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EVALUATION OF A HEALTH CARE SYSTEM

FOR CHILDREN UNDER FIVE YEARS OF AGE IN AFRICA

BY

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CONTENTS

ABSTRACT

The system of health care known as the Under Fives Clinic
has been in existence in some African countries for the past
ten years.   The present study endeavours to evaluate this
system of health care. An epidemiological study was undertaken
in four areas of Africa each with an established Under Fives
Clinic. These areas were Ilesha and Esa Oke in Western Nigeria,
Namitambo in the Southern Province of Malawi and Mansa in the
Luapula Province of Zambia. The method used was a point
prevalence study that involved a stratified sample of
approximately 200 dwellings in which lived children under the
age of five years, for each area. In Ilesha there were 434
children, in Esa Oke 405, in Namitambo 261, and in Mansa 314
children who were taken into the survey. Data were collected
from the families of these children using a questionnaire
administered by an interviewer, that sought information on
family and domestic circumstances and the health of the child.

From this approach children who attended the clinic and
those who did not were identified. A comparison between clinic
attenders and non attenders has been made to discover whether
there are any differences in the health of the two groups; and
also what factors might influence health in these two groups.
In general there were no major differences in health.
Differences were found between the Under Fives Clinics in their
activities, and this was reflected for example in the
immunisation status of the children attending.

The present study was the first of its kind to undertake

a comparative evaluation of Under Fives Clinics in Africa.
The methodology used in this study, with some modifications
could be used in further evaluation studies where instead of
doctors, medical auxillaries, lay workers and even secondary
school children could perform the field work.

INTRODUCTION

In developing countries children face health problems which are in many ways different from those found in developed or industrialised countries. These are the end results of numerous interacting factors-genetic, environmental including hygiene, socio-political, educational, housing and cultural. Taken separately or in combination, these conditions account for the fact that the Infant Mortality rate in developing countries is about four times as high as in the more privileged parts of the world, and also for the forty to fifty-fold increase in the 1 - 4 year mortality found in the developing countries. For example in the United Kingdom the 1 - 4 year mortality in 1969 was 1/1,000 population. SOCIAL TRENDS (1972) and in Malawi the 1 - 4 year mortality was estimated at 52/1,000 population for the late nineteen sixties. COLE KING (1971).

The available resources in the form of staff, finances, buildings and drugs are limited in the developing countries. With the prevailing problems and the available resources a logical and practical methodology has to be applied to the existing situation in the hope that the primary health needs at least of the community would be met. Further, in the second half of the nineteen seventies there appears to be an increased likelihood of food shortages and even famine, and the governments in developing areas are likely to put more money into agriculture, and this may mean that the projected increase in health budgets are likely to be curtailed or not increased at all.

One of the most recent forms of health services available for the pre-school children in the developing countries is the Under Fives Clinic first started by Dr. David Morley at the Wesley Guild Hospital in Ilesha in the Western region of Nigeria in 1959.

These clinics have now been in existence in some areas in Nigeria for the past fifteen years. In the late nineteen sixties other African countries adopted these clinics as National Policy. They are now well established amongst other countries in Malawi, Zambia and Tanzania. This type of service has also spread beyond the African continent to Asia. The Under Fives Clinics have been established in many parts of India, and in 1969 the Sarawak Government accepted a plan for introducing these clinics in the rural areas of Sarawak. Over eighty five clinics are in existence in Sarawak at the present time. ROBERTS (1973).

The Under Fives Clinic was originally established to meet the basic health needs of the pre-school child. In practice, however, most of these clinics serve much larger populations than they were originally designed for, and have had to correspondingly spread their already meagre resources even more thinly. In spite of this there may still be scope to improve these services if the working of these clinics can be systematically reviewed. Where such reviews have been done they have usually taken the form of subjective impressions of their work gained through on site inspections or based on perusal of reports submitted by staff, which mostly emphasise

the fulfillment of certain assigned tasks, for example the
total numbers of immunisations given. These subjective
approaches to evaluation tend to be of uncertain value
particularly when clinics may be studied by different
investigators. If however the achievements of the Under Fives
Clinics can be evaluated using more objective criteria,
comparisons may be made between these clinics and the effect
of changes in the organisation and the work of the clinic
effectively assessed.

At the time the study that forms the basis of this report
was being planned, objective techniques for evaluating aspects
of the Under Fives Clinics had not yet been applied. This
report describes the evaluation of four Under Fives Clinics
in Nigeria, Malawi and Zambia using objective methods. The
study was carried out from January to May 1972.

CHAPTER 1.   LITERATURE REVIEW

A.   CHILDHOOD DISEASES IN DEVELOPING COUNTRIES.

(1)   General considerations.

In industrialised countries most children are shielded
from serious illness by good hygiene, effective sanitation,
nutritious food, immunisation and a clean environment. The
ready availability of skilled medical staff and adequate
medical facilities ensures that most parents are able to obtain
treatment for illnesses that occur among their children. As a
result of these and other circumstances the technically
advanced countries have a lowered mortality in childhood.
For example in Canada the 1 - 4 year mortality for 1971 was
0.84/1,000 population. WORLD HEALTH STATISTICS ANNUAL (1971).

In developing countries serious illness in young children
is both common and is accepted by parents as an almost normal
feature of their society. Parents tend to seek medical advice
only when their children are seriously ill and usually after
the traditional forms of treatment have failed. WYON AND
GORDON (1971)   showed in their study in rural India that 85%
women over forty years of age had lost, by death, one or more
of their children. Nearly 50% of women had lost three or more
live-born children. Thus loss of children by death is still a
common occurence in the non-industrialised countries. WELLIN
(1954) reports on the high Infant Mortality among the Peruvians.
In one community in Peru, infant deaths were common and the
society had adapted itself to accepting these deaths as normal
by converting the funerals into a fiesta.

The majority of children in the developing countries suffer, at one time or other, from a wide variety of preventable diseases. Many of these illnesses are also complicated by malnutrition in the child. These preventable diseases arise, largely due to lack of public sanitation, community ignorance concerning nutrition and hygiene, and the widespread susceptibility of the children to these illnesses.

(2) Patterns of mortality in children.

The health situation in the developing countries is such that an extraordinary burden of disease falls on small children. In these countries 35 - 60% of all deaths occur in children under the age of five who make up only 17% of the total population. Table 1 gives data for three countries, Guatamala, Jamaica and Thailand, that are typical of this group. BRYANT (1969). This table confirms what has been said above. In each of these countries children under the age of five form approximately 16% of the population and yet account for up to 57% of the total deaths. By contrast Bryant has shown that in the United States of America this age group forms 10.8% of the population and accounts for less than 7% of all deaths.

TABLE 1.

DEATHS OF YOUNG CHILDREN IN

PROPORTION TO ALL DEATHS. THREE COUNTRIES   BRYANT (1969).

Country	Deaths of young children		
	Under 1 year	1 - 4 years	Birth to 4 years
Guatamala	17,485	17,539	35,024
Jamaica	3,945	1,691	5,636
Thailand	43,489	32,353	75,842

Country	All deaths	Deaths of children under five as % of all deaths	Children under 5 as % of population
Guatamala	62,287	57	16.8
Jamaica	14,813	38	16.6
Thailand	221,157	34	16.3

Diseases tend to be concentrated in the first few years of life and mortality takes a high toll on the life of young children in the developing countries. However, very few sources of information are available on the mortality among young children in these countries. The following Table is taken from 'HEALTH CARE OF CHILDREN UNDER FIVE' (1973). In it the mortality in the O - 5 year age group is compared in different areas in the developing world. (Table 2)

TABLE 2.

NUMBER OF DEATHS BY SELECTED CAUSES AMONG CHILDREN UNDER FIVE

HEALTH CARE OF CHILDREN UNDER FIVE (1973)

Disease	Khanna study India	Imesi Nigeria	Luapula Zambia	North Sumatra	Pusan South Korea
Diarrhoeal disease	2%	12%	18%	25%	15%
Pneumonia	*	12%	10%	11%	9%
Malnutrition	***41%	12%	16%	26%	14%+
Malaria	*	8%	15%	8%	3%
Whooping cough Measles Smallpox	**18%	8%	13%	7%	16%
Tuberculosis	3%	5%		6%	8%
Anaemia	*		7%	5%	7%
Neo natal	23%	*	*	*	*
Other causes	13%	43%	21%	11%	28%
Total	100%	100%	100%	98%	100%
Total deaths in children	1,958	?	340	1,282	1,036

* Included under 'other'
** Includes Tetanus
*** Includes malnutrition with diarrhoea
+ These figures were collected soon after the Korean war. Since then malnutrition has practically disappeared from Korea.

These studies were carried out five to ten years ago in rural areas in India (Khanna study), rural Nigeria (Imesi), rural Zambia (Luapula) in Northern Sumatra and in South Korea.

Unfortunately as there is no reference to the total number of children in the 0 - 5 years age group for the communities it is thus not possible to ascertain mortality rates. These studies form very limited figures and are not based entirely on community studies although in each case the doctor concerned was working in the community as well as in the local hospital. In spite of these limitations it is notable that in each of the areas over 60% of the mortality is due to preventable causes such as malnutrition, malaria, whooping cough, measles, smallpox and tuberculosis.

Detailed data are given for causes of mortality in childhood in "Patterns of Mortality in Childhood" an excellent report of the Inter American Investigation of Mortality in Childhood organised by the Pan American Health Organisation (PAHO). PUFFER AND SERRANO (1973). Similar studies are not available for Africa. However data from the Americas can be used to illustrate the high mortality in childhood found in non industrialised countries in that continent. (It may be reasonable to assume that the patterns of mortality in the developing countries of Africa are broadly similar to those found in South America).

The Pan American Health Organisation project studied selected communities in the Americas. The research project was designed to establish death rates for infancy and childhood that would be as accurate and comparable as possible, taking into account biological as well as nutritional, sociological and environmental factors.

Mortality both in rural and urban areas, was studied in order
to better understand their causes with a view to aid planning
of childhood health services in the Americas.

TABLE 3

MORTALITY IN THE UNDER FIVE YEARS AGE GROUP

PUFFER AND SERRANO, PAHO STUDY (1973)

Country	Total Population	Total deaths in children under five	All causes Mortality rate/1,000	Measles deaths/ 100,000	Nutritional deficiencies deaths/ 100,000
Argentina	181,628	3,857	21.2.	82.0.	698.0.
Bolivia	158,046	4,276	27.0.	366.3.	969.3.
Brazil	338,154	9,073	26.8.	177.1.	1004.6.
Chile	207,532	2,714	13.1.	10.0.	322.0.
Columbia	278,571	4,230	15.1.	100.2.	618.9.
California	205,284	898	4.4.	0.5.	21.4.

It is clear from Table 3 that measles and malnutrition
play major roles in the high mortality in children under the
age of five. Even though it appears that the mortality due to
measles is lower than that due to nutritional deficiencies,
this does not take into account deaths due to multiple causes,
for example, measles occuring with malnutrition, could be
classified as a nutritional death. The synergistic effects of
measles and malnutrition on deterioration of the health of a
child has been well established. SCRIMSHAW, TAYLOR AND GORDON
(1968).

In the Pan American study, all the available information
for each death was considered in assigning cause of death. In

Table 3 deaths are classified by the underlying causes of death.
The underlying cause of death was defined as the disease or
injury which initiated the train of morbid events leading
directly to death, and the contributary cause was any significant
condition which unfavourably influenced the course of the morbid
process and thus contributed to the fatal outcome, but which was
not related to the disease or condition directly causing death.
However in practise, the immediate and the terminal causes
(complications and consequences), are not always the result of
the underlying cause alone. However the implications of the
concept of contributary causes is important from the present
view point. For example, measures aimed at treating or
preventing the underlying causes will not be sufficient to
reduce mortality, appreciably, if the contributary conditions
remain. The synergistic effects of malnutrition and infection
have been referred to earlier; for example, in a campaign to
prevent malnutrition, the children should also be prevented
from contracting measles and other such infections by adequate
immunisation.

The Chilean measles mortality appears low in comparison
with other South American countries. A controlled trial of
live measles vaccine was carried out in Chile in 1963 RISTORI,
BOCCARDO, MIRANDA, BORGONO (1964). The lower measles mortality
in this country could in all probability be attributable to this
programme. Limited data are available for mortality studies in
the African countries. These data usually consist of
information from single hospitals. National and International

studies on the scale of the Pan American Health Organisation
study have not yet been attempted in the African continent.
KOENIGSBURGER (1963) studied the paediatric services at Sokode
Hospital in Dahomey and listed Malaria, respiratory infections,
gastro-enteritis and Kwashiorkor as some of the major causes
of mortality. CHRISTIAN (1967) reported on 373 autopsies
performed on children in the Korle-Bu Hospital in Accra. The
major pathological findings found in their order of frequency
as the main cause of death was listed as follows:

    (1)   Malnutrition

    (2)   Broncho-pneumonia and upper respiratory infections

    (3)   Malaria

    (4)   Sickle cell Disease

    (5)   Prematurity

    (6)   Gastro-enteritis

    (7)   Accidents

    (8)   Congenital malformations

    (9)   Measles

  (10)   Aspiration asphyxia and pneumonitis

  (11)   Typhoid and Tuberculosis

He also stresses that most of the cases show multiple lesions
related or unrelated, occuring concurrently.

(3)   <u>Patterns of morbidity and hospital attendance</u>.

    Some of the major health problems, facing developing
countries, are presented by the unsatisfactory physical
development of young children that often accompanies poor
nutrition, and the effect this has, in maintaining high rates

of morbidity and mortality. Political awareness of childhood
illness as it affects national development and planning is well
illustrated by the following remarks made by the Nigerian
Minister of Health in 1961, at a conference held in Nigeria
on "Infectious diseases of the pre-school child". IBRAHIM
(1961). In his opening remarks the Minister stated "In the
countries in West Africa as in many parts of the world a high
proportion of the population falls into what may be termed the
Pre-School group. The proportion is roughly 20%. Into what these
children grow depends the future of our countries. It is right
therefore that we nurture our children and send them unhandi-
capped physically or mentally by any scars resulting from the
ravages of diseases. For the most part the diseases that leave
the most scars are the infections diseases - paralysis from
poliomyelitis, blindness from measles - to give two examples
from a list that is all too long". It is encouraging to feel
that politicians are as aware of these problems as are the
doctors.

There is little doubt that morbidity (disease, sickness
illness) as such is more difficult to measure than death, the
latter being a readily defined event. The measurement of
morbidity is plagued with difficulties, for example in the
definition of an illness and the standardisation of criteria
for the diagnosis of disease.

The EXPERT COMMITTEE OF THE WORLD HEALTH ORGANISATION
ON HEALTH STATISTICS has over the years attempted to rationalise
and standardise morbidity data. Definition of many terms used

in collecting   morbidity data has been established, and
lists of International Classification of Diseases has been
published for the guidance of all concerned with vital and
health statistics. Fortunately most of the major diseases
affecting children in Africa are communicable diseases where
the diagnoses are fairly straightforward in comparison with
for example the chronic diseases of middle life. However in
developing countries para-medical staff are often responsible
for the collection of morbidity data and it is imperative
that they be given the necessary training for this and also
that the criteria for diagnosis are agreed upon.

Morbidity data from developing countries in particular,
on the prevalence and incidence of disease in children are
limited. What information is available is usually derived
from hospital inpatient and out patient records. Hospital
records are however unlikely to accurately reflect the pattern
of disease in the community. District and provincial hospitals
usually act as referral centres, for patients with unusual or
rare diseases. They thus take patients from a wide area. The
pattern of disease seen in these hospitals may thus not be an
accurate reflection of the disease pattern in the community
around the hospital. Further some diseases prevalent in the
community may never reach hospital. For example in some
communities epilepsy is thought to be due to a curse of an
enemy, and children and adults suffering from this disease are
seldom taken to hospital. MACLEAN (1971).

Among the Bambara tribe in Mali treatment and prevention

of measles lies with the practitioner who deals with the
supernatural. These practitioners use charms and talismen
in the treatment of measles. The severity of a case governs
the number and anatomical placement of these objects. IMPERATO
AND TRAORE (1969). Data collected from hospital records would
tend in this case to under estimate the true morbidity of measles
in the community. Furthermore, hospital attendance might be
guided by the severity of the complaint. For example the more
seriously ill, who may be unable to walk, remain at home due to
the non availability of transport, and only those with
relatively minor complaints may make the long journey to hospital
for treatment. Hospitals differ in their admission policies
and this may be reflected in the type of cases admitted. For
example, medical staff may have an interest in specific diseases
which might be selectively admitted. Not only do these cases
tend to be selectively admitted but also the local people tend
to respond to this interest by bringing to hospital more people
suffering from these complaints.

However, in spite of the deficiencies in hospital records
as indicators of the health of the community, the investigator
in developing countries has often no recourse but to turn to
hospital records where these are available, for information on
the disease pattern in the community.

If we are willing to turn to hospital records, as a source
of information on the pattern of disease in the community, then
a fair amount of information is available from hospital records
in developing countries throughout the world. The following

Table illustrates the type of information that is available
from hospital records.   Table 4   shows the breakdown by cause
of cases seen at the out patient department of the government
hospital in Bo, Sierre-Leone in 1959.   THOMAS (1961).   These
are the major diagnoses for children in the 1 - 5 age group.

TABLE   4.

ANALYSIS OF CASES SEEN AT THE OUT PATIENTS DEPARTMENT
AT THE BO HOSPITAL IN SIERRE-LEONE FOR 1959

THOMAS (1961)

	Number of Cases	%
Malaria	563	34.7%
Whooping cough	30	1.8%
Bronchitis	327	20.1%
Scabies	37	2.3%
Gastro enteritis	158	9.7%
Measles	85	5.3%
Malnutrition	8	0.5%
Other diagnoses	415	25.6%
TOTAL	1,623	100.0%

The author, who took the diagnoses from the out patient
records considered that the number of cases of malnutrition
was a gross under estimate, as many of the children diagnosed
as suffering from another disease would also have their
disease complicated by malnutrition.   The diagnoses have been
based on the most serious or prominent illness, for example, a

child having gastro-enteritis following measles would be
classified as measles rather than gastro-enteritis. Due to
this method of disease classification, it would be seen that
some diseases would be under estimated. In the Table 4
children diagnosed as suffering from measles and whooping
cough appear to be few in comparison with the findings from
other studies. As already mentioned this could be due to the
local belief, in the community regards the causation of these
diseases, which prevent mothers from seeking treatment at
hospital. In some communities it is thought that these
diseases are caused by evil spirits or due to the wrong doings
of the ancestors. If such beliefs exist then the parents
usually indulge in rituals and ceremonies which they believe
are designed to cure the disease. Such communities would not
bring their children suffering from measles or whooping cough
to hospital. Also the acute nature of measles and whooping
cough might account for the smaller numbers of these seen at
the out patient department, as death or spontaneous cure
reduces the numbers seeking out patient treatment. Also
difficulties might arise in the diagnosis of whooping cough in
acute stages. All of the medical conditions listed above are
preventable, and it is important to realise that of the 1,623
visits made by children between the age 1 - 5 to the out
patient department 1,208 or 74.4% had preventable diseases.

In developing countries mothers are inhibited from bringing
their sick children early to hospital for a number of reasons.
For example distance of the home from hospital, non availability

of transport, attitudes to hospital care and as already
mentioned cultural barriers are some of them.

As a result a child may often be taken to hospital as
a last resort, once all other forms of locally
available native treatment have failed. SWIFT AND
HAMILTON (1973) in their study in Uganda found that
48.79% of all hospital deaths occurred in the twenty
four hours following admission to hospital, and that
8 - 9% deaths occurred on the second and third day
and thereafter the rate falls to less than 1% on the
ninth day. The authors found that the high numbers
of deaths in the first day was not among the children
coming from long distances. The authors conclude that
the delay in obtaining treatment purely because of
distances from the hospital does not seem to be the
sole reason for the high incidence of mortality in
the first twenty four hours of hospital admission.
They suggest that factors other than distance from
hospital, such as parents ability to recognise
illness and its severity, their reactions to different
diseases, the amenability of the disease to treatment
by native or western methods, as possible explanations
for the delay in seeking treatment.

Numbers of children seeking treatment at the out patients
departments in hospitals and in rural and urban health centres
are high. CUTHBERTSON AND MORLEY (1962) reported that over
9,000 children sought treatment at the Wesley Guild Hospital
in Ilesha, Nigeria, every month. NOAK (1967) in her study in
Zambia found that 30 - 45% of the first attenders at the Lusaka
Hospitals and urban clinics were children under the age of five;
however they formed only 19.5% of the population of Zambia.
UNITED NATIONS DEMOGRAPHIC YEAR BOOK (1967). BOELENS (1968) FIG.1
showed that in Lusaka clinics the under fives formed 45% of
first attenders. They constitute 66% of the total deaths in
the Lusaka Central Hospital (now the University teaching
hospital), and they also accounted for 75% of the burials in
the Chingwele cemetery in Lusaka. In addition 80% of the
notifiable diseases in Lusaka occurred in children, yet only
17% of the hospital beds in the Central Hospital were
paediatric beds. The number of beds was in proportion to the
population composition of 20% under the age of five but not in
proportion to their dire needs. SHATTOCK (1971).

The situation as described above has been the experience
of most health personnel working in developing countries.
Children constitute a large percentage of the total attenders
at out patient clinics at general hospitals. Furthermore
facilities for in-patients for example the number of beds
allotted, seem to be biased by the population composition than
the disease patterns. Therefore even though a third to half
of illnesses needing admission are confined to the paediatric
age group, yet only about 10 - 20% of the hospital beds are

PROPORTIONS OF POPULATION, MEDICAL FACILITIES AND DEATHS
UNDER ■ AND OVER ☐ 5 YEARS OF AGE (Lusaka)

FIG 1   Boelens (1968)

Population

Hospital beds

O. P. attendances

Deaths (hospital)

Burial
(cemetary)

Notified deaths
(excl. accidents)

0   20   40   60   80   100

Per Cent

21
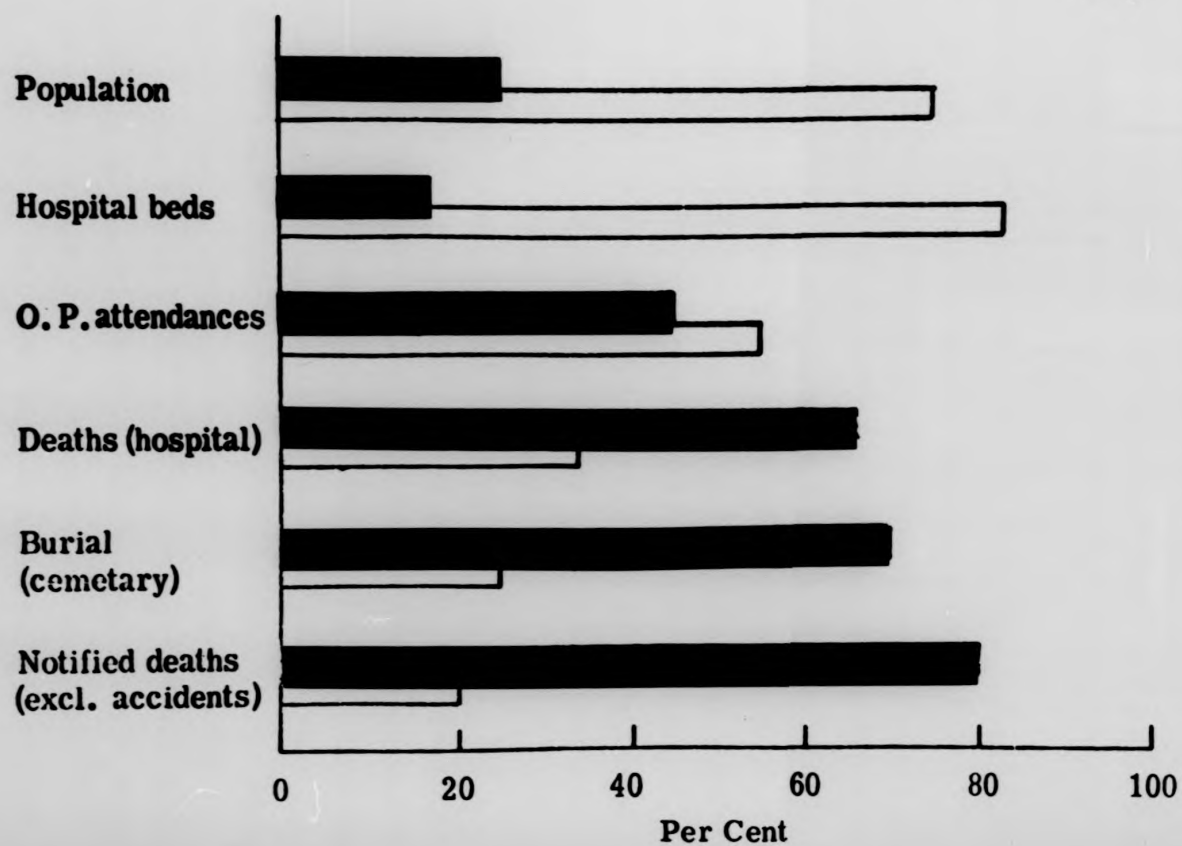
allocated to children. Clearly the need was evident for separating the services for children from those for adults, in order to provide more efficient services for both groups of patients. A great deal of differences exist in the requirements of the two groups. In the case of adults, it is necessary to see if the disease is serious, advise hospitalisation where necessary, and often offer a placebo for his ailments. However in clinics for children, in addition to curative treatment it is also necessary to stress preventive care and teaching. This will require frequent if brief contact between staff and patients. For the in patients many countries have developed special paediatric hospitals and this might be the answer to the above situation. On an out patient basis clinics specially catering to the needs of the children such as Under Fives Clinics could provide a solution.

(4) Problem of Protein Calorie Malnutrition.

Malnutrition in early childhood is still one of the major problems in most developing countries. BEHAR (1968) estimated that three hundred million pre school children suffer from some form of protein-calorie malnutrition and that 75% of them are under weight for age. Though easily recognised clinically in its gross forms, malnutrition is often missed in mild cases and the prevalence is thus likely to be under estimated. PUFFER AND SERRANO (1973), in the Pan American Health Organisation study referred to earlier, Malnutrition (Marasmus and Kwashiorkor) accounted for 33.9% of the total deaths under the age of five, i.e. 11,913 of a total of 35,095 deaths studied. KAPLAN (1969)

working in Zambia found that 40% of her children died directly
as a result of malnutrition or due to a combination of
malnutrition and infectious disease. BILLEWICZ, THOMPSON,
ILLSLEY, RAHMAN, THOMSON AND MCGREGOR (1968), in Gambia
showed that 43% of children died before reaching the age of
seven, either as a direct result of malnutrition or due to a
disease complicated by the effect of malnutrition. COOK (1971)
studied the admissions to twenty four teaching hospitals and
paediatric research units in various parts of the world and he
reports a hospital case fatality ranging from 12 - 52% of those
admitted with these diagnoses.

Kwashiorkor is intimately related to a number of factors
such as food habits, education and occupation of parents,
beliefs and attitudes existing in the community. Although
Kwashiorkor is a particularly good example to illustrate the
interaction of these factors many diseases found in the
community in developing countries shows the interaction of
these situations. Figure 2. KING (1966b).

FIG 2

AN AID TO UNDERSTANDING THE COMMUNITY DIAGNOSIS OF KWASHIORKOR.

KING - 1966(b)

B.   PROVISION OF MEDICAL CARE IN DEVELOPING COUNTRIES.

(1)   Introduction.

"The cleavage of the world into rich nations and poor
ones divides care in sickness quite as sharply as it does any
other aspect of the human condition. In this, the great
division of mankind, the rich have money and medical skills in
comparative abundance, and the poor have not". KING (1966a.)

(2)   Manpower.

In the industrialised countries the doctor patient ratio
is far higher than in the developing ones. For example the
ratio for England and Wales in 1970 was one doctor for 820
patients   WORLD HEALTH ORGANISATION STATISTICS ANNUAL (1970).
The same report shows that the ratio for doctors for Nigeria
as a whole is 1:20,530. However in Nigeria, due to the
unequal distribution of doctors between urban and rural areas,
i.e. in the concentration of doctors in the urban areas, the
doctor patient ratio in rural areas is much higher. The
shortage of medical staff is not confined to doctors.
Throughout the developing world there exists even a greater
shortage of para medical and auxillary staff. In Malawi in
1970 the nurse patient ratio was 1:16,090 and in Gambia the same
ratio was 1:15,000 for 1970. WHO STATISTICS ANNUAL (1970)

(3)   Economic Considerations.

In many developing countries, where resources are severely
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agricultural, educational and industrial projects. As a

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In many developing countries, where resources are severely
limited, health services must compete for funds with
agricultural, educational and industrial projects. As a

result the funds available for health services are far below
the requirements. MORLEY (1973a) shows the bleak economic
outlook for the developing countries during the next thirty
years, and implies that the improvement in the health services
will call for redeployment of services. (Table 5).
Table 5 taken from Morley's paper shows that in the less
developed countries the expenditure for health per head is
expected to increase three fold over a period of thirty years
but this increase is insignificant as in reality this is an
increase of two dollars over the entire period. However, even
though in the more developed countries the increase in $2\frac{1}{2}$ times
only, in terms of money they would have an increase per head of
3,600 dollars, over the same period of time. It would be
essential therefore especially in the developing countries to
cost all aspects of medical care and to make the maximum use
of the available resources in respect of manpower, building and
facilities.

TABLE   5.

GROSS NATIONAL PRODUCT AND HEALTH EXPENDITURE PER CAPITA ($)

IN 1970 and 2000

*	Gross National Product/capita		Health expenditure/capita	
	Year 1970	Year 2000	Year 1970	Year 2000
More developed countries	2,200	5,800	100	250
Less developed countries	160	325	1	3

* the Gross National Product is estimated as the total

production, either in the wages earned, or for the farmer in
terms of crops produced, whether these are eaten or sold.
The differences that exist in the provision of health care
in developing countries can be looked at in a different way
by relating total expenditure on health care to total
government expenditure.

TABLE 6.

Country	Total Health Expenditure as a % of general government expenditure	Total Health Expenditure per inhabitant (£ sterling)
Ghana	7.9	2.26
Ceylon	9.5	1.99
Jordan	3.4	1.78
United States of America	4.6	94.85
United Kingdom and Northern Ireland	16.4	34.20

Table 6 OFFICIAL RECORDS OF WORLD HEALTH ORGANISATION (1967)
shows that Jordan and the United States of America spend 3.4%
and 4.6% of the total general government expenditure on health,
but when this is taken in relation to the population, i.e.
per capita expenditure on health a large difference is seen.
In the United States of America in 1967 £94.85 was spent
per head, while in Jordan this figure was only £1.78. Even
if Jordan spends its entire budget on health then it still
cannot reach the amount spent per capita in the United States
of America.

At present in most developing countries the greater part
of the health expenditure is spent on a few large central
hospitals, with smaller sums on peripheral hospitals and very
little money left for medical care provided at health centres.
To obtain maximum use of hospital services it would be
essential to reserve hospital in patient care only for those
cases that cannot be adequately treated on an out patient basis.
LAWLESS, GARDEN AND LAWLESS (1966) writing from Zambia remarked
"the wisdom of admitting children with medical diagnoses to
hospital in under developed countries is questioned".
SADRE AND DONOSO (1969) stated "it seems to us that under
present circumstances, the admission to hospital of malnourished
patients is to a large extent a waste of time and money".

A reduction in the number of admissions to hospitals can
be achieved in several ways. The provision of early treatment
on an out patient basis for conditions which might otherwise
require hospital in patient treatment if left unattended;
provision of immunisations and other forms of preventive
medicine on an out patient basis thus reducing the morbidity
of these conditions; encouraging and advising early hospitali-
sation for conditions that need hospital admission; early
discharge from hospital where appropriate, with follow up on
an out patient basis. A service which could provide on an out
patient basis, curative and preventive medical care, and act as
a screen for disease prior to hospital admission, would keep
down the cost of health services. Such a service for children
under the age of five is provided for at the Under Fives Clinic.

The high rate of child mortality is made even more overwhelming by the huge numbers of children in most tropical countries. MORLEY (1973b) showed that in a developing country 20% of the population are subsistence farmers or wage earners and provide resources for the balance 80% of population comprising of children under the age of five, school children and the old. In an industrialised country 60% of the population are between the ages of fifteen and sixty, and, in addition to the men, two out of three women in this age group are also wage earners. Thus it is seen that the wage earner in an non industrialised country has a bigger burden to bear in supporting his fellow countrymen than his counterpart in an industrialised country.

(4) Culture.

Culturally differences exist from one social group to another. A doctor only rarely practises among people with a culture identical to his own. It is necessary for medical workers anywhere to understand the patient's beliefs regarding the causation of disease, and the medical care provided must be carefully adapted to the opportunities and limitations of the local culture. The child rearing practises in developing countries differ fundamentally from those found in developing ones. However, within developing countries there is a wide variation in these practises. For example, the child who has been weaned from the breast is separated from the mother and he is promoted from dependent babyhood to the more independent status of a member of a sibling group. In some societies, such as the Baganda and the Zulu weaning from the breast is

immediately associated with displacement from the mother - in
some cases even by geographical separation from her. In other
communities, such as the Yorubas in Nigeria, the whole process
is much more gradual. JELLIFFE AND BENNETT (1972)

(5) Urbanisation.

Urbanisation brings with it problems associated with
housing, adaptation to nuclear families (i.e. a family composed
simply of parents and their children) Change from a subsistance
economy to a cash economy and disruption of the rural way of
life. This is mainly associated with the fall in living standards
that usually accompany urbanisation. These problems are closely
linked with overcrowding, shanty dwellings and maternal
deprivation that is usually seen in the case of working mothers.
KLEEVANS (1971) has shown that in a period of fifty years, i.e.
1920 - 1970 the urban population in developing countries has
grown from 100 million to over 600 million and by 1980 may
exceed the urban population of the technically advanced
countries. FIGURE 3. If the health worker is aware of the
health problems that could arise as a result of rapid
urbanisation then he could look out for these and either try
to prevent or find solutions for at least some of them.

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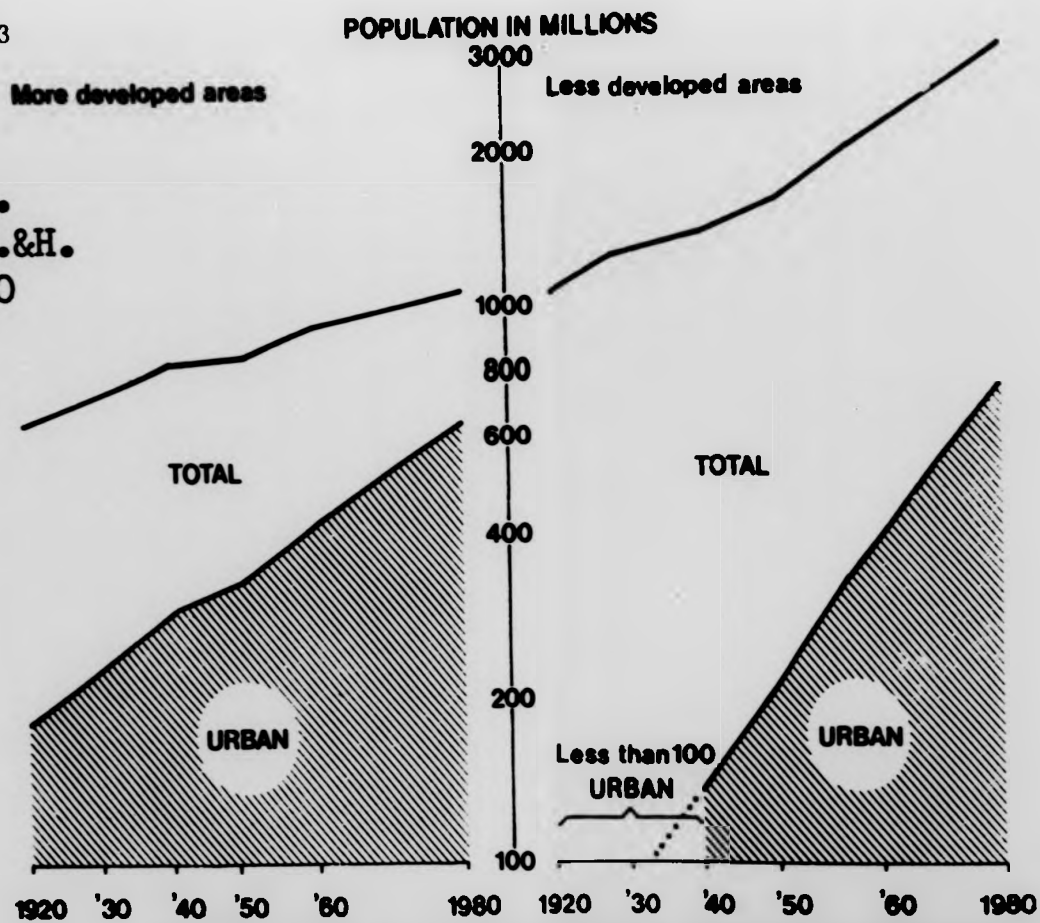
FIG 3

POPULATION IN MILLIONS

More developed areas

Less developed areas

TOTAL

TOTAL

URBAN

Less than 100
URBAN

URBAN

1920 '30 '40 '50 '60 1980   1920 '30 '40 '50 '60 1980

Trends and crude projections of total and urban populations.

(6)   Systems of Health Care.

Many developing countries have adopted the type of health services that exist in the technically more advanced countries, and have not adapted these services to their own special local circumstances. WILLIAMS (1955) stressed this when she said "The child care services in Britain have resulted as a process of growth. Although they are in some ways clumsy and expensive they have constructed what is now an effective machine; but it is unreasonable to think that this machine will work in other climes". If these child care services to which she refers are to work in developing countries, because of the differences that exist in the disease patterns, health resources and medical care between the developed and developing countries, those services would have to undergo modifications to meet the needs of these populations.

In the developing countries one often meets on the one hand well equipped and staffed 'Well Baby Clinics' at health centres or hospitals devoting all its time to a few healthy babies while on the other, a nearby hospital may have a out patient clinic which is over crowded, poorly staffed and having to attend to the needs of not only the sick children but also the adults. A mother in such circumstances may be uncertain as to which of the above clinics she should take her child to. Is the child ill enough to be taken to the out patients department to join a long queue of adults and children or is the child well enough to be taken to the Well Baby Clinic? If she decided to take her child to the Well Baby Clinic and subsequently it is

found at the clinic that the child is ill then she would be unable to obtain any treatment for this at the clinic. On the other hand if she takes her child to the out patient department of the hospital, then her child would not be able to have any preventive care such as immunisation or nutrition education. The mother may need at some time or another the services available at both clinics, By combining curative with preventive care in the Under Fives Clinic the mother is saved this difficult decision.

Women in rural Africa have a very heavy work load. They not only take care of the home and the children but also have to prepare meals for the family, collect water and fetch firewood and may be called upon to help their husbands in the fields. JELLIFFE (1967) states "the over-burdened, over-worked village mother cannot be expected to carry her healthy three month old baby to one type of clinic, and, at quite another time and place, try to solve the considerable problem of transporting her heavier, barely walking ailing pre-school child to the hospital outpatients".

The concept of the Under Fives Clinic was evolved from the awareness of several important factors which existed in the non-industrialised countries, but not, for example, in Britain and other industrialised countries. JELLIFFE (1966) states "Once again Dr. Morley's Under Fives Clinic is one model to go by, and a good example of the way to apply a completely logical and intensely practical methodology to a particular situation in tropical practice. The use of locally trained village girls,

the weight chart he developed, its possession by the mother, the way in which the nurse herself dispenses the medicines, the use of the ladle, the use of sulpha dimidine all the details of this very successful clinic, be they minutiae or not - this is what is meant by practical methodology adapted to this particular situation". By a clinic such as this an adequate service meeting both 'demand' and 'need' of the community could be provided. In the Under Fives Clinic the health worker is able to provide a package of health care to the mother and child with the resources that are available. Every child she sees will get some preventive and some curative care.

C.   UNDER FIVES CLINIC PATTERN.

(1)   Objectives.

MORLEY (1963) in setting up the first Under Fives Clinic
defined its objectives as follows:

It was   (a) To provide simple acceptable treatment for the
diseases commonly found in the area of the clinic, e.g.
Pneumonia, diarrhoea and skin conditions.

(b) To prevent malnutrition, Malaria, Pertussis,
Smallpox, Tuberculosis and Measles.

(c) To regularly supervise the health of all children
up to the age of five, with special emphasis on their physical
progress nutrition and immunisation. By regular supervision
is meant that the child should visit the clinic ideally once a
month in the first year and once every three months up to the
age of five. The Under Fives Clinic was designed for the pre-
school child who is at an age when it is most susceptible to
infection and malnutrition. The name of the clinic probably
arose more by accident than design. It is not intended to be
exclusively for children under the age of five, or to be
separate from other services. Clearly the child under five has
particular priorities. In some countries the child may be seen
up to the age of six. In some areas these clinics are called
"Young Child Clinics".

(2) Clinic routine.

At the clinic a mother would only regularly see three
clinic workers. A clerk, who would register the number on her
child's card, and stamp the date; a second clerk who would

FIG 4

The Road To Health Chart which
is central to 'Under 5' clinics

Simplified
methods of
dispensing
medicine
by the nurse

ELFARE
XTURE

Spoons for
demonstration

36

weigh the child and record the weight on the child's weight chart; and finally the nurse who would examine the child and supply any medicine the child would need. This nurse would (FIG 4) have a supply of the commonly used drugs (pre packed tablets and mixtures already made up). If the child should need immunisation then the mother would proceed to the immunisation room. While a child is being seen and examined by the nurse, six or seven mothers are in the room with their children waiting their turn to be seen by the nurse. This arrangement ensures that these mothers not only learn from the nurse when she is attending to their own children but also learn by overhearing. In addition to the teaching the mothers receive from the nurse, other forms of health education are carried out at the clinic. In the waiting room while the mothers wait to see the nurse, a member of the staff speaks to these mothers on topics relevant to maternal and child health. These lectures include topics such as breast feeding, ante natal care and its importance, infectious diseases and their spread, immunisations, good sanitation; group discussion is encouraged. In the field of nutrition education, practical demonstrations are held in various aspects of menu planning and food preparation. Often a mother from the audience is picked out to be the group leader. She carries out the food demonstration under the guidance of the health worker.

A doctor would also be in attendance at the clinic. Approximately 10% of all cases would be referred to the doctor.

FIG 5 ROAD TO HEALTH CARD
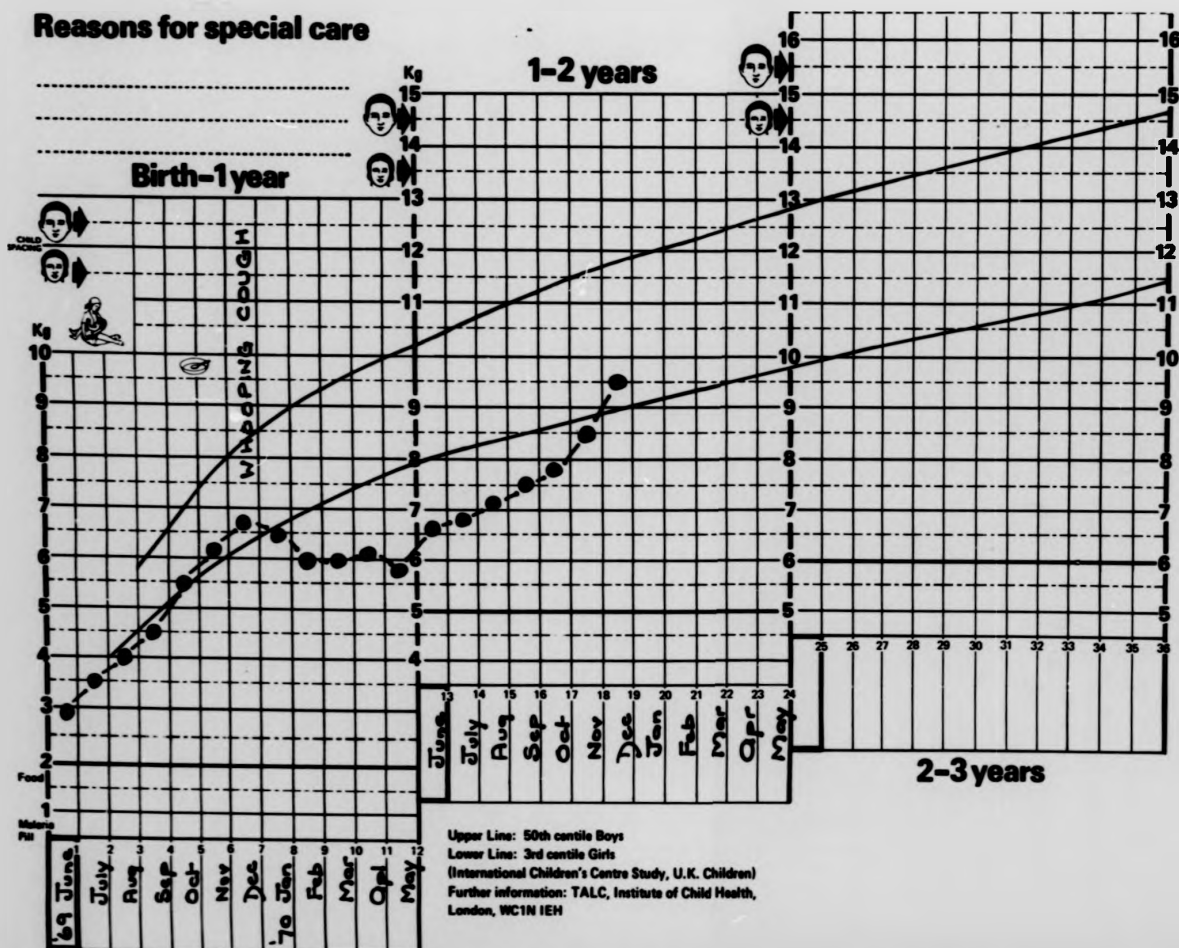
(3)   Growth Chart or a 'Road-to-Health' Card.   (Fig. 5)

To assess the progress of the children who attend the Under Fives Clinic it was necessary to devise a simple record card.   A special record known as the 'Road-to-Health' Card was designed for this purpose.   These cards were first used in Ilesha, Nigeria in 1959, but have undergone considerable modification since then.   As well as acting as a record this card is also used to introduce or extend the following two principles of health care.   MORLEY (1973c).

1.   Children need to receive continuous comprehensive health care.   Each illness episode should not be treated as a separate entity as is the case seen in most outpatient clinics. The 'Road-to-Health' card acts as a record of the child's health and progress for a period of five years.

2.   'Promotion of adequate growth' in a child.   This also reflects a more effective approach to the control of malnutrition in the community.   In children retardation of growth is the earliest and most sensitive indication of impending malnutrition, and up to the age of five years failure to gain in weight is particularly informative.   As much as persistant loss of weight is a sign of malnutrition increase in the rate of weight gain can be considered as evidence of good health or recovery from ill health.

The card provides space for plotting serial weights on a chart so that a child's weight can easily be compared with what would be expected for his age.   The 'Road-to-Health' card has two reference lines of growth.   According to MORLEY (1973d)

the most useful lines to have for use by medical auxillaries
are as follows:

The lower line should represent the median weight for age
for children in the villages of the country concerned, i.e.
these children would be assumed to have come from poor social
class and have lower than expected weights for age. The upper
line should represent the median weights for children from a
upper social class for example the children of the local
university staff living on the university campus. The parents
of these children have both the knowledge and the means to
feed their children well and are also able to give them good
medical care. Assuming a similar genetic background, differen-
ces between these two lines represent the deficiencies due to
environmental factors particularly poor nutrition and frequent
infection, of the village children.

At an international meeting it was decided that as so
few countries had such figures available, and as they are
likely to vary from time to time in each country, that it was
more reasonable to have an international standard. For this
reason the upper line is now taken as the 50th percentile of
a large group of normal children and the lower line the 3rd
percentile of the same group of children. The figures for this
group are those recommended by TANNER AND WHITEHOUSE (1973).
The present weight charts use these lines. In practice these
figures were found to be similar to those used on previous
weight charts. In particular they are similar to the Harvard
mean and 80% Harvard mean used by some workers. NELSON (1966)

The health worker is taught that the objective should be to endeavour to improve nutritional status and thereby the weights of the children, so that their weight curves run parallel to these lines, and as many as possible above the lower line. This would mean an attempt to bring village children of lower weights, and therefore likely to be less well nourished, up to the level of the more fortunate children. However it should be stressed that whatever standards are used the most important aspect should be the direction of the child's curve rather than the exact position of it in relation to the given standards at any point in time. Within a community the variations in weight due to genetic reasons could be appreciable. Therefore it is impossible to suggest what is a "normal" curve, and that where we have malnourished communities, the difference in the weights between these communities and the well nourished may not be as large as the genetic variation in either. MORLEY (1973e) has compared weight percentile for a group of Nigerial boys and English boys. He concludes that the variation within the English group which is largely genetic, is much greater than the variation between the groups which is largely nutritional.

The chart has been produced in various designs over the last fifteen years. At present the chart is printed in green on a primrose yellow coloured strong card. These colours show up well and entries made on them in ink or with a ball point pen can be clearly seen. In the previous designs of the charts weights were recorded against the child's age given in months or in fractions of a year. This entailed the calculation

FIG 6

A.

Birth   1   2   3   4   5

Monthly scale

B.

Birth   1   2   3   4   5

Decimal scale
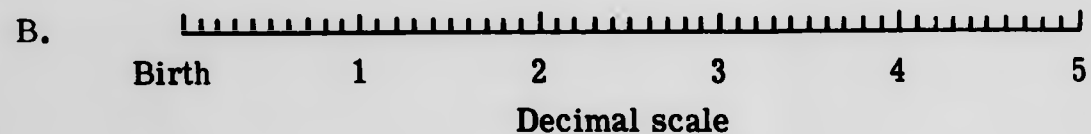
C 1
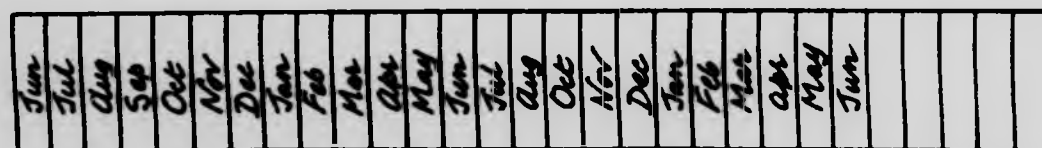
Calendar System

C 2

'65   '66

CALENDAR SYSTEM WITH BIRTH MONTH EMPHASISED

of the age by the nurse or the clerk and sometimes resulted in mathematical errors. This problem was overcome by the introduction of the calender system which consisted of writing the months of the year starting with the month of the child's birth along the bottom line of chart (Figure 6c). This avoids the necessity to calculate the age of the child at each visit to the clinic thus saving time, and minimising possible errors when plotting weight for age.

The 'Road-to-Health' card also has specific records of other relevant items of information such as details of major illnesses that are likely to affect growth, birth intervals, low birth weights and twins. This information assists the clinic nurse to recognise the "at risk" child. The term "at risk" child is used for the children who are more susceptible to infections and growth retardation, due to social or economic factors).

Another important feature of the 'Road-to-Health' card is that it is kept at home by the parents and is brought out each time the child attends the clinic. The parents are encouraged to consider the card as a valuable piece of their own property which is important to the health of the child. Parental retention of the card is important because it is essential to obtain parental participation in promoting the health of the children. For this reason it is useful to have cards in the major local languages so that literate parents could read and understand them. At present the cards are available in over 20 languages. The chart is printed on strong card, is about 25 cms by 10 cms when folded and is kept in a heavy quality

open ended polythene cover for protection. These features
increase the durability of the card.

"Parent retained cards" provide a economical method of
having a continuous record of a child. In developing countries
adequate record filing facilities for out patients records is
usually absent. Maintaining records for more than five
thousand persons where identification of people by name is not
clear cut, can be both difficult and expensive both in
personnel and waiting time for the children. HEALTH CARE OF
CHILDREN UNDER FIVE (1973). Reporting from Malawi COLE KING
(1971) states "Duplicate individual records kept at Under Fives
Clinics have proved impracticable. It was time consuming for
the limited staff, who often had to spend considerable time
searching for records while patients had to wait, and frequently
the records were completely mislaid. It took one staff member
one half day after the clinic to sort out the records".
Patients find that they get seen and treated faster when they
have the card in their hands than when without it and to them
it is a "passport to health services".

The mobility of rural people in developing countries has
increased remarkably in the past few years. WYON AND GORDON
(1971) showed that in a study in Punjab villages in India 80%
of mothers went away from their husbands home for the birth
of their first baby. They usually stayed away while they
breast fed the baby. If the child's health record is kept by
the parents and carried with them, in the event of the child
seeking treatment at any institution then the health worker

who sees the child would have all the relevant details of the child to aid him.

(4) Research involving home based records.

Another important use of the home based records is that in community evaluation studies, of the use being made of the clinic, the card can prove invaluable in identifying those children who attend the clinic from those who do not attend. It is in this area that the present study is breaking new ground. As the cards are held by the community,resources available within the community can be utilised to analyse the health care provided. In the absence of such home based records it would prove difficult to obtain reliable information on for example the immunisation status of some sections of the population.

(5) Evaluation of Under Fives Clinics.

Need for evaluation.

"Evaluation Research is concerned with determining how well an action programme has succeeded in meeting its stated goal, by applying the methods of Social Science Research"   WEISS (1972).

If we wish to approach the health problems of pre-school children rationally rather than arbitrarily or blindly and eventually determine whether our remedial efforts are producing the desired results then objective evaluation is essential. It is essential for intelligent programme planning, and no less essential for programme follow up. WRAY (1968) stated "Community based data demonstrate the gravity and magnitude of a problem, in this case the problem of health, and this

information would be beneficial to the decision maker of all kinds, whether they be health planners or economic policy makers. No scientist in a laboratory carries out an experiment and then ignores the results. No responsible physician initiates therapy in a patient and then goes off and leaves him ignoring the effects of the therapy".

COCHRANE (1971) has stressed the need for "effectiveness and efficiency" in the provision of health care. He discusses the problems that have arisen by the use in medical work of practices that have not been fully evaluated.

Clinic based child health services can be evaluated in many ways. The majority of evaluation studies carried out have concentrated on collecting information on mortality and morbidity figures obtained from those who utilised the services. The Under Fives Clinics were first established in 1959 and their main objectives were given on page 35. Since then many changes have taken place in the organisation and the structure of these clinics. Literature contains many articles stressing the needs and the benefits of these modifications. However, much less information is available on assessment of programme effectiveness. In the evaluation of Under Fives Clinics two types of studies are possible.

1. Longitudinal. In this type of study baseline data on the population are collected prior to the implementation of the factors which could bring about a change. The population is then studied after a period of time during which the project was in operation. Any changes beneficial or otherwise attributable to the project are studied. A longitudinal study

has been defined by BENJAMIN (1968) as a "carefully controlled
follow up of a group of 'healthy' persons of well defined
social characteristics, in whom the emergence of disease can be
closely observed and recorded in its detailed presentation, and
in proper relation to biological and external environmental
factors, which may be involved in causation, the rate of
development, or in the possibility of reversion".

In the context of the Under Fives Clinic, a longitudinal
study could take the following form. Baseline data (including
health, socio-economic) are obtained from a geographically
defined area. An Under Fives Clinic is organised in this area
at an easily accessible location. The functions of the clinic
are clearly explained to the community, and they are encouraged
to bring their children regularly to the clinic. After a period
of time, say three years, another field survey is carried out.
The same social, health and economic data are evaluated. It
is established if the presence of the clinic has had any
beneficial or other effect on the community. In drawing
conclusions one must also take into account other factors that
might come into operation at the same time as the Under Fives
Clinic, e.g. improvement in sanitation in the village.

A variation on the longitudinal type study is the
controlled Trial. In this type of study two areas are chosen
having similar climatic, economical, cultural and health patterns.
Into one area is introduced the Under Fives Clinic and no child
health services are introduced to the other. Having obtained
baseline data for both areas before the start of the Under
Fives Clinic a survey is carried out after the clinic has been

in operation for a known length of time to see if the health
and the disease patterns in the two areas have changed
significantly.

2. <u>Point Prevalence study</u>. At a given point in time after
the project has been in operation for a known length of time,
a study could be made on a group of the population affected
by the project and compared with a control group from the
same environment not affected by the project.

(a) <u>Evaluation studies done prior to the present
study</u>.

A modification of the 'controlled trial' type study was
carried out by CUNNINGHAM (1969) in Nigeria. He carried out
a comparative study of two villages in the Western State of
Nigeria. He compared Imesi-Ile with a neighbouring village
Oke-Imesi. The former village had a well established Under
Fives Clinic while the latter had the traditional welfare
centre and a dispensary.

TABLE 7.

VILLAGE PROFILES: IMESI-ILE AND OKE-IMESI (1967)

CUNNINGHAM (1969)

Environmental and life style	Imesi-Ile (study village)	Oke-Imesi (Control)
Population	6,200	7,200
Persons/house ratio	7.9	7.9
Percentage of houses cemented	5.7	56
Water supply	Streams	Piped (since 1966)
Staple foods	Yams, gari, eko, rice, beans	Yams, gari, amala, rice, eko.
Cash crops	Yams, cocoa, kola, cotton	Rice, yams, cocoa
School students	1,568	1,352
Seamstresses	24	47
Tailors	19	26
Palm wineries	16	29

The comparative study was carried out over a period of one year
in August 1966 to August 1967.   These profiles show considerable
similarity in the villages;   the control village however has the
advantage of pipe borne water supply and a greater proportion
of cemented houses, suggesting greater wealth.   The large number
of school students in the study village was related to a well
established high school in the area.   The health statistics
collected by Cunningham during this year are given in Table 8

TABLE 8.

CHILD MORTALITY IN IMESI-ILE AND OKE-IMESI

(AUGUST 1966 - AUGUST 1967)

CUNNINGHAM (1969)

	Imesi-Ile Under Fives' Clinic	Oke-Imesi 'Welfare' Clinic.
Live births	302	327
Infant deaths	14	26
Infant Mortality rate/1,000 live births	45	80
Child 1 - 4 population (estimated mid year)	896	997
Child deaths 1 - 4 years	16	48
Child 1 - 4 mortality rate (per 1,000 children 1 - 4)	18	48
Malaria parasite rate (positive films)	15.5%	55.0%
Malaria	holoendemic	holoendemic

The above Table demonstrates remarkable differences
between the Infant Mortality Rates in the test and control
villages. If the total 1 - 4 year mortality is considered it
is seen that in the control village the death rate is three
times that found in the study village, and the Infant Mortality
Rate in the control village is almost twice that found in the
study village. Among the survivors there were also some demon-
strable differences. To illustrate these differences each childs
weight has been expressed as a percentage of the standard

weight for age (using standards set by NELSON (1966) for a
child of the same sex and age). A percentage of the ideal
weight for age of the median child in each age and sex
group is compared for the two villages. (Table 9)

TABLE 9.

MEDIAN PERCENTAGE OF STANDARD WEIGHT FOR AGE AND SEX FOR GROUP OF CHILDREN 0 - 4
YEARS IN IMESI-ILE AND OKE-IMESI (1966)

| | Median % of standard weight for age | | | | | |
| | Boys | | | Girls | | |
Age in months	Imesi-Ile	Oke-Imesi	Difference	Imesi-Ile	Oke-Imesi	Difference
0 - 5	92.0	92.2	-0.2	90.0	93.4	-3.4
6 - 11	84.5	84.3	+0.2	85.0	77.8	+7.2
12 - 23	82.0	78.9	+3.1	80.8	76.2	+4.6
24 - 35	83.6	81.1	+2.5	83.8	78.9	+4.9
36 - 47	83.9	81.5	+2.4	79.0	78.6	+0.3
48 - 60	82.5	80.3	+2.2	80.9	77.6	+3.3

Though babies from the study village where an Under Fives
Clinic was established were found to be lighter for the first
six months of life, thereafter they rose ahead of the Oke-Imesi
(Control) village children. The difference is most evident in
the second year of life and most marked in girls. (Table   9).
In spite of the apparent greater wealth and the pipe borne
water supply of the control village there was as shown above a
considerable improvement in the health of the children in the
study village.

WEBB (1969) carried out a study to evaluate the Under
Fives Clinic in Ilesha in Western Nigeria. She used home based
'Road-to-Health' cards for obtaining a variety of baseline data
on the health of the children in the community. In this study
data were collected to determine immunisation status, weights
of children at various ages and some other details. The study
was carried out as follows:

From a map of the town of Ilesha, six areas at specified
distances from the clinic were selected. In each area using a
specified routine twenty one houses were visited. The survey
was carried out using an interviewer administered questionnaire.
In each house visited every child under the age of five was
taken into the survey. A total of 235 children were included
in the survey. Results of this study were not published and
as such it has not been possible to draw any conclusions from
the study.

(b)   Studies carried out after the present study.

DE WINTER (1972) describes a controlled trial type
longitudinal study carried out to measure any improvements to
the health of a rural community which may arise as a result
of the introduction of "Health centre methods, especially Under
Fives Clinics, health education, home visits and community
development methods in their various forms". The basic
principle of the project was to deliver the above type of health
centre services to a 'test village' in Nkhata Bay District of
the Northern Region of Malawi. The 'control' village would not
receive these facilities. The test and control villages were
chosen to be close to the local hospital. Basic demographic
data were obtained for both villages. The villages had
similar population structure and the age and sex ratio were
compatible. It was found that the morbidity patterns for the
two villages were similar. A study of the inpatients and out
patients records of the nearby hospital was made for two
eighteen month periods starting from March 1966. The addresses
of the patients were noted and compared. These records did not
show any obvious difference. The agricultural and nutritional
pattern of the two villages were similar. The health services
available to the two villages were identical prior to the start
of the project.

Sociological and medical data were obtained for the test
village but the sociological survey was not carried out in the
control village. This was mainly 'due to the lack of staff'
but as the author points out it was wrongly assumed that the

sociological baseline survey would not be necessary in the
control village. Sociological information included ownership
of property, occupation of the head of the household, sources
of income, education levels of children, education levels of
parents, housing conditions, livestock kept, nutrition knowledge,
food production and consumption, and child care practises.
Medical information included age and sex, prevalence of
abnormalities and illnesses, and clinical findings. The same
items of information were obtained for the test and control
villages, in the baseline and evaluation surveys. Some items
were however included only in the baseline survey, i.e. merely
in order to collect information about the villages without
intending to use these items as a measure of progress. Some
items of information collected in the baseline survey were
later discarded as they were found to be irrelevant. On the
other hand some questions that could be beneficially used as
parameters of progress were only thought of during the course

of the study. The finding of the medical baseline data
constituted the starting point of the actual project, in that
they described the extent and the type of illness in the
villages.

The health care provided to the test village comprised -
A weekly lecture or health discussion
A general out patient clinic (held weekly and conducted
   by the medical assistant)
A weekly Under Fives Clinic (conducted by the State
   Registered Nurse initially but later by a midwife)

A weekly ante natal clinic (conducted by the midwife)

Home visiting

Evaluation surveys were carried out in the two villages two years after the health project was in operation at the test village. Evaluation was based on fifty three families in the test village and fifty families in the control village, who were included in the sociological survey. The evaluation of the medical surveys was based on 115 individuals in the test village and seventy five in the control village, who were included in both baseline and evaluation) surveys. The results could be summarised as follows:

Sociological evaluation in the test village showed that more families had improved than deteriorated, although this was not a statistically significant difference. However if the social conditions of the two villages at the time of the sociological evaluation are compared one hardly finds any difference between the two. It is reasonable to assume that the improvements that occurred in the test village only brought the social conditions of these villages to the level that existed in the control village prior to the start of the survey. i.e. at the start of the survey the social conditions that existed in the control village were better than those in the test village.

In contrast however, the medical survey showed clearly that the proportion of individuals who showed improvement in the test village far exceeded those that showed improvement in the control village.

BORNSTEIN AND KREYSLER (1972) undertook a study to investigate
some of the social factors affecting the attendance at the
Under Fives Clinic in a densely populated area in Tanzania.
Interviews were conducted with eighty mothers of two villages
which are in the catchment area of a clinic served weekly by a
mobile clinic team. Both villages are situated in the Lushoto
District, are approximately of the same size (one hundred
families) at the same distance from the clinic (four miles) and
of homogenous composition with regards to socio-economic
background of the families. One village had access to a clinic
for over three years and the other only for ten months. Their
results showed little difference in attendance rates and
frequency of visits at the old and new clinics. Between 70%
and 75% of all mothers with children under five years of age
had attended the clinic. The average frequency of visits was
four. In one village a greater number of attending mothers had
more formal education when compared to the non attending mothers,
but apart from this no significant differences were noted in age
or education between parents of the two groups. One group found
the "ten house all leaders" (elected local representatives),
a very useful source of information on clinic matters, while
the other group obtained most of its information on clinic
activities from neighbours and friends. Significantly the non
attending mothers around the newly established clinic had not
been informed by the village leaders. Many of the attending
mothers went to the clinic on the advice of their husbands and
many non attending mothers gave as a reason the disapproval of

their husbands. The most appreciated clinic activities were
the free distribution of food and medicines whereas health
education was not mentioned at all by the mothers. Among the
practical problems connected with the attendance, distance and
cost were the major ones. The mother spends an average of four
hours walking to and from the clinic.

The survey results presented are based on a small sample,
within a certain social and geographic context in rural Tanzania.
Though the results may not be representative for a larger area,
it highlights some of the problems in connection with the
perception and use of medical services by rural families.

WOLGEMUTH (1972) carried out a study in Lusaka in 1972 to
evaluate the Under Fives Clinics in Zambia. The study took the
form of a field and clinic survey. The clinic study, consisted
of visiting, one or more times, seven Under Fives Clinics in the
Lusaka suburbs. Information was sought from the 'Road-to-Health'
cards of the children attending the clinic on the day of the
survey. Relevant details on weights and immunisation status
were analysed. The field study comprised a house to house
survey conducted to acquire some knowledge of the characteristics
of the community around the Clinic 1 (i.e. one of the clinics
studied in the clinic survey). Mothers living within half a
mile from the Clinic 1 were interviewed. The sampling technique
was devised with the aid of an aerial map. The township was
divided into eight regions and the number of houses per region,
and the proportion each region contributed to the entire town-
ship was calculated. In this study every other household was
visited. It had been originally planned to correlate household

income, expenses on food, mothers education, number of living
and dead children, positive and negative attitudes towards the
clinic with the child's growth. Though 396 mothers were taken
into the sample only less than twenty mothers had their child's
card available for the interviewer. The author concludes that
due to this very low response rate it was not possible to
correlate the clinic results with the findings in the field
survey. However much information is available on the population
that attended the clinic. This information included, age, sex,
frequency of clinic attendance and weight for age.

Conclusion

It is seen from the foregoing passages that the evaluation
of the uptake of services of an Under Fives Clinic has been only
minimally studied. The clinics have now been in existance in
some countries in Africa for as long as ten years and it is
necessary to evolve a methodology to evaluate these clinics not
only for the benefit of the individual clinics but also for the
use of health planners involved in policy making. The three
studies described above which were carried out after the
conducting of the present study do not still provide a repeatable
methodology for the evaluation of Under Fives Clinics on a
large scale.

CHAPTER II.   PURPOSE OF THE PRESENT STUDY.

As shown in the Literature Review (Chapter I) little or no evaluation of Under Fives Clinics has been done.   Even those surveys that have attempted evaluation have concentrated in the main on the operational or administrative efficiency of these clinics.   Use made by the population of the services has hardly been studied.   Little else has been systematically observed or recorded of this form of health care.   The parents' attitudes and opinions of the clinic also have been little studied.   If this form of health care is to be recommended and accepted as government policy in other developing countries, then information on their effectiveness is needed.

Main objective of study

The main objective was to develop and apply a methodology for the measurement of the utilisation of the services provided by the Under Fives Clinic.   At the same time the health of clinic attenders and non attenders would also be measured, in an attempt to see whether attendance at clinic conferred some health benefit.

Subsidiary objectives of the study

(1)   To investigate parents attitudes towards the services provided, i.e. reasons for attending or not attending the clinics.

(2)   To collect comparative data on the different activities of the clinics, e.g. immunisation, health education and attendances.

The subsidiary and main objectives taken together should help in the future development of methods for the evaluation of Under Fives Clinics.

FIG 7

Map of Africa

Nigeria

o

Zambia

Alantic Ocean

Equator

0°

Malawi
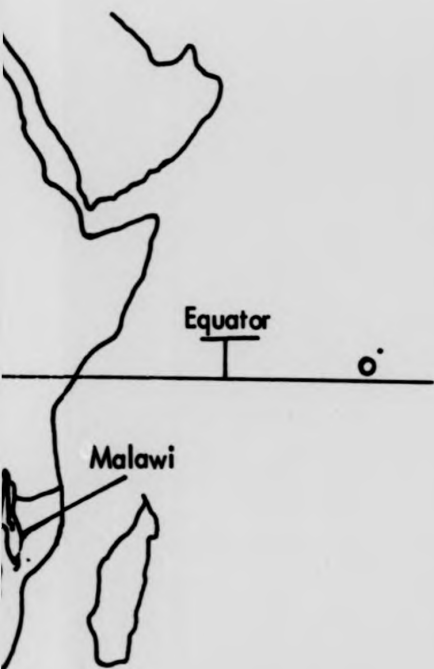
India Ocean

CHAPTER III.   METHODOLOGY.

A.   AREA DESCRIPTION.

(1).   Nigeria.

The Federal Republic of Nigeria lies almost at the Eastern end of the broad sweep of the West African coastline and is demarcated by latitudes 4 degrees, and 14 degrees N parallel and longitudes 30 degrees and 15 degrees meridian. Nigeria is bounded on the west north and east by the French speaking republics of Dahomey, Niger and the Cameroons respectively, on the south by the Atlantic ocean. Nigeria has an area of 356,669 square miles and though it is the 14th largest African state it is the most populous country on the continent having an estimated population of 64 million. DADA (1972)

Situated well within the tropics Nigeria has a climate which is characterised by relatively high temperatures throughout the year. Temperatures vary from $70\overset{\bullet}{F}$ to $90\overset{\bullet}{F}$ throughout the year. The annual rain fall varies from 150 inches on the coast to 25 inches in the north eastern region. June – September are the rainiest months throughout the country.

Resources.

Although 70,000 square miles of Nigeria are in the forest belt only 9,000 square miles account for most of the timber resources of the country. Nigeria exports a wide range of tropical hardwoods. Cattle, and to a lesser extent sheep constitute important animal resources. Cocoa and ground nuts form the main agricultural produce. Mineral resources are varied, although exploration of many have only just begun. Tin collumbite and iron ore are among those being produced. Fuel

resources include sub bituminous coal and petroleum. The latter
would become a major source of revenue in the future.
Agriculture together with livestock forestry and farming
contributed 55.6% of the total   gross National product for
1966 which was £1,583.1 million.

Population.

Although racially negroid the Nigerian population exhibits
extreme ethnic diversity. Ten groups notably Hausa, Fulani,
Yoruba, Ibo, Kanuri, Tiv, Edo, Nupe, Ibidio and Ijowu account
for 80% of the total population. Recent economic development

has stimulated considerable rural urban migration and has led to
phenomenal growth of such cities as Lagos, Ibadan and Port
Harcourt. Nearly 16% of the Nigerian population live in urban
areas making the country perhaps the most urbanised in black
Africa. MABOGUNJE (1972).

Health Statistics.

The estimated death rate is 20/1,000 and the estimated
birth rate 45/1,000 in 1970 and an approximate growth rate of
2.5%. ABOYADE (1972). The estimated mid year population for
1970 was 64,000,000. It is estimated that the number of pre-
school children would comprise 25% of this population. DADA
(1972).

Nigeria has 2,683 registered medical practitioners, and
13,046 registered nurses and 14,367 registered midwives. A
total of 29,789 hospital and health centre beds are available
in the country. This gives a population of 24,000 per medical
practitioner, 5,000 per nurse, and 4,500 per midwife and 2,100
per hospital bed. The country has four medical schools each

with its own teaching hospital and the population per medical school is 16,000,000.

DADA (1972) in a paper entitled guidelines for the development of health manpower and facilities in Nigeria during the 1970 - 1979 decade stated the following

TABLE 10.

	1975	1980
Mid year population estimate	72 million	80 million
Desirable number nursing staff 1/1,000 population	72,000	80,000
Desirable number medical practitioners (1/1,000 population)	7,200	8,000

From the above it is seen that at present (1970) Nigeria has only 20 % and 37 % of the desired number of nurses and medical practitioners. This report gave a list of categories of health personnel requirements for the next decade.

DESCRIPTION OF STUDY AREAS.

(a) ILESHA.

The town of Ilesha (7° 39 N., 4° 38 E.) is situated in the Western region of Nigeria and lies in the rain forest belt of the country. It has a population of about 165,000 and a similar number live in the surrounding villages. The majority of people are Yoruba with farming as the chief occupation on the farms. Yam maize and cassava are the principal food crops while cocoa is grown as a cash crop.

Ilesha town has a pipe borne water supply. The water comes from a stream six feet wide twenty miles away in the Effon Hills. PEARSON (1973).

The town has a 175 bed Mission Hospital (Wesley Guild Hospital) and a Government Hospital.

(b) ESA-OKE.

The village of Esa Oke is situated eighteen miles from the town of Ilesha in the western region of Nigeria. The people here too are in the main farmers. The majority of them are Yoruba.

The village has its own Oba (chief) who is looked upon as the head of the village.

The village has four primary schools and two secondary schools.

The focal point of the village is the market place, situated in close proximity to the Oba's palace and the health centre (where the Under Fives Clinics are held). There are

three market days each week. Brisk buying and selling
takes place and it is a very colourful sight - as is any
African Market place.

No statistics are available on population, age
structure, etc. for Esa Oke.

(2) MALAWI.

Malawi formerly known as Nyasaland lies to the South of
Tanzania and between Zambia on the West and Mozambique on the
South East.   In comparison with other African countries Malawi
is small occupying 45,747 square miles, of which 36,324 square
miles is land the rest being lakes.   Malawi has no natural
resources and the country's income is derived from the export
of tobacco, tea, cotton, ground nuts and other agricultural
products.   Increasing emphasis is now paid to tourist potential
as a source of income.

In 1969 the estimated population was 4.4 million a
projection from the 1966 population census.   95% of the
population live in rural areas.   43.9% are under fifteen years
of age and 19% under five.   An annual population increase of
3% is estimated.   COLE KING (1971)

50% of the population live in the southern region and
there is an overall population density of 111/square mile, one
of the highest in the African continent.   Malawi's population
density is more than four times that of the African Continent
as a whole and about half that of Europe.   NATIONAL STATISTICAL
OFFICE PUBLICATION (1970).

General Morbidity and Vital Statistics.

An estimate of the Infant Mortality rate calculated from
the 1966 census was 160/1,000 live births.   Total Under Five
mortality obtained from retrospective studies was between
30 to 50% according to the district.   BHIMA (1970) reported a
maternal mortality of 500-1,000 per 100,000 deliveries for
Malawi.

Health Services.

Approximately forty doctors are employed by the Ministry of Health in Malawi of whom more than half are in the three major towns of Blantyre, Zomba and Lilongwe. Another forty are employed by missions or in private practise, giving an overall doctor patient ration of 1-53,000.

The country has three Government Hospitals with 200 - 350 beds, nineteen district hospitals each with 80 - 100 beds, and staffed by a single medical officer, and fifteen rural hospitals each with 12 - 4o beds run by medical assistants. The rural hospitals have no theatre or x-ray facilities and many of them are in fact dispensaries with beds. 3,039 beds are provided by the government and a further 2,552 by missions giving an overall rate of 1.2/1,000 population. KING (1969).

In 1969 only 0.8% of the health budget was spent on preventive services. This constituted almost entirely of some environmental hygiene and smallpox control and were undertaken by a team of health assistants, auxillaries who were trained for two years in sanitation and communicable disease control. At this time personal preventive services for mother and children, immunisation programmes and health education were negligible as there were no staff trained to undertake them. COLE KING (1971) states "73 'Well baby' clinics were held regularly throughout the country but only 17 (23%) were run by the Ministry of Health, the rest being run by Mission and voluntary organisations. Analysis of total attendances showed that they saw 0.5% of the total under five population each week, most of whom were in the 0 - 1 year age group. Little

FIG 8   <u>DEVELOPMENT OF COMPREHENSIVE CHILD CARE SERVICES IN MALAWI</u>

Malawi

1968

Lake
Malawi

72
'Welfare'
Clinics

1972

Lake
Malawi

362
Under
Fives
Clinics

69
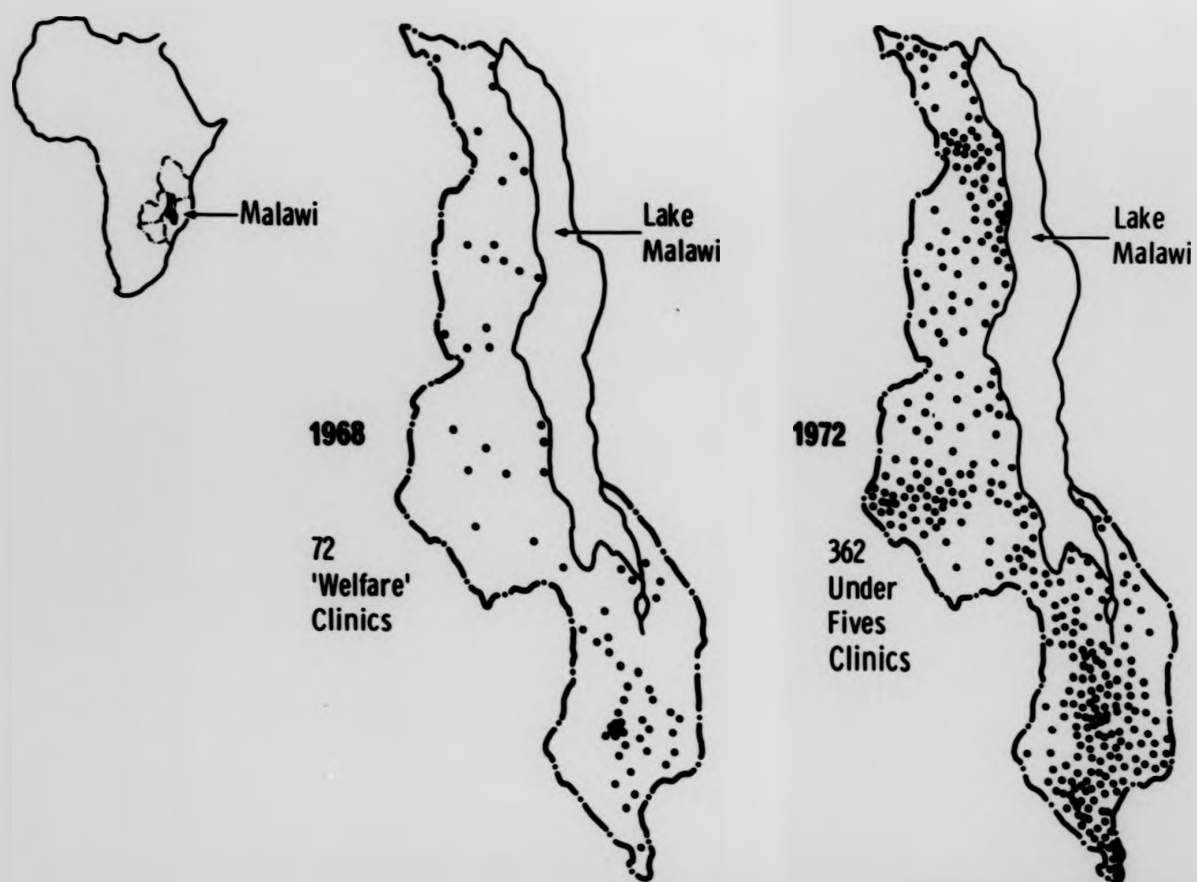
or no health education was carried out at these clinics".

The aim of the Under Fives Clinics programme started in 1969 was to reach 60% of the under fives population in a ten year period. Under Fives Clinics were started in each pre-existing medical unit adding gradually mobile clinics to increase population coverage. At present there are 362 Under Fives Clinics in Malawi. (Figure 8).

The clinics are run by medical auxillaries. The Peace-corp Volunteers working in Malawi helped in the initial organisation of the Under Fives Clinics programme. Supervision of the clinics at Central Government level is the overall responsibility of the Medical Officer in charge of Maternal and Child Health.

(a) NAMITAMBO.

Is a Local Court Area under chief Kade-were in Chiradzulu Sub-district. It has an area of approximately thirty five square miles and lies about twenty five miles south east of Blantyre The altitude rises from about 2,500 feet to the east where it borders on the Palombe plain, to about 2,800 feet westwards as it approaches the Shire Highlands.

The climate as elsewhere in Malawi, consists of a dry cold season from April to August, becoming hotter and drier through the months of September and October until the onset of rain in November. There is then a hot rainy season until March/April during which rains can be heavy.

Total population of Namitambo was 19,197 when the 1966 census was taken, and it is one of the most densely populated areas of Malawi having a population density of 500/ square mile BURGESS AND COLE KING (1969)

The main occupation is subsistence agriculture, but there are a few Migrant Workers either in Malawi or in Rhodesia or South Africa.

The people are primarily of the Lomwe tribe but there are some Yao and a few Nyanjo.

The area is served by one rural health centre at Namitambo Trading Centre, and consists of an out patient clinic and a twelve bedded Maternity Unit. The Under Fives Clinic is held at the Rural Health Centre.

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The area is served by one rural health centre at Namitambo Trading Centre, and consists of an out patient clinic and a twelve bedded Maternity Unit. The Under Fives Clinic is held at the Rural Health Centre.

(3) <u>ZAMBIA</u>.

Zambia an independent republic within the Commonwealth since 1964, occupies tropical high plateau country in South central Africa. Gently undulating plateau, mostly between 900 - 1,500 metres mean sea level and separated by gentle slopes or dissected escarpment zones dominate the scenery. Three quarters of Zambia drain to the Zambezi. From the Barotze flood plain the river flows south and then east along the Rhodesian border, plunging over the Victoria falls to enter th gorge section now largely occupied by the 274 km man made lake Kariba, the dam of which supplies most of the countries electricity. Important plateau features of Zambia are the dambos - shallow linear moisture retaining concavities that provide dry season water and thus influence rural settlement patterns. Zambia with a high rural population has as its basic resources land - most of which is still cultivated traditionally. Copper however totally dominated the mining and national economy accounting in 1969 for 97% of domestic exports and 52% of net domestic products. Zambia is the world's third largest copper producer. DAVIS (1972).

Zambia is divided into eight provinces and the capital city is Lusaka.

Population.

According to the 1969 census figures 4,057,012 people occupied some 290,000 square miles at an average density of square mile (see page 77 for population breakdown by age for Zambia for 1969). A third of the population live in the urban centres. The largest being in Lusaka (estimated population

250,000) Kitwe and Ndola. With rising expectations the larger
centres are growing too quickly through migration, and mush-
rooming peri-urban shanty settlements indicate growing social
problems for the rural migrants. They lack the skill for urban
jobs even where these are available. 98% of the people are
African but divided by many tribal groups and tongues of the
Bantu group.

"As in most other developing countries Zambia too did not
till fairly recently have legislation to make registration of
births and deaths compulsory. The amendment of the Births and
Deaths registration Act in 1972 made it possible for all races
to be registered under the Act. Before this the provision of
the Act referred to foreigners. Its effectiveness has still to
be seen, but it is a step in the right direction. In future
it is hoped that our vital statistics will be more meaningful
and reliable". NALUMANGO (1974).

Organisation of health services.

A cabinet minister heads the Ministry of Health and is
responsible for policy decisions and political direction of the
health services. He has a minister of state under him, the
Permanent Secretary and Director of Medical Services. An
assistant director of medical services in charge of preventive
services also incorporates the Maternal and Child Health
Services. The Maternal and Child Health Services are under the
direction of a Specialist Medical Officer attached to head-
quarters. He is assisted by a Senior Public Health Nurse. At
the periphery Provincial Medical Officers are responsible for
the development of services in each province assisted in five

out of the eight provinces by a Public Health nurse.   At
present

> 16 Public Health Nurses and health visitors
> 41 Community nurses.
> 25 Nutrition demonstrators of the Ministry of
>   Health and Dutch, Danish and Swedish volunteers
> 14 Zambia enrolled nurses of local authorities,

are engaged in Maternal and Health activities. The work
consists of providing ante natal and post natal care to
mothers and care of infants and pre-school children at
Government Mission and Mines Health Institutions. Except in
some urban areas no home visiting is done by Public Health
staff and no domiciliary midwifery has yet been developed
even in the urban areas. Infants and children up to the age
of five years are provided care at the Under Fives Clinic.
Since 1967 great emphasis has been placed on the establishment
of these clinics which have now grown rapidly from thirty six
in that year to 1,000 in 1973.

Health Economy.

Due to her natural resources, Zambia is one of the richest
countries in Africa. In 1963-64 the recurrent revenue was
63,718,000 Kwachas and rose to 306,111,000 Kwachas -
£112,240,700 in 1968. For the same period health expenditure
rose from 3,038,800 Kwacha or £1,420,000 to 14,788,000 Kwachas
to £6,901,534. (This is about 5% of the recurrent revenue)
With a population of 4.16 million this works out to 3 Kwacha or
£1.40 or $3.75 per head per hear for health. GERVAIS (1973)

Description of study area.

(a)   Mansa is the administrative capital of Luapula Province.
The 1969 census showed a population of 352,000 for Luapula
Province.   The population of Mansa is estimated at 6,000.   The
principal occupation in this area is subsistence farming.
Cassava, maize and rice are the main crops.

The majority of people speak Bemba.

Luapula Province is geographically situated near the
Copper belt.   However, by road one has to cross the Congo pedicle
in order to reach the Copper belt.   This situation has been
partly responsible for the slow development of the towns in
Luapula Province.

TABLE 11.

UNDER FIVES CLINICS IN ZAMBIA (GOVERNMENT MISSION AND MINE

UNITS) 1970 – 1972   NALUMANGO (1974)

Year	Main Clinics	Sub Clinics	Total
1970	312	295	607
1971	413	327	740
1972	503	448	951

Remarks –

(1)   Figures for 1972 are provisional.

(2)   In addition to clinics included in Table 11
      municipalities run their own clinics.   In 1971
      and 1972 numbers of such clinics were thirty nine
      and forty respectively.

(3)   Main clinics run a daily Under Fives Clinic while
      Sub clinics run an Under Fives Clinic weekly,
      fortnightly or monthly.

TABLE 12.

REPORTED POPULATION OF ZAMBIA WITH DETAILED BREAKDOWN OF AGE-GROUPS UNDER 15.   POPULATION CENSUS 1969.

Age groups (Years)	Males and Females (Numbers)	Percentage of age Classified population %
0	139,935	3.49
1	170,746	4.25
2	155,650	3.88
3	143,466	3.57
4	139,253	3.47
1 - 4	749,031	18.66
5	150,446	3.75
6	135,668	3.38
7	129,375	3.22
8	113,934	2.84
9	122,049	3.04
5 - 9	651,472	16.23
10	110,804	2.76
11	96,917	2.41
12	95,035	2.37
13	81,807	2.04
14	73,767	1.84
10 - 14	458,330	11.42
15 - 24	678,330	16.90
25 - 34	545,319	13.59
35 - 44	409,250	10.20
15 - 44	1,632,899	40.68
45 and over	522,024	13.01
Total	4,013,754	100.00
Unspecified age	43,258	
All ages	4,057,012	

Remarks - (1) The census took place in August 1969.   Hence the population recorded as 0 years was born in 1969, and is approximately 2/3 of the true population under 1 year of age. (2) The number in individual age groups are unreliable due to difficulties in specifying age at the time of enumeration.

METHODOLOGY.

B. FIELD STUDY.

(1) Preparation.

The survey was discussed and agreed on by the administrators and Health authorities of all three countries, i.e. Nigeria, Malawi and Zambia. In the selection of study areas one of the first considerations was to find suitable health leaders for each area to act as principal organiser and assume responsibility for the logistics of the field study.

For these reasons Ilesha (Nigeria), Esa Oke (Nigeria) Namitambo (Malawi) and Mansa (Zambia) were chosen. Each of these areas had an already existing Under Fives Clinic and it was decided to draw the sample for the field study from the community that lived at varying distances from the clinic. The clinic study comprised gathering information from the above-named clinics.

At village level permission was sought from the headman or chief of the area. Co-operation was very forthcoming.

(2) Sampling Technique.

In sample surveys the sampling techniques that are employed must be such that they fulfil the objectives of the survey and also meet the statistical requirements. FOOD AND AGRICULTURAL ORGANISATION REPORT (1949) advises "In all surveys sampling must be planned in advance, with the help of a competent statistician. The sampling technique must be reduced to simple terms for the field investigators. For example in the family surveys the investigator must be given the address of the family to be visited or instructions to survey every

second or third house, in a given street etc. They should
also know how to seek substitutes for households which refuse
to co-operate in such a way that the sample remains unbiased".

In the planning stage of the present study these principles
were observed. In this study the sampling unit was the dwelling.
Every child under the age of five who slept in the dwelling the
previous night was taken into the survey whether he was a clinic
attender or not. In developing countries distance is a critical
determinant of uptake of medical care, and it was realised that
those that live close to a medical centre can derive more benefit
from these services. For example in Kenya it was found that 40%
of out patients attending the health centre lived within five
miles from the clinic, and 30% between five and ten miles from
it. FENDALL (1965). In the present study it was decided to see
what part distance played in the utilisation of facilities of an
Under Fives Clinic. It was decided to sample a population
living at distances of $\frac{1}{2}$, 1, $1\frac{1}{2}$, 2 and $2\frac{1}{2}$ miles from the clinic.
However it was not possible to obtain a census, therefore
stratified random sampling of children was not attempted. Multi
occupation in dwellings is a common feature in West Africa. If
a family was chosen as the sampling unit then a list of families
stratified by distance would be required. And this was highly
unlikely for all the areas studied. Further even if such a list
of families was available, in randomising, some families in a
dwelling would be included while other families within the same
dwelling excluded. This would lead to a difficult situation,
and cause unpleasantness between the investigators and the
occupants. Further though dwellings were used as the sampling

unit classical random sampling could not be carried out due to
the non availability of a list of dwellings in each area, with
their addresses and their distances from the clinic. Thus the
only reasonable method was to employ the one used in this
investigation. On a map of the area, the clinic was
identified and used as the starting point. Figure 9 (a).
A grid was constructed on the map by drawing circles of radii
equal to $\frac{1}{2}$, 1, $1\frac{1}{2}$, 2 and $2\frac{1}{2}$ miles from the clinic. FIGURE 9 (b)
These circles were further divided into sectors by drawing two
lines North South and East West FIGURE 9 (c). Each of the
sectors so produced were further subdivided by a line bisecting
the circumference of each sector. FIGURE 9 (d). The mid
point in each sector X was the starting point of the field
survey in each sector. The street nearest this point was
selected on the map. Once the street was identified, and the
starting point was noted, then travelling from this point in
a direction away from the clinic every dwelling on the left hand
side of the road, having its front door facing the street was
included in the survey. Buildings not visited included schools,
churches, huts with only three walls, and derelect buildings
with no roof. Buildings were included if they had four walls
and a roof. Sometimes however these buildings were uninhabited.
Many shops were used as places of work only, and these were
excluded from the survey. However those shops which had
living accommodation attached to them were taken into
the survey. If a building was shuttered up then it would
be revisited another time. Every dwelling on the
left hand side of the street was visited. If the dwelling

FIG. 9

SAMPLING TECHNIQUE

(a) Map of Area

(b)

Boundary of
Area
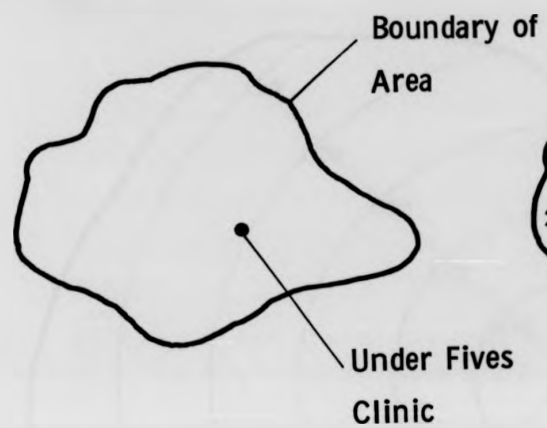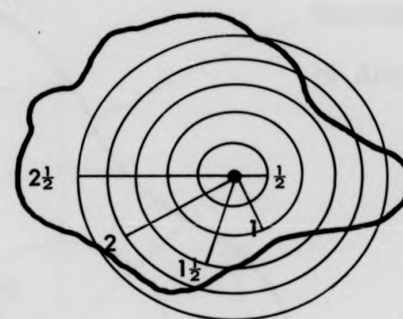
Under Fives
Clinic

(c)
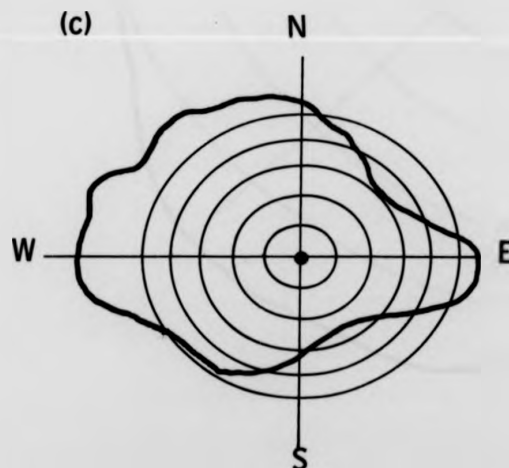
(d)
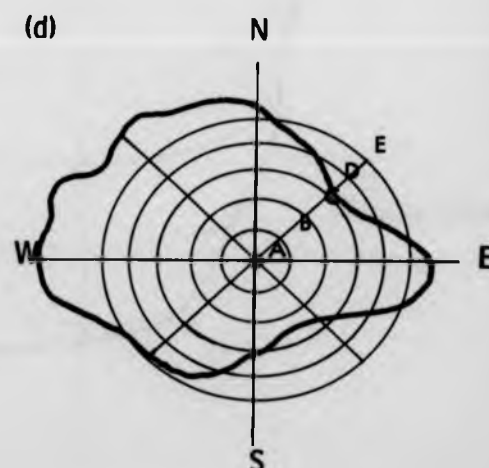
FIG. 10.
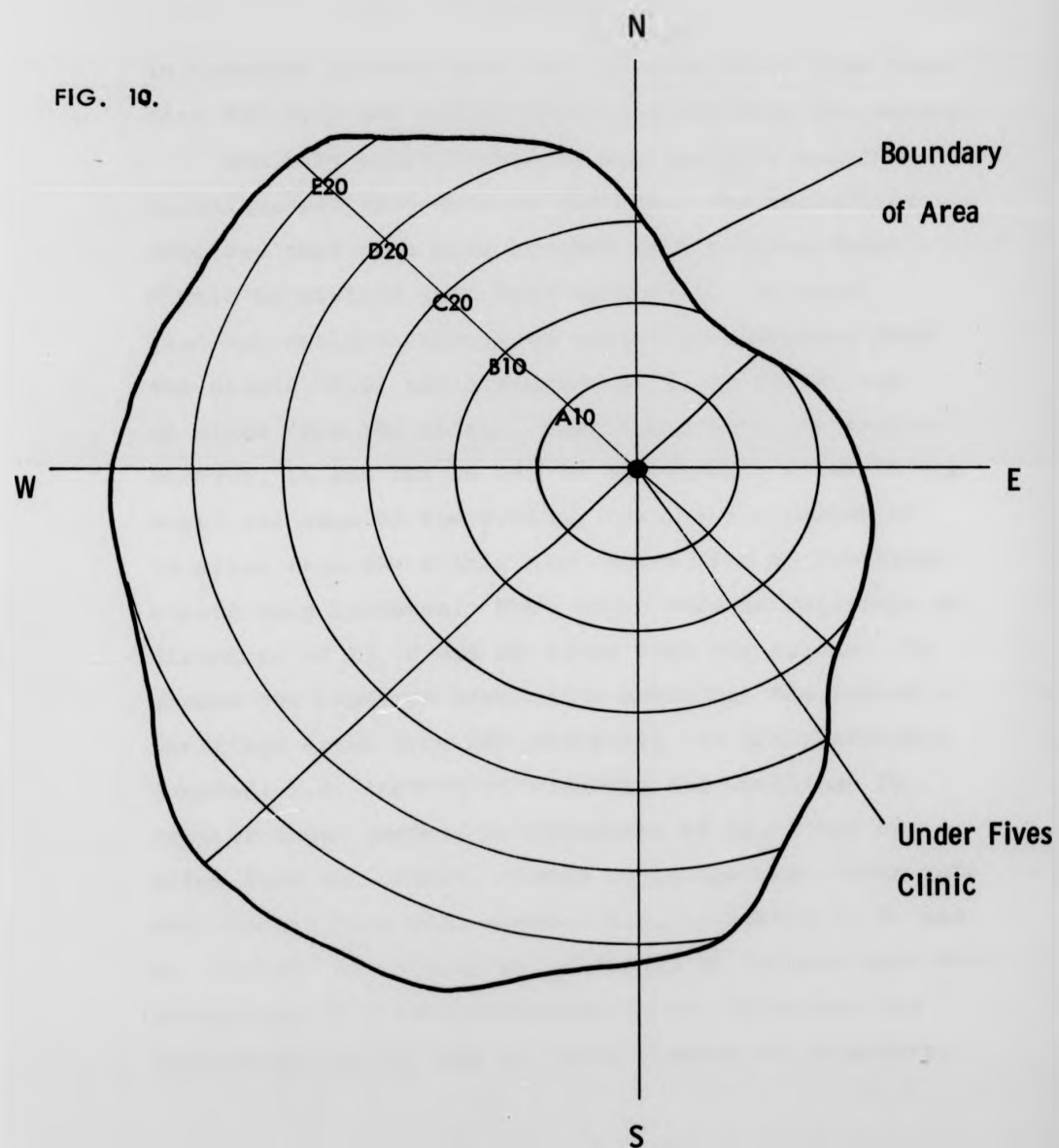
ESA-OKE

in question did not have any children under five then
that dwelling was immediately excluded from the survey.

The only modification to the original sampling
technique was that made in Esa Oke. The techniques
required that each area drained by the Under Fives
Clinic be divided into four quadrants. In each
quadrant children living at specified distances from
the clinic, i.e. the distances of $\frac{1}{2}$, 1, $1\frac{1}{2}$, 2, and
$2\frac{1}{2}$ miles from the clinic, were taken into the sample.
However, in Esa Oke in two of the quadrants (north and
east) the edge of the village fell at a distance of
$1\frac{1}{4}$ miles from the clinic, and there were no dwellings
beyond this distance. Thus there were no dwellings at
distances of $1\frac{1}{2}$, 2 and $2\frac{1}{2}$ miles from the clinic. To
ensure the required numbers of dwellings the number of
dwellings drawn from the remaining two quadrants were
doubled, i.e. instead of visiting ten dwellings in
each of these sectors at distances of $1\frac{1}{2}$, 2 and $2\frac{1}{2}$
miles from the clinic, twenty dwellings were taken into
the survey, from each sector, i.e. at points C. D. and
E. FIGURE 10. There is no reason to believe that the
proportion of clinic attenders to non attenders was
altered in Esa Oke due to these changes in procedure..

(3)   Sample Size.

The primary sampling unit was the dwelling. The object
of the survey was to obtain a representative sample of
children under five.   ETHIOPIAN MEDICAL ASSOCIATION 3RD
ANNUAL MEETING (1967) reported that "Major health conditions
were assumed to have a prevalance of 20% or greater.
To establish the differences (between baseline and resurvey
study or between study and control communities) of 10% or
more at 95% confidence levels required a minimum of two
hundred observations". If this rationale is applied to
this present study then two hundred children must be
seen in each area. However, with multi occupied dwellings it
was felt that the sample of two hundred children would be drawn
from relatively few dwellings. i.e. if four children under
five were found in each of the dwellings then visiting fifty
dwellings would yield the required sample. However since the
sampling was stratified by distance it was felt that a larger
number of dwellings situated at varying distances need be
taken into the sample. It was decided to visit two hundred
dwellings in each of the four study areas each dwelling
having at least one child under five. In the time available
it was felt that this was a feasible number of dwellings to
attempt to visit.

During the planning stage of study some comments made by
WEBB (1969) proved useful. From her study it was found that on
average three children under five could be expected per dwelling
KIMMANCE (1970) working in Swaziland found an average of 2.8

children under five per home.

Working with an interpreter it was estimated that the 'interviewing' in each dwelling would take an average of thirty to forty minutes. As such it would be possible to visit eight to ten dwellings (each having at least one child under five) in an eight hour working day. This would leave sufficient extra time for any revisits that might be necessary.

(4) Interpreter. (Selection)

The field survey was carried out using questionnaires. They were interviewer administered, and not self administered. The latter were thought to be impractical in the areas chosen for the field survey in view of the low literacy rates.

Much thought was given to the choice of an interpreter. The author herself did not speak the local languages, and it would not have been feasible for her to study the different languages and dialects that she would have encountered in the four areas of the survey in the time available. Hence the questionnaires were administered via an interpreter. The interpreter should not only be profficient in the local language but also have a good knowledge of English to be able to understand and translate the questions and answers. Since the interviews were conducted in the homes and since it was considered more likely to meet mothers than fathers during the home visits it was decided that ideally the interpreter should be female. The interpreter must sense and understand the needs and the attitudes of the interviewed and should be capable of making the interviewed feel comfortable. She must question with kindness and listen quietly. She must speak with the interviewed

as with friends and this she can do only when she regards the
interviewer as a friend.

(5) Questionnaires.

The questionnaires were three in number (Appendix 2)
The first contained information on the dwelling, and was
completed for every dwelling having had at least one child
under the age of five who slept in it the previous night.
The questionnaire was designed to obtain information on the
type of housing, water supply, the sewage and refuse
disposal, number of occupants in the dwelling their age and
sex breakdown. A question was included on the type of trade
if any, carried out in the dwelling. Experience WOODLAND
(1971) has shown that especially in West Africa, many women
carried out small scale trading in their own dwelling. This
could be their only source of income, or it could be to
supplement the family earnings. It was felt that information
on this might be correlated with social status, and also with
the educative value to the child. Also if the trade was one
which took up a great deal of the mother's time, then this
might act as an obstacle to her taking her child regularly
to the Under Fives Clinic. A word of explanation is necessary
on the inclusion of question on   type of animal if any
kept in dwelling. In many African societies animals are not
kept as pets but are usually considered as an investment and
a source of income. For example cattle are used as 'bride
price' and chicken reared for the purpose of sale of eggs.
Thus information from this question could give an indication
of family social status. Direct questions on family income

and expenditure on housekeeping were intentionally avoided.
It was felt that accuracy of answers to this type of question
was doubtful and that such questions might arouse suspicion
in the minds of the mothers as to the real purpose of the
survey. The mothers might even feel that the information so
gathered would be for income tax purposes etc. Experiences
from other studies WYON AND GORDON (1971) has shown that
mothers get suspicious when asked questions pertaining to
earnings and expenditure. A measure of economic status was
however no more than a peripheral interest in the study and
it was not worth endangering the rapport with the villagers
that direct questionning would have meant.

Early in the survey in Nigeria it was discovered that
the mothers concept of time and distance was poor; the author
was able to test this out by asking mothers at the end of the
interview how long the mother thought the interview lasted.
The average time spent was sixty to eighty minutes but the
answers varied from five to ninety minutes; as a direct
result of this observation the questions 21 and 22 in
questionnaire 1 (appendix page 400) on time taken to fetch
water were excluded.

Questionnaire number 2 was filled in for every family
within the dwelling that had at least one child under the
age of five years. This question sought to elicit
information on parity of mother, number of living children,
number of children born to mother (Appendix 2 page 401)
Information was also obtained on the years of birth of the
first and last child born to mother. A still birth or a

neo-natal death could reduce the birth intervals.

Questionnaire number 2 also contained a set of questions on the mothers attitudes to the causation of disease, activities at the clinic and the reasons for attending or not attending the Under Fives Clinic. Further questions were included on the mothers ante natal history, i.e. if in the last pregnancy the mother visited the ante natal clinic, if so the number of visits and the reasons for attendance.

The third questionnaire was completed for each child under five who slept in the dwelling the previous night. If the child concerned was away from home at the time of visit then the dwelling was revisited once.

The questions in this questionnaire were of three types.
First set. Here the answers were provided by the father, mother or guardian. These related to the age of child (if not available on the 'Road-to-health' card) past illnesses especially measles and whooping cough, number of stools passed in the last twenty four hours and episodes of diarrhoea in the past three months. Also an inquiry was made of the child's health on the day of interview, i.e. is the child well today?
Second set. The answers to this set of questions was extracted from the 'Road-to-Health' card and this was only possible for the children who attend the Under Fives Clinic and who had the card with them on the day of survey. Ideally all the children attending the Under Fives Clinic should have the 'Road-to-Health' card with them, but occasionally it was not available for perusal on the day of survey because it was

lost or temporarily misplaced. Occasionally it was not available because it was, together with the family heirlooms, locked away in a cupboard or trunk and the key taken away by the father. This suggests the value attached to the card by some of the mothers, but to some extent defeats the purpose of the card which is meant to be available at all times, especially if the child suddenly fell ill and had to seek medical attention. Information obtained from the card was as follows:

Confirmation of date of birth, date card issued, information of immunisation given and their dates, weights of the child at previous clinic visits, total number of hospital admissions, and total number of visits to the Under Fives Clinic.

Third set. The answers to this set of questions were provided by observing and weighing the child. The information so obtained included, the weight of the child on the day of interview, presence or absence of skin lesions, and the presence or absence of umbilical hernia. It was decided to keep the measurements to a minimum for lack of time. Heights and weights are considered the most valid anthropometric measurements of young children which serve as an index of growth and development. Heights best reflects a child's past history, because it is stable and not affected by recent nutritional disturbances. Weight reflects both past and recent history of the child's health, although its interpretation may be ambiguous for each child unless the child has been followed longitudinally. However in the

assessment of the health status of a group of children of
different ages, weight would be a more realistic measurement
to make. A single weight measurement could be used as a
gross assessment of a population of children. Also the field
conditions in developing countries allow weight to be
measured far more accurately and easily than height, which is
almost impossible to obtain with reasonable accuracy in young
children.

The questionnaires were filled in order, i.e. 1, 2 and 3.
The arrangement of questions in them were such that the
answers to the early ones did not in any way embarass or upset
the mother whose child might not have attended the .clinic.
'Road-to-health' cards were only asked for at the end of the
interview. Also procedures such as weighing the child were
left to the last so that if the child was upset or was crying
then this would not have interrupted the interview.

Each child had three questionnaires completed, i.e. the
Dwelling,Family and Child questionnaires. The answers to the
family questionnaires would be identical to that of all his
siblings and the answers to the dwelling questionnaires would
be identical to that of any other children under five living
in the same dwelling.

(6) Weighing of children.

Growth is one of the most sensitive indicators of
nutritional status of a child. Physical changes characteristic
of malnutrition do not appear until the child has fairly
advanced malnutrition. Since weight deficiencies appear before
there are any other changes JELLIFFE (1963,)   a method of

evaluation which incorporates measurement of weights will allow early recognition of malnutrition and also will indirectly help assess the beneficial effects if any of the clinic activities. SCRIMSHAW et al (1968) have shown the interaction of infection and malnutrition. Since the work of the Under Fives Clinic involves prevention of the commonly occurring infectious diseases by immunisation and health education it is hoped that with time the work of the clinic would be reflected in the weight gain among the clinic attenders.

Weighing of children.

In a report of the CONFERENCE ON THE USE OF GROWTH CHARTS (1971) on the use of growth charts for assessing progress of children and teaching of parents JELLIFFE AND JELLIFFE (1971) stated that workers in fifty two countries agreed on the following criteria for a good weighing device for use in developing countries.

1.   Low cost.

Price no more than $35.00 U.S. scale. The scales used in the present study cost £5.00

2.   Sufficient accuracy.

A level of accuracy of 100 gms was generally acceptable. The scales used in the study were graduated in lbs and kgms and were graduated up to 25 kgms and were considered accurate to within $\frac{1}{4}$ lb or 100 gms.

3.   Sturdiness. Stress was given to the need for simplicity and ease of repair. Durability; use of non-rusting material and ease of cleaning were also considered important.

FIG 11

SIMPLE HANGING SCALE- A SIMILAR SCALE WAS USED IN THE
FIELD SURVEY OF THE PRESENT STUDY

The Salter hanging scale used in present study complied with these requirements.

4. <u>Weight range</u>.

For weighing children up to the age of five a range of up to 25 kg was suggested. The scale used in the present survey had a range of 25 kg.

5. <u>Calibration</u>.

The need for continued checking and calibration of apparatus was widely emphasised. In the present study the weighing scales used in the field were checked twice weekly against the scales used at the clinic. It must be emphasised that recalibration of the scales was not required during the entire period of the study.

The scales used in the present study was the Salter spring balance. The scales had a circular dial calibrated in lbs and kgms. The hook of the scales was suspended from a strong beam or at times from a branch of a tree. The child was placed in a specially made washable cloth trousers. The trousers were then suspended from the bottom of the scale. The reading was taken at eye level, once the initial movement of the scale had ceased. It was important to ensure that the child stayed still while the reading was being taken. A few children were apprehensive but with a little persuasion it was possible to get all except 23 children weighed by this method. (FIGURE 11). The trousers were made of cloth and posed rather a problem in that they had to be washed and dried very frequently. In spite of having available a spare pair of trousers it was felt that plastic or other easily cleanable material would have been more practical for the purpose.

C. CLINIC STUDY.

(1) Objectives.

One of the objectives of the field study was to obtain information on the uptake of services of the Under Fives Clinic. In order to aid interpretation of the findings from the field survey information on the activities of the clinics in the areas studied would be necessary.

Information from the four clinics was obtained using the following sources:

(1) Clinic attendance records.

(2) Observations made during clinic sessions.

(3) Personal communications with clinic staff.

(2) Clinic Records.

The 'Road-to-Health' card, kept at home by the mother and brought to the clinic at each visit, is the most informative record as far as each individual child was concerned. However these records cannot be used to give an indication of the daily work load of the clinic, for example on the total number of children seen per session, the number and type of immunisation given, and the staff employed. This information is useful for administrative purposes, and therefore it is necessary to at least keep minimal records at the clinics of these items of information. Some clinics use registers for recording the name, address and other personal details of the clinic attenders. In addition other information is collected on each individual child at each attendance, for example, treatment and immunisation given at each visit. However, with the introduction of the home-based records, record keeping at clinics has been reduced to a minimum.

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Many Under Fives Clinics have adopted the tally chart system of record keeping to obtain information on daily attendances and immunisations. FIGURE 12 page 97.

In the present study it was decided to collect whatever relevant information was available at the clinic by perusal of available records, e.g. record books, registers, tally charts. It was decided to look at the records available for the year preceding the year of study. The search was limited to the data for one year only. It was thought that in the time available for the clinic study this would be feasible. The author had no prior knowledge of what information would be available at the clinics. As such the decision on what information should be collected was left till each clinic was visited.

(3) Observations made during clinic sessions.

It was decided that the author should spend up to four sessions at each Under Fives Clinic. These sessions should preferably be arranged to cover different session times and different days. For example, if clinics were held both in the morning and afternoon then visits should be attempted at each time. Also if there was a marked variation in the numbers attending a clinic on a particular day of the week, for example on the local market day, it was felt that one visit should be made to the clinic on these days.

All observations that were made were informal. It was decided that the author should be a passive observer at the clinic rather than take any active part in the activities of

the clinic. This was mainly in order to maintain the goodwill and co-operation of the clinic staff. No measurements or time and motion studies were carried out for the same reason.

(4) <u>Personal communication with clinic staff</u>.

Information on staffing, hours of work, session times, and qualifications of the staff was obtained by questionning the clinic staff.

DATA ANALYSIS

The information collected from the field survey was transfered onto code sheets. From these sheets the information was punched onto Hollerith cards, and then computer analysed.

FIG: 12

UNDER FIVE CLINIC ATTENDANCES

Date ....July 9 - 16th '73

Name of the Clinic ....Manson.....

		Total
New attendances	ØØØØØ ØØØØØ ØØØØØ ØØØØØ ØØØØØ ØØØØØ ØØØ00 00000 00000 00000 00000 00000 00000 00000 00000 00000 00000 00000 00000 00000	33
Repeat attendances	ØØØØØ ØØØØØ ØØØØØ ØØØØØ ØØØØØ ØØØØØ ØØØØØ ØØØØØ ØØØØØ ØØØØØ ØØØØØ ØØØØØ ØØØØØ ØØØØØ 00000 00000 00000 00000 00000 00000 00000 00000 00000 00000 00000 00000 00000 00000 00000 00000	70
Underweight new attendances	ØØØØØ ØØØØØ ØØØØØ 00000 00000 00000	15.
Underweight repeat attendances	ØØØØØ ØØØØØ ØØØØØ ØØØØØ Ø0000 00000	21.
Smallpox vaccination	ØØØØØ ØØØØØ ØØØØØ ØØØ00 00000 00000 00000 00000	18

D.P.T.

	1	2	3	
	ØØØØØ ØØØØØ ØØØØØ ØØ000 00000 00000	ØØØØØ ØØØØØ ØØØØØ ØØØ00 00000 00000	ØØØØØ 00000 00000 00000	1- 17 2- 18 3- 5 .

CHAPTER IV

RESULTS OF FIELD SURVEY

SURVEY   POPULATION

TABLES   13 - 17.

TABLE 13

THE NUMBER OF DWELLINGS VISITED, BY AREA AND BY PARTICIPATION
IN SURVEY.

DWELLINGS	A R E A				
	ILESHA (NIGERIA)	ESA OKE (NIGERIA)	NAMITAMBO (MALAWI)	MANSA (ZAMBIA)	ALL AREAS
Total number of dwellings visited	249	249	240	282	1020
Number of dwellings willing to participate in survey	248+	249	240	282	1019
% dwellings willing to participate	99.6%	100%	100%	100%	99.9%

+ In Ilesha occupants of one dwelling only refused to take part in
the survey. (Table 13)
The occupants of this dwelling were Jehovah's Witnesses and refused
to participate in survey on religious grounds. Their faith did
not permit them to accept any type of medical service. This dwel-
ling was excluded from the survey. The response rate was a 100%
for all areas except Ilesha where it was 99.6%.

TABLE 13

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ling was excluded from the survey. The response rate was a 100%
for all areas except Ilesha where it was 99.6%.

TABLE 14

DISTRIBUTION OF DWELLINGS VISITED BY NUMBER AND PERCENTAGE
DWELLINGS WITH CHILDREN UNDER THE AGE OF FIVE BY AREA.

DWELLINGS	AREA				
	ILESHA (NIGERIA)	ESA-OKE (NIGERIA)	NAMITAMBO (MALAWI)	MANSA (ZAMBIA)	ALL AREAS
Number of dwellings willing to participate in survey	248	249	240	282	1019
Dwellings with children under 5 - and therefore included in survey	183	197	200	200	780
Percentage of dwellings with children under 5	73.5%	79.1%	83.3%	70.9%	77%

Table 14 shows the percentage of dwellings which had children
under five living in them. It is seen that even though 1019
dwellings were visited only 780 or 77% had at least one child
under the age of five living in the dwelling.

In Ilesha 73.5% in Esa-Oke 79.1% in Namitambo 83.3% and in Mansa
70.9% dwellings had children under the age of five.

TABLE 15

DISTRIBUTION OF DWELLINGS WITH CHILDREN UNDER THE AGE OF FIVE
BY TOTAL NUMBER OF FAMILIES AND CHILDREN SEEN BY MEAN NUMBER OF
CHILDREN PER DWELLING BY AREA

	AREA				
	ILESHA (NIGERIA)	ESA-OKE (NIGERIA)	NAMITAMBO (MALAWI)	MANSA (ZAMBIA)	ALL AREAS
Number of dwellings with children under 5	183	197	200	200	780
Total number of families with children under 5	323	299	202	213	1037
Total number of children under 5	434	405	261	314	1414
Mean number of children under 5 per dwelling	2.37	2.05	1.30	1.57	1.81

Table 15 shows the mean number of children under five per
dwelling. In Ilesha 2.37 children per dwelling were seen. In
Esa-Oke 2.05 children per dwelling were found while in Namitambo
1.30 children per dwelling were seen and in Mansa 1.57 children
per dwelling were seen. The over all figure for all areas was
1.81 children per dwelling

TABLE 16

NUMBER OF DWELLINGS WITH CHILDREN UNDER FIVE BY DISTANCE OF
DWELLING FROM UNDER FIVES CLINIC AND BY AREA.

DISTANCE OF DWELLINGS FROM THE UNDER FIVES CLINIC	A R E A				
	DWELLINGS ILESHA (NIGERIA)	DWELLINGS ESA OKE (NIGERIA)	DWELLINGS NAMITAMBO (MALAWI)	DWELLINGS MANSA (ZAMBIA)	ALL AREAS
½ mile	20.2% (37)	18.8% (37)	20.0% (40)	20.0% (40)	19.7% (154)
1 mile	19.7% (36)	19.8% (39)	20.0% (40)	20.0% (40)	19.9% (155)
1½ miles	21.9% (40)	20.3% (40)	20.0% (40)	20.0% (40)	20.5% (160)
2 miles	19.1% (35)	20.8% (41)	20.0% (40)	20.0% (40)	20.0% (156)
2½ miles	19.1% (35)	20.3% (40)	20.0% (40)	20.0% (40)	19.9% (155)
All distances	100.0% (183)	100.0% (197)	100.0% (200)	100.0% (200)	100.0% (780)

Table 16.

It was aimed to visit forty dwellings with children under the
age of five for each distance from the clinic, i.e. ½ mile, 1
mile, 1½, 2 and 2½ miles from the clinic per area. This was
achieved in Namitambo and Mansa. In Ilesha and Esa Oke the
total number of children per dwelling was greater than in the
other two areas. This was as a direct result of the dwellings
in these two areas being multi-occupied dwellings (vide Table 15
mean number of children per dwelling). Due to the above more
questionnaires had to be completed in Ilesha and Esa Oke; this
resulted in fewer dwellings being visited in these areas due to
lack of time. In Esa Oke the sampling technique was slightly
modified in order to obtain the required number of dwellings
(vide page 83.)

TABLE 17.

DISTRIBUTION OF CHILDREN UNDER FIVE BY THE DISTANCE OF THEIR

DWELLINGS FROM CLINIC BY AREA

DISTANCE OF THE CHILDREN'S DWELLING FROM UNDER FIVES CLINIC	A R E A				
	CHILDREN ILESHA (NIGERIA)	CHILDREN ESE OKE (NIGERIA)	CHILDREN NAMITAMBO (MALAWI)	CHILDREN MANSA (ZAMBIA)	CHILDREN ALL AREAS
½ mile	22.1% (96)	22.5% (91)	18.0% (47)	20.1% (63)	21.0% (297)
1 mile	22.6% (98)	17.3% (70)	20.3% (53)	16.9% (53)	19.4% (274)
1½ miles	21.9% (95)	20.7% (84)	21.5% (56)	18.4% (58)	20.8% (293)
2 miles	18.4% (80)	19.5% (79)	18.7% (49)	24.8% (78)	20.2% (285)
2½ miles	15.0% (65)	20.0% (81)	21.5% (56)	19.8% (62)	18.6% (264)
TOTAL	100.0% (434)	100.0% (405)	100.0% (261)	100.0% (314)	100.0% (1414)

Table 17 shows the distribution of children under the age
of five by distance of dwelling from clinic.

In Ilesha at each distance, i.e. ½ mile, 1 mile, 1½ miles
and 2 miles from clinic, between 18.4 and 22.6% of children
are seen to live. However only 15% of children live at a
distance of 2½ miles from clinic. This could have arisen
due to fewer dwellings being sampled at this distance in
Ilesha (Table 17). In Esa Oke and Namitambo the children

are evenly distributed at each distance from the clinic, i.e.
between 17.3% and 22.5% in Esa Oke and 18.0% and 21.5% in
Namitambo. In Mansa, at distances of $\frac{1}{2}$, $1\frac{1}{2}$ and $2\frac{1}{2}$ miles
from clinic, the pattern is similar to Esa Oke and Namitambo.
However, at a distance of 1 mile there were only 16.9% of
children and at 2 miles 24.8%. There does not seem to be
any likely explanation for this.

Tables 13 - 17 show the results of sampling. There was no prior knowledge of the numbers of dwellings in each area that would not have any children under the age of five. As such in order to maintain uniformity for all areas it was decided to take into the sample only dwellings which had at least one child under the age of five. From the study it was shown that overall for all areas 23% of the dwellings had no children under the age of five (Table 14).

In the study it was decided to see if distance of the dwelling from the clinic was an important factor in the uptake of clinic services It was decided to sample dwellings with children under five situated at specified distances from the clinic. The distances were $\frac{1}{2}$, 1, $1\frac{1}{2}$, 2 and $2\frac{1}{2}$ miles from the clinic. A total of 200 dwellings from each area of which 20% or 40 dwellings from each specified distance were to be taken into the survey. Table 16 shows that for each area and at each distance the percentage of dwellings seen approximated to 20%. The range was 18.8% - 20.8%

If the distribution of children in the dwellings in each area was fairly constant then it could be assumed that approximately equal numbers of children would be seen living at each distance from the clinic. There was no reason to believe that this would not be so. Table 17 confirms that there were approximately equal numbers of children living in the dwellings at different distances from the clinic.

The range for all areas taken together was 18.7% - 21.0%.

CHARACTERISTICS OF ALL DWELLINGS

TABLES 18 - 37.

TABLE 18.

DISTRIBUTION OF DWELLINGS BY NUMBER OF CHILDREN UNDER FIVE PER DWELLING BY AREA.

NUMBER OF CHILDREN UNDER FIVE PER DWELLING	AREA				
	ILESHA (NIGERIA)	ESA OKE (NIGERIA)	NAMITAMBO (MALAWI)	MANSA (ZAMBIA)	ALL AREAS
0	26.3% (65)	21.0% (52)	17.0% (40)	28.8% (82)	23.0% (239)
1	26.2% (64)	33.0% (83)	60.0% (145)	27.8% (108)	39.2% (400)
2	22.0% (55)	25.0% (63)	20.0% (49)	27.0% (75)	24.0% (242)
3	13.2% (33)	11.0% (27)	3.0% (6)	5.0% (13)	8.0% (79)
4	6.0% (15)	6.0% (14)	0.0% (0)	1.0% (3)	3.0% (32)
5	2.0% (6)	2.0% (5)	0.0% (0)	0.4% (1)	1.2% (12)
6	2.0% (4)	0.8% (2)	0.0% (0)	0.0% (0)	0.7% (6)
7	1.1% (3)	0.8% (2)	0.0% (0)	0.0% (0)	0.5% (5)
8	0.4% (1)	0.4% (1)	0.0% (0)	0.0% (0)	0.2% (2)
9	0.8% (2)	0.0% (0)	0.0% (0)	0.0% (0)	0.2% (2)
TOTAL	100.0% (248)	100.0% (249)	100.0% (240)	100.0% (282)	100.0% (1019)

In Table 18 it is seen that the number of children per dwelling differed considerably between the West African and the Central African areas. In Ilesha thirty one dwellings had four or more children under the age of five, and in Esa Oke twenty four dwellings had four or more children, while in Namitambo there were no dwellings that had more than three children under the

<u>TABLE 18</u>   (Continued)

age of five, while in Mansa three dwellings had four children
under the age of five, and one dwelling had five children under
the age of five.

In Ilesha there were two dwellings that had nine children under
the age of five, and Esa Oke had one dwelling that had eight
children under the age of five.

TABLE 19

DISTRIBUTION OF THE DWELLINGS BY THE NUMBER OF FAMILIES WITH CHILDREN UNDER FIVE PER DWELLING BY AREA.

FAMILIES PER DWELLING	A R E A				
	ILESHA (NIGERIA)	ESA OKE (NIGERIA)	NAMITAMBO (MALAWI)	MANSA (ZAMBIA)	ALL AREAS
1	56.4% (103)	68.0% (134)	99.0% (198)	94.0% (188)	79.8% (623)
2	24.0% (44)	19.0% (37)	1.0% (2)	5.5% (11)	12.1% (94)
3	12.0% (22)	9.0% (18)	0.0% (0)	0.5% (1)	5.3% (41)
4	5.5% (10)	3.0% (6)	0.0% (0)	0.0% (0)	2.1% (16)
5	1.1% (2)	1.0% (2)	0.0% (0)	0.0% (0)	0.5% (4)
6	0.5% (1)	0.0% (0)	0.0% (0)	0.0% (0)	0.1% (1)
7	0.5% (1)	0.0% (0)	0.0% (0)	0.0% (0)	0.1% (1)
TOTAL	100.0% (183)	100.0% (197)	100.0% (200)	100.0% (200)	100.0% (780)

Table 19 shows that far more dwellings in Ilesha and Esa Oke were multi-occupied, i.e. had more than one family living in a dwelling. In Ilesha 36 out of 183 dwellings, i.e. 19.6% had three or more families per dwelling. In Namitambo however 99.0% of the dwellings had only one family per dwelling while in Mansa 94.0% of dwellings were occupied by one family only.

TABLE 20.

DISTRIBUTION OF DWELLINGS BY NUMBER OF ADULT MALES IN DWELLING
BY AREA

ADULT MALES IN DWELLING	A R E A				
	ILESHA (NIGERIA)	ESA OKE (NIGERIA)	NAMITAMBO (MALAWI)	MANSA (ZAMBIA)	ALL AREAS
None	12.0% (22)	8.0% (16)	45.5% (91)	8.5% (17)	19.0% (146)
1	25.0% (46)	40.0% (79)	53.5% (107)	83.5% (167)	51.0% (399)
2	24.0% (44)	25.0% (49)	1.0% (2)	5.0% (10)	13.0% (105)
3	15.0% (28)	14.0% (28)	0.0% (0)	2.0% (4)	8.0% (60)
4	12.0% (22)	5.0% (10)	0.0% (0)	1.0% (2)	4.0% (37)
5	8.0% (14)	5.0% (10)	0.0% (0)	0.0% (0)	3.0% (24)
6	2.0% (4)	2.0% (4)	0.0% (0)	0.0% (0)	1.0% (8)
7 and over	2.0% (3)	1.0% (1)	0.0% (0)	0.0% (0)	1.0% (4)
TOTAL	100.0% (183)	100.0% (197)	100.0% (200)	100.0% (200)	100.0% (780)

Table 20 shows the distribution of adult males per dwelling.
In Ilesha, Esa Oke and Mansa between 8% and 12% dwellings did
not have an adult male living in them. However, in Namitambo
it is interesting to note that 45.5% dwellings, i.e. almost
half the dwellings visited did not have an adult male in them.

TABLE 21

DISTRIBUTION OF DWELLINGS BY TOTAL NUMBER OF MALES IN DWELLING BY AREA.

TOTAL NUMBER OF MALES IN DWELLING	A R E A				
	ILESHA (NIGERIA)	ESA OKE (NIGERIA)	NAMITAMBO (MALAWI)	MANSA (ZAMBIA)	ALL AREAS
None	2.0% (3)	1.0% (2)	13.0% (26)	3.0% (6)	5.0% (37)
1	3.0% (6)	3.5% (7)	32.0% (64)	23.0% (46)	16.3% (123)
2	11.0% (20)	10.0% (19)	35.5% (71)	28.5% (57)	21.2% (167)
3	14.0% (26)	12.0% (23)	13.5% (27)	22.5% (45)	15.5% (121)
4	14.0% (26)	17.5% (36)	4.0% (8)	14.0% (28)	12.5% (98)
5	11.0% (21)	8.0% (16)	1.0% (2)	6.5% (13)	7.0% (52)
6	10.0% (18)	14.0% (27)	1.0% (2)	1.5% (3)	6.0% (50)
7	10.0% (18)	9.0% (17)	0.0% (0)	0.0% (0)	4.5% (35)
8	6.0% (11)	10.0% (20)	0.0% (0)	0.5% (1)	4.0% (32)
9	5.0% (9)	3.5% (7)	0.0% (0)	0.5% (1)	2.0% (17)
10 and over	14.0% (25)	11.5% (23)	0.0% (0)	0.0% (0)	6.0% (48)
TOTAL	100.0% (183)	100.0% (197)	100.0% (200)	100.0% (200)	100.0% (780)

Table 21 shows the total number of males in the dwellings. This table is an extension of Table 20. Here the male children have been added on to the number of adult males in

<u>TABLE   21   (Continued)</u>

the dwelling.   Again it is seen that in Namitambo none
of the dwellings have over six males per dwelling,
while in Ilesha there are twenty five dwellings that
had ten or more males in the dwelling.

The modal value for total males per dwelling in Ilesha
was four, in Esa Oke four, in Namitambo two and in Mansa
two.   The overall figure for all areas was two.

TABLE 22

DISTRIBUTION OF DWELLINGS BY NUMBER OF ADULT FEMALES IN DWELLING BY AREA.

ADULT FEMALES IN DWELLING	A R E A				
	ILESHA (NIGERIA)	ESA OKE (NIGERIA)	NAMITAMBO (MALAWI)	MANSA (ZAMBIA)	ALL AREAS
None	0.0% (0)	0.0% (0)	0.0% (0)	1.0% (2)	0.3% (2)
1	11.0% (20)	10.0% (19)	85.5% (171)	79.0% (158)	46.6% (368)
2	19.0% (34)	28.0% (56)	13.0% (26)	14.0% (28)	18.3% (144)
3	17.0% (32)	22.0% (44)	1.5% (3)	5.0% (10)	11.0% (89)
4	22.0% (41)	16.0% (32)	0.0% (0)	1.0% (2)	10.0% (75)
5	12.0% (22)	11.0% (21)	0.0% (0)	0.0% (0)	6.0% (43)
6	9.0% (16)	7.0% (14)	0.0% (0)	0.0% (0)	4.0% (30)
7	4.0% (7)	3.5% (7)	0.0% (0)	0.0% (0)	2.0% (14)
8	3.0% (6)	2.0% (3)	0.0% (0)	0.0% (0)	1.0% (9)
9	1.0% (2)	0.5% (1)	0.0% (0)	0.0% (0)	0.4% (3)
10 and over	2.0% (3)	0.0% (0)	0.0% (0)	0.0% (0)	0.4% (3)
TOTAL	100.0% (183)	100.0% (197)	100.0% (200)	100.0% (200)	100.0% (780)

Table 22 shows the total number of adult females per dwelling. If this table is compared with Table 20 which shows the total number of adult males it is seen that in all four areas there is

TABLE 22 (Continued)

preponderance of females. It is seen that in Ilesha, Esa-Oke
and in Namitambo all dwellings had at least one adult female in
the dwelling while 12% dwellings in Ilesha 8% in Esa-Oke 45.5%
in Namitambo and 8.5% in Mansa had no adult males in the dwelling
(Table 20) 56 or 31% dwellings in Ilesha and 46 or 24% of dwellings
in Esa Oke had five or more adult females in the dwellings and in
Mansa only 1% of the dwellings, i.e. two dwellings had four adult
females in the dwelling.

TABLE 23

DISTRIBUTION OF DWELLINGS BY TOTAL NUMBER OF FEMALES IN DWELLING BY AREA.

TOTAL NUMBER FEMALES IN DWELLING	AREA				
	ILESHA (NIGERIA)	ESA OKE (NIGERIA)	NAMITAMBO (MALAWI)	MANSA (ZAMBIA)	ALL AREAS
None					
1	0.5% (1)	1.0% (2)	27.0% (54)	11.5% (23)	10.0% (80)
2	7.0% (13)	6.0% (12)	39.0% (78)	28.5% (57)	21.0% (160)
3	11.0% (20)	13.0% (26)	24.0% (48)	24.0% (48)	18.0% (142)
4	8.0% (14)	10.0% (20)	6.5% (13)	23.5% (47)	12.0% (94)
5	13.0% (23)	12.0% (23)	2.5% (5)	9.5% (19)	9.0% (70)
6	11.0% (20)	10.0% (19)	0.5% (1)	2.5% (5)	6.0% (45)
7	11.0% (21)	11.0% (21)	0.5% (1)	0.5% (1)	6.0% (44)
8	10.0% (18)	9.0% (17)	0.0% (0)	0.0% (0)	4.0% (35)
9	9.0% (17)	8.0% (16)	0.0% (0)	0.0% (0)	4.0% (33)
10	7.0% (12)	8.0% (15)	0.0% (0)	0.0% (0)	3.0% (27)
11	3.0% (6)	4.0% (8)	0.0% (0)	0.0% (0)	2.0% (14)
12 and over	9.5% (18)	9.0% (18)	0.0% (0)	0.0% (0)	5.0% (36)
TOTAL	100.0% (183)	100.0% (197)	100.0% (200)	100.0% (200)	100.0% (780)

Table 23 is an extension of Table 22. It shows the total number of females in the dwellings. This included female adults and

<u>TABLE 23</u> (Continued)

children.   71 or 28.5% dwellings in Ilesha have more than
seven females in the dwellings and in Esa-Oke 74 dwellings have
over
˄seven females in the dwellings.

In Namitambo and Mansa no dwellings have over seven females in
them.

TABLE 24

<u>DISTRIBUTION OF DWELLINGS BY TOTAL NUMBER OF OCCUPANTS BY AREA.</u>

TOTAL NUMBER OF PERSONS IN DWELLINGS	AREA				
	ILESHA (NIGERIA)	ESA OKE (NIGERIA)	NAMITAMBO (MALAWI)	MANSA (ZAMBIA)	ALL AREAS
0 - 1					
2 - 3	2.0% (3)	1.0% (2)	47.0% (94)	15.0% (30)	16.0% (129)
4 - 5	5.0% (10)	8.5% (17)	39.5% (79)	38.5% (77)	23.0% (183)
6 - 7	15.0% (28)	15.0% (29)	11.5% (23)	29.5% (59)	18.0% (139)
8 - 9	12.0% (22)	12.0% (24)	2.0% (4)	14.5% (29)	10.0% (79)
10 - 11	13.0% (24)	12.5% (25)	0.0% (0)	1.5% (3)	7.0% (52)
12 - 13	13.0% (24)	14.0% (27)	0.0% (0)	0.5% (1)	7.0% (52)
14 - 15	12.0% (22)	9.5% (19)	0.0% (0)	0.5% (1)	5.0% (42)
16 - 17	11.0% (20)	11.5% (23)	0.0% (0)	0.0% (0)	5.8% (43)
18 - 19	5.0% (10)	5.5% (10)	0.0% (0)	0.0% (0)	3.0% (20)
20 - 21	5.0% (9)	1.0% (2)	0.0% (0)	0.0% (0)	1.4% (11)
22 and over	7.0% (11)	9.5% (19)	0.0% (0)	0.0% (0)	3.8% (30)
TOTAL	100.0% (183)	100.0% (197)	100.0% (200)	100.0% (200)	100.0% (780)

Table 24 is a combination of Tables 21 and 23. It gives the distribution of the total number of persons living in the dwelling, i.e. children and adults of both sexes. It is interesting t

TABLE 24 (Continued)

note that in the two West African study areas, i.e. Ilesha and Esa-Oke, the modal number of persons per dwelling is between six and seven, while in Namitambo it is two and three and in Mansa four and five. The modal value for all areas when taken together lies between four and five. It is also worth noting that in Ilesha there are at least eleven dwellings (7.0%) having twenty two or more persons per dwelling while in Esa-Oke too, at least nineteen dwellings (9.5%) of the dwellings have twenty two or more persons in each.

TABLE 25.

DISTRIBUTION OF DWELLINGS BY NUMBER OF OCCUPANTS PER ROOM
BY AREA

NUMBER OF OCCUPANTS PER ROOM	A R E A				
	ILESHA (NIGERIA)	ESA OKE (NIGERIA)	NAMITAMBO (MALAWI)	MANSA (ZAMBIA)	ALL AREAS
1	4.9% (9)	1.5% (3)	3.5% (7)	7.0% (14)	4.2% (33)
2	27.9% (51)	25.4% (50)	31.5% (63)	38.5% (77)	30.9% (241)
3	34.4% (63)	36.0% (71)	37.0% (74)	28.5% (57)	34.0% (265)
4	21.9% (40)	23.4% (46)	17.5% (35)	14.5% (29)	19.2% (150)
5	6.6% (12)	10.7% (21)	5.0% (10)	6.0% (12)	7.0% (55)
6	3.8% (7)	2.0% (4)	3.0% (6)	2.5% (5)	2.8% (22)
7	0.0% (0)	1.0% (2)	1.5% (3)	0.5% (1)	0.8% (6)
8	0.0% (0)	0.0% (0)	1.0% (2)	2.0% (4)	0.8% (6)
9	0.5% (1)	0.0% (0)	0.0% (0)	0.5% (1)	0.3% (2)
TOTAL	100.0% (183)	100.0% (197)	100.0% (200)	100.0% (200)	100.0% (780)

Table 25 shows the number of occupants per room. In Ilesha, Esa Oke and Namitambo the median values is three occupants per

room. However, it must be noted that twenty dwellings in Ilesha, twenty seven in Esa Oke, twenty one in Namitambo and twenty two dwellings in Mansa have five or more occupants per room.

TABLE 26

DISTRIBUTION OF DWELLINGS BY OWNERSHIP AND BY AREA.

OWNERSHIP OF DWELLING	A R E A				
	ILESHA (NIGERIA)	ESA OKE (NIGERIA)	NAMITAMBO (MALAWI)	MANSA (ZAMBIA)	ALL AREAS
Own	72.0% (132)	88.9% (175)	88.0% (176)	78.5% (157)	82.1% (640)
Rented	27.9% (51)	11.1% (22)	3.5% (7)	16.0% (32)	14.4% (112)
Other	0.0% (0)	0.0% (0)	8.5% (17)	5.5% (11)	3.5% (28)
All	100.0% (183)	100.0% (197)	100.0% (200)	100.0% (200)	100.0% (780)

Table 26 shows that for all areas 82.1% of the dwellings were owned by the occupants. However, considering each individual area it is seen that in Ilesha only 72% of the dwellings were owned by the occupants while in Namitambo and Esa Oke 88% and 88.9% of the dwellings respectively were owned by the occupants. 8.5% dwellings in Namitambo and 5.5% dwellings in Mansa were neither owned or rented, i.e. the occupants of these dwellings did not own these dwellings but did not also pay any rent for them. This group consisted of for example those living in a relatives' house, where no rent was paid, or those who worked or helped in the farm or other business but did not pay rent for the lodgings.

TABLE 27

DISTRIBUTION OF DWELLINGS BY PRESENCE OF TRADE IN DWELLING AND BY AREA.

TRADE IN DWELLING	A R E A				
	ILESHA (NIGERIA)	ESA-OKE (NIGERIA)	NAMITAMBO (MALAWI)	MANSA (ZAMBIA)	ALL AREAS
Yes	22.4% (41)	10.1% (20)	0.5% (1)	0.5% (1)	8.1% (63)
No	72.6% (142)	89.9% (177)	99.5% (199)	99.5% (199)	91.9% (717)
TOTAL	100.0% (183)	100.0% (197)	100.0% (200)	100.0% (200)	100.0% (780)

22.4% of dwellings in Ilesha had a trade carried out in it. (Table 27) Esa Oke had 10.1% of dwellings with a trade in them. Trade carried out in a dwelling is a rare occurence in the Central African countries as shown by the Namitambo and Mansa figures. These trades are usually carried out by women as a source of supplementary income.

TABLE 27

DISTRIBUTION OF DWELLINGS BY PRESENCE OF TRADE IN DWELLING AND
BY AREA.

TRADE IN DWELLING	A R E A				
	ILESHA (NIGERIA)	ESA-OKE (NIGERIA)	NAMITAMBO (MALAWI)	MANSA (ZAMBIA)	ALL AREAS
Yes	22.4% (41)	10.1% (20)	0.5% (1)	0.5% (1)	8.1% (63)
No	72.6% (142)	89.9% (177)	99.5% (199)	99.5% (199)	91.9% (717)
TOTAL	100.0% (183)	100.0% (197)	100.0% (200)	100.0% (200)	100.0% (780)

22.4% of dwellings in Ilesha had a trade carried out in it.
(Table 27) Esa Oke had 10.1% of dwellings with a trade in them.
Trade carried out in a dwelling is a rare occurence in the
Central African countries as shown by the Namitambo and Mansa
figures. These trades are usually carried out by women as a
source of supplementary income.

TABLE 28

124

DISTRIBUTION OF DWELLING BY TYPE TRADE IN DWELLING BY AREA.

TYPE OF TRADE	A R E A				
	ILESHA (NIGERIA)	ESA OKE (NIGERIA)	NAMITAMBO (MALAWI)	MANSA (ZAMBIA)	ALL AREAS
Petty sales	14.0% (25)	6.0% (13)	0.5% (1)	0.5% (1)	5.0% (40)
Tailor	4.0% (8)	3.0% (5)	0.0% (0)	0.0% (0)	2.0% (13)
Food sales	2.0% (2)	1.0% (1)	0.0% (0)	0.0% (0)	0.5% (4)
Other	3.0% (6)	1.0% (1)	0.0% (0)	0.0% (0)	1.0%
No	77.0% (142)	90.0% (177)	99.5% (199)	99.5% (199)	91.5% (717)
TOTAL	100.0% (183)	100.0% (197)	100.0% (200)	100.0% (200)	100.0% (780)

Table 28 shows a breakdown of the type of trade carried out in the dwellings.   In both Ilesha and Esa Oke the most frequent trade was in the form of a very small shop selling groceries and toiletries 4% of the dwellings in Ilesha and 3% of the dwellings in Esa Oke carried on small scale tailoring businesses.   Except in one dwelling in Ilesha where the entire family income came from the tailoring trade carried out by the father, the tailoring was carried out by the mother or other female as a subsidiary form of income.

The category of 'other' included a mechanic, a football pools agent, a weaver (textile) and a local herbalist.

TABLE   29

DISTRIBUTION OF DWELLINGS BY TYPE OF WALLS BY AREA.

TYPE OF WALLS	A R E A				
	ILESHA (NIGERIA)	ESA OKE (NIGERIA)	NAMITAMBO (MALAWI)	MANSA (ZAMBIA)	ALL AREAS
Brick	47.5% (87)	32.0% (63)	2.0% (4)	11.0% (22)	22.6% (176)
Stone	18.6% (34)	25.4% (50)	2.5% (5)	1.5% (3)	11.8% (92)
Laterite	33.9% (62)	42.6% (84)	95.5% (191)	87.5% (175)	65.6% (152)
TOTAL	100.0% (183)	100.0% (197)	100.0% (200)	100.0% (200)	100.0% (780)

Table 29.

In Mansa and Namitambo a large proportion of the dwellings had laterite walls. In Ilesha and Esa Oke too, dwellings with laterite walls were common (33.9% and 42.6% respectively) but 47.5% and 32.0% dwellings respectively had brick walls. Thus homes in West Africa tended to be constructed of more long lasting material, i.e. these buildings were more permanently constructed. Those in Namitambo especially tended to be much more temporary in nature.

TABLE   30

DISTRIBUTION OF DWELLINGS BY TYPE OF FLOOR BY AREA.

TYPE OF FLOOR	A R E A				
	ILESHA (NIGERIA)	ESA OKE (NIGERIA)	NAMITAMBO (MALAWI)	MANSA (ZAMBIA)	ALL AREAS
Cement	65.6% (120)	64.0% (126)	4.5% (9)	11.5% (23)	35.6% (278)
Mud	33.9% (62)	36.0% (71)	94.5% (189)	87.5% (175)	63.7% (492)
Wood	0.50% (1)	0.0% (0)	1.0% (2)	1.0% (2)	0.7% (5)
TOTAL	100.0% (183)	100.0% (197)	100.0% (200)	100.0% (200)	100.0% (780)

The more temporary nature of the dwellings in Namitambo and
Mansa is echoed in the flooring seen in these areas.
Table 30 shows that in 94.5%, 87.5% of dwellings respectively
in Namitambo and Mansa mud is used as a covering for the
floors, whereas in Ilesha and Esa Oke the majority of the
floors are cemented.

TABLE   31

DISTRIBUTION OF DWELLINGS BY ITS VENTILATION BY AREA.

VENTILATION	A R E A				
	ILESHA (NIGERIA)	ESA OKE (NIGERIA)	NAMITAMBO (MALAWI)	MANSA (ZAMBIA)	ALL AREAS
A	35.5% (65)	11.2% (22)	6.0% (12)	5.0% (10)	14.0% (109)
B	34.4% (63)	44.1% (87)	18.0% (36)	15.0% (30)	27.7% (216)
C	30.1% (55)	44.7% (88)	76.0% (152)	80.0% (160)	58.3% (455)
TOTAL	100.0% (183)	100.0% (197)	100.0% (200)	100.0% (200)	100.0% (780)

A.   All rooms had at least one window that opened to the exterior, and at time of survey these windows were open

B.   Half or more rooms had windows that opened to the exterior and these windows were open at the time of survey.

C.   Less than half of the rooms had windows that opened to the exterior and/or the windows that opened to the exterior were shuttered up.

The overall standard of ventilation was poor.   Most buildings especially in Ilesha and Esa Oke had adequate numbers of windows but in many cases these windows were shuttered up permanently or kept shut most of the time.   When questioned by the author about the reason for this some of the following answers were obtained.

(1)   "the house becomes too dusty"
(2)   "to keep away insects and mosquitoes etc"
(3)   "to prevent thefts"
(4)   "hinges broken so unable to open"

TABLE   32

DISTRIBUTION OF DWELLINGS BY PLACE WHERE COOKING IS DONE BY AREA.

COOKING DONE IN	AREA				
	ILESHA (NIGERIA)	ESA OKE (NIGERIA)	NAMITAMBO (MALAWI)	MANSA (ZAMBIA)	ALL AREAS
Kitchen	91.3% (167)	89.3% (176)	40.0% (80)	37.0% (74)	63.7% (497)
Part of living room	3.8% (7)	6.1% (12)	41.5% (83)	1.5% (3)	13.5% (105)
Outside	4.9% (9)	4.6% (9)	18.5% (27)	61.5% (123)	22.8% (178)
All	100.0% (183)	100.0% (197)	100.0% (200)	100.0% (200)	100.0% (780)

91.3% and 89.3% dwellings in Ilesha and Esa Oke respectively have their own kitchens while in Mansa 61.5% of the dwellings have no kitchen and cooking is done outside the dwellings. In the wet weather this can give rise to substantial problems. It would be impossible in these circumstances to cook three times a day. Most mothers are, however, able to do all their daily cooking once a day. Living in a tropical climate and having no proper refrigeration facilities this could pose problems with regard to the spoilage of food.

In all areas cooking was done at floor level. This could increase the risks of injury from burns especially in the case of toddlers and young children.

TABLE 33

DISTRIBUTION OF DWELLING BY SOURCE OF WATER SUPPLY BY AREA.

SOURCE OF WATER SUPPLY	A R E A				
	ILESHA (NIGERIA)	ESA OKE (NIGERIA)	NAMITAMBO (MALAWI)	MANSA (ZAMBIA)	ALL AREAS
Pipe at home	1.1% (2)	0.0% (0)	0.0% (0)	5.5% (11)	1.7% (13)
Own well	0.5% (1)	0.0% (0)	0.5% (1)	0.0% (0)	0.3% (2)
Shared well	0.0% (0)	0.0% (0)	99.5% (199)	76.0% (152)	45.0% (351)
Street pipe	98.4% (180)	0.0% (0)	0.0% (0)	7.5% (15)	24.9% (195)
River or stream	0.0% (0)	100.0% (197)	0.0% (0)	11.0% (22)	28.1% (219)
	100.0% (183)	100.0% (197)	100.0% (200)	100.0% (200)	100.0% (780)

Table 33. Ilesha being a town has its own pipe borne water supply system and 98.4% of the dwellings get their water supply from street pipes. In Esa Oke there is no public pipe borne water system, and as such, water for drinking and washing is got from two streams that flow in the outskirts of the village.
In Mansa and Namitambo the main source of water supply is from wells. These wells are usually shared by many families.

TABLE   34

DISTRIBUTION OF DWELLING BY AVAILABILITY OF LATRINE BY AREA.

LATRINE	AREA				
	ILESHA (NIGERIA)	ESA OKE (NIGERIA)	NAMITAMBO (MALAWI)	MANSA (ZAMBIA)	ALL AREAS
Own	30.1% (55)	31.0% (61)	34.0% (68)	55.5% (111)	37.8% (295)
Shared	46.4% (85)	17.3% (34)	31.5% (63)	6.5% (13)	25.0% (195)
Public	0.0% (0)	0.0% (0)	0.5% (1)	0.0% (0)	0.1% (1)
None	23.5% (43)	51.7% (102)	34.0% (68)	38.0% (76)	37.1% (289)
TOTAL	100.0% (183)	100.0% (197)	100.0% (200)	100.0% (200)	100.0% (780)

From Table 34 it is seen that over half of the dwellings in
Esa Oke have no latrine of their own or one they could share
with another dwelling. These people living in these dwellings
use the surrounding 'bush' for the purpose of defaecation.
Public latrines were not found in the Ilesha, Esa Oke and
Mansa areas. In Namitambo occupants of one dwelling used a
public latrine which was in the health centre compound. It is
also worth noting that except in Mansa, in the other three
areas only about a third of the dwellings had their own latri-
nes. Even where each dwelling had its own latrine this very
often was not used by all the occupants of the dwellings.
Some of the adults would still prefer the 'bush' and some of
the children would not be able to use the adult type of
latrines. These children would defaecate in the garden.
Evidence of this was seen during the present study.

TABLE   35

DISTRIBUTION OF DWELLINGS BY TYPE OF LATRINE BY AREA.

TYPE LATRINE	A R E A				
	ILESHA (NIGERIA)	ESA OKE (NIGERIA)	NAMITAMBO (MALAWI)	MANSA (ZAMBIA)	ALL AREAS
Flush	1.1% (2)	0.0% (0)	0.0% (0)	0.0% (0)	0.2% (2)
Bucket	5.5% (10)	0.0% (0)	1.0% (2)	0.0% (0)	1.6% (12)
Pit	69.9% (128)	48.2% (95)	65.0% (130)	62.0% (124)	61.2% (477)
No latrine	23.5% (43)	51.8% (102)	34.0% (68)	38.0% (76)	37.0% (289)
TOTAL	100.0% (183)	100.0% (197)	100.0% (200)	100.0% (200)	100.0% (780)

Table 35.

Except for the very small percentage of dwellings that had a flush type of latrine in Ilesha, and the 5.5% and 1.0% respectively of the dwellings in Ilesha and Namitambo that had the bucket type of latrine, the majority of dwellings in all areas had a pit latrine. The squatting plate in these latrines were of the adult type and children under five were not encouraged to use them for fear that they may fall into the latrine pit.

TABLE   36

DISTRIBUTION OF DWELLINGS BY MODE OF REFUSE DISPOSAL BY AREA.

METHOD OF REFUSE DISPOSAL	A R E A				
	ILESHA (NIGERIA)	ESA OKE (NIGERIA)	NAMITAMBO (MALAWI)	MANSA (ZAMBIA)	ALL AREAS
Dump in special area	3.8% (7)	0.0% (0)	0.0% (0)	0.0% (0)	0.9% (7)
Dump anywhere	96.2% (176)	100.0% (197)	100.0% (200)	100.0% (200)	99.1% (773)
TOTAL	100.0% (183)	100.0%)197)	100.0% (200)	100.0% (200)	100.0% (780)

Table 36.

Except in the case of seven dwellings in Ilesha (3.8%) all
other dwellings in all areas did not have a suitable method for
refuse disposal.   Refuse was dumped at any point which was
found convenient.   The refuse was left exposed to the
elements and often provided food for dogs and birds.   This
resulted in the rubbish being scattered around in the garden.
The decaying rubbish also provided a culture medium for
disease causing organisms.

TABLE 37

DISTRIBUTION OF DWELLINGS BY ANIMALS KEPT IN THE COMPOUND OF THE DWELLING BY AREA

ANIMALS KEPT IN DWELLINGS COMPOUND	AREA									
	ILESHA (NIGERIA)		ESA OKE (NIGERIA)		NAMITAMBO (MALAWI)		MANSA (ZAMBIA)		ALL AREAS	
	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
Goats	48.0% (87)	52.0% (96)	72.0% (142)	28.0% (55)	10.0% (20)	90.0% (180)	0.5% (1)	99.5% (199)	32.0% (250)	68.0% (530)
Poultry	60.0% (110)	40.0% (73)	81.0% (160)	19.0% (37)	32.0% (63)	68.0% (137)	26.0% (52)	74.0% (148)	49.0% (385)	51.0% (395)
Pigs	1.0% (1)	99.0% (182)	0.0% (0)	100.0% (197)	4.0% (8)	96.0% (192)	0.0% (0)	100.0% (200)	1.0% (9)	99.0% (771)
Dogs	3.0% (5)	97.0% (178)	0.0% (0)	100.0% (197)	0.5% (1)	99.5% (199)	0.5% (1)	99.5% (199)	1.0% (7)	99.0% (773)
Cattle	0.0% (0)	100.0% (183)	0.0% (0)	100.0% (197)	0.5% (1)	99.5% (199)	0.0% (0)	100.0% (200)	0.5% (1)	99.9% (779)

Table 37.

Many of the occupants of the dwellings visited reared domestic animals as a source of income, for food or as pets. Poultry was seen to be the commonest domestic animal in all areas of study.

In Ilesha 60.0%, Esa Oke 81.0%, Namitambo 32.0% and in Mansa 26.0% of occupants of the dwellings reared poultry. Goats were the next common. 48.0% in Ilesha, 72.0% in Esa Oke and 10.0% of the occupants of dwellings in Namitambo reared goats.

CHARACTERISTICS OF ALL FAMILIES

TABLES 38 - 50.

TABLE 38

DISTRIBUTION OF FAMILIES WITH CHILDREN UNDER FIVE BY NUMBER
OF CHILDREN UNDER FIVE PER FAMILY BY AREA.

CHILDREN UNDER FIVE PER FAMILY	AREA				
	FAMILIES ILESHA (NIGERIA)	FAMILIES ESA-OKE (NIGERIA)	FAMILIES NAMITAMBO (MALAWI)	FAMILIES MANSA (ZAMBIA)	FAMILIES ALL AREAS
1	69.4% (224)	66.6% (199)	73.4% (148)	57.8% (123)	66.9% (694)
2	26.9% (87)	31.4% (94)	24.3% (49)	38.0% (81)	30.0% (311)
3	3.7% (12)	2.0% (6)	2.3% (5)	3.7% (8)	3.0% (31)
4	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)
5	0.0% (0)	0.0% (0)	0.0% (0)	0.5% (1)	0.1% (1)
TOTAL FAMILIES	100.0% (323)	100.0% (299)	100.0% (202)	100.0% (213)	100.0% (1037)

Table 38 shows the distribution of families with children under
five by number of children under five per family for each area.
In Ilesha and Esa Oke and Namitambo all families had one, two or
at the most three children under the age of five. However in
Mansa this situation prevailed except in the case of one family
where there were five children under the age of five. This
included one pair of twins. It is interesting to note that
even though some families had up to three children under the
age of five that yet the median value for all areas was 1.
69.4% in Ilesha, 66.6% in Esa Oke, 73.4% in Namitambo and 57.8%
families in Mansa had only one child under the age of five.

TABLE 39

DISTRIBUTION OF FAMILIES BY PRESENCE OF PARENTS BY AREA.

PARENTS OF CHILD	A R E A				
	ILESHA (NIGERIA)	ESA-OKE (NIGERIA)	NAMITAMBO (MALAWI)	MANSA (ZAMBIA)	ALL AREAS
Both alive	98.2% (317)	96.7% (289)	99.0% (200)	99.5% (212)	98.2% (1018)
Mother dead	0.3% (1)	0.3% (1)	0.0% (0)	0.0% (0)	0.2% (2)
Father dead	1.2% (4)	3.0% (9)	1.0% (2)	0.5% (1)	1.5% (16)
Both dead	0.3% (1)	0.0% (0)	0.0% (0)	0.0% (0)	0.1% (1)
TOTAL	100.0% (323)	100.0% (299)	100.0% (202)	100.0% (213)	100.0% (1037)

TABLE 40

DISTRIBUTION OF FAMILIES BY WHICH PARENTS LIVES IN DWELLING BY AREA.

PARENT LIVING IN DWELLING	A R E A				
	ILESHA (NIGERIA)	ESA-OKE (NIGERIA)	NAMITAMBO (MALAWI)	MANSA (ZAMBIA)	ALL AREAS
Mother only	44.5% (143)	34.0% (103)	46.0% (92)	17.0% (37)	36.0% (375)
Father only	1.0% (3)	0.7% (2)	0.0% (0)	1.0% (2)	1.0% (7)
Both	51.5% (166)	64.0% (190)	52.0% (106)	80.0% (170)	61.0% (632)
Neither parent	3.0% (11)	1.3% (4)	2.0% (4)	2.0% (4)	2.0% (23)
TOTAL	100.0% (323)	100.0% (299)	100.0% (202)	100.0% (213)	100.0% (1037)

In all four areas of study it is seen that very few
children had lost one or both parents.   (Table 39).
In the entire study there was only one family where
the children were orphans.   This was a family in Ilesha.
In 1.2% families in Ilesha, 3.0% families in Esa Oke, 1.0%
families in Namitambo and o.5% families in Mansa the father
was dead.   One family each in Ilesha and Esa Oke were seen
where the mother was dead.

From Table 39 it is seen that in all areas nearly all
families had both parents living.   However looking at Table
40 it is seen that in many cases the children live with one
parent only.   For example in Ilesha in 44.5% of families,
in Esa Oke 34.0% of families, in Namitambo 46.0% of families
and in Mansa 17.0% of families the children live with their
mother only.
It is interesting to note that very few children live with
their father only.   This situation is seen only in 1.0% of
the families in Ilesha and Mansa and in 0.7% in Esa Oke.
2.0% of the children live with neither parent and are looked
after by a guardian.   Often this is a grandmother or an aunt.

TABLE   41   1 3 9

DISTRIBUTION OF FAMILIES BY NUMBER OF CHILDREN BORN TO MOTHER

BY AREA.

NUMBER OF CHILDREN BORN TO MOTHER	A R E A				
	ILESHA (NIGERIA)	ESA-OKE (NIGERIA)	NAMITAMBO (MALAWI)	MANSA (ZAMBIA)	ALL AREAS
1	16% (53)	13% (39)	24% (47)	16% (33)	17% (172)
2	20% (64)	15% (44)	17% (35)	18% (38)	17% (181)
3	19% (61)	13% (39)	9% (19)	14% (29)	14% (148)
4	19% (60)	16% (48)	9% (19)	12% (25)	15% (152)
5	13% (41)	15% (45)	14% (27)	11% (24)	13% (137)
6	8% (25)	12% (36)	6% (13)	10% (22)	9% (96)
7	2% (8)	7% (21)	8% (17)	7% (14)	6% (60)
8 and over	3% (11)	9% (27)	13% (25)	12% (28)	9% (91)
TOTAL	100% (323)	100% (299)	100% (202)	100% (213)	100% (1037)

Table 41.

The mothers taken into consideration were those who, at
the time of the study had at least one child under the age of
five. Hence it could be expected that the mothers would tend

to be of the younger age groups.   Therefore it is not
surprising that the modal . value was low for the number
of children born to mother, i.e. two in Ilesha, four in
Esa Oke, one in Namitambo and one in Mansa.   However 9%
of all mothers had eight or more children.

Though the mothers were asked the total number of
children born, i.e. both living and dead, the author felt
that some mothers only included those children who were
alive.   Hence these figures could underestimate parity.

TABLE   42

DISTRIBUTION OF FAMILIES BY UNDERSTANDING OF PURPOSE OF

IMMUNIZATION BY AREA.

PURPOSE OF IMMUNISA- TION	A R E A				
	ILESHA (NIGERIA)	ESA OKE (NIGERIA)	NAMITAMBO (MALAWI)	MANSA (ZAMBIA)	ALL AREAS
For good health	78.0% (251)	16.0% (49)	0.0% (0)	0.0% (0)	29.0% (300)
To prevent disease	3.0% (11)	65.7% (196)	63.5% (128)	83.0% (176)	29.0% (511)
Other	18.0% (58)	18.0% (53)	36.0% (73)	17.0% (37)	21.5% (221)
Do not know	1.0% (3)	0.3% (1)	0.5% (1)	0.0% (0)	0.5% (5)
TOTAL	100.0% (323)	100.0% (299)	100.0% (202)	100.0% (213)	100.0% (1037)

TABLE 43

DISTRIBUTION OF FAMILIES BY TYPE OF MILK THOUGHT SUITABLE

FOR YOUNG BABIES BY AREA.

TYPE MILK SUITABLE FOR YOUNG BABIES 0 - 3 MONTHS	A R E A				
	ILESHA (NIGERIA)	ESA OKE (NIGERIA)	NAMITAMBO (MALAWI)	MANSA (ZAMBIA)	ALL AREAS
Breast milk	86.5% (279)	84.2% (251)	62.0% (125)	90.5% (193)	82.0% (848)
Artificial milk	6.0% (20)	10.3% (31)	33.0% (67)	3.0% (6)	12.0% (124)
Both	6.0% (20)	5.2% (16)	3.5% (7)	0.0% (0)	4.0% (43)
Do not know	1.5% (4)	0.3% (1)	1.5% (3)	6.5% (14)	2.0% (22
TOTAL	100.0% (323)	100.0% (299)	100.0% (202)	100.0% (213)	100.0% (1037)

The question 'What is the purpose of vaccination?' evoked a
variety of responses (Table 42). A small percentage (0.5%
for all areas taken together) said that they did not know the
reason for vaccinations. In Esa Oke Namitambo and Mansa 65.7%
63.5% and 83.0% respectively answered that vaccinations were
given in order to prevent disease. Many of them were able to
name at least some of the diseases against which their children
could be immunised. In Ilesha only 3.0% answered similarly.
The majority of answers in Ilesha were "in order to have good
health". This could taken in its broadest sense convey the
right meaning. After all the ultimate purpose of immunisation
is to keep the child free of illness. However, it was felt
that the answers received in Ilesha indicated that immunisation
was looked upon as a "tonic or vitamin" to good health. It
could be that the health education talks carried out in Ilesha
conveyed this information about immunisation. Between 17 - 36%
of the answers received from the areas were incorrect. These
answers ranged from 'to control fits or convulsions', 'to
prevent swelling', 'to prevent malnutrition', 'for the child to
get stronger', 'for ear ache', 'for fever' etc. Some of these
answers clearly indicated that there was some confusion between
injections given for specific diseases, for example anti-
biotics and anti convulsants and "injectable vaccines", such
as DPT and BCG.   The mothers were at times unable to appreciate
the difference between these two types of "injections"
Table 43. The spokesman for each family in the study was asked
what milk he or she felt was most suitable for an infant under
the age of three months. The majority gave breast milk as the
answer, i.e. 86.5% in Ilesha, 84.2% in Esa Oke, 62.0% in
Namitambo and 90.5% in Mansa. However in Namitambo 33.0% gave
artificial milk as the answer. This was in contrast to the other

areas where only between 3.0% and 10.3% gave artificial
milk as the answer. A small percentage did not know which
milk was most suitable and a further few said both breast
milk and artificial milk should be given.

Table 44.

The mode age at which solids were introduced into the
child's diet was six months in Ilesha and Mansa and five
months and four months respectively in Esa Oke and Namitambo.

However, it must be noted that 4.3% of families
introduced solids into a child's diet only after the age of
1 year.

In communities such as these where malnutrition is
rampant, every effort must be made to teach mothers the
needs of supplementing breast milk with nutritious foods
at an early age.

TABLE 44.

DISTRIBUTION OF FAMILIES BY AGE (IN MONTHS) AT WHICH SOLIDS
FIRST INTRODUCED INTO CHILD'S DIET BY AREA.

AGE (IN MONTHS) AT WHICH SOLIDS FIRST GIVEN	A R E A				
	ILESHA (NIGERIA)	ESA OKE (NIGERIA)	NAMITAMBO (MALAWI)	MANSA (ZAMBIA)	ALL AREAS
1	0.0% (0)	0.0% (0)	0.5% (1)	0.0% (0)	0.1% (1)
2	0.6% (2)	0.0% (0)	1.0% (2)	0.5% (1)	0.5% (5)
3	3.7% (12)	16.7% (50)	8.4% (17)	3.8% (8)	8.4% (87)
4	6.8% (22)	7.4% (22)	29.2% (59)	10.3% (22)	12.1% (125)
5	18.9% (61)	32.1% (96)	27.7% (56)	10.8% (23)	22.8% (236)
6	22.3% (72)	15.7% (47)	23.7% (48)	55.8% (119)	27.6% (286)
7	21.7% (70)	12.0% (36)	3.5% (7)	8.9% (19)	12.7% (132)
8	12.4% (40)	6.7% (20)	2.0% (4)	1.9% (4)	6.5% (68)
9	3.7% (12)	2.7% (8)	0.0% (0)	1.4% (3)	2.2% (23)
10	1.2% (4)	0.7% (2)	0.5% (1)	0.5% (1)	0.8% (8)
11	0.6% (2)	0.0% (0)	0.0% (0)	0.0% (0)	0.2% (2)
12 and over	8.1% (26)	5.7% (17)	0.0% (0)	0.9% (2)	4.3% (45)
Unknown	0.0% (0)	0.3% (1)	3.5% (7)	5.2% (11)	1.8% (19)
TOTAL	100.0% (323)	100.0% (299)	100.0% (202)	100.0% (213)	100.0% (1037)

TABLE 45.

DISTRIBUTION OF *FAMILIES BY REASONS GIVEN FOR CHILDREN
ATTENDING UNDER FIVES CLINIC BY AREA.

REASONS FOR CLINIC ATTENDANCE	A R E A				
	ILESHA (NIGERIA)	ESA OKE (NIGERIA)	NAMITAMBO (MALAWI)	MANSA (ZAMBIA)	ALL AREAS
Treatment only	35.0% (100)	23.2% (62)	49.3% (69)	22.3% (40)	31.1% (271)
Weighing only	0.4% (1)	0.0% (0)	3.6% (5)	44.7% (80)	9.9% (86)
Treatment and weighing	14.7% (42)	27.3% (73)	1.4% (2)	0.6% (1)	13.5% (118)
Treatment and Health Education	1.0% (3)	30.4% (81)	5.0% (7)	0.0% (0)	10.4% (91)
Treatment and Immunisation	13.1% (37)	3.3% (9)	4.3% (6)	0.0% (0)	6.0% (52)
Other groups of reasons	35.8% (102)	15.8% (42)	36.4% (51)	32.4% (58)	29.1% (253)
TOTAL	100.0% (285)	100.0% (267)	100.0% (140)	100.0% (179)	100.0% (871)

*Families where some or all of the children under the age of
five attend the under fives clinic.

Table 45.

"For treatment" appeared to be the main reason for mothers bringing their children to the Under Fives Clinic. It is interesting to note that treatment and health education was given as a reason by 30.4% of mothers in Esa Oke, while very few mothers in the other three areas mentioned health education as a reason for clinic attendance.

Immunisation, on the whole was not considered as an incentive for bringing children to the Under Fives Clinic. It is worth noting that 44.7% of mothers in Mansa took their children to the clinic for weighing only.
"Other group of reasons" in the main consisted of a variety of combinations of the above mentioned reasons.

Table 46.

This table gives the reasons for not attending Under Fives Clinic. The answer most frequently was that "it was not necessary" to take a child to the clinic. Coupled with the findings in table 45 where most mothers who attended the Under Fives Clinic did so when their children were ill, it is seen that the mothers consider the Under Fives Clinic as giving curative treatment only. It is interesting to note that all mothers who did not attend the clinic in Mansa and Namitambo had still heard of the clinic.

TABLE 46.

DISTRIBUTION OF *FAMILIES BY REASONS GIVEN FOR THEIR CHILDREN NOT ATTENDING UNDER FIVES CLINIC BY AREA.

REASONS FOR NON ATTENDANCE AT UNDER FIVES CLINIC	A R E A				
	ILESHA (NIGERIA)	ESA OKE (NIGERIA)	NAMITAMBO (MALAWI)	MANSA (ZAMBIA)	ALL AREAS
Did not know of clinic	5.3% (2)	9.4% (3)	0.0% (0)	0.0% (0)	3.0% (5)
Too far/ inconvenient	0.0% (0)	0.0% (0)	12.9% (8)	31.4% (11)	11.4% (19)
Not necessary	39.5% (15)	15.6% (5)	66.1% (41)	22.9% (8)	41.3% (69)
Child not ill/ too small/too old	10.5% (4)	6.2% (2)	8.1% (5)	8.6% (3)	8.4% (14)
Other	26.3% (10)	34.4% (11)	9.7% (6)	17.1% (6)	19.7% (33)
No reason given	18.4% (7)	34.4% (11)	3.2% (2)	20.0% (7)	16.2% (27)
TOTAL	100.0% (38)	100.0% (32)	100.0% (62)	100.0% (35)	100.0% (167)

* Families where some or all children under five do not attend the Under Fives Clinic.

TABLE 47

DISTRIBUTION OF FAMILIES BY ANTE-NATAL CLINIC ATTENDANCE
OF MOTHER BY AREA.

ANTE-NATAL CLINIC ATTENDANCE	AREA				
	ILESHA (NIGERIA)	ESA OKE (NIGERIA)	NAMITAMBO (MALAWI)	MANSA (ZAMBIA)	ALL AREAS
Yes	87% (280)	91% (270)	88% (177)	85% (181)	88% (908)
No	13% (43)	9% (29)	12% (25)	15% (32)	12% (129)
TOTAL	100% (323)	100% (299)	100% (202)	100% (213)	100% (1037)

TABLE 48

DISTRIBUTION OF *FAMILIES BY REASONS GIVEN FOR ANTE NATAL
CLINIC ATTENDANCE BY AREA.

REASONS GIVEN FOR ANTE NATAL CLINIC ATTENDANCE	AREA				
	ILESHA (NIGERIA)	ESA OKE (NIGERIA)	NAMITAMBO (MALAWI)	MANSA (ZAMBIA)	ALL AREAS
Routine visits	72.5% (203)	91.1% (246)	89.2% (158)	82.3% (149)	83.3% (756)
Only for treatment (when mother was unwell)	26.1% (73)	8.5% (23)	10.2% (18)	17.7% (32)	16.1% (146)
Other	0.0% (0)	0.4% (1)	0.0% (0)	0.0% (0)	0.1% (1)
Did not answer	1.4% (4)	0.0% (0)	0.6% (1)	0.0% (0)	0.5% (5)
TOTAL	100.0% (280)	100.0% (270)	100.0% (177)	100.0% (181)	100.0% (908)

* applies to those families where the mother attended the ante-
natal clinic in her last pregnancy.

Table 47.

     This table shows that over 85% or more mothers in each area attend the ante natal clinic during a pregnancy. The highest attendance is recorded in Esa Oke where 91% of mothers attend.

Table 48 shows that in all areas over 70% of mothers who attended the clinic did so for routine check visits. It is interesting to note that during a pregnancy a mother accepts the need for attending the ante natal clinic for routine preventive measures, but in the case of her children she does not always appreciate the need for taking them to Under Fives Clinics in order to obtain immunisations and other preventive measures available at these clinics.

TABLE 49.

DISTRIBUTION OF FAMILIES BY WHERE TREATMENT WOULD BE SOUGHT
IN AN EMERGENCY BY AREA.

EMERGENCY TREATMENT SOUGHT AT	A R E A				
	ILESHA (NIGERIA)	ESA OKE (NIGERIA)	NAMITAMBO (MALAWI)	(ZAMBIA)	ALL AREAS
Hospital	83.0% (268)	9.7% (29)	1.5% (3)	90.1% (192)	47.4% (492)
Home of midwife/ nurse	3.1% (10)	62.6% (187)	0.0% (0)	0.0% (0)	19.0% (197)
Health Centre	0.0% (0)	0.3% (1)	61.3% (124)	0.0% (0)	12.0% (125)
Home remedies	5.0% (16)	19.1% (57)	0.5% (1)	0.0% (0)	7.1% (74)
"Local doctor"	2.8% (9)	0.3% (1)	14.9% (30)	0.5% (1)	4.0% (41)
"Local doctor" or hospital/ health centre	0.0% (0)	5.0% (15)	19.8% (40)	6.6% (14)	6.7% (69)
Other	1.2% (4)	2.0% (6)	2.0% (4)	0.0% (0)	1.4% (14)
Did not answer	4.9% (16)	1.0% (3)	0.0% (0)	2.8% (6)	2.4% (25)
TOTAL	100.0% (323)	100.0% (299)	100.0% (202)	100.0% (213)	100.0% (1037)

Table 49.

In Ilesha and Mansa where the areas are served by a general
hospital, it is seen that the majority of mothers seek emergency
treatment at hospital. However 2:8% of families in Ilesha would

consult a "local doctor" first.   In Namitambo 14.9% families
would in an emergency always consult a "local doctor".   While
19.8% of families in Namitambo specified that for certain
emergencies they would seek treatment from a health centre or
hospital providing 'western' treatment, and for other conditions
they would seek treatment from the local doctor.   However, they
did not specify the diseases that fell into the two categories.

TABLE 50.

DISTRIBUTION OF FAMILIES BY MODE OF TRAVEL TO UNDER FIVES CLINIC BY AREA.

MODE OF TRAVEL TO CLINIC	A R E A				
	ILESHA (NIGERIA)	ESA OKE (NIGERIA)	NAMITAMBO (MALAWI)	MANSA (ZAMBIA)	ALL AREAS
Mammy wagon (local 'bus)	0.3% (1)	7.4% (22)	0.0% (0)	0.0% (0)	2.2% (23)
Walk	47.7% (154)	92.0% (275)	75.7% (153)	83.6% (178)	73.3% (760)
Taxi or private car	35.0% (113)	0.0% (0)	0.0% (0)	0.0% (0)	10.9% (113)
Bicycle	0.0% (0)	0.0% (0)	0.0% (0)	0.4% (1)	0.1% (1)
Walk or car/taxi	17.0% (55)	0.6% (2)	24.3% (49)	16.0% (34)	13.5% (140)
TOTAL	100.0% (323)	100.0% (299)	100.0% (202)	100.0% (213)	100.0% (1037)

Table 50.

This table shows that the majority of mothers in all areas walk to the clinic.

As a result during the rainy season, when conditions are not conducive to walking, a marked reduction in clinic attendance could be expected.

CHARACTERISTICS OF ALL CHILDREN

TABLES 51 - 68.

## AGE DISTRIBUTION OF THE CHILDREN SEEN IN THE STUDY.

It was possible to accurately establish the ages of 1393 of the 1414 children seen in the study. Age was established by means of the 'Road-to-Health' cards when available. If these cards were not available then evidence of date of birth was sought by looking at baptismal records or other available documents. Age was ~~accurately~~ established in 420 of the 434 children seen in Ilesha, 402 of the 405 children in Esa Oke, 259 of the 261 children in Namitambo and in 312 of the 314 children in Mansa.

In all four areas it was seen that the numbers of children seen in the younger age groups were greater than the numbers of children seen in the older age groups. For example 24.8% of the children seen in Ilesha were aged between 0 - under 12 months while in the 48 - under 60 months age group there were 17.3% of all children. Table 51. In Namitambo for the 0 - under 1 year age group there were 34.7% of the study children while in the 48 - under 60 months age. group there were only 8.2% of all the study children. This trend is seen in the other two areas as well.

Figure 13 shows the distribution of children by age, for all areas. When the children are grouped together it is still noticeable that there are far more children in the 0 - 12 months age group than in the 48 - 60 months age group.

. The results in Table 51 have been plotted in Figure 13 to show the distribution of children by age for each area. In Ilesha and Esa Oke the differences in number of children between the 0 - 12 months group and the 48 - 60 month groups are not as marked as that seen in Mansa and Namitambo for the same age groups.

FIG. 13.

AGE DISTRIBUTION (IN MONTHS) OF CHILDREN IN THE 4 AREAS
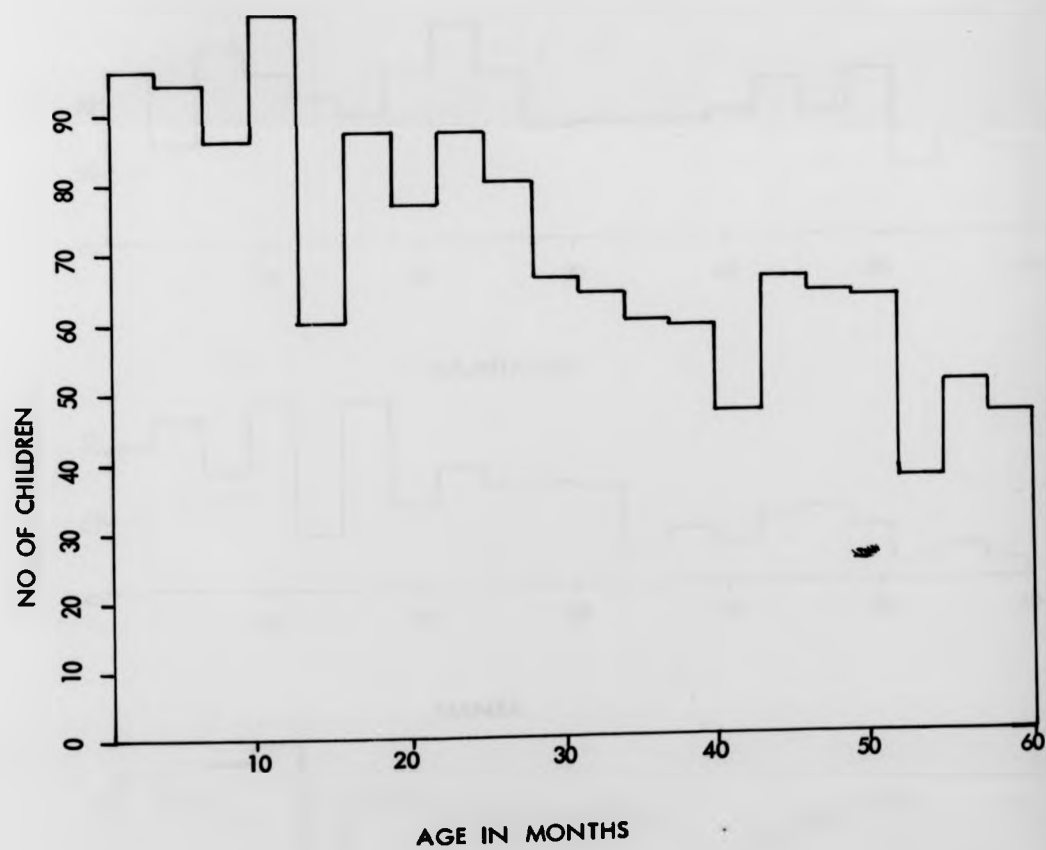
ILESHA   FIG. 14.
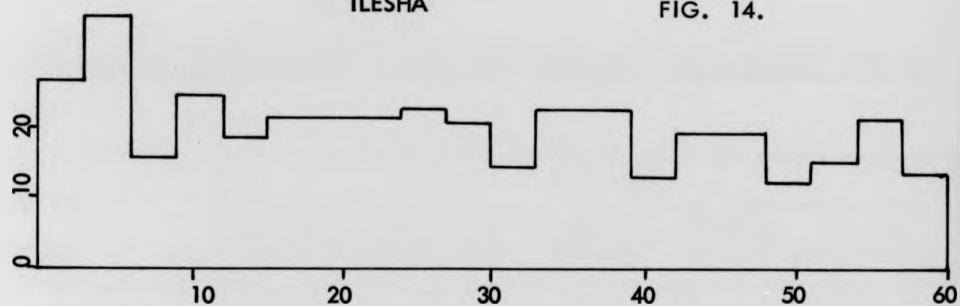
ESA-OKE
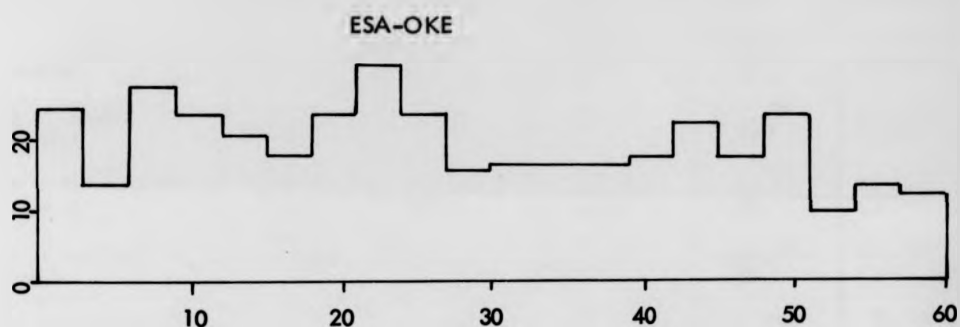
NAMITAMBO
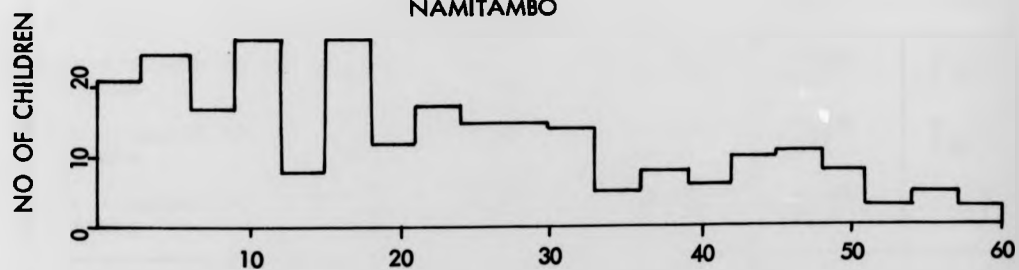
MANSA
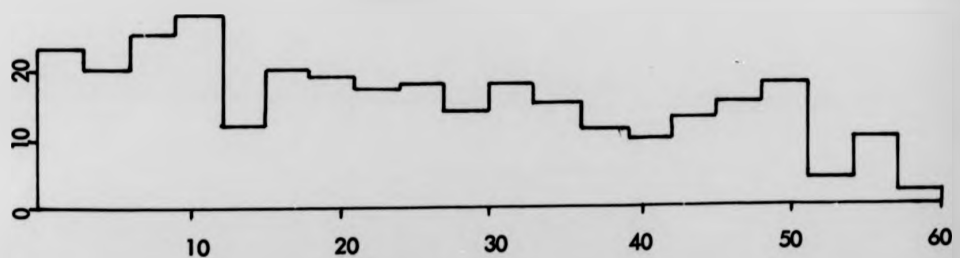
NO OF CHILDREN

Age in months

TABLE 51.

DISTRIBUTION OF CHILDREN UNDER FIVE BY AGE (IN MONTHS) AND BY AREA.

AGE IN MONTHS	A R E A				
	ILESHA (NIGERIA)	ESA OKE (NIGERIA)	NAMITAMBO (MALAWI)	MANSA (ZAMBIA)	ALL AREAS
0 - under 6 months	15.0% (63)	9.6% (39)	17.7% (46)	13.8% (43)	13.7% (191)
6 - under 12 months	9.8% (41)	13.0% (52)	17.0% (44)	17.0% (53)	13.6% (190)
12 - under 18 months	9.8% (41)	9.6% (39)	13.5% (35)	10.2% (32)	10.6% (147)
18 - under 24 months	10.5% (44)	13.7% (55)	11.2% (29)	11.5% (36)	11.8% (164)
24 - under 30 months	10.5% (44)	10.0% (40)	11.6% (30)	10.3% (32)	10.5% (146)
30 - under 36 months	9.0% (38)	8.5% (34)	7.3% (19)	10.6% (33)	8.9% (124)
36 - under 42 months	8.6% (36)	8.7% (35)	5.4% (14)	6.7% (21)	7.6% (106)
42 - under 48 months	9.5% (40)	10.2% (41)	8.1% (21)	9.0% (28)	9.3% (130)
48 - under 54 months	6.8% (29)	8.5% (34)	4.3% (11)	7.1% (22)	6.9% (96)
54 - under 60 months	10.5% (44)	8.2% (33)	3.9% (10)	3.8% (12)	7.1% (99)
TOTAL	100.0% (420)	100.0% (402)	100.0% (259)	100.0% (312)	100.0% (1393)

TABLE 52.

DISTRIBUTION OF CHILDREN UNDER FIVE BY SEX AND BY AREA.

SEX	AREA				
	ILESHA (NIGERIA)	ESA OKE (NIGERIA)	NAMITAMBO (MALAWI)	MANSA (ZAMBIA)	ALL AREAS
Males	52.1% (226)	52.6% (213)	50.2% (131)	45.9% (144)	50.5% (714)
Females	47.9% (208)	47.4% (192)	49.8% (130)	54.1% (170)	49.5% (700)
TOTAL	100.0% (434)	100.0% (405)	100.0% (261)	100.0% (314)	100.0% (1414)

The sex distribution of the children showed a male
preponderance (Table 52). In Namitambo they were almost
identical with the values obtained from all areas. However
in Ilesha and Esa Oke though there is an excess of males
(similar to the overall figure) the ratios are slightly
different, i.e. the percentage of males to females is
52.1% to 47.9% in Ilesha, 52.6% to 47.4% in Esa Oke. In
Mansa a reversal of the percentages is seen. Here there is
a preponderance of females, i.e. males to females of 45.9%
to 54.1%

TABLE 53.

DISTRIBUTION OF CHILDREN UNDER FIVE BY SEX AT EACH AGE BY AREA

AGE IN MONTHS	AREA									
	ILESHA (NIGERIA)		ESA OKE (NIGERIA)		NAMITAMBO (MALAWI)		MANSA (ZAMBIA)		ALL AREAS	
	MALES	FEMALES	MALES	FEMALES	MALES	FEMALES	MALES	FEMALES	MALES	FEMALES
0 – under 12 months	50% (52)	50% (52)	54% (49)	46% (42)	48% (43)	52% (47)	43% (41)	57% (55)	49% (185)	51% (196)
12 – under 24 months	52% (44)	48% (41)	50% (47)	50% (47)	55% (35)	45% (29)	49% (33)	51% (35)	51% (159)	49% (152)
24 – under 36 months	57% (47)	43% (35)	55% (41)	45% (33)	63% (31)	37% (18)	55% (36)	45% (29)	57% (155)	43% (115)
36 – under 48 months	53% (40)	47% (36)	55% (42)	45% (34)	40% (14)	60% (21)	37% (18)	63% (31)	48% (114)	52% (122)
48 – under 60 months	51% (37)	49% (36)	49% (33)	51% (34)	33% (7)	67% (14)	47% (16)	53% (18)	48% (93)	52% (102)

Table 53.

In the sex distribution of children at each age, it is noted that in Ilesha at every age group there is a slight preponderance of males over females. In Esa Oke too a pattern similar to Ilesha is seen except in the 48 - under 60 months age group where a slight excess of females is seen.

In Mansa, the over all preponderance of females noted in Table 52 is seen at each age group except the 24 - under 36 months group where males are in excess forming 55% of children in that age.

Table 54.

The distribution of children by sex by age for each area is shown in Table 54. In Ilesha and Esa Oke where the distribution of children at each age was fairly uniform, the sex distribution appears to conform to the same pattern, i.e. In Ilesha males and females are seen to be distributed fairly evenly at each age. The males range from 16.8% to 23.7% and the females 17.5% to 26.0% at each age.

In Namitambo and Mansa as pointed out earlier in Figure 14 the numbers of children at each age decreases with increasing age. For example in Mansa 32.8% children under 1 year are females while only 10.7% of children in the 4 - under 5 age group are females.

Table 53.

In the sex distribution of children at each age, it is noted that in Ilesha at every age group there is a slight preponderance of males over females. In Esa Oke too a pattern similar to Ilesha is seen except in the 48 - under 60 months age group where a slight excess of females is seen.

In Mansa, the over all preponderance of females noted in Table 52 is seen at each age group except the 24 - under 36 months group where males are in excess forming 55% of children in that age.

Table 54.

The distribution of children by sex by age for each area is shown in Table 54. In Ilesha and Esa Oke where the distribution of children at each age was fairly uniform, the sex distribution appears to conform to the same pattern, i.e. In Ilesha males and females are seen to be distributed fairly evenly at each age. The males range from 16.8% to 23.7% and the females 17.5% to 26.0% at each age.

In Namitambo and Mansa as pointed out earlier in Figure 14 the numbers of children at each age decreases with increasing age. For example in Mansa 32.8% children under 1 year are females while only 10.7% of children in the 4 - under 5 age group are females.

TABLE 54.

DISTRIBUTION OF CHILDREN UNDER FIVE BY SEX BY AGE AND BY AREA.

AGE IN MONTHS	A R E A									
	ILESHA (NIGERIA)		ESA OKE (NIGERIA)		NAMITAMBO (MALAWI)		MANSA (ZAMBIA)		ALL AREAS	
	MALES	FEMALES	MALES	FEMALES	MALES	FEMALES	MALES	FEMALES	MALES	FEMALES
0 - under 12 months	23.7% (52)	26.0% (52)	23.1% (49)	22.1% (42)	33.1% (43)	36.5% (47)	28.5% (41)	32.8% (55)	26.2% (185)	28.6% (196)
12 - under 24 months	20.0% (44)	20.5% (41)	22.1% (47)	24.8% (47)	26.9% (35)	22.4% (29)	22.9% (33)	20.8% (35)	22.5% (159)	22.1% (152)
24 - under 36 months	21.3% (47)	17.5% (35)	19.4% (41)	17.4% (33)	23.8% (31)	14.0% (18)	25.0% (36)	17.3% (29)	21.9% (155)	16.7% (115)
36 - under 48 months	18.2% (40)	18.0% (36)	19.8% (42)	17.8% (34)	10.8% (14)	16.3% (21)	12.5% (18)	18.4% (31)	16.2% (114)	17.8% (122)
48 - under 60 months	16.8% (37)	18.0% (36)	15.6% (33)	17.9% (34)	5.4% (7)	10.8% (14)	11.1% (16)	10.7% (18)	13.2% (93)	14.8% (102)
TOTAL	100.0% (220)	100.0% (200)	100.0% (212)	100.0% (190)	100.0% (130)	100.0% (129)	100.0% (144)	100.0% (168)	100.0% (706)	100.0% (687)

TABLE 55

DISTRIBUTION OF CHILDREN BY THEIR HEALTH ON DAY OF SURVEY BY
AREA.

HEALTH OF CHILD ON DAY OF SURVEY	A R E A				
	ILESHA (NIGERIA)	ESA OKE (NIGERIA)	NAMITAMBO (MALAWI)	MANSA (ZAMBIA)	ALL AREAS
Child ill	7% (29)	8% (34)	20% (53)	10% (30)	10% (146)
Child well	93% (405)	92% (371)	80% (208)	90% (284)	90% (1268)
TOTAL	100% (434)	100% (405)	100% (261)	100% (314)	100% (1414)

TABLE 56

DISTRIBUTION OF CHILDREN UNDER FIVE BY SKIN LESIONS SEEN ON
DAY OF INTERVIEW AND BY AREA.

SKIN LESIONS	A R E A				
	ILESHA (NIGERIA)	ESA OKE (NIGERIA)	NAMITAMBO (MALAWI)	MANSA (ZAMBIA)	ALL AREAS
Present	8.3% (36)	4.0% (16)	10.3% (27)	5.7% (18)	6.8% (97)
Absent	91.7% (398)	96.0% (389)	89.7% (234)	94.3% (296)	93.2% (1317)
All	100.0% (434)	100.0% (405)	100.0% (261)	100.0% (314)	100.0% (1414)

Table 55. The mother or guardian was asked if the child was well on the day of survey. Due to the conditions under which the survey was carried out no physical examination was possible to confirm the replies to the above. Answers were obtained from the history given. The possibility of the mother exaggerating the illness in a child with the hope that the members of the survey team might provide treatment was also kept in mind. 7.0%, 8.0%, and 10.0% of the children in Ilesha, Esa Oke and Mansa respectively were said to be ill at the time of the survey. However, in Namitambo 20.0% of the children were reported as being sick at the time of the survey. This was more than twice the number reported sick in each of the other areas.

"Illness" ranged from headache, fever vomiting diarrhoea, scabies, cough, malaria, 'lack of appetite' to marasmus kwashiorkor, chicken pox and measles.

Table 56. Skin disorders in childhood can be a cause of considerable discomfort and morbidity. Infections with bacteria, fungi and infestations were the most frequent causes of skin disease in children. 6.8% of all children seen had some form of skin lesion. The highest was in Namitambo with 10.3% and lowest in Esa Oke 4.0%

TABLE 57.

DISTRIBUTION OF CHILDREN BY NUMBER OF ATTACKS OF DIARRHOEA
(IN PAST THREE MONTHS) BY AREA.

NUMBER OF ATTACKS OF DIARRHOEA	A R E A				
	ILESHA (NIGERIA)	ESA OKE (NIGERIA)	NAMITAMBO (MALAWI)	MANSA (ZAMBIA)	ALL AREAS
0	83.0% (359)	86.8% (351)	64.0% (167)	57.0% (179)	74.9% (1056)
1	6.0% (24)	6.0% (25)	28.0% (72)	39.0% (123)	17.0% (244)
2	9.0% (41)	6.0% (24)	8.0% (22)	3.0% (10)	7.0% (97)
3	1.0% (5)	0.5% (2)	0.0% (0)	1.0% (2)	0.6% (9)
4 and over	1.0% (5)	0.7% (3)	0.0% (0)	0.0% (0)	0.5% (8)
TOTAL	100.0% (434)	100.0% (405)	100.0% (261)	100.0% (314)	100.0% (1414)

Table 57.

The mother (or guardian) for each child was asked if the
child had in the previous three months suffered from diarrhoea.
'Diarrhoea' in this instance was defined as the passage of
two or more loose stools per day. Attacks of diarrhoea was
taken to mean the number of different occasions when the child
had diarrhoea. If the child had diarrhoea continuously then
that would be one attack of diarrhoea. If after a break of
over seventy two hours the child developed diarrhoea again
then this was considered another attack of diarrhoea. Overall
for the four areas 74.9% of the children did not give a history
of diarrhoea in the past three months, i.e. three months
preceding the survey. 9% of the children in Ilesha 6% of the
children in Esa Oke 8% of children in Namitambo and 3% of the
children in Mansa had suffered two attacks of diarrhoea in the
three months prior to the time of survey. However, since the
mother had to recall events that occurred up to three months
prior to the time of survey it was not possible to give much
weight to this information. Also it is not always possible
when recalling events of the past to be able to definitely
decide that the event in question occurred in the last three
months and not in the previous three months. In spite of
these shortcomings it was possible to elicit from a history
the fact that 25.1% of the children had suffered from
diarrhoea in the three months prior to the survey.

<u>TABLE 58.</u>

<u>DISTRIBUTION OF CHILDREN BY HISTORY OF MEASLES AND BY AREA</u>

HISTORY OF MEASLES	A R E A				
	ILESHA (NIGERIA)	ESA OKE (NIGERIA)	NAMITAMBO (MALAWI)	MANSA (ZAMBIA)	ALL AREAS
Yes	27.9% (121)	40.0% (162)	42.1% (110)	27.1% (85)	33.8% (478)
No	65.2% (283)	59.8% (242)	57.5% (150)	70.7% (222)	63.4% (897)
Do not know	6.9% (30)	0.2% (1)	0.4% (1)	2.2% (7)	2.8% (39)
TOTAL	100.0% (434)	100.0% (405)	100.0% (261)	100.0% (314)	100.0% (1414)

<u>Table 58.</u>

A past history of measles in the child was obtained from the mother or guardian. There were problems encountered in describing to the mother the disease measles. Wherever possible the mothers history was checked with information in the 'Road-to Health' cards. 33% of children in all areas gave a past history of measles. The ratio was as high as 42.1% in Namitambo.

A small percentage of mothers 2.8% for all areas did not know if their child had suffered from measles.

TABLE 59.

DISTRIBUTION OF CHILDREN BY HISTORY OF WHOOPING COUGH AND
BY AREA.

HISTORY OF WHOOPING COUGH	A R E A				
	ILESHA (NIGERIA)	ESA OKE (NIGERIA)	NAMITAMBO (MALAWI)	MANSA (ZAMBIA)	ALL AREAS
Yes	6.0% (26)	7.1% (29)	18.4% (48)	18.8% (59)	11.5% (162)
No	90.6% (393)	92.6% (375)	80.8% (211)	78.0% (245)	86.5% (1224)
Do not know	3.4% (15)	0.3% (1)	0.8% (2)	3.2% (10)	2.0% (28)
TOTAL	100.0% (434)	100.0% (405)	100.0% (261)	100.0% (314)	100.0% (1414)

Table 59.

Each mother (or guardian) was asked if any of the children
under the age of five in the family had suffered from whooping
cough. It was difficult at times to explain to the mother what
whooping cough was. This problem was often overcome by
demonstrating a 'cough with a whoop'. It is noted that almost
19% of children in Mansa and Namitambo had suffered from
whooping cough. Occasionally there was a note in the 'Road-
to-Health' card to the effect that the child had suffered from
whooping cough, but in most cases the information was obtained
from parent or guardian. A few children who gave a history
of whooping cough were also seen to have had Diptheria Pertussis

Tetanus (DPT) vaccination. Since information on age when the
child had whooping cough was not sought (this was done
deliberately as it was felt that this information might be
inaccurate for it involved recall of an incident which
occurred sometime in the past) it was not possible to
establish if the child suffered from whooping cough before
or after being given DPT.

<u>TABLE 60.</u>

<u>DISTRIBUTION OF CHILDREN UNDER FIVE BY AGE BY NUMBER OF
STOOLS PASSED IN THE TWENTY FOUR HOURS PRIOR TO SURVEY FOR
ALL AREAS.</u>

NUMBER OF STOOLS PASSED IN TWENTY FOUR HOURS PRIOR TO SURVEY	A L L A R E A S			
	A G E			
	0 - under 6 months	6 - under 12 months	12 - under 18 months	18 months and over
0	6.8% (13)	3.2% (6)	8.8% (13)	4.3% (37)
1	18.9% (36)	23.3% (44)	21.8% (32)	16.8% (145)
2	30.5% (58)	37.0% (70)	36.1% (53)	40.6% (349)
3 and over	43.8% (83)	36.5% (69)	33.3% (49)	38.3% (330)
TOTAL	100.0% (190)	100.0% (189)	100.0% (147)	100.0% (861)

<u>Table 60.</u>

This table shows the distribution of child by number of
stools passed by age, for all areas. Except in the age group
0 - under 6 months the **modal. value** for the number of
stools passed was :two:. This pattern was seen to be
identical for all four areas. Therefore to simplify the
presentation, a single table is constructed showing the
distribution of the number of stools passed in the twenty four
hours prior to survey for all areas. The answers could be

considered accurate for the children in the younger age groups. However, the older children are less supervised by their mothers and hence the mothers may not be always aware of the number of times her older children defaecate per day.

It is noted, however, that none of the mothers refrained from answering this particular question.

TABLE 61.

This table shows the distribution of children by age by number of admissions to hospital for all areas.

It is seen that with increasing age the proportion of children who have never been admitted to hospital decreases. For example, 92% of children in the 0 - under 1 year age group have never been admitted to hospital while in the 4 - under 5 years of age group only 71% of children have escaped hospitalisation.

This pattern of course is to be expected. The older the child the more chance he or she would have had of contracting a disease which warrants hospitalisation.

The above pattern was experienced in all four areas of study. In order to simplify the presentation, table 61 has therefore been constructed for all areas taken together.

<u>TABLE 61.</u>

<u>DISTRIBUTION OF CHILDREN BY AGE BY NUMBER OF ADMISSIONS</u>

<u>TO HOSPITAL FOR ALL AREAS</u>

AGE	NUMBER OF ADMISSIONS	ALL AREAS
Up to 1 year	0	92% (351)
	1	7% (26)
	2 and over	1% (4)
	TOTAL	100% (381)
1 - under 2 years	0	81% (251)
	1	16% (50)
	2 and over	3% (10)
	TOTAL	100% (311)
2 - under 3 years	0	78% (210)
	1	20% (55)
	2 and over	2% (5)
	TOTAL	100% (270)
3 - under 4 years	0	78% (59)
	1	18% (14)
	2 and over	4% (3)
	TOTAL	100% (76)
4 - under 5 years	0	71% (140)
	1	23% (44)
	2 and over	6% (11)
	TOTAL	100% (195)

TABLE 62.

DISTRIBUTION OF CHILDREN BY PRESENCE OF AN UMBILICAL HERNIA

BY AREA.

		AREA			
	ILESHA (NIGERIA)	ESA OKE (NIGERIA)	NAMITAMBO (MALAWI)	MANSA (ZAMBIA)	ALL AREAS
Total children seen	434	405	261	314	1414
Umbilical hernia present	25% (108)	26% (105)	6% (16)	5% (16)	17% (245)

Table 62.

Umbilical hernia were fairly frequently seen in African
children.   All children were examined for the presence or
absence of herniae. Overall   . 17% of the children were seen
to have umbilical herniae   In the two West African areas i.e.
Ilesha and Esa Oke 25% and 26% of the children respectively
were seen to have umbilical herniae at the time of the study.

TABLE 63.

DISTRIBUTION OF CHILDREN UNDER FIVE BY CLINIC ATTENDANCE BY
PRESENCE OF ROAD TO HEALTH CARD BY AREA.

CLINIC ATTENDANCE AND ROAD TO HEALTH CARD	A R E A				
	ILESHA (NIGERIA)	ESA OKE (NIGERIA)	NAMITAMBO (MALAWI)	MANSA (ZAMBIA)	ALL AREAS
N O (Never had a card)	13% (55)	9% (37)	32% (83)	16% (51)	16% (226)
Y E S	87%	91%	68%	84%	84%
(Card lost)	1% (5)	1% (3)	21% (55)	17% (54)	8% (117)
(Card not available)	6% (25)	5% (21)	5% (12)	7% (21)	6% (79)
(Cards seen)	80% (349)	85% (344)	42% (111)	60% (188)	70% (992)
TOTAL	100% (434)	100% (405)	100% (261)	100% (314)	100% (1414)

Table 63.

From this table it is seen that 13% of children in Ilesha,
9% in Esa Oke, 32% in Namitambo and 16% in Mansa have never
attended an Under Fives Clinic, and therefore had never been
issued with a 'Road-to-Health' card.

Those children who have attended the clinic, i.e. 87% in
Ilesha, 91% in Esa Oke, 68% in Namitambo and 84% in Mansa fall
into one of three categories as far as their 'Road-to-Health'

card, on day of survey was concerned.   Though all the children were issued with 'Road-to-Health' cards, on the day of the survey their cards could be -

    1.   Not available (for example locked away)

    2.   Lost

    3.   Seen

It is interesting that in Ilesha and Esa Oke the cards lost only amounted to 1% while in Mansa it was 17% and Namitambo 21%.

Morley has suggested that ideally a child should be
brought to the Under Fives Clinic once a month in the first
year of life and once in three months during the next four
years.   In an ideal situation if one takes Morley's
suggestion, for the number of attendances at each year of
age, as an optimum use of clinic facilities, then the simplest
way to look at part played by distance in uptake of clinic
factors would be to tabulate the frequency of clinic attendances
of the children living at varying distances from the clinic,
for each of the four areas.   However, age is a factor in this.
Younger children because of their age would not have had the
opportunity of attending the clinic as many times as the
children who are older.   In order to simplify the presentation
of such data some allowance has to be made for any difference
in age structure for population of children living at
different distances from the clinic and in different areas.
This has been done taking Morley's schedule for clinic
attendances, as what could be reasonably expected for children
at each age attending the clinic.   On this basis, for each
clinic attender in the study, the expected number of clinic
attendances was calculated (taking into account the age of
the child.) For each child, with a 'Road-to-Health' card,
the number of visits made to clinic was obtained from the
card and this value was compared with the ideal number of
visits the child should have made according to Morley's
recommendation — Chart 1.

These values have been tabulated.   For simplicity
of presentation these percentages have been presented in four

categories, i.e. at each age group the proportion of children
attending the clinic 1 - 25%, 26 - 50%, 51 - 75% and over
75% of the optimum number of visits expected for the age
group. For example, a child aged thirty months, if it had
made fourteen or more visits then this would comprise 76%
or more of the ideal number of visits recommended by Morley
(Chart 1). If a child aged four months had visited the
clinic four times then the number of visits would be 76%
or more of the ideal number of visits for its age. If a child
of the same age had made only two visits then this number of
visits would be only 26 - 50% of the ideal number of visits
for its age.

Table 64.

In this table the number of visits (if any) made by the
child to the Under Fives Clinic have been compared with the
ideal number of visits he should have made for his age.
For example, in Ilesha 236 or 54% of children seen in the survey
had made 76% or more of the ideal number of visits for their
age, at the time of survey. Whereas in Namitambo only 14%
of children had made 76% or more of the ideal number of visits
for age. In 10%, 6%, 26% and 24% in Ilesha, Esa Oke, Namitambo
and Mansa respectively the children were clinic attenders but
their cards were not available on the day of survey. As such
it was not possible to obtain the number of clinic visits made
by these children.

CHART 1

IDEAL NUMBER OF VISITS TO CLINIC BY EACH AGE.

Age in Months	A 76% and over of ideal visits	B 51 - 75% of ideal visits	C 26 - 50% of ideal visits	D 1 - 25% of ideal visits
1	1			
2	2		1	
3	3	2	1	
4	4	3	2	1
5	4, 5	3	2	1
6	5, 6	4	3, 2	1
7	6, 7	4, 5	2, 3	1
8	8, 7	6, 5	4, 3	2, 1
9	7 - 9+	6, 5	4, 3	2, 1
10	8 - 10+	7, 6	3 - 5	2, 1
11	9 - 11+	6 - 8	3 - 5	2, 1
12	9 - 12+	7, 8	4 - 6	1 - 3
15	10 - 13+	7 - 9	4 - 6	1 - 3
18	11 - 14+	8 - 10	4 - 7	1 - 3
21	11 - 15+	8 - 10	4 - 7	1 - 3
24	13 - 16+	9 - 12	5 - 8	1 - 4
27	13 - 17+	9 - 12	5 - 8	1 - 4
30	14 - 18+	10 - 13	5 - 9	1 - 4
33	15 - 19+	10 - 14	5 - 9	1 - 4
36	16 - 20+	11 - 15	6 - 10	1 - 5
39	16 - 21+	11 - 15	6 - 10	1 - 5
42	17 - 22+	12 - 16	6 - 11	1 - 5
45	18 - 23+	12 - 17	6 - 11	1 - 5
48	19 - 24+	13 - 18	7 - 12	1 - 6
51	19 - 25+	13 - 18	7 - 12	1 - 6
54	20 - 26+	14 - 19	7 - 13	1 - 6
57	20 - 27+	14 - 19	7 - 13	1 - 6
60	21 - 28+	15 - 20	8 - 14	1 - 7

TABLE 64.

DISTRIBUTION OF CHILDREN UNDER FIVE BY FREQUENCY OF CLINIC ATTENDANCE BY AREA.

NUMBER OF VISITS AS A % IDEAL FOR AGE	A R E A			
	ILESHA (NIGERIA)	ESA OKE (NIGERIA)	NAMITAMBO (MALAWI)	MANSA (ZAMBIA)
76 - 100%	54% (236)	74% (298)	14% (37)	20% (64)
51 - 75%	8% (33)	5% (20)	3% (9)	9% (29)
26 - 50%	9% (39)	3% (11)	11% (29)	16% (49)
1 - 25%	6% (26)	3% (14)	14% (36)	15% (46)
0% (i.e. clinic non-attender	13% (55)	9% (37)	32% (83)	16% (51)
Number of visits not known	10% (45)	6% (25)	26% (67)	24% (75)
TOTAL	100% (434)	100% (405)	100% (261)	100% (314)

TABLE 65.

DISTRIBUTION OF CHILDREN UNDER FIVE BY B.C.G. VACCINATION
BY AREA.

B.C.G. VACCINATION	A R E A				
	ILESHA (NIGERIA)	ESA OKE (NIGERIA)	NAMITAMBO (MALAWI)	MANSA (ZAMBIA)	ALL AREAS
Given	74% (322)	66% (269)	25% (66)	47% (149)	57% (806)
Not given	26% (112)	34% (136)	75% (195)	53% (165)	43% (608)
TOTAL	100% (434)	100% (405)	100% (261)	100% (314)	100% (1414)

Table 65.

Information on BCG vaccination was obtained for all
survey children by examination of deltoid region of upper arm
for BCG vaccination scar and/or information in the 'Road-to-
Health' cards.

In Ilesha and Esa Oke the proportion of children given
BCG is seen to be bigger than in Namitambo and Mansa. The
lowest was in Namitambo with only 25% of children having
received BCG vaccination.

TABLE 66.

DISTRIBUTION OF CHILDREN UNDER FIVE BY NUMBER OF OCCUPANTS
PER ROOM BY AREA.

OCCUPANTS PER ROOM	A R E A				
	ILESHA (NIGERIA)	ESA OKE (NIGERIA)	NAMITAMBO (MALAWI)	MANSA (ZAMBIA)	ALL AREAS
1	5.5% (24)	0.7% (3)	3.0% (8)	6.0% (20)	4.0% (55)
2	23.0% (100)	19.0% (77)	29.0% (76)	38.0% (119)	26.1% (372)
3	36.3% (156)	35.0% (141)	37.0% (97)	28.0% (89)	34.0% (483)
4	24.0% (106)	25.1% (102)	19.0% (49)	15.0% (47)	21.3% (304)
5	7.0% (30)	18.0% (73)	5.0% (13)	7.0% (22)	10.0% (138)
6	4.0% (17)	1.2% (5)	3.5% (9)	3.0% (9)	3.0% (40)
7	0.0% (0)	1.0% (4)	1.5% (4)	1.0% (3)	0.8% (11)
8+	0.2% (1)	0.0% (0)	2.0% (5)	2.0% (5)	0.8% (11)
TOTAL	100.0% (434)	100.0% (405)	100.0% (261)	100.0% (314)	100.0% (1414)

Table 66.

Except in Mansa the modal value for the number of
occupants per room was three, i.e. three persons occupy one
room. In Mansa the mode is two. However, it is worth
noting that 154 children in Ilesha 184 in Esa Oke 80 in
Namitambo and 86 in Mansa live in dwellings where there are
four or more persons per room. In Namitambo and Mansa five

<u>TABLE 66.</u>

<u>DISTRIBUTION OF CHILDREN UNDER FIVE BY NUMBER OF OCCUPANTS
PER ROOM BY AREA</u>.

OCCUPANTS PER ROOM	A R E A				
	ILESHA (NIGERIA)	ESA OKE (NIGERIA)	NAMITAMBO (MALAWI)	MANSA (ZAMBIA)	ALL AREAS
1	5.5% (24)	0.7% (3)	3.0% (8)	6.0% (20)	4.0% (55)
2	23.0% (100)	19.0% (77)	29.0% (76)	38.0% (119)	26.1% (372)
3	36.3% (156)	35.0% (141)	37.0% (97)	28.0% (89)	34.0% (483)
4	24.0% (106)	25.1% (102)	19.0% (49)	15.0% (47)	21.3% (304)
5	7.0% (30)	18.0% (73)	5.0% (13)	7.0% (22)	10.0% (138)
6	4.0% (17)	1.2% (5)	3.5% (9)	3.0% (9)	3.0% (40)
7	0.0% (0)	1.0% (4)	1.5% (4)	1.0% (3)	0.8% (11)
8+	0.2% (1)	0.0% (0)	2.0% (5)	2.0% (5)	0.8% (11)
TOTAL	100.0% (434)	100.0% (405)	100.0% (261)	100.0% (314)	100.0% (1414)

<u>Table 66.</u>

Except in Mansa the modal value for the number of
occupants per room was three, i.e. three persons occupy one
room. In Mansa the mode is two. However, it is worth
noting that 154 children in Ilesha 184 in Esa Oke 80 in
Namitambo and 86 in Mansa live in dwellings where there are
four or more persons per room. In Namitambo and Mansa five

children in each area came from dwellings which had eight
or more persons to a room, even though measurements for
area of room were not collected, yet the degree of over-
crowding would be high in the latter situation. Spread
of diseases caused by **droplet infection would be**
rapid in the presence of overcrowding.

TABLE 67.

DISTRIBUTION OF CHILDREN UNDER FIVE BY PARENTS

BY AREA

PARENTS OF CHILD	A R E A				
	ILESHA (NIGERIA)	ESA OKE (NIGERIA)	NAMITAMBO (MALAWI)	MANSA (ZAMBIA)	ALL AREAS
Both alive	98.7% (428)	96.8% (392)	99.2% (259)	99.7% (313)	98.4% (1392)
Mother dead	0.2% (1)	0.2% (1)	0.0% (0)	0.0% (0)	0.2% (2)
Father dead	0.9% (4)	3.0% (12)	0.8% (2)	0.3% (1)	1.3% (19)
Both dead	0.2% (1)	0.0% (0)	0.0% (0)	0.0% (0)	0.1% (1)
TOTAL	100.0% (434)	100.0% (405)	100.0% (261)	100.0% (314)	100.0% (1414)

Table 67.

This table indicates that a very high proportion of children in all areas have both their parents alive. This was seen to be the case in 98.4% of all children. It is noteworthy that of all 1414 children seen in the survey there was only one child who was orphaned.

TABLE 68.

DISTRIBUTION OF CHILDREN UNDER FIVE BY PERSON LIVING
WITH CHILD IN DWELLING BY AREA.

PERSON LIVING WITH THE CHILD IN DWELLING	AREA				
	ILESHA (NIGERIA)	ESA OKE (NIGERIA)	NAMITAMBO (MALAWI)	MANSA (MALAWI)	ALL AREAS
Neither parent	2.5% (11)	1.0% (4)	1.5% (4)	1.6% (5)	1.7% (24)
Mother only	41.9% (182)	34.6% (140)	46.0% (120)	15.0% (47)	34.6% (489)
Father only	0.7% (3)	0.7% (3)	0.0% (0)	0.6% (2)	0.6% (8)
Both	54.9% (238)	63.7% (258)	52.5% (137)	82.8% (260)	63.1% (893)
TOTAL	100.0% (434)	100.0% (405)	100.0% (261)	100.0% (314)	100.0% (1414)

Table 68.

From this table it is seen that the majority of children
in all areas live with both parents. However, within this
group marked variations are seen. For example 52.5% of
children in Namitambo and 82.8% children in Mansa live with
both parents. Consequently in Mansa in contrast to the other
areas, the proportion of children living with their mother only
is low at 15%. The reasons for a child living with his or her
mother only could be many. The parents may be divorced or
separated, or the father could be working away from home. It is
seen from Table 67 that the proportion of children who have lost
their father through death is very small. Hence this reason at
least could not account for a large proportion of children
living with their mother only.

CHARACTERISTICS OF ALL FAMILIES BY UNDER

FIVES CLINIC ATTENDANCE OF CHILDREN

TABLES 69 - 74.

TABLE 69.

DISTRIBUTION OF FAMILIES BY UNDER FIVES CLINIC ATTENDANCE OF CHILDREN BY AREA.

ATTENDANCE OF CHILDREN AT UNDER FIVES CLINIC	A R E A				
	ILESHA FAMILIES	ESA OKE FAMILIES	NAMITAMBO FAMILIES	MANSA FAMILIES	ALL AREAS
All children under five in family attend	85.5% (276)	89.3% (266)	65.0% (131)	79.5% (170)	81.0% (843)
Only some children under five in family attend	3.0% (11)	0.7% (2)	9.0% (18)	8.0% (16)	5.0% (47)
No children under five in family attend	11.5% (36)	10.0% (31)	26.0% (53)	12.5% (27)	14.0% (147)
TOTAL	100.0% (323)	100.0% (299)	100.0% (202)	100.0% (213)	100.0% (1037)

Table 69.

All families taken taken into the survey, could be divided into the following three categories, depending on the Under Fives Clinic attendance of children in the family.

(1) Families where all children under the age of five attend the Under Fives Clinic. 85% families in Ilesha fall into this group while only 65.0% of the families in Namitambo are in this category. In Esa Oke 89.3% and in

Mansa 79.5% of families take all their children under
the age of five to the Under Fives Clinic.

(2)   Families where some children under the age of
five in family attend the Under Fives Clinic.

It seems rather strange that a mother would decide
to take only some of her children to the Under Fives
Clinic. Some of the reasons given for a mother not
taking her other children under the age of five to
the clinic were as follows -

   (a)   The child not ill

   (b)   Child too small

   (c)   Child too old.

The above situation arose in 9% and 8% families
respectively in Namitambo and Mansa. However, in Esa
Oke only two families (0.7%) were in this situation.

(3)   Families where all the children under the
age of five do not attend the Under Fives Clinic.
This amounted to 11.5% families in Ilesha, 10.0%
in Esa Oke, and 12.5% in Mansa. However, in
Namitambo 26% of families (more than twice as many
as in other areas) did not take any of their children
under the age of five to the Under Fives Clinic
(See Table 46 for reason for clinic non attendance).
Table 69. This shows the division of the families

into three distinct groups, depending on the clinic
attendance of the children under five in the family.
In Tables 70 - 74, the three groups of families have
been compared with each other in relation to the
different variables.

TABLE 70.

DISTRIBUTION OF FAMILIES BY UNDER FIVES CLINIC ATTENDANCE BY
PERSON LIVING WITH CHILDREN BY AREA

PERSON/S LIVING IN DWELLING WITH CHILDREN	ALL AREAS		
	FAMILIES GROUP A	FAMILIES GROUP B	FAMILIES GROUP C
Mother only	34.1% (288)	40.2% (19)	46.2% (68)
Father only	6.0% (5)	0.0% (0)	1.4% (2)
Both	63.3% (533)	59.6% (28)	48.3% (71)
Neither parent	2.0% (17)	0.0% (0)	4.1% (6)
TOTAL	100.0% (843)	100.0% (47)	100.0% (147)

Group A. All children under the age of five in the family
          attend the under fives clinic
Group B. Some children under the age of five in family
          attend the under fives clinic
Group C. No child under the age of five in family attend
          under fives clinic

    In all areas the tendency for children under the age of
five to attend the clinic is seen to be greater if the child
lives with both parents rather than one. This pattern is
seen also when each area is looked at separately. However,

since the number of families where both parents live in
dwelling far outnumber families where only one parent lives
in dwelling, it is not possible to draw firm conclusions
on this finding. For simplicity of presentation a single
table is given for all four areas.

TABLE 71.   191

DISTRIBUTION OF FAMILIES BY UNDER FIVES CLINIC ATTENDANCE OF
CHILDREN BY KNOWLEDGE OF "PURPOSE OF IMMUNISATION" FOR ALL
AREAS.

PURPOSE OF IMMUNISATION	ALL AREAS			
	FAMILIES GROUP A	FAMILIES GROUP B	FAMILIES GROUP C	ALL FAMILIES
For good health	32.6% (275)	19.2% (9)	10.8% (16)	28.9% (300)
To prevent disease	51.0% (430)	55.3% (26)	37.4% (55)	49.3% (511)
Other	15.8% (133)	25.5% (12)	51.8% (76)	21.3% (221)
Do not know	0.6% (5)	0.0% (0)	0.0% (0)	0.5% (5)
TOTAL	100.0% (843)	100.0% (47)	100.0% (147)	100.0% (1037)

Group A.   All children under the age of five in the family
           attend the under fives clinic
Group B.   Some children under the age of five in family
           attend the under fives clinic.
Group C.   No children under the age of five in family attend
           under fives clinic.

This table attempts to elicit the knowledge acquired by
families with regards to "purpose of immunisation".

Among families in Group A, 82.6% gave "for good health"
and "to prevent disease" as answers. Both these answers were
accepted as correct. However, among families in Group C
51.8% of answers given were classified as "other". These
answers were interpreted as incorrect. The group "other"

included answers such as "immunisations are given for
diarrhoea, convulsions"etc.

The results of this table reveal that those mothers
who brought some or all of their children to the Under Fives
Clinic had a better knowledge regards reasons for immunising
their children, than those mothers who did not bring any of
their children to the Under Fives Clinic. Mothers in Group A
were exposed to 'health education' at the Under Fives Clinic,
while mothers in Group C were not. This could account for the
better answers received from mothers in Group A.

For each of the four areas the answers were similar, and
conformed to above pattern. Therefore to simplify presentation
all areas have been taken together for Table 71

TABLE 72.

DISTRIBUTION OF FAMILIES BY UNDER FIVES CLINIC ATTENDANCE OF
CHILDREN, BY TYPE OF MILK SUITABLE FOR CHILDREN (UNDER THREE
MONTHS OF AGE) BY AREA.

PART A.   FAMILIES WHERE ALL CHILDREN UNDER THE AGE OF FIVE
ATTEND THE UNDER FIVES CLINIC.

TYPE OF MILK	AREA				
	ILESHA (NIGERIA)	ESA OKE (NIGERIA)	NAMITAMBO (MALAWI)	MANSA (ZAMBIA)	ALL AREAS
Breast milk	85.1% (235)	83.8% (223)	64.9% (85)	91.7% (156)	82.9% (699)
Artificial milk	6.9% (19)	10.2% (27)	30.5% (40)	2.4% (4)	10.7% (90)
Both	6.5% (18)	5.6% (15)	3.8% (5)	0.0% (0)	4.5% (38)
Do not know	1.5% (4)	0.4% (1)	0.8% (1)	5.9% (10)	1.9% (16)
TOTAL	100.0% (276)	100.0% (266)	100.0% (131)	100.0% (170)	100.0% (843)

PART B.   FAMILIES WHERE ONLY SOME OF THE CHILDREN UNDER THE AGE
OF FIVE ATTEND THE UNDER FIVES CLINIC

TYPE OF MILK	AREA				
	ILESHA (NIGERIA)	ESA OKE (NIGERIA)	NAMITAMBO (MALAWI)	MANSA (ZAMBIA)	ALL AREAS
Breast milk	100.0% (11)	50.0% (1)	72.0% (13)	81.3% (13)	80.8% (38)
Artificial milk	0.0% (0)	50.0% (1)	28.0% (5)	6.2% (1)	14.9% (7)
Both	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)
Do not know	0.0% (0)	0.0% (0)	0.0% (0)	12.5% (2)	4.3% (2)
TOTAL	100.0% (11)	100.0% (2)	100.0% (18)	100.0% (16)	100.0% (47)

TABLE 72 (Continued)

DISTRIBUTION OF FAMILIES BY UNDER FIVES CLINIC ATTENDANCE OF
CHILDREN BY TYPE OF MILK THOUGHT SUITABLE FOR CHILDREN UNDER
THREE MONTHS OF AGE BY AREA.

PART C. FAMILIES WHERE NO CHILD UNDER THE AGE OF FIVE ATTENDS THE UNDER FIVES CLINIC.

TYPE OF MILK	A R E A				
	ILESHA (NIGERIA)	ESA OKE (NIGERIA)	NAMITAMBO (MALAWI)	MANSA (ZAMBIA)	ALL AREAS
Breast milk	91.6% (33)	87.1% (27)	50.9% (27)	88.9% (24)	75.5% (111)
Artificial milk	2.8% (1)	9.7% (3)	41.5% (22)	3.7% (1)	18.4% (27)
Both	5.6% (2)	3.2% (1)	3.8% (2)	0.0% (0)	3.4% (5)
Do not know	0.0% (0)	0.0% (0)	3.8% (2)	7.4% (2)	2.7% (4)
TOTAL	100.0% (36)	100.0% (31)	100.0% (53)	100.0% (27)	100.0% (147)

Table 72.

In Part A for families where all children attend the Under Fives Clinic it is seen that between 64.9% and 91.7% families thought breast milk was more suitable for a child under the age of three months. However in Namitambo in this group 30.5% families replied that artificial milk was better suited for children under the age of three months.

In Part C among mothers who do not take their children to the Under Fives Clinic it is seen that 41.5% of families in Namitambo felt that artificial milk was more suitable for children under the age of three months.

The preferance of artificial milk for children under three months of age was only shown to any extent in Namitambo. In the other three areas in Part A, B and C of Table 72 it is seen that breast milk was accepted as more suitable for the children under the age of three months. It is possible that the staff at Namitambo clinic do not lay special emphasis on the importance of breast milk for the young child.

<u>TABLE 73.</u>

<u>DISTRIBUTION OF FAMILIES BY UNDER FIVES CLINIC ATTENDANCE OF</u>

<u>CHILDREN BY NUMBER OF CHILDREN BORN TO MOTHER BY AREA.</u>

<u>PART A.</u> FAMILIES WHERE ALL CHILDREN UNDER THE AGE OF FIVE IN
THE FAMILY ATTEND THE UNDER FIVES CLINIC.

NUMBER OF CHILDREN BORN TO MOTHER	A R E A				
	ILESHA (NIGERIA)	ESA OKE (NIGERIA)	NAMITAMBO (MALAWI)	MANSA (ZAMBIA)	ALL AREAS
1	16.0% (45)	13.0% (33)	24.0% (31)	16.0% (28)	16.0% (137)
2	18.0% (51)	15.0% (39)	20.0% (26)	15.0% (26)	17.0% (142)
3	20.0% (55)	13.0% (35)	9.0% (12)	15.0% (25)	15.0% (127)
4	18.0% (50)	15.0% (41)	6.0% (8)	12.0% (20)	14.0% (119)
5	13.0% (35)	16.0% (42)	13.0% (17)	11.0% (18)	13.0% (112)
6	9.0% (24)	12.0% (32)	5.0% (7)	11.0% (18)	10.0% (81)
7	2.0% (5)	7.0% (19)	10.0% (13)	6.0% (11)	6.0% (48)
8 and over	4.0% (11)	9.0% (25)	13.0% (17)	14.0% (24)	9.0% (77)
TOTAL	100.0% (276)	100.0% (266)	100.0% (131)	100.0% (170)	100.0% (843)

<u>Table 73.</u>

For families where all children under the age of five
attend the clinic, the modal number of children born to
mother for Ilesha was three, Esa Oke 5, Namitambo 1, and

Mansa one   (Part A)

However, it is seen that 4.0%, 9.0%, 13.0% and 14.0% families in Ilesha, Esa Oke, Namitambo and Mansa respectively had eight or more children born to mother in the families where all children under the age of five attend the clinic.

In families where only some of the children under five attend the clinic (Part B) it is seen that the mode number of children born to mother is similar to Part A for Ilesha and Esa Cke, but for Namitambo this value increases to three and for Mansa to 2.

In families where none of the children under five attend the clinic, the modal. number of children born to mother was 1. (part C) When all areas are taken together.

TABLE 73 (Continued)   1 9 8

DISTRIBUTION OF FAMILIES BY UNDER FIVES CLINIC ATTENDANCE OF

CHILDREN BY NUMBER OF CHILDREN BORN TO MOTHER BY AREA.

PART B.   FAMILIES WHERE SOME OF THE CHILDREN UNDER THE AGE
          OF FIVE IN FAMILY ATTEND THE UNDER FIVES CLINIC.

NUMBER OF CHILDREN BORN TO MOTHER	A R E A				
	ILESHA (NIGERIA)	ESA OKE (NIGERIA)	NAMITAMBO (MALAWI)	MANSA (ZAMBIA)	ALL AREAS
1	8.0% (1)	0.0% (0)	0.0% (0)	0.0% (0)	2.0% (1)
2	28.0% (3)	0.0% (0)	17.0% (3)	38.0% (6)	25.0% (12)
3	28.0% (3)	0.0% (0)	27.0% (5)	7.0% (1)	19.0% (9)
4	18.0% (2)	50.0% (1)	17.0% (3)	12.0% (2)	17.0% (8)
5	0.0% (0)	50.0% (1)	11.0% (2)	12.0% (2)	11.0% (5)
6	0.0% (0)	0.0% (0)	11.0% (2)	7.0% (1)	6.0% (3)
7	18.0% (2)	0.0% (0)	0.0% (0)	12.0% (2)	9.0% (4)
8 and over	0.0% (0)	0.0% (0)	17.0% (3)	12.0% (2)	11.0% (5)
TOTAL	100.0% (11)	100.0% (2)	100.0% (18)	100.0% (16)	100.0% (47)

<u>TABLE   73</u>   (Continued)

<u>DISTRIBUTION OF FAMILIES BY UNDER FIVES CLINIC ATTENDANCE OF</u>

<u>CHILDREN BY NUMBER OF CHILDREN BORN TO MOTHER BY AREA.</u>

<u>PART C.</u>   FAMILIES WHERE NO CHILDREN UNDER THE AGE OF FIVE IN
FAMILY ATTEND THE UNDER FIVES CLINIC.

NUMBER OF CHILDREN BORN TO MOTHER	A R E A				
	ILESHA (NIGERIA)	ESA OKE (NIGERIA)	NAMITAMBO (MALAWI)	MANSA (ZAMBIA)	ALL AREAS
1	19.0% (7)	19.0% (6)	30.0% (16)	19.0% (5)	23.0% (34)
2	28.0% (10)	16.5% (5)	11.0% (6)	22.0% (6)	19.0% (27)
3	8.0% (3)	13.0% (4)	4.0% (2)	11.0% (3)	8.0% (12)
4	22.0% (8)	19.0% (6)	15.0% (8)	11.0% (3)	17.0% (25)
5	17.0% (6)	6.5% (2)	15.0% (8)	14.0% (4)	14.0% (20)
6	3.0% (1)	13.0% (4)	8.0% (4)	11.0% (3)	8.0% (12)
7	3.0% (1)	6.5% (2)	8.0% (4)	4.0% (1)	5.0% (8)
8 and over	0.0% (0)	6.5% (2)	9.0% (5)	8.0% (2)	6.0% (9)
TOTAL	100.0% (36)	100.0% (31)	100.0% (53)	100.0% (27)	100.0% (147)

TABLE 74.

DISTRIBUTION OF FAMILIES BY UNDER FIVES CLINIC ATTENDANCE OF
CHILDREN IN FAMILY BY ANTE NATAL CLINIC ATTENDANCE OF MOTHER
FOR ALL AREAS.

ANTE NATAL CLINIC ATTENDANCE OF MOTHER	ALL AREAS		
	FAMILIES GROUP A	FAMILIES GROUP B	FAMILIES GROUP C
Yes	91% (770)	79% (37)	69% (102)
No	9% (73)	21% (10)	31% (45)
TOTAL	100% (843)	100% (47)	100% (147)

Table 74.

Group A. All children under the age of five in family attend
         the under fives clinic.
Group B. Some children under the age of five in family attend
         the under fives clinic.
Group C. No children under the age of five in family attend
         under five clinic.

This table looks at the relationship between the ante
natal attendance of a mother during her pregnancy and the
Under Fives Clinic attendance of her child. Is it more
likely for a mother to take her children to the Under Fives
Clinic if she herself makes use of the facilities at the
ante natal clinic when she is pregnant? 91% of mothers who
take all their children to the Under Fives Clinic (Group A)
attend ante natal clinic when pregnant. However, only 69%
of mothers in Group C, i.e. (those mothers that do not take
any of their children to the Under Fives Clinic) attend ante
natal clinic. 31% of families do not use the facilities at

Under Fives Clinic or ante natal clinic.

The relationship between Under Fives clinic attendance and ante natal clinic attendance, for each of the four study areas showed a pattern similar to above. Hence in order to simplify the presentation, a single table, combining all areas is given.

CHARACTERISTICS OF CHILDREN BY UNDER

FIVES CLINIC ATTENDANCE

TABLES 75 - 83.

CHARACTERISTICS OF CHILDREN BY UNDER

FIVES CLINIC ATTENDANCE

TABLES 75 - 83.

TABLE 75.

DISTRIBUTION OF CHILDREN BY AGE IN YEARS BY CLINIC ATTENDANCE AND BY AREA.

AGE	AREA									
	ILESHA (NIGERIA)		ESA OKE (NIGERIA)		NAMITAMBO (MALAWI)		MANSA (ZAMBIA)		ALL AREAS	
	*C.A.	**N.A.	*C.A.	**N.A.	*C.A.	**N.A.	*C.A.	**N.A.	*C.A.	**N.A.
0 - under 1 year	25% (88)	31% (16)	22% (82)	26% (9)	34% (61)	35% (29)	36% (80)	18% (16)	28% (311)	27% (70)
1 - under 2 years	19% (71)	27% (14)	23% (84)	29% (10)	24% (43)	26% (21)	10% (21)	52% (47)	19% (219)	36% (92)
2 - under 3 years	19% (71)	19% (10)	18% (67)	21% (7)	18% (31)	22% (18)	24% (54)	12% (11)	20% (223)	18% (46)
3 - under 4 years	19% (71)	10% (5)	20% (72)	12% (4)	18% (31)	5% (4)	18% (40)	10% (9)	18% (214)	8% (22)
4 - under 5 years	18% (67)	13% (7)	17% (63)	12% (4)	6% (11)	12% (10)	12% (27)	8% (7)	15% (168)	11% (28)
TOTAL	100% (368)	100% (52)	100% (368)	100% (34)	100% (177)	100% (82)	100% (222)	100% (90)	100% (1135)	100% (258)

*Clinic Attender
** Clinic Non Attender

Table 75.

This table shows the relationship between age of children and clinic attendance. In Ilesha and Esa Oke, the clinic attenders are seen to be distributed between 17% and 25% for each age group, i.e. almost as many children in the older age group attending the clinic as in the younger ages.

However in Namitambo and Mansa, the pattern is different. In both these areas there is a higher proportion of clinic attenders in the younger age groups, i.e. 0 - under 1 year than in the older age group 4 - under 5 years. For example, in Namitambo 34% clinic attenders are in the 0 - under 1 year age group while only 6% of children in the 4 - under 5 year group attend the clinic.

Table 76.

The sex distribution of children in relations to clinic attendance is seen in Table 76. In Ilesha, Esa Oke and Namitambo more males are seen among clinic attenders. However, in Mansa the proportions are reversed, with more females in the group clinic attenders.

It must be noted, however, that in Esa Oke among those children who did not attend the clinic (non attenders) too there was a male preponderance. The numbers in the group are small and hence cannot be used as a reliable indicator of sex distribution among clinic non attenders for this area.

TABLE 76.

DISTRIBUTION OF CHILDREN BY CLINIC ATTENDANCE BY SEX AND BY AREA

SEX	AREA									
	ILESHA (NIGERIA)		ESA OKE (NIGERIA)		NAMITAMBO (MALAWI)		MANSA (ZAMBIA)		ALL AREAS	
	*C.A.	**N.A.	*C.A.	**N.A.	*C.A.	**N.A.	*C.A.	**N.A.	*C.A.	**N.A.
Males	52.8% (200)	47.5% (26)	52.4% (193)	54.1% (20)	51.7% (92)	47.0% (39)	46.4% (122)	43.1% (22)	52.3% (637)	47.3% (107)
Females	47.2% (179)	52.8% (29)	47.6% (175)	45.9% (17)	48.3% (86)	53.0% (44)	53.6% (141)	56.9% (29)	47.7% (581)	52.7% (119)
TOTAL	100.0% (379)	100.0% (55)	100.0% (368)	100.0% (37)	100.0% (178)	100.0% (83)	100.0% (263)	100.0% (51)	100.0% (1218)	100.0% (226)

*C.A.   Clinic Attender
**N.A.   Clinic Non Attender

TABLE 77.

DISTRIBUTION OF CHILDREN BY DISTANCE OF DWELLING FROM CLINIC BY UNDER FIVES CLINIC ATTENDANCE BY AREA.

DISTANCE FROM CLINIC	AREA									
	ILESHA (NIGERIA)		ESA OKE (NIGERIA)		NAMITAMBO (MALAWI)		MANSA (ZAMBIA)		ALL AREAS	
	*C.A.	**N.A.	*C.A.	**N.A.	*C.A.	**N.A.	*C.A.	**N.A.	*C.A.	**N.A.
½ mile	95% (91)	5% (5)	92% (84)	8% (7)	51% (24)	49% (23)	79% (51)	19% (12)	81% (250)	19% (47)
1 mile	90% (88)	10% (10)	96% (67)	4% (3)	75% (40)	25% (13)	85% (45)	15% (8)	86% (240)	14% (34)
1½ miles	84% (80)	16% (15)	90% (76)	10% (8)	75% (42)	25% (14)	83% (48)	17% (10)	81% (246)	19% (47)
2 miles	90% (72)	10% (8)	86% (68)	14% (11)	67% (33)	33% (16)	87% (68)	13% (10)	81% (241)	19% (45)
2½ miles	74% (48)	26% (17)	90% (73)	10% (8)	70% (39)	30% (17)	82% (51)	18% (11)	75% (211)	25% (53)
TOTAL	87% (379)	13% (55)	91% (368)	9% (37)	68% (178)	32% (83)	84% (263)	16% (51)	81% (1188)	19% (226)

* Clinic Attender
** Clinic Non Attender

Table 77.

The distribution of children by distance from
dwelling by clinic attendance is shown in Table 77.

In Ilesha the proportion of children who attend
the clinic decreases with increasing distance, i.e.
95% of children living at a distance of $\frac{1}{2}$ mile from
clinic, are Under Fives Clinic attenders. Whereas
only 74% of children living at a distance of $2\frac{1}{2}$ miles
from clinic attend it. However, in Esa oke, Namitambo
and Mansa, the proportion of children who attend the
clinic at each distance does not decrease with
increasing distances of dwelling from clinic. For
example in Mansa 79% of children living $\frac{1}{2}$ mile from
clinic, and 82% of children living $2\frac{1}{2}$ miles from
clinic are clinic attenders.

TABLE 78.

DISTRIBUTION OF CHILDREN BY CLINIC ATTENDANCE BY PRESENCE OF UMBILICAL HERNIAE BY AREA

UMBILICAL HERNIAE	ILESHA (NIGERIA)		ESA OKE (NIGERIA)		NAMITAMBO (MALAWI)		MANSA (ZAMBIA)		ALL AREAS	
	Clinic Attenders	Clinic Non-Attenders	Clinic Attenders	Clinic Non-Attenders	Clinic Attenders	Clinic Non-Attenders	Clinic Attenders	Clinic Non-Attenders	Clinic Attenders	Clinic Non-Attenders
Present	24% (92)	29% (16)	26% (96)	24% (9)	7% (12)	5% (4)	5% (14)	4% (2)	18% (214)	14% (31)
Absent	76% (287)	71% (39)	74% (272)	76% (28)	93% (166)	95% (79)	95% (249)	96% (49)	82% (974)	86% (195)
TOTAL	100% (379)	100% (55)	100% (368)	100% (37)	100% (178)	100% (83)	100% (263)	100% (51)	100% (1188)	100% (226)

Table   78.

As mentioned earlier, in many parts of Africa
umbilical herniae in children are common. From Table 78,
it is seen that in both clinic attenders and non attenders
in Ilesha and Esa Oke umbilical herniae were seen in about
25% of children. There does not appear to be any relationship
between presence of umbilical herniae and clinic attendance
in any of the four areas of study.

Table 79.

The mother or guardian was asked if they thought their
child was ill on the day of interview. No physical or
other examinations were carried out to verify the answer
received.

In Ilesha, Esa Oke and Mansa nearly 90% of mothers
answered that the child was well at time of interview.
However in Namitambo there were almost twice as many ill
children on day of survey. During the month of March 1972
when the Namitambo survey was carried out there was an
outbreak of conjunctivitis in that area. This seemed to
affect not only children but also adults. In Namitambo
the higher proportion of children who were reported as
ill on the day of survey might have at least in part
resulted from the conjunctivitis outbreak.

TABLE 79.

DISTRIBUTION OF CHILDREN UNDER FIVE BY CLINIC ATTENDANCE BY ILLNESS ON DAY OF SURVEY AND BY AREA

HEALTH OF CHILD ON DAY OF SURVEY	AREA									
	ILESHA (NIGERIA)		ESA OKE (NIGERIA)		NAMITAMBO (MALAWI)		MANSA (ZAMBIA)		ALL AREAS	
	*C.A.	**N.A.	*C.A.	**N.A.	*C.A.	**N.A.	*C.A.	**N.A.	*C.A.	**N.A.
Child ill	7% (28)	2% (1)	8% (31)	8% (3)	21% (38)	18% (15)	10% (26)	8% (4)	10% (123)	10% (23)
Child well	93% (351)	98% (54)	92% (337)	92% (34)	79% (140)	82% (68)	90% (237)	92% (47)	90% (1065)	90% (203)
TOTAL	100% (379)	100% (55)	100% (368)	100% (37)	100% (178)	100% (83)	100% (263)	100% (51)	100% (1188)	100% (226)

* Clinic Attender
** Clinic Non Attender

TABLE 80.

DISTRIBUTION OF CHILDREN BY CLINIC ATTENDANCE BY NUMBER OF ATTACKS OF DIARRHOEA (IN THE THREE MONTHS PRIOR TO SURVEY) BY AREA.

NUMBER OF ATTACKS OF DIARRHOEA	AREA									
	ILESHA (NIGERIA)		ESA OKE (NIGERIA)		NAMITAMBO (MALAWI)		MANSA (ZAMBIA)		ALL AREAS	
	*C.A.	**N.A.	*C.A.	**N.A.	*C.A.	**N.A.	*.C.A.	**N.A.	*C.A.	**N.A.
0	81% (307)	94% (52)	86% (315)	97% (36)	58% (104)	76% (63)	55% (144)	69% (35)	73% (870)	82% (186)
1	6% (23)	2% (1)	7% (25)	0% (0)	33% (59)	16% (13)	41% (109)	27% (14)	18% (217)	12% (28)
2 and over	39% (49)	4% (2)	7% (28)	3% (1)	9% (15)	8% (7)	4% (10)	4% (2)	9% (102)	6% (12)
TOTAL	100% (379)	100% (55)	100% (368)	100% (37)	100% (178)	100% (83)	100% (263)	100% (51)	100% (1188)	100% (226)

*Clinic Attender
**Clinic Non Attender

211

Table 80:

The mothers were asked to recall the number of
attacks of diarrhoea her child had suffered from in
the three months preceding the survey. (For definition
of diarrhoea as applicable in this study see page *165*)

In each area the children who did not attend clinic
had suffered less from diarrhoea than children who attend
clinic. For example in Ilesha 81% clinic attenders and
94% non · attenders had not had any attacks of diarrhoea in
the three months preceding survey.

From Table 45 it is seen that the most popular reason
for clinic attendance is treatment. If this is so, then
one would expect that a child attended the clinic because
it had diarrhoea, and therefore a lower proportion of
children who were not having diarrhoea would not attend
clinic.

TABLE 81.

DISTRIBUTION OF CHILDREN BY HISTORY OF WHOOPING COUGH AND/OR HISTORY OF MEASLES BY CLINIC ATTENDANCE BY AREA.

HISTORY OF DISEASE	ILESHA (NIGERIA)		ESA OKE (NIGERIA)		NAMITAMBO (MALAWI)		MANSA (ZAMBIA)		ALL AREAS	
	*C.A.	**N.A.	*C.A.	**N.A.	*C.A.	**N.A.	*C.A.	**N.A.	*C.A.	**N.A.
Only measles Yes	29% (110)	13% (7)	36% (131)	24% (9)	37% (67)	24% (20)	22% (57)	14% (7)	31% (365)	19% (43)
Only whooping cough - yes	3% (13)	6% (3)	2% (7)	0% (0)	9% (16)	11% (9)	12% (33)	14% (7)	6% (69)	8% (19)
Both - Yes	3% (12)	4% (2)	5% (20)	3% (1)	10% (17)	7% (6)	6% (17)	41% (2)	5% (66)	5% (11)
Neither - Yes	62% (234)	75% (42)	56% (208)	73% (27)	43% (77)	58% (48)	57% (150)	60% (31)	56% (669)	66% (148)
Do not know	3% (10)	2% (1)	1% (2)	0% (0)	1% (1)	0% (0)	3% (6)	8% (4)	2% (19)	2% (5)
	100% (379)	100% (55)	100% (368)	100% (37)	100% (178)	100% (83)	100% (263)	100% (51)	100% (1188)	100% (226)

*Clinic attender
**Clinic non attender.

213

TABLE 81.

The distribution of children by history of whooping cough and/or measles by clinic attendance is shown in Table 81. It is noted that for each area, a large proportion of clinic non attenders have not suffered from either measles or whooping cough. For example 75%, 73%, 58% and 60% non attenders in Ilesha, Esa Oke, Namitambo and Manse have not suffered from measles or whooping cough.

Between 3 and 10% of all children had suffered from both whooping cough and measles (clinic attenders and non attenders) It is also interesting to note that for each area far more clinic attenders suffered from measles than clinic non attenders. Far less children in each area gave a history of having had whooping cough. This could have partly arisen due to the inability of the mothers to recognise this disease. However, among those children who gave a history of whooping cough a greater proportion in each area were clinic non attenders.

TABLE 82.

DISTRIBUTION OF CHILDREN BY CLINIC ATTENDANCE BY HOSPITAL ADMISSION, IF ANY, BY AREA.

ADMISSIONS (NUMBER OF OCCASIONS)	A R E A									
	ILESHA (NIGERIA)		ESA OKE (NIGERIA)		NAMITAMBO (MALAWI)		MANSA (ZAMBIA)		ALL AREAS	
	*C.A.	**N.A.	*C.A.	**N.A.	*C.A.	**N.A.	*C.A.	**N.A.	*C.A.	**N.A.
0	78.4% (297)	85.4% (47)	83.2% (306)	91.9% (34)	88.2% (157)	91.6% (76)	64.6% (170)	72.5% (37)	78.3% (930)	85.8% (194)
1	17.2% (65)	7.3% (4)	13.9% (51)	5.4% (2)	10.7% (19)	6.0% (5)	33.5% (88)	33.5% (12)	18.8% (223)	10.2% (23)
2	4.4% (17)	7.3% (4)	2.9% (11)	2.7% (1)	1.1% (2)	2.4% (2)	1.9% (5)	4.0% (2)	2.9% (35)	4.0% (9)
TOTAL	100.0% (379)	100.0% (55)	100.0% (368)	100.0% (37)	100.0% (178)	100.0% (83)	100.0% (263)	100.0% (51)	100.0% (1188)	100.0% (226)

* Clinic attender
** Clinic non attender

TABLE 82

This table shows the distribution of children by hospital
admission by clinic attendance and by area. In order to
study the association between hospital admissions and clinic
attendance it is also important to separate the children into
age groups.(An older child would have a greater chance of being
hospitalised than a younger one, as the older child would have
been exposed longer to diseases that might warrant hospitalization)
The effect of age was looked at in relation to this table, and
was found to be similar to that in table 61. Therefore for
simplicity of presentation age as factor has been omitted from
Table 82.

The percentage of clinic attenders in Mansa that have been
admitted to hospital at least once is 35.4%. This is seen to be
higher than in any of the other areas of study. The presence
of a General hospital in Mansa, could partly have accounted
for this. However in Ilesha, where there was also a General
Hospital the percentage of clinic attenders admitted to
hospital was 21.6%. So the presence of a General Hospital
in the area does not seem to be the only guiding factor, for
admission of clinic attenders to hospital.

TABLE 83(a)

DISTRIBUTION OF CHILDREN BY CLINIC ATTENDANCE BY B.C.G.VACCINATION BY AREA.

B.C.G. VACCINATION	AREA									
	ILESHA (NIGERIA)		ESA OKE (NIGERIA)		NAMITAMBO (MALAWI)		MANSA (ZAMBIA)		ALL AREAS	
	*C.A.	**N.A.	*C.A.	**N.A.	*C.A.	**N.A.	*C.A.	**N.A.	*C.A.	**N.A.
Given	83% (313)	16% (9)	73% (268)	3% (1)	37% (65)	1% (1)	56% (148)	2% (1)	67% (794)	5% (12)
Not given	17% (66)	84% (46)	27% (100)	97% (36)	63% (113)	99% (82)	44% (115)	98% (50)	33% (394)	95% (214)
TOTAL	100% (379)	100% (55)	100% (368)	100% (37)	100% (178)	100% (83)	100% (263)	100% (51)	100% (1188)	100% (226)

* C.A Clinic Attender

** N.A Clinic Non Attender

Table 83(a)

In all children the deltoid region of the upper
arm was examined for scar following BCG vaccination.
83% and 73% clinic attenders in Ilesha and Esa Oke
respectively had received BCG vaccination.   Far
smaller proportion of non attenders, i.e. 16% and 5%
in Ilesha and Esa Oke had also been given BCG.

In Namitambo and Mansa the proportion of clinic
attenders who had received BCG was smaller than the
corresponding proportion for Ilesha and Esa Oke.
However, in both Namitambo and Mansa the clinic
attender who had received BCG far outnumbered the
clinic non attenders who had been given BCG, i.e. 37%
and 56% clinic attenders respectively in Namitambo and
Mansa had been given BCG while 1% and 2% non attenders
had in Namitambo and Mansa also had BCG

WEIGHTS OF CLINIC ATTENDERS AND NON ATTENDERS.

Figures 15 to 18 have been constructed by
plotting the mean weights of children by age for
children who attend the clinic and for those who do
not.

In all four areas the mean weights by age of
children who attend the clinic lie very close to the
mean weights by age for the children who do not
attend the clinic.

Of the 1414 children in the survey 1391 children
were weighed. 23 children refused to be weighed.
In Figures 15 to 18 the children have not been further
subdivided by sex. This was intentional in order not
to reduce further the numbers in each group.

The mean weights and number of children at each
age are given in Tables 1-26 (Appendix 1)

DISTRIBUTION OF MEAN WT. (kg.) BY AGE (in months) BY CLINIC
ATTENDERS AND NON ATTENDERS

ILESHA.   FIG. 15.
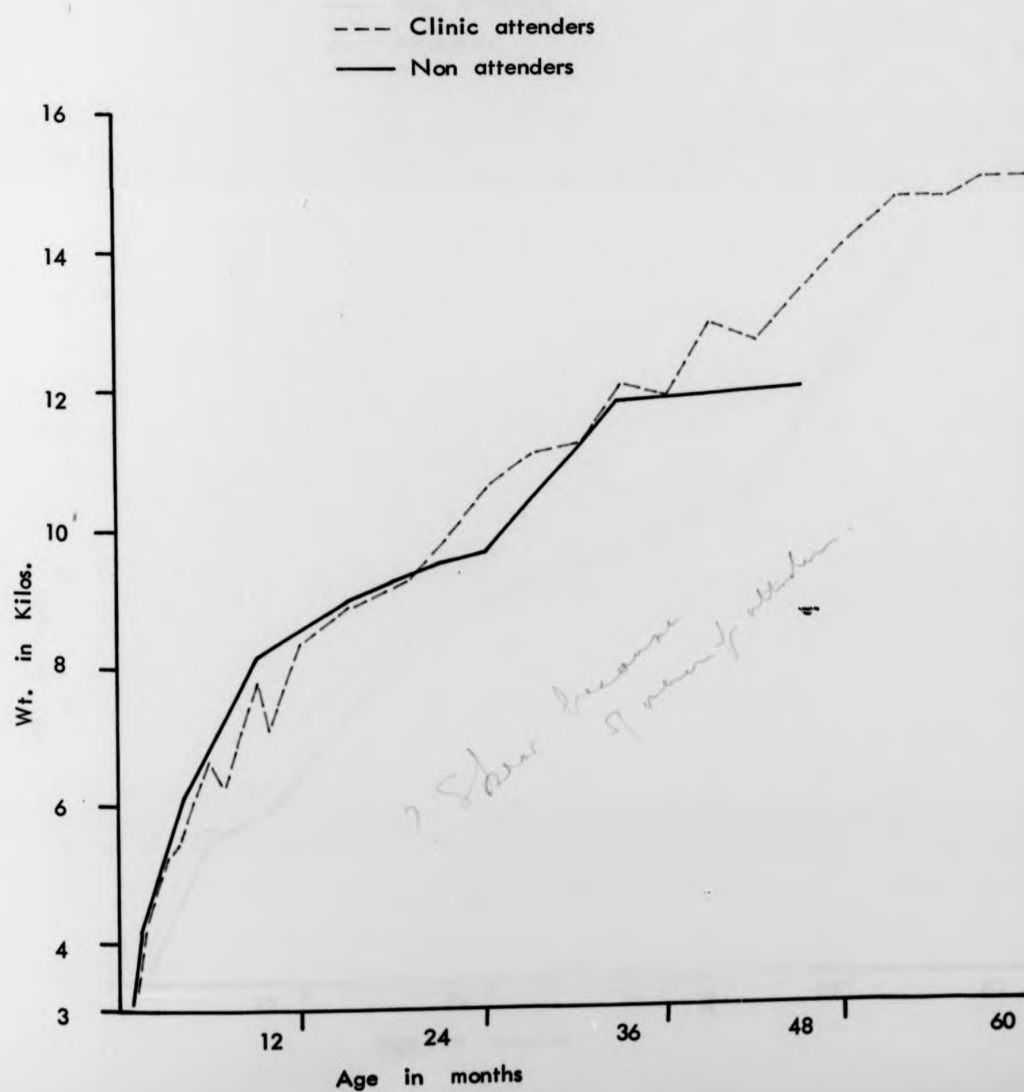
DISTRIBUTION OF MEAN WT. (Kg.) BY AGE (in months) FOR CLINIC
ATTENDERS AND NON ATTENDERS.

ESA-OKE.   FIG. 16.
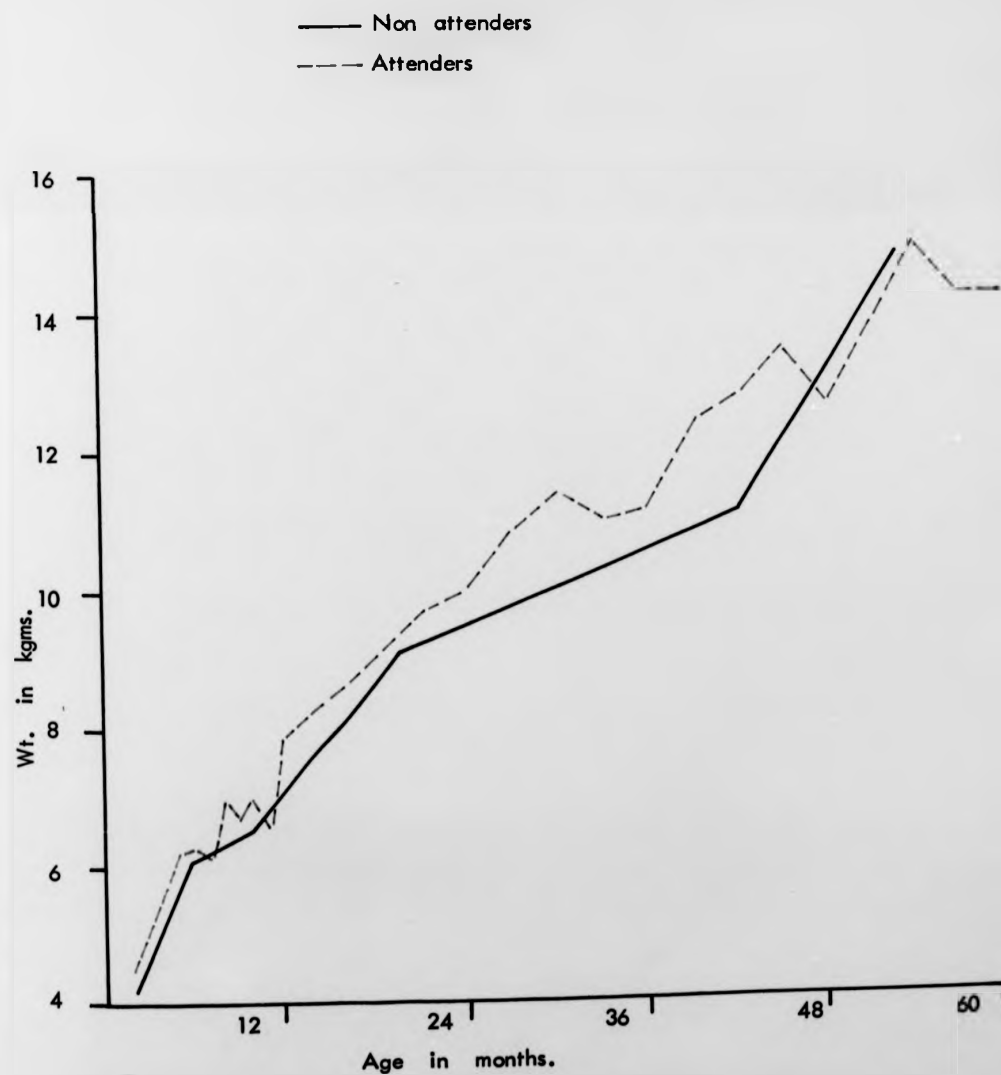
DISTRIBUTION OF MEAN WT. (Kg.) BY AGE (in months) FOR CLINIC
ATTENDERS AND NON ATTENDERS.

NAMITAMBO.   FIG. 17.
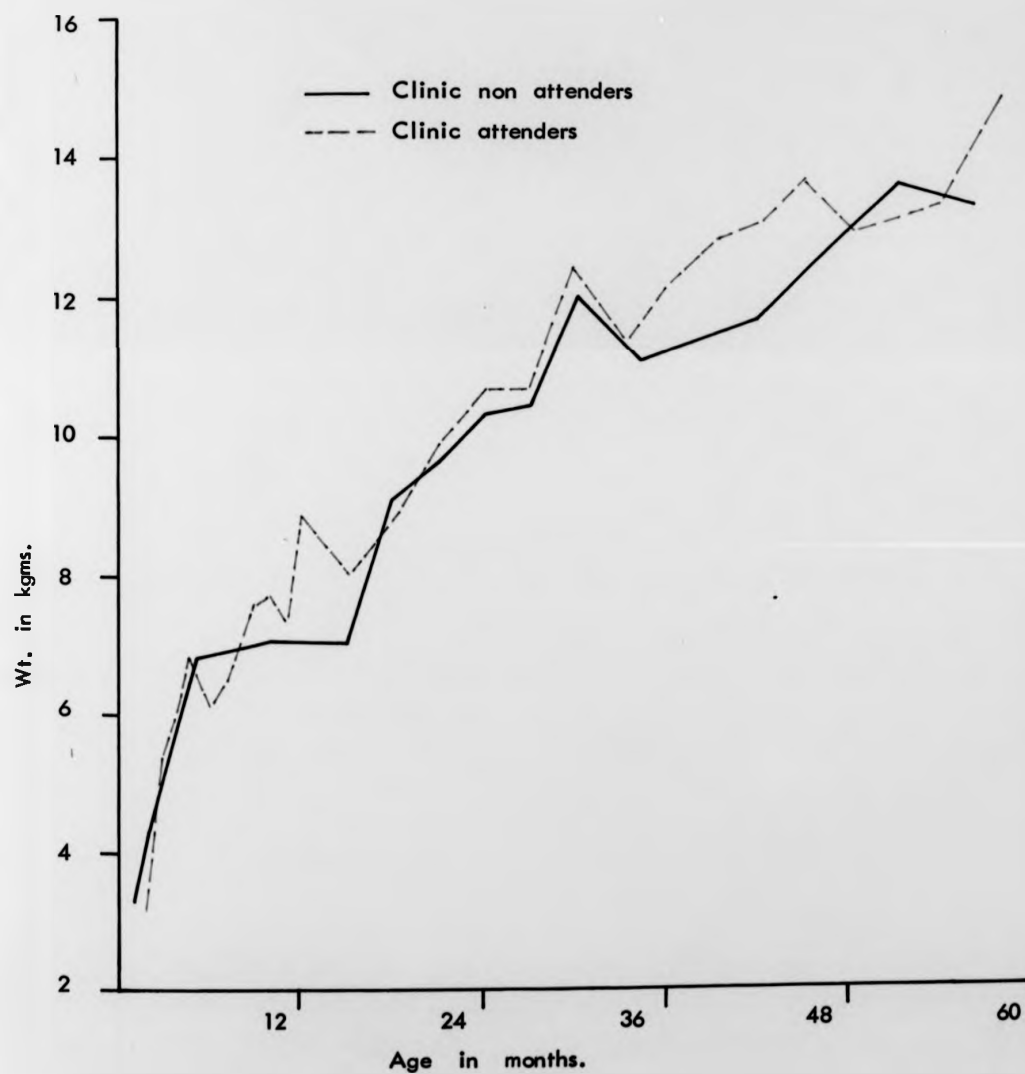
DISTRIBUTION OF MEAN WT. (kg.) BY AGE (in months) FOR CLINIC
ATTENDERS AND NON ATTENDERS.

MANSA.   FIG. 18.

STRUCTURE OF DWELLINGS AND CLINIC ATTENDANCE.
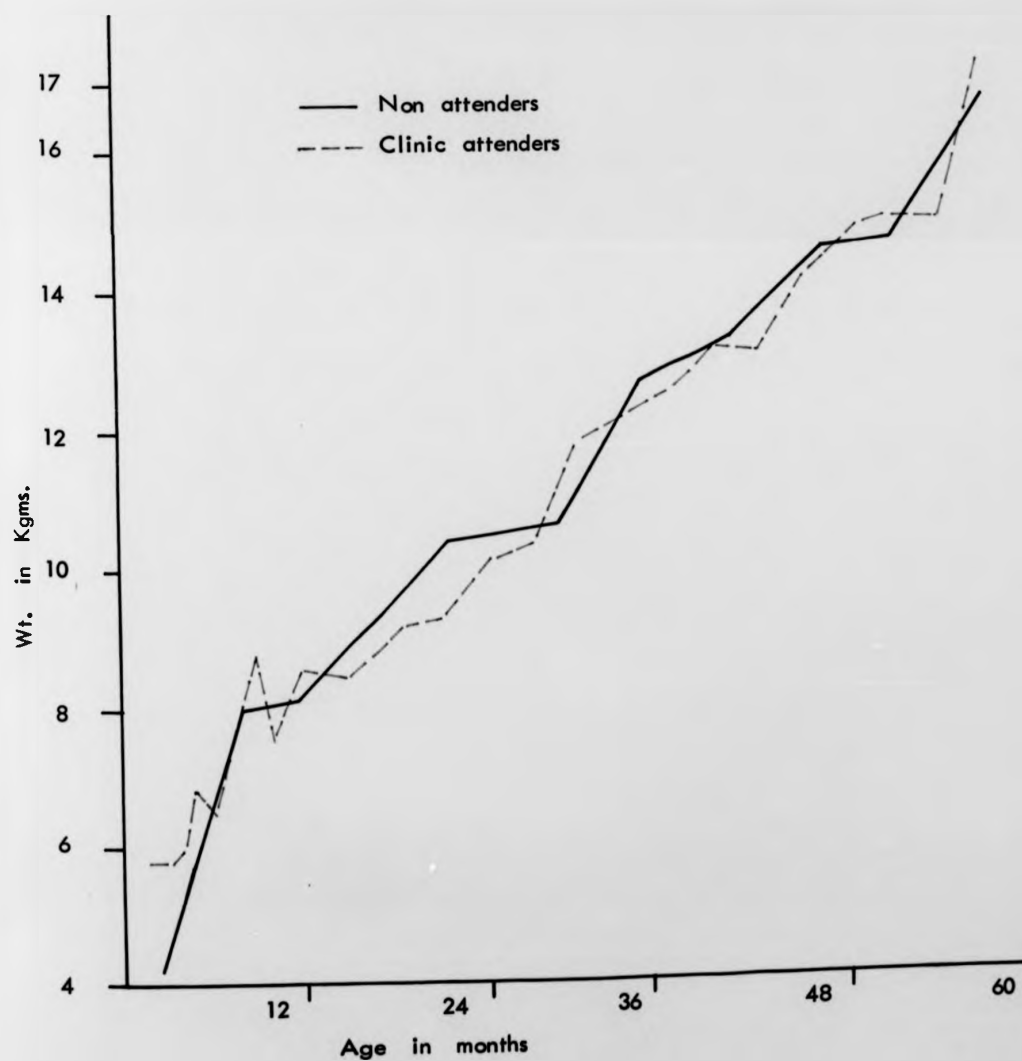
No evidence, by looking at structure of walls, floor and ventilation, place where cooking is done, latrine, ownership of dwelling and type of trade, was seen to elicit a difference between Clinic attenders and clinic non attenders (Appendix Tables 3, to 1a,) It might have been the case that none clinic attenders come from a broad socio-economic group which tended to live in less satisfactory dwellings, but this is shown not to be so. Therefore, from the present survey it is seen that there is no way of identifying clinic non attenders. (However a point of importance is that the clinic attenders far out numbered the clinic non attenders and therefore the number of clinic non attenders was of about one fifth of the number of clinic attenders)

CHARACTERISTICS OF CLINIC ATTENDERS

(WHO HAD A ROAD TO HEALTH CARD ON

DAY OF SURVEY)

TABLE 83.(b)

DISTRIBUTION OF *CHILDREN BY DISTANCE TO CLINIC FROM DWELLING BY CLINIC VISITS (AS A PERCENTAGE OF IDEAL FOR AGE) BY AREA.

AREA	CLINIC VISITS AS % OF IDEAL FOR AGE	DISTANCE OF DWELLING FROM CLINIC				
		$\frac{1}{2}$ mile	1 mile	$1\frac{1}{2}$ miles	2 miles	$2\frac{1}{2}$ miles
Ilesha	76% and over	87.5% (77)	72.0% (56)	67.5% (52)	69.5% (48)	47.0% (17)
	51 – 25%	6.5% (6)	13.0% (10)	8.0% (6)	11.5% (8)	14.0% (5)
	26 – 50%	5.0% (4)	10.0% (8)	12.0% (9)	13.0% (9)	17.0% (6)
	1 – 25%	1.0% (1)	5.0% (4)	12.5% (10)	6.0% (4)	22.0% (8)
	TOTAL	100.0% (88)	100.0% (78)	100.0% (77)	100.0% (69)	100.0% (36)
Esa Oke	76% and over	88.0% (73)	92.0% (58)	88.0% (56)	82.0% (52)	89.0% (62)
	51 – 75%	6.0% (5)	4.0% (3)	3.0% (2)	9.0% (6)	4.0% (3)
	26 – 50%	0.0% (0)	2.0% (1)	6.0% (4)	3.0% (2)	4.0% (3)
	1 – 25%	6.0% (5)	2.0% (1)	3.0% (2)	6.0% (4)	3.0% (2)
	TOTAL	100.0% (83)	100.0% (63)	100.0% (64)	100.0% (64)	100.0% (70)
Namitambo	76% and over	62.5% (10)	37.0% (12)	40.0% (12)	8.0% (1)	25.0% (5)
	51 – 75%	6.0% (1)	3.0% (1)	3.0% (1)	15.0% (2)	15.0% (3)
	26 – 50%	13.0% (2)	41.0% (13)	10.0% (8)	31.0% (4)	25.0% (5)
	1 – 25%	18.5% (3)	19.0% (6)	47.0% (14)	46.0% (6)	35.0% (7)
	TOTAL	100.0% (16)	100.0% (32)	100.0% (30)	100.0% (13)	100.0% (20)
Mansa	76% and over	28.0% (11)	35.0% (9)	26.0% (8)	43.0% (18)	28.0% (14)
	51 – 75%	15.0% (6)	11.5% (3)	22.0% (7)	16.0% (7)	14.0% (7)
	26 – 50%	42.0% (16)	42.0% (11)	26.0% (8)	14.0% (6)	16.0% (8)
	1 – 25%	15.0% (6)	11.5% (3)	26.0% (8)	27.0% (11)	42.0% (21)
	TOTAL	100.0% (39)	100.0% (26)	100.0% (31)	100.0% (42)	100.0% (50)

* For children who attended the clinic and who had their 'Road to Health' card available on day of survey.

DISTRIBUTION OF MEDIAN NO. OF CLINIC VISITS PER CHILD 227
BY AGE AND AREA.

FIG. 19.

ILESHA
ESA-OKE
NAMITAMBO
MANSA
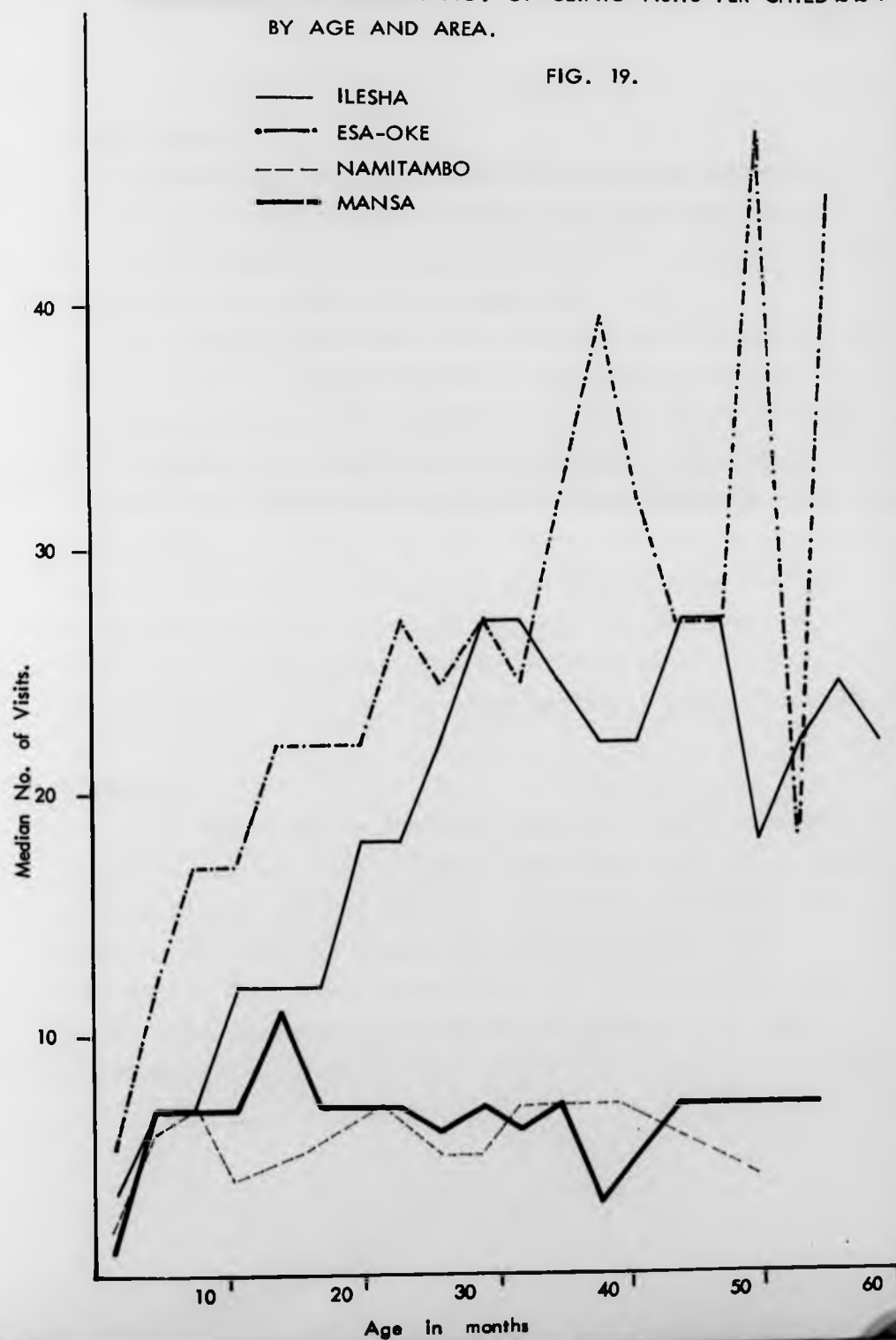
TABLE 83(b).

This table shows the relationship between distance of
dwelling from clinic and frequency of clinic attendance.
The 'clinic visits as an ideal for age' has been arrived at
by the criteria mentioned on pages 176 - 178.

In Ilesha, as expected, the proportion of children who had made
76% and over of expected visits for age decreases with
increasing distance from clinic, i.e. 87.5% children living
at a distance of $\frac{1}{2}$ mile and 47.0% children living at a
distance of $2\frac{1}{2}$ miles from clinic had made 76% or over of
ideal number of visits for age. In Esa Oke at all distances
from clinic between 82% and 92% children made 76% and over
of the ideal number of visits for age. In Namitambo and
Mansa only a small proportion of children at all distances
had made 76% or more of the ideal number of visits for age.

FIGURE 19.

This figure shows the mean number of visits made per
child at each age. As expected from Table 83(b) it is seen
that in Ilesha and Esa Oke the mean number of visits per
child at all ages is higher than those for Mansa and
Namitambo. This graph applies to only those children who
had a 'Road-to-Health' Card on day of survey, i.e. 992
children.

CHAPTER V

FINDINGS - CLINIC STUDY.

The author spent at least four sessions at each
clinic acting as a passive observer. The information
gathered from the clinic study is mainly of a
descriptive nature.

ILESHA.

The concept of an Under Fives Clinic was first
applied at Imesi, a village twenty five miles from
Ilesha in the Western region of Nigeria, by Dr. David
Morley and Miss Margaret Woodland in 1957. This
concept was later extended to the Wesley Guild Hospital,
a mission hospital in Ilesha. Prior to the
commencement of an Under Fives Clinic in 1959 the
Wesley Guild Hospital provided out patient clinics
at which sick children and adults were seen and
simple curative treatment provided.

The Under Fives Clinic in Ilesha is situated
in the grounds of the Wesley Guild Hospital. The
clinic's work constituted part of the Maternal and
Child Health services provided by the hospital. Ante-
natal and Family Planning clinics were also held twice
weekly as part of the Maternal and Child Health
services.

The Ilesha clinic is held on six days of the week
(excluding Sundays and Public Holidays). It opens at
7.30 a.m. and usually stays open till 2 p.m. or until all
the children have been seen. Any child brought in after the
clinic has closed is seen at the Casualty Department of the
hospital, if the condition warrants emergency treatment. At
the Under Fives Clinic simple curative treatment is available
for common ailments and in addition nutrition and health
education talks and discussions are held daily. Immunisations
are also carried out daily.

STAFF.

The staff employed at the Ilesha Under Fives Clinic is
as follows:

Doctors	1	Part time.
Sisters	2	1 full time 1 part time
State Registered Nurse (S.R.N.)	1	Part time.
State Certified Midwife (S.C.M.) Grade I	6	
State Certified Midwife (S.C.M.) Grade II	2	
Student Nurses	2 - 4	(6 week attachment)
Pupil Midwives	1	(1 week attachment)
Welfare maids	2	
Welfare orderly	1	
Gardener	1	
Clerical	4	

Training and Duties of Staff.

Sister. 1 full time at the Under Fives Clinic; in overall charge of the clinic activities including administration. Works from 7 a.m. to 3 p.m. with one hour off for lunch. The other Sister visits the four out stations Under Fives Clinics three to four times a week. Spends the rest of the time at the Ilesha Under Fives Clinic.

A sister has both the S.R.N. and S.C.M. certificates. To be eligible to be appointed to the grade of a sister she should have had at least five years experience after qualifying as a S.R.N., or S.C.M. She should also have undergone the Health Visitor's training which takes fifteen months. A sister at the Ilesha Under Fives Clinic was paid £832/£942 per annum.

Staff Nurse. 1 staff nurse was attached to the Under Fives Clinic. She, however, spent three to four days each week visiting the out station clinics. The rest of the time she worked at the Ilesha clinic mainly attending to the Infants, i.e. under one year old.

In order to qualify as a State Registered Nurse, she should have completed her secondary school education with passes in English and Mathematics. She then spends three and a half years at the nursing school prior to being awarded a S.R.N. certificate. (As an option she could do one year of midwifery as well.) A state registered nurse at Wesley Guild Hospital was paid £ 740/£832

Grade I midwife. 6 Grade I midwives were attached to the clinic. They worked from 7 a.m. to 2.30 p.m. with a thirty minute break. 6 of them worked in the examination and

consulting room and one worked in the nutrition rehabilitation room, i.e. dealing with malnourished children and educating their mothers.   A grade I midwife was paid £ 543/£671

Grade II Midwife. A grade II midwife was attached to the clinic.   She worked in the immunisation room.

The Student Nurses and the pupil midwives helped in rotation the other staff at the clinic in attending to the children and also helping in the immunisation and nutrition rehabilitation rooms.

The Doctor was in attendance from 11.30 a.m. to 2 p.m. for consultations.   Approximately 10% of cases were referred to her.   The Doctor was also in charge of teaching the staff and in supervising clinic activities.

Welfare maids and orderly carried out routine cleaning jobs. They had elementary schooling only.   Two worked from 7 a.m. to 12 noon and two from 3 p.m. to 5 p.m.

Clerical staff. They are responsible for registration of the children, and for weighing and weight recording. They also help to maintain a smooth flow of patients through the clinic. They have a secondary school education.   They work in shifts. Two work from 7 a.m. to 11 a.m., two from 7 a.m. to 1 p.m. and three from 1 p.m. to 3 p.m.   One clerical worker does a further period of duty from 3 p.m. to 5 p.m. to attend to the records of the day.

TABLE 84

IMMUNISATIONS GIVEN AT ILESHA UNDER FIVES CLINIC - JANUARY 1971 - DECEMBER 1971

MONTH	TRIPLE 1st dose	TRIPLE 2nd dose	TRIPLE 3rd dose	B.C.G.	Smallpox	POLIO 1st dose	POLIO 2nd dose	POLIO 3rd dose	Measles
January	483	347	223	645	191	155	52	24	339
February	445	310	210	535	301	452	101	30	249
March	316	225		595	242	390	110		373
April	608	257	23	644	484	152	33		459
May	786	424	352	636	375			1	468
June	897	667	508	685	369	4	65	33	597
July	767	692	535	659	826	67	74	54	430
August	841	695	619	751	629	739	187	88	643
September	724	589	570	717	483	415	188	86	534
October	661	515	541	560	371	267	191	149	398
November	657	567	458	692	365	187	154	121	362
December	513	491	450	579	384	368	193	145	383
Total doses	7,698	5,779	4,489	7,698	5,020	3,196	1,348	731	5,235
Mean number of doses/month	642	482	374	642	418	266	112	61	436

TABLE 85.

ATTENDANCE AT THE ILESHA UNDER FIVES CLINIC - JANUARY 1971 - DECEMBER 1971.

Month	Re-attenders Males	Females	New attenders Males	Females	Total Attendances	Referred to Doctor Numbers	%
January 1971	6,551	6,060	394	440	13,445	1,645	12.2%
February 1971	6,150	5,843	324	403	12,720	1,564	12.3%
March 1971	6,586	6,021	408	425	13,440	1,458	10.8%
April 1971	6,189	5,901	375	391	12,856	1,326	10.3%
May 1971	5,541	5,155	369	347	11,412	1,176	10.3%
June 1971	5,718	5,259	337	324	11,638	1,292	11.1%
July 1971	6,613	6,167	422	373	13,575	1,232	9.1%
August 1971	7,096	6,536	392	381	14,405	1,211	8.4%
September 1971	5,867	5,520	347	341	12,075	1,285	10.6%
October 1971	5,861	5,530	386	385	12,162	1,397	11.5%
November 1971	5,928	5,721	403	394	12,446	1,326	10.6%
December 1971	5,381	4,905	362	349	10,997	1,279	11.6%
Total attendances	73,481	68,618	4,519	4,553	151,171	16,191	10.7%

ESA-OKE.

In Esa Oke the Under Fives Clinic was started in 1969.
Prior to this the only western medicine available was at the
local dispensary in the village which provided curative
treatment only. Attached to the Esa Oke Under Fives Clinic
is a delivery room and four lying-in beds for post partum
mothers.

At Esa Oke the clinic is open daily from 8 a.m. till
2 p.m. or until all the children are seen. Due to the lack
of refrigeration facilities at the clinic immunisations are
carried out once a week when a visiting nurse from the Wesley
Guild Hospital Under Fives Clinic brings the vaccine to Esa oke.
No electricity was available at Esa Oke. However a paraffin
refrigerator would have been a possibility. In spite of the
immunisations being available only once a week the percentage
of children immunised was high. This could mainly be
attributed to the enthusiasm of the clinic staff. The midwife
in charge of the clinic was in fact the wife of the local
village chief. The chief was a man of great intellect and had
a very strong influence on his people. The success of the
Esa Oke clinic is mainly due to the encouragement given by the
chief to the staff. Another factor which contributed to the
success of the clinic was that the clinic served a localised
area only.

Staff at Esa Oke Under Fives Clinic.

Grade 1 Midwife	1
Grade II Midwife	2
Welfare maid	1

Cleaner   1

Visits from a doctor once a week

Visits from Public Health Sister once a month

Visits from Staff Nurse once a week

TABLE 86.

ATTENDANCES AT THE ESA OKE UNDER FIVES CLINIC - JANUARY 1971 - DECEMBER 1971.

Month	Re attenders		New attenders		Total
	Males	Females	Males	Females	Attendances
January	834	769	15	9	1,627
February	788	894	9	2	1,693
March	876	1,160	11	12	2,059
April	838	1,040	14	11	1,903
May	924	1,220	12	12	2,168
June	913	1,070	9	12	2,004
July	845	1,083	14	10	1,952
August	803	987	18	11	1,819
September	638	812	15	10	1,475
October	543	637	23	9	1,212
November	602	740	9	11	1,362
December	569	770	10	7	1,356
Total attendences	9,173	11,182	159	116	20,630

TABLE 87.

IMMUNISATIONS GIVEN AT THE ESA OKE UNDER FIVES CLINIC - JANUARY 1971 - DECEMBER 1971

MONTH	TRIPLE 1st dose	TRIPLE 2nd dose	TRIPLE 3rd dose	B.C.G.	Smallpox	POLIO 1st dose	POLIO 2nd dose	POLIO 3rd dose	Measles
January	22	26	16	13	8				
February	25	16	16	10	3				
March	21	21	17	9	-				45
April	19	29	19	36	9				17
May	29	11	20	17	1				9
June	17	25	14	17	15				3
July	12	17	13	14	11				-
August	15	12	11	22	8	6			
September	34	14	26	24	3	83			29
October	26	23	8	26		32	69		22
November	24	13	20	8	2	33	31	51	21
December	26	27	28	7	20	16	30	17	19
Total doses mean/doses month.	270 22.5	234 19.5	208 17.3	203 16.9	80 6.6	170 14.1	130 10.8	68 5.6	165 13.7

TABLE 88.

FINANCES OF THE ESA OKE CLINIC - APRIL 1970 - MARCH 1971

INCOME

MONTH	FEES FROM NEW PATIENTS AT FIVE SHILLINGS/ PATIENT	VACCINES	TOTAL
April 1970	31 x 5 £7 15.0.	£3 17. 0.	£11 12. 0.
May 1970	37 x 5 £9 5.0.	£2 14. 0.	£11 19. 0.
June 1970	20 x 5 £5 0.0.	£3 0. 0.	£8 0. 0.
July 1970	21 x 5 £5 5.0.	£3 9. 0.	£8 14. 0.
August 1970	24 x 5 £6 0.0.	£2 15. 0.	£8 15. 0.
September 1970	27 x 5 £6 15.0.	£2 12. 0.	£9 7. 0.
October 1970	25 x 5 £6 5.0.	£1 19. 0.	£8 4. 0.
November 1970	26 x 5 £6 10.0.	£2 7. 0.	£8 17. 0.
December 1970	22 x 5 £5 10.0.	£2 1. 0.	£7 11. 0.
January 1971	24 x 5 £6 0.0.	£3 4. 0.	£9 4. 0.
February 1971	11 x 5 £2 15.0.	£2 17. 0.	£5 12. 0.
March 1971	23 x 4 £5 15.0.	£2 19. 0.	£8 14. 0.
Total income from Under Fives Clinic patients			£106 9. 0.
Fees from adults and children over 5			£644 8. 6.
Total fees Under Fives and adults			£750 17. 6.

TABLE 89

FINANCES ESA OKE CLINIC - APRIL 1970 - MARCH 1971.

EXPENSES

Salaries	£650	0.	0.
Drugs and dressings	£382	18.	3.
Sundry expenses (cleaning etc.)	£32	3.	6.
Transport (Staff nurse and sister's visits	£26	12.	0.
Total expenses	£1,091	13.	9.
40% of expenses paid by Wesley Guild Hospital as a grant, i.e.	£436.	7.	0.
Credit, i.e. £750 17. 6. (Table 88) + £436 7. 0. - £1,091 13. 9.	£95	10	9.

Cost/patient visit 8.93d = 3.7p.

NAMITAMBO.

Until 1968 the number of health centres providing children's clinics in Malawi was minimal. Only seventeen government clinics were operating in the whole of the country, which together with the mission clinics saw approximately 0.5% of the children under the age of five. Cole King (1968)

COLE KING (1968) The introduction of Child Health services was therefore accorded priority in developing the personal preventive health services of Malawi. As a trial demonstration project in 1967, an existing dispensary was selected where an Under Fives Clinic could be started, staff trained and reorientated and methods developed, before introducing clinics on a wide scale. Namitambo had a typical rural dispensary with an adjacent maternity unit, and was chosen for the trial demonstration project.

At the time of the present study (March - April 1972) an Under Fives Clinic was held at the Namitambo centre once a week. However, children attending on the other days were seen in the general out patients clinic. Immunisations were carried out once weekly. In addition to the above weekly Under Fives Clinic at the Namitambo Health centre, mobile Under Fives Clinics were held at four sub centres (distances of one to three miles from the Namitambo clinic). These clinics were held once a month, for three hours.

The Namitambo Under Fives Clinic was administered directly by Central Government, i.e. the Ministry of Health. Malawi at present has 362 Under Fives Clinics. (FIGURE 8).

Drugs and vaccines for the Namitambo Under Fives Clinic are

sent directly from the Ministry of Health. (The Under Fives
Clinic in Malawi receive their supplies via the District
Hospital). The smallpox and triple vaccines come from UNICEF
but frequent shortages occur. No charge is made to the patients
for the services rendered at the Under Fives Clinic. Due to
the central administration of the Namitambo Under Fives Clinic
it was not possible to obtain the costing of this clinic.

Staff at the Namitambo Under Fives Clinic.

Midwives   2

Community Nurse   1

Medical Assistant   1

TABLE 90.

ATTENDANCES AT THE NAMITAMBO UNDER FIVES CLINIC - JANUARY 1921 -
OCTOBER 1971.

MONTH	NEW ATTENDERS	RE ATTENDERS	TOTAL ATTENDANCES
January	52	181	133
February	123	219	342
March	112	265	377
April			
May	49	64	113
June	73	147	220
July	67	134	201
August	36	112	148
September	45	136	181
October	94	268	362
Total attendances	651	1,534	2,077

TABLE 90.

ATTENDANCES AT THE NAMITAMBO UNDER FIVES CLINIC - JANUARY 1971 - OCTOBER 1971.

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January	52	181	133
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April			
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June	73	147	220
July	67	134	201
August	36	112	148
September	45	136	181
October	94	268	362
Total attendances	651	1,534	2,077

TABLE 91.

IMMUNISATIONS GIVEN AT THE NAMITAMBO UNDER FIVES CLINIC - JANUARY 1971 - JANUARY 1972.

MONTH	TRIPLE 1st dose	TRIPLE 2nd dose	TRIPLE 3rd dose	B.C.G.	Smallpox	POLIO 1st dose	POLIO 2nd dose	POLIO 3rd dose	Measles
January	40	28	20	56	201	41	36	29	21
February	70	46	28		210	70	48	29	18
March	65	52	34	51	58	70	60	44	46
April									
May	63	39	32	46	59	79	64	52	14
June	53	40	26	78	43	65	44	29	20
July	65	44	24	61	46	77	59	30	4
August	46	30	20	18	52	65	53	40	4
September	36	24	16	53	26	63	32	21	
October	31	27	16	83	25	44	30	22	
November									
December									
January 1972	41	24	17	46	34	68	46	38	28
Total doses	469	330	216	446	720	574	426	296	127
Doses/month	47	37	24	50	80	64	47	33	14

Cost of running Under Fives Clinics (Malawi)

In Malawi it is difficult to separate the cost of the
Under Fives Clinic from the general out patient clinics as there
was no separate budget for this programme and separate figures
are not available for the Namitambo clinic. However, COLE KING
(1971) made an estimate of the recurrent costs of the 124
Under Fives Clinic services in Malawi for the year June 1969 -
May 1970 as follows:

Staff costs @ £65 per clinic for 124 clinics (assuming one-tenth of three medical auxillaries' time spent on each Under Five clinic)	£7,060
Drugs cost @ £100 per 6,000 attendances	5,298
Immunisations (excluding DPT and Smallpox, which were supplied free from UNICEF)	996
Costs of graphs and plastic bags @ 2d. per child	731
Total	£14,085

Thus the estimated cost per attendance   =   1/2d. = 6p

Estimated cost per child per year   3/6d. = 17½p.

She points out that the majority of children seen would
have probably attended the general out patients clinic if they
had not attended the Under Fives Clinic. The cost of attendance
would be the same for the out patients clinic and the Under Fives
Clinic, with the exception of the vaccines. Therefore she
emphasises that the money spent on the Under Fives Clinics would
if the clinics were not available, have been spent on general
out patient clinics which would have had to cope with the extra
work load of providing medical care for children.

ZAMBIA.

FAO Short term Food and Nutrition Survey Team in 1966 recommended to the Government of Zambia that a Zambian National Food and Nutrition Commission be established to implement the policy of the cabinet "to promote good nutrition and reduce the incidents of malnutrition" LUBBOCK AND CLAGUE (1967). The National Food and Nutrition Commission was organised in 1967 by Act 41 of the National Assembly, and received Presidential assent. WOLGEMUTH (1972). The Commission works closely with the Ministry of Health and particularly with the Maternal and Child Health Specialist. A pilot pre-school protection area in the Lusaka rural district was next set up and later extended to the Central Kafue area. These were the first attempts toward the start of Under Fives Clinics in the Zambian context WOLGEMUTH (1972). The growth of the clinics was further aided by the policy of the Ministry of Health to have an Under Fives Clinic in each of its government medical units. Valuable assistance has come from the contribution of the field staff represented from volunteer services, especially those from the Netherlands nurses who established clinics in North western Province and Luapula Province.

Dr. C. A. M. Boelens was appointed as the first Medical Officer for Maternal and Child Health services in the Ministry of Health in Zambia in January 1967 and was asked to organise these services for the whole of Zambia. Prior to this the medical services consisted of provision of simple curative treatment for the commonly occurring ailments, apart from the work carried out by the environmental Hygiene Department. In March 1967 a pilot project for Under Fives Clinics was

started in Luapula Province as part of the outpatient services provided by the Mansa General Hospital. A daily Under Fives Clinic at Mansa Hospital was started in June 1970. GREENACRE (1970). Dr. Francis Shattock in 1969 took over as specialist in Maternal and Child Health in Zambia. Under his leadership the Under Fives Clinics net work spread rapidly into every province. Today Zambia has over one thousand Under Fives Clinics

At the time of the present survey in April 1972, the Mansa Under Fives Clinics were held daily from 8 a.m. till 1 p.m. from Monday to Friday and a small clinic on Saturday mornings lasting about two hours. Immunisations were carried out daily. Seven sub centres at Senama, Kabuta, Chibalashi, Buntungwe, Kabunda, Dairy and Katangwe) also hold Under Fives Clinics, and their clinic session times and their distances from the Mansa clinic are given below.

Senama   2 miles from Mansa 6 sessions per month $\frac{1}{2}$ day sessions
Kabuta   3 miles from Mansa 1 session per week $\frac{1}{2}$ day sessions
Chibala-shi 4 miles from Mansa 1 session per week $\frac{1}{2}$ day sessions
Kabunda   9 miles from Mansa 1 session per week $\frac{1}{2}$ day sessions
Dairy   9 miles from Mansa 1 session per week $\frac{1}{2}$ day sessions
Buntungwe 2 miles from Mansa 1 session per week $\frac{1}{2}$ day sessions
Katangwe 15 miles from Mansa 1 session per week $\frac{1}{2}$ day sessions

The children seen in the Mansa field survey mainly visited the Under Fives Clinic at the Mansa hospital but may have also very occasionally made a visit to one of the sub centre clinics in the area

Staff at the Mansa Under Fives Clinic.

S.R.N.	1
Community Nurse	1
Nutrition demonstrator	1
Female dressers	3
Helper	1

TABLE 92.

ATTENDANCES AT THE MANSA UNDER FIVES CLINIC - JANUARY 1971 - NOVEMBER 1971.

Month	New attenders	Re attenders	Total
January 1971	194	341	535
February 1971	169	581	750
March 1971	218	927	1,145
April 1971	165	839	1,004
May 1971	* 7	671	678
June 1971	119	774	893
July 1971	86	613	699
August 1971	72	539	611
September 1971	214	1,027	1,241
October 1971	503	1,633	2,136
November 1971	441	1,950	2,391
Total attendances 2,188		9,895	12,083

The number of new attenders at the clinic in May 71 is far less than during any other month. It is possible that there might have occured a clerical error in copying down the numbers from the register.

TABLE 93.

IMMUNISATIONS GIVEN AT THE MANSA UNDER FIVES CLINIC - FEBRUARY 1971 - NOVEMBER 1971.

Month	TRIPLE 1st dose	TRIPLE 2nd dose	TRIPLE 3rd dose	B.C.G.	Smallpox	POLIO 1st dose	POLIO 2nd dose	POLIO 3rd dose	Measles
January 1971	119	89	57	119	84	114	79	67	96
February 1971	147	61	77	198	111	147	57	82	76
March 1971	113	126	56	242	180	207	104	57	*O/S
April 1971	185	128	86	185	153	171	119	84	*O/S
May 1971	145	112	70	103	67	147	114	78	*O/S
June 1971	123	99	52	93	84	127	91	62	291
July 1971	78	76	102	69	69	77	71	98	183
August 1971	95	86	82	90	85	84	82	67	85
September 1971	133	92	114	129	104	128	87	82	171
October 1971	174	110	109	211	135	163	88	64	156
November 1971	135	60	55	162	185	134	72	32	126
Total doses	1,447	1,035	860	1,601	1,247	1,499	964	773	1,184
Mean doses/ month	131.5	94.4	78.1	145.5	113.3	136.3	87.6	70.2	107.6

*O/S Out of stock

TABLE 94.

COMPARISON BETWEEN CLINICS.

A. ATTENDANCES

	ILESHA	ESA OKE	NAMITAMBO	MANSA
Attendances/month (1971)				
First attenders	756	23	72	199
Re attendances	11,841	1,696	170	900
Total/month	12,597	1,719	242	1,099
Clinic sessions/ month	24	24	4	24
Attendances/clinic session	525	72	61	46
Re attendance Indicator	15.6	73	2.3	4.5
Total annual re attendances/ Total annual new attenders				

TABLE 94.

COMPARISON BETWEEN CLINICS.

A. ATTENDANCES

	ILESHA	ESA OKE	NAMITAMBO	MANSA
Attendances/month (1971)				
First attenders	756	23	72	199
Re attendances	11,841	1,696	170	900
Total/month	12,597	1,719	242	1,099
Clinic sessions/ month	24	24	4	24
Attendances/clinic session	525	72	61	46
Re attendance Indicator	15.6	73	2.3	4.5
Total annual re attendances/ Total annual new attenders				

TABLE 95.

COMPARISON BETWEEN CLINICS

B.   IMMUNISATIONS

Immunisations/ month (1971)	ILESHA (NIGERIA)		ESA OKE (NIGERIA		NAMITAMBO (MALAWI)		MANSA (ZAMBIA)	
	Doses	*I.R.	Doses	*I.R.	Doses	*I.R.	Doses	*I.R.
BCG	642	20	17	101	50	5	146	8
Smallpox	418	30	7	246	180	3	113	10
Triple vaccine								
1st dose	642	20	23	75	52	5	132	8
2nd dose	482	26	20	86	37	7	94	12
3rd dose	374	34	17	101	24	10	78	14
Polio vaccine								
1st dose	266	47	14	123	64	4	136	8
2nd dose	112	112	11	156	47	5	87	13
3rd dose	61	207	6	287	33	7	70	16
Measles	436	29	14	123	14	17	148	7
Total vaccine doses	3,433		109		401		1,004	
Immunisation rate attendances/ month immunisation/ month	3.66		15.77		0.6		1.09	

*I.R. is the ratio, of the total number of attendances to the total number of vaccinations given per month.   For example for Ilesha for every 20 children attending the clinic 1 child is given BCG vaccination.

TABLE 96.

COMPARISON BETWEEN CLINICS

C. STAFF

	ILESHA	ESA OKE	NAMITAMBO	MANSA
Sisters	2			
State Registered Nurses	1			
State certified Midwives	8	2	2	
Medical assistants			1	
Student nurses/ and or student midwives/and or dressers/and or Nutrition demonstraters	3			1
TOTAL STAFF	14	2	3	3
Patients/staff member/session	38	36	30	15

CHAPTER VI.   DISCUSSION.

The systems of health care encapsulated by the title
'Under Fives Clinic' attempts, with limited resources of
personnel and money, to meet the medical need of young children
in the developing countries. It aims to reduce the overall
mortality and morbidity of young children, to reduce the
incidents of malnutrition, and to change the attitudes and
child rearing practises, by the provision of some basic medical
care and also health education. How far have these goals been
achieved?

A World Health Organisation Study Group on the 'Measurement
of levels of health' WHO (1957) states "No more fundamental
problem confronts the health administrator than the measurement
of the levels of health in the community; and nothing could be
more valuable than to have at his command one or more measuring
rods to help him in his task and also in assessing his specific
problems relating to the health of the people, in designing his
plans to deal with these, in guiding his administration and in
evaluating his schemes". However in those areas of the world
where Under Fives Clinics exist reliable data on such basic
health indices as mortality and morbidity are not available.
As a result of this lack of essential vital statistical data it
has not been possible to make any routine assessment on the
health of the community after the introduction of an Under Fives
Clinic. The various methods of assessing the health of a
population will be first considered in this discussion.

Assessing changes in the health of a population.

In the absence of National Vital Statistics for assessing the changes in the morbidity and mortality in the child population, specific studies can be designed to assess such changes in the health status of the community. As discussed earlier they could take one or two forms. (1) Longitudinal studies and (2) Point prevalence studies.

Longitudinal study.

In this type of study the baseline data on the health of the population would be collected. Following on this an Under Fives Clinic would be set up and the health of the population followed for an appropriate period of time. A comparison could then be made of the health of the population before and after the introduction of the Under Fives Clinic. This is basically an unsatisfactory type of approach because the changes in the health of the population over this period of time could result from other factors which may not be apparent to the investigator, which may erroneously be ascribed to the effects of the Under Fives Clinic. Such longitudinal studies are in their nature expensive in both staff and money and is not a very certain method for assessing the effects of Under Fives Clinics particularly where a quick answer is required.

Controlled Trials.

This is a variation on the longitudinal study described above. Here two closely matched populations would be followed over an appropriate period of time. One population would have an Under Fives Clinic set up and the other would be left with its usual health and other services. After a period of time the

health of the two communities would be compared. This type
of design gets over the problems of comparing the health before
and after the introduction of an Under Fives Clinic, but assumes
that the two populations are similar in all important respects,
except that one has an Under Fives Clinic and the other has not.

The introduction of a health service which is assumed to
be beneficial to the population to only one of these areas could
be politically a difficult task. Also in reality it is difficult
to chose two areas that initially are comparable. Thus this
type of approach may also present difficulties when it comes to
interpret the findings. In addition it has all the problems of
longitudinal studies mentioned above.

What we would be seeking in the way of techniques to
evaluate Under Fives Clinics would be those that are simple,
cheap and rapid, that would serve to give us some possibly fairly
crude measurement of such clinics, on the health of communities.
Point prevalence studies.

This type of study does seem to offer the possibility of
being able to assess the effects of Under Fives Clinics. Point
Prevalence studies are usually unsatisfactory for assessing
the levels of acute diseases in the community. This might well
be unreliable, in for example indicating whether acute gastro-
enteritis or acute respiratory disease has become more or less
common following the introduction of Under Fives Clinics.
However Point Prevalence studies undertaken in populations
served by Under Fives Clinics, and in others where these clinics
had not been set up, could provide some measure of their
activities and effectiveness.

A further approach to the study of Under Fives Clinics which was undertaken in the present study was to try and ask questions not so much in populations with and without Under Fives Clinics, but to see if there was any evidence in the population which had access to an Under Fives Clinic, that those who made use of these services appeared to have any better health than those who did not. With the use of this approach it was attempted to test a methodology for assessing Under Fives Clinics.

In developing countries there does not seem to be sufficient realisation that health services need to be evaluated. This implies that money from the general health budget may need to be set aside for research into the health services. However, if the community can be involved in studying the delivery of health care, it is possible that the study of the effectiveness of the delivery system may be done economically and not need much from central funds.

Evaluation of medical care.

The evaluation of Under Fives Clinics have so far been carried out on a very limited scale. Prior to the present study the evaluation studies reported in the literature were very few. The most relevant studies were described in chapter I and will be briefly discussed here.

WEBB (1969) attempted to evaluate the Ilesha Under Fives Clinic (which is the same Under Fives Clinic referred to in the present study). She visited dwellings at varying distances from the clinic, and attempted to study the children under the age of five in these dwellings. However, her findings have not

been published and thus it is not possible to arrive at any
conclusions on the validity of this method of evaluation.
The methodology used in the present study was a modification
of that used by Webb.

In the other study described by CUNNINGHAM (1969) a
village having an established Under Fives Clinic (Imesi-Ile)
was compared with a village Oke-Imesi which had no Under Fives
Clinic.   The survey was carried out in 1966/67 and at this
time it was said that the villages were similar in the more
important criteria like population structure and socio-
economic status.   The control village of Oke Imesi was if
anything the wealthier.   The author concluded that the only
appreciable differences between these villages lay in their
infant mortality rates and the 1 - 4 year mortality rates and
in the weights of children after the first six months of life.
The above mentioned mortality rates were reduced in Imesi-Ile
which had an Under Fives Clinic, and also the weights of the
children after the first six months of life were better in the
children in Imesi.   (Tables 8 and 9).
However it is not clear from the report of the study that the
two villages were similar in their characteristics important
in measuring the health of the community.   However the final
report of this study is still being completed and cannot be
assessed on the limited information available at the present
time.

The present study was carried out from January to May
1972.   In the same year BORNSTEIN AND KREYSLER (1973)   carried
out a survey to 'Investigate some of the social factors

affecting attendance at the Under Fives Clinic' in a densely populated rural area of Tanzania. This survey was not designed to study the use made of the Under Fives Clinic but aimed at obtaining information on attitudes to clinic attendance. A substantial amount of information on the practical problems connected with clinic attendance was obtained, including reasons for non attendances and the part played by the local leaders in giving information on clinic activities. However the study was limited in that it did not investigate the children who did not attend the clinic, nor were the clinic activities assessed. From this study it was not possible to gain any impressions on the improvements in the health of the children in the community which might have occurred as a result of the Under Fives Clinics.

A study in Lusaka WOLGEMUTH (1972) carried out in May - August 1972 had the objective of evaluating the Under Fives Clinics in Zambia. The methodology employed consisted of a field and a clinic study. The latter comprised the major portion of the study. Seven Under Fives Clinics in the township of Lusaka were investigated. The clinic cards of the children attending on the day of survey were used as the source of information.

Much information was available on the immunisation status of those children attending the clinic, their weight in relation to age and the total number of attendances per child. However all this information was only available for those children who attended the clinic. The field survey was intended to serve as a source of information on the socio-economic and demographic

features of the community that lived at a distance of half a mile from one of the clinics. However, although 396 mothers were taken into the field survey, less than twenty of them were able to produce their 'Road-to-Health' cards on the day of interview.

The method used for the field sampling technique involved an aerial map of the township of Lusaka. The town was divided into eight regions and the number of houses per region were counted. The proportion of houses that each region contributed to the entire township was calculated. These proportions were then used to dictate the proportion of houses each region would contribute to the population sampled. This system of subdividing the town would not allow a simple stratification of the sample by distance, from the clinic. To ensure that the sampling proportions were adhered to, it is important to distinguish between an occupied and an unoccupied house. Further more churches, office buildings and other uninhabited buildings must be excluded. It is not always possible to make these distinctions on an aerial map. In addition, for example a recent flood could have driven people away from their permanent homes. This could not be taken into account in this sampling technique. If an aerial map showed that 15% of the houses were in the flood striken sector then 15% of the sample would be expected to be drawn from it. However, in reality this sector may be uninhabited. Alternative methods to get round the problem would have to be decided upon.

The methodology used in the present study to evaluate the the Under Fives Clinics will now be discussed.

FIELD STUDY.

A. INTERPRETER. (SELECTION AND TRAINING).

The method of evaluation used in the field survey involved
sampling dwellings at varying distances from the clinic. The
author, who is a doctor from an Asian country, was well received
and accepted in the African homes. She conducted the interview
through a local interpreter. However, in the circumstances it
was thought essential for the interpreter to be of a similar
background to those who were being interviewed, i.e. a local
person of similar social background and speaking the same
language and dialect. She would be thus able to talk freely
to the mothers and they would accept her without suspicion, as
would be the case if she was a stranger. This arrangement
contributed greatly to the co-operation obtained with the
population. In the present study at the time the homes were
visited the men were at work, and the author and her interpreter
who were both women, met only women and children of the house.
For this reason women were considered preferable to men as
interviewers. However, this is not essential, as in a study
carried out in Tanzania BORNSTEIN AND KREYSLER (1972) to
investigate the social factors affecting the attendances at the
Under Fives Clinic, the interviewer was a male medical assistant
student and he obtained a response rate of 100%. Whoever
administers the questionnaires he or she must of course be
acceptable to the community being surveyed.

The investigator was fortunate in obtaining an interpreter
who was an educated woman with a good knowledge of both English
and the local language. All the interpreters were not directly

connected with the local Under Fives Clinic. As they were not involved with the local clinic, any bias which might occur as a result of the mother modifying the answer to the questions, in order to please any interpreter who she associated with clinic staff, was removed. In Ilesha and Esa Oke the same interpreter, the wife of a local accountant, was employed. In Namitambo a girl who was training to be a teacher was employed, and a community nurse acted as interpreter in Mansa. Before the start of the survey the interpreter undertook a period of training with the author. The reasons for the study were explained, and the importance of translating the exact words of the questions and answers without any embellishments at each interview was emphasised. Although the author did not know any of the local languages it did not appear that any of the interpreters deviated from the instructions.

B.   SAMPLING.

The method used for the identification of dwellings for the survey was a simple and practical one. A map of each area was obtained. The maps used in the present survey varied from, for example, a street map in Ilesha to aerial maps in Mansa and Namitambo. In Esa Oke a simple but accurate map was constructed by a local school teacher. In most areas of the world it should not be too difficult to obtain a suitable map drawn to scale. Aerial photographs may well be available for many parts of the world. Once the maps were obtained the system of geographic stratification of the areas was not found difficult to apply. (Already discussed in Chapter III)

C. QUESTIONNAIRE.

The same three questionnaires administered by interviewer were used in each of the four areas. These questionnaires attempted to seek information on a wide range of items including socio-economic, domestic and health. During the first week of the field study in Ilesha two questions from the questionnaires were found to be unsatisfactory and were excluded. These questions attempted to elicit information on time spent every day in collecting water for drinking and in collecting water for washing. (Questions 21 & 22 page 401) This problem arose after the author found that the concept of time was little understood by the mothers who were interviewed. Evidence for the lack of understanding of time by the mother was discovered when the author, at the end of a visit to a dwelling, would enquire from the mother how long she thought the interviewing team had spent in her dwelling. The answers received ranged from five minutes to three hours, while the actual time spent was usually between sixty and eighty minutes. Very few gave accurate answers. The majority of these mothers were illiterate and their concept of time was very different to that of the literate. FUGLESANG (1973) stressed this basic difference in the understanding of concepts of time, shape, volume and weight. It is important in designing questionnaires

that are to be used among the illiterate population, to devise
questions that do not depend upon these concepts.

The other questions in the questionnaires which led to
some confusion were those dealing with diseases, i.e. measles
and whooping cough (Questions14 & 15 questionnaire 3 page 404)
In the Yoruba language there was no specific word for measles
and the direct translation of the word used to describe measles
used by the Nigerians means a 'rash'. The problem was overcome
with some difficulty when the interpreter managed to explain
to the mothers the clinical picture of measles and this they
seemed to understand. The same problem arose with whooping
cough. However, a demonstration of a 'cough with a whoop'
helped most mothers to recognise the disease. In future
surveys, if specific names are used in such questions it is
suggested that the use of diagrams or pictures depicting the
disease or possible tape recordings should be used where this
is appropriate. For example a photograph of a child with a
typical measles rash or tape recordings of a child coughing
with a whoop for pertussis.

Others have suffered from similar difficulties. A
relevant study is that by MOFFAT AND NGANWA-BAGUMAH (1971)
who in an article entitled "Do we mean what they say" points
out the difficulties that arise when certain medical terms are
translated into the local language. Their study was carried
out in an area in Uganda where the local language was Runyankore
They found that the terms used by the local health workers for
diseases such as smallpox and tuberculosis were misunderstood
by the mothers. "The word used for smallpox (omuze) was

immediately understood by one group as being smallpox while the
other interpreted it as measles, scabies, chicken pox, leprosy
and even some non dermatological conditions". They emphasise
that health workers should not assume that their listeners
always understand what they are talking about. They conclude
that "This is a field in which linguists, educationists and
social anthropologists might be of some help to the health staff,
in a further professional enquiry into the problem".

In one of the survey questionnaires, i.e. No. 2 a large
group of questions were included on the health knowledge and
practice. Some of these questions (Appendix 2 quest: 16 & 17 pg 40)
did not seem to be well understood by all mothers. Some of
the answers to these questions were quite irrelevant and some
mothers seemed unable to answer them. However not all questions
posed problems for these mothers. It is possible to identify
the questions that yielded simple and accurate answers. In
planning evaluation surveys in the future it seems reasonable
to use only those questions that have been tried before and
found to yield valid answers. Though the present set of three
questionnaires had 86 questions in total, it seems much more
feasible for large scale evaluations carried out simultaneously
in many areas, to limit the numbers of questions to between
ten and twenty. Those questions found most useful in the present
survey, some twelve in all, will be detailed later.

D. RESPONSE RATE.

The response rate in this study was highly satisfactory .
at 99.8% . Of the 1020 dwellings visited the occupants of 1019
consented to being included in the survey. The only refusal

was from the occupants of a dwelling who were "Jehovah's
Witnesses", and who declined to co-operate on religious
grounds. This high overall response rate, coupled with the
method of sampling employed, gives confidence that the findings
may represent those of the community as a whole.

E. SAMPLE SIZE.

The author stayed a month in each of the four areas to
complete both the field survey and the clinic study.
Approximately three weeks were spent on the field survey in
each area. It was possible in this time to visit 183 dwellings
in Ilesha, 197 in Esa Oke and 200 each in Namitambo and Mansa.
Each of these dwellings contained at least one child under the
age of five. In Ilesha the average interview time was eighty
minutes. The average number of children per dwelling was
greater in Ilesha than in all other areas, and this resulted
in more questionnaires seeking information on the family and
the children being completed in Ilesha, than in any other areas.
As a result 434 children were seen in Ilesha, 405 in Esa Oke,
261 in Namitambo and 314 in Mansa. Ilesha was also the first
area studied and as such the speed with which the survey was
conducted (example in completing questionnaires) was slightly
slower than in the other areas. With the experience gained in
Ilesha the average time spent per dwelling in Esa Oke was
reduced to sixty five minutes, in Namitambo to forty minutes
and in Mansa to fifty minutes. A further problem arose in
Ilesha when the interpreter asked for two and a half days leave
in order to attend to her sick child. To maintain uniformity
in the questionning no interviewing was carried out while she

was away. It was important to keep the same interpreter, as
recruiting a new interpreter might have introduced biases into
the data collected at interview.

In the survey a representative samples of children under the
age of five, who were living at varying distances from the
clinic, were required: this sample should include children who
attended the clinic and those who did not. In dwellings
occupied by more than one family, the number of children under
the age of five would be expected to be greater than in
dwellings with one family only. Where multi-occupation was
common the sample would contain fewer dwellings, and similarly,
where multi-occupation does not occur the sample would contain
more dwellings. It is possible in areas where multi-occupation
does not occur, that a sampling technique based on dwellings would
give a sample with fewer biases than in a situation where multi-
occupation exists, as a greater range of families and their
socio-economic circumstances could be sampled.

In future surveys, before deciding on a technique using
dwellings as the primary sampling unit, it is necessary to
decide whether multi-occupation is at all common. In such a
situation, some other method, for example taking one family
per dwelling at random, or even two or three families, may
yield a more satisfactory sample.

In the present survey, the techniques decided upon in the
original plan were maintained in order to ensure compatability
in each area. As a result in Ilesha and Esa Oke more children
were seen than necessary, and thus involved the author in more
work than was required. However these comments are made, of
course, with hindsight.

Within the geographically defined areas, dwellings as the sampling unit did not pose any problems. Identifying houses using the sampling methods as defined in practise was easy, and there was usually little doubt as to which road the front of the dwelling faced. WEBB (1969) took every fifth dwelling into her sample; she found that the mothers in the intervening dwellings also wanted to be included in the survey. For this reason consecutive dwellings were sampled in the present survey and the above situation was avoided. However, a small problem arose due to the sample being drawn from one side of the street only. Those living on the opposite side of the street, who saw their neighbours being interviewed, often wanted to be included in the survey themselves. When they were persistant in their request the author, in order to maintain the goodwill of the people, filled in a questionnaire and weighed their children. However, as these children were not within the sample frame their questionnaires were excluded from analysis. Six such extra questionnaires were filled in Ilesha, three in Esa Oke and two each in Namitambo and Mansa. The rules for sampling within a grid system were sufficiently simple that in any future studies they could be taught to para-medical and auxillary health workers.

Though this survey was carried out by the author who is a doctor, in future surveys of this type it would be sensible to use less skilled personnel as it would be less expensive. Further this category of person may be more readily available for carrying out this type of survey. Almost any literate person could be taught this sampling technique. It should be

possible to train secondary school children in this technique as a classroom exercise, and in addition be used as interviewers in field surveys. This makes it possible to do such surveys quickly, on a large scale and at low cost. Further it makes the community involved in evaluating its own health service, and this in turn should make them more aware of their health problems, and also the available sources of health care. These surveys could be repeated as and when necessary; for example, annually to monitor the effects of any changes in medical care services.

This sampling technique could be carried out, not only in surveys to assess health status, but also in any other surveys of for example   dietary economic and educational circumstances where samples are required at varying distances from a particular location.

The only modification to the original sampling technique was that made in Esa Oke, as discussed earlier in chapter 111

The original estimate of sample size suggested that a sample of 200 dwellings would give an adequate number of children under the age of five. It was not known what percentage of children would be clinic attenders. MORLEY (1972) thought about 10% of children in Ilesha would be non-clinic attenders. In the other areas even such uncertain estimates were not available.

In future studies it would be useful to carry out a pilot study to estimate the number of children under five per dwelling, and also the proportion of clinic attenders to non attenders. In this way it would be possible to choose the sample in such a manner that the required number of children would be obtained.

F. DWELLINGS WITH NO CHILDREN UNDER THE AGE OF FIVE.

Of the 1019 dwellings visited (i.e. dwellings occupied and open) 780 had at least one child under the age of five who was present at the time of visit and had slept in the dwelling the previous night. In Ilesha, Esa Oke, Namitambo and Mansa 73.5%, 79.1%, 83.3% and 70.9% of dwellings respectively contained at least one child under the age of five living in the dwelling. (Table 14). This information should be useful in planning future surveys as it provides an estimate of the total number of dwellings in these areas that need to be identified in order to yield the required number of dwellings with children under the age of five. (In the present study sixty five dwellings in Ilesha, fifty two in Esa Oke, forty in Namitambo and eighty two in Mansa did not have any children under the age of five and were thus not included in the survey). In some of the dwellings without children under five the occupants said there was a child

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were thus not included in the survey). In some of the dwellings
without children under five the occupants said there was a child

under the age of five, but on close questionning the child turned out to be over five years of age. The time spent in these dwellings with no children under five averaged out at eight minutes per dwelling.

Thus in deciding in future surveys on the number of dwellings to be visited to study children under the age of five it would be useful to know what proportion of dwellings in each of the areas would not be expected to have any children under the age of five.

G. NUMBER OF CHILDREN PER DWELLING.

No reliable data was available on the number of children to be expected per dwelling. WEBB (1969) in a pilot study in Ilesha, found an average of three children per dwelling. KIMMANCE (1970) working in Swaziland, reports that 2.8 children per dwelling could be anticipated. If a census of children for each area was available then it would be possible to readily calculate the expected number of children under five per dwelling. However, this information is usually not available for most industrialised countries, let alone for the non industrialised ones. This information would be useful not only for the health planner but also for the educational and social services and welfare authorities. The health planner could use this information in deciding the type of service he should provide, the staff, the buildings and equipment for these age groups of the population. Similarly the educational authorities could use this information in deciding on the number of primary school places and teachers required, for the welfare authorities too this knowledge would be a factor in planning

the provision of creches and play groups for the pre-school child.

In the present study the average number of children under five per dwelling in Ilesha was 2.37., in Esa Oke 2.05., in Namitambo was 1.30 and in Mansa was 1.57. (Table 15) In Ilesha 35% of dwellings visited had only one child under the age of five, while in Namitambo 72.5% of dwellings visited had one child only under the age of five. Moving to Table 38 it is seen that the number of children under the age of five per family is more or less similar for all four areas, except for the one family in Mansa which had five children under the age of five (this included a pair of twins). In all other families in each area there were one, two, or at the most three children under the age of five. The modal value for the number of children under the age of five was one (Table 38)

H. BIRTH INTERVAL.

This is defined as the time interval between two subsequent deliveries for a mother. MORLEY (1973f)reported that the average birth interval in a rural society in West Africa was 34.7 months. Therefore a mother on the average at any one point in time would be unlikely to have more than two children under the age of five. However Morley points out that in a study carried out in South America it was found that the average birth interval was only 17.25 months. Here, the average mother could have up to three children under the age of five at any given point in time. Morley stresses that the African mother is thus at a distinct advantage over her South American counterpart as she has only to look after two children under the age of five

at any given time. Further, the child from a oommunity with longer birth intervals stands to benefit more than a child who comes from a community where the birth intervals are shorter; the former child would be expected to receive more 'mothering' as it would remain the youngest child for a longer period of time. The admission of mothers with their sick babies to hospital is a practise found in many parts of Africa. The advantage of this system has been stressed by many workers. KING (1966). Thus the African mother with only one, or at the most two children under the age of five, will find it easier to be away from home, for example to take her sick child to hospital. The situation for the South American mother would be more difficult as she would perhaps be reluctant to leave several children under the age of five, in order to attend at or stay in hospital with one sick child.

In the present study, though specific questions on birth intervals were not asked, the findings from other questions can be used to deduce birth intervals. The proportion of families having one or two children under five was 96.3% in Ilesha, 98.0% in Esa Oke, 97.7% in Namitambo and 96.2% in Mansa. This suggests that birth intervals in these areas are similar to those found by Morley.

I. PERSONS PER DWELLING.

In the West African society many dwellings are multi-occupied, i.e. two, three or more families live in the same dwelling, each with their own children. Usually these families are related and the term "extended families" is

applied to them. Although most demographic data for developing
countries list number of persons per dwellings and numbers
of persons per family, little information is published for
number of families per dwelling. However, information from
the Eastern Region of Ghana collected during a household
budget survey conducted by DUTTA ROY (1969) throws some
light on the situation in West Africa. He finds a marked
difference between the numbers of families per dwelling in the
rural and urban areas. (His definition of "house" is identical
to the author's "dwelling" and his definition of "household"
is identicalwith the author's "family".)

TABLE 96.

DISTRIBUTION OF DWELLINGS BY NUMBER OF FAMILIES PER DWELLING BY AREA.

NUMBER OF FAMILIES PER DWELLING	GHANA (DUTTA ROY)				NIGERIA (PRESENT STUDY)			
	URBAN		RURAL		URBAN (ILESHA)		RURAL (ESA OKE)	
1	159	18.5%	179	51.4%	103	56.3%	134	68.0%
2	61	19.2%	87	25.0%	44	24.1%	37	19.0%
3	65	20.4%	44	12.6%	22	12.0%	18	9.0%
4	54	17.0%	23	6.6%	10	5.5%	6	3.0%
5	29	9.1%	10	2.9%	2	1.1%	2	1.0%
6	19	6.0%	3	0.9%	1	0.5%		
7	13	4.1%			1	0.5%		
TOTAL	318	100.0%	348	100.0%	183	100.0%	197	100.0%

His data on the distribution of households per dwelling in the
urban and rural areas in Ghana are given in Table (96)
Dutta Roy's results can be compared with those obtained in the
present survey. In West African areas, i.e. Ilesha and Esa-
Oke, it can be seen that 12% and 9% of the dwellings respectively
have three families in them. Ten dwellings in Ilesha and six
in Esa Oke had four families in them. These findings are similar
to those in Ghana. It must be remembered however that in the
present survey only families with children under five were
considered. The presence of more than one family in a single
dwelling could have important effects on the pattern of disease
among children in these dwellings. In the present study the
modal number of persons per room was three (Table 66)
However, in Ilesha seventeen children came from dwellings which
had up to six occupants per room. The presence of a large
number of children living together favours the spread of
communicable disease, and the isolation of a sick child is not
really feasible in such a situation.

Although differences in the incidence of disease in
children living in multi-occupied dwellings in Ilesha and Esa-
Oke and the other two areas might be expected, the design of
the present study which was a point prevalence survey, (and which
obtained information on the health status of children at the
time of the study) cannot be used to make any useful comparison
between the past health of the children that might establish
whether or not there was any difference.

K. FREQUENCY OF CLINIC ATTENDANCE IN RELATION TO DISTANCE OF DWELLING FROM CLINIC.

The relationship between distance of dwelling from the health centre and the attendance at out patients clinics has been noted by many authors. BRYANT (1969) states "Distance is a critical factor in the interplay of health resources and needs. People travel to reach health facilities - health workers travel to reach people". Studies in East Africa have shown a close correlation between the proximity and the use of health facilities. KING (1966) showed that in Uganda the average number of out patient visits per patient halves for every two miles that people live from a hospital, every half a mile from a dispensary and every mile from an aid post. Not many people would walk more than a few miles for out patient services, particularly if they have to carry their children. Improved public transport would presumably change this situation by shortening the journey time and eliminating the necessity for carrying children over these distances.

The present study was concerned with investigating any relationship between the use of Under Fives Clinic services in children living up to and not beyond $2\frac{1}{2}$ miles from the clinic. The sample surveyed, as already noted, was stratified by distance. The findings in relation to distance are given in Table 77 . In Ilesha, of those living within half a mile from the clinic, 5% were non attenders, and at distances of $2\frac{1}{2}$ miles from the clinic 26% of the children were non attenders. In the other survey areas there did not seem to be a difference in the proportion of non attenders at varying distances from the clinic.

The distances in this study from the dwelling to the clinic
were taken "as the crow flies". However, the distance
travelled to reach the clinic is usually much greater, because
of the lack of direct roads leading to the clinic. It was
estimated that a mother living at a distance of $2\frac{1}{2}$ miles from
the clinic in Namitambo would have to actually travel four to
five miles during the dry season, but in the rainy season this
distance could be increased by about two miles, as the most
direct routes would usually be impassable due to flooding.
Except in Ilesha, distance does not seem to be a critical
factor in the uptake of child health services. It must be
noted that in this study the maximum distances "as the crow
flies" were up to and not beyond $2\frac{1}{2}$ miles. A significant
fall in the uptake of services might have occurred if families
living at greater distances from the clinic were sampled. So
as to maintain a uniform sampling technique, no deviation was
made from the original planning, to sample up to, and not beyond
$2\frac{1}{2}$ miles. In the planning of any future surveys it might be
useful to study the uptake of services at distances greater
than $2\frac{1}{2}$ miles. This additional information could be useful to
health planners when deciding on the siting of new Under Fives
Clinics, when the numbers of children, for example, living at
varying distances from the clinic, and who might be expected
to visit the clinic could be determined. From Table 83b in Ilesha
it is quite clear that with increasing distance of the dwellings
from the clinic attendances became less frequent than in those
children who lived close to the clinic.

In Ilesha this pattern is quite consistent. It is of course no surprise that with increasing distance there is a decrease in proportion of clinic attenders, and those who attend, do so less often. However, this study provides factual confirmation of this in relation to the Under Fives Clinics at Ilesha. However, in the other three areas it is a little surprising that while the proportion attending the clinic doesnot vary with distance from the clinic, that frequency of attendance should drop off. This situation could have arisen due to a biased sample, for example if a larger proportion of the attenders were sampled at greater distances from the clinic. This seems an unlikely occurrence. There does not appear to be any obvious reason for this finding.

L. COMPARISON OF CLINIC ATTENDERS AND NON ATTENDERS.

A clinic attender is, by definition, a child under the age of five who has at some time attended the Under Fives Clinic. As proof of this he or she should ideally have the 'Road-to-Health' Card issued by the clinic. This card is kept at home by the mother and is brought with the child when attending the clinic. A non attender, by definition, is a child who has never attended the Under Fives Clinic, and hence is a child who has never been issued with a 'Road-to-Health' card. Some of the clinic attenders, however, did not have their 'Road-to-Health cards available for inspection on the day of survey. This was either due to the card being lost, or to their being locked away. As discussed earlier, one of the great advantages of the home based records is that it would be available at all times. If the child is taken ill suddenly, and requires treatment,

then the 'Road-to-Health' Card could be taken to hospital
with the child. In house-to-house surveys these cards
serve a very useful additional purpose, in that not only
does this provide evidence of clinic attendance but the use
made of the clinic services is also documented. It has been
assumed in this study that these records are true and
accurate.

M. CARD LOSS.

The strongest arguments against home based records are
on the grounds that these cards tend to be not adequately
looked after and sometimes lost. In the present survey
the non-availability or loss of cards for children claimed
to be clinic attenders is small. Table 63 . The card loss
for all areas was 8.3%. However, in Ilesha and Esa Oke the
cards lost were 1.0% and 4.0% respectively, while in Mansa
and Namitambo this was 17.0% and 21.0% respectively. A
survey in India carried out by CUTTING (1971), it was found
that the card loss was 6%. The differences in card loss
between the study areas are striking. The information
collected from the clinic study highlights two main
differences between the clinics in Nigeria (Ilesha
and Esa Oke), and those in Central Africa (Namitambo
and Mansa). The clinics in Nigeria have been in existence
for twelve and fifteen years respectively, while that in
Namitambo for three years and in Mansa for three years. The
Central African clinics may not have been established for
long enough to impress on the mothers, the benefits to the
health of their children, that could be achieved by regular
clinic attendance. This could be one of the reasons why mothers

are less careful with their children's 'Road-to-Health' cards.
Also it is interesting to note that in Mansa and Namitambo the
cards are issued free, while in Esa Oke and Ilesha a charge
is made for them. It could be that anything acquired free of
charge does not appear to be as important as things that are
paid for. If the latter explanation is correct, then it would
be worthwhile for the governments in Malawi and Zambia to make
a nominal charge for these cards and thus possibly reduce the
heavy losses of cards seen at present in these areas. Also
it should be borne in mind that a mother who has never taken
her child to the Under Fives Clinic, instead of admitting this
could say that she has lost the card. This would produce a
false increase in the number of "children whose cards were lost"
and a corresponding false decrease in the "numbers of children
who never attended the clinic". However, it seems unlikely
that in this study this happened, as there was nothing to be
gained by falsly claiming to be a clinic attender. Also,
wherever possible, cross checks were carried out to establish
if the children whose cards were lost were in fact clinic
attenders.

In Ilesha 13% in Esa oke 9% children seen in the field
survey had never attended the Under Fives Clinic. Namitambo
and Mansa the figures were 32% and 16% respectively. Again
in those clinics which had been established for a longer time
in West Africa the proportion of those who had not attended
the clinic was much lower. (Table 65)

The study, as originally designed, some comparison was
expected between attenders and the non attenders. However, in

practise this was not possible as the non attenders were a
very small group (16%) and no worthwhile comparison could be
made.

N.   REASONS   FOR   CLINIC   ATTENDANCE   AND   NON   ATTENDANCE.

        In questionnaire No. 2 specific questions were asked on '
'reasons for Under Fives clinic attendance' and 'non attendance'.
Of those reasons given, treatment, weighing, health education
and immunisation comprised the majority of answers received.
Table 45.   Though the majority of mothers in each area gave
one or more of the above reasons for attending the clinic, the
most frequently given reason for clinic attendance for each
area was not the same.   For example, in Ilesha 35.0% of the
mothers attended the clinic in order to obtain treatment only,
i.e. when the child was ill.   However in Esa Oke the most
common reason for clinic attendance was for a combination of
treatment and health education.   In Namitambo too,treatment
was the most popular reason for clinic attendance, while in
Mansa the clinic activity that caused most mothers to attend
the clinic was weighing of children.   In all four areas
routine distribution of 'free milk' or other food supplements
were not carried out.   In Namitambo milk supplements were
sometimes available for distribution as a supplementation for
the seriously malnourished children.   It is however
satisfying to note that distribution of free milk was not given
as a reason for attending the Under Fives Clinic except by
three mothers in Namitambo.   The experience in these clinics
is an argument against those who suggest that giving out of
free milk is necessary to create a high attendance level.

BORNSTEIN AND KREYSLER (1972) stated an "addiction" to free
supplementary food supplies for children might have a seriously
negative effect on their own production potential, which is vital
in a largely subsistence economy. In their study in Tanzania,
which had the objective of establishing the reasons that mothers
gave for attending the Under Fives Clinic, they concluded that
"free distribution of medicines and food were clearly the most
appreciated activities of the clinics in one area of study, and
clinical examination the other clinic area". They added that
no mother mentioned health education as a reason for clinic
attendance. In the present study health education in
combination with another activity such as treatment was mentioned
by 30.4% of the mothers in Esa Oke in contrast to the other areas,
and in combination with weighing and/or immunisation was mentioned
by about 10% of all mothers. There does not seem to be any
clear explanation for the increased importance paid to Health
Education in Ese Oke in contrast to the other areas. The level
of Health Education, in each clinic seemed to be similar, as
was discovered during observational sessions in clinic study.
The mothers in Esa Oke may have been more receptive to Health
Education or the Health Education given in Esa Oke may have
been more effective. (Table 45)

The importance of curative treatment in attracting
attendance at Under Fives Clinics is thus clearly seen.
Immunisations, by itself, does not seem to be a major reason
for clinic attendance in any of these study areas.

In Mansa "weighing of children" is seen to be a very important factor in clinic attendance. The mothers attending this clinic may have been taught the need for checking regularly the weights of their children. It is possible that the National Nutritional Programme in Zambia, which included a particular stress, on recognition and treatment of malnutrition, may have accounted for the mothers attending the Mansa clinic, with their children, to give this as a main reason for clinic attendance.

What priorities should be given in future to the different clinic activities? If the immediate material benefits of treatment outweights the long term improvement by education and immunisation, then the main targets of a preventive service may be missed. However, it can be seen from the percentages of children receiving immunisations (as recorded from the 'Road-to-Health' cards) and also from the clinic study, that a fair proportion of children attending the clinic are receiving immunisations. It could be that the clinics are seizing upon the opportunity of immunising the children when they are brought to the clinic for treatment, or advice. In the informal discussions with the mothers it did not at any stage transpire that immunisations were unacceptable. However, this has not always been the case. At the time of the smallpox outbreak in Western Nigeria in 1957 a great many mothers refused to have their children immunised and at that time there was a general fear of immunisation. MORLEY (1970). Another factor to be kept in mind is that not all mothers appreciated the reasons for having their children immunised. In the families where all

children under the age of five attend the clinic, only 51% of
mothers thought that immunisations were given to prevent
disease.   Table 42,   15.8% or 133 mothers, who took all their
children under the age of five to the clinic gave answers which
were categorised as "other". These mothers said that
vaccinations were given "for convulsions" "for worms" "for
diarrhoea" "for swelling" for "fever". It could be assumed
in these cases that the mother misunderstood the true reasons
for immunisation and assumed that they were curative injections.
The health education lectures and discussions must therefore be
directed to emphasise the needs for immunisation, and it is
possible that with true emphasis a better result could be
obtained with immunisation programmes in these areas.

In the present study, the mothers who did not take any or
all of their children to the Under Fives Clinic were asked to
give reasons for not doing so.   There was wide variation between
areas in the answers received.   In Ilesha the most common
reason was that "the mother thought that it was not necessary to
take a child to the clinic" 39.5% of mothers gave this
answer.   Table 46.   From the above answer it could be assumed
that the mother treated the Under Fives Clinic as a place she
could take her child for curative treatment only.   Thus it is
not surprising that 35.0% of mothers in Ilesha who attended the
clinic (Table 45) gave "treatment" as the only answer for
attending the Under Fives Clinic.   In Esa Oke 15.6% of mothers
gave. the same answer, it was unnecessary to take their child to
the Under Fives Clinic.   However, in this area 34.4% of mothers
gave answers which were classified as "other".   These included

families who were visitors to the areas, who felt they were
going to live in the area for too short a time to warrant
registration at the clinic. Also included in this group were
mothers (2) who said that their husbands objected to their
attending the clinic. In Namitambo 66.1% of mothers again
said that they thought that it was not necessary to attend the
clinic, and it is interesting to note that 49.3% of mothers
attending the clinic in this area gave treatment as the reason
for attending. It is noted that in Mansa the reasons for not
attending the clinic were due to the "clinic being too far"
and "inconvenient". These reasons were also given by 12.9%
of none attending mothers, in Namitambo, but none of the mothers
in Ilesha or Esa Oke gave these as reasons for not attending
the clinic. Table 46. From the majority of answers received
for reasons for attending the clinic and also for reasons for
non attendance at the clinic, it becomes clear that many
mothers consider the Under Fives Clinic as a place where only
sick or ill babies are taken. They did not seem to grasp too
well the need for regular attendance for healthy children, and
the need for preventive care. These same mothers, however,
seem to have a different attitude towards ante natal clinic
attendance. They consider that ante natal clinic attendance
is necessary even when the mother feels fit and well.
A distribution of families by reasons given for ante natal
clinic attendance shows that 72.5% of mothers in Ilesha,
91.1% in Esa Oke, 89.2% in Namitambo and 82.3% in Mansa attended
the clinic as routine for regular check up. Table 48.
Only a very small percentage, i.e. 16.1% overall said they

attended the clinic for treatment only. So clearly there is evidence that the mother considers the ante natal clinic as a place she should visit regularly during her pregnancy.

From this study, there seems to be good evidence that a substantial proportion of mothers who, while they know of the Under Fives Clinic in their area, yet do not use the facilities provided. Secondly, those who use the facilities tend to use only the treatment facilities and not those concerned with disease prevention. It seems therefore, that in all four clinics, the objective of covering the whole population of children under the age of five, with curative and preventive services, has not been wholly achieved. There seems good reasons therefore, for the development of programmes aimed at testing the reasons for mothers not attending the clinics with their children, and for not fully using the preventive services provided, with a view to developing a programme to persuade mothers, that it is to the childrens advantage to use the clinic facilities to the fullest extent. As a first stage the results from this study have been conveyed to the staff of the four clinics.

O. AGE DISTRIBUTION OF CHILDREN.

Of the 1414 children taken into the survey it was possible to establish the age in 1393 children. This was mainly due to the availability of the home based 'Road-to-Health' cards. The dates of birth were entered in these cards, and as these cards are usually issued very early in life the available dates of birth from these cards could be considered accurate. In this study it was possible to estimate the ages of 98.5% of the

children in the survey. This is an almost unique situation for Africa especially for communities living in the rural areas. CUNNINGHAM (1967) working in Imesi (Western Nigeria) found it possible with the help of the 'Road-to-Health' cards to establish accurately the dates of birth of 96.5% of the children in his study.

In each of the four areas, children in the 0 - 1 year age group comprise a larger proportion of the sample than children in the 4 - 5 year age group. (Table 97)

TABLE 97.

Age	Ilesha	Esa Oke	Namitambo	Mansa	All
(a) 0 - under 1 year	24.8%	22.7%	34.8%	30.8%	27.3%
(b) 4 - under 5 years	17.4%	16.7%	8.2%	10.9%	14.0%
Difference (a - b)	7.4%	6.0%	26.6%	19.9%	13.3%

The simplest explanation for this difference is that the group of older children have had a longer exposure to the force of mortality than the younger age groups and therefore fewer of them have survived, and therefore constitute a small proportion of the under fives group than the children under the age of 1 year. This explanation is in accordance with the Life Table for Tropical Africa described by BRASS. CARRIER AND HOBCRAFT (1971) These Life Tables shows that due to mortality the proportion of children alive drops consistently with increasing age. Assuming constant birth rate, each annual birth cohort would lose members through death as the cohort aged. Thus the younger cohorts would contain larger numbers of children than the older cohorts. Assuming no change in the birth rates in all four

areas it seems fairly clear that the smaller proportion of
children in the 4 - 5 year age group in Namitambo and Mansa
could be interpreted as indicative of a higher mortality rate
among the under fives than in Ilesha and Esa Oke.

A further explanation could of course be that a family
planning programme instituted very recently in Ilesha and Esa-
Oke would have decreased the proportion of children in the 0 -
under 1 year age group for these areas. However, no such pro-
gramme had been recently instituted in these areas.

However there are other factors that might decrease the
proportion in the older age groups and one of these is migration
out of the area, and this could account for the lower proportion
of older children.

Although there seems to be several possible reasons for
the differences in proportion of children in the 0 - 1 years
age group and in the 4 - 5 year age groups, yet one cannot be
sure as to which of the above is the correct explanation.

P. WEIGHTS OF CHILDREN.

In the present survey it was decided to weight all children
under the age of five taken into the study. Details of weighing
techniques and scales used are given in Chapter 111
Of the 1414 children in the study 1391 were weighed. 23
children refused to co-operate and hence were not weighed.
Thus for 98.4% of the study children accurate weights were
available. There is no reason to believe that the absence of
weights for 1.6% of the children would introduce bias into the
comparisons of weight made in this report.

FIGURES 15 to 18 show the distribution of mean weights for children by clinic attendances and by area. In these Figures the children have not been divided into further groups by sex. This was intentional in order that the numbers in each sub group would not become too small for comparison. In any event there were no systematic differences in weight between the sexes. These Figures show that the weights of children who attend the Under Fives Clinic, and the weights of the clinic non attenders, are similar. It may appear therefore that by attending the Under Fives Clinic there was no advantage as far as weights of children were concerned. However, from a point prevalence study it is not possible to obtain serial weights of children over a period of time. Without information on the progress in weight of a child over a period of time, it is not possible to draw conclusions on the effect a clinic could have had on the nutritional status of the child. Further, it must be remembered that a clinic attender, by definition, was a child who had attended the clinic at least once. It is also possible, that those children who attend the clinic only infrequently have not had the opportunity of taking advantage of the health education and other benefits available at the clinic, and as such their weights may not be appreciably affected by clinic attendance. The other possibility is that those who attend the clinic are, as a group, children who are regularly underweight as a result of intercurrent illness. If such is the case, then it could be presumed that had the clinic attenders not attended the clinic, then their weights might have been even lower than their present weights. It could also therefore

be possible that the non attenders were in fact the most
healthy children in the community. There is no evidence either
way to test these ideas. However the reasons given for clinic
attendance emphasise that a large proportion of mothers attend
the clinic only when their child is sick. Table 45
Also 41.3% of mothers in all areas who did not take their
child to clinic felt that it was not necessary to do so. This
implied that they did not consider it necessary to attend the
clinic routinely for preventive measures and health education.
So the idea that the healthy children may not be attending the
clinic while the ill ones do, may be a possibility.

MORLEY, WOODLAND, MARTIN AND ALLEN (1968) described a
study carried out in Imesi in the Western region of Nigeria
during the period January 1957 and August 1963. The mean
weights of children in the Imesi study are compared with the
mean weights of children seen in the present study for the two
West African areas, i.e. Ilesha and Esa Oke. Tables 98 and 99.
Imesi is a village situated about twenty five miles from Ilesha
and forty miles from Esa Oke. Though the present study was
carried out ten to twelve years after the Imesi study, it is
interesting to note from the Tables that the mean weights for
boys and girls for each age group has remained more or less
similar. It must be however kept in mind that the children in
the Imesi study were Under Fives Clinic attenders who were
regularly supervised at the clinic. So ideally the children
from the Imesi study should be compared with the clinic attenders
from the present study. This was not attempted as it has
already been shown that there was no appreciable difference in

TABLE98.

DISTRIBUTION OF MEAN WEIGHTS (DECIMAL KILOGRAMS) BY AGE FOR BOYS UP TO THE AGE OF FIVE IN ILESHA, ESA OKE AND IMES-ILE.

AGE	ILESHA NIGERIA 1972	ESA OKE NIGERIA 1972	IMES-ILE NIGERIA 1957 - 63.
3 months	5.5	5.3	5.4
6 months	6.6	6.7	6.6
9 months	8.5	6.9	7.5
12 months	8.8	7.9	8.2
18 months	9.5	9.6	9.6
24 months	10.9	10.8	10.8
30 months	12.4	11.0	11.9
36 months	12.2	12.1	12.5
42 months	13.7	13.1	13.7
48 months	14.6	13.5	14.4
54 months	15.4	13.9	15.1
60 months	15.9	14.1	15.5

*Morley, Woodland, Martin and Allen (1968). The original data for Imesi-Ile were in decimal pounds. Using 2.2 lbs - 1 kg as the conversion factor Imesi-Ile weights were converted in decimal kgms for ease of comparison.

TABLE 99.

DISTRIBUTION OF MEAN WEIGHTS (DECIMAL KILOGRAMS) BY AGE FOR
GIRLS UNDER THE AGE OF FIVE IN ILESHA, ESA OKE AND IMES-ILE.

AGE	A R E A		
	ILESHA NIGERIA 1972	ESA OKE NIGERIA 1072	IMES-ILE NIGERIA 1957 - 63.
3 months	5.3	5.2	5.1
6 months	6.4	5.8	6.2
9 months	7.1	6.9	7.1
12 months	8.4	7.7	7.9
18 months	9.1	9.1	9.3
24 months	10.5	10.0	10.1
30 months	10.5	11.3	11.5
36 months	12.3	10.9	12.5
42 months	12.3	13.1	13.4
48 months	13.8	13.3	14.1
54 months	14.2	15.4	14.8
60 months	14.0	14.3	15.5

*Morley, Woodland, Martin and Allen (1968). The original Imesi-
Ile data were in decimal points using 2.2lbs = 1 kg
as the conversion factor Imesi-Ile weights were converted into
decimal kgms for ease of comparison.

the mean weights of the children who were clinic attenders
and those who were not clinic attenders (Figures 15 - 18)
P. CLINIC ACTIVITY.

The activities carried out at an Under Fives Clinic and
their success can be assessed in a number of ways.
(1) Records could be maintained at the clinic which contained
information on the different activities carried out at the
clinic. For example registers could be maintained to record
the number of children immunised, the different types of
immunisation used, dates when the specific immunisations were
carried out, and separate records for each child to make it
possible to find out what specific immunisations each individual
child had received. If these records are maintained accurately
then it would be possible to refer to them and obtain information
on the activities pertaining to immunisation provided at the
clinic. However this type of record keeping is expensive in
terms of time, manpower, and storage space. In most Under
Fives Clinics some degree of record keeping is necessary in
order to calculate total number of children seen, immunisations
given per session, week, months etc. to enable costing,
staffing and other logistic details to be worked out. However,
at the Under Fives Clinic this record keeping is reduced to a
minimum due to the availability of the relevant information in
the 'Road-to-Health' card kept by the mother. These record
cards are another source of useful information on the clinic
activity. In the present survey the information obtained
from the 'Road to Health' cards of the children seen in the
field survey were used to draw conclusions on the clinic

activities, policies etc. The information collected at clinics
in this study were then compared with the findings from
field survey.

(i) Clinic Attenders and Population coverage.

Of the 434 children seen in Ilesha 55 or 13% had never
attended the clinic. (Table 64). The average number of new
attenders at the Ilesha clinic was 756 per month, and the
average number of visits made by old attenders was 11,841
per month. (Table 94)

TABLE 100.

	Ilesha	Esa Oke	Namitambo	Mansa
Non clinic attenders (from field study)	13%	9%	32%	16%
New attenders/month (from clinic study)	756	23	72	199
Re attenders/month (from clinic study)	11,841	1,696	170	900
Re attendance indicator (i.e. total old attendances/total new attenders)	15.6	73	2.3	4.5

The results for all four areas are given in Table 100
In the protocol drawn from 'The establishment of Under Fives
Clinics in Malawi' the aim of the programme was stated to be "a
60% coverage of all children in Malawi". COLE KING (1971)
Certainly this has been achieved in Namitambo area. In the
present study it was found that 68% of children in Namitambo
area were Under Fives Clinic attenders. However, only 14% of
the children made 76% or more of the ideal number of visits

for their age. (Table 64). (However in the Malawi protocol
it was stated that a child should at least attend six times in
the first year of life. This is half the number stipulated by
the other clinics as being ideal).

In Mansa 16% of the children were non attenders. FUGELSANG
(1971) found that in the Luapula Province in Zambia about two
thirds of the children under the age of five were clinic
attenders. NALUMANGO (1974)has estimated that in 1972
35 - 40% of all children under the age of five in Zambia
attended an Under Fives Clinic. He has used the Re attendance
Indicator (Ratio of re attendances to first attenders) as a
"Fairly reliable indicator of provincial trends and success of
the Under Fives Clinic programme". He stresses that the
Re attendance Indicator is not an actual re attendance rate
per child since it included children who first attended in the
previous year. If all mothers took their children to a clinic
soon after birth and then re attended every months for the next
twelve, and every three months for the next four years, then the
target figure for Re attendance Indicator would be twenty eight
or more". Using Nalumango's criteria for calculation, the
Re attendance Indicator for the four areas is as follows:

Ilesha 15.6   Esa Oke 73   Namitambo 2.3   Mansa 4.5
In order to achieve the optimum target for the Re attendance
Indicator the children should be seen early in life and then
followed up regularly.

The following section of the discussion would apply to
only those children who had a 'Road-to-Health' card on the day
of survey.

(ii)   Age Distribution of Clinic Attenders.

Monitoring of growth during the child's first five years of life implies continued attendance at a clinic from birth until the age of five years. A clinic which is successful in retaining children until their fifth birthday would have a clientele of all ages within these limits. A clinic which is only partially successful would have a disproportionately larger number of children attending for a particular age period usually at the younger age.

In Ilesha and Esa Oke the proportion of clinic attenders was seen to be fairly evenly distributed throughout the age range. However, in Namitambo and Mansa the proportion of clinic attenders fell as the ages of the groups increased. For example in Namitambo 34% of the children under the age of one year were clinic attenders while only 6% of children in the four to under five year age group were clinic attenders.(Table 75) WOLGEMUTH (1972) in her study carried out in seven clinics in Lusaka, Zambia found the following age distribution for all clinic children.   (Total number of children was 1190)

TABLE 101

AGE DISTRIBUTION OF CLINIC ATTENDERS AT LUSAKA UNDER FIVES CLINIC

Age in months	Percentage of total
1 - 12 months	58.2%
13 - 24 months	19.1%
25 - 36 months	12.0%
37 - 48 months	5.9%
49 - 60 months	4.4%
TOTAL	99.6%

58.2% of the clinic attenders were in the 1 - 12 months age group while only 4.4% of clinic attenders were over the age of 48 months. These figures are even worse than the figures obtained for the age distribution of clinic attenders in Mansa in 1972 in the present study.

COLE KING (1971) reported that in a survey carried out in eleven clinics in Malawi, 57% of the attenders were under the age of one year. It is likely that as the clinics become established, then the clinics would attract children of all ages within the 0 - 5 year age group. However, if it is to be expected that the clinic attenders would have a relatively uniform distribution of ages within the 0 - 5 years limit, then this assumes that the community also includes an even distribution of children of these ages. However, it was discussed earlier that in Mansa and Namitambo the age distribution of children seen (clinic attenders and clinic non attenders)

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uniform distribution of ages within the 0 - 5 years limit, then
this assumes that the community also includes an even
distribution of children of these ages. However, it was
discussed earlier that in Mansa and Namitambo the age distribu-
tion of children seen (clinic attenders and clinic non attenders)

Table 51 showed an excess of children in the younger age groups. This could partly account for the greater number of children among the clinic attenders of the younger age groups. There is no information available on the age distribution of children in the community in Lusaka, from Wolgemuth's study.

Another reason to be taken into account of course is the time when the Under Fives Clinic was first started. If the clinic was started only recently then it is possible that the children nearing their fifth birthday would not be brought to the clinic. (They may have already had their immunisations etc. elsewhere). In clinics which have not been in existance for at least five years it is not reasonable to expect an even distribution of children at each age group within the five year period.

(iii) <u>Age of child at first attendance at the Under Fives Clinic</u>.

The children in each area are divided into five cohorts depending on their age on the day of survey. The Cohorts were as follows:

Cohort 1.   0 - under 1 year

Cohort 2.   1 - under 2 years

Cohort 3.   2 - under 3 years

Cohort 4.   3 - under 4 years

Cohort 5.   4 - under 5 years

In Ilesha it is seen that for all ages, 72% of clinic attenders (who had their card with them on the day of survey) had been to the clinic for the first time in the first three months of life. This figure was 89% in Esa Oke. However, in

Namitambo and Mansa the picture was somewhat different. In
Namitambo in the first two cohorts 72% and 61% of children
were seen at the clinic within the first three months of life.
However, among the older cohorts only a small proportion of
children were issued their cards in the first three months of
life. (FIG. 20-23)

If one looks at the dates of birth of the children in the
older cohorts it can be seen that these children were over the
age of two years at the time of survey. Since the survey in
Namitambo was carried out in March 1972, the children in cohorts
3, 4 and 5 were born prior to March 1970. Since the Under
Fives Clinic in Namitambo was started in 1969, children born
prior to and around the time the Under Fives Clinic was opened,
could not have been issued with a 'Road-to-Health' card in the
first three months of life.

In Mansa too, in the first 2 cohorts, 70% and 26% children
respectively were issued their 'Road-to-Health' cards in the
first three months of life. These were the children who were
under the age of two at the time of survey. Children in cohort
3 would have been born between April 1969 and March 1970,
(since the survey in Mansa was carried out in April 1972) For
children in this cohort the age when their 'Road-to-Health' cards
were issued seem to be well distributed throughout the three
year period. Figure 23 page 304. None of the children in Mansa,
who were over the age of three years, had been issued with a
'Road-to-Health' card in the first three months of life. Prior
to 1969 the clinic in Mansa was in its infancy and it cannot
be expected that cards would be issued to all children early
in life.

ILESHA

FIG. 20.

DISTRIBUTION OF CHILDREN BY AGE (IN MONTHS) AT WHICH THEIR ROAD TO HEALTH CARDS WERE ISSUED
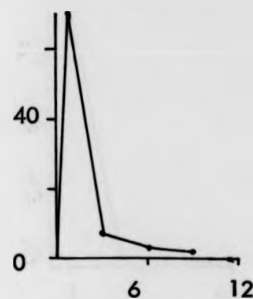
ESA-OKE   FIG. 21.

AGE AT STUDY

0 - UNDER 1 YR
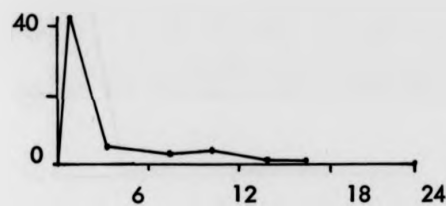
1 - UNDER 2 YRS
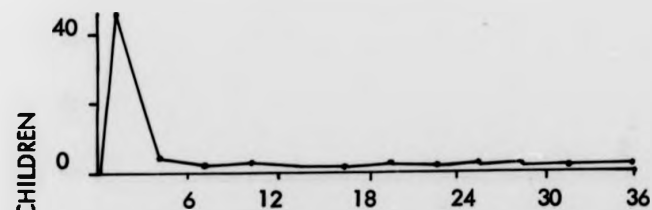
2 - UNDER 3 YRS
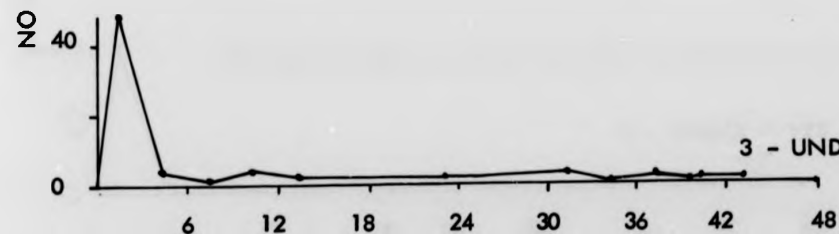
3 - UNDER 4 YRS
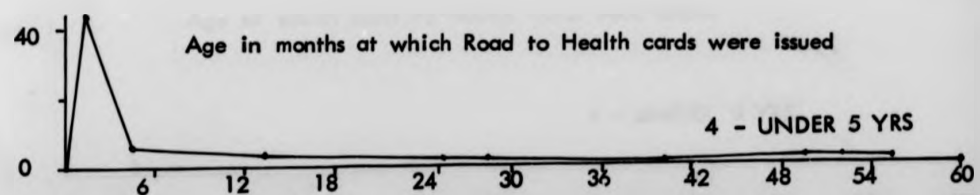
Age at which Road to Health cards were issued

4 - UNDER 5 YRS
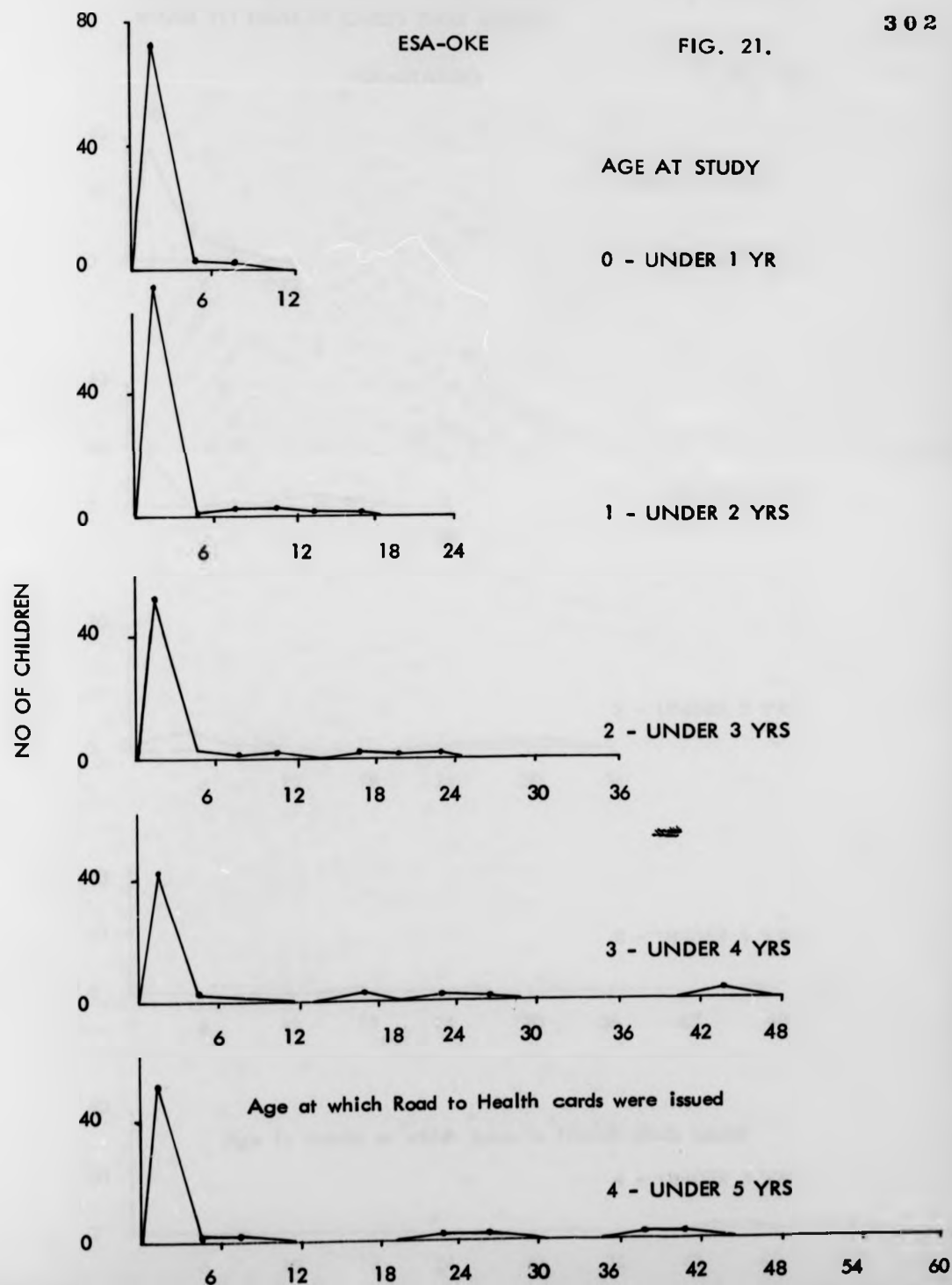
NO OF CHILDREN

DISTRIBUTION OF CHILDREN BY AGE (IN MONTHS) AT WHICH THEIR
ROAD TO HEALTH CARDS WERE ISSUED

303

NAMITAMBO   FIG. 22.
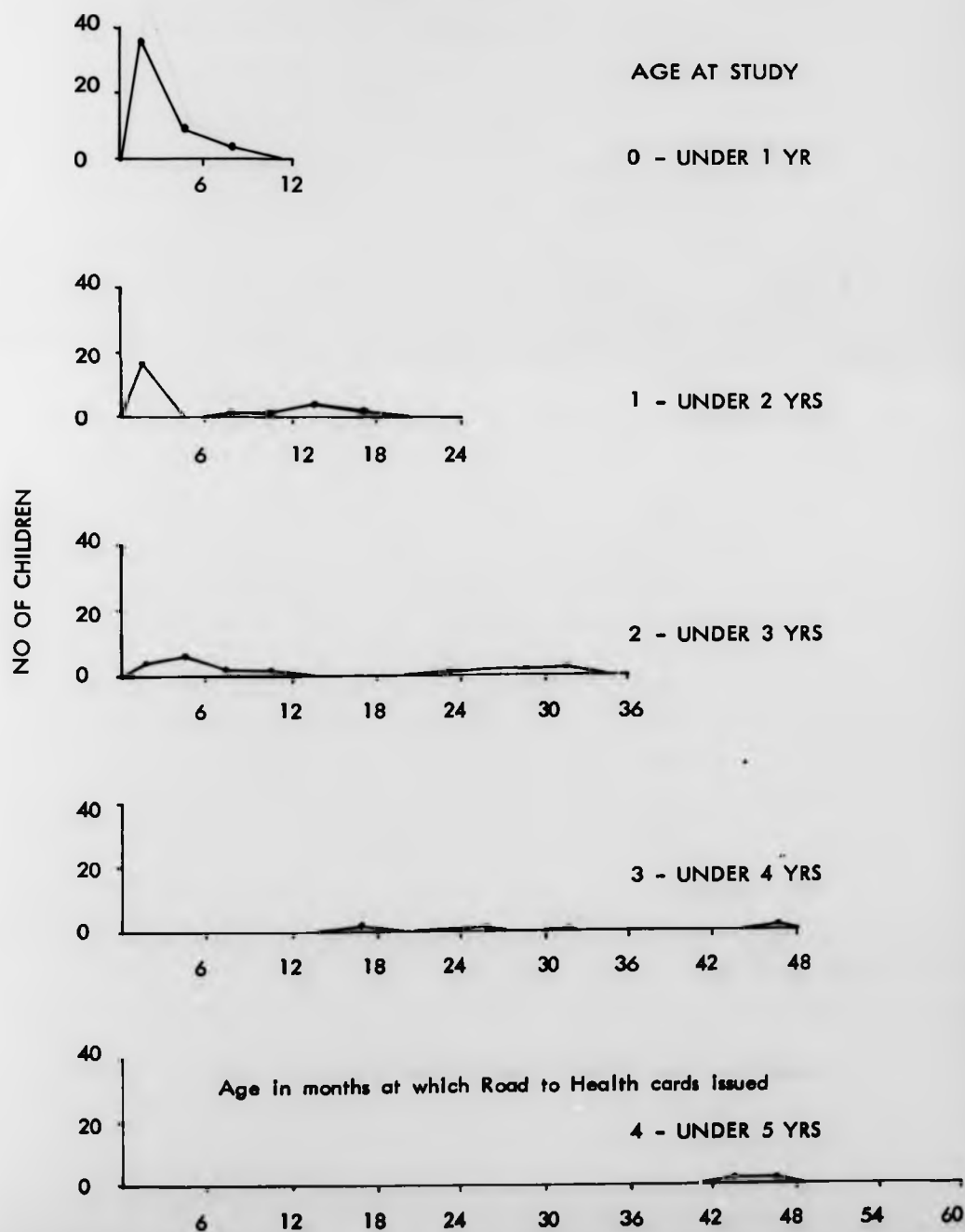
DISTRIBUTION OF CHILDREN BY AGE (IN MONTHS) AT WHICH THEIR
ROAD TO HEALTH CARDS WERE ISSUED

MANSA   FIG. 23.
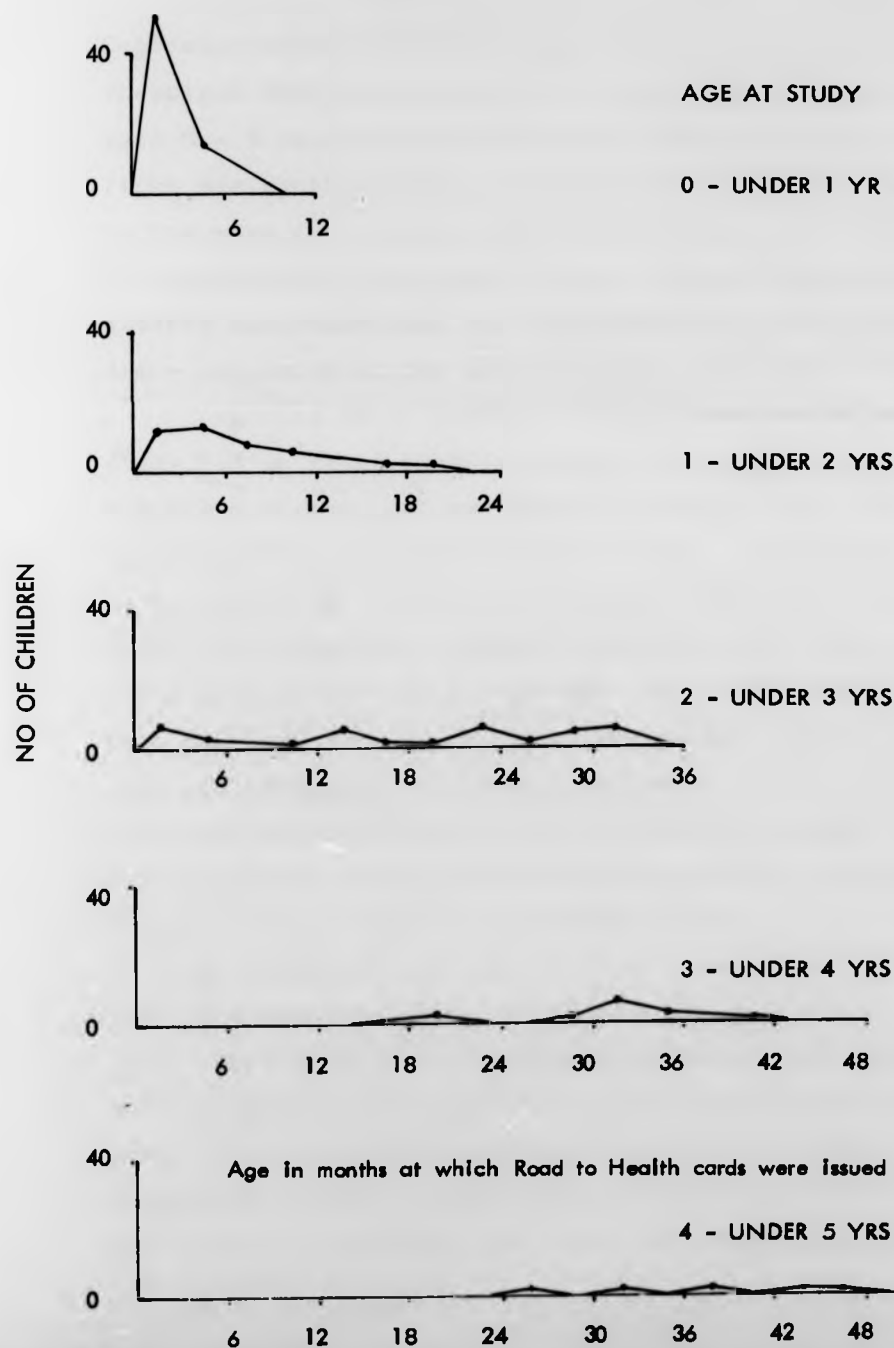
In a study carried out in Kenya between January 1966 and
September 1968 SCHOFIELD et al (1971) it was shown that in the
Thembigwa Sublocation, out of a population of 2,835 children
aged 0 - 5 years, 25% of them were brought to the clinic in the
first six months of life, 8.5% in the second six months and 4%
in the next four years. It must be noted that no part of the
Sublocation was more than 2.6 kms from the health centre and the
authors concluded that the attendance was low in spite of the
close proximity of the clinic to the dwellings.

Comparing these figures with the results of the present
study, it is noted that in Ilesha, of the 434 children seen in
the field survey, 251 or 57.8% were seen in the first three
months of life. In Esa Oke 305 of the 405 children, i.e. 75.3%
in Namitambo 58 of 261 children, i.e. 22% and in Mansa 71 out
of 314 children, i.e. 22.6% were seen at the clinic in the
first three months of life. This figure does not, however, take
into account those clinic attenders whose 'Road-to-Health' cards
were not available on the day of survey but who also may have
been seen at the clinic in the first three months of life.
The results in Mansa and Namitambo are seen to be fairly similar
to the results found in the Kenyan study.

In Ilesha and Esa Oke it seems likely that the mothers
were encouraged to bring their children to the clinic early in
life. These clinics have been in existence for over ten years
and it seems likely that this factor has played an important
part in making known to the local people the clinic policies
related to the age at which the children should be brought to
the clinic. WOLGEMUTH (1972) in her study in Lusaka found

that in clinics that had opened for the first time, more older children were brought to them. She concluded that it was possible that the mothers were hesitant to expose younger children to the uncertainities of a new clinic, and that it was also possible that the younger children were too weak, malnourished, or ill and could not be easily carried a long distance to the clinic. However, the newer clinics in the present study, namely Namitambo and Mansa were in existence for over two years, at least, and as such cannot be directly compared with the clinics discussed by Wolgemuth.

From a simple field survey it has thus been possible to establish the proportion of children who were issued with a 'Road to Health' card very early in life, i.e. within the first three months of life. It is important to stress to the mother the need for bringing the children at an early age to the clinic. It is by this means that the clinic staff could ensure that the child receives all its necessary immunisations, and also that mothers receive nutrition and health education at the right time. For example the importance of breast feeding is best discussed at a time when the mother is breast feeding the child.

(iv) <u>Immunisation</u>.

Another activity of the clinic which could be assessed by a field survey is immunisation. Availability of vaccines and the policy regarding age at which immunisations are given could be deduced from a field survey carried out to extract this information from the home based 'Road-to-Health' cards.

Widespread use of effective vaccines has become probably
the most important contemporary practise of preventive
medicine. The recent increase in activity in vaccine research
and development has greatly enhanced the immunisation programmes.
DULL (1971) stated "It was 175 years ago that Edward Jenner
undertook his historic work on smallpox prophylaxis that leads
now to the promise of worldwide eradication of smallpox. It was
almost a century ago that Louise Pasteur demonstrated a vaccine
for post-exposure treatment of rabies, a concept still employed
today. But in spite of these two monumental discoveries of
important antigens, most of the vaccines now in routine use
have become available only since the early to mid-twentieth
century. Within the last decade alone, four effective live
attenuated virus vaccines against poliomyelitis, measles, mumps
and rubella have been put to use".

The use of vaccines for the prevention of disease is wide-
spread in tropical Africa. The optimum age at immunisation
for different vaccines has been the subject of much research.
In establishing the optimum age at immunisation the following
points should be considered.

(1) At what age would an unvaccinated child be most
susceptible to the disease?

(2) At what age would the effects of the disease be most
severe?

(3) Up to what age would maternal antibodies and antibodies
in breast milk interfere with antibody formation in the child?

(4) At what age would a child be most likely to come in
contact with the medical services in order to be able to receive
vaccination?

ROBBINS (1971) speaking on immunisation of newborns and infants stated "There are several reasons why it would be desirable to vaccinate the neonate. First, certain infections are particularly lethal for the young infant. Pertussis, for example, is a serious and not frequently fatal disease during the first years of life; it is a less virulent disease in later years. Secondly, the newborn infant has not had an opportunity to acquire infection with agents that might interfere with a live vaccine. This is applicable especially in poliomyelitis. Finally, the time of birth may be one of the few times in an individual's life when he is likely to be in contact with the health system and available to be immunised. One would like to capitalise upon such opportunities". Robbins, however, goes on to stress that certain features such as maternal antibodies, antibodies in breast milk, and 'immuno-logical immaturity' in the infant might, in the case of certain vaccines, make it more suitable to be given later in life. For example he states that the measles vaccination should not be performed in a highly immune population until the age of 9 - 12 months, as parental administration of live virus vaccines such as measles, are totally ineffective in the presence of even minimal levels of antibody, as the vaccine virus is promptly neutralised and no multiplication occurs.

Cost of vaccination is another subject that has attracted attention. DULL (1971) states "there is considerable cost associated with disease. There is, of course, considerable cost associated with its control and prevention. Uncontrolled disease has easily recognised costs. They are

sickness and death. Economists list them as 'direct' and 'indirect' costs referring to monies spent for the medical care of the sick and to the lost wages during sickness and unfulfilled productivity due to premature death. As vaccines for controlling and preventing disease become available, the inherent cost of buying and using them is justified with saving of medical care and costs and increases productivity of healthy people. To the extent that sickness is prevented and lives saved, vaccination programme costs seem insignificant".

In the areas of investigation in the present study immunisation was carried out routinely at the Under Fives Clinics. The details as regards each individual type of immunisation would be dealt with in the next few pages.

BCG   VACCINATION

Protection.

Since the take rate of smallpox vaccine or the rate of
serological conversion of measles vaccine are known, it is
possible to calculate the rate of immunity in the population
that may be expected from a given vaccination coverage.   The
situation with regards BCG is less clear, since the natural
or induced immunity against tuberculosis cannot be taken for
granted.   The tuberculin test is merely evidence of the
immunisation process, and does not indicate levels of immunity.
PAVIOT (1971).

The protection provided by BCG in the community can best
be assessed by a longitudinal survey such as The Medical
Research Council's BCG trial carried out in 1956 where
protection was estimated as 80%.   SPRINGETT (1965)

In all four study areas the clinic policy was to immunise
children against tuberculosis (by giving a single dose of BCG)
at birth or at the first visit to the clinic.

Information on BCG vaccination was obtained from the 'Road-
to-Health' card and/or from observing the deltoid region of the
upper limb for vaccination scars.   Information from one or other
of the above sources was considered as evidence of having had
BCG.   It was not possible to establish the date when the
vaccination was given if the child did not have a 'Road-to-Health'
card, even if he or she had a scar.

BCG Vaccination and Population coverage.

74%, 66%,25% and 47% of children respectively in Ilesha, Esa Oke, Namitambo and Mansa had received a BCG vaccination (Table65). The high coverage in the two West African areas could ; partly be due again to the fact that the clinics in Ilesha and Esa Oke have been in operation for a longer period of time. SCHOFIELD et al (1971) reported a 9.7% population coverage for BCG vaccination in the pre-school population in a rural area in Kenya. This area had a static Maternal and Child Health Clinic. They also report a 23.1% BCG vaccination coverage for another area of Kenya, served by mobile fortnightly Maternal and Child Health Clinics. The authors compare the immunisation coverage achieved by a static clinic (former) with a mobile clinic (latter). In the areas of study in the present survey all immunisations were carried out by static clinics. The coverage achieved in Ilesha and Esa Oke is exceptionally high in comparison with the Kenyan coverage. In Namitambo, which had a 25% coverage for BCG and was the lowest for the four areas of the present study, yet this coverage is in excess of that achieved by the mobile team in Kenya. However, it must be kept in mind that the Kenyan mobile team carried out immunisations once a fortnight while the immunisations were available at the Namitambo clinic once a week.

CUNNINGHAM (1969) studied the immunisation records of 982 children attending the Under Fives Clinic in Imesi in the Western region of Nigeria. He found that 90.8% of these children had received BCG. However, the children studied by

him, were those who were being followed up closely by the
clinic staff as part of a longitudinal study, and as such this
population could not be considered typical.

Age at BCG vaccination.

Children seen in the field survey are again divided into
age cohorts (see page 298) since all clinics endeavoured to
give children BCG early in life. It could be expected that
the peak age when maximum number of children received their
BCG would be in the first three months of life. In Ilesha and
Esa Oke it is seen that for children in each age group who have
had BCG vaccination, a large proportion of these children
received their vaccination in the first three months of
life (Figures 24 - 27)

For Namitambo and Mansa, however, even though it would
have been possible for the children to have received their
BCG vaccination soon after birth for example at the maternity
unit, yet those children born prior to the starting of the
Under Fives Clinic in these areas would not have had a 'Road-
to-Health' card issued early enough, to have the date of BCG
vaccination noted on the cards.

Page 318 shows the percentage of children in each cohort who
had received their BCG vaccination in the first three months of
life. (For those children for whom the age at BCG vaccination
was known). Of these children it is seen that for children in
the first two cohorts, i.e. for children under the age of two
years in all areas a high percentage of children received their
BCG in the first three months of life. For example in the 0 -

under 1 year cohorts 93.8% in Ilesha, 96.6% in Esa Oke, 72.4%
in Namitambo and 71% in Mansa of the children (whose age at BCG
was known) had received their BCG within the first three months
of life. However, for the 4 - under 5 years cohorts the
results for the areas differ considerably. In Ilesha 56.6%
and in Esa Oke 64.2% children (whose age at BCG was known)
received their BCG within the first three months of life. In
Namitambo none of the children in this cohort who had received
BCG had the date of vaccination known. A similar situation was
seen in Mansa. This situation arose as a result of the clinics
in these areas being opened after these cohorts of children were
born.

DISTRIBUTION OF CHILDREN BY AGE (IN MONTHS) AT BCG VACCINATION

ILESHA

314

FIG. 24.

AGE AT STUDY

0 - UNDER 1 YR

1 - UNDER 2 YRS

2 - UNDER 3 YRS

3 - UNDER 4 YRS

4 - UNDER 5 YRS

NO OF CHILDREN

Age in months at BCG vaccination

DISTRIBUTION OF CHILDREN BY AGE (IN MONTHS) AT BCG VACCINATION

ESA-OKE

FIG. 25.

AGE AT STUDY

0 - UNDER 1 YR
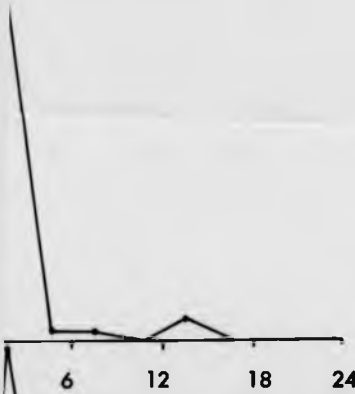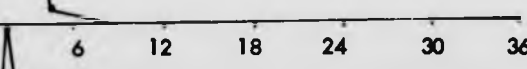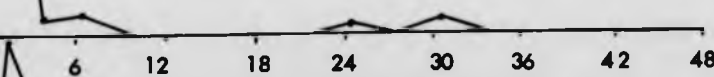
6   12

1 - UNDER 2 YRS

6   12   18   24

2 - UNDER 3 YRS

6   12   18   24   30   36

3 - UNDER 4 YRS

6   12   18   24   30   36   42   48

Age in months at BCG vaccination

4 - UNDER 5 YRS

DISTRIBUTION OF CHILDREN BY AGE (IN MONTHS) AT BCG VACCINATION
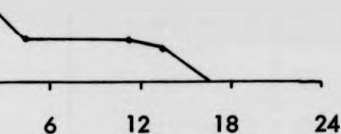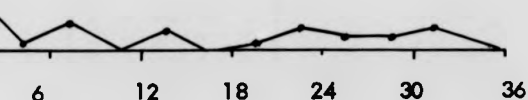
316

NAMITAMBO

FIG. 26.

AGE AT STUDY

0 - UNDER 1 YR
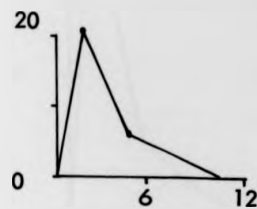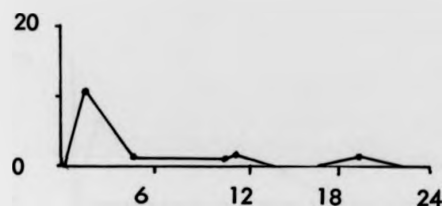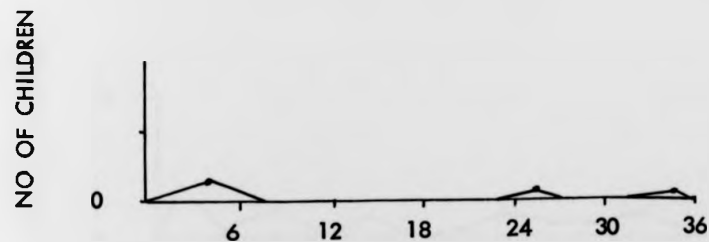
1 - UNDER 2 YRS

2 - UNDER 3 YRS

3 - UNDER 4 YRS

Age in months at BCG vaccination
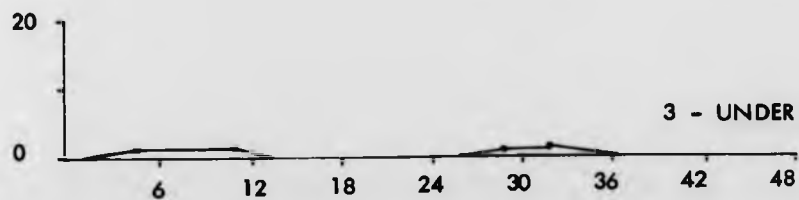
4 - UNDER 5 YRS
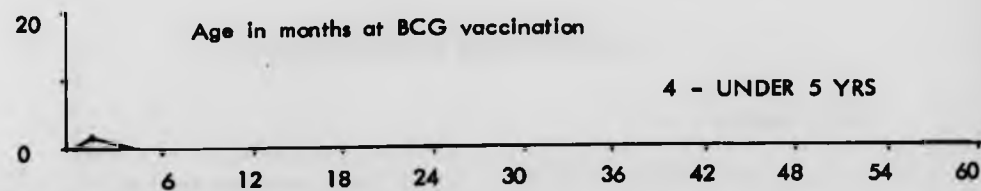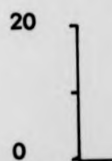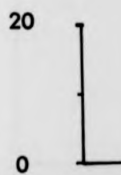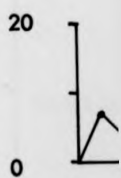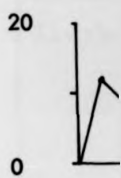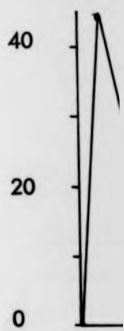
NO OF CHILDREN

NO OF CHILDREN

DISTRIBUTION OF CHILDREN BY AGE (IN MONTHS) AT BCG
VACCINATION

MANSA   FIG. 27.   3 1 7

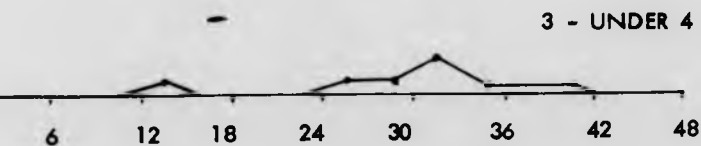AGE AT STUDY

0 - UNDER 1 YR

1 - UNDER 2 YRS

2 - UNDER 3 YRS

3 - UNDER 4 YRS
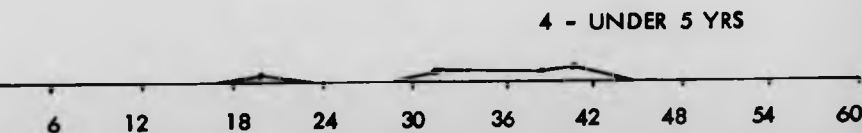
Age in months at BCG vaccination

4 - UNDER 5 YRS

TABLE 102.

DISTRIBUTION OF CHILDREN BY AGE, BY AGE AT BCG, AND BY AREA.

Clinic	Age	% given BCG in 1st 3 months of life. Total number children at each age.	% given BCG in 1st 3 months of life Children whose (age at BCG vaccination was known)
Ilesha	0 - under 1	57.7% (60/104)	93.8% (60/64)
	1 - under 2	47.0% (40/85)	67.8% (40/59)
	2 - under 3	47.5% (39/82)	75.0% (39/52)
	3 - under 4	52.6% (40/76)	67.7% (40/59)
	4 - under 5	41.1% (30/73)	56.6% (30/53)
	All ages	49.8% (209/420)	72.8% (209/287)
Esa Oke	0 - under 1	71.6% (51/81)	96.6% (58/60)
	1 - under 2	58.0% (56/94)	91.8% (56/61)
	2 - under 3	52.7% (39/74)	88.6% (39/44)
	3 - under 4	52.6% (40/76)	83.3% (40/48)
	4 - under 5	40.3% (27/67)	64.2% (27/42)
	All ages	56.0% (220/392)	86.3% (220/255)
Namitambo	0 - under 1	21.2% (21/90)	72.4% (21/29)
	1 - under 2	17.2% (11/64)	73.3% (11/15)
	2 - under 3	6.1% (1/49)	16.6% (1/6)
	3 - under 4	0.0% (0/35)	0.0% (00/5)
	4 - under 5	0.0% (0/21)	0.0% (0/0)
	All ages	12.7% (33/259)	60.0% (33/55)
Mansa	0 - under 1	45.8% (44/96)	71.0% (44/62)
	1 - under 2	17.6% (12/68)	34.3% (12/35)
	2 - under 3	10.7% (7/65)	25.9% (7/27)
	3 - under 4	0.0% (0/49)	0.0% (0/14)
	4 - under 5	0.0% (0/34)	0.0% (0/6)
	All ages	20.2% (63/312)	43.8% (63/144)

SMALLPOX   VACCINATION

Since the advent of the global smallpox eradication programme in 1967, the problem of smallpox in Africa has changed dramatically. Only five years ago smallpox was found in most African countries south of the Sahara and, in some, the rates were the highest recorded anywhere in the world. In Africa today, major endemic foci persist only in two countries - Sudan and Ethiopia.

Provision of adequate quantities of fully potent vaccine was of prime importance in the smallpox eradication programme. HENDERSON (1971) reported "it was a shock to us to find in 1967 that no more than 10% of all smallpox vaccines manufactured and in use in Africa were freeze dried vaccine which met WHO recommended standards."

Throughout Africa now, fully potent freeze-dried smallpox vaccine is in use with the result that when vaccine is administered to 100 persons, virtually all are, in fact vaccinated as contrasted to perhaps 10 per 100 or less only five years ago. The introduction of the jet injector and later the bifurcated needle constituted a significant advance in vaccine administration. With these devices there was a saving of 50 per 100 or more vaccine consumption, take rates were significantly higher, than with the older scratch techniques, and vaccinations were able to be performed at a much faster rate of speed thus saving on personnel and expense.

Smallpox vaccination population coverage.

Information on smallpox vaccination was obtained from the 'Road-to-Health' Cards and/or by observing the deltoid region of the upper arm for scars. By this means it was established that 55.8% children in Ilesha, 34.6% children in Esa Oke 42.1% children in Namitambo and 78.7% children in Mansa, who were seen in the survey had been given smallpox vaccinations. Table 103a. However, it must be remembered that smallpox vaccination was usually given after the first three months of life, hence 27, 25, 21 and 23 children in Ilesha, Esa Oke, Namitambo and Mansa respectively were under the age of three months, at time of survey and should be excluded as being not eligible (because of age).

TABLE 103(a)

DISTRIBUTION OF CHILDREN BY AGE BY SMALLPOX VACCINATION BY AREA.

Age	ILESHA		ESA OKE		NAMITAMBO		MANSA	
	SPV given	SPV not given	SPV given	SPV not given	SPV given	SPV not given	SPV given	SPV not given
Under 3 months	4.0% (1)	96.0% (26)	0.0% (0)	100.0% (25)	5.0% (1)	95.0% (20)	43.0% (9)	57.0% (14)
Over 3 months	59.2% (241)	40.8% (166)	36.8% (140)	63.2% (240)	45.4% (109)	54.6% (131)	81.8% (238)	18.2% (53)
All ages	55.8% (242)	44.2% (192)	34.6% (140)	65.4% (265)	42.1% (110)	57.9% (151)	78.7% (247)	21.3% (67)

a.

ely

If these "under age" children are excluded then the percentage coverage in respect of smallpox vaccination becomes 59.2% (241/407) for Ilesha, 36.8% (140/380) for Esa Oke, 45.4% (109/240) for Namitambo and 81.8% (238/291) for Mansa.

The clinics in Ilesha and Mansa provided immunisation daily while those in Namitambo and Esa Oke were able to immunise children only once a week. Therefore in the latter areas the opportunities for a mother to get her child immunised would be less. For example, if a child was ill on the day when immunisations are given, then in Namitambo and Esa Oke he or she would have to wait a whole week before it is possible to get immunisation again, whereas in Ilesha and Mansa the child could if fit be immunised on the next day.

In a study carried out by Cunningham (1969) in Imesi in Nigeria, it was reported that 90.2% of the children under the age of five had received smallpox vaccination. However, this study was carried out in a test village where a longitudinal study of children was in progress, and this guaranteed more frequent opportunity for vaccination , and could have also resulted in improved health education, whereby the population was more aware of the advantages of vaccination.

SCHOFIELD et al (1971) reported the results of an observational study, carried out in a community living at distances of 2.6 km or less from a Rural Health Centre in Kenya. The coverage for smallpox vaccination achieved here was 8.8%.

It seems quite clear that in this population the uptake of smallpox vaccination was highly unsatisfactory. Unfortunately the authors made no comment on the possible reasons for this.

THURAIUX, COOK AND MOFFAT (1971) reported an investigation of the vaccination status of the population of a rural area in Uganda carried out by the World Health Organisation in 1969, for smallpox and BCG.

Their findings are given in Table 103(b) for two sub counties served by a Young Child Clinic (Y.C.C.) and eight sub counties without Young Children Clinics.

<u>TABLE 103(b)</u>

Age group	Y.C.C. Sub counties		Non Y.C.C. Sub counties	
	BCG scars	SP scars	BCG scars	SP scars
0 - 1 year	72%	60%	59%	49%
1 - 4 years	79%	88%	58%	83%
0 - 4 years	77%	85%	58%	72%

In the non Y.C.C. Sub counties the immunisation was carried out by mobile clinics or as part of a mass campaign. (The arguments for and against both these types of immunisation programmes would be discussed later). However, it is worth noting that the percentage coverage achieved by the Young Child Clinics for smallpox and BCG vaccination is, for all ages greater than that achieved by the mobile/ and or mass campaigns.

AGE AT SMALLPOX VACCINATION.

In the areas of study the policy regarding the age at
which smallpox vaccination should be given did not appear to be
as rigid as for BCG vaccination. In Ilesha, Esa Oke THWAITES
(1972) and Namitambo COLE KING (1972) it was the clinic policy
to give the smallpox vaccination between the third and sixth
month, preferably nearer the sixth month. This ruling arose
as a result of the belief that the child had an appreciable
amount of maternal antibodies against smallpox until about
the age of six months, after which the levels fell to a
negligible amount. In Mansa, the author was unable to obtain
information on clinic policy, it was not possible to establish
a definite ruling regarding the ideal age for smallpox
vaccination. However, in the field survey it was seen that
some of those children for whom the date of smallpox vaccination
was known the maximum number received it in the first three
months of life. Figure 31 From the 'Road-to-Health' cards it
was found that the majority of children in Ilesha received their
smallpox vaccination between the ages of three and six months
for all age cohorts except for the cohort of children over the
age of one year but under two years, at the time of survey.
Here the peak age of smallpox vaccination is seen to be shifted
to the right (Figure 28), i.e. the peak is seen between nine
and twelve months. This could have been due to a temporary
change in clinic policy regarding the ideal age for smallpox
vaccination, In Ilesha a trial may have been carried out at
that particular time to see what changes might result by giving
the smallpox vaccination at a slightly later age, or it could

be that in that particular period a shortage or non availability
of vaccines, or other equipment such as bifurcated needles
may have occurred which resulted in a complete or partial
cessation of smallpox vaccination in the area. This difference
in the peak ages at which smallpox vaccination was given was
only discovered when the results of the field survey were
analysed, i.e. after the author had left Ilesha. It was thus not
possible to establish the real reason for this difference in peak
age for smallpox vaccination. In the next age cohort, i.e.
children under four years of age but over three years at the
time of the survey, a similar shift in the peak is seen.
(Figure 28). However, here of the seventy six children in this
age cohort twelve received their smallpox vaccination between
the age of six and nine months and eleven received their
vaccination between the age of three and six months.

Throughout the five year period under review, i.e. February
1967 to February 1972, it is seen that the peak age for smallpox
vaccination for Esa Oke was between the ages of three and six
months. (Figure 29). However in cohorts 2 and 3, i.e.
children born in February 1969 and February 1970, a number of
children received their smallpox vaccination later in life,
as shown by the smaller peaks at between the ages of twelve and
eighteen months in cohort 3, and at eighteen months in cohort 2.

It must be remembered that due to the lack of refrigeration
facilities at the Esa Oke clinic, immunisations are carried out
once a week only by a visiting nurse/sister who travels from
Ilesha weekly with the vaccine. Thus at Esa Oke immunisations
are carried out four times a month only.

DISTRIBUTION OF CHILDREN BY AGE (IN MONTHS) AT
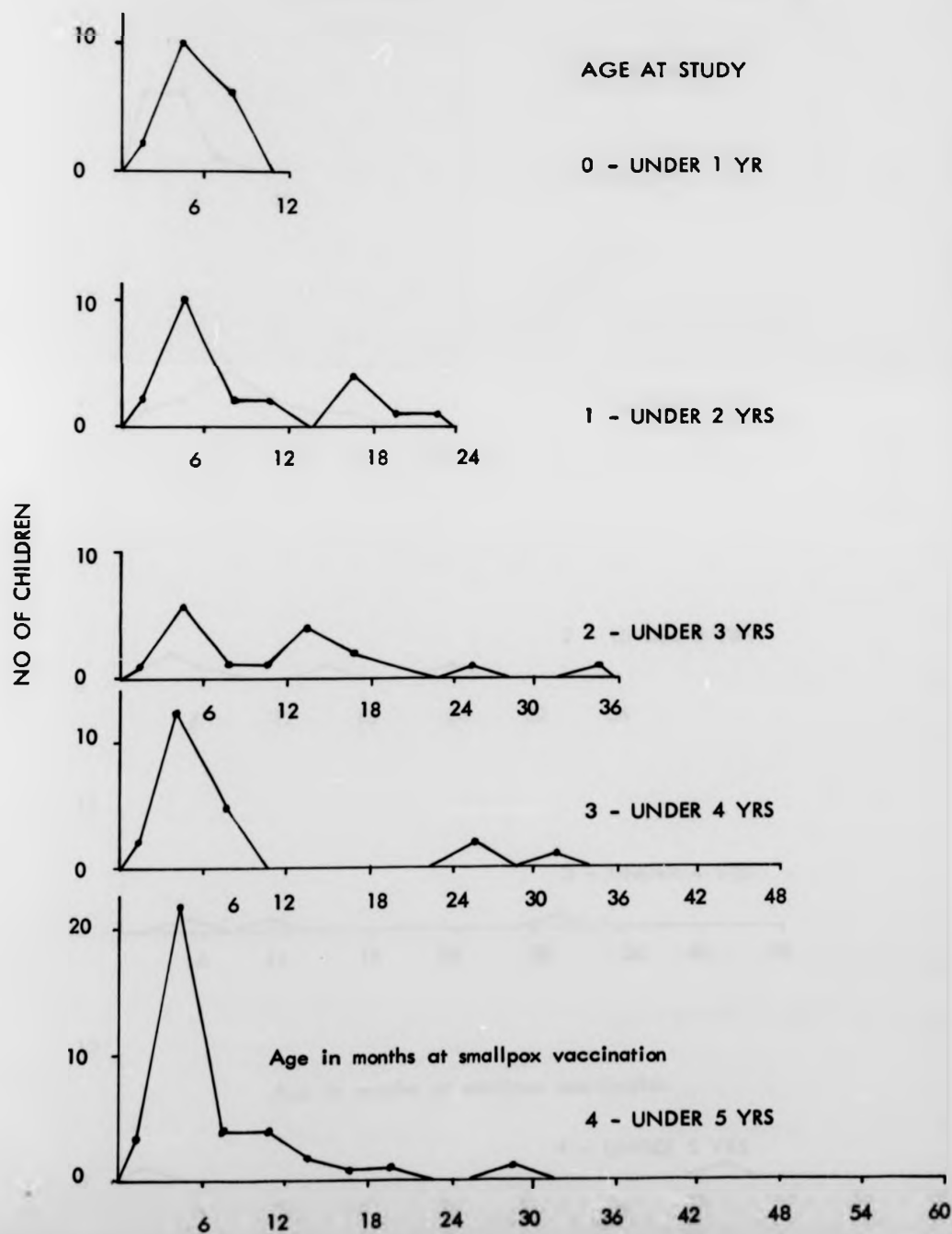SMALLPOX VACCINATION

325

ILESHA

FIG. 28.
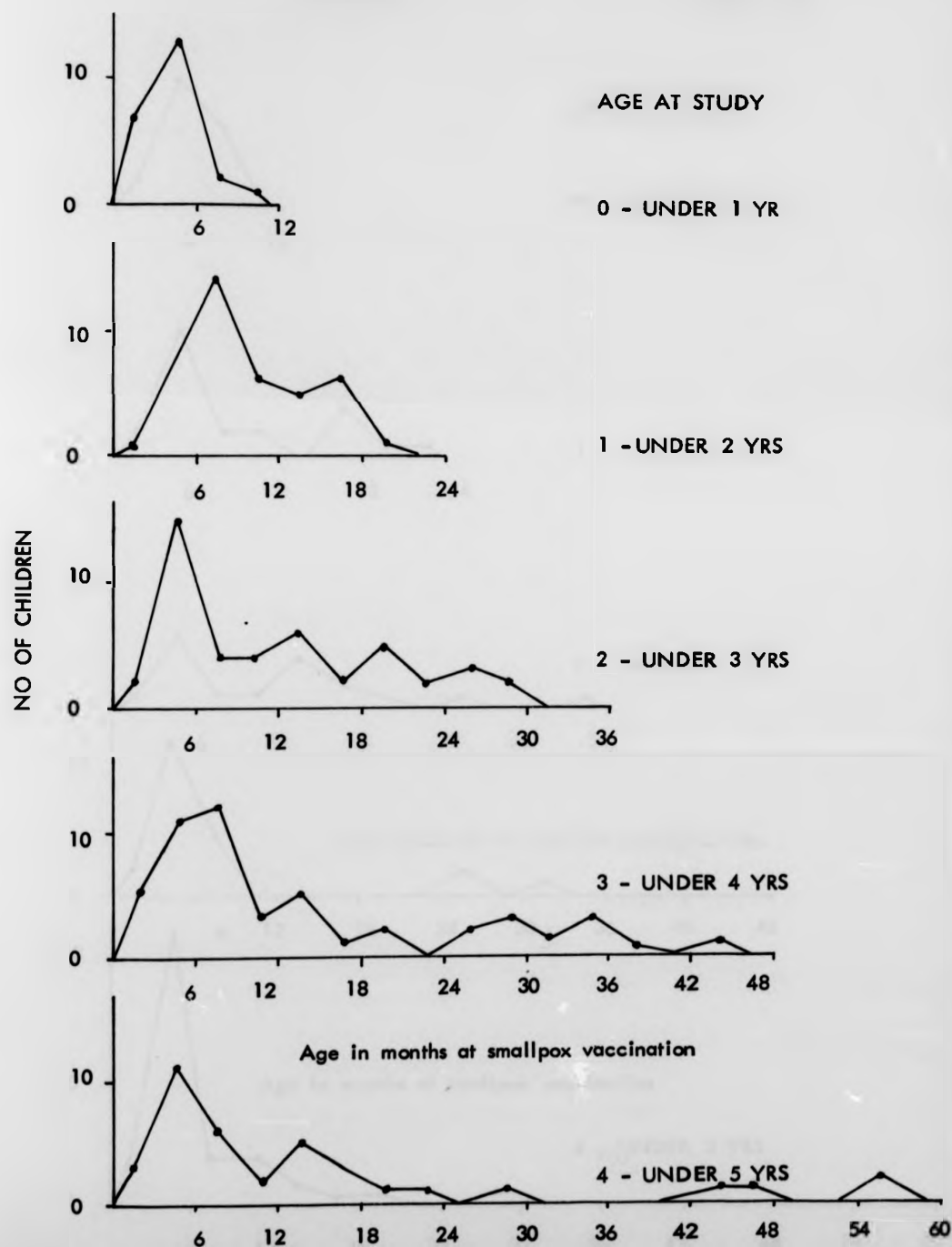
DISTRIBUTION OF CHILDREN BY AGE (IN MONTHS) AT
SMALLPOX VACCINATION
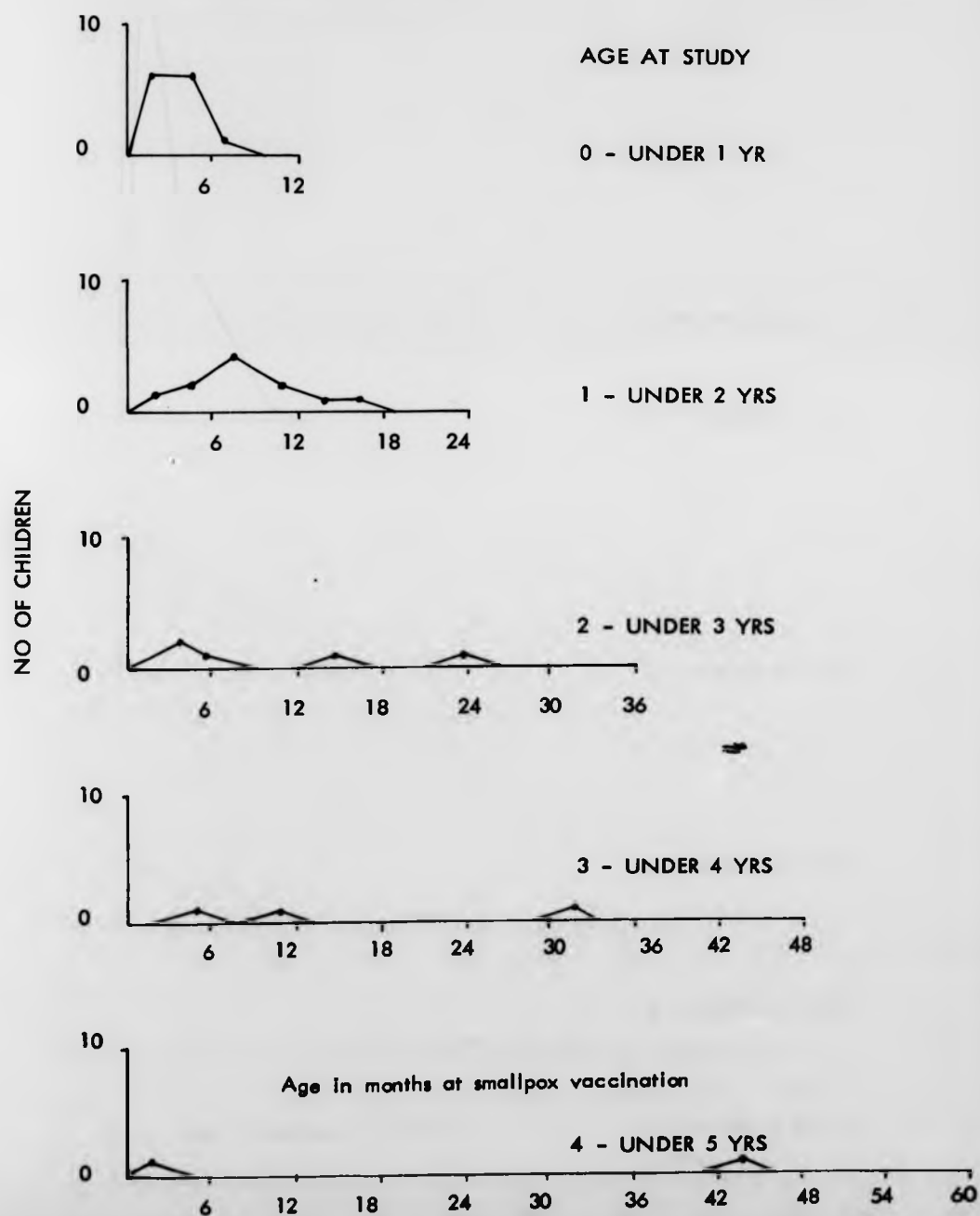
ESA–OKE   FIG. 29.

DISTRIBUTION OF CHILDREN BY AGE (IN MONTHS) AT SMALLPOX VACCINATION

NAMITAMBO

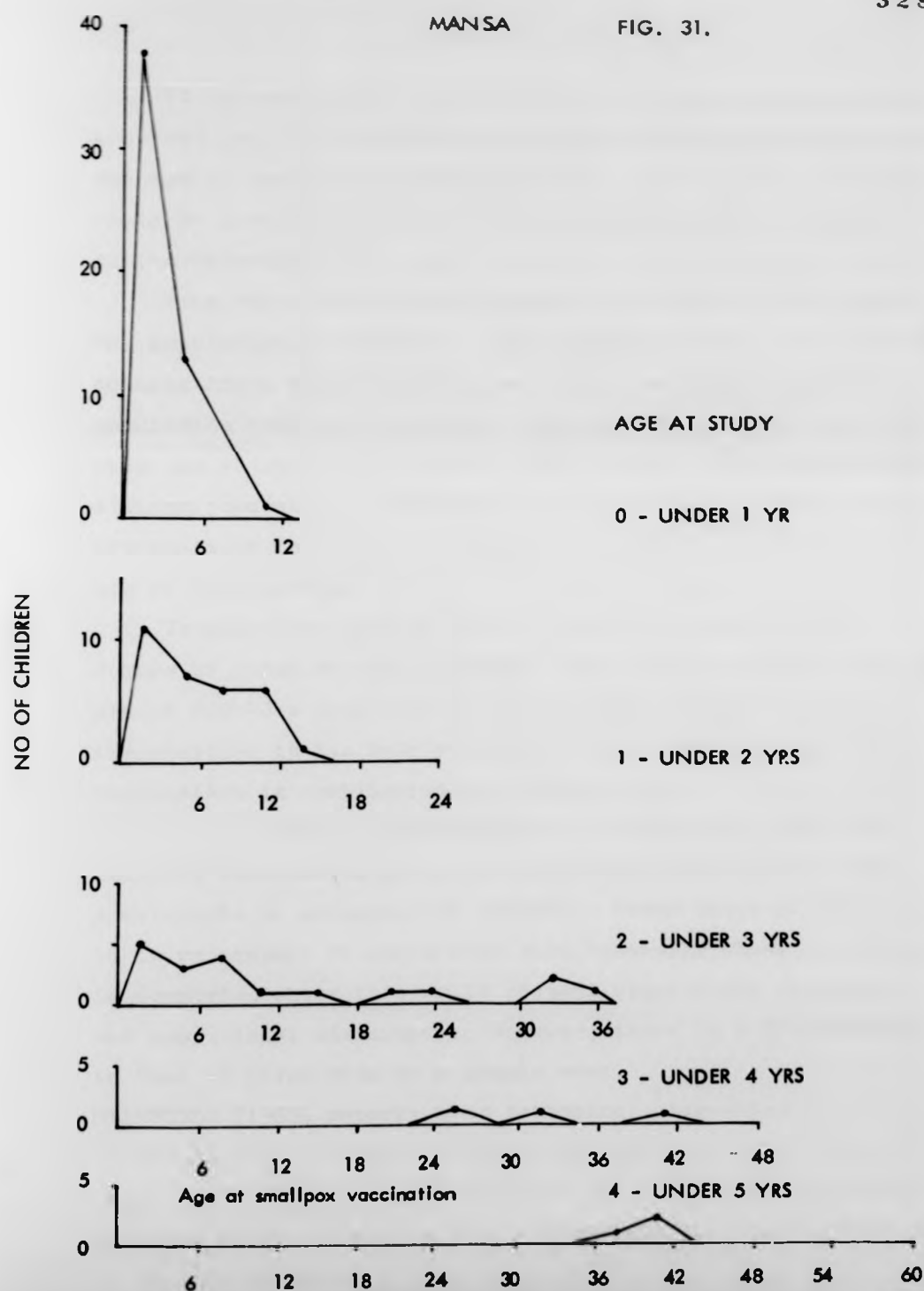FIG. 30.

DISTRIBUTION OF CHILDREN BY AGE (IN MONTHS) AT SMALLPOX VACCINATION

MANSA   FIG. 31.

328

AGE AT STUDY

0 - UNDER 1 YR

1 - UNDER 2 YRS

2 - UNDER 3 YRS

3 - UNDER 4 YRS

4 - UNDER 5 YRS

NO OF CHILDREN

Age at smallpox vaccination

It was pointed out earlier that in Ilesha also, in cohort 2, a second peak for smallpox vaccination was seen to occur between the age of twelve and eighteen months. The Esa Oke situation could be a reflection of the vaccine availability at Ilesha during this time.

From this type of field survey it was possible to assess the population at risk (i.e. the population that is at risk of contracting a particular disease unless suitably immunised), the population that has received a specified immunisation and the peak age at which a particular immunisation was carried out in a known population. However, it is not always possible to offer explanations for the differences that might be seen in the peak age of vaccination.

Vaccinations against BCG and smallpox confer a high degree of immunity with a single dose of the vaccine. With the use of Pedo-Jet injectors and other modern techniques of immunisation it has been possible to give BCG and smallpox vaccination in combination as a single dose.
LIN AND HYG (1965) substantiated the evidence that BCG and smallpox vaccination given simultaneously does not have any synergistic or antagonistic effects. Under these circumstances it is reasonable to administer simultaneously these two vaccines in countries where this would present significant financial and operational advantages. However, there is a disadvantage in that it gives rise to a single scar.
STANFIELD (1967) reports that tattooing, pigmenting the vaccine or the issuing of rings or discs have all been suggested as a means of identifying those children who have received BCG and smallpox vaccinations together. Stanfield also quotes Heyworth

(1967 personal communication) that "for instance in one trial the site of combined BCG and smallpox vaccination is being replaced under the **angle of the left scapula.**"

However, the use of 'Road-to-Health' cards should make this unnecessary. Not only would the card carry information on the immunisation given but would also contain information on the dates of vaccination and re vaccination. A field survey similar to the present one, of the home based records, would give an immediate indication of the population that has received the vaccination at any given time. The practise of giving smallpox and BCG vaccination simultaneously was not being used in the areas of the present study. For the reasons given above it might well be considered useful to introduce such a regime.

MEASLES VACCINATION.

Protection.

Attenuated measles vaccine is among the most reliable and effective of all known live vaccines AGBOTON AND REY (1971). They suggest that protection produced by measles vaccine could be as high as 95% in experimental studies but that in mass campaignssero-conversion of 85 could be expected. Live vaccine is said to be ineffective in children under the age of six months because of the presence of circulating maternal anti-bodies, and only moderately effective between the ages of six and nine months. KRUGMAN AND GILES (1970) reported on 80% sero-conversion in children between the ages of nine and twelve months and a 97% sero conversion in children over the age of twelve months. However, in tropical Africa where measles is a serious illness among children it is best to give the vaccine rather earlier in life, i.e. between the ages of nine and twelve months, and risk a lower rate sero conversion, than to withhold vaccination till a later age to ensure higher sero conversion, but risk the child developing the disease, which might prove fatal. Another problem encountered with the measles vaccine is its lability. In spite of the freeze drying, measles vaccine is very sensitive to heat and light. It is stable at four degrees centigrade for up to a year, but at forty five degrees centigrade the vaccine is inactivated in two to three days. This may at times account for the relative failure of vaccination campaigns against measles to induce protection.

Measles vaccine is expensive, and the cost of administering this vaccine is estimated at 80 United States cents per susceptible individual. FOSTER (1971). However MORLEY (1971a) shows that a wide variation in the price of measles vaccine is encountered. He reports that prices ranging from United States $1.07 to 0.32 cents were quoted, for a 50 dose phial of measles vaccine, and stresses that the lowest of these prices was offered by a large and reputable international drug company.

Ilesha and Mansa have the greatest proportion of children immunised against measles. This could be due, as in the case of BCG and smallpox, to the availability of vaccinations daily at these clinics. In contrast in Namitambo and Esa Oke immunisations were carried out once a week only.

The first measles vaccine used in African countries was given in Imesi (a village twenty five miles from Ilesha) in 1960, and Ilesha was the subject of many vaccine trials and as such the people of Ilesha have a long experience of vaccination in the area MORLEY (1971b). The cost and the poor keeping quality of the measles vaccine could also account in part for the overall lower immunisation against measles in all areas.

In a community where measles is epidemic or endemic, an attempt must be made to intervene, in order to reduce the incidence of the disease. Field surveys need to be carried out in order to find out the age at which the children in that population were most likely to contract the disease. On the basis of these findings it could be decided how early in life measles vaccination should be given, with the objective of immunising children at an earlier age than maximum risk of attack

TABLE 104.

DISTRIBUTION OF CLINIC ATTENDERS (AGED ONE YEAR AND OVER WHO HAD THEIR ROAD-TO-HEALTH CARDS ON DAY OF SURVEY) BY MEASLES VACCINE BY AREA.

MEASLES VACCINATIONS	AREA				
	ILESHA (NIGERIA)	ESA OKE (NIGERIA)	NAMITAMBO (MALAWI)	MANSA (ZAMBIA)	ALL AREAS
Given	46% (123)	33% (86)	10% (6)	44% (50)	38% (265)
Not given	54% (145)	67% (127)	90% (55)	56% (64)	62% (441)
TOTAL	100% (268)	100% (263)	100% (61)	100% (114)	100% (706)

Table 104.

46%, 33% 10% and 44% of clinic attenders aged one year and over (who had a 'Road-to-Health' card on day of survey) In Ilesha, Esa Oke, Namitambo and Mansa respectively, were seen to have been given measles vaccination. In these areas it was not possible to establish what proportion of susceptible children had not been immunised against measles. This was due to the following reasons.

(1) Lack of documented evidence of the child having suffered from measles. (Not all children suffering

from measles would be brought to the Under Fives
Clinic. As such the 'Road-to-Health' card would not
always contained this information).

(2) Inability of mother to recall if the child had
suffered from measles.

Because of this the "uptake" of measles vaccination for all
children over the age of one year who are clinic attenders
has been considered. (However, some of these children may
have acquired immunity already as a result of having
suffered from measles).

AGE AT MEASLES VACCINATION.

In each cohort for the children in Ilesha, it is seen that the peak age at measles vaccination lay between the ages of six and nine months. A similar pattern emerges for the first 2 age cohorts in Esa Oke (Figure 33) i.e. for children up to the age of two years at the date of survey. In the 4th cohort, i.e. for children between the ages of three and under four years, the peak lies at between thirty and thirty six months. However, there were very few children in this cohort, in fact five, and it is unwise to generalise on the experiences of these five children, for all three to under four year olds in the area.

Again in Namitambo, the numbers are too small for any reliable conclusions to be drawn about peak age at vaccination.

Workers in many parts of tropical Africa have at one time or another resorted to mass vaccination campaigns. Being single dose vaccines, BCG, smallpox and measles are better suited for administering in this way, than vaccines such as diphtheria, polio and whooping cough which need to be given in two or three doses.

The mass campaign has the advantages of a vigorous attack on an obvious problem, and the utilisation of an elementary type of worker with the possibility of expansion and further training. STANFIELD (1967b) However, Stanfield goes on to say that, the disadvantages of this type of approach are many. A large number of the problems encountered in developing countries are not ameniable to the "mass approach". For example malnutrition, gastro enteritis. Even when this approach is used for vaccination programmes they tend to be expensive

and they may also produce an imbalance, and create a degree of
dependence. Also those who conduct these campaigns may
understand the techniques of disease control, while ignorant
of local customs and attitudes.

In the control of diseases such as measles and smallpox
knowledge of local customs and attitudes could play an important
role.

For these reasons, the recent trends have been towards
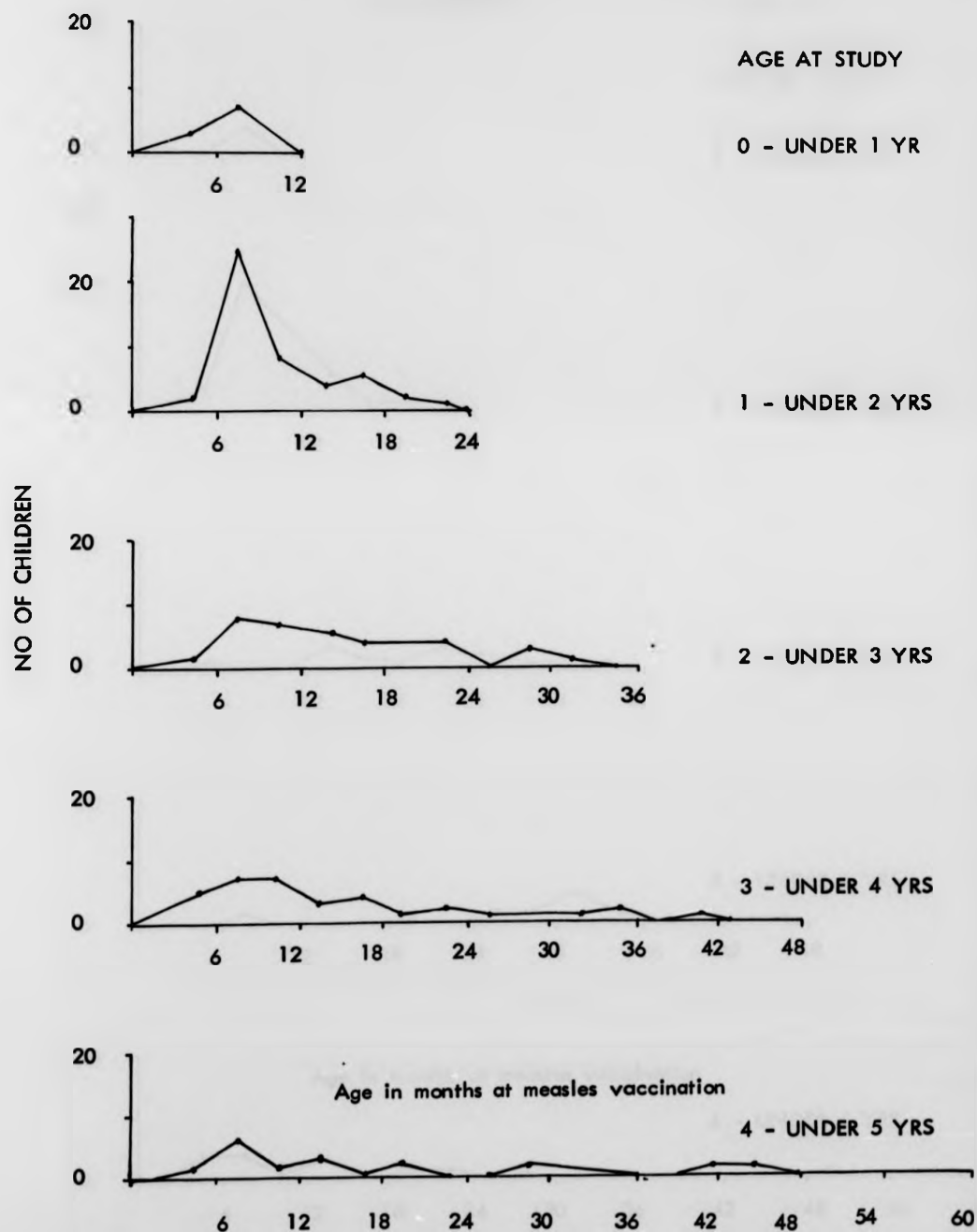more longer lasting and adaptable programmes for disease
prevention and control. The Under Fives Clinics offer such
a programme.

DISTRIBUTION OF CHILDREN BY AGE (IN MONTHS) AT MEASLES VACCINATION

FIG. 32.   3 3 7

ILESHA

AGE AT STUDY

0 - UNDER 1 YR

1 - UNDER 2 YRS

NO OF CHILDREN

2 - UNDER 3 YRS

3 - UNDER 4 YRS
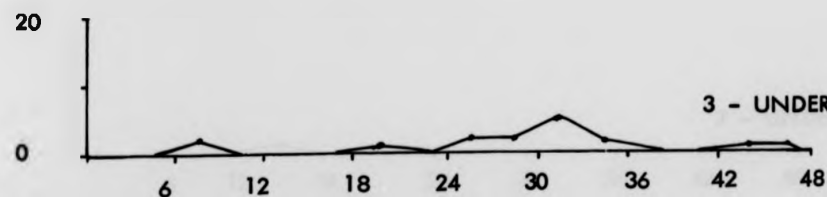
Age in months at measles vaccination

4 - UNDER 5 YRS

DISTRIBUTION OF CHILDREN BY AGE (IN MONTHS) AT MEASLES VACCINATION
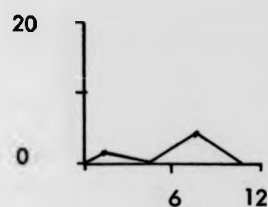
ESA - OKE

FIG. 33.

338

AGE AT STUDY

0 - UNDER 1 YR

1 - UNDER 2 YRS
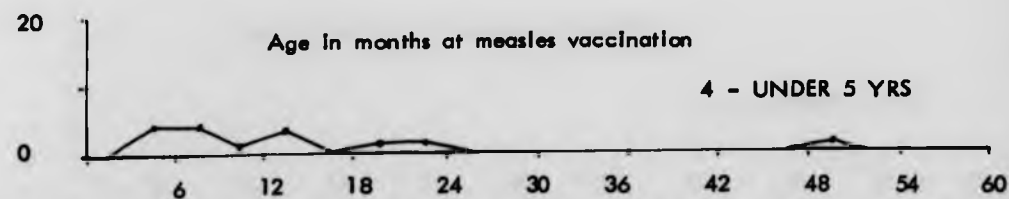
2 - UNDER 3 YRS

3 - UNDER 4 YRS

Age in months at measles vaccination

4 - UNDER 5 YRS

NO OF CHILDREN

NAMITAMBO   FIG. 34.
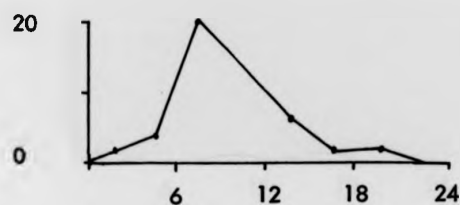
AGE AT STUDY

0 - UNDER 1 YR
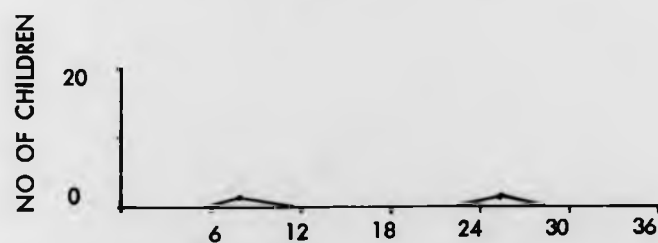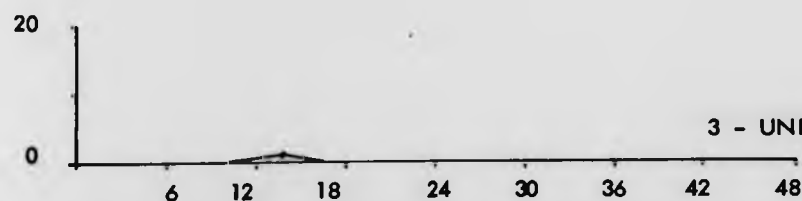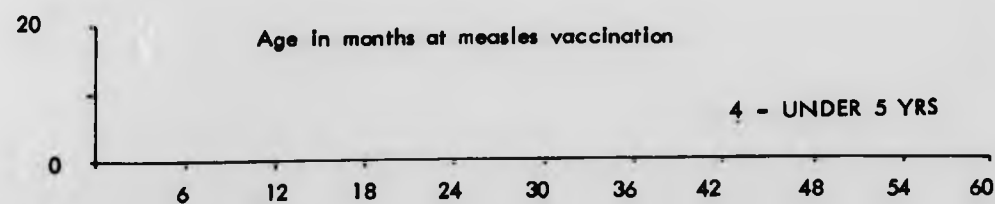
1 - UNDER 2 YRS

2 - UNDER 3 YRS

3 - UNDER 4 YRS

Age in months at measles vaccination

4 - UNDER 5 YRS

NO OF CHILDREN

FIG. 35.

MANSA

AGE AT STUDY

0 - UNDER 1 YR
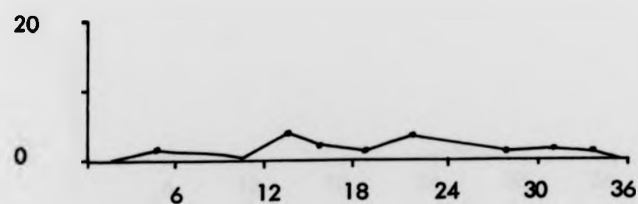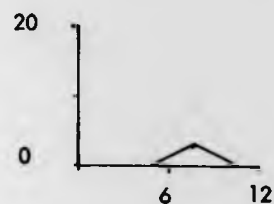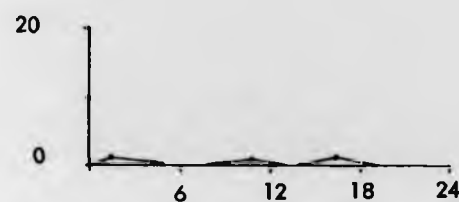
1 - UNDER 2 YRS

2 - UNDER 3 YRS

3 - UNDER 4 YRS

Age in months at measles vaccination

4 - UNDER 5 YRS

NO OF CHILDREN
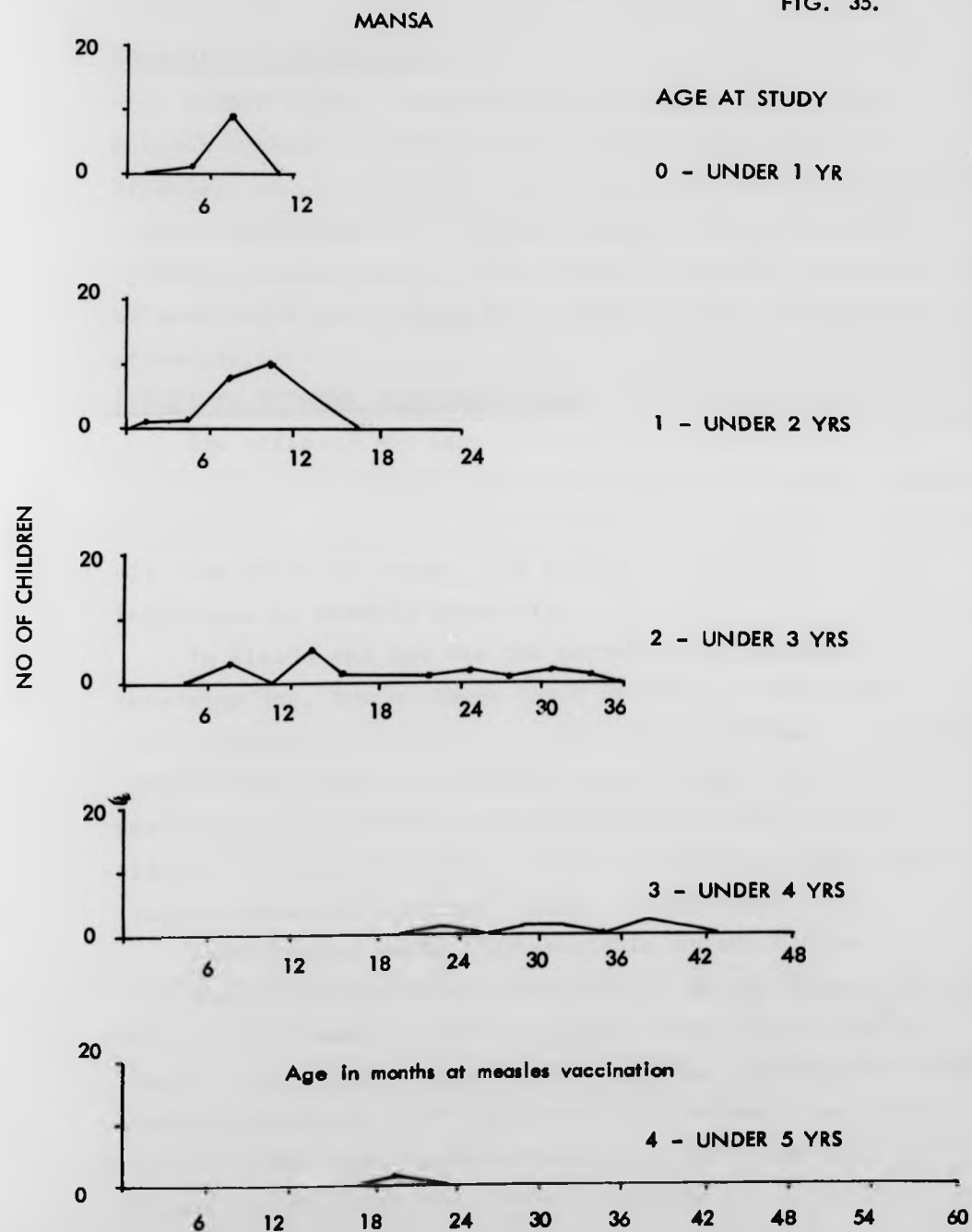
COMBINATION OF VACCINES.

GATEFF (1971) suggests that one must vaccinate the maximum number of people against the maximum number of diseases, at one attempt. The combination of vaccines permit the administration in a single attempt of one or several vaccines to one person. In order for a vaccine combination to be acceptable for routine use it must be safe and it must be effective.

DIPTHERIA TETANUS PERTUSSIS (DPT)

The efficacy and harmlessness of this combination has been officially recognised and confirmed many times. CHEN et al (1956) BARR (1955). This combination of vaccines was used in all four areas of study. The policy was to give separate injections at monthly intervals.

In Ilesha and Esa Oke the percentage of children receiving one, two or three doses of DPT is higher than the corresponding figures for Namitambo and Mansa. In Esa Oke immunisations are available only once a week, but the percentage of children immunised at this clinic is very similar to the immunisation coverage at Ilesha clinic where immunisations are available daily. (Table 105).

Immunisation being only available at the clinic once a week does not seem to be a deterrent to the mothers in Esa Oke, while in Namitambo it could be one of the reasons for the smaller percentage of immunisation given. The mothers in Esa Oke are motivated sufficiently and are capable of bringing their children on a specified date for their immunisations. Another factor which could have accounted for the higher

percentage of immunisations given in Esa Oke could be the localised nature of the village. The clinic is situated very near the village market place. Mothers quite often visit the market to buy or sell their produce or goods. Combining a visit to the market with a visit to the Under Fives Clinic was a practical solution to the problem of 'lack of time', which one encountered so much among these mothers.

TABLE 105

DISTRIBUTION OF CLINIC ATTENDERS (AGED ONE YEAR AND OVER WHO
HAD THEIR 'ROAD TO HEALTH' CARDS ON DAY OF SURVEY) BY NUMBER
OF DOSES TRIPLE VACCINES BY AREA.

TRIPLE VACCINE DOSES	AREA				
	ILESHA (NIGERIA)	ESA OKE (NIGERIA)	NAMITAMBO (MALAWI)	MANSA (ZAMBIA)	ALL AREAS
0	15% (40)	13% (35)	30% (18)	23% (26)	17% (119)
1	9% (25)	7% (18)	16% (10)	20% (23)	11% (76)
2	13% (35)	13% (35)	8% (5)	20% (23)	14% (98)
3	63% (168)	67% (175)	46% (28)	37% (42)	58% (413)
TOTAL	100% (268)	100% (263)	100% (61)	100% (114)	100% (706)

Table 105.

In Ilesha 9% of children received the first dose only of
DPT while 13% received two doses and 63% received all three
doses. These figures are for children aged 1 year and over, who
had a 'Road-to-Health' card on day of survey. (Table 105)

In each area there is a fall off in the proportion having a full course of vaccine, i.e. children having all three doses are far less than children having the first dose only. Figure 36 to 39 show the distribution of children by age (in months) at DPT vaccination for each area. This emphasises one of the drawbacks of using vaccine that had to be given in divided doses. It is desirable wherever possible to reduce the number of doses. MANDE (1971) concluded that giving two instead of three injections of diphtheria or tetanus toxoid does not markedly decrease the percentage of children effectively protected provided the interval between injections is increased to two months; however this same reduction in the number of doses of pertussis does decrease the quality of the response.

At present tetanus toxoid incorporated in the DPT vaccine is given in three doses at monthly intervals. However two phase vaccination, is under trial. Since as yet diphtheria and pertussis vaccines are given in three doses, it is practical to give tetanus toxoid in combination with these two as DPT. The value of single dose tetanus toxoid in pregnanant mothers has been stressed by STANFIELD (1973) Immunisation of mother with tetanus toxoid after the sixth month of pregnancy confers passive immunity in the newborn.

Unlike whooping cough and tetanus which are major problems in developing countries, diphtheria is not really a priority for immunisation. However it can conveniently be given in combination with the pertussis and tetanus vaccine. The

rational approach would be to include diphtheria in National immunisation programmes and thus hopefully avoid future outbreaks of diphtheria

AGE AT DPT VACCINATION.

The average age when DPT vaccination was given seems to be similar in Ilesha and Esa Oke, and coincided with the general policy in Africa, i.e. 3 doses at monthly intervals, starting at three months. However, in Mansa the first dose seems to have been given at a later age, i.e. between the age of three and six months. The two subsequent doses were given at intervals of two to three months. FIGURE 39

In Mansa in the older age cohorts, i.e. children over the age of two years at the time of study, the age when they received their first DPT seems to have been less rigid, and was seen to have been evenly distributed throughout the age group.

In Namitambo, the number of children who had received DPT were too small to allow any firm conclusions to be drawn regarding peak age of vaccination.

In Ilesha and Esa Oke in all cohorts peak age for all three doses of DPT vaccine was found to be in the first year of life. In the five year period preceding this study the policy for age of DPT vaccination seems to have been constant in these areas.

It is clear looking at Namitambo, Figure 38 that very few children have been immunised. Again in Mansa of the children in the older cohorts very few are seen to have been immunised against DPT. This is a reflection of the

pattern of clinic services.   The clinics in Mansa were set up in 1970 and that in Namitambo in 1969.   Clearly the children have prior to the commencement of the clinics been unable to obtain their vaccinations at the right time.

DISTRIBUTION OF CHILDREN BY AGE (in months) AT TRIPLE VACCINATION.
(Three Doses).

347

ILESHA

FIG. 36.

·—·— 1st. Dose Triple Vaccine
——— 2nd. Dose Triple Vaccine
----- 3rd. Dose Triple Vaccine

Age at study.
0 - under 1 yr.

1 - under 2 yr.

2 - under 3 yr.

3 - under 4 yr.

4 - under 5 yr.

Age in months at Vaccination.

DISTRIBUTION OF CHILDREN BY AGE (in months) AT TRIPLE VACCINATION.
(Three Doses).

ILESHA

FIG. 36.

•—•— 1st. Dose Triple Vaccine
———— 2nd. Dose Triple Vaccine
———— 3rd. Dose Triple Vaccine

Age at study.
0 - under 1 yr.

1 - under 2 yr.

2 - under 3 yr.

3 - under 4 yr.

4 - under 5 yr.

Age in months at Vaccination.

DISTRIBUTION OF CHILDREN BY AGE (in months) AT TRIPLE VACCINATION.

(3 doses)

EAS-OKE   FIG. 37.   3 4 8

- - - -   1st. Dose Triple Vaccine
———   2nd. Dose Triple Vaccine
- - -   3rd. Dose Triple Vaccine

Age at study.
0-under 1 yr.

1-under 2 yr.

2-under 3 yr.

3- under 4 yr.

4-under 5 yr.

Age in months.

DISTRIBUTION OF CHILDREN BY AGE (in months) AT TRIPLE VACCINATION.

(3 doses)

NAMITAMBO   FIG. 38.

DISTRIBUTION OF CHILDREN BY AGE (in months) AT TRIPLE VACCINATION.
(3 Doses)

FIG, 39.

MANSA

Legend:
- 1st. Dose Triple Vaccine
- 2nd. Dose Triple Vaccine
- 3rd. Dose Triple Vaccine

Age at study.
0-under 1 yr.

1-under 2 yr.

2-under 3 yr.

3-under 4 yr.

4-under 5 yr.

Age in months
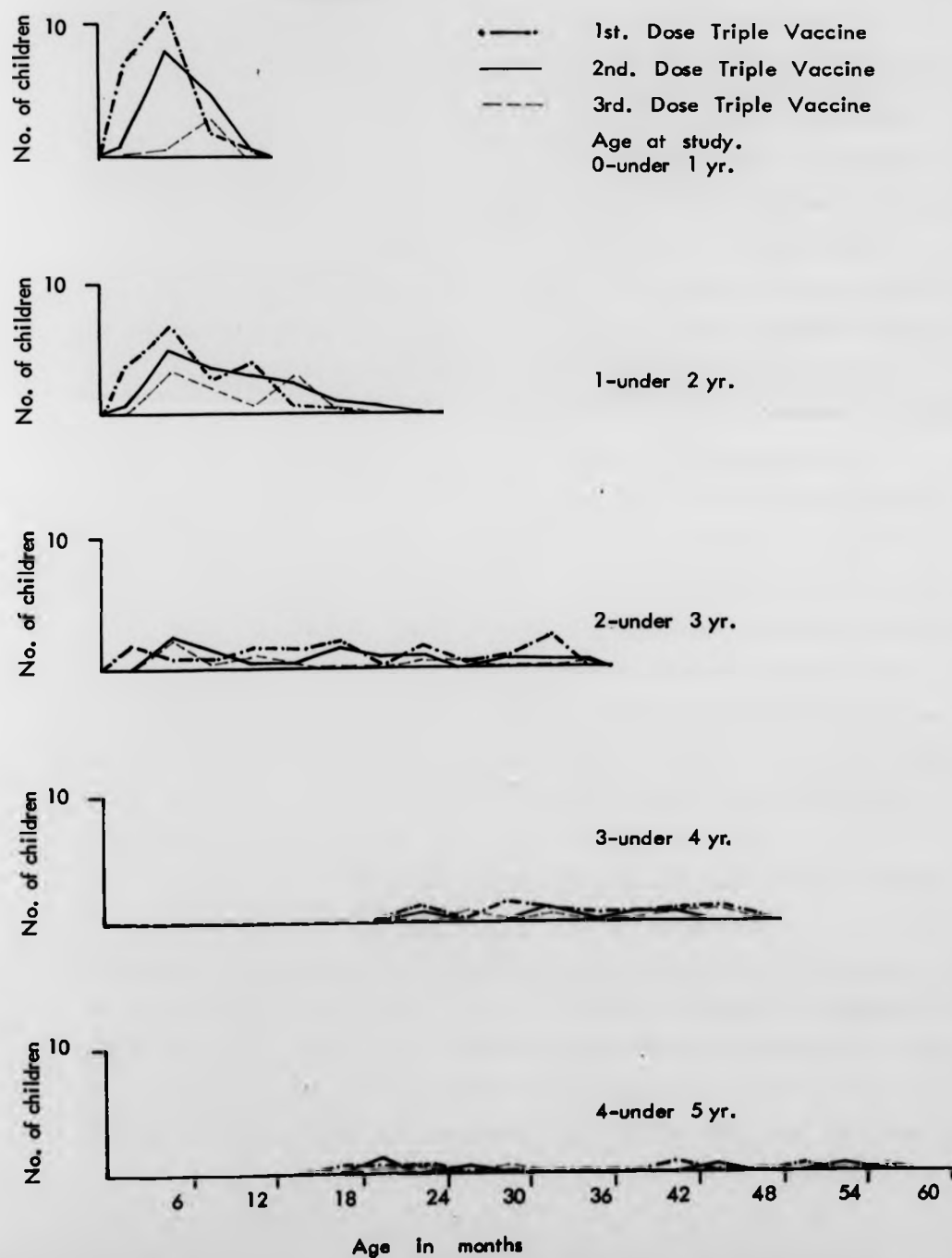
POLIO   IMMUNISATION.

Initial immunisation against poliomyelitis is only fully effective if two or three doses of the vaccine are given. One of the major problems encountered in this type of phased immunisation programmes (as shown earlier in immunisation with DPT) is the rapid decrease in attendance at successive vaccination sessions. For operational reasons this type of prophylaxis is still beyond the scope of mass immunisation programmes, and is therefore confined to protection of individuals without immediate epidemiological impact. PAVIOT (1971). DOMOK (1971) in discussing the situation cf poliomyelitis in tropical Africa reports that between 1951 - 1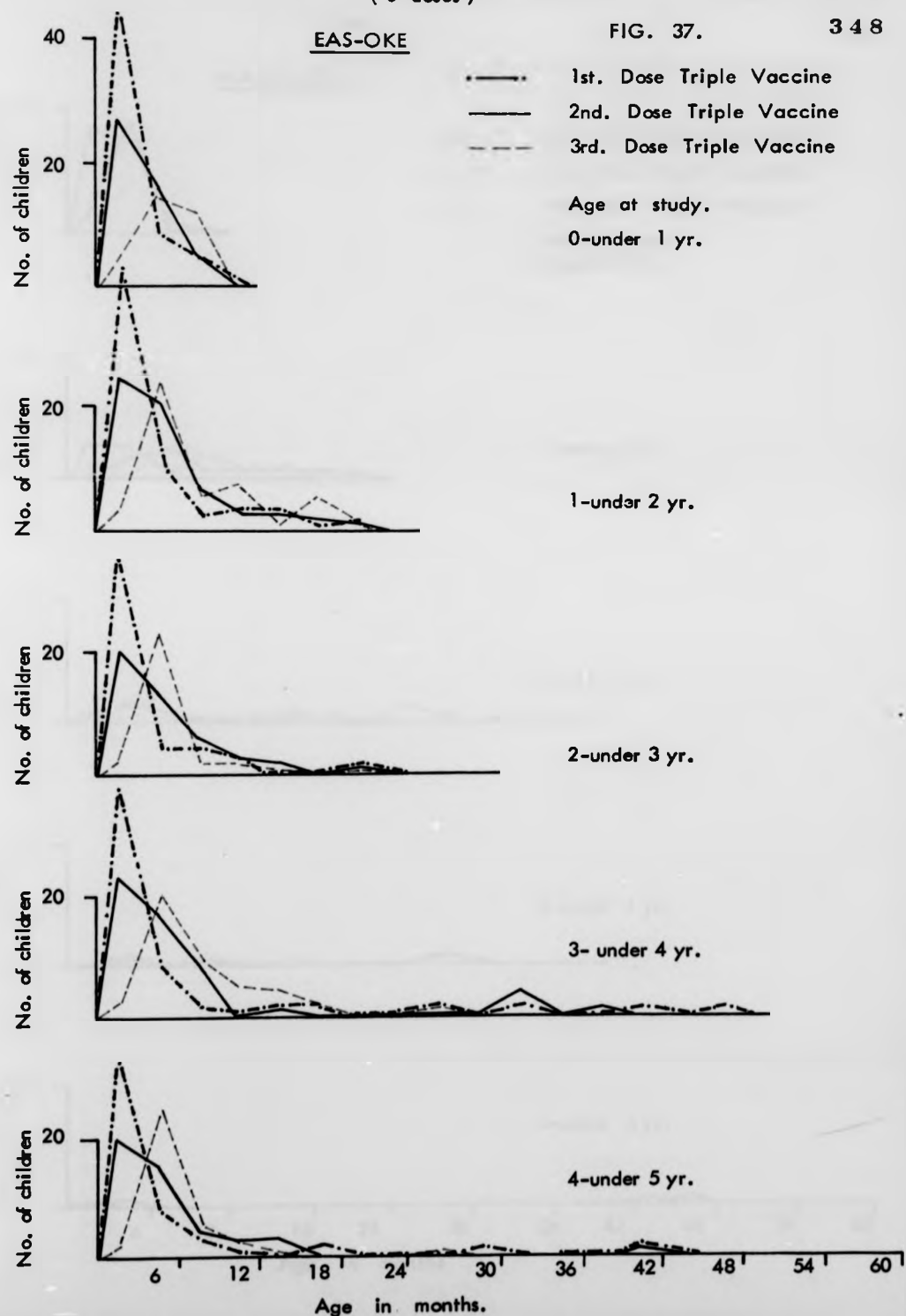955 and 1966 - 1969 less than ten fold increase in poliomyelitis was reported from Zambia an over tenfold increase for the same period was reported from Malawi and Nigeria. He also adds that in most parts of Africa the number of cases of poliomyelitis is under reported. He explains that his figures taken from official registers would therefore very likely , be an under estimate of the incidence of poliomyelitis in these countries.

The considerably low sero conversion with polio vaccination has been one of the problems of polio vaccination programmes. DOMAK (1971) has calculated the expected sero conversions with first, second and third doses of polio vaccine by taking the average sero conversion rates to individual poliovirus types, i.e. types 1, 2 and 3, after vaccination with different doses derived from literary data published from tropical countries.

His figures are as follows:

TABLE 106.

DOMOK (1971)

Number of doses Pv	sero conversion to type 1 polio	sero conversion to type 2 polio	sero conversion to type 3 polio
1	51%	67%	49%
2	67%	93%	76%
3	90%	100%	92%

Various explanations are offered for the poor sero conversion with polio vaccines. Interference between entero viruses and vaccine strains has been incriminated by many authors. Antibodies present in human breast milk are said to be capable of neutralising polio virus. SABIN (1950). However ADCOCK AND GREENE (1971) have shown that an interval of two to three hours between breast feeding and vaccination was sufficient to overcome response inhibition, but PERADZE et al (1968) have showed that under field conditions in Nigeria, prevention of breast feeding even for a short time was not possible.

Malnutrition and protein deficiency improper storage of live vaccine have also been incriminated as responsible for the lowered response. Another factor thought to be responsible is the use of improper vaccine schedules. SABIN et al (1960) has emphasised that for optimum results that the vaccine should be applied in mass campaigns where a very high proportion of susceptible children are fed simultaneously, thus providing opportunity to replace the enteroviruses with vaccine strain partly by direct feeding and partly by wide scale spreading of vaccine strains to contacts.

TABLE 107(a)

DISTRIBUTION OF CLINIC ATTENDERS (AGED ONE YEAR AND OVER)
WHO HAD THEIR 'ROAD-TO HEALTH' CARDS ON DAY OF SURVEY) BY
NUMBER OF DOSES POLIO VACCINE BY AREA.

DOSES POLIO VACCINE	AREA				
	ILESHA (NIGERIA)	ESA OKE NIGERIA)	NAMITAMBO (MALAWI)	MANSA (ZAMBIA)	ALL AREAS
0	60% (162)	71% (187)	34% (21)	26% (29)	57% (399)
1	12% (31)	7% (17)	15% (9)	18% (21)	11% (78)
2	12% (31)	5% (14)	10% (6)	18% (21)	10% (72)
3	16% (44)	17% (45)	41% (25)	38% (43)	22% (157)
TOTAL	100% (268)	100% (263)	100% (61)	100% (114)	100% (706)

In the present survey it was seen that all three doses of polio
vaccines were given to 16% of survey children in Ilesha, 17% in
Esa Oke, 41% in Namitambo and 38% in Mansa.   Table 107(a)
(These figures are for clinic attenders aged 1 year and over
who had a 'Road-to-Health' card on day of survey.)

TABLE 107*(b)

DISTRIBUTION OF ALL SURVEY CHILDREN BY NUMBER OF DOSES

OF POLIO VACCINE GIVEN BY AREA.

Number of doses of Polio vaccine	ILESHA (NIGERIA)	ESA OKE (NIGERIA)	NAMITAMBO (MALAWI)	MANSA (ZAMBIA)
0	74% (323)	80% (324)	72% (187)	60% (188)
1	7% (31)	4% (17)	11% (28)	10% (31)
2	8% (33)	3% (14)	5% (14)	13% (42)
3	11% (47)	13% (50)	12% (32)	17% (53)
TOTAL	100% (434)	100% (405)	100% (261)	100% (314)

* This table should not be used to draw any comparison between areas with regards to polio vaccinations, as no allowance has been made for the age distribution of children. Some children might be too young to be eligible for polio vaccination. However, this table has been used in calculating the percentage sero conversion of the entire under fives population seen in survey, table 108.

Table 107(b) shows that 74%, 80%, 72%, and 60%
children in Ilesha, Esa Oke, Namitambo and Mansa
respectively had not received any polio vaccinations
at all. Only 11% in Ilesha   13 % in Esa Oke, 12%
in Namitambo and   17 % in Mansa had received all three
doses of polio vaccine .

The percentage coverage coverage by polio vaccine
in all the areas of study was low (Table 107(b))
The estimated sero conversion rates for the vaccinations
in each area can be obtained by applying Domak's Figures in
Table 106 to those children with one, two or three doses
of polio vaccine in each area (Table 108).

TABLE 108.

EXPECTED IMMUNITY STATUS OF ALL SURVEY CHILDREN IN EACH
AREA DUE TO THE VACCINATIONS CARRIED OUT IN THESE AREAS.
(% WITH SERO CONVERSION)

	ILESHA	ESA OKE	NAMITAMBO	MANSA
Sero conversion to				
Type 1 polio virus	20.5%	12.6%	14.8%	36.8%
Type 2 polio virus	25.2%	14.8%	18.1%	45.3%
Type 3 polio virus	21.4%	13.0%	15.3%	38.6%

Therefore some 20% sero conversion was achieved for all
three types of polio viruses in Ilesha, and a somewhat lower
sero conversion in Esa Oke and Namitambo. A rather higher
degree of sero conversion was achieved in Mansa.

There was no explanation for the poor coverage with polio vaccination in these four areas. Even in areas like Ilesha and Esa Oke where the general immunisation coverage was fair, the coverage for polio was nevertheless poor.

There is no concensus of opinion regarding polio immunisation in Africa. Some argue that since polio causes few deaths and the frequency of disability due to polio is low that polio vaccination is not justified. ROBBINS (1971) takes a contrary view. He argues that epidemic poliomyelitis is beginning to appear in parts of the world where it was formerly endemic. Further if trends continue, paralytic cases with the accompanying permanent disability will increase. Robbins also notes that polio vaccine is cheap and effective.

If indeed polio is likely to become increasingly more common, the findings of the present study suggest that the use of polio vaccine be stepped up in all areas so that a greater population coverage is achieved.

Age of polio vaccination

Trivalent polio vaccine given in three doses was seen to be the procedure of choice in all areas of study. The ideal age at which to start polio vaccination was not well defined in any of the areas. The conflicting opinions as regards the effects of breast milk to the immune response was a guiding factor in some areas. In rural African society breast feeding may be carried on until the child is over eighteen months of age. Withholding polio vaccination till cessation of breast feeding would be detrimental to the child. In Ilesha the peak age for the first dose was seen to be between the third and

sixth month. In Esa Oke the majority of children had the
first dose of polio vaccine a little later in life, i.e.
between six and nine months. (Figure 41).

In Namitambo the age at which the first dose of polio vaccine
was given tended to be much earlier, i.e. in the first three
months of life. In Mansa the pattern seems to be similar to
that in Ilesha where the peak age for giving the first dose of
polio was between the third and sixth months. The recommended
interval between doses is eight weeks. From the study areas it
was seen that the peak age as for the second and third doses
seem to lie two to four months apart for all areas. However no
firm conclusions can be drawn from this survey on the age of
polio vaccination due to the small numbers of children who had
received the immunisation.

If one looks at the results of clinic study for each of
the four areas of study it is seen that in Ilesha in May only
one dose of polio vaccine was given. Similarly in March and
April 1971 no children received the third dose of polio vaccine.
This could have arisen as a result of vaccine shortage but
there is no information on this point. (Table 84).

The trend for polio immunisation seems to have improved
towards the latter part of the year, as shown by the larger
numbers of children receiving their third dose of vaccine in
the months of August to December. The results of the clinic
study in Esa Oke suggest that polio vaccination only started
here in August/September 1971. So prior to the present study
(carried out in Esa Oke in February 1972) it is seen that the
number, of children who had received polio vaccine was small.

In Namitambo fewer polio vaccinations were given, as were
the other vaccines, than in the other three areas.

DISTRIBUTION OF CHILDREN BY AGE (in months) AT POLIO
IMMUNISATION.

FIG. 40.

ILESHA

.—.—. 1st. Dose Polio Vaccine
———— 2nd. Dose Polio Vaccine
— — — 3rd. Dose Polio Vaccine

Age at study.
0-under 1 yr.

1-under 2 yr.

2-under 3 yr.

3-under 4 yr.

4-under 5 yr.
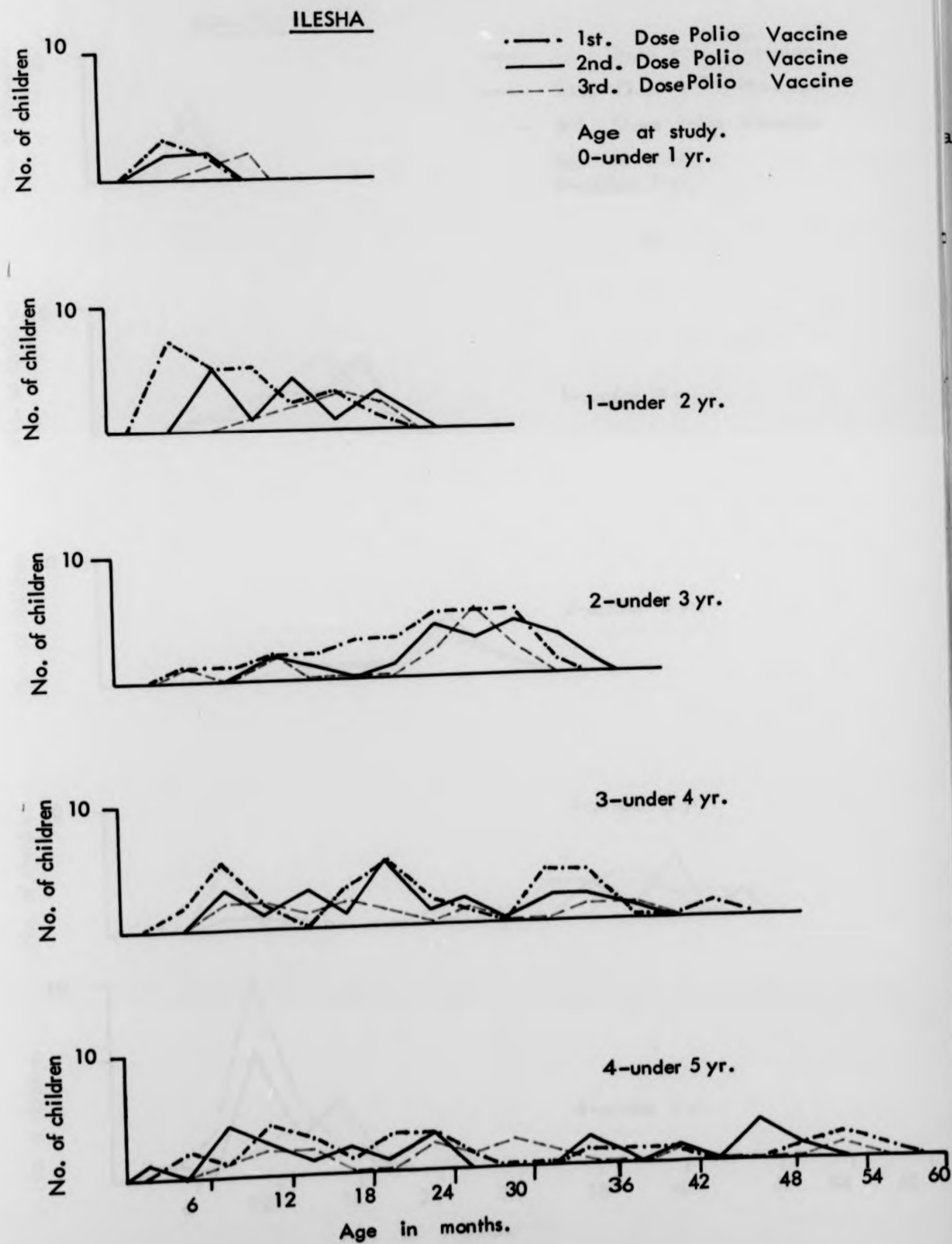
Age in months.

DISTRIBUTION OF CHILDREN BY AGE (in months) AT POLIO IMMUNISATION.

FIG. 41.
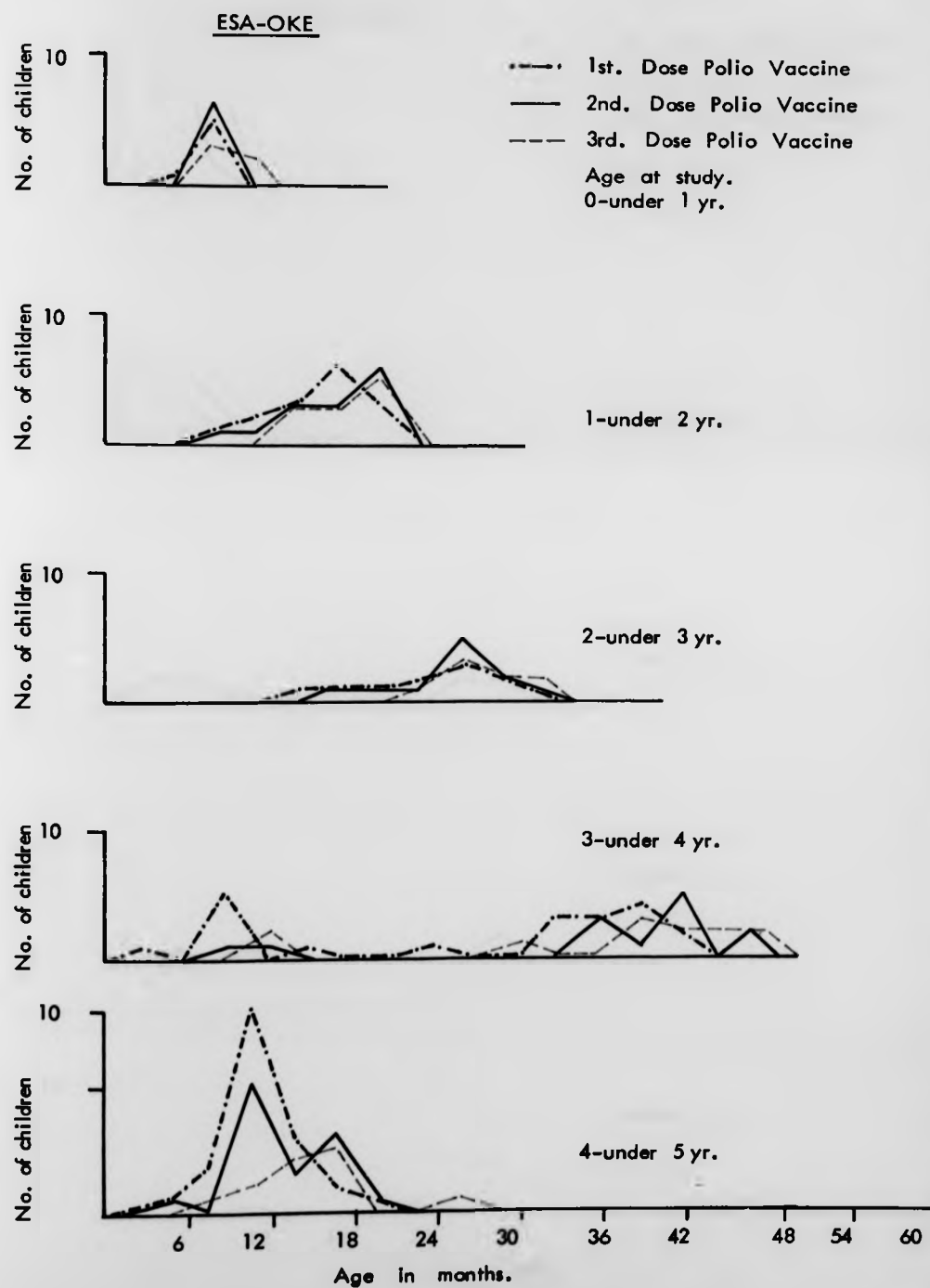
DISTRIBUTION OF CHILDREN BY AGE (in months) AT POLIO IMMUNISATION.

FIG. 42.

361

NAMITAMBO.
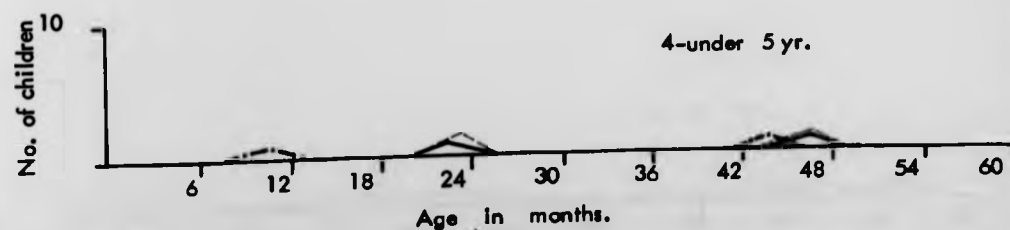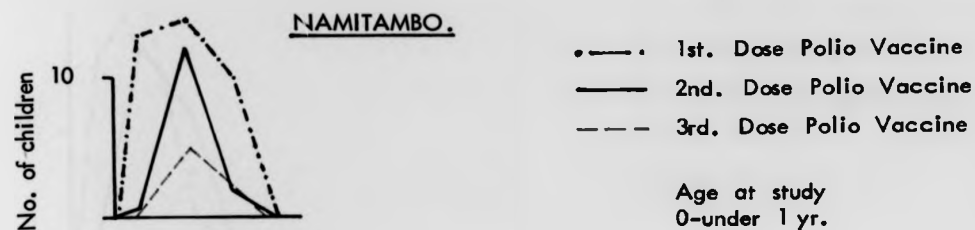
DISTRIBUTION OF CHILDREN BY AGE (in months) AT POLIO IMMUNISATION MANSA

FIG. 43.

3 6 2

1st. Dose Polio Vaccine
2nd. Dose Polio Vaccine
3rd. Dose Polio Vaccine

Age at study

0-under 1 yr.

1-under 2 yr.

2-under 3 yr.

3-under 4 yr.

4-under 5 yr.

Age in months.
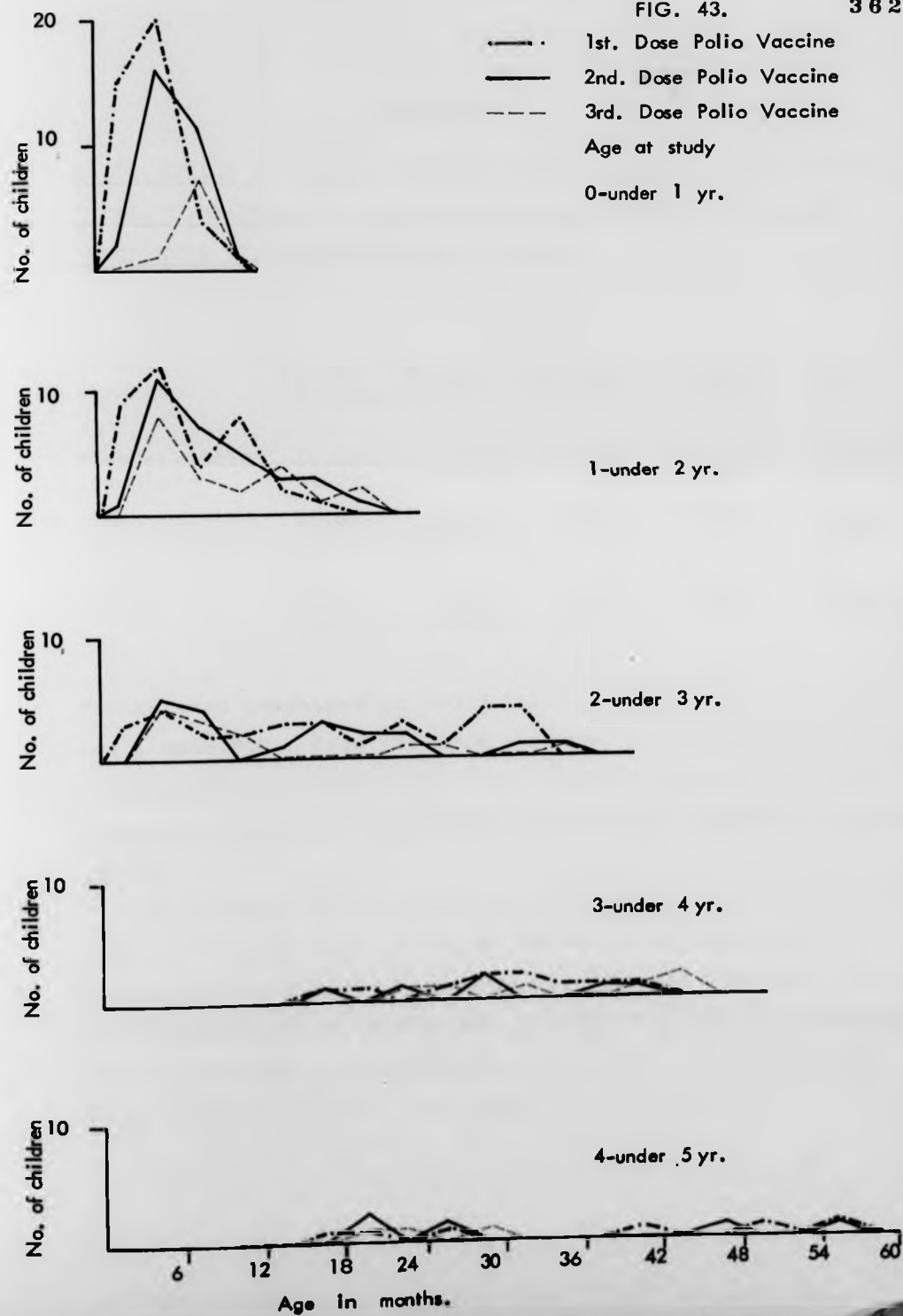
TABLE 109.

DISTRIBUTION OF CLINIC ATTENDERS AGED 1 YEAR AND OVER (HAVING
'ROAD-TO-HEALTH' CARD AVAILABLE ON DAY OF SURVEY) WHO HAVE
*COMPLETED THEIR IMMUNISATION BY AREA.

A R E A

	ILESHA (NIGERIA)	ESA OKE (NIGERIA)	NAMITAMBO (MALAWI)	MANSA (ZAMBIA)	ALL AREAS
*Immunisation complete	14.2% (38)	11.8% (31)	44.2% (27)	20.2% (23)	16.9% (119)
Immunisation incomplete	85.8% (230)	88.2% (232)	55.8% (34)	79.8% (91)	83.1% (587)
TOTAL	100.0% (268)	100.0% (263)	100.0% (61)	100.0% (114)	100.0% (706)

* completed immunisation would indicate that the child has
had 1 dose BCG 1 dose smallpox vaccine, 1 dose measles vaccine,
3 doses polio vaccine and 3 doses triple vaccine. In Zambia
these children have been termed "Protected" children. SHATTOCK
(1972)

In Ilesha 14.2% of children who attend the clinic (and had a
'Road-to-Health' card on day of survey) had completed their
immunisation, while in Namitambo 44.2% of children had completed
their immunisation (Table 109). However, it must be remembered
that in Namitambo the proportion of children attending the
Under Fives Clinic was less than in the other areas.

However, it appears that if a child does attend the Under
Fives Clinic in Namitambo then his chances of completing
the immunisation is far greater than in all other areas.
This fact is also substantiated in Table. 111

One important aspect of the work of the Under Fives
Clinics is to ensure that children are vaccinated against as
many preventable diseases as possible. In the present survey
this aspect of the clinics functions has been studied in
depth. Wide variation was seen between areas with regards to
age at vaccination, and the population coverage. Two of the
clinics (Ilesha and Mansa) carried out vaccination daily while
in Namitambo and Esa Oke vaccinations were available once a
week only. It is suggested from the present study that the
availability of vaccination at a clinic daily would allow a
greater population coverage. However, exceptions were seen as
pointed out earlier. Many mothers still tend to attend the
Under Fives Clinic when her child is sick. It may not be
possible (depending on the state of health of the child) to
immunise it when it is "ill". It is suggested that a mother
should be encouraged to bring all her children under five
when she attends to obtain treatment for only one of her
children. This might provide an opportunity for the clinic
staff to immunise the healthy siblings.

Policies regarding age of vaccination, number of doses
to be given, route of administration should be laid down and
adhered to.

If refrigeration facilities are provided at Esa-Oke there is reason to believe that the immunisation coverage in this area would be further improved. Possibility of using combinations of vaccines such as BCG and smallpox should be further investigated.

It is suggested that greater emphasis during health education sessions should be placed on the purpose of vaccination, and the importance of completing immunisation schedules. It was also revealed during the field survey that many mothers did not appreciate the need for vaccinating their children.

The immunisation patterns of the children in the community as was shown before, would be difficult to obtain from clinic records. Further clinics do not collect information on the age at immunisation or the number of doses of vaccine given per child. The only simple way of obtaining this information is from a field survey.

It seems fairly clear that this type of survey is a highly effective way of establishing the apparent immunisation status of children attending the Under Fives Clinic. This type of exercise is simple and quick to do and could well be employed on a wide scale to monitor immunisation programmes with a view to altering the policy where this may seem necessary.

ACTIVITIES IN THE CLINICS.

One aspect of evaluating the work of the clinic is to determine what proportion of the eligible population use the individual facilities provided. In the present study a wider evaluation was attempted by not only noting the work done in the clinic, but also by assessment of the population who attend and who did not attend the Under Fives Clinics. In the following section an attempt is made to correlate the findings of the clinic study with those of the field study.

TABLE 110.

AVERAGE NUMBER OF CLINIC ATTENDANCES PER MONTH. AND THE PERCENTAGE OF CLINIC ATTENDERS AMONG CHILDREN LIVING WITHIN 2½ MILES FROM CLINIC.

Area	Attendance/ month	Attendance/ session	Attendance/ health worker	% of children attending clinic
Ilesha	12,597	525	38	87
Esa Oke	1,719	72	36	91
Namitambo	242	61	30	68
Mansa	1,099	46	15	84

It is seen in Table110 that in Ilesha, Esa Oke and Namitambo each staff member at the clinic sees between thirty and thirty eight children per session. The percentage of population covered in Namitambo is far less than in Ilesha and Esa Oke, i.e. 87% and 91% in Ilesha and Esa Oke, but only 68% in Namitambo. In Mansa, where each staff member sees

only fifteen patients per day, there is a population coverage
of 84%. All clinics, except that in Namitambo, are held daily.
The Namitambo clinic is held once a week only, and this could
account for the lower population coverage here. The duration
of the clinic sessions are approximately the same in all
areas. All clinics opened around 7.30 a.m. and carried on
till around 2 p.m., or until all the children were seen. None
of the clinics operated an appointment system. This would not
be feasible in these areas.

From Table 110 it is also interesting to note that even
though in Ilesha an average of 525 children were seen daily at
the clinic, and at Esa Oke only seventy two children per day,
yet the population coverage in Esa Oke, i.e. 91% is superior
to that in Ilesha at 87%.

It is quite clear that under these circumstances a compar-
ison of the total numbers of children seen per session in
Ilesha and Esa Oke would be a poor indication of the effective-
ness of these clinics in terms of their coverage of population.

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ness of these clinics in terms of their coverage of population.

TABLE 111.

DATA ON IMMUNISATION FROM FIELD AND CLINIC STUDY FOR EACH AREA.

Immunisation	Ilesha *F	*C	Esa Oke *F	*C	Namitambo *F	*C	Mansa *F	*C
BCG	74%	1:20	66%	1:101	25%	1:5	47%	1:8
SP	56%	1:30	35%	1:246	42%	1:3	79%	1:10
Measles	44%	1:29	29%	1:123	5%	1:17	24%	1:7

*F   Proportion of children who received the immunisations
     (results of field survey)

*C   Ratio - Total immunisation given (doses)/month
              Total attendances/month
              (results from clinic study)

If one used the ratio total immunisation given/month to total attendances/month to give a measure of the immunisation status of a population attending the clinic, one could be seriously led astray. By taking findings at face value it appears that a clinic attender in Namitambo had a one in five chance of being given BCG vaccination, while in Esa Oke this would be a one in 101. Table 111 One might be tempted to conclude from this that Namitambo is achieving a higher degree of immunisation in the population. However from the field survey it is seen that in Esa Oke 66% of children had BCG while in Namitambo only 25% children had been immunised with BCG.

In Namitambo the clinic opened only once a week, and on
the same day immunisations were given. Quite clearly children
are being referred to clinic on this day, and have a greater
chance of being immunised. The Esa Oke clinic is opened
six days a week but immunisations are carried out once a week.
This decreases the chances of a child being immunised.

Immunisations per month might be taken to give some
indication of the scope of immunisation at a clinic. This can
clearly be highly misleading.

It has been shown that by looking at clinic data it is
not possible using simple indices like immunisation
given per month and the clinic attendances per month to assess
the effectiveness of the clinic.

CHAPTER VII.   CONCLUSIONS AND RECOMMENDATIONS.

1.0   Health Services Evaluation

Health Services can be evaluated in terms of:

(1)   The use made of the facilities provided, and

(2)   The effect of the services upon the health of the
       community served.

The literature contains a number of reports on the
organization of the under fives clinics; some reports
stress the need, and the benefits, that can result from
their modification.   However, evaluation of the clinics in
the terms of the use made of their services or of their
effects on child health has been carried out on a limited
scale.   Most studies only examined the health of those
attending a clinic, ignoring those who do not take advantage
of these facilities.

This study breaks new ground in that it demonstrates
the feasibility of measuring the uptake within a community
of health care, by gathering data from home based record
systems i.e. the Road to Health Card, as well as from the
parents' information on their children.   At the same time
it permits, by interview and simple medical examination,
assessment of the health of children who attend, and who do
not attend the clinic.   By linking the findings from such
field surveys with data derived from investigations of the
work of the clinic, an overall view can be taken of both
the uptake and effects on health of such clinics.

2.0   Use made of facilities

2.1   Ideally, all children under the age of five should
regularly attend an under fives clinic.   However, in the
present survey it was seen that 87%, 91%, 68% and 84% in

Ilesha, Esa Oke, Namitambo and Mansa   respectively
attended the under fives clinic.   Many of the mothers
attending these clinics said they did so to obtain treatment
when the child was sick.   The majority of mothers who never
took their children to the under fives clinic felt it was
unnecessary as their children were never seriously ill.
Thus mothers tended to consider the under fives clinic as
primarily a treatment centre and were not aware of the other,
for example, immunization services they provided.   Perhaps
this is not surprising as the approach of western health
care systems has been to invest curative systems with both
finance and prestige.   If full advantage is to be taken of
the comprehensive services offered by the under fives
clinics, then health education programmes in each of these
areas should stress the preventive aspects of the clinic
services.

2.2   In contrast to their attitude to the under fives
clinic, mothers felt that the services of the ante-natal
clinic should be utilized regularly during the pregnancy
and not just when problems arise.

This view was confirmed by the high ante-natal clinic
attendance noted in all of the four areas.   These ante-natal
clinics should provide a good contact point for disseminating
information to the mothers on the benefits of regular atten-
dances at under fives clinics once the baby is born.

It is recommended that active steps be taken in all
four areas to inform mothers about the under fives clinic.
Whenever possible, linking the two clinics together on the
same site, as has been done in many under fives clinics,
would facilitate such steps.   This would enable a pregnant

mother to bring with her at each ante-natal clinic visit her
under fives for routine preventive measures or, where
necessary, for treatment.

3.O Clinic Attenders and Non Attenders

3.1   In the present study a clinic attender was defined as a
child under the age of five who attended the under fives
clinic on one or more occasions.   By this definition a child
who had attended the clinic even once in its life time was
included in the group 'clinic attenders'.   This was
essentially an operational definition and has the disadvantage
that no distinction could be made between regular attenders
and those who attended only once or intermittently.   A child
that attends a clinic regularly, say once every four weeks,
could stand to benefit more from the services provided by the
clinic, particularly preventive services such as immunization,
than a child who attends ten times in one month and then
keeps away from the clinic for a year.

         In future studies it is recommended that information on
total number of clinic visits per child and the frequency of
visits at different ages be recorded.   However to extract
such information from the Road to Health card is difficult
and time consuming.

3.2   In all four areas the clinics themselves did not keep a
record of the individual children attending the clinic. The
information available at the clinic included the number of
new and old attenders per session, type and number of immuniza-
tions given.   Children who, for example, did not attend the
clinic regularly could not thus be identified.   To identify
such defaulters, it would be necessary to register all clinic

mother to bring with her at each ante-natal clinic visit her under fives for routine preventive measures or, where necessary, for treatment.

3.0 <u>Clinic Attenders and Non Attenders</u>

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attenders by name, and also to note the date of their next appointment.

To maintain such clinic based records is beyond the capabilities of many under fives clinics, due to the extra clinic record storage space needed and increased burden on an already overworked staff. Further, information on such defaulters would be useless unless one had an adequate system of recall, or home visiting. Most under fives clinics do not have the facilities to under take such a task. Even the most elaborate clinic based record system will only list those children who attended the clinics. Those who never attended an under fives clinic cannot be included.

3.3 None of the clinics visited in the study areas maintained 'at risk' registers. Children "at risk" being those that need special attention in terms, for example, of having unusually poor family background, or some handicap.

It is recommended that all clinics should maintain an 'at risk' register. Each clinic could identify among its clinic attenders those children who can be classified as 'at risk'. It is not possible to define precisely what should constitute an 'at risk' child, as this would tend to vary from place to place. The progress of this special group of children could be monitored, and frequent defaulters followed up by, for example, home visits. However, an 'at risk' register at a clinic cannot identify those 'at risk' children in the community who have never attended an under fives clinic.

4.0 <u>Information on base line values</u>

The group of children visited at home was, for reasons

already given, equivalent to a random sample of the child
population.   The data so collected could be used to set up
base line values for the community.   For example, the
distribution of height and weight, from such samples, could
be used to define the levels of nutrition of the population
or act as reference values for use in the clinics.   At the
same time it permits, by interview and simple medical
examination, assessment of the health of children who attend,
and who do not attend the clinic.   By linking the findings
from such field surveys with data derived from investigation
of the work of the clinic, an overall view can be taken of
both the uptake and effects on health of such clinics.   In
most local communities this type of information is not
available.   It might be recommended that these base line
data be collected when under fives clinics are either first
set up in an area, or in areas with established clinics if
this has not already been done.

5.0   Assessment of immunization status

From a study such as this, the immunization status of
a community can be readily assessed and immunizations
attributed to the local under fives clinic identified.   On
the assumption that immunization confers benefits, it would
be valuable in terms of individual and community
susceptibility to determine the relative immunization
status of clinic attenders and non attenders.   This assess-
ment can be extended to examine such clinic activity by
finding the proportion of children who had received all the
vaccines available, i.e. "protected children".   Following
smallpox and tuberculosis (BCG) immunization, an independent

index of such procedures can be obtained by examination of children for vaccination and BCG scars. For DPT and polio, uptake of immunization and levels of protection can only be reliably estimated from documentary evidence found in the home based records.

In the present survey it was found that 14.2%, 11.8%, 44.2% and 20.2% children respectively in Ilesha, Esa-Oke, Namitambo and Mansa had received three doses DPT, three doses polio, and a dose each of SP and BCG vaccine and hence were, by definition, "protected children".

6.0 <u>Nutrition and breast feeding</u>

In the present study, questions on breast feeding, nutrition and weaning diets were not asked. Difficulties arise both in eleciting such information from mothers and in assessing its accuracy. In future surveys, attempts could be made to incorporate questions on aspects of nutrition in clinic evaluation studies.

7.0 <u>Use of home based cards in evaluation studies</u>

A feature of the under fives clinic is the use of the Road to Health card which is kept by parents at home. In this study the cards were found to be well cared for, and while their loss was uncommon in West Africa it was more frequent in Malawi and Zambia. The reasons for such differences could arise from a charge being made for the cards in West Africa and also because the mothers there have been made more aware of the beneficial effects of having documented evidence of a child's progress.

The present study was only possible due to the availability of home based records. Thus, while the home based

records are an effective and cheap way of maintaining the
health record of a child from birth to the age of five, they
are also very useful during field surveys as a source of
information on the children.

In child health facilities where records are not
retained by parents at home but kept at a clinic, field
surveys, for example, to estimate the proportion of attenders
to non attenders can still be carried out.   However, the
data from child health record cards would then have to be
extracted from the clinic files.   In most communities,
correlation of clinic records with the child identified in
the field study could prove difficult.

8.0   Measurement of effects on health of Under Fives clinics

8.1   Point prevalence studies may not be wholly suitable to
assess the benefits to health that a health facility has
conferred on the community.   Such assessments depend upon
comparisons between the health of the clinic attenders and
non attenders at one point in time;   no differences in
health may be found or, alternatively, one or other group
may show higher prevalence of disease.   Assessment of these
findings may prove difficult.   For example, it may not be
possible to determine whether or not the two groups started
off with different patterns of health, and thus any lack of
similarity observed in the field study may only reflect some
inherent differences, for example, in susceptibility or
opportunity for infection rather than the effects of
attending or non attending the clinic.

Point prevalence studies in addition are seldom wholly
satisfactory for the study of acute illness.   However,

questions such as history of diarrhoea in the past three months may provide information on differences in the levels of that illness in clinic attenders and non attenders. The interpretation, however, of any differences (or lack of differences), as already noted, in disease levels between attenders and non attenders may not be simple. In favour of point prevalence studies, it must be emphasized that, in spite of their limitations, useful information can be obtained. In purely practical terms such studies have great advantages in that they can be carried out both quickly and economically.

8.2   It is unlikely that a single point prevalence study conducted after a clinic has been in operation for a given length of time would allow one to decide whether or not the facility has conferred benefit to health on the attenders. It is therefore clear that rigorous evaluation of the effects on health can only satisfactorily be done by conducting a longitudinal survey. Here the population's health would be assessed before the introduction of the facility and at appropriate intervals thereafter, contrasting the initial and subsequent health of those who attend and do not attend.

It is recommended that before new health services are introduced, this base line measurement of health be made as well as further assessments after the clinics are established.

The alternative would be to have two comparable areas, and introduce the health facility only into one area, and observe these two areas after a period of time. In practice this poses many problems; one of which is to find adequate

control areas for every area which is to have a health facility introduced. It may, however, not be practical, politic or ethical to withhold the introduction of clinics in these selected control areas.

8.3   The field and clinic study in the four areas has shown clearly the practicality of assessing the uptake of services provided by under fives clinics and also provided a crude assessment of the health of those children who attended or did not attend the under fives clinic. With certain modification to the field survey, for example, limiting the number of questions, and where necessary modifying them to suit the local situation, in order to study the population covered by clinic and the organization and work of the clinic, the general approach can be recommended for wider application.

9.0 Sampling techniques

The basic method of sampling proved practical, and there is no reason to believe that a satisfactory sample was not obtained. In the present survey it was decided to sample every consecutive dwelling. In a survey done by Webb (1968) she sampled every fifth dwelling, and this posed certain problems. The major problem resulted from mothers in the intervening non sampled dwellings also wanting to be included in the sample. This required a lengthy explanation for their exclusion, or they were examined and findings not included in the analysis. However in the light of local circumstances if it is felt that sampling consecutive dwellings might produce a biassed sample of children, every, for example, 2nd, 4th or 6th dwelling could be taken into the sample.

Home visits were not excessively time consuming. In those homes where the children did not have the home based records, less time was spent as the information was not available for extraction.

10.0   Questionnaire

10.1   The use of an interviewer administered questionnaire was found to be a useful method for obtaining the necessary information.   If, in future, surveys are carried out by local staff then the need to use an interpreter would be eliminated.

10.2   The questionnaire used in the present study endeavoured to elicit information on a large number of items.

While this has adequate justification in a research project, for routine assessments fewer items of information could be collected.

The following items of information might be considered useful in the context of assessment of under fives clinics.

Questions related to child

(1)   Age and sex of child

(2)   Has the child got a 'Road-to-Health' card, if not why not?

(3)   Age of child when card issued

(4)   Weight of child as measured on day of survey

(5)   Vaccinations given to child and number of doses

(6)   Age at each vaccination

(7)   Number of visits to Under Fives clinic

Questions related to family (mother)

(1)   What is the purpose of vaccination?

(2)   Reasons for Under Fives clinic attendance

(3)   Reasons for non attendance at Under Fives clinic

(4)   Ante natal clinic attendance

(5)   Reasons for ante natal clinic attendance.

11.0   <u>Community involvement in evaluation studies</u>

11.1   There are considerable advantages if the community itself can be made responsible for assessment of its own health activities.   This would involve the community not only in responsibility for collecting data from the field survey and clinic study but also in responsibility for the analysing of the data.   This is an additional reason for reducing the amount of information collected in the field survey to those items of information that are really crucial to assessment.

      The clinic staff needs to participate in any evaluation, as this gives them an insight into the impact of their work; also the results of such evaluations may be to hand earlier than if an outside agency is conducting the study and preparing the analysis.   Analysis of the small number of items of information collected could consist of simple distributions of, for example, the proportion of attenders to non attenders by age and sex.

      Such evaluation studies could well become a continuing part of any home visiting programmes already undertaken by the staff of the clinic in the normal course of their duties. Such a programme would have a dual effect, i.e. supplying information hopefully leading to better planning of the work of the clinic, and at the same time encourage mothers who do not attend to do so.

11.2   The setting up of studies and their analysis might be beyond the capabilities of the staff of a small clinic.   If

government is considering employing evaluation on a wide
scale, a proforma would be prepared centrally, setting out
the methods to be employed in data collection and including
simple instructions for the local analysis of the data
collected.

11.3   Considerable advantages can arise by carrying out
evaluation studies using comparable methods.   A standard
protocol would be used to evaluate all clinics within a
country.   The present survey does suggest that such a
protocol, incorporating simple standard methods, can be
developed, such that it could be used by relatively
untrained staff.   In the present survey the author was a
doctor with training in epidemiology.   Also the documents
used and methods of analysis were sophisticated.   However,
with simplified questionnaires, school children can be
trained without difficulty to carry out similar evaluation
studies.   The method can be documented and explained by
means of training manuals, or lectures.   Specially trained
lecturers could provide guidance on methods and procedures,
and form a core staff to supervise training at regional and
district level.

As a result of the preliminary findings from the present
survey GALBRAITH (1974) has further developed the methodology
and conducted a survey of under fives clinics in an area of
West Africa.   He has shown that in an investigation taking
less than ten days, information can be obtained from a 10%
sample of all the children in a village of 8,000.   These
results were efficiently and successfully analysed
manually without the use of computers.

382

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APPENDIX 1

TABLE 1

MEAN WEIGHTS OF CHILDREN BY AGE AND BY AREA FOR ALL CHILDREN
IN THE STUDY.(Numbers of children in parenthesis)

Age	ILESHA	ESA OKE	NAMITAMBO	MANSA
0 - 3 mth	4.45 (24)	3.96 (25)	4.09 (21)	5.47 (23)
3 - 6 mth	6.02 (34)	6.28 (14)	6.53 (25)	6.25 (20)
6 - 9 mth	7.57 (15)	6.69 (28)	6.87 (16)	8.13 (25)
9 - 12 mth	7.72 (25)	7.05 (24)	7.77 (27)	8.05 (28)
12 - 15 mth	8.93 (19)	8.40 (21)	7.51 (8)	8.51 (12)
15 - 18 mth	9.13 (21)	9.14 (18)	8.94 (27)	9.45 (20)
18 - 21 mth	9.67 (20)	9.60 (24)	9.82 (12)	9.38 (19)
21 - 24 mth	10.57 (22)	10.17 (31)	10.51 (17)	10.11 (16)
24 - 27 mth	10.84 (22)	10.78 (24)	10.61 (15)	10.14 (18)
27 - 30 mth	11.35 (20)	11.23 (16)	12.28 (15)	11.98 (14)
30 - 33 mth	12.06 (15)	11.10 (17)	11.18 (14)	12.30 (18)
33 - 36 mth	11.77 (22)	10.96 (16)	12.39 (5)	12.55 (15)
36 - 39 mth	12.71 (21)	12.12 (17)	12.74 (8)	12.98 (11)
39 - 42 mth	12.67 (13)	12.81 (18)	12.86 (6)	13.51 (10)
42 - 45 mth	13.25 (20)	13.31 (23)	13.70 (10)	14.34 (12)
45 - 48 mth	13.91 (20)	12.60 (18)	12.62 (11)	14.76 (15)
48 - 51 mth	14.70 (11)	13.97 (24)	14.19 (8)	15.08 (18)
51 - 54 mth	14.71 (15)	12.12 (10)	13.46 (3)	15.07 (4)
54 - 57 mth	14.89 (21)	14.26 (14)	13.79 (5)	17.06 (10)
57 - 60 mth	15.01 (13)	14.24 (13)	13.87 (3)	16.98 (2)

TABLE 2(a) MEAN WEIGHTS BY CLINIC ATTENDANCE BY AREA FOR CHILDREN AGED 0-UNDER 30 MONTHS

AGE	ILESHA (NIGERIA)		ESA OKE (NIGERIA)		NAMITAMBO (MALAWI)		MANSA (ZAMBIA)	
	*C.A.	**N.A.	*C.A.	**N.A.	*C.A.	**N.A.	*C.A.	**N.A.
0 - under 3 mth	4.13 (6)	4.55 (18)	4.20 (4)	3.92 (21)	3.81 (12)	4.46 (9)	4.59 (8)	5.84 (15)
3 - under 6 mth	6.12 (6)	5.98. (29)	6.11 (2)	6.31 (12)	6.86 (8)	6.37 (17)	5.15 (2)	6.38 (18)
6 - under 9 mth	14.06 (1)	7.10 (14)	7.29 (1)	6.67 (27)	6.27 (2)	6.89 (14)	8.09 (3)	8.14 (22)
9 - under 12 mth	8.16 (8)	7.68 (23)	6.12 (2)	7.13 (22)	7.28 (6)	7.92 (21)	8.11 (3)	8.04 (25)
12 - under 15 mth	8.99 (5)	8.91 (14)	7.82 (4)	8.54 (17)	7.05 (4)	7.97 (4)	(0)	8.51 (12)
15 - under 18 mth	9.24 (3)	9.11 (18)	(0)	9.14 (18)	9.03 (5)	8.92 (22)	11.45 (2)	9.22 (18)
18 - under 21 mth	9.53 (4)	9.70 (16)	8.48 (2)	9.71 (22)	9.65 (5)	9.94 (7)	9.41 (1)	9.37 (18)
21 - under 24 mth	9.61 (2)	10.66 (20)	10.79 (4)	10.08 (27)	10.29 (7)	10.65 (10)	10.04 (3)	10.12 (13)
24 - under 27 mth	8.17 (1)	10.96 (21)	10.28 (3)	10.85 (21)	10.50 (7)	10.71 (8)	8.88 (3)	10.39 (15)
27 - under 30 mth	12.59 (2)	11.22 (18)	9.07 (1)	11.37 (15)	12.03 (5)	12.40 (10)	12.34 (3)	11.88 (11)

*CA-Clinic attender

**NA-Clinic non attender

TABLE 2(b)   MEAN WEIGHTS BY CLINIC ATTENDANCE BY AREA FOR CHILDREN AGED 30 MONTHS TO UNDER 60 MONTHS (Numbers of children in parenthesis)

AGE	AREA							
	ILESHA (NIGERIA)		ESA OKE (NIGERIA)		NAMITAMBO (MALAWI)		MANSA (ZAMBIA	
	*C.A.	**N.A.	*C.A.	**N.A.	*C.A.	**N.A.	*C.A.	**N.A.
30 - under 33 mth	12.08 (5)	12.05 (10)	11.34 (1)	11.08 (16)	10.74 (4)	11.36 (10)	13.01 (2)	12.22 (16)
33 - under 36 mth	10.89 (2)	11.86 (20)	9.30 (2)	11.20 (14)	12.59 (2)	12.27 (3)	12.59 (3)	12.54 (12)
36 - under 39 mth	10.77 (2)	12.91 (19)	9.75 (2)	12.44 (15)	12.05 (2)	12.82 (6)	12.32 (3)	13.23 (8)
39 - under 42 mth	(0)	12.67 (13)	(0)	12.81 (18)	12.13 (1)	13.01 (5)	16.44 (1)	13.18 (9)
42 - under 45 mth	11.79 (2)	13.41 (18)	12.47 (2)	13.39 (21)	(0)	13.70 (10)	15.20 (3)	14.05 (9)
45 - under 48 mth	11.79 (1)	14.07 (19)	(0)	12.60 (18)	9.75 (1)	12.91 (10)	13.83 (2)	14.90 (13)
48 - under 51 mth	(0)	14.70 (11)	14.51 (4)	13.86 (20)	13.65 (4)	14.73 (4)	14.76 (4)	15.17 (14)
51 - under 54 mth	14.97 (1)	14.70 (14)	16.78 (1)	14.94 (9)	(0)	13.46 (3)	(0)	15.07 (4)
54 - under 57 mth	(0)	14.89 (21)	(0)	14.26 (14)	13.15 (2)	14.21 (3)	15.76 (1)	17.20 (9)
57 - under 60 mth	(0)	15.01 (13)	14.51 (1)	14.21 (12)	13.87 (3)	(0)	16.98 (2)	(0)

*CA-Clinic attender
**NA- Clinic non attender

TABLE 3

DISTRIBUTION OF CHILDREN BY OWNERSHIP OF DWELLING AND BY CLINIC ATTENDANCE AND BY AREA

OWNERSHIP OF DWELLING	AREA									
	ILESHA (NIGERIA)		ESA OKE (NIGERIA)		NAMITAMBO (MALAWI)		MANSA (ZAMBIA)		ALL AREAS	
	*C.A.	**N.A.	*C.A.	**N.A.	*C.A.	**N.A.	*C.A.	**N.A.	*C.A.	**N.A.
Own	67% (256)	71% (39)	91% (334)	81% (30)	88% (157)	88% (73)	77% (203)	72% (37)	80% (950)	79% (179)
Rented	33% (123)	29% (16)	9% (34)	19% (7)	4% (7)	5% (4)	18% (47)	24% (12)	18% (211)	17% (39)
Neither	0% (0)	0% (0)	0% (0)	0% (0)	8% (14)	7% (6)	5% (13)	4% (2)	2% (27)	4% (8)
TOTAL	100% (379)	100% (55)	100% (368)	100% (37)	100% (178)	100% (83)	100% (263)	100% (51)	100% (1188)	100% (226)

*Clinic Attender
**Clinic Non Attender

TABLE 4

DISTRIBUTION OF CHILDREN BY TYPE OF WALLS IN DWELLING BY CLINIC ATTENDANCE BY AREA.

TYPE OF WALLS IN DWELLING	A R E A									
	ILESHA (NIGERIA)		ESA OKE (NIGERIA)		NAMITAMBO (MALAWI)		MANSA (ZAMBIA)		ALL AREAS	
	*C.A.	**N.A.	*C.A.	**N.A.	*C.A.	**N.A.	*C.A.	**N.A.	*C.A.	**N.A.
Brick	45% (171)	57% (31)	33% (121)	38% (14)	2% (4)	6% (5)	16% (41)	12% (6)	28% (337)	24% (56)
Stone	22% (82)	25% (14)	27% (98)	11% (4)	3% (6)	4% (3)	2% (4)	4% (2)	16% (190)	10% (23)
Laterite	33% (126)	18% (10)	40% (149)	51% (19)	95% (168)	90% (75)	82% (218)	84% (43)	56% (661)	65% (147)
TOTAL	100% (379)	100% (55)	100% (368)	100% (37)	100% (178)	100% (83)	100% (263)	100% (51)	100% (1188)	99% (226)

*Clinic Attender
**Clinic Non Attender

TABLE 5

DISTRIBUTION OF CHILDREN BY TYPE OF FLOOR IN DWELLING BY CLINIC ATTENDANCE BY AREA.

TYPE OF FLOOR IN DWELLING	AREA									
	ILESHA (NIGERIA)		ESA OKE (NIGERIA)		NAMITAMBO (MALAWI)		MANSA (ZAMBIA)		ALL AREAS	
	*C.A.	**N.A.	*C.A.	**N.A.	*C.A.	**N.A.	*C.A.	**N.A.	*C.A.	*N.A.
Concrete	68% (259)	78% (43)	67% (248)	49% (18)	5% (9)	10% (8)	17% (44)	12% (6)	47% (560)	38% (75)
Mud	31% (116)	22% (12)	33% (120)	51% (19)	93% (166)	90% (75)	82% (216)	88% (45)	52% (618)	67% (151)
Wood	1% (4)	0% (0)	0% (0)	0% (0)	2% (3)	0% (0)	1% (3)	0% (0)	1% (10)	0% (0)
TOTAL	100% (379)	100% (55)	100% (368)	100% (37)	100% (178)	100% (83)	100% (263)	100% (51)	100% (1188)	100% (226)

*Clinic Attender
**Clinic Non Attender

TABLE 6

DISTRIBUTION OF CHILDREN BY AVAILABILITY OF LATRINE BY CLINIC ATTENDANCE BY AREA.

AVAILABILITY OF LATRINE	AREA									
	ILESHA (NIGERIA)		ESA OKE (NIGERIA)		NAMITAMBO (MALAWI)		MANSA (ZAMBIA)		ALL AREAS	
	*C.A.	**N.A.	*C.A.	**N.A.	*C.A.	**N.A.	*C.A.	**N.A.	*C.A.	**N.A.
Cwn	36.0% (138)	36.0% (20)	30.0% (112)	27.0% (10)	37.0% (65)	27.0% (22)	58.0% (150)	57.0% (29)	39.0% (465)	36.0% (81)
Shared	43.0% (160)	53.0% (29)	23.0% (85)	5.0% (2)	29.0% (51)	37.0% (31)	8.0% (22)	10.0% (5)	27.0% (318)	29.0% (67)
Public	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	1.0% (2)	0.0% (0)	0.0% (0)	0.0% (0)	0.1% (2)	0.0% (0)
None	21.0% (81)	11.0% (6)	47.0% (171)	68.0% (25)	33.0% (60)	36.0% (30)	34.0% (91)	33.0% (17)	33.9% (403)	35.0% (78)
TOTAL	100.0% (379)	100.0% (55)	100.0% (368)	100.0% (37)	100.0% (178)	100.0% (83)	100.0% (263)	100.0% (51)	100.0% (1188)	100.0% (226)

*Clinic Attender
**Clinic Non Attender

TABLE 7

DISTRIBUTION OF CHILDREN BY TYPE OF LATRINE BY CLINIC ATTENDANCE BY AREA.

TYPE OF LATRINE	AREA									
	ILESHA (NIGERIA)		ESA OKE (NIGERIA)		NAMITAMBO (MALAWI)		MANSA (ZAMBIA)		ALL AREAS	
	*C.A.	**N.A.	*C.A.	**N.A.	*C.A.	**N.A.	*C.A.	**N.A.	*C.A.	**N.A.
Flush	2.0% (6)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	0.5% (6)	0.0% (0)
Bucket	4.0% (15)	9.0% (5)	0.0% (0)	0.0% (0)	1.0% (2)	1.0% (1)	0.0% (0)	0.0% (0)	1.0% (17)	2.0% (6)
Pit	73.0% (277)	80.0% (44)	54.0% (197)	32.0% (12)	65.0% (116)	63.0% (52)	65.0% (172)	67.0% (34)	64.5% (762)	63.0% (142)
None	21.0% (81)	11.0% (6)	46.0% (171)	68.0% (25)	34.0% (60)	36.0% (30)	35.0% (91)	33.0% (17)	34.0% (403)	35.0% (78)
TOTAL	100.0% (379)	100.0% (55)	100.0% (368)	100.0% (37)	100.0% (178)	100.0% (83)	100.0% (263)	100.0% (51)	100.0% (1188)	100.0% (226)

*Clinic Attender
**Clinic Non Attender

401

TABLE 8

DISTRIBUTION OF CHILDREN BY TYPE OF TRADE CARRIED OUT IN DWELLING BY CLINIC ATTENDANCE BY AREA

TYPE OF TRADE IN DWELLING	AREA									
	ILESHA (NIGERIA)		ESA OKE (NIGERIA)		NAMITAMBO (MALAWI)		MANSA (ZAMBIA		ALL AREAS	
	*C.A.	**N.A.	*C.A.	**N.A.	*C.A.	**N.A.	*C.A.	**N.A.	*C.A.	**N.A.
Petty Sales	11.0% (43)	18.0% (10)	6.0% (21)	0.0% (0)	0.0% (0)	1.0% (1)	0.4% (1)	0.0% (0)	6.0% (65)	5.0% (11)
Tailor	4.0% (16)	0.0% (0)	4.0% (13)	8.0% (3)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	2.0% (29)	1.0% (3)
Food sales	1.0% (4)	7.0% (4)	1.0% (3)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	0.6% (7)	2.0% (4)
Other	1.0% (5)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	0.4% (5)	0.0% (0)
None	83.0% (311)	75.0% (41)	89.0% (331)	92.0% (34)	100.0% (178)	99.0% (82)	99.6% (262)	100.0% (51)	91.0% (1082)	92.0% (208)
TOTAL	100.0% (379)	100.0% (55)	100.0% (368)	100.0% (37)	100.0% (178)	100.0% (83)	100.0% (263)	100.0% (51)	100.0% (1188)	100.0% (226)

* Clinic Attender
** linic Non Attender

TABLE 9

DISTRIBUTION OF CHILDREN BY TYPE MILK BY CLINIC ATTENDANCE BY AREA.

TYPE MILK THOUGHT BEST FOR CHILDREN 0 - 3 MONTHS	AREA									
	ILESHA (NIGERIA)		ESA OKE (NIGERIA)		NAMITAMBO (MALAWI)		MANSA (ZAMBIA)		ALL AREAS	
	*C.A.	**N.A.	*C.A.	**N.A.	*C.A.	**N.A.	*C.A.	**N.A.	*C.A.	**N.A.
Breast milk	86.0% (325)	96.0% (52)	84.5% (311)	86.0% (32)	65.4% (117)	55.0% (46)	93.0% (244)	88.0% (45)	84.0% (997)	77.0% (175)
Artificial milk	7.0% (25)	2.0% (1)	10.0% (35)	11.0% (4)	31.0% (55)	38.0% (31)	2.0% (6)	4.0% (2)	10.0% (121)	17.0% (38)
Both	6.0% (24)	2.0% (2)	5.0% (20)	3.0% (1)	3.0% (5)	5.0% (4)	0.0% (0)	0.0% (0)	4.0% (49)	3.0% (7)
Do not know	1.0% (5)	0.0% (0)	0.5% (2)	0.0% (0)	0.6% (1)	2.0% (2)	5.0% (13)	8.0% (4)	2.0% (21)	3.0% (6)
TOTAL	100.0% (379)	100.0% (55)	100.0% (368)	100.0% (37)	100.0% (178)	100.0% (83)	100.0% (263)	100.0% (51)	100.0% (1188)	100.0% (226)

*Clinic Attender
**Clinic Non Attender

TABLE 10

DISTRIBUTION OF CHILDREN BY CLINIC ATTENDANCE BY PARENTS BY AREA.

PARENTS OF THE CHILD	AREA									
	ILESHA (NIGERIA)		ESA OKE (NIGERIA)		NAMITAMBO (MALAWI)		MANSA (ZAMBIA)		ALL AREAS	
	*C.A.	**N.A.	*C.A.	**N.A.	*C.A.	**N.A.	*C.A.	**N.A.	*C.A.	**N.A.
Both alive	98.6% (374)	98.0% (54)	97.0% (357)	95.0% (35)	99.0% (176)	100.0% (83)	99.6% (262)	100.0% (51)	98.4% (1169)	99.0% (223)
Mother dead	0.3% (1)	0.0% (0)	0.3% (1)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	0.2% (2)	0.0% (0)
Father dead	0.8% (3)	2.0% (1)	2.7% (10)	5.0% (2)	1.0% (2)	0.0% (0)	0.4% (1)	0.0% (0)	1.3% (16)	1.0% (3)
Both dead	0.3% (1)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	0.1% (1)	0.0% (0)
TOTAL	100.0% (379)	100.0% (55)	100.0% (368)	100.0% (37)	100.0% (178)	100.0% (83)	100.0% (263)	100.0% (51)	100.0% (1188)	100.0% (226)

*Clinic Attender
**Clinic Non Attender

TABLE 11

DISTRIBUTION OF CHILDREN BY CLINIC ATTENDANCE BY PERSON LIVING WITH CHILD AND BY AREA

PERSON LIVING WITH CHILD	A R E A									
	ILESHA (NIGERIA)		ESA OKE (NIGERIA)		NAMITAMBC (MALAWI)		MANSA (ZAMBIA)		ALL AREAS	
	*C.A.	**N.A.	*C.A.	**N.A.	*C.A.	**N.A.	*C.A.	**N.A.	*C.A.	**N.A.
Neither parent	3.0% (10)	2.0% (1)	0.5% (2)	5.0% (2)	1.0% (2)	2.0% (2)	2.0% (4)	2.0% (1)	2.0% (18)	4.0% (8)
Mother only	39.0% (151)	56.0% (31)	33.0% (121)	52.0% (19)	48.0% (85)	42.0% (35)	13.0% (35)	24.0% (12)	33.0% (392)	43.0% (97)
Father only	1.0% (3)	·0.0% (0)	0.8% (3)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	4.0% (2)	0.5% (6)	0.0% (0)
Both	57.0% (215)	42.0% (23)	65.7% (242)	43.0% (16)	51.0% (91)	56.0% (46)	85.0% (224)	70.0% (36)	64.5% (772)	53.0% (121)
TOTAL	100.0% (379)	100.0% (55)	100.0% (368)	100.0% (37)	100.0% (178)	100.0% (83)	100.0% (263)	100.0% (51)	100.0% (1188)	100.0% (226)

*Clinic Attenders
**Clinic Non Attenders

TABLE 12

DISTRIBUTION OF CHILDREN BY CLINIC ATTENDANCE BY ANTA NATAL VISITS OF MOTHER BY AREA.

ANTE NATAL VISITS BY MOTHER	AREA									
	ILESHA (NIGERIA)		EBA OKE (NIGERIA)		NAMITAMBO (MALAWI)		MANSA (ZAMBIA)		ALL AREAS	
	*C.A.	**N.A.	*C.A.	**N.A.	*C.A.	**N.A.	*C.A.	**N.A.	*C.A.	**N.A.
Yes	89% (339)	71% (39)	94% (345)	70% (26)	91% (162)	78% (65)	91% (240)	67% (34)	91 (1086)	73% (164)
No	11% (40)	29% (16)	6% (23)	30% (11)	9% (16)	22% (18)	9% (23)	33% (17)	9% (102)	27% (62)
TOTAL	100% (379)	100% (55)	100% (368)	100% (37)	100% (178)	100% (83)	100% (263)	100% (51)	100% (1188)	100% (226)

*Clinic Attender
**Clinic Non Attender

TABLE 3

DISTRIBUTION OF CHILDREN BY CLINIC ATTENDANCE, BY REASONS GIVEN BY MOTHER FOR ANTE NATAL VISITS

BY AREA.

REASONS FOR ANTE NATAL VISITS	AREA									
	ILESHA (NIGERIA)		ESA OKE (NIGERIA)		NAMITAMBO (MALAWI)		MANSA (ZAMBIA)		ALL AREAS	
	*C.A.	**N.A.	*C.A.	**N.A.	*C.A.	**N.A.	*C.A.	**N.A.	*C.A.	**N.A.
Routine	69% (262)	46% (25)	86% (315)	67% (25)	81% (144)	70% (58)	77% (204)	53% (27)	77% (925)	60% (135)
Complaints only	20% (77)	25% (14)	8% (30)	3% (1)	10% (18)	8% (7)	14% (36)	14% (7)	14% (161)	13% (29)
No ante-natal visits	11% (40)	29% (16)	6% (23)	30% 11)	9% (16)	22% (18)	9% (23)	33% (17)	9% (102)	27% (62)
TOTAL	100% (379)	100% (55)	100. (368)	100% (37)	100% (178)	100% (83)	100% (263)	100% (51)	100% (1188)	100% (226)

*Clinic Attender
**Clinic Non Attender

APPENDIX 2

SURVEY ON THE UTILIZATION OF CHILD HEALTH SERVICES

Conducted jointly by the Institute of Child Health and the
London School of Hygiene and Tropical Medicine of the
University of London. 1972. Interviewer: Dr. I.P. SENANAYAKE

QUESTIONNAIRE NO. 1. (To be filled in once for each dwelling)

1. Area.......................

2. Dwelling No...............

3. Family No................,

4. Child No...................

5. Date of interview.......Day........month........year.

6. Total No. children under five who slept here last night.......

7. Total No. adult males who slept here last night...............

8. Total No. adult females who slept here last night...... ....

9. Total No. males(including children) who slept here last night..

10. Total No females who slept here last night(inc. children).....

11. Dwelling: .....owned.....rented......norent/not owned

12. Is there a trade carried out in the dwelling ?....yes.....no.

13. If yes to quest: 12, what is it ?..............................

14. Walls of dwelling.....brick.....stone.....laterite.....other

15. Floor of dwelling.....cement.....mud.....wood.....other

16. Light and ventilation.....A.......B......C
>   (A. all rooms have windows that open to the exterior
>   B. More than half the rooms have windows that open to
>   exterior
>   C. Half or less than half the rooms have windows that
>   open to the exterior.

17. No of rooms used for sleeping:..........

18. Cooking is done:.....separate room.....part of living room
    .....outside.

19. Water for drinking is got from:.....pipe at home.....own well
.....shared well.......street pipe......river/stream
.....rain water.
20. Water for washing is got from:.......same as in 19......other
21. Time taken per day fr collecting water for.drinking:........
22. Time taken per day for collecting water for washing:.......
23. Distance to source of drinking water:.........
24. Distance to source of washing water:..........
25. Latrine:.....owned.....shared.....public.....none.
26. Type latrine:.....flush.....pit.....bucket.....other.
27. Refuse:.....composting.....burning.....burying.....dumping.
28. Animals kept in the compound:.....pigs.....cows.....goats.....
.....poultry.....sheep.

SURVEY ON THE UTILIZATION OF CHILD HEALTH SERVICES

Conducted jointly by the Institute of Child Health and the
London School of Hygiene and Tropical Medicine of the
University of London. 1972. Interviewer: Dr. I.P.SENANAYAKE

QUESTIONNAIRE NO 2. (To be filled in once for each family)

1. Area......................

2. Dwelling No...............Address..............

3. Family No.................

4. Child No..................

5. Father & mother.....both alive.....Father dead.....mother dead.
..:...both dead.

6. Who lives in dwelling.....mother.....father.....both.....neithe

7. No of children ever born to mother.........

8. No: of children alive today................

9. No: born dead.........

10. No: that died after birth.....

11. When was the first child born.....day.....month.....year.

12. When was the last child born......day.....month.....year.

13. The following questions would be answered by.....father
.....mother.....other.

14. Do children under the age of three months do better on:
.....breast milk.....artificial milk.....both.... do not know

15. At what age do you think solids(paps rice biscuits) should
be introduced to a child's diet?..........months.

16. Do you think water(un clean un boiled) could be a cause of
disease?.....yes.....no.....do not know. If yes specify........
....

17. What is the purpose of vaccination?...........................

18. Do you take your child to the under fives clinic?.....yes all
children.....yes some children......no.

Questionnaire No. 2 contd:

19. If No to question 18 give reasons:.............................

    ;..

20. If yes to question 18 give reasons........................

    ....

21. In an emergency where would you take your sick child

    for treatment?...

22. How far is it to the clinic.........miles

23. How do you usually travel to the clinic?..................

24. How long does it usually take you to get to the clinic?.....

25. During your/your wife's last pregnancy did you/ your wife

    attend the ANC?.......yes.....no.....do not know.

26. If yes how many times.......

27. Purpose of attendance......routine.....for complaints only

    .....free supplies.....other.

SURVEY ON THE UTILIZATION OF CHILD HEALTH SERVICES

Conducted jointly by the Institute of Child Health and the
London School of Hygiene and Tropical Medicine of the
University of London, 1972. Interviewer: Dr. I.P. SENANAYAKE.

QUESTIONNAIRE NO: 3.(To be filled in once for each child under 5)

1. Area.... ....

2. Dwelling No:......... Adress of dwelling................

3. Family No:...........

4. Child No:...........

5. Sex:.....male.....female

6. Name of child...................

7. Road to Health card.......never had one.....lost....not avail:
   .....seen.

8. Date of birth.....day.....month.....year.

9. Date card issued.....day.....month.....year.

10. If date of birth not known estimated age........

11. Age estimated by.....baptismal records...local calender.
    .....mother's recall.

12. O.P.D. visits to hospital in the 6 months preceding survey...

13. In patient spells so far in hospital......

14. Has the child had measles....yes....no....do not know.

15. Has the child had whooping cough....yes....no....do not know.

16. Weight of child today..........

17. Is the child well today?.....yes.....no if no specify........

18. skin lesions .....present......absent.

19. Umbilical hernia.....present.....absent.

Questionnaire No: 3 contd

20. Has the child had diarrhoea in the past three months
    which needed treatment?.....yes.....no.

21. Has the child had untreated diarrhoea in the last 3 months?
    .....yes.....no.

22. Number of stools passed in the last 24 hours?......

23. Smallpox vaccination- scar.....seen.....not seen

24. B.C.G. Vaccination scar seen.....not seen......

INFORMATION OBTAINED FROM THE ROAD TO HEALTH CARD(in those
    children with cards)

25. Smallpox vaccination.....given.....not given.
    If given,.....day.....month.....year.

26. B.C.G......given.....not given.....day....month....year.

27. Triple vaccination. No injections 1   2   3

        Triple 1st dose.....day.....month.....year.

        Triple 2nd dose.....day.....month.....year.

        triple third dose...day.....month.....year.

28. Polio vaccination. no doses   1   2   3

        1st dose polio...day...month.....year.

        2nd dose polio...day.....month....year.

        3rd dose polio....day....month....year.

29. Age in months at last weighing........

30. weight at last weighing. ....

31. wieght 3 months ago........day.....month.....year......