seen on shelves by interviewers. Of shop personnel interviewed, 26 out of 30 knew that expiration dates were printed on the strip-packed medicines, and all of them said that they discard or destroy any expired items.

Overall profitability of medicine sales: Of the 27 shop owners interviewed, 17 said that they earn a lot of money selling medicines, 9 said that they did not, and one did not know.

Shopkeepers' self-statements on recommended treatments for children:

- **Fever:** The most frequent "prescription" (14/30) was for an analgesic/antipyretic only. Five shopkeepers said they would recommend Fansidar (SP) alone and another said he would if he had it in stock, and four said they would sell the patient an antipyretic and SP. The advice to take the child to a health facility if there was no improvement was offered in only one case. Many shopkeepers said that they do not give any advice unless specifically asked for it.

- **Diarrhoea:** Fifteen out of 30 shopkeepers said they could not offer any medicine for diarrhoea and seven recommended an antibiotic. Only four recommended that the child be taken to a clinic if the diarrhoea did not stop.

- **Cough** (for several days)**:** The most common "prescription" (23/30) was cough lozenges or cough syrup, followed by three recommendations for an antibiotic, with one shopkeeper suggesting the child be taken to a hospital if there were no improvement.

- **Stomach pains:** Fifteen out of 30 said that they would suggest an antacid or similar compound such as Liver Salts. Nine had no recommendation, and three suggested an

antibiotic. Half of those who did not have any drugs to recommend suggested instead that the patient visit the hospital.

Other medicine-related knowledge and interest:

- **Did you know that sometimes people buy the wrong medicine for their sickness?** The responses to this question varied greatly by district. Eight of ten shopkeepers in Mwanza said they did not know that people could buy the wrong medicine, five of ten said this in Mzimba, but in Zomba all said that they knew that people do sometimes buy the wrong medicine.

- **Did you know that people sometimes take the wrong amounts of the right medicine?** Only four in ten shopkeepers in Mwanza said that they were aware of this problem, in contrast to ten out of ten in both Mzimba and Zomba. Most of the Mzimba shopkeepers said that they advise people of the dosage according to the packet instructions, while most of those from Zomba said that although they knew of potential errors they would only advise dosage when specifically asked.

- **Did you know that people sometimes do not need any medicine at all for their illness?** Mwanza shopkeepers were most aware of this, with six in ten answering affirmatively, versus four out of ten in Mzimba and only two out of ten in Zomba. However, only in Mzimba were comments made suggesting some awareness that many illnesses are self-limiting or due to fatigue or poor diet.

- **Would you be interested in learning more about the correct use of these medicines? If so, why?** All 30 interviewees said that they would like to learn more, with 29 of 30 saying that this would allow them to be more useful to their customers, or something similar. The one remaining mentioned that some customers were illiterate and could not read package directions.

- **Any posters, flyers, or other informational materials pertaining to health or medicines?** The only type found were advertisements for analgesics, with four in Zomba, one in Mzimba, and none in Mwanza.

4) Results of simulated patient survey (Vol. 4, Part 2, 3.3)

Welcome received in shop: In about 90 percent (26/30) of simulated patient visits, the "patient" was greeted with respect, and only 10 percent described the shopkeeper as "indifferent or not interested".

Any questions asked or advice given: At least one drug was recommended and sold in 96 percent (29/30) of visits, and two drugs were sold in 46 percent (14/30) of visits. In 23 percent (7/30) of visits the shopkeeper asked questions about the condition of the customer's child, such as the child's age or the duration of the fever or cough. After the

purchase was made, the shopkeepers gave instructions for 41 out of the 43 drugs sold (after the patient asked) on how often to give the drug.

Drug sold for child with fever/malaria: Fifteen out of 16 cases were sold at least one analgesic/antipyretic for a child with fever or malaria. In four cases, two antipyretics were sold. SP was sold in only 12 percent of cases (2/16) and the dosage was incorrect both times.

Drug sold for child with a cough: All 14 cases of a child with a cough were sold at least one drug. In two cases, only analgesics were sold, seven sold an antibiotic alone (penicillin or Bactrim) or in combination with a cough medicine or analgesic/antipyretic, and five were sold only a cough medicine alone or in combination with an analgesic/antipyretic.

Amount spent: The total price paid for drugs bought by the simulated patients ranged from MK1.50 to MK48.55. The mean amount spent was MK7.0.

Comparison between shopkeeper's statement and actual practice: Comparing what the shopkeeper had told the interviewer he/she would recommend and the recommendations and sale actually made, in only 12 of 30 cases was the actual practice (drugs sold) fully consistent with the statement. The rate of consistency was higher for cough/ARI "patients" (7/14) than for malaria "patients" (5/15).

In three of the visits for malaria with inconsistent results, the shopkeeper had said he would sell SP or Fansidar, but actually did not because the drugs were not kept in stock. In another, Fansidar was sold even though it was not originally recommended. Most of the consistent cases had advised and sold an antipyretic only.

For cough/ARI "patient" visits, the main inconsistency was that where a cough tablet had been recommended an antibiotic was in fact sold. In three of the consistent cases, Bactrim had been recommended and was sold.