WORLD HEALTH ORGANIZATION
ORGANISATION MONDIALE DE LA SANTÉ

WHO/SE/77.91
ORIGINAL: ENGLISH

SUMMARY OF THE CONTRIBUTIONS OF THE SMALLPOX PROGRAMME TO OTHER HEALTH PROGRAMMES THROUGH SURVEYS IN BANGLADESH[a]

BACKGROUND

Surveys were initially developed to assess the effectiveness of the smallpox search carried out periodically by 12 000 Family Welfare Workers (FWW), who are supposed to visit every house in Bangladesh over a 6-10 day period. However, the Smallpox Eradication Programme has been extending its services into a wider public health field through conduct of other surveys in conjunction with this assessment. These additional surveys are done to provide data to help in the planning or evaluation of other health programmes in Bangladesh. Each survey is preceded by consultation between the Bangladesh Government and the World Health Organization. The results of the surveys are forwarded to the Government which can then make them available to other relevant agencies. To date the additional surveys[b] carried out are:

(1) Provision and usage of tubewell water in villages. (Subsequently this was repeated on a sample of the villages by UNICEF with a high correlation found between the results of the two surveys.)

(2) Vitamin A capsule distribution.

(3) Malaria case detection.

(4) Evaluation of the Family Planning Programme by inquiring as to the villagers' knowledge of the pill as a contraceptive. (This survey has been published as a booklet by the Bangladesh Government and USAID.)

(5) An examination as to who is providing primary medical care.

LOGISTICS

Timing - The assessments are carried out over an eight-day period following the search for smallpox.

Staff - District and subdivisional health and malaria officers, Smallpox Eradication Programme epidemiologists, and to some extent surveillance team members participate in the survey. This provides approximately 400 assessors. Most of these persons have their own transport, be it jeep or motorcycle.

Target population - Bangladesh is divided into districts, further subdivided into subdivisions, thanas, and JLs (roughly corresponding to villages). In a JL each house is allotted a malaria house number. At Smallpox Eradication Programme headquarters there is a record of the population of each JL, cumulatively added through thanas, subdivisions, and districts. Also available are thana maps showing the location of villages.

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[a] Prepared by the Bangladesh Smallpox Eradication Programme, Dacca.

[b] Results of these surveys may be made available on request.

The households to be assessed are randomly selected. The number of JLs for each district are assigned according to the population of that district. For each million population in the 1973 census, about 20 JLs are assigned for assessment.

Within a district the required number of JLs have been selected by a technique which gave each JL an equal chance of being selected irrespective of its size and location. However, in future, a new method will be used giving the chance of a JL being selected in proportion to its population. Within each selected JL a cluster of 20 houses is selected randomly. Mouza maps showing the location of malaria house numbers in the village are available at the thana headquarters.

The target population for search assessment is approximately 1500 villages - about 30 000 houses. The Chittagong Hill Tracts and major municipalities, in which there are approximately 12 million houses, are not included in the assessment. (The major municipalities account for 8% of the population of Bangladesh.) The sample is thus about 1 in 400. Any persons in these households may be interviewed according to the requirements of the survey.

It should be noted that the sample chosen is a clustered one, for logistic reasons. Hence errors may be introduced if whatever is being measured in the survey clusters within the population.

Methodology - The actual wording of the questions is tested first in a pilot survey. The techniques of the survey are then explained to the district officers at district meetings held several days before the survey is conducted. These meetings are usually chaired by the civil surgeons, and the techniques explained by smallpox epidemiologists, who have been adequately briefed in Dacca.

During the assessment, the assessor asks questions about the smallpox search, and then asks the questions related to the additional survey. The answers to the survey questions are recorded on the same forms as the smallpox assessment. All the results are analysed at headquarters in Dacca.

ADDITIONAL SURVEYS USING EPIDEMIOLOGISTS AND SURVEILLANCE TEAMS

In addition to surveys carried out in conjunction with search assessments, it may be possible over the next year to perform surveys in the course of the work involved in providing further documentary evidence of smallpox eradication to the International Commission. For example, recently a natality/mortality survey was carried out in conjunction with a smallpox scar and vaccination study.

In general the staff available for this work are 51 surveillance teams (one for each subdivision) with 223 members (each team having four to five members), and approximately 30 field epidemiologists, six of whom are internationals. The epidemiologists are provided with jeeps and the surveillance team members, motorcycles.

The logistics for these additional surveys vary according to the study. However in the combined survey noted above which involved interviewing and examining for pock marks, two members of a surveillance team took two to three days to cover 100 houses in a village.

I. ASSESSMENT OF VITAMIN A DISTRIBUTION IN BANGLADESH OCTOBER 1975

1. INTRODUCTION

Keratomalacia secondary to vitamin A deficiency is a major cause of blindness in children in Bangladesh. With assistance from UNICEF, the Ministry of Health and Family Planning instituted a residential distribution in 1973 of 250 000 unit vitamin A capsules on an every six-month schedule. Clinical documentation of vitamin A deficiency in the post-liberation period has been well documented.[1,2,3,4]

In October 1975 an independent assessment of vitamin A distribution was undertaken by the Ministry of Health in conjunction with the monthly assessment of the house-to-house search for smallpox.[5]

2. SAMPLE SELECTION

A random selection of 1535 villages was made from 18 of the 19 districts. Chittagong Hill Tracts comprising less than 1% of the population was not included in the assessment. The method of sample selection is shown in Appendix I.

Assessment was carried out by district officers, WHO epidemiologists and district surveillance teams.

3. METHOD OF ASSESSMENT

(1) Each assessor was provided with a vitamin A capsule.

(2) Pre-assessment training was carried out at the district level to assure uniformity of method.

(3) At each cluster, the selected index house and 19 surrounding houses were checked.

(4) At each house, the following questions were asked:

(a) Have you seen this capsule before? Yes/No

(b) How many children under six live in this house?

(c) How many children under six have ever taken this capsule?

4. RESULTS

Of 42 518 children in sampled houses, 23 433 (55.1%) reported ingestion of a vitamin A capsule (Table 1).

5. DISCUSSION

Since 1972 UNICEF has imported 75 million high potency vitamin A capsules for distribution during five, six-month rounds (15 million capsules per round). Integrated health services records have shown a vitamin A delivery coverage of 85% and sample assessments carried out by UNICEF have shown a significant decrease in the prevalence of signs and symptoms of vitamin A deficiency.

TABLE 1. NUMBER AND PERCENTAGE OF CHILDREN UNDER SIX WITH HISTORY OF EVER HAVING TAKEN A VITAMIN A CAPSULE

District	Number of children under six	Number of children under six with history of vitamin A ingestion	Percentage of children under six who have received vitamin A
Dinajpur	1 892	996	53
Rangpur	2 782	1 511	54
Bogra	1 346	881	66
Pabna	1 548	844	55
Rajshahi	2 508	1 607	64
Kushtia	2 276	2 005	88
Jessore	3 199	2 211	69
Khulna	1 475	759	52
Faridpur	2 057	1 046	51
Barisal	2 019	1 291	64
Patuakhali	998	421	42
Mymensingh	4 469	2 296	51
Tangail	1 451	723	50
Dacca	5 750	2 369	41
Sylhet	1 890	599	32
Comilla	3 040	2 086	69
Noakhali	1 741	650	37
Chittagong	2 077	1 138	55
	42 518	23 433	55

The current assessment shows that 55% of children under six had received vitamin A on at least one occasion. Estimating the target population ages 0-6 (22% x 75 million) at 16.5 million, approximately 9.1 million children have received vitamin A.

The survey did not measure how many children received capsules on more than one occasion. It also did not measure the vitamin A coverage in children now over six who were in the target population during previous rounds. For these two reasons it is not possible to accurately estimate the actual number of capsules distributed. The administration of a service to an estimated nine million children is, however, a significant achievement.

Reasons for the sub-optimal coverage are many and include the following:

(1) Vacant subsectors (approximately 1200 out of 12 000 subsectors) have no FWW assigned.

(2) FWWs are instructed to administer vitamin A capsules to the available population and not to leave capsules for absentees. Therefore, children not in the village at the time of the FWW visit do not receive vitamin A.

(3) Lack of regular concurrent assessment of vitamin A distribution.

(4) Inadequate training of FWWs in rationale and method of vitamin A distribution.

Although the results achieved are less than expected, problem identification is the first step in improving performance.

6. RECOMMENDATIONS

6.1 Before the next vitamin A distribution round, provide one day training of the FWWs at thana headquarters in the reasons for and methods of vitamin A distribution.

6.2 Experimentally determine effectiveness of leaving vitamin A capsules with responsible adult household members for administration to absentees.

6.3 Operationally evaluate following alternative schemes of vitamin A distribution.

(a) One week unipurpose campaign similar to smallpox house-to-house search week.

(b) Single round target with vitamin A emphasis.

(c) Maintenance of vitamin A distribution as part of routine work.

6.4 Develop regular independent assessment of vitamin A distribution including identification of good workers for recognition and bad workers for retraining and/or discipline.

6.5 Carry out survey of vitamin supply system to assess quantity and potency of capsule in the storage and distribution system.

7. REFERENCES

1. Kamal, W. W. Assignment report on Blindness Prevention Programme, Bangladesh, November-December 1972 (Document SEA/NUT/41)

2. Kamal, W. W. Assignment report on implementation of the Blindness Prevention Programme in Bangladesh, 12 February - 15 March 1973 (Document SEA/NUT/45)

3. Kamal, W. W. Assignment report on preliminary evaluation of the Bangladesh Blindness Prevention Programme, 31 August - 1 September 1973 (Document SEA/NUT/47)

4. Franken Assignment Report on Blindness Prevention Programme in Bangladesh, 9 October - 1 November 1974 (Document SEA/OPTHAL/4)

5. Government of Bangladesh Order No.1/Integ/74-75/OPN/V-III/54 of 10 October 1975.

APPENDIX I

METHOD OF VILLAGE SELECTION

1. All JLs in a district should be listed as follows:

Sl No.	Thana	JL No.	House No. start	House No. finish
1	Kotwali	256	1	256
2	Kotwali	257	2	1 000

2. The total number of JLs (serial numbers) should be divided by the number of villages to be searched to determine search interval, e.g. if you have 400 JLs and you are to search 40 villages, divide 400 by 40 and obtain the search interval 10.

3. Select a random number between 0 and the search interval number. This represents the first village to be searched, e.g. if the search interval is 10, choose a number between 0 and 10, e.g. 5.

4. Serially add the search interval number and select the JL to be searched, e.g. if the search interval is 10 and the first selected JL is 5, the selected JLs would be 5, 15, 25, 35 etc.

5. For each selected JL, divide the total number of house numbers by, e.g. if JL has 256 houses, divide 256 by 6 that is 44. House number 44 would be the first house to check followed by 19 closest houses.

II. A SURVEY ON TUBEWELL AVAILABILITY AND UTILIZATION IN RURAL AREAS OF BANGLADESH

In September 1975 a special survey of tubewells was carried out by district officers in conjunction with the assessment of the house-to-house search for smallpox. The results are summarized in Table 1.

TABLE 1

Distance between house and nearest tubewell	Number of houses	Percentage
0-250 yards	22 467	61
250 yards to 1/2 mile	10 730	30
1/2 mile	3 868	9

Tubewell in working condition

Yes	23 558	83
No	4 746	17

Baris using tubewell

Yes	18 909	65
No	10 125	35

The data was made available to the Department of Public Health Engineering and UNICEF who have recently released these data. As these results were considerably better than expected, UNICEF undertook a second survey of which two assessed and two non-assessed villages in each district were surveyed house-to-house (UNICEF report February 1976, Shawcross). The results of the two surveys are compared to that expected in Table 2.

TABLE 2

	WHO prediction July 1974	UNICEF prediction September 1975	Smallpox search assessment September 1975	UNICEF survey January 1976
% tubewell within 250 yards	26	50	61	74
% tubewell functioning	50	75	83	86
Using tubewell water	-	-	65	58
Nearest tubewell more than half a mile away	-	-	9	9

Despite differences in sampling procedure and in sample size the overall results are strikingly similar. These results will be used as baseline data for future surveys.

In the UNICEF survey the effect of distance on tubewell use was determined (Table 3).

TABLE 3

Distance of house to nearest tubewell	Percentage of houses using tubewell
0-300 feet	79
300-700 feet	52
700-1/2 mile	32
1/2 mile	15

Nearness to a functioning tubewell increases the probability of its use. From the point of view of health and the health worker, reduction of diarrhoeal disease morbidity and mortality requires a multidisciplinary approach:

(1) Education of the public as to the need for safe water.

(2) Provision of adequate water supply facilities.

(3) Maintenance of facilities in working order.

(4) Knowledge of how to use water.

(5) Motivation of public to correctly use water.

Achievements of these objectives will require continuing cooperation and coordination of multiple departments including health, public health engineering, education, information and rural development.

III. A SURVEY ON MEDICAL CARE IN THE VILLAGES COMBINED WITH AN ASSESSMENT OF A HOUSE-TO-HOUSE SEARCH FOR SMALLPOX IN BANGLADESH - PRELIMINARY REPORT 19 JUNE 1976

1. INTRODUCTION

A survey on medical care delivery was conducted in the rural areas of Bangladesh in June 1976, in conjunction with the assessment of a house-to-house search for smallpox cases. The urban areas (representing only 8% of the total population) were therefore excluded from this survey.

The search for smallpox was carried out from 28 May to 5 June by family welfare workers (village workers).

2. OBJECTIVE OF THE SURVEY

The survey was intended to determine the sort of medical care villagers would seek in case of serious sickness in one of their children.

When a child is seriously sick in a house people would in most cases consult one of the following persons:

(1) "Government doctor" refers to graduate doctors but also, more generally, to a health officer delivering medical care in a government hospital, rural health centre, etc.

(2) "Private doctor" refers to a registered doctor in a private hospital or clinic or performing home visits to patients but it also includes nongraduate practitioners who provide medical treatment with allopathic drugs.

(3) "Homeopaths" is self explanatory. This category includes practitioners with an official medical degree and others who received a short training or who are self trained by reading books. They treat patients with homeopathic drugs or other drugs of their own composition (herbs etc.).

(4) "Traditional practitioners" includes Kobiraj, Baidya, Oza, etc. They generally do not use drugs but use quack methods.

3. TECHNIQUE

The officers involved in the survey visited a sample of houses selected according to a system which enables a selection of houses proportional to the population of each district.

More than 27 000 households in 1381 villages were visited and 22 867 persons contacted answered the following question: "The last time that a child of this house was so sick that he could not take food, whom did you consult first?" The answer was recorded by the assessor against one of the following categories as appropriate:

(1) A Government doctor.

(2) A private doctor.

(3) An homeopath doctor.

(4) A traditional practitioner (Kobiraz, Baidya, etc.).

(5) None.

The assessors had to fill out a questionnaire: all data were thereafter compiled at district, then national level.

4. RESULTS

The results are shown in the charts and graphs annexed.

4.1 National results

(1) Fifty-five per cent. of the people interrogated first consulted a practitioner of "modern" (allopathic) medicine when they had a child seriously ill in their house.

(2) Thirty-one per cent. first consulted any other practitioner.

(3) Fourteen per cent. did not consult any practitioner.

(4) Fig. 1 shows the relative importance of "private doctors" in terms of coverage of the population. More than 38% would first consult them.

4.2 District results

The results show a considerable variation between districts. For example, in Khulna and Patuakhali, traditional medicine was more commonly utilized.

In Kushtia and Noakhali most people consulted a private doctor.

In Mymensingh, Rajshahi and Chittagong, a significant number of persons (20-30%) consulted the government doctor whereas a remarkably constant number of people (average 10%) did the same in the other districts.

5. DISCUSSION AND CONCLUSION

It is noted that 15% did not consult any practitioner. There are several possible reasons such as, death of child, quick recovery, bad communication, non-availability of health care, high cost involved, embarrassment or fear, bad previous experience, etc.

These are questions open to further research.

This survey identifies the "private doctor" as the person to whom a seriously ill child was most commonly referred. (He is also the most commonly available practitioner in the villages.)

"Modern" medicine utilizing allopathic drugs as practiced by "government" or "private doctors" was the most common. Of those interrogated, 70% consulted one or the other of these "doctors".

As this survey has identified the private village practitioner as the key man in the situation described, a second survey will be developed in an attempt to more clearly know what his impact on the village health is, what is his level of training, his sources of income etc.

ANNEXED:

1. Instructions given to survey officers.

2. Consolidated results.

3. Graphs comparing the results for each category of practitioners.

ANNEX 1

GUIDELINES FOR DISTRICT ASSESSMENT

Assessor's name _____ Designation _____

Number of high risk JLs to assess _____

Number of randomly selected JLs to assess _____

1. High risk assessment

The high risk assessment will be of JLs where a bad search is anticipated such as these of previously defaulting workers, border areas, chars, and other areas of difficult access. ASO should prepare a list of high risk JLs. At the district presearch meeting each district assessor should be assigned one or more thanas in which he will supervise the search and do the high risk assessment. High risk assessment should be done in Form-8 "High Risk" type. Results of high risk assessment should be compiled by ASO but should not be included on the district Form-9.

2. Random assessment

The number of randomly selected JLs will be the same as the March Search. The method of selection is described in a separate circular. For the May-June Search the starting house number should be computed by dividing the highest house number in the JL by five.

3. Additional survey will be conducted only in randomly selected JLs, not in "High Risk" JLs. The survey this time will be on "Medical Care in the Villages".

The target of this survey is to know where people usually go when someone is very sick. Do they first consult the government doctor or a private doctor or a homeopathic doctor or do they first try the traditional medicine?

The question to be asked is: "The last time that a child of your house was so sick that he could not take food, whom did you consult first?"

There may not be any child in the house. Then ask the same question for any adult. But remember, sometimes pregnant women stop taking food even though they are neither very sick nor consulting any practitioner. Why is it mentioned "for not taking food"? It is an indication of degree of sickness so that the answer would be based on the same sort of situation.

The assessors of the smallpox search are now trained in surveys. They know that the survey is of no use if any pressure is made on the persons interrogated. Please, take your time, ask the question trying to get a spontaneous answer. If no reply comes, ask again with no compulsion. Accurate answer will come.

There may be other titles of practitioners than these listed on the forms. In this case, please enter the reply in the category which is most similar.

Of course, in many cases several practitioners of different categories will be consulted for the same patient. In order to simplify the questions, please record which practitioner was consulted first.

If people do not understand your question, do not propose him any of the names which he should give you. Rather explain "whom did you consult who could advise you or treat your patient", but do not say "whom did you consult like private practitioner . . . homeopath?"

In this last case you would probably get a "Yes" following the first name you propose.

Remember also that such surveys are a good way to get rough evaluation. But they must be made with honesty and objectively.

MEDICAL CARE DELIVERY IN THE VILLAGES - ADDITIONAL SURVEY MAY 1976

			WHOM DID YOU CONSULT FIRST?									
District	No. of villages assessed	No. of answers	Govt doctors	%(1)	Private doctors	%(2)	Homeopaths	%(3)	Traditional doctors	%(4)	None	%(5)
Dinajpur	59	1 152	203	18	497	43	215	19	84	7	153	13
Rangpur	114	2 232	166	7	907	41	349	16	212	9	598	27
Bogra	48	950	96	10	512	54	180	19	95	10	67	7
Rajshahi	103	1 980	635	32	634	32	173	9	309	16	229	11
Pabna	59	1 140	163	14	548	48	202	18	108	10	119	10
Kushtia	32	569	33	6	414	73	18	3	86	15	18	3
Jessore	69	994	96	10	213	21	185	19	248	25	252	25
Khulna	77	762	7	1	185	24	97	13	467	61	6	1
Barisal	82	1 357	316	23	608	45	121	9	144	11	168	12
Patuakhali	32	350	34	10	35	10	21	6	235	67	25	7
Faridpur	85	1 502	162	11	519	35	130	9	593	39	98	6
Dacca	115	2 290	336	15	367	16	289	13	712	31	586	25
Tangail	47	646	106	17	338	52	112	17	36	6	54	8
Mymensingh	156	1 893	594	31	613	33	147	8	252	13	287	15
Sylhet	92	1 819	337	18	795	44	251	14	165	9	271	15
Comilla	82	765	126	16	251	33	194	25	190	25	4	1
Noakhali	63	1 254	180	14	894	71	121	10	59	5	0	-
Chittagong	66	1 212	287	24	356	29	244	20	141	12	184	15
Chittagong HT	Not done											
Total	1 381	22 867	3 877	17	8 686	38	3 049	13	4 136	18	3 119	14

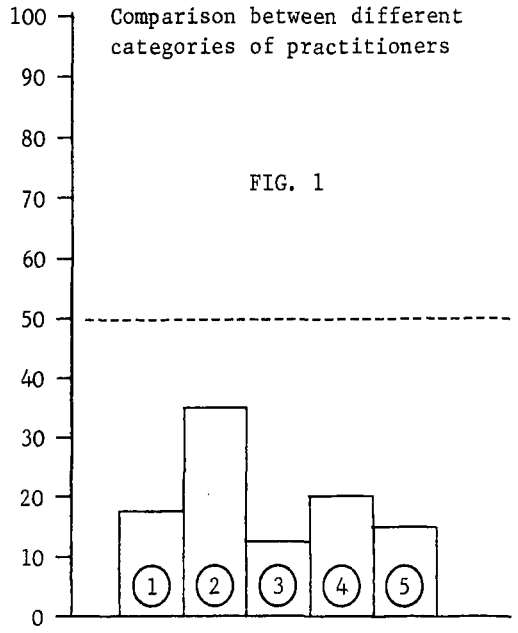

FIG. 1

1. Government doctor.
2. Private practitioner.
3. Homeopath doctor.
4. Traditional practitioner.
5. None.

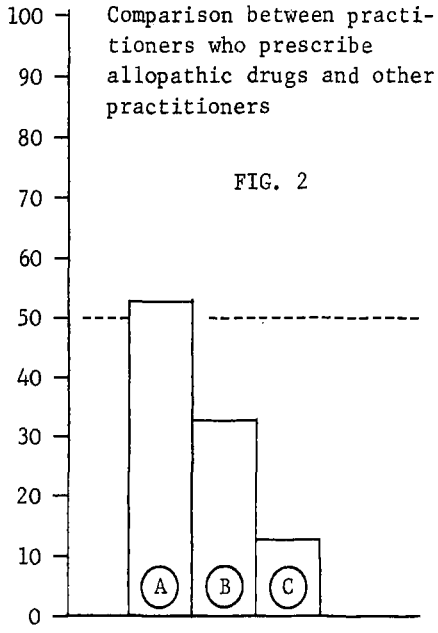

FIG. 2

A. Government and private doctor.
B. Others.
C. None.

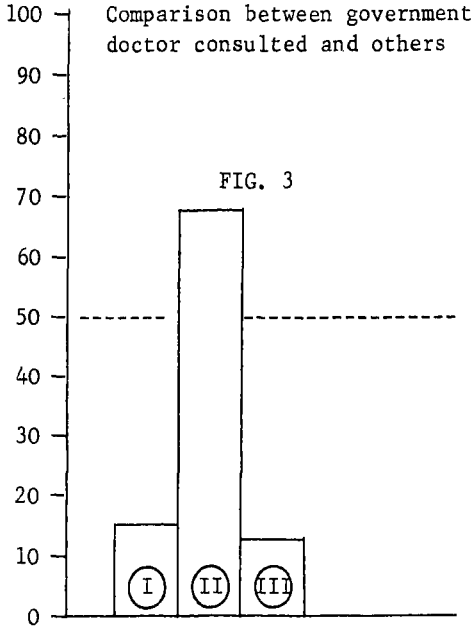

FIG. 3

I. Government doctor.
II. Others.
III. None.