DJIBOUTI

EPI/CDD/CHILD MORTALITY

SURVEY, 1989

Prepared by:

UNICEF, Middle East &
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Ministry of Health,
Republic of Djibouti

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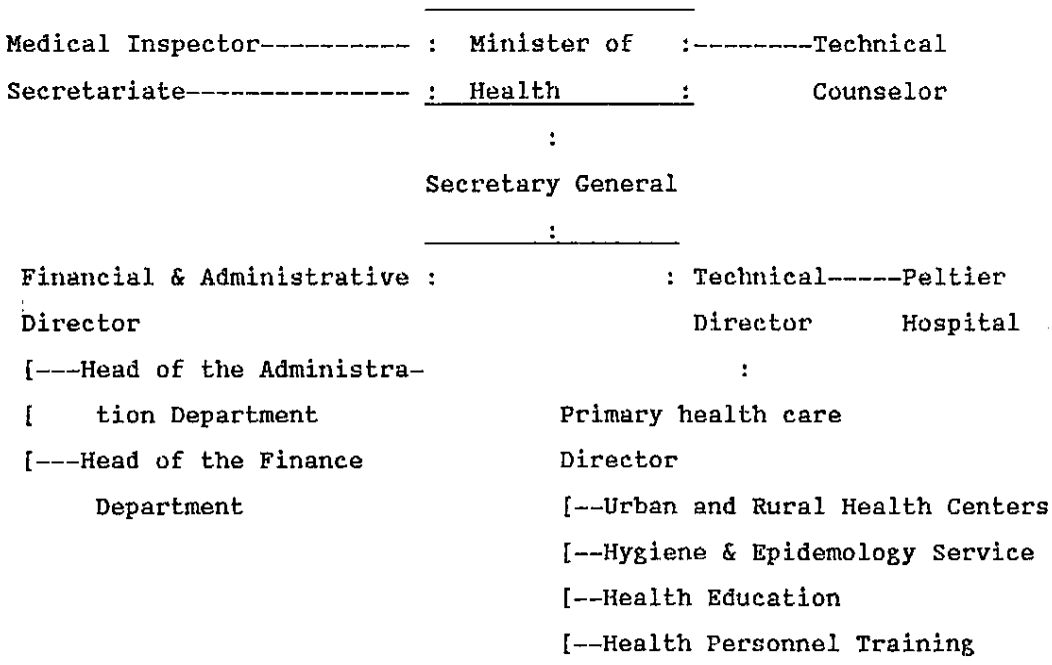
I. INTRODUCTION

The republic of Djibouti is situated on the horn of Africa. It has a surface of 23,000 square kms and a population of 460,000 inhabitants of which more than half live in the capital (Djibouti-city). The country is divided administratively into five districts: Djibouti, Tadjourah, Ali Sabieh, Obock and Dikhil. A small fraction of the districts' population live a nomadic life.

The Ministry of Health covers the entire district population. As to the Capital's inhabitants, health organisations, other than the Ministry of Health, offer services. (ex. Intercorporation Medical Service for the workers and their families).

The Ministry of Health's budget represents approximately 7% of the national budget. The Ministry's organization chart, according to the 1985 law is as follows:



Despite the efforts made since the 1982 seminar, the health system is still dominated today by curative medicine, while preventive

medicine remains underdevelopped. The national health system has disparities in the distribution of physicians: out of 60 doctors of whom most are expatriates, only 4 are located throughout the other districts. Access to health care for the population was facilitated by adequate and progressive implementation of health centers in the country. Before 1982, the few programmes that existed, such as the anti-tuberculosis programme, were vertical, as were the vaccination programmes, which were administered by the health services, in the form of periodical campaigns. Today and since 1984, EPI, which remains under the coordination of the health department, is included in primary health care.

Diarrhoeal diseases, a preoccupying concern of the country, suffer from the absence of an efficient and adequate programme in spite of all the surveys by international experts. Since 1986, isolated actions, such as information on ORS, PHC usage and the definition of focal points took place.

To evaluate the efforts made concerning EPI and PHC, a national survey was conducted in 1987 in collaboration with UNICEF and WHO , as was for the current survey,

The 1985 survey on infant mortality done in collaboration with UNICEF and WHO could also be considered. This survey established a mortality rate of 200 per 1000 in the city of Djibouti.

II. SUMMARY

In February 1989, the Ministry of Health in Djibouti in collaboration with UNICEF and WHO conducted a national sample survey in the city of Djibouti and the four districts of the country. Fieldwork lasted from February 7 until February 15. Training of field supervisors and interviewers lasted for 5 consecutive days preceding fieldwork.

The results produced from the 1989 review provide the Government of Djibouti with valuable pieces of information on child mortality and trends over time. Child mortality has been lacking from the government official reports. Little is known about actual child mortality rates. A previous study was limited to Djibouti City and does not represent the country as a whole*. The estimates published each year in the UNICEF publication, The State of the World's Children, are prepared by the UN agency responsible for all infant and child mortality estimates: The UN Population Division. These have been based on recent projections using trends in a neighbouring country for reference.

The findings from this survey will provide the MOH guidelines in the planning of policy and intervention programmes in maternal and child health.

(*) UNICEF, O.M.S.
RESULTATS DE L'ENQUETE SUR LA MORTALITE INFANTILE DANS LA VILLE DE DJIBOUTI, 1985

III. BACKGROUND

Only EPI has been taken into account due to the fact that, up till now, no national anti-diarrhoeal prevention programme exists.

Profile of E.P.I

1. History:-

Before 1982, the vaccination program was administered by the hygiene department in the form of periodical campaigns. Since 1984, this horizontal programme has grown (E.P.I) and remains under the coordination of the same department and is considered part of primary health care.

2. Management:-

E.P.I is administered by a focal point based at the health department which controls orders, stocks, and the distribution of vaccinations. Provided by UNICEF, it is responsible for the setting in place, the supervision, and the evaluation of E.P.I.

3. Supervision:-

Besides the focal point, supervision is also offered by a three member team based at the health department. This team distributes the vaccine to the MCH centers and controls the cold chain and vaccination techniques. The statistical data given by the PHC centers concerning EPI are sent to the health department once a month.

4. Population targeted:-

The groups targeted by E.P.I. are children under one year and pregnant women.

At present, non-pregnant women in the reproductive age, do not receive their TT shots at the center, but during the mass campaigns that were carried out.

5. Calendar:-

Since the national seminar on E.P.I. organized in Djibouti on December 27th and 28th 1988, a new vaccination calendar was adopted in which oral polio vaccine at birth was inserted as well as the Antihepatitus B vaccine. The new calendar is as follows:-

Calender for Children Under 1 Year

Vaccine	Age of vaccination
OPV (Oral Polio)]	
BCG]	
VHB (Viral Hepatitus B)]	at birth
DPT I]	
VHB]	6 weeks
DPT II	10 weeks
DPT III	14 weeks
Measles]	
VHB]	9 months

Calender of the TT (Tetanus Toxoid)
for Pregnant Women and Women in the Reproductive Ages

1st dose	:	Last trimester during pregnancy
2nd dose	:	4 weeks after the first dose
3rd dose	:	Following pregnancy (2nd) or the following year
4th dose	:	Following pregnancy (3rd) or the following year
5th dose	:	Following pregnancy (4th) or the following year

6. Strategy:-

E.P.I is carried out through the mobile and fixed PHC Centers.

In maternities, according to the new calender, BCG, oral polio, and soon hepatitus B are administered.

During the 1988 national seminar, it was recommended that a dose of vitamin A should be added to E.P.I.

7. Social Mobilization:-

The Educational Committee for Health makes efforts to educate and inform mothers and women in their reproductive ages on the importance of vaccination, but the social mobilization expected hasn't been reached yet.

The increase in the coverage rate is mostly due to the success of the integration of E.P.I within the primary health care system.

8. Personnel training:-

Personnel training is done as follows:-

- An annual workshop seminar for doctors and health workers in charge of administering E.P.I.

- Two classes per year on cold chain for nurses and health workers.

9. Programme surveillance:-

The prevalence and the consequence of the diseases targeted by E.P.I are supervised by the sentinel surveillance system and the routine monitoring system controlled by the planning and statistical department which centralizes the country's data.

In April 1988, a survey on missed vaccination opportunities was carried out. The reading of the results proved that the weekly vaccination administration should be changed.

10. Programme evaluation:-

The evaluation of vaccination coverage was done through two "cluster-sample" surveys in November 1987 and February 1989.

IV. PREPARATION & OBJECTIVES

1. Survey preparation:-

A meeting was set upon the request of the Minister of Health, on December 29th 1988, to form a survey committee. A second meeting was held on January 1989, in which a president, a survey reporteur and members of the committee were nominated. The committee members met daily to place and prepare for the survey.

The committee decided that the training of the interviewers would begin on January 31st and end on February 4th 1989. The work programme adopted was as follows:-

- Tuesday 31.01.89:
  - * 7:30 - 9:00 : Survey introduction.
  - * 9:15 - 10:00 : Study of the questionnaires.
  - * 10:45 - 12:30: Distribution of teams according to the surveyed zones.

- Wednesday 01.02.89:
  - * 7:30 - 8:30 : Discussion on the questionnaires after personnel reading.
  - * 8:30 - 12:00 : Group workshop.

- Thursday 02.02.89:
  - * 7:30 - 8:00 : Group workshop - The interviewers are divided into three groups according to local dialects.

- Saturday 04.02.89:
  - * 8:00 - 12:00 : Pretest fieldwork.

- Sunday 05.02.89: Urban survey starts.

- Monday 13.02.89: Rural survey starts.

The committee decided on:-

1) Broadcasting the survey on national radio and television

2) Inviting (OINAS-National Statistical Director) to participate in the survey

3) Sending an official letter to the Ministry of Interior as well as to the five republic officials to facilitate the survey

4) Informing head doctors of the different interior districts

5) Logistic preparation (car, plane ticket, computers...etc).

2. Survey Objectives:-

The survey objectives were grouped into three fields: problems due to diarrhoea, maternal and child mortality and E.P.I.

1) Problems due to diarrhoea:-

Since no efficient anti-diarrhoeal disease programme (very important in Djibouti) exists for the time being, this survey can be used as a reference for the coming elaboration of a national anti-diarrhoeal programme and policy. The results will come to reinforce health routine data given by the health statistical and planning department. This survey will give us information on:-

- The diarrhoea morbidity episodes per child per year.
- Mortality.
- Treatment practices.

These indicators are necessary to set a good anti-diarrhoeal campaign in the country.

2) Maternal and child mortality:-

This survey puts in figures for the first time in the country on the maternal mortality rate. Knowing this indicator may ignite the reinforcement of the current policy in terms of prenatal care of the mother.

Concerning child mortality, it will be possible to compare this survey with the 1985 survey and observe the evolution of the trend, then to reinforce the policy to the benefit of the child.

3) E.P.I.:-

This survey will be compared to the 1987 survey and will provide an evaluation of vaccination coverage among children under one year and women in their reproductive age.

More generally, this survey will measure the impact of our primary health care programme concerning the health situation of both mother and child.

V. METHODOLOGY

1. Questionnaires:-

Three questionnaires (A, B & C) were used in the survey. Questionnaire A addressed females of childbearing age (15-49) to collect information on maternal and child mortality as well as to evaluate tetanus toxoid coverage. It included the marital status of the female at the end of the form, to avoid problems when questionning females with children who were unmarried.

Questionnaire B was directly taken from the WHO household survey manual for an MMT survey.

Questionnaire C also used the standard WHO EPI form to evaluate vaccination coverage.

All three questionnaires were produced and printed in French. A pretest of the questionnaires was carried out prior to finalizing the forms.

During training of field teams, the interviewers were divided into three language groups according to their mother tongue (Arabic, Somali and Afar). A supervisor who was a member of the committee, revised each questionnaire by translating every question into the local language.

All three groups had a master copy of the translated questionnaire and this was used in the field for reference.

The sequence of the questionnaires which had to be filled, that is, beginning with the mortality questions did not prove to be a good idea. We found in the field that starting an interview by questions on child deaths and causes of death, set the mothers off, which enhanced their reluctance to respond to the section on cause of death. This section was added at the end of the birth history form. If a child died, the interviewer would ask about the symptoms the child had a week before his death. Finally the cause of death was first reported by the mother or family, and second by the interviewing team. This was in part where mothers could not respond and did not want to speak about a death and its related cause.

Instructions were given to the teams, that they write down exactly what the mother reports. The opinion of the team part was to be discussed with the supervisor to assess the cause from the symptoms already listed. Further surveys must take this into account by first establishing rapport with the mother, asking questions that are less sensitive and then move to the mortality questions.

2. Sample size:-

The Djibouti 1989 survey covered two regions: Djibouti city with 30 clusters and the remaining four rural districts with another 30 clusters. This stratified the sample in terms of the simple dichotomy known to divide urban and rural Djibouti. It also allowed separate estimates to be made for the two regions. The sample of clusters was drawn with probability proportional to size (PPS) using the sampling frame from the 1983 population census, assuming a rate of increase of 3 percent. However, certain parts of the city had a higher rate of population increase than other areas such as Balbala where its population was estimated to cover 25% of Djibouti city of 80,000 inhabitants.

Certain districts in the city were dropped from the sampling selection: those which were either commercial/industrial or which were mainly occupied by foreign inhabitants. Thus, the results of this survey can be applied only to the areas included in the sampling frame. This list and an example of a map which was used for one district is included. During the course of training of supervisors and fieldworkers, the team leaders provided aerial as well as tracking maps. These were used to guide each supervisor and his team on the boundaries of the cluster, and used the city plan zoning system to identify the starting point in the cluster. The zone would be circled on the map with an identified road or street. There were 30 maps distributed according to every cluster. This was useful in the city itself, but the procedure could not be followed in the rural districts.

Small clusters in the sampling frame were grouped together into larger ones before the PPS sample was drawn where these areas were thought to be too small on their own to yield a large enough sample of women. In rural areas this remained a problem.

A random pattern of moves from village to village was set up for cases where one cluster did not yield enough women, but in the end almost all women in the age range in the rural clusters were interviewed.

Sample size was first calculated on the basis of numbers of women needed to provide a recent estimate of childhood mortality using the Preceding Birth Technique (PBT).

The following formula was used:

$$n = 4p(1-p)D/(\text{precision required})^2$$

where n = the sample size required in one region,
p = an estimate of the level of mortality = 150 deaths/1000 births
4 = twice the Z value of a normal distribution, to give a 95% confidence interval, and
D = an estimate of the design effect due to use of the cluster survey methodology = 2.

The estimate was required to fall within $\pm$ 15 points per thousand and substituting in the equation, this gives

$$n = \frac{4 \times 0.15\ (1-0.15) \times 2}{(0.015)^2}$$

= 4533 or approximately 4500 women with at least two births, one within the past two years. Given the aim of obtaining regional as well as national mortality estimates, this in turn requires 150 women per cluster in each region (60 clusters total). Since childbearing outside marriage in Djibouti is uncommon, these should be ever-married women.

Not enough was known about the composition of households or about fertility in Djibouti to estimate the number of households which would have to be visited to encounter sufficient women fitting this description, so a quota of ever-married women was set to ensure sufficient numbers for the estimation procedures, although this meant that the PBT estimate would probably be made only at the national level.

The number of children under five required for the morbidity, mortality and treatment survey (MMT) was 50 children in every cluster to yield a total of 1,500 children under five in each region and a total of 3,000 children for the national estimates. This number was obtained from the WHO Household Survey Manual sample size chart.

Finally, the immunization coverage required 7 index children, that is between the ages of 12-23 months, in each cluster.

The sample size needed to estimate maternal mortality level proved to be well within the number of females interviewed for the childhood mortality estimates. 6,000 or more reports were sufficient to make the maternal mortality estimates based upon reports on sisters surviving and dying from maternal causes (the sisterhood method, section IX.D). We expected to have interviewed at least 96,000 EMW in the course of the survey while completing the check mortality questions

Following the field test carried out in Djibouti city during the training of interviewers and supervisors, this sample of ever-married women from each cluster proved to be an obstacle to smooth fieldwork, requiring more than two days work per cluster. 150 women per cluster is also a very large cluster sample size; it would be preferable to sample either smaller numbers of women in more clusters or to lower the sample size. Thus, we decided to lower the sample size to a quota of 100 ever-married women per cluster, which would yield a total of 6000 women nationally. In any case the sample size could only be based on a general rule of thumb that over 3000 women were needed to provide the indirect estimates from the questions on children everborn and surviving. The numbers of women to interview with two recent births for the PBT estimate to be reasonably precise was too large, given the scope of the Djibouti survey. A trade-off was made between cost, time required and the desired level of precision of the estimates so as not to jeopardize data quality.

The survey also addressed single females for the Tetanus Toxoid coverage rates. This covered a few single mothers who were encountered in some parts of the city. A consensus was reached among the survey team members that every team would complete 100 forms for ever married women and 50 forms for single females even if they had children. The limitations of this sample for mortality estimation are dealt with in a later section.

The final number of cases obtained for each target group gave 7463 females 15-49 years of age for estimating mortality and tetanus toxoid coverage, 3175 children under 5 years for the Morbidity, Mortality and Treatment survey and 437 children for immunization coverage estimates.

3. Methods of estimating infant and child mortality:-

The survey employed three techniques to estimate infant and child mortality using reports from women of childbearing age:-

1) The indirect technique of estimation of childhood mortality through questioning women about children ever born and children who died, which estimates the level and trend in mortality over the past 15 or so years. It brings trends up to some three years before a survey.

2) The preceding birth technique which uses information on the age of a woman's most recent child and the survival status of the birth that preceded it to estimate recent levels of childhood mortality.

3) The life table method by using information from birth dates and death dates given in a truncated birth history.

METHOD FOR ESTIMATING MATERNAL MORTALITY

The indirect technique for estimating maternal mortality is based on questioning any adult about the survivorship of his/her sisters and the number of those who died due to a maternal cause. A death due to a maternal cause was defined as one during pregnancy, or during childbirth or six weeks after childbirth, an abortion or miscarriage*. This method is not a substitute for a full assessment of maternal mortality. At best, it gives only an approximate estimate of levels some 15 years before the survey, with so little known of Djibouti about main health indicators to MOH and WHO requested that there brief questions be added to the survey to obtain a first reading. In Djibouti, the main respondent was the female in the household between the ages of 15-49 who would be interviewed for the child mortality survey and her own tetanus immunization coverage.

THE PREVALENCE OF DIARRHOEA AND TREATMENT RATES

This method of calculating prevalence rate of diarrhoea during the past two weeks is based on the WHO household survey manual instructions.

(*) Graham, W., Bass and Snow, The sisterhood Method, London School of Hygiene & Tropical Medicine.

VI. TRAINING OF INTERVIEWERS & SUPERVISORS

The 24 health workers and nurses of the training center at the Peltier Hospital and about 19 supervisors participated in the training courses.

The essential epidemiology concepts helping in the understanding of the survey were explained to the students, nurses and health workers. Questionnaires were discussed and modified according to the needs. Moreover, a pretest was done around twenty households and a survey simulation was done on the spot. The interviewers were distributed into three linguistic groups (Afar, Arab, Somali) in order to have a homogeneous local translation of the questionnaires. Later a field test was done in neighbourhoods not included in the sample.

VII. FIELDWORK

Fieldwork lasted for 15 days. The teams began work in the city for five days. The work in the town was facilitated by the use of maps, the population density and knowledge of these areas. Each team consisted of a supervisor and two interviewers, according to the language they spoke. Prior to fieldwork, the Ministry of Health announced on the radio that a study will take place during that week.

In the rural districts, the chief doctors, village chiefs and administrators were alerted concerning the arrival of these teams.

Fieldwork in the rural areas lasted for seven days, varying from four days for those in the village centers, to seven days to those who travelled to dispersed villages. In some districts, locating the ever married women was difficult, because of the presence of nomads who live in small numbers for a short time in one area.

Fieldwork was facilitated through the collaboration of thee various sectors and organizations existing such as the Ministry of Agriculture, the chiefs of the districts, WHO, and UNFD.

Problems with the dataset

During the course of fieldwork and data entry, two major problems were encountered with handling the data. The first was accurate dates of birth and death. The latter proved to be more problematic and difficult to obtain. This was a result of recall problems from mothers in remembering dates of death. This rendered the dataset with a number of missing data on date of death and even age at death of the child. The interviewer was instructed to fill in an age at death when a date was not available, but in certain instances both birth and death dates were incomplete. There were 14121 children from the truncated birth history, with 46 cases with no age registered and 49 with no age at death registered. One bears in mind that the availability of birth certificates is minimal, and that 61.1% of ages come from mothers' reports (see section IX.C). However, interviewers were instructed to obtain age when no date is available, an age at death when no date of death is available.

The second type of data which proved to be missing was that on symptoms preceding the death and cause of death in the opinion of mother and interviewer. Cause of death was difficult to ascertain for three reasons:-

(1) Interviewers were not well trained to probe for cause of death.

(2) Timing and number of questionnaires to be completed a day did not allow the interviewer to probe and question the mother on what symptoms the child suffered a week before his/her death.

(3) The reluctance of mothers to speak about a death of a child was a common characteristic encountered in all of Djibouti. "The will of God" was not uncommon on the questionnaires received.

VIII. DATA PROCESSING

a. Daily procedure:-

The data were entered on microcomputers at the UNICEF office in Djibouti. There were three data entry people who worked two shifts daily, for four hours each shift. Data entry started on the second day of fieldwork as soon as questionnaires were completed. Every team's supervisor submitted the completed forms and the supervisors at the UNICEF office reviewed for comments. This was especially important and helpful during the first few days of fieldwork. Throughout the five days when Djibouti city was surveyed, all field supervisors met daily at the UNICEF office to review questionnaires and discuss major problems encountered in the field or in certain clusters.

The first step taken before handing the questionnaires to the data entry team was to identify the number of forms completed, check major inconsistencies and identify the cluster number. In Djibouti city, a cluster was completed on average in two days.

The data entry program was written in D.Base III + and later the screens were converted into French for the data entry people. The program consisted of three parts, it provided the entry person with a choice of what questionnaire he/she needed to enter. The program also had internal consistency checks for invalid ranges or codes.

The screens appeared in the same order as the questionnaires which facilitated both the training of the data entry team and the pace of work.

There were three Toshiba laptops used for data entry and an IBM PS/2 used for supervisory checks. Two people supervised the daily process of data entry, transferring, checking, cleaning and editing the data.

In addition the operation was supervised by a UNICEF consultant who prepared the programs and the routine checks for the data during the first week of fieldwork.

Following every four hour shift, the supervisor copied the data entered for every person on a diskette accompanied by the batch of questionnaires it referred to and transferred it to the main supervisory computer. The main task of the supervisor was to check the batch of work entered through a management program customized in a menu-driven fashion to check for inconsistency. This also allowed checking for quality of data entry and feedback to the data entry person on types of errors to avoid.

The program enabled the supervisor to check every record entered, to print out the errors, to go back to the questionnaires and finally edit the data.

When all the data was completed for all of Djibouti, a final management program was run to check the completed data set and carry out final editing of the data. The program also created working files to be used later for data analysis. Following this procedure, a clear data set was ready and brought to the UNICEF MENA office for analysis and production of tables.

Data entry lasted for two weeks and was concordant with the pace of fieldwork.

b. Description of the data:-

The data consisted of four major files:-

(1) Mortality file 1 (Djimrt 1, DBF)

(2) A Mortality file 2 (Djimrt 2, DBF)

(3) A CDD file (DjiCDD.DBF)

(4) An EPI file (DjiEPI.DBF).

These four files existed on the three entry programs and microcomputers. When the data entry person chose which type of questionnaire he/she needed to enter, the program was designed to open the necessary file to receive data.

The supervisory machine however, contained the four above mentioned files and also contained a master file for each type of data (i.e. Mortality, CDD or EPI). When a batch of data was checked and edited, it would be copied to the master file and kept on the hard disk. The running file which is copied from the diskette to the supervisory machine would then be erased and ready to receive a new batch of data. The master files were the same as the data entry files as follows:-

(1) MDjimrt 1.DBF (3) MDjiEPI.DBF
(2) MDjimrt 2.DBF (4) MDjiCDD.DBF.

The mortality data was entered on two separate files. MDjimrt 1 contained the TT coverage, the maternal mortality questions and the Brass questions. MDjimrt 2, the second file included the last page of the questionnaire on the truncated birth history.

In the final management procedure of checking the four master files, new working files were created to link data. The two mortality files were joined in one file to include information from both MDjimrt 1 and MDjimrt 2. It also included calculated ages of children, at birth and at death for those who died. It also calculated birth intervals between the three births to be used in the preceding birth calculations.

Another file was created from the birth history sheet where every child would have a separate record in addition to information on mother's age and numbers of children born and surviving to that mother.

c. Data analysis:-

The data were analyzed in the UNICEF MENA Regional Office in Amman. The tables and preliminary results were produced using SPSS/PC+.

Tables were produced in two parts for every data set, one giving national estimates, and the other showing urban rural differences. National estimates were weighted according to the population distribution in Djibouti. The table below shows the weighing factors calculated for each set of data. The SPSS/PC+ programme, allows weighing of every variable in the data set. A weight variable is computed, and in the case of Djibouti, when we ran national estimates, the weighing procedure was carried out according to the corresponding weighing factors for urban and rural areas. The data were run through batch files written in wordstar. The mortality estimates required three major runs: one for the indirect estimates on children ever born and surviving by five year age groups of females and number of females in every age group. Later the output was fed into a demographic package to produce fertility estimates and probabilities of dying before ages one, two, three and five years. This package is developed by the UNPD and it is called Q-5 and AFEMO.

The second run produced the parameters needed to calculate the survival of the preceding birth and the third to obtain the distribution of children born and dead by age intervals over the past five years for the life table estimates.

The diarrhoeal disease morbidity, mortality and treatment practices required numbers of children under five years, numbers of who had diarrhoea during the past two weeks preceding the day of interview and treatment rates during the diarrhoeal episode.

Immunization coverage rates were produced directly to give the percent coverage of children under age one for each dose of every antigen. Age at immunization for every antigen was calculated for children who had both date of birth and date they received the dose. Children outside the age range 12-23 months were dropped from the analysis. The production of tables also entailed age distribution of females, respondent rates, Tetanus Toxoid coverage rates.

Following the production of tables, the results were reviewed and discussed by UNICEF and two visiting members from the Ministry of Health in Djibouti who participated in the comments and report writing.

Calculation of Weighing Factors

1. Weights used for Mortality estimates

Survey Number	Population * Proportion	Sample Proportion	Weighting Factor	Weighted n
1 Djibouti	0.788	4000/7463 = 0.536	0.788/0.536 = 1.47	5880
2 Rural districts	0.212	3463/7463 = 0.464	0.212/0.464 = 0.457	1582
Total	1.00	1.00		7462

* Based on recent estimates of the population distribution between urban and rural areas

2. Weights used for EPI coverage

Survey Number	Population Proportion	Sample Proportion	Weighting Factor	Weighted n
1 Djibouti	0.787	203/411 = 0.4939	1.6	325
2 Rural districts	0.212	208/411 = 0.506	0.4189	87
Total	1.00	1.00		412

3. Weights used for CDD coverage

Survey Number	Population Proportion	Sample Proportion	Weighting Factor	Weighted n
1 Djibouti	0.787	1584/3180 = 0.498	1.6	2534
2 Rural districts	0.212	1591/3180 = 0.5003	0.424	674.6
Total	1.00	1.00	1.00	3209

IX. RESULTS

A. EPI Coverage Survey:-

The results of the cluster survey show the coverage levels of children 12-23 months Table 1. Eighty-seven percent of infants had received their BCG, sixty-five percent had completed 3 doses of DPT and OPV. The DPT/OPV first to third dose dropout rate was 25 percent Table 1. Sixty-eight percent of children also had received their measles vaccine. About forty-five percent of under-one's had been fully immunized and as expected, this was lower than any of the antigens. Seventy-five percent of children had had their immunization card retained by their mothers. This shows major programme success. Coverage levels in the rural areas were as high as those of the urban areas. This is believed to be because health services are well provided to the rural areas.

The most impressive result is the high tetanus toxoid coverage i.e. 60 percent of women 15-49 years who received two doses of TT, Table 2. The high figures include all women where young single women were immunized during the two national campaigns. The survey did not ask mothers on TT immunization during pregnancy. Again there is no difference in coverage levels between urban and rural Djibouti. It is remarkable to observe the high priority and effort put in the Djibouti Immunization Programme on tetanus toxoid unlike many other MENA/EMRO countries. However, the problem of high default between the first and second dose needs to be dealt with.

TABLE 1

Results of Immunization Coverage survey (12-23 Months) (Djibouti 1989)

Vaccine	Urban		Rural		National *	
	N	%	N	%	N	%
BCG	183	90.6	155	74.5	358	87.0
Scar	146	80.0	107	69.2	179	78.0
DPT 1	186	92.0	166	80.0	368	89.0
DPT 2	169	83.3	144	69.2	331	80.3
DPT 3	133	65.5	128	61.5	267	65.0
OPV 1	183	90.1	164	79.0	362	88.0
OPV 2	165	81.3	144	69.2	325	79.0
OPV 3	133	65.5	127	61.1	266	65.0
Measles	138	68.0	142	68.3	281	68.0
Fully immunized						
(card + history)	113	56.0	107	51.4	226	55.0
with card only	92	45.0	88	42.0	184	45.0
Children with card	152	75.0	124	59.6	295	72.0

* Weighted

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TABLE 2

Tetanus Toxoid coverage among

Women 15-49 Years

Djibouti 1989

Vaccine	Urban		Rural		National	
	N	%	N	%	N	%
TT1	3197	80	2801	81	5980	80.0
TT2	2333	58	2054	59	4368	58.5

The high dropout rate between the doses of DPT and Polio is a significant problem. If this problem is addressed, Djibouti will probably achieve its Universal Child Immunization target.

The age at which the measles vaccine is given, is especially important because of the risks of late immunization and the problem of inadequate seroconversion before the age of 9 months. Table 3 and figure 1 show a breakdown of when measles vaccine was administered. Thirty seven percent of measles vaccine was administered before the age of 9 months. More than half of the children were immunized against measles between the ages of 9-12 months, and 16 percent received the vaccine too late, after 12 months (Table 3). Of the 37 percent who received the measles vaccine before 9 months, 19 percent were given at 8 months. This shows the confusion between actual and completed months, i.e. 8th month in the age of children. Because of better seroconversion rates, measles should be given after the infant completes 8 months, not before.

TABLE 3

Measles Immunization by Age

(Completed months)

Djibouti 1989

Age in Months	Urban	Rural	National % of total
Under 8 months	3.2	3.4	8 %
8 months	22.1	26.0	19 %
9 - 12	60.0	54.0	57 %
13 - 23	14.7	17.0	16 %
Number of cases	95	207	199

NB: Cases are based on children who have both date of birth and date of vaccination recorded. It probably underestimates the prevalence of the problem with those that are less likely to be immunized or immunized correctly, being concentrated among those whose age at immunization could not be calculated.

Figures 1 through 5 shows the age at immunization for every dose.

Routine Reporting Vs Actual Survey Coverage

Table 4 compares reported coverage for 1988 with that found in the survey. Even though this does not validate the routine reporting against the survey results, it gives a reasonable comparison between the two. The survey looks at children 12-23 months while the routine in reported data are estimated from immunization given to children aged 0-1 in 1988. The most likely explanation for the difference could be an overestimation of the target population used for calculating the coverage of the routine reporting system.

TABLE 4

Coverage from Routine Reporting 1988 Data

Compared to Results of the 1989 Coverage Survey

Vaccine	Reported 1988 Data - WHO	1989 Cluster Survey *
BCG	58	87
DPT/OPV 1	57	89
DPT 3	57	65
OPV 3	57	65
MEASLES	42	68
TT 1	54	80
TT 2	42	58

* refers to children born during 1987-1988 time period, while the WHO data refers to children under one during 1988 reporting period.

Note: Standard margin of error in cluster surveys of 30 clusters is $\pm$ 10%.

EPI:

CONCLUSION AND RECOMMENDATIONS:

1. High coverage levels are maintained in the Djibouti immunization programme through the PHC delivery system. After the 1987 acceleration efforts which raised awareness and coverage levels the programme has settled into a strategy which depends on vaccination delivery through ALL existing health facilities on a daily or weekly basis supplemented by a mobile strategy in the rural areas. This strategy is certainly providing sustainable coverage levels.

2. For Djibouti to reach the 1990 UCI goal it is strongly recommended that the high level of defaulter rates be lowered to the minimum possible. Strategies to do this could include: default tracking by the health facilities; continued awareness raising through media messages to mothers with special emphasis on default tracking.

3. The administration of measles to children below 9 months should be discouraged. A circular to all health facilities and mobile teams emphasizing the need to discourage too early immunization.

4. Re-organize the health centers and MCH services to keep missed immunization opportunities to a minimum.

5. Strengthen and improve the routine reporting system. Conduct a study to find the source of differences in measles coverage obtained through routine monitoring and survey results.

6. The current high coverage levels for tetanus toxoid reflect the successful 1986/87 TT acceleration. To sustain this high level, the TT immunization services delivered through the routine health system should be extended to all women of child-bearing age 15-49 years.

7. The impact of the high TT coverage levels on neo-natal tetanus mortality could be ascertained by an MMT survey.

B. CDD Morbidity and Treatment Practices:-

i) Morbidity Rates

In the Survey in February 1989, 360 (12.8 percent) out of 2,820 children under five years of age have had diarrhoea during the past two weeks. Table 5

According to the regular MOH data of total number of diarrhoea cases in 1988, cases during the same two February weeks in 1988 represented 4.5 percent out of the Annual total.

Assuming that the number of diarrhoea cases (360) found in the present survey represent 4.5 percent of the annual 1988 cases, it can be calculated that each Djiboutian child under 5 years can be expected in a year to have 2.8 diarrhoeal episodes in a year or a total of about 151,200 cases yearly.

TABLE 5

Diarrhoea Attack Rates

February 1989 Survey - Last Two Weeks

Number of Children Under Five	Urban	Rural	National *
Number of Children Under five	1584	1591	2820
Children with Diarrhoea	208	174	360
%	13.13	11.00	12.76

* Weighted Total

ii) Treatment and ORS Usage

The results of the survey show that 46 percent of mothers (167 cases out of 360) had used ORS either alone or with other agents as treatment for diarrhoea. The survey also shows a 56 percent use of ORT which means most mothers are using home fluids, i.e. 37 percent along with ORS. This level of usage is (higher) than the national target usage of 50%. The survey did not attempt to go into correct usage. There is a high degree usage of medicines either alone or with ORS. This means that health workers are prescribing a lot of drugs besides giving ORS.

TABLE 6

Treatment Rates for Diarrhoeal Diseases

	Urban %	Rural %	Total %
ORS	42.0	36.0	46.0
ORS + Medicine	34.0	32.0	38.0
Medicine	31.0	18.0	32.5
Home made fluids	34.0	28.0	37.0
ORT	53.0	36.0	56.0
IV fluids	5.0	--	4.4

Figure 6 shows a Bar Chart of treatment rates for children with Diarrhoea.

CONCLUSIONS AND RECOMMENDATIONS

1. The ORS usage and ORT usage rates show a reasonable degree of awareness, availability and use of Oral Rehydration Therapy in Djibouti.

2. Physicians and other health workers are still prescribing a lot of drugs for children with diarrhoea. It seems as if ORS has not replaced the use of anti-diarrhoeal drugs but is used as an additon. More training and convincing need to be done by the CDD Department. In fact the Djibouti Government should consider banning of anti diarrhoeal drugs.

3. This survey does not consider the correct case management and how effectively ORT is used by the mothers. Future surveys should include this as the awareness and usage rates go up.

4. Strengthen the CDD programme so that it can improve the level of awareness, training and effective case management of diarrhoea cases.

C. Infant and Child Mortality:-

The Djibouti survey collected information from mothers on children born and surviving according to sex in order to estimate under one and under five mortality rates, frequently referred to as IMR (infant mortality rate) and CMR (child mortality rate). The questionnaire also asked mothers to list the last three births she has had. The information includes date of birth, survival status, sex of the child and date of death, if the child had died. This collection of data is referred to as the truncated birth history. It is used for the calculation of the preceding birth technique estimate and in the construction of a life table.

Before presenting the estimates of mortality, an examination of the quality of the data is discussed

- Data quality:-

The results of any mortality analysis are limited by the non-random composition of the sample of women taken. Because a decision was taken during the survey to sample not only a quota of ever-married women, but also to maintain a quota of single women, the sample is artificially structured. If a good estimate of the proportions of ever-married women in the population as a whole were available, estimates based only on the ever-married women would provide a valid estimate of childhood mortality derived from these women. Since childbearing outside marriage is very limited in Djibouti, such estimates would provide a fair idea of the extent of childhood mortality in the country. (Only 1.3% of single women in the sample, 19 women, reported having children). However, this information is not available and any estimates based on adjustments to the numbers of women in each age group must therefore be made with great caution.

Table 7 gives the distribution of all women 15-49 in the sample by five-year age groups. The age-structure of a growing population should be reflected in our sample by larger numbers of women at younger ages. Women in the two youngest age groups appear to have been systematically under-sampled.

In addition, we have no information confirming that these younger women represent a random sample of single and married women. It is quite likely that ever-married women were under-sampled in these age groups in order to achieve the quota of single women which was set for each cluster. Comparing proportions ever-married in the sample, they match surprisingly well the proportions ever-married in the sample from the Sudan 1979 Fertility Survey. Almost no other information on patterns of marriage in the region is available by which to judge the adequacy of the sample.

This is unfortunate from the point of view of mortality estimation, but since virtually no other information exists in Djibouti, estimates made from these data may be of some use if they are reasonably consistent with information which already exists. The reader should bear in mind the deficiencies brought about by the sampling procedure and should regard the estimates reported only as indicative of the general picture of mortality in Djibouti.

TABLE 7

Distribution of all women 15-49 in the sample by five-year age groups

Age	Number	percent
15-19	767	10.4
20-24	1256	17.0
25-29	1694	23.0
30-34	1269	17.1
35-39	1031	14.0
40-44	778	10.5
45-49	613	8.5
Total	7408	100.0

Missing cases = 55

- Age reporting:-

The age distribution of all women in the sample shows obvious heaping around ages ending in zero or five. Figure 7 illustrates the distribution graphically. The lack of an official document and recall problems of females knowing their exact age led the age reporting to be rounded off around numbers ending in zero or five. This result was expected prior to the survey, whereas females in Djibouti do not remember their exact age and where age is not significant as in other cultures. When grouping the ages, the heaping diminishes and the distribution in 5-year age groups is similar between urban and rural regions (figure 8).

- Reports on children born and surviving:-

An initial examination of the sex ratios of male children born and surviving to female children is presented. The ratio of children in a normally distributed population is between 1.02 to 1.05. The sample survey presents an erratic distribution of sex ratios across the age groups, (Table 8).

The irregular trend indicates underreporting of female births. The sex ratios of children dead follows a similar pattern, female deaths are also underreported, (Table 9).

Figure 9 is a representation of the sex ratios across the five-year age groups. Apart from the youngest and older ages, sex ratios of children born and dead are parallel to one another indicating perhaps a systematic underreporting of female children.

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TABLE 8

Sex Ratios of Children ever born by Five Year Age Groups of Women

Age group	Total Boys	Total Girls	Sex Ratio
15-19	68	72	0.94
20-24	591	565	1.05
25-29	2112	1743	1.21
30-34	2710	2467	1.10
35-39	2897	2474	1.17
40-44	2599	2164	1.20
45-49	2283	2031	1.12
TOTAL	13260	11516	1.15

TABLE 9

Sex Ratios among Children who died by Five Year Age Groups of Women

Age Group	Males dead	Females dead	Sex Ratio
15-19	2	11	0.2
20-24	75	71	1.05
25-29	317	246	1.28
30-34	422	346	1.22
35-39	521	413	1.26
40-44	471	324	1.45
45-49	481	427	1.13
TOTAL	2289	1838	1.25

Average parities of ever married women and all women by age groups are shown in table 10.

Since there is no previous data available on female parities in Djibouti, a comparison with the Sudan 1979 fertility survey is found most appropriate. The average parities in Djibouti shows a pattern matching that of Sudan, among ever married females. (Tables 11 & 12, Figure 10).

When examining the proportions dead of children ever born to all women, (Table 13), an increase in proportions is systematic, except for age group 30-34. This is more likely to be attributable to age reporting of women where shifting to another age group results from rounding the age around zero or five than to conclude that this group underreported deaths more than others. Underreporting of females deaths has been demonstrated previously across all age groups.

TABLE 10

Average Parities Djibouti 1989

	Ever-married	Average parity ever-married	N all women	Average parity, all women	Sudan. 1979 ever-married
15-19	167	.838	767	.183	.8
20-24	752	1.54	1256	.920	2.1
25-29	1462	2.65	1694	2.27	3.5
30-34	1210	4.27	1269	4.07	5.0
35-39	1012	5.31	1031	5.21	5.8
40-44	760	6.27	778	6.12	6.3
45-49	604	7.14	613	7.04	6.3
Missing			55		
TOTAL			7463		

TABLE 11

Proportions Ever-married

	Djibouti sample	Sudan, F.S. (1979)	Ethiopian rural survey (1985)
15-19	.218	.218	.097
20-24	.599	.636	.541
25-29	.857	.890	.925
30-34	.954	.957	.985
35-39	.982	.980	.990
40-44	.977	.985	.996
45-49	.985	.992	.994

TABLE 12

Distribution of Sample Population

Proportion of Total Women, 15-49

	Djibouti sample (weighted)	Sudan Fertility Survey 1979	Ethiopia (Demographic Yearbook, 1986)
15-19	.101	.243	.202
20-24	.162	.168	.173
25-29	.224	.191	.165
30-34	.181	.115	.146
35-39	.145	.135	.126
40-44	.102	.077	.105
45-49	.079	.071	.083
TOTAL	1.000	1.000	1.000

TABLE 13

Proportions Dead of Children Everborn, Djibouti, 1989

Age-group	N (all women)	CEB			DEAD			PROP DEAD
		Male	Female	Total	Male	Female	Total	
15-19	767	68	72	140	2	11	13	.092
20-24	1256	591	565	1156	75	71	146	.126
25-29	1694	2112	1743	3852	317	246	564	.146
30-34	1269	2710	2467	5314	422	346	768	.144
35-39	1031	2897	2474	5370	521	413	934	.174
40-44	778	2599	2164	4763	471	324	795	.167
45-49	613	2283	2030	4314	481	427	908	.210
TOTAL	7408	13260	11515	24910	2289	1839	4128	.166
Missing	55							
	7463							

- Reporting of dates of birth and death among children:-

When mothers reported the age or date of birth of the child, the interviewer checked the source of the information. Out of the 7241 births occuring in the past five years reported in the history sheet, 61 percent of the children had the age or date of birth reported by the mother. The second source of date or age reporting came from an official birth certificate, 28 percent, and finally 10 percent of the reports came from another document most frequently the immunization card, (Table 14)

TABLE 14

Source of Date of Birth or Age reported

Source	Number	Percent
Birth Certificate	2042	28.2
Mother's report	4425	61.1
Other document	741	10.2
Not reported	33	0.5
TOTAL	7241	100

Dates of death were difficult to obtain in the field since registering deaths is almost nonexistent, especially in the case of neonatal deaths. In many instances, interviewers approximated the date or age at death according to the mother's reports. Although interviewers were alerted to this obstacle beforehand during training, the problem lay in actual fieldwork when mothers did not recall the age or date of death and in certain instances were reluctant to speak about the death of a child. However, 0.5% of the children registered had no date of death.

Figures 11 and 12 show the age distribution at birth and at death among children born in the past three years. Age heaping at age 12, 24 and 36 months reflects the approximation of age by mothers where reporting exact age is difficult to ascertain.

- Respondent to the interview:-

In the survey protocol, interviewers were asked to revisit a household when an eligible female living in the house was not present. On the questionnaire, the interviewer checked a box indicating the person responding to the mortality questions. Table 15 shows that 88 percent of the females were present and responded to the questions themselves, 10 percent had another female usually a sister or mother responding to the questions. The pattern of respondents is similar in both urban and rural areas.

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TABLE 15

Respondent during interview

	Urban		Rural		National	
	N	%	N	%	N	%
Woman herself	3502	88	3091	89	6561	88
Another female in household	419	10	240	7	726	10
Husband	55	1.0	132	4	141	2
TOTAL	3976	100	3463	100	7427	100

Although revisits were encouraged, no indicator of call backs was shown on the questionnaire. One is likely to expect no call backs in the rural districts especially in clusters that were scattered where travelling long distances would make revisits impractical.

- Summary of data quality:-

The quality of our data, bearing in mind deficiencies in the sampling procedure, allow estimates of childhood mortality to be made from only the indirect methods of mortality estimation. This is not a surprising outcome, given that women in Djibouti do not place a great deal of importance on dates. Obtaining better dating of births and deaths would obviously require a much larger investment of training, preparation time and fieldwork time and might still not result in significantly better data simply because the women don't know the required information. The indirect methods of estimation are designed for just such situations where measurement error is a significant problem.

RESULTS

These data allow us to apply indirect methods of mortality estimation. The reader is reminded that these results only apply to the sample of women interviewed. They can be seen as indicative of mortality trends in Djibouti, but until further information becomes available, cannot be taken as representative. Each of these methods is discussed below.

a. The indirect estimation of childhood mortality.

The information from mothers on number of children ever born and surviving is used to estimate mortality among children up to age one, two three and five. The method applies fertility and mortality models and locates the time period to which every estimate refers to.

Table 16 shows the indirect national estimates of mortality of children born and children surviving for both sexes. It applies the Trussel regression equations using the west model life table.

TABLE 16

Indirect Estimates of Mortality From Children Ever Born and Surviving (National estimates, both sexes combined)

Age group	CEB	Children surviving	Age X	Mortality Level	Years ago	Q Values for MLCX Q1	Q2	Q5
15-19	140	127	1	16.46	1.39	0.085	0.103	0.120
20-24	1156	1010	2	14.64	2.53	0.107	0.132	0.155
25-29	3852	3288	3	14.21	4.02	0.113	0.139	0.164
30-34	5168	4400	5	14.63	5.74	0.107	0.132	0.155
35-39	5370	4436	10	13.91	7.64	0.117	0.144	0.170
40-44	4763	3968	15	14.79	9.90	0.105	0.129	0.152
45-49	4314	3406	20	13.64	12.81	0.120	0.149	0.177
Average mortality level:				14.6		0.108	0.132	0.156

TABLE 17

Indirect Estimates of Mortality From Children Ever Born and Surviving

(National estimates, male children)

Age group	CEB	Children surviving	Age X	Mortality Level	Years ago	Q Values for ML Q1	Q2	Q5
15-19	86 (85)	66	1	22.39	1.39	0.027	0.029	0.032
20-24	591	516	2	15.05	2.47	0.111	0.134	0.156
25-29	2112	1795	3	14.41	3.86	0.119	0.145	0.169
30-34	2710	2288	5	14.63	5.48	0.116	0.141	0.164
35-39	2897	2376	10	13.94	7.29	0.125	0.150	0.178
40-44	2599	2128	15	14.42	9.47	0.119	0.141	0.167
45-49	2283	1802	20	13.84	12.40	0.127	0.151	0.178
Average mortality level=				15.53		0.104	0.126	0.146

The trend over time shows no real change in childhood mortality levels in Djibouti during the past 15 years. Fluctuations in the level probably reflect irregularities in the reporting by age of mother, but do not show a significant fall in mortality, which remains very high. The estimate based on reports of 15-19 year old women must be excluded from the analysis because numbers of women and children everborn in this age group are so small. Because no downward trend is apparent, we can take an average estimate based on reports of male deaths to all women above the age of 19 to get a minimum level of mortality centred approximately 6.8 years ago.

The mortality estimate for Q1, Q2 and Q5 (children dying by age 1, 2 and five respectively) after averaging and excluding the youngest age group gives 120 for Q1; 144 for Q2 and 169 for Q5. One must note that these are to be regarded as minimum estimates for reasons due to reporting of data, and inadequate source of external data to compare the results with. We know from reports of previous study carried out in Djibouti city alone reported that infant mortality was calculated to be 200 per 1,000 in 1985. However the methodology of the study is questionable because a fixed time reference of one year (between 1984 and 1985) was fixed to count number of births and deaths occuring in that

same period. Using a time reference as one year carries with it a set of errors which can overestimate or heavily underestimate mortality.

For those reasons, one can say that the 1989 review produced results of infant mortality as low as 120 per 1,000 and can be 15 percentage points higher as 140 per 1,000. In its 1989 "State of World's Children", the United Nations population division reports an infant mortality rate for Djibouti of 123 per 1,000. Therefore, the results fit the projected estimates, but show no rapid decline as observed in countries in the region.(Figures 13, 14 & 15).

b. The preceding birth technique.

The birth history form (see questionnaire A) asked the mother to list the last three births she has had. This allows for the calculation of the preceding birth technique by selecting mothers who gave birth to a child in the past two years. The method calculates a probability of dying before age two years which is closer to the time of the survey. In this study a q value is calculated by obtaining the mean age of the last child, the mean birth interval between the last and the previous birth and finally the proportion of preceding births who have died.

A q(2.38) is calculated which equals 0.8 i(the mean birth interval) plus a (the mean age of the last child). The mean birth interval is equal to 27 months and the average age is 11 months. The proportion of preceding children dead is 0.097 or 9.7% of preceding births born 24 months prior to the survey date were dead. The q(2.38) refers to 16.5 months before the survey or 1.4 years ago.

Using the logits method of interpolation and applying the Brass General Standard model life table which implies an infant mortality rate of about 150 per 1,000, we calculate a mortality level alpha for this population. By interpolation, we get values of Q1, Q2 and Q5 referring 1.4 years ago. The low estimates produced from the preceding birth technique indicate that deaths were missed and that cases had to be dropped from the calculations where data on the birth or age of the last child was missing. The long birth interval (27 months) between the last and the preceding birth reflects that interviewers did not probe the mother to identify any births or deaths occuring during that interval.

The estimate calculated for Q(2) using the Preceding Birth Technique of 90 per thousand centred about 2 years before the survey compares with a value of Q(2) from the Children Everborn and Surviving method of 140 deaths before age two per thousand live births centred about 7 years ago.

It is unlikely that childhood mortality in Djibouti has suddenly dropped by 50 deaths per thousand live births. The more likely explanation for this discrepancy lies elsewhere.

First, the question upon which it is based may not have been clear to both the interviewer and to the respondent. In this survey, which had to be conducted in four languages, 2 of which are unwritten, it is likely that difficulty in posing the question properly resulted in some, perhaps many, women telling about only the preceding child who was alive.

Second, the fact that many of the interviewers were males, and the attempt to obtain dates of birth and death in a place where women did not readily know these things may have resulted in a large number of women reporting only the last three living children in the short birth history, for whom at least an age could be guessed by her or by the interviewer. In future such surveys, where it is known that ages and dates are hard to obtain, it may be preferable to ask only about the date of the last live birth and about the survival status of the preceding child, omitting further more demanding and confusing questions as are found in the birth history.

Third, women in Djibouti may also have been reluctant to discuss individual deaths with the field-workers, especially those which occurred more recently. The degree to which respondents will co-operate depends a great deal upon the attitude of the interviewer and the time and care spent explaining the purpose of the survey to mothers.

For these reasons, aggregate reports on total children everborn and total surviving are the best source of information in these data for estimating childhood mortality.

DISCUSSION OF FINDINGS

The data shows that there is no indication of a sharp decline in mortality since the past fifteen years.

The indirect estimates provided us with figures, that can be regarded as minimum estimates. The national figures for male children only (averaged) gave us a Q(1) value of 120, a Q(2) value of 144 and a Q(5) of 169 per 1,000. These figures are centered about 7 years ago. The UN population division presented an IMR figure of 123 per 1,000 for 1989 (SOWC, 1989). This is in line with the results obtained from the survey.

We must also bear in mind the sampling technique applied in the field which renders the data limitations in being representative

D. MATERNAL MORTALITY

The survey addressed females in the child bearing age (15-49) to provide information on the number of sisters who are over 15 years of age (presumed to be the age of exposure to the risk of pregnancy) and how many have survived. In case a sister over fifteen had died, the respondent was asked if the death was pregnancy related.

Using the indirect estimation of maternal mortality, the data provided us with 7377 respondents, a total of 15,753 sisters over 15 years and 374 maternal deaths (Table 18). The overall risk of dying from a pregnancy related death among females 15-49 years was found to be 0.49. This also means that one in every 20 females dies of a pregnancy related death.

The Maternal Mortality ratio was calculated based on a total fertility rate of 6.8. It resulted in 740 maternal deaths per 100,000 live births (Table 19). This high figure of MMR draws further attention to the need to improving prenatal health care, identifying maternal risk factors and developing a tool to identify high risk mothers.

TABLE 18

Maternal Mortality Estimates, Djibouti, 1989

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Age-group	No. of female respondents	No. of sisters > 15	Maternal deaths	Adjustment factor	Sv units exposure	Life-time risk
15-19	761	1285*1674	15	.107	179	.084
20-24	1252	2486*2754	37	.206	567	.065
25-29	1694	3672	61	.343	1259	.048
30-34	1269	2927	67	.503	1472	.046
35-39	1028	2279	71	.664	1513	.047
40-44	769	1770	60	.802	1419.5	.042
45-49	608	1334	63	.900	1201	.052
TOTAL	7377	15753	374		7610.5	.049

* Average no of sisters, women aged 25-49, 2.2

q(w) lifetime risk = .049

That is, about 1 woman in 20 (5%) dies of pregnancy-related causes during her reproductive years.

TABLE 19

	(8) No. of sisters >15 died	(9) Prop. dead of sisters dying of maternal causes	(10) Prop dead of sisters >15
15-19	56	.267	.033
20-24	131	.282	.048
25-29	243	.251	.066
30-34	257	.261	.088
35-39	263	.270	.115
40-44	256	.234	.145
45-49	244	.258	.183
TOTAL	1450	.258	.092

Taking the TFR = 6.8

MM ratio = 1 - [Pr (survival) 1/TFR]

= 1 - [e (2n Pr survival/TFR)]

or = 1 - [e 1/TFR x 2n Pr survival]

Lifetime risk = .049 therefore 1-.049 = .951 Pr surviving

TFR 6.8

MM ratio = 1 - [e 1/6.8 x 2n (.951)]

= 1 - [e -.0073884]

= 1 - (.9926) 1-.9926

= .0074 or 740 maternal deaths per 100,000 live births

X. CONCLUSIONS AND RECOMMENDATIONS

The Djibouti survey has provided an additional piece of information that is important for the Ministry of Health in Djibouti in planning its future for its mothers and children.

Keeping in mind the quality of data and sampling, we can conclude the following:-

1. Child mortality does not show a decline in the past ten to fifteen years.

2. The averaged indirect male mortality is in line with the United Nations'most recent estimate of infant mortality. The survey gave 114 while the UN published an estimate of 123 in 1989.

3. The underreporting of females throughout all ages, draws further attention to further investigation whether a sex differential exists in child care practices. We were not able to detect any differences between male and female mortality.

4. The observed heaping in the age distribution of the women in te sample sets future surveys to use duration of marriage instead of exact age for the indirect estimation of mortality.

5. There is no difference between urban and rural areas in the mortality pattern.

Recommendations:-

1) To improve reporting of age and death registration. A mini-census through the primary health care system can be developed to track births and deaths in certain areas.

2) The high maternal mortality ratio is exceedingly high. Further investigation must be carried out to undertand better the magnitude of the problem. Also, tools within the sector of prenatal care must be further developed to detect mothers at risk, as part of the safe motherhood initiatives.

3) Utilize if available, the census data to compare and add information to the survey carried out on child mortality.

4) Add the brass questions on children born and surviving in future censuses and cross-sectional surveys whenever feasible and realistic, in tracking mortality in Djibouti.

F I G U R E S

AGE AT IMMUNIZATION

DPT1/OPV1

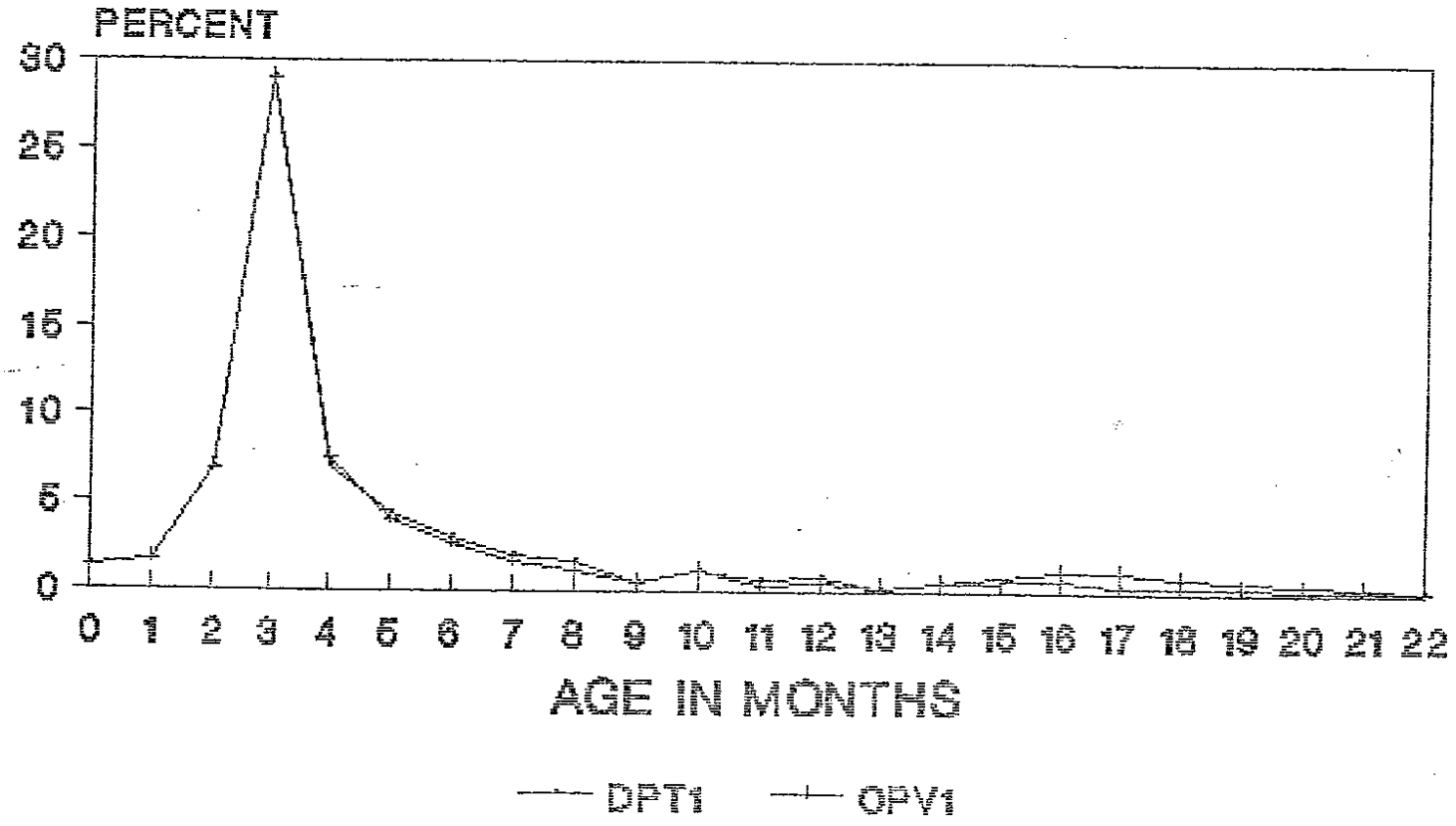


FIGURE 1

AGE AT IMMUNIZATION

DPT2/OPV2

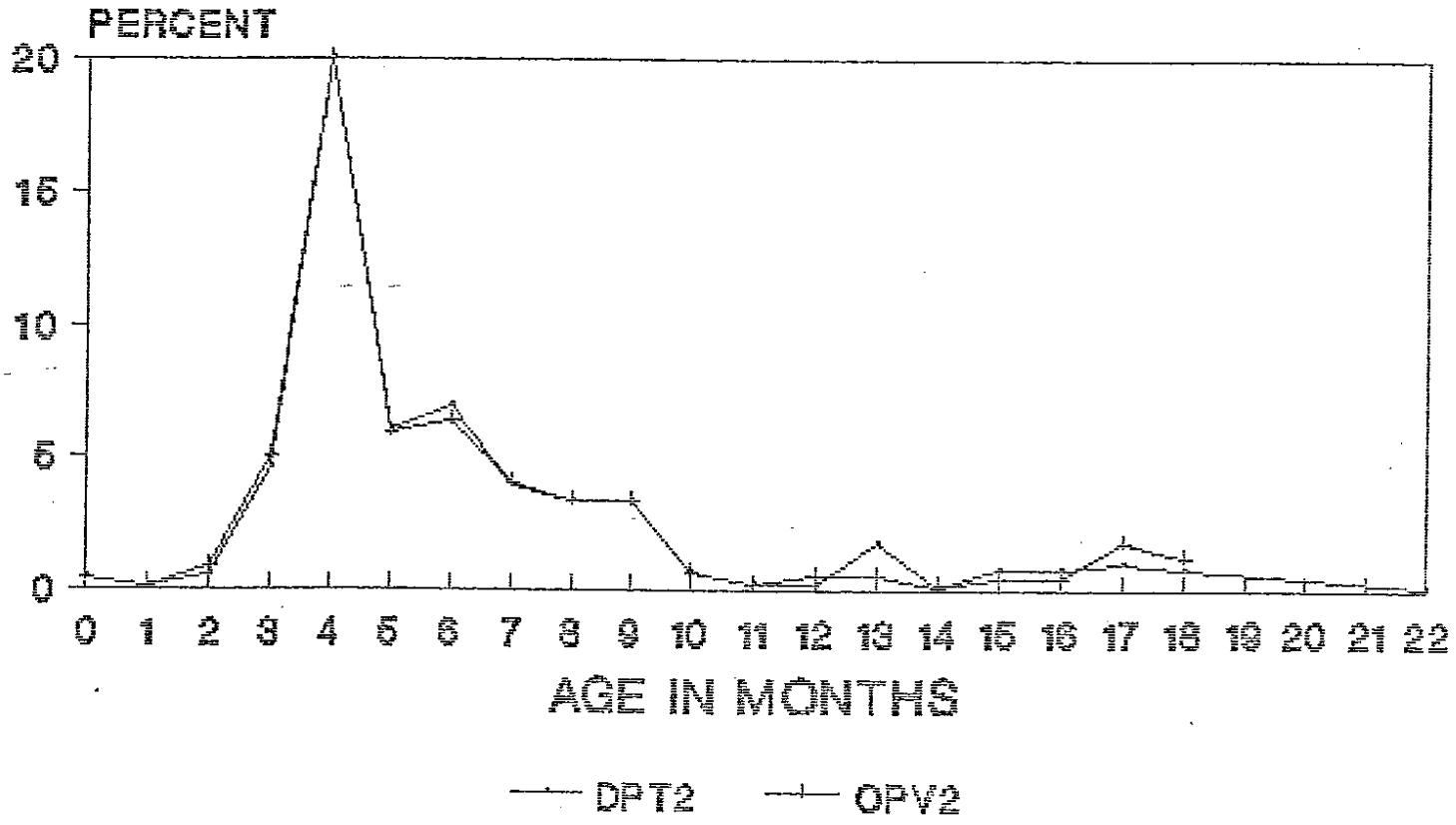


FIGURE 2

AGE AT IMMUNIZATION
DPT3/OPV3

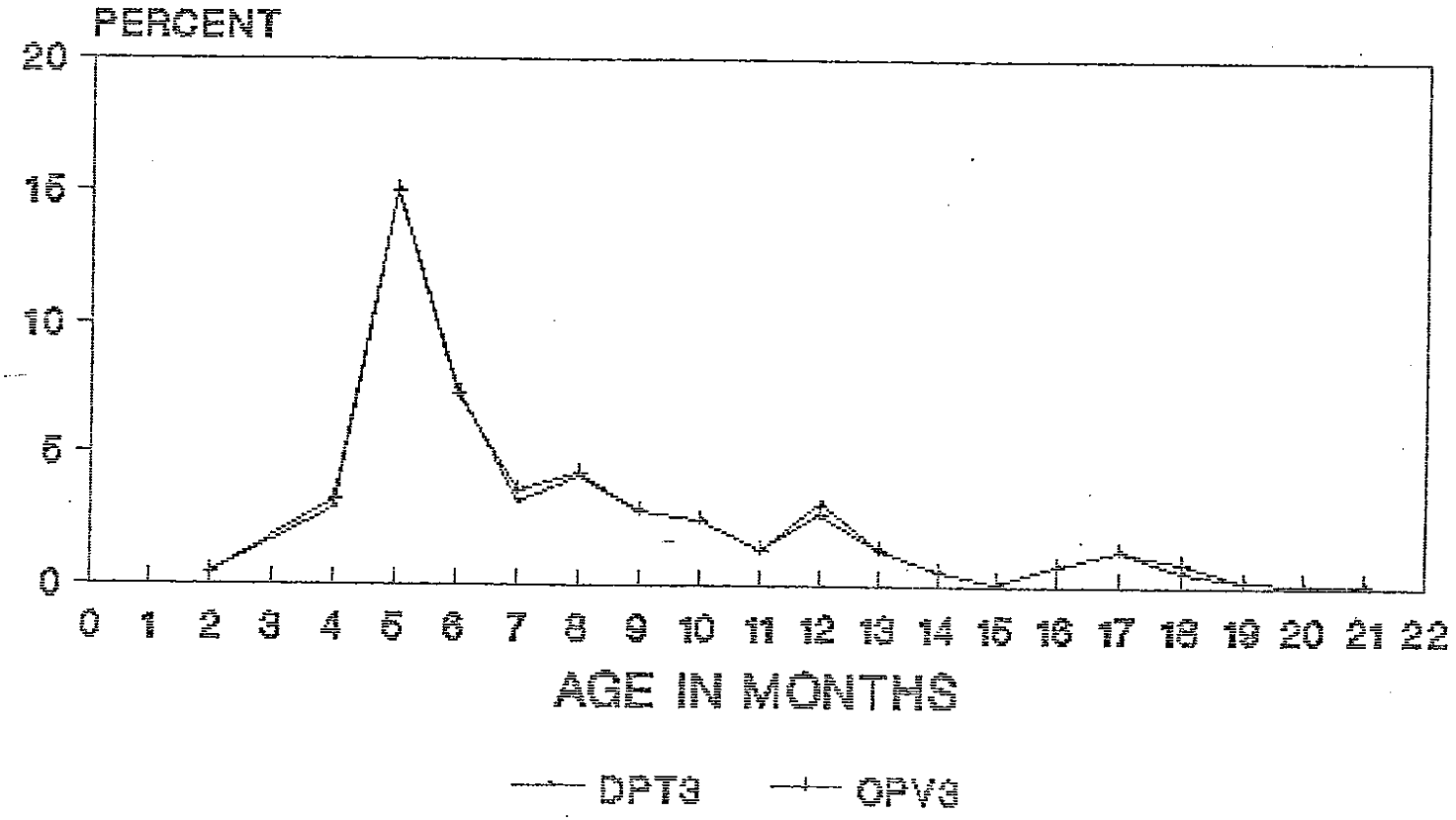


FIGURE 3

AGE AT IMMUNIZATION

MEASLES

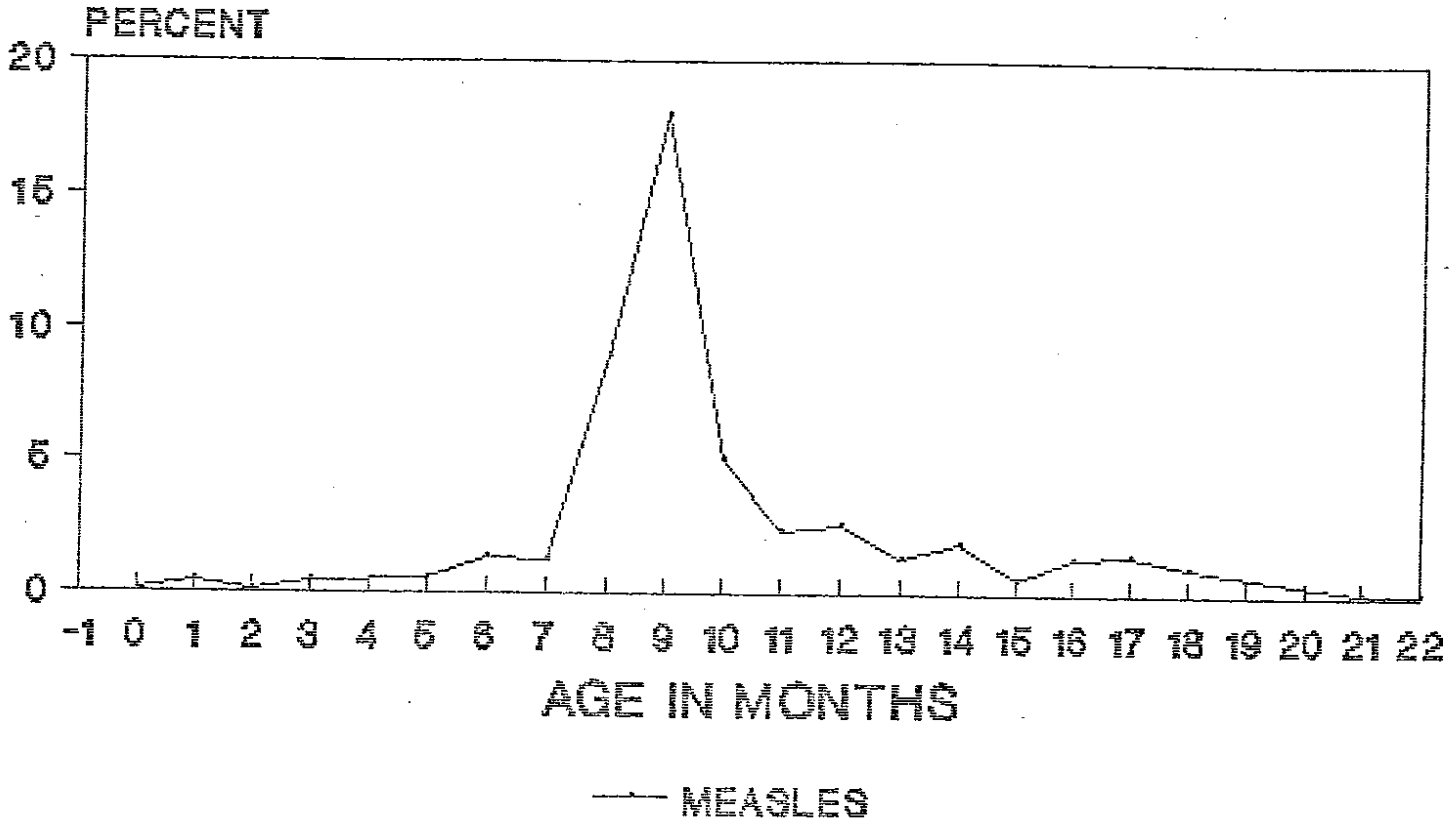


FIGURE 4

AGE AT IMMUNIZATION

BCG

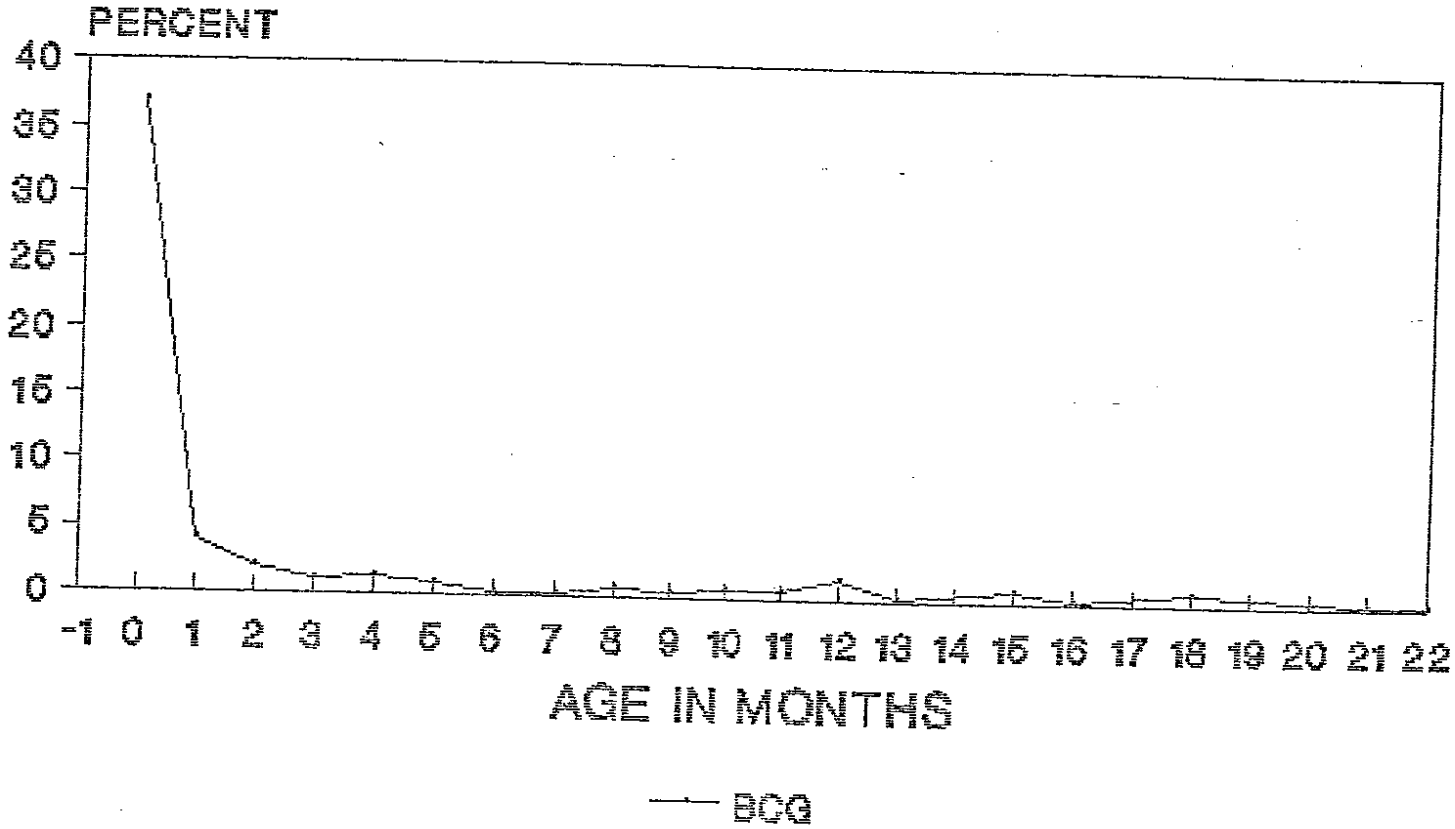


FIGURE 5

TREATMENT OF DIARRHOEA

NATIONAL

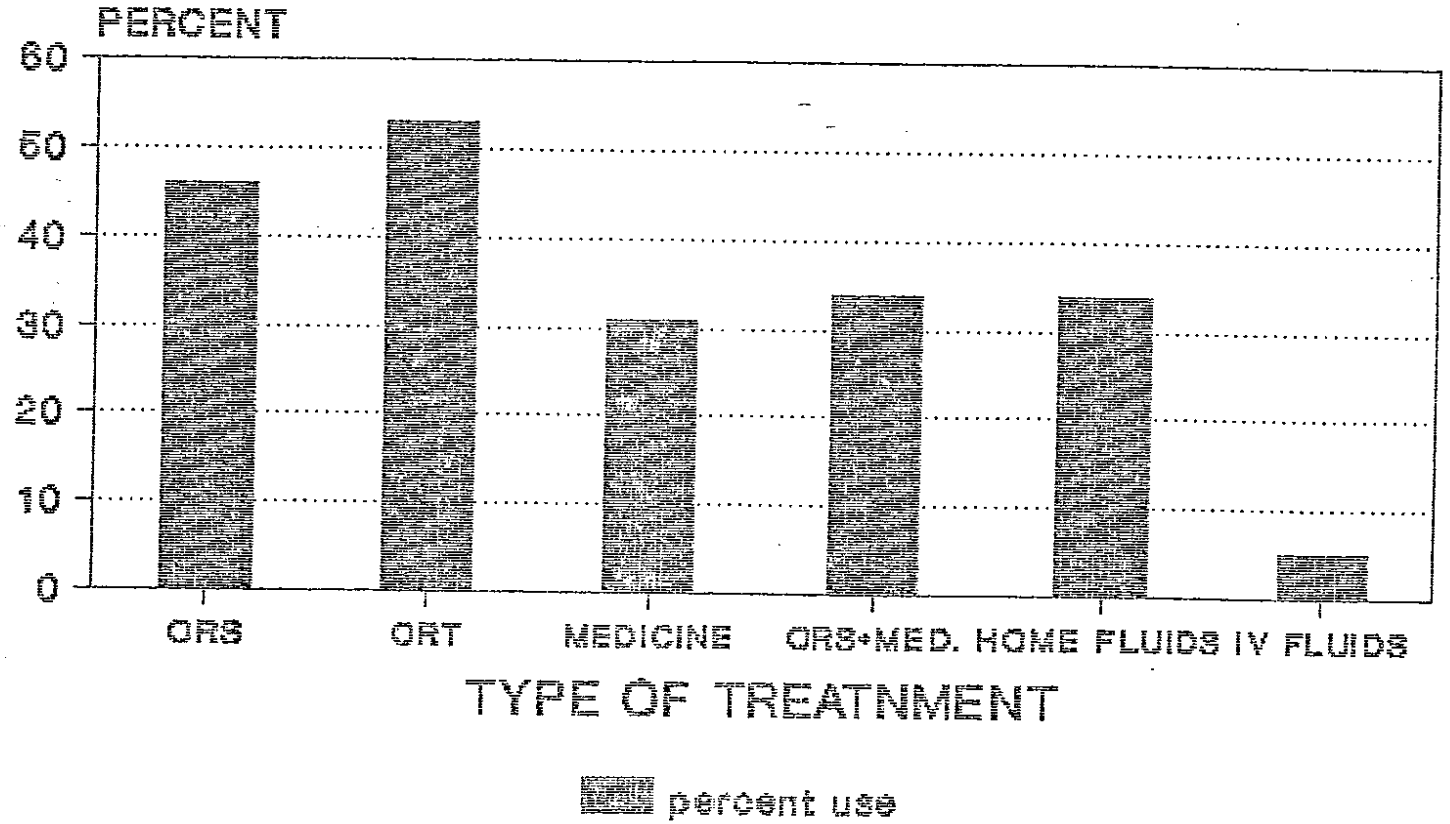


FIGURE 6

WOMEN'S AGE REPORTING

Single Year of Age

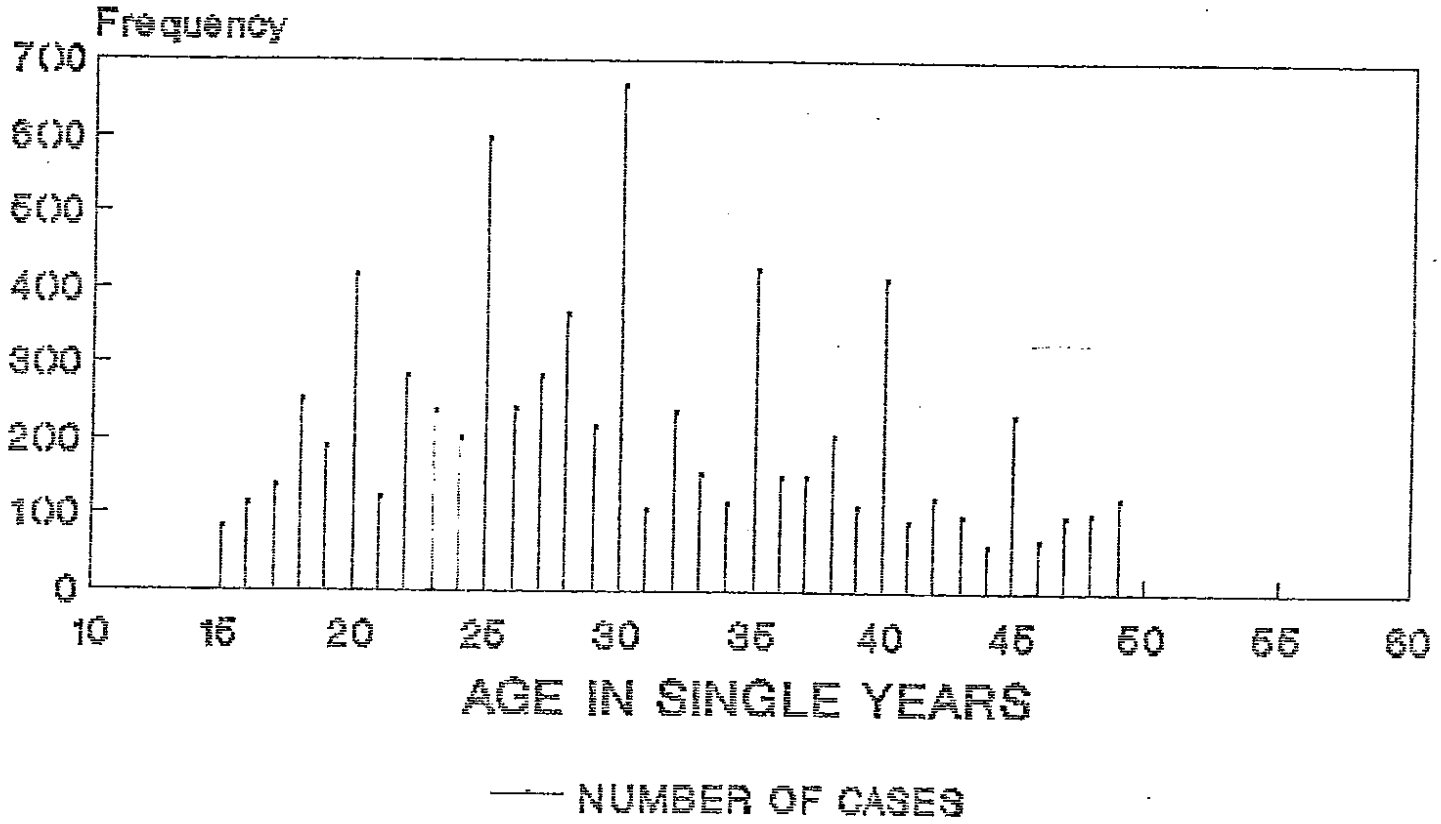


FIGURE 7

Age Distribution IN REGIONS
ALL WOMEN

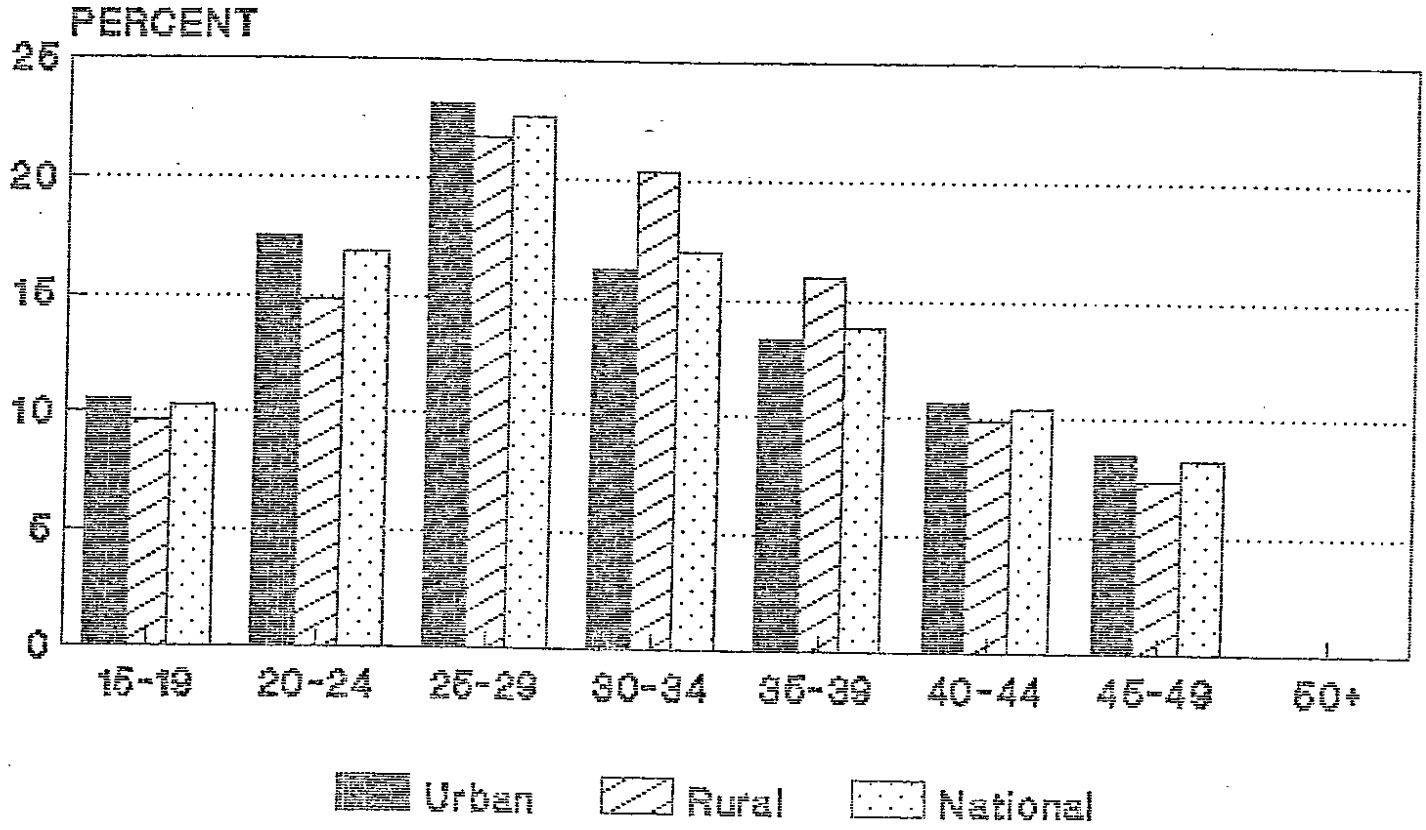


FIGURE 8

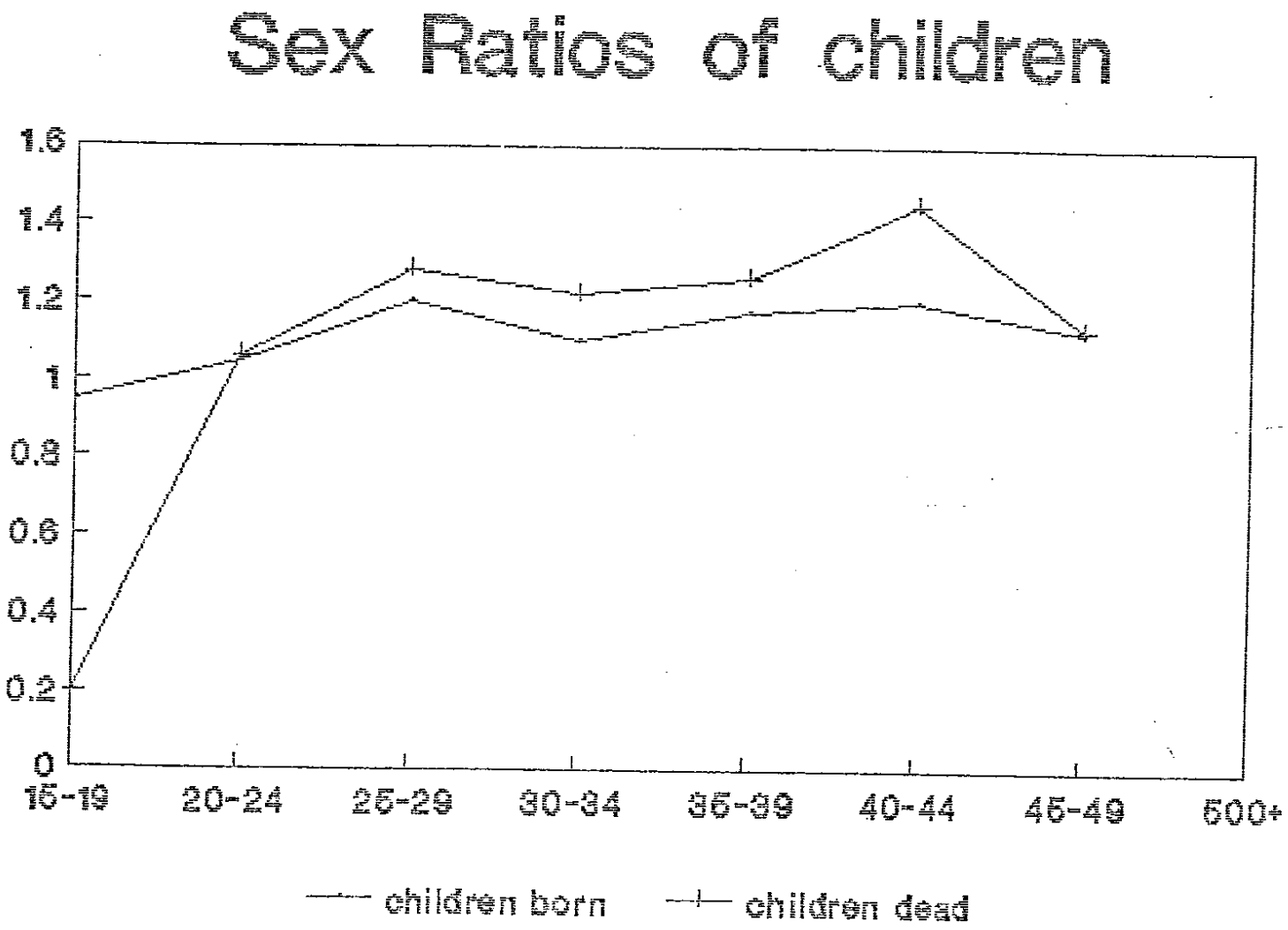

Sex Ratios of children
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
15-19
20-24
25-29
30-34
35-39
40-44
45-49
500+
children born
children dead

FIGURE 9

Proportions Ever Married

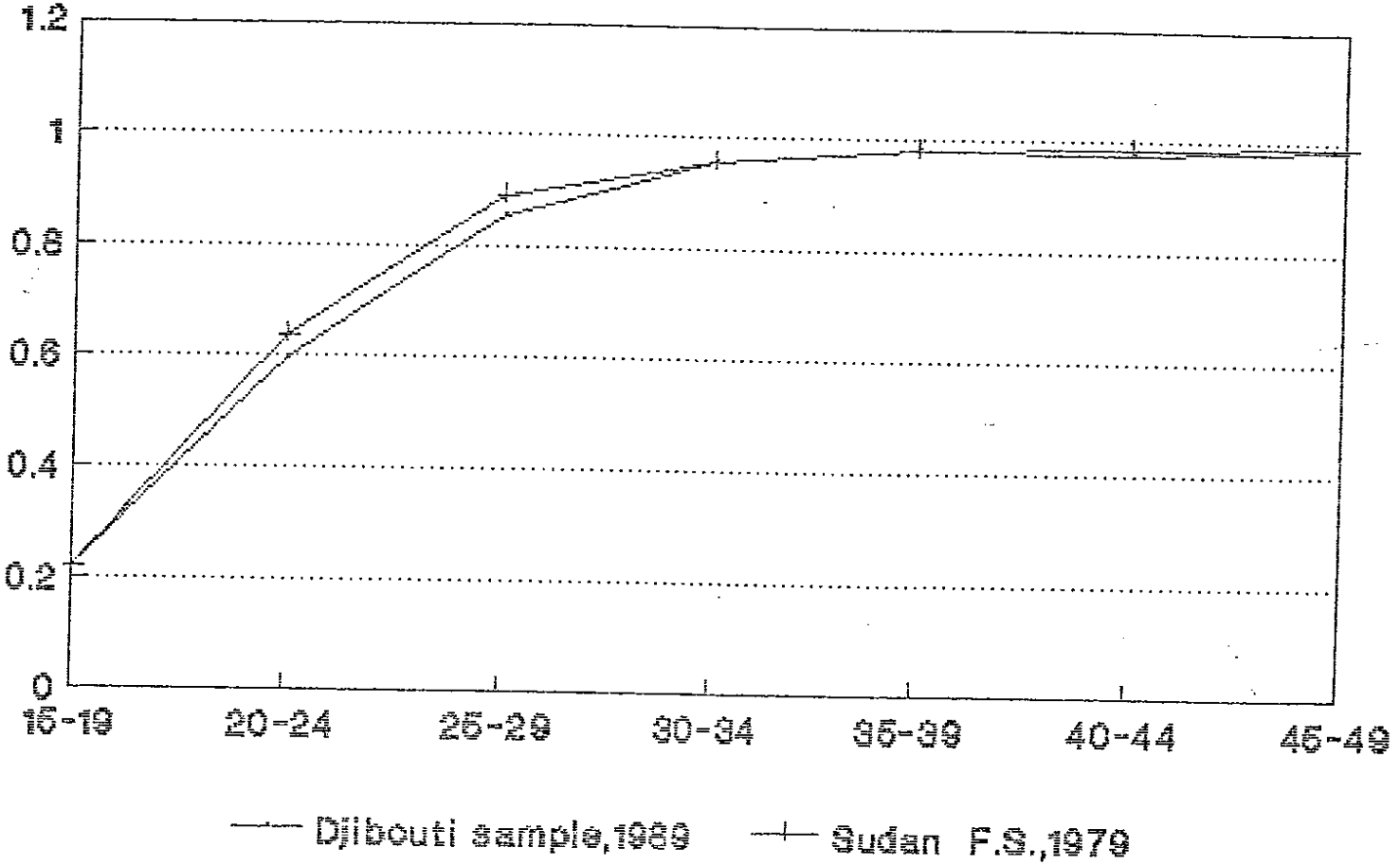


Figure 10

Age Distribution of Children

Born in the past three years

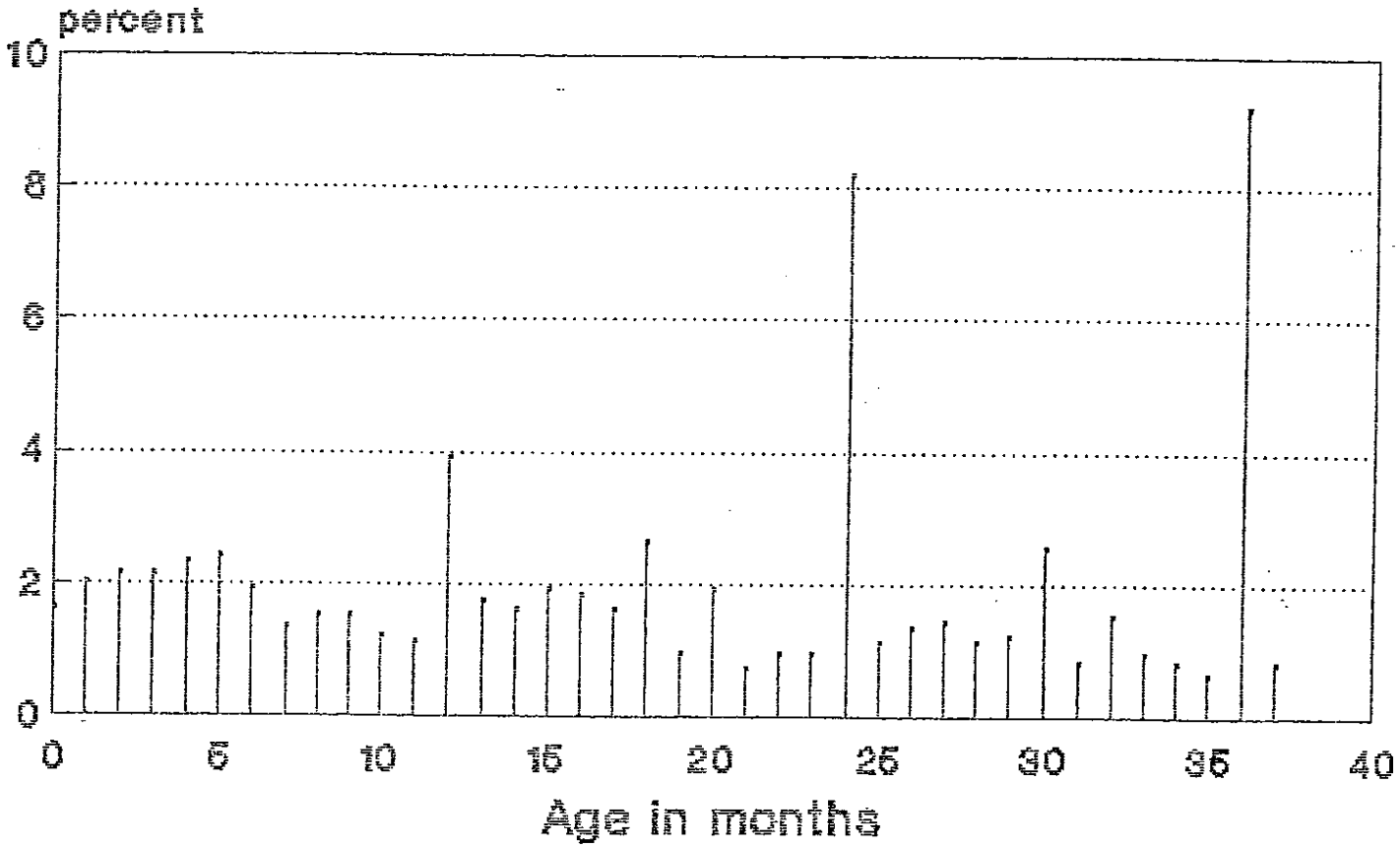


Figure 11

Date of death reporting
Children dying in last 5 years

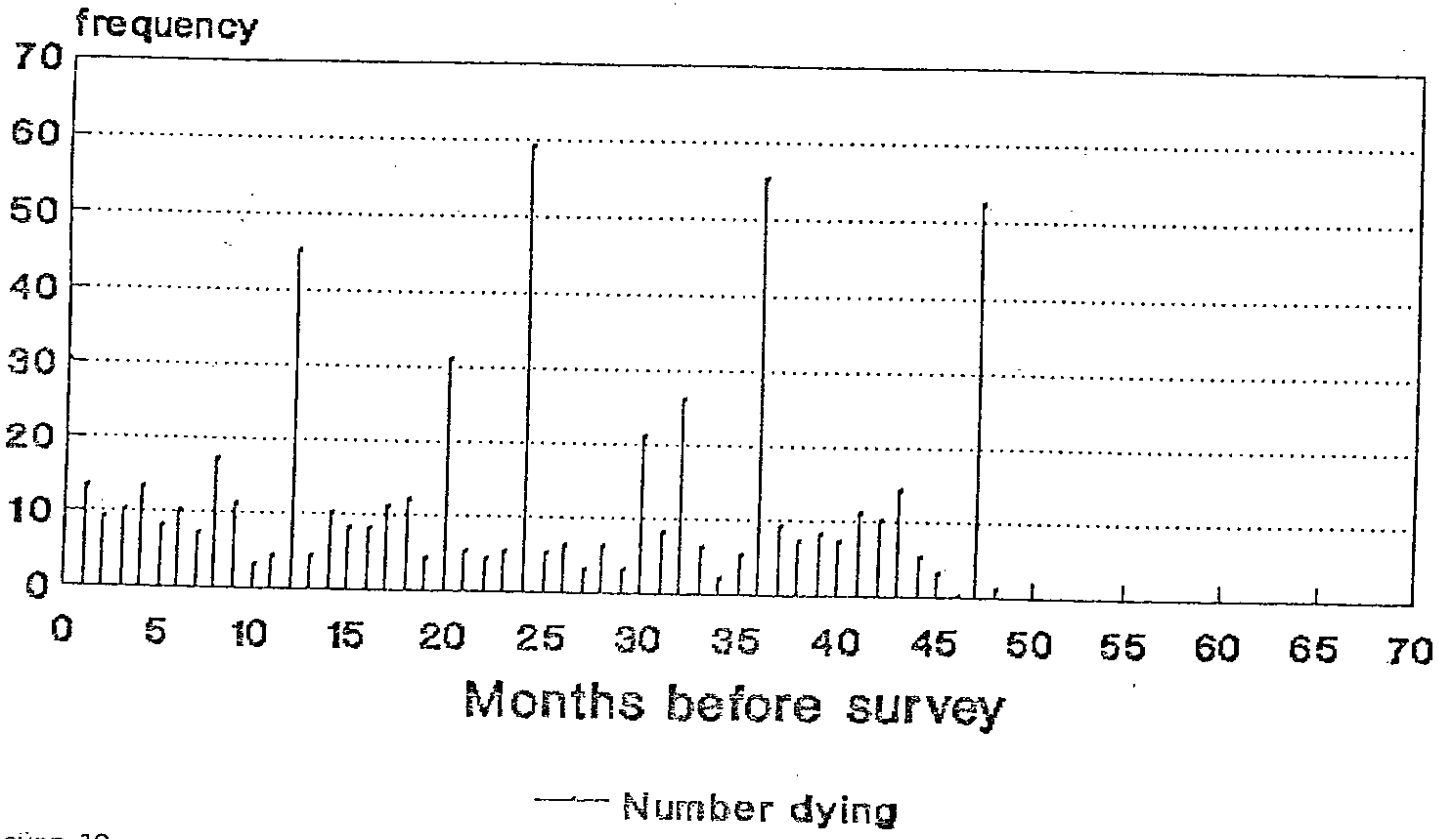


FIGURE 12

source: 1989 Djibouti Mortality Survey

Infant and child mortality trends

NATIONAL ESTIMATES, MALES

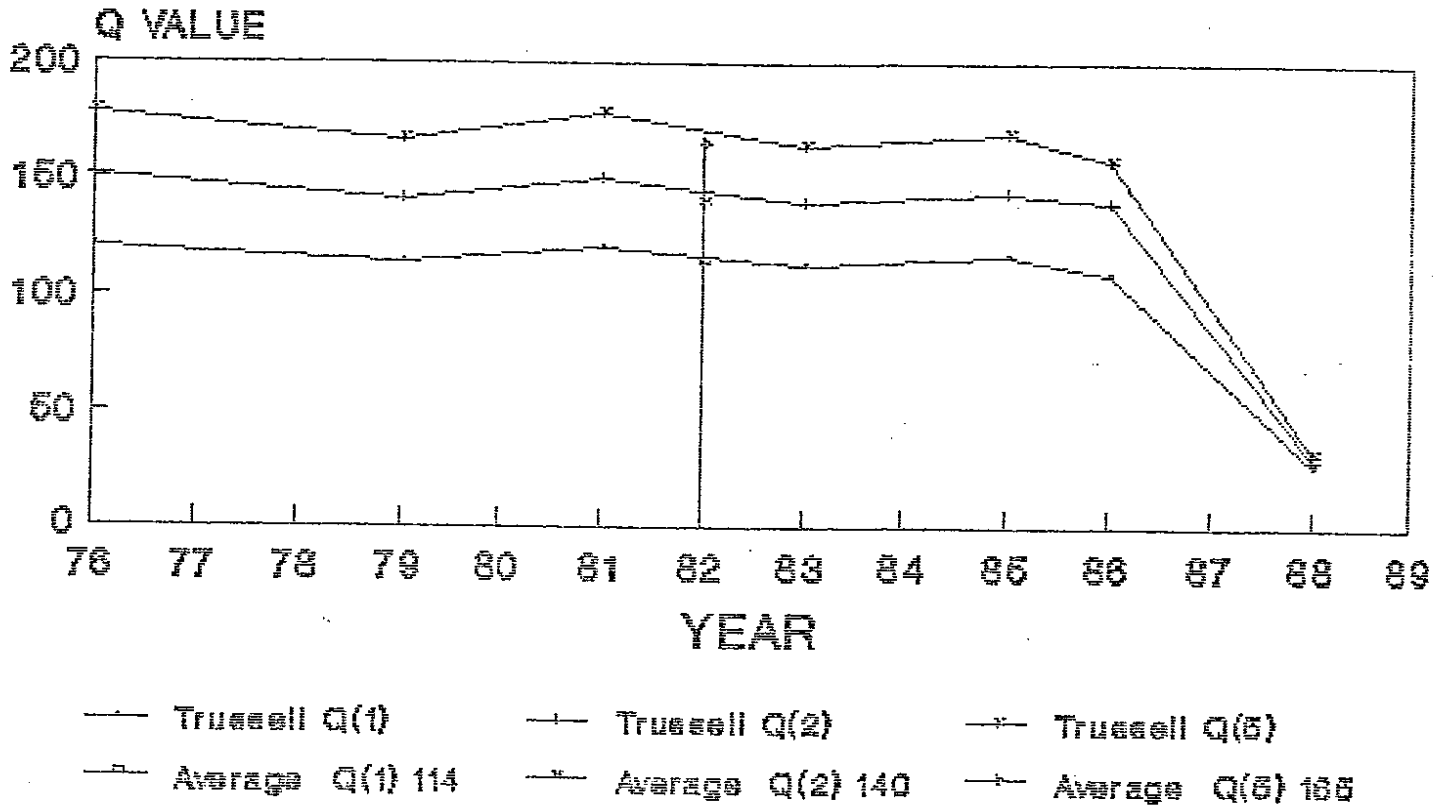


figure 13

Under Five Male Mortality in Djibouti
Children Everborn and Surviving Estimate

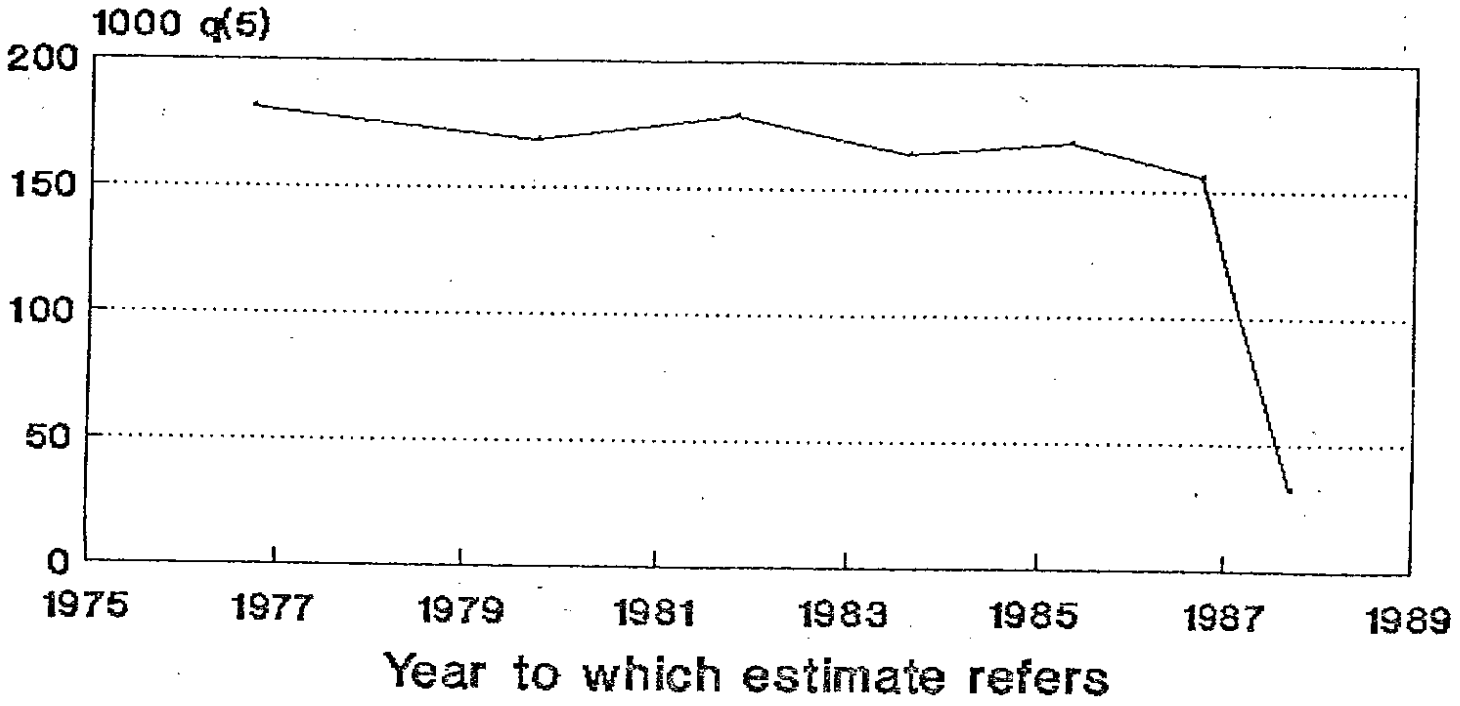


FIGURE 14

source: 1989 Djibouti Mortality Survey

Under Five Male Mortality in Djibouti
Children Everborn and Surviving Estimate

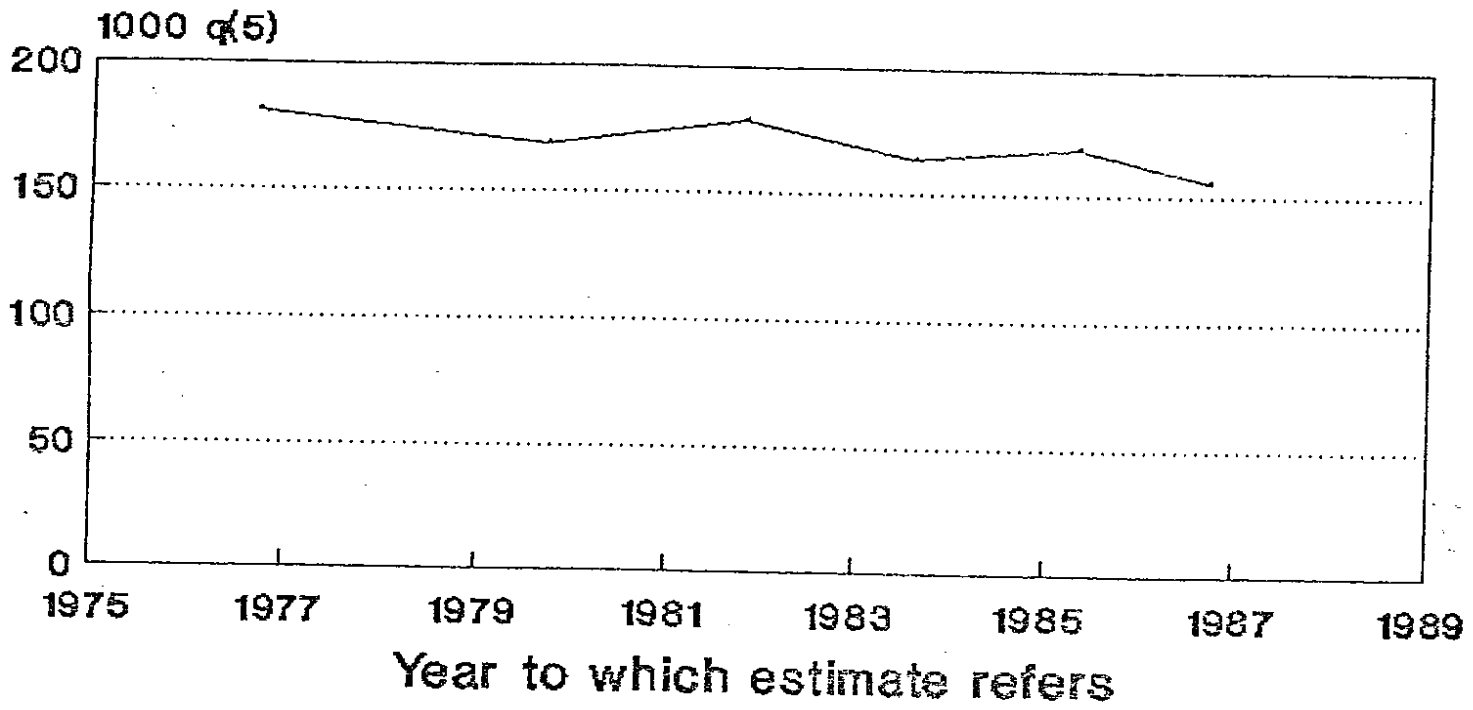


FIGURE 15

source: 1989 Djibouti Mortality Survey

APPENDICES

A. QUESTIONNAIRES

QUESTIONNAIRE A

REPUBLIC OF DJIBOUTI
INFANT AND MATERNAL MORTALITY QUESTIONNAIRE

Instruction

- Use a separate form for every female between the age of 15 and 49 years.
- If there is more than one female in a household, begin filling out the form with the eldest first.
- Give each woman a serial number

Interviewer No.: Cluster No.:

Supervisor: _____ Date of Interview:

Woman No.: Quarter/District: _____

1.	Respondent: 1 Woman herself 2 Another female in the household 3 The husband		
2.	Age of the women:		
3.	Immunization against Tetanus:		
	TT1 shot	Yes	No
	TT2 shot	Yes	No
	TT3 shot	Yes	No
4.	How many sisters have you ever had who were born to your mother?		
5.	How many of these sisters reached age 15, including those who are dead?		
6.	How many of these sisters reaching age 15 are alive now?		
7.	How many of these sisters reaching age 15 are dead?		
	Interviewer: Check that the sum of questions 6 and 7 is equal to the total number of sisters reaching age 15 (Question 5)		
8.	How many of these dead sisters died while pregnant, or during childbirth or in the six weeks after delivery, an abortion or a miscarriage?		

9. How many sons you have given birth to who are now living with you?

10. How many sons have you given birth to who are living elsewhere?

11. How many daughters you have given birth to are now living with you?

12. How many daughters you have given birth to are now living elsewhere?

13. Have you ever given birth to a son who later died, even if he lived only a short time?
    Yes 1 (Go to Q.14) No 2 (Go to Q.15)

14. How many of your sons have died?

15. Have you ever given birth to a daughter who later died, even if she lived only a short time?
    Yes 1 (Go to Q.16) No 2 (Go to Q.17)

16. How many of your daughters have died?

17. How many live births have you had in all?

18. Sum the answers to Questions (9,10,11,12,14,16) Record the total, check to see that your total matches the woman's response to Question 17. If there is a difference, go back over the questions with her and make the necessary corrections

---

Birth History Form

Interviewer:

Now ask the mother for the birth certificates and vaccination cards of her children, explaining that you need dates of birth and vaccination information available on the card. Ask the mother about her last three recent births. Make sure to begin with the latest and/or youngest. This can include live-births that later died. Make sure to include all births and not only those who are currently living. Go back in time from the present and backward.

Note on Birth History Form

1. When no birth certificate is available record the completed age of the child in days, months or years. For example, 40 days, 2 months or 3 years.

2. If any of the last three births is a twin, record the information in the last column. Record the number, to identify which birth it is referring to.

3. If there is a differenence of 3 years or more between any two births, ask the mother if she has had any live births (deliveries) including children who later died between those two births.

B I R T H H I S T O R Y F O R M

		Last Birth No. 1	Next-to-last Birth No. 2	Second from Last Birth No. 3	Twin No.
1.	Name				
2.	Sex	M 1 F 2	M 1 F 2	M 1 F 2	M 1 F 2
3.	Date of Birth or Age	Day Month Year or Age: _____	Day Month Year or Age: _____	Day Month Year or Age: _____	Day Month Year or Age: _____
4.	Source of Information 1 = Birth Certificate 2 = Other official document 3 = Mother's report only				
5.	Is he/she alive?	Yes 1 No 2	Yes 1 No 2	Yes 1 No 2	Yes 1 No 2
6.	Date of Death or Age at Death	Month Year or Age: _____	Month Year or Age: _____	Month Year or Age: _____	Month Year or Age: _____
7.	Symptoms child had a week prior to death:	Check each answer by YES or NO YES NO	Check each answer by YES or NO YES NO	Check each answer by YES or NO YES NO	Check each answer by YES or NO YES NO
(a)	Fever	1 2	1 2	1 2	1 2
(b)	Rash	1 2	1 2	1 2	1 2
(c)	Diarrhoea	1 2	1 2	1 2	1 2
(d)	Shortness of Breath	1 2	1 2	1 2	1 2
(e)	Convulsions	1 2	1 2	1 2	1 2
(f)	Other, specify				
8.	Cause of Death (family opinion)				
9.	Cause of Death (Opinion of team)				

10. Marital Status of the woman — 1 = Married 2 = Widowed/Divorced 3 = Single

QUESTIONNAIRE C

EVALUATION OF VACCINATED CHILDREN
AGED 12 - 23 MONTHS
BORN BETWEEN 10/2/87 AND 9/2/88

Interviewer No. |___|___| Cluster No. |___|___|

Name of Supervisor: ________________ Date / / ____________

1.	Mother number (as in Page 1)										
2.	Name										
3.	Date of Birth Month Year Age										
4.	Sex										
5.	Vaccination Card	Yes = 1 No = 2									
6.	DPT-1 Date	Yes = 1 No = 2									
7.	DPT-2 Date	Yes = 1 No = 2									
8.	DPT-3 Date	Yes = 1 No = 2									
9.	Polio-1 Date	Yes = 1 No = 2									
10.	Polio-2 Date	Yes = 1 No = 2									
11.	Polio-3 Date	Yes = 1 No = 2									
12.	Booster: DPT/Polio Date	Yes = 1 No = 2									
13.	Measles Date	Yes = 1 No = 2									
14.	BCG Date	Yes = 1 No = 2									
15.	Scar	Yes = 1 No = 2									
16.	Child Fully Immunized	Yes = 1 No = 2									

ENQUETE SUR LA MORTALITE, MORBIDITE ET TRAITEMENTS DES DIARRHEES

QUESTIONNAIRE B

No.du l' enquêteur: ☐☐ No.de Grappe: ☐☐

Nom du superviseur: _____ ☐☐ Date: _____

Remplir une Colonne par Maison Visitée

1.	Numéro de la maison ou son numéro de série dans la grappe.											Total *****
2.	Combien d'enfants de moins de cinq ans dans cette maison? S'il n'y en a pas noter 0 et aller à 7.											
3.	En se renseignant sur chaque enfant (de moins de cinq ans), trouver combien d'entre eux ont contracté une diarrhée au cours des deux dernières semaines (y compris le jour de l'enquête). Enregistrer leur nombre. Pour chaque cas, compléter une colonne des questions 4 - 6 ci - dessous.											
7.	Un enfant de moins de cinq ans de cette maisonnée est-il mort depuis:..... (12 mois) ? Si OUI, répondre en 8 - 10.Si NON,se reporter à 11.											OUI
8.	Les signes ou symptômes suivants se sont-ils manifestés la semaine précédant la mort ? — Fièvre ?											
	— Eruption ?											
	— Diarrhée											
	— Difficulté respiratoire?											
	— Convulsions ?											
	— Autres (préciser) ?											
9.	Selon les gens de la maison, quelle a été la cause de la mort?											***** ***** ***** ***** ***** *****
10.	Selon L'enquêteur est-ce que la mort est "associée" à la diarrhée?											OUI
11.	Y a-t-il eu une naissance dans cette maison depuis: ..... (12 mois). (non compris les mort-nés). ? Si OUI, vérifier que l'enfant a été enregistré dans la question 2 ou 7, selon le cas.											***** ***** ***** *****

Completer une colonne pour chaque cas de diarrhee commence dans les deux dernieres semaines

4.	Numéro de la maison (comme dans 1 ci-dessus)											*****
5.	Quelles boissons l'enfant a-t-il reçues pour traiter sa diarrhée ? — SRO ?											
	— SRO et Médicament ?											
	— Boisson domestique préconisée ?											
	Cas traité par TRO (SRO et / ou boisson domestique préconisée)											
6.	A-t-on traité l'enfant par perfusion intraveineuse ?											

Après avoir rempli une colonne par c[illegible]arrhée, on retournera A 7 ci - dessus.

QUESTIONNAIRE (C)

EVALUATION DE LA COUVERTURE VACCINALE
DES ENFANTS AGES DE 12 A 23 mois
(ENFANTS NES ENTRE 10.2.87 ET 9.2.88)

No du L'enquêteur: ☐☐ Numéro de Grappe: ☐☐

Nom du Superviseur: _____ ☐☐ Date: _____

1.	Numéro de la Mère (Cf. Première page)									
2.	Nom de L' enfant									
3.	Date de Naissance: Mois Année Age approximatif:									
4.	Sexe F 1 M 2									
5.	Carte de Vaccination: Oui - 1 Non - 2									
6.	D. T. C - 1 Date Oui - 1 Non - 2									
7.	D. T. C - 2 Date Oui - 1 Non - 2									
8.	D. T. C - 3 Date Oui - 1 Non - 2									
9.	Polio - 1 Date Oui - 1 Non - 2									
10.	Polio - 2 Date Oui - 1 Non - 2									
11.	Polio - 3 Date Oui - 1 Non - 2									
12.	Rappel DTC, polio Oui - 1 Non - 2									
13.	Rougeole Date Oui - 1 Non - 2									
14.	B. C. G Date Oui - 1 Non - 2									
15.	Cicatrice Oui - 1 Non - 2									
16.	Enfant entièrement Vacciné: Oui - 1 Non - 2									

B. INSTRUCTIONS TO INTERVIEWERS

INSTRUCTIONS TO INTERVIEWERS

Maternal and Infant Mortality Questionnaire (A)

- When you have chosen the direction and have located the first household, introduce yourself and explain the purpose of your visit. Then say that you would like to speak to all the females in the household who are currently living with the household (since a month) and are between the ages of 15 and 49.

- List all the women in the household 15-49. Start interviewing the eldest female in the household and then move to the younger and so on.

- Record your number, each interviewer will be assigned a number.

- Record the name and number of the supervisor.

- Fill in the cluster number and the date of interview.

- Give the woman interviewed a serial number starting from 1 until you have obtained 150 EMW (ever-married-women). The serial number may go over 150.

Q.1 Check with whom the interview took place. Make it as much possible to interview the woman herself. If one of the female members is not present at the time of your visit, record her name, assign her a number and try to re-visit the household when she is present. If on the second or third visit, the female is still not available, then ask the questions from another respondent.

Q.2 Ask the woman about her age in completed years. If for example she says she is almost 20 make sure she has completed 19 years and record that age. In some countries, women tend to round their age around the 5's, zero's and 9's i.e. they may report 25, 30 or 29 more than their actual age.

Q.3 Ask the woman if she received her Tetanus shot. Record YES or NO for the 1st, 2nd and third shots.

Maternal Mortality Questions

- These four questions are aimed to estimate maternal mortality by asking females about the survivorship of their sibling sisters. Therefore, this method is called the sisterhood method. If the woman is not present at the time of interview and you interview another person in the household, ask the proxy respondent about his/her sisters.

Q.4 Question 4 asks on all the sisters a woman has had, who were born to the same mother. Exclude adopted sisters or those not born to the same mother.

Q.5 Question 5 identifies females who have reached the age of 15, which is the age of exposure to the risk of pregnancy.

Q.6 Question 6 asks how many of those who reached the age of exposure (age 15) are still living.

Q.7 Question 7 asks on how many of those sisters reaching age 15 are now dead.

- Make sure that the sum of the answers to questions 6 and 7 is equal to the total number of sisters in question 5. If there is no consistency, repeat the questions from the beginning.

Q.8 If there are dead sisters, ask how many died while pregnant, or during childbirth or six weeks after the end of pregnancy. (This applies to a miscarriage, abortion and stillbirth).
You can use the 40 days after childbirth as a reference point as well.

Infant and Child Mortality Questions

- If a woman has no births, ask all the questions, by putting a zero in the boxes for no children.

Q.9 Ask the woman in the local language on how many boys she has given birth to who are living with her in the household. Make sure that these are her own biological children, do not include children who are currently being raised by the family who are not born to this woman. Record the number of boys in the box.

Q.10 Ask the woman on the number of boys she gave birth to who are living outside the home. Record the number.

Q.11 Ask the same question as in Q.9. on the daughters living at home.

Q.12 Ask the same question on the daughters who are living outside the home.

Q.13 Ask the woman if she has given birth to a boy who later died, even if he lived for a very short time. If she answers yes, go to question 13.

Q.14 Record the number of boys who died.

Q.15 & 16 Repeat the same questions about the girls who died.

Q.17 Ask the woman about her total live births she has had in all and record the number.

Q.18 Sum the answers to Q's (9,10,11,12,14 & 16) and compare the total to the number the woman gave you in Q.17.
If the numbers are different, go over the questions (from 8-15) with her to make sure she did not include or exclude any live births.

Note: A live birth is a delivery which results in a living child who shows a sign of life such as crying or breathing. It excludes still births, miscarriages and abortions, do not include the last 3 mentioned.

Truncated Birth History Form

- Now ask the woman to give you the birth certificates and vaccination cards of her last 3 births (even if any of them had died).

- Go to the sheet on the last three births.

Q.1 Ask the mother about her last birth she has had. Record his/her name in Q.1

Q.2 Record the sex of the last child Q.2

Q.3 Date of Birth

1. If a birth certificate is available, record the month and year of birth. If you have any doubt about the accuracy of the Certificate, ask the mother about the age of the child.

2. If no certificate is available ask the mother about the completed age of the child in exact years, months or days. For example, if the child is 40 days record 40 days. If he/she is 18 months record 18 months. If he/she is 3 years and a 1/2 record 3 years and 6 months.

3. If the mother cannot give you an exact age use the reference calendar on when the child was born.
Refer to important seasonal events such as the hot summer season to locate the month of the year the child was born in.

Q.4 Record the source of information concerning the date of birth.

Q.5 Ask if the child is currently living or not. If the child died - move to the date of death.

Q.6 Ask the mother about the month and year in which the child died. If she does not recall the date of death, ask her how old the child was when he/she died. If no age is available probe for the date using the reference calendar.

Q.7 Ask the mother if the child suffered any of the symptoms listed a week before his death. Check YES or NO for every symptom listed. If a symptom is not listed record it as reported by the mother.

Q.8 Ask the mother's opinion on why the child died and write in the opinion.

Q.9 Record your opinion about the cause of death.

- Now repeat the questions on the preceding birth - Make sure to go back in time and not to record the births from the eldest to youngest.

- Ask about the second before last birth, and go over the questions about this birth.

- If there is a 3-year difference or more between each of the births, probe the issue further and ask the mother if she has had any birth in between.

- If any of the last three births is a twin record the information about the twin in the last column. Put the number on top to indicate which birth it is referring to (1,2,3).

- Now ask about the woman's marital status

- If the woman has any children below the age of 5 years, move to the CDD questionnaire. Children born after 10/2/1984 must be included in the CDD questionnaire.

Definition of a Household

A household is defined as one, where all members live under the same roof and share the kitchen.

- Continue interviewing females until you get 150 EMW and not a total of 150 females. You may get over 150 sheets when single women are encountered.

- Continue locating children under 5 for the CDD questionnaire. Stop when you reach 50 children or more.
  If the number of women is not complete keep moving in the cluster until you get the 150 EMW women.

- For the EPI, you need seven index children between the ages of 12-23 months born between 10/2/1987 and 9/2/1988.

INSTRUCTIONS FOR FILLING OUT CDD

Q.1 Enter 1 for the first household visited, 2 for the second, etc.

Q.2 Enter all children under 5 years old living in the household, even if they are not the children of the respondent.

Q.3 For each child <5 individually, ask whether or not the child had diarrhoea starting in the past 2 weeks. Use the term for diarrhoea agreed on during training. Do not define diarrhoea any further unless the respondent asks or you are in doubt about her answer. If diarrhoea must be defined, it is 3 or more abnormally loose stools per day, with or without blood. On the questionnaire, enter the total number of children <5 who have had diarrhoea starting in the past 2 weeks.

Q.4 For each diarrhoea case starting in the past 2 weeks, repeat the case's house number from b1 above. Record answers to b5 and b6 under the appropriate house number.

Q.5 Ask this as an open question. (In other words, do not suggest the possible answers in your question). The respondent may mention one or more fluids. Indicate in the spaces provided if ORS, or ORS and medication, or the recommended home fluid was given.

At the end of 5, there is a space for the interviewer to indicate if a case was given ORT (that is, ORS and/or the recommended home fluid).

Q.7 As agreed during training, insert a well-known event to define the 12 month period, for example, the visit of the President to the districts in Djibouti in February 1988.

Include any child who was less than 5 years old at the time of death. Ask 8 - 10 for each of these deaths, recording answers for each death in a separate column.

Q.8 Ask about each sign or symptom individually. Record all signs and symptoms described by the respondent, writing any additional symptoms mentioned (e.g. cough) in the "other" space.

Q.9 Write the respondent's opinion. This is mainly to discover causes of death which are obviously unrelated to diarrhoea (e.g. accidental death).

Q.10 A death is considered "diarrhoea-associated" if diarrhoea occurred in the week before death, and there was no obvious cause of death unrelated to diarrhoea (e.g. an accident). The surveyor should record his opinion.

Q.11 This question is a check on the completeness of answers to 2 and 7. If the baby is alive and still living in the household, make sure it was counted in 2. If the baby has died, make sure it was included in b7 and that 8 - 10 were asked about the death. Stillbirth means that the baby was born dead, that is, did not move or cry after birth.

DECIDE ON THE TIME PERIOD TO BE COVERED BY THE SURVEY

Time Period for Diarrhoea Morbidity

Family members are more likely to remember episodes of diarrhoea if asked about a short recent time period. The recommended time period to be covered for diarrhoeal morbidity is the 2-week period prior to the survey, including the day of the survey. The questionnaires in Section F are phrased to cover this time period.

In most countries, diarrhoea morbidity is greater during some times of the year than others. Thus, the particular 2-week period included in the survey may not be representative of the entire year. The survey results can be adjusted for seasonality to estimate the average number of diarrhoea episodes per child per year; one method is described in Section L.

If a country plans to achieve significant reductions in morbidity before the follow-up survey, it may be best to carry out both the initial and follow-up surveys during the high incidence period since greater changes in morbidity should occur at these times. Follow-up surveys should always be carried out at the same period of the year as the initial survey.

Time Period for Mortality

Family members are likely to remember deaths which occurred during the last year, but it is often difficult for people to understand exactly how long one calendar year is. Interview questions may need to refer to the time period since an important event which occurred one year ago. Some examples of important events might be:

- a major religious holiday;
- a festival;
- a major storm or flood;
- beginning of the warm season.

If the survey will include questions about deaths, you may have special difficulties with those questions:

- For personal or cultural reasons, people may not want to talk about the death of a child. In such cases, you will need to be particularly sensitive and respectful in the way you ask questions. You may need to say something like, "I know it is difficult to talk about, but has any child of this house under age 5 died since .... It is important that we know so that we can improve health care and prevent more deaths." Of course, you will need to agree on the way to ask the question with the co-ordinator during training.

- The one-year recall period or the date of death may be difficult to define. The co-ordinator may provide you with a list of events that occurred about one year ago (for example, a religious festival, a crop harvest). You may ask about the timing of deaths in relation to one of these events.

- Babies that died within days or weeks after birth may be forgotten about or thought by the respondent to be unimportant for the survey, especially since you are asking about older children as well. There should be a question on the survey form that will help you to identify these deaths. On questionnaire B: Minimum Survey of Diarrhoea Mortality, Morbidity and Treatment, in Section F, this is question 11:

Q.11 b11 **Has any child been born in this house since: .....(12 months), (excluding stillbirths)? If YES, make sure that the child is included in Q b2 or Q b7, as appropriate.**

If the answer to this question is "yes," make sure the child was included in the answer to question 2 or 7:

Q.2 2 **How many children <5 years live in this house? If none, enter 0 and go to Q b7.**

7 **Has any child of this house <5 years old died since .....(12 months)? If YES, answer Qs b8-b10. If NO, go to Q b11.**

IMMUNIZATION COVERAGE SHEET

If a household you visit has a child born between 10/2/87 and 9/2/88, fill out a vaccination form. Be sure to include all children 12-23 months present in the household at the time of interview.

Fill out the top of the page: Number of interviewer, name of supervisor, cluster number and date.

Q.1 Record the number of the mother as it is in the Mortality Questionnaire. The mother in most cases, should already have had a separate form filled out for her. If the child's mother number is not available, put 99 in the column.

Q.2 Record the name of the child.

Q.3 Record the date of birth of the child.

Q.4 Record the sex of the child.

Q.5 Check whether a vaccination card is available or not.

Q.6-Q.14 Go over every shot DPT 1,2,3, Polio 1,2,3 Measles, BCG and the DPT/Polio Booster. Record the date when a vaccination card is available. If no date is available, record YES or NO for every shot.

Q.12 The Booster dose for DPT and Polio is usually given at 18 months of age.

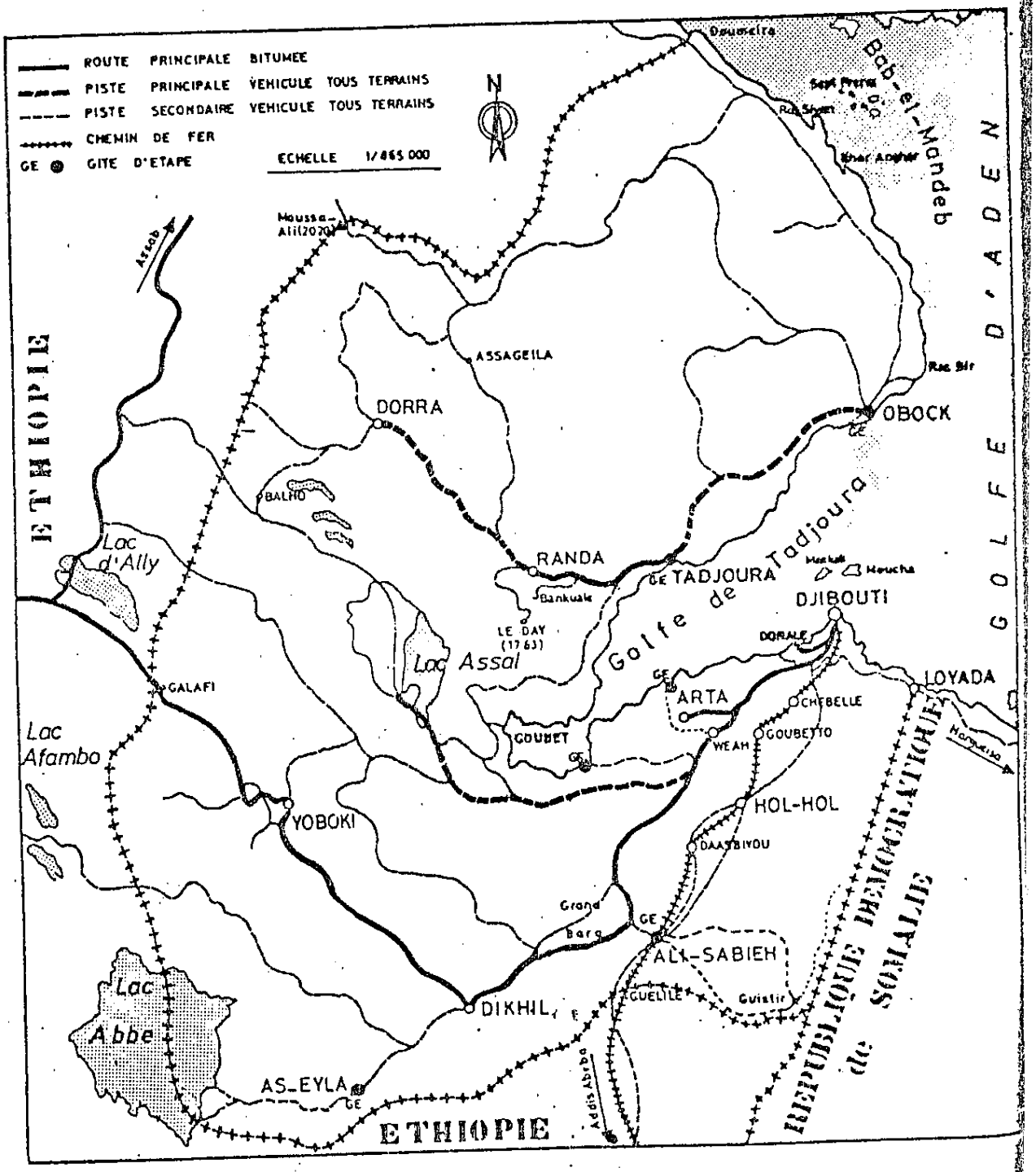
Q.15 Record whether the child has a scar from the BCG shot or not. This is useful when the mother cannot recall whether the child received the shot or not.

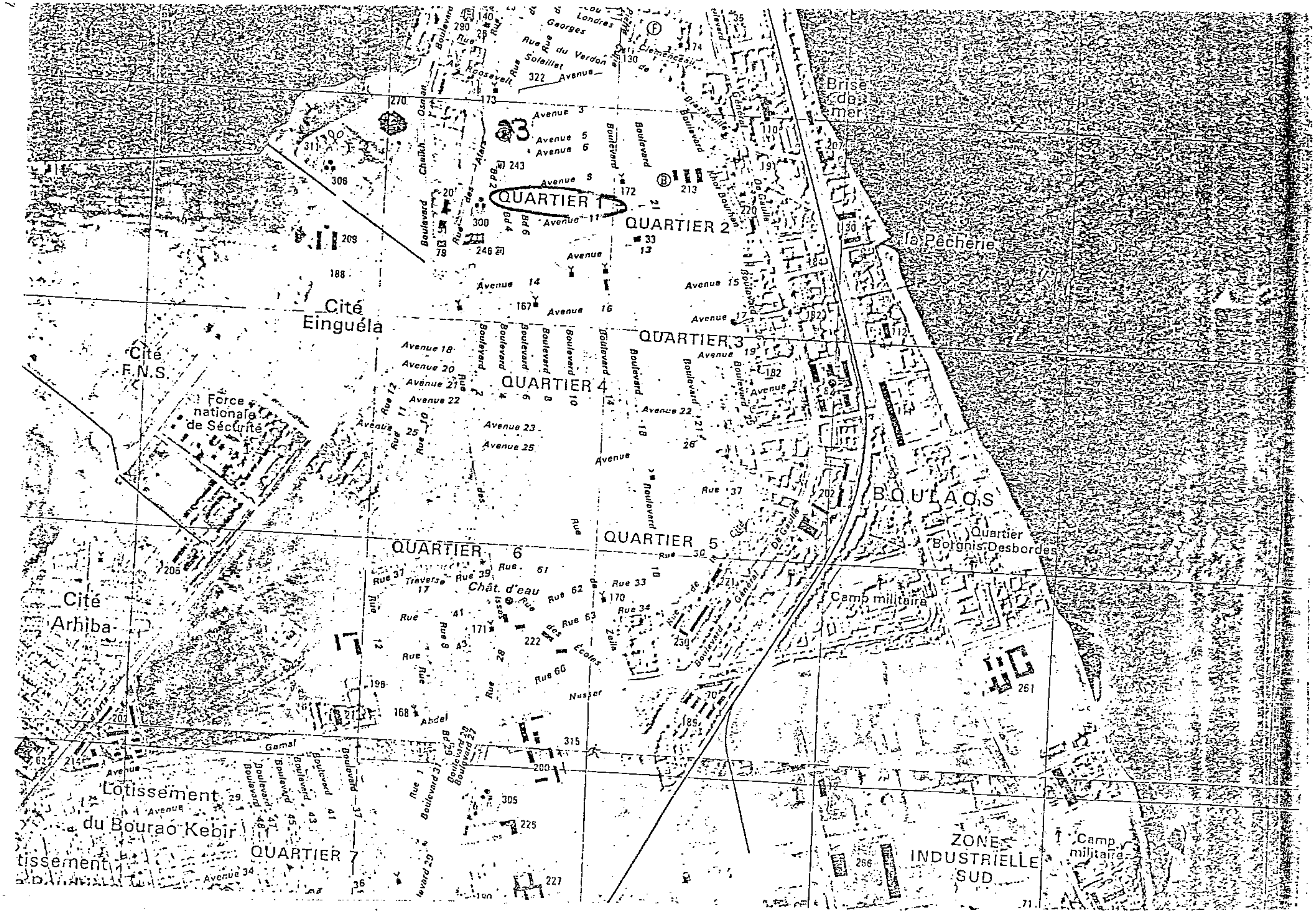
Q.16 Record if the child received all the shots against the above listed antigens.

C. MAPS

1. 10 LA REPUBLIQUE DE DJIBOUTI

1. 11 CARTE GEOGRAPHIQUE ET ROUTIERE




Brise de mer
la Pêcherie
BOULAOS
Quartier Borgnis-Desbordes
Camp militaire
ZONE INDUSTRIELLE SUD
Camp militaire
QUARTIER 1
QUARTIER 2
QUARTIER 3
QUARTIER 4
QUARTIER 5
QUARTIER 6
QUARTIER 7
Cité Einguéla
Cité F.N.S.
Force nationale de Sécurité
Cité Arhiba
Lotissement du Bourao Kebir
Châl. d'eau
Boulevard Général De Gaulle
Rue des Écoles
Gamal Abdel Nasser

D. LIST OF CLUSTERS

ENQUETE URBAINE : DJIBOUTI VILLE ET PERIPHERIE

PEV/LMD/TMI

GRAPPE	QUARTIER	Zones de Recensement
1	Quartier 1	23
2	Quartier 2	20
3	Quartier 3	12
4	Quartier 4	2
5	Quartier 4	6
6	Arhiba	1
7	Arhiba	5
8	Engueila 1	9
9	Quartier 7 Bis	14
10	Quartier 7 Bis	18
11	Quartier 7 Cité du Stade Gabode	22
12	Quartier 7 Cité du Stade Gabode	25
13	Quartier 7 Cité du Stade Gabode	30
14	Quartier 7 Cité du Stade Gabode	34
15	Quartier 6	39
16	Quartier 6	42
17	Quartier 6	46
18	Quartier 5	49
19	Quartier 5	53
20	Ambouli	6
21	Ambouli	15

GRAPPE	QUARTIER	Zones de Recensement
22	Djebel	14
23	Balbala	-
24	Balbala	-
25	Balbala	-
26	Balbala	-
27	Balbala	-
28	Balbala	-
29	Balbala	-
30	Arta Ville	

Enquête rurale

Région	Équipe	[illegible]	[illegible]	Superviseur	[illegible]	Localité	Véhicule	Chauffeur
DIKHIL	A	ABYBDA	ILHAM IBRAHIM	Dr HASSAN MOHAMED	1e	D. VILLE		
					2e	D. VILLE		
	B	ALI ABDO ZAHRA MOUSSA		Mr MOHAMED SAID	3e	AS-EYLA		
					4e	DAGADLE		
	C	HASSAN MOUSSA HAWA HASSAN		Mr MOUMIN HAKI	5e	HANDALA		X
					6e	GANATI		
	D	LOYTA IBRAHIM	ABDILLAHI ROBLE AMINA FARAH	Mr MOHAMED MOUSSA (MARTIN)	7e	GALAFI		
					8e	YOBOKI		
ALI SABIEH	E	ABDI ISMAEL	ABDI AIRACHE	Mme AICHA IOLE	9e	A/S VILLE		
					10e	A/S VILLE		
	F	MOHAMED DAOUD [illegible] OMAR		Mr HASSAN DAOUD	11e	A/S VILLE		
					12e	A/S VILLE		
	G		ILYAS KADRA YOUSSOUF	Mr ALI MOHAMOUD	13e	A/S VILLE		
					14e	Holl-Holl		
	H	ALI MOUSSA [illegible] AUBLE		Dr AHMED	15e	Elgal		
					16e	GUISTIR		
	I		Ahmed SHAKER Charmarke [illegible] ABAYARI	Mr MOHAMED ALI + OMS	17e	GABLA KALAN (ILLENCA)		
TADJOURAH	J	Meriam Ali Kamil Fardoza [illegible]		Dr Said	18e	T. Ville		
					19e	T. Ville		
	K	Ahmed Esse	SAID ALI	Dr KYRIAKOS	20e	RIBTA		
					21e	RANDA		
	L	MOUNIRA ALI	FATHIA MOHAMOUD	~~Dr HASSAN~~ Dr ABDALLA	22e	ASSA GUEILA		
	M	ALI ABDOU FATOUMA [illegible]		Dr JAMAL Mme SAMIRA	23e	GARELA		
OBOCK	N	HASNA ALI HOUMED	AHMED ALI ESMAHAN	Mr AKAUIRI M HOTR	24e	O. VILLE		
					25e	O. VILLE		
	O		MOULLAH KIH MOHAMED ALI	Mme NADIRA MOALLA	26e	WADDI	X	
					27e	RAS-BIR		
	P	KADIJA YOUSSOUF	TOUKAYA	Dr. MAHYOUB	28e	ALAÏLI DADA	X	
					29e	BISSIDIRO		
		ASSIA	MOHAMED	[illegible]	30e	GENERE	✓	

E. TRAINING SCHEDULE OF FIELDWORKERS

MINISTERE DE LA SANTE PUBLIQUE
ET DES AFFAIRES SOCIALES

DIRECTION TECHNIQUE
DE LA SANTE

CENTRE
DE FORMATION DES PERSONNELS
DE SANTE

ENQUETE SUR LA MORTALITE MATERNELLE ET INFANTILE
MORTALITE, MORBIDITE ET MODES DE TRAITEMENT DE LA DIARRHEE
COUVERTURE VACCINALE P.E.V.

DATES	HORAIRES	OBJECTIFS / ACTIVITES	METHODE EXP.	METHODE T.G.	METHODE AUTRE	SUPERVISEURS	SALLES
31/01/89 Mardi	7 h 30 - 9 h 00	Introduction de l'enquête - Objectifs	x			Dr. SAID/BAILLY	Salle d'honneur
	9 h 15 - 12h 30	Etude des questionnaires	x			Dr. SAID	Salle d'honneur
		N.B. Révision des questionnaires (par les élèves).	x			Mme SAMIRA	Salle d'honneur à domicile
01/01/89 Mercredi	7 h 30 - 8 h 30	Réponse aux questionnaires				Dr. SAID	Salle d'honneur
	9 h 00 - 13h 00	Travaux de groupes selon les langues locales : - Afar : - Somalie - Arabe Synthese des travaux de groupes		x		Mr. HASSAN et Mr. MARTIN/Med SAID Dr. SAID et Dr. AHMED	Salle de cours (CFPS) Salle d'honneur Salle de consult.
02/02/89 Jeudi	7 h 30 - 9 h 30	Jeu de rôles		x		Mr. MAHYOUB et Mme SAMIRA	Mêmes salles
	10 h - 12h 30	Synthèse en plenière + Méthodes de l'enquête	x			Dr. SAID	Salle d'honneur
04/02/89 Samedi	7 h 30 - 13 h	Après test sur le terrain			x	SUPERVISEURS DES EQUIPES	
05/02/89 Dimanche	8 h 00 - 12 h	Synthèse du test	x			Dr. AHMED	Salle d'honneur
06/02/89	8 h 00 - 12 h	Problèmes organisationnelles				Dr. SAID Dr. BAILLY	Salle d'honneur

R E F E R E N C E S

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