CAUSES OF LOW EPI COVERAGE IN THE OSUDOKU SUB-DISTRICT OF THE DANGME WEST DISTRICT IN THE GREATER ACCRA REGION OF GHANA

by

CLETUS OPOKU - AMANKWAAH

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DECLARATION

I hereby declare that this document is an original work produced by me under the supervision of Prof. S. Ofosu-Amaah and Dr. John Gyapong for the award of a Master of Public Health Degree. This document has never on any previous occasion been presented in part or whole to any Institution or Board for the award of any Degree.

Signature.....
Mr. Cletus Opoku-Amankwaah

SUPERVISORS

Signature.....
Prof. S. Ofosu-Amaah

Signature.....
Dr. John Gyapong

DEDICATION

I dedicate this study to Dr. Matilda Pappoe, a senior lecturer at the School of Public Health, Legon, and Miss Nutefe Lawluvi, a Nursing Officer-Public Health, Asutsuare, for their kind gesture to me, individually, at some point in time during my MPH course

ABSTRACT

The Osudoku subditrict has been blamed for the persistent inability of the Dangme West District Health Authority to achieve its immunisation coverage objective.

The study objective was to ascertain the accuracy of this assertion of the DHMT and then find the factors causing the alleged poor performance of the subdistrict, if confirmed by the study.

Two immunisation coverage surveys using the WHO/ EPI '30 cluster sample' methodology were conducted , one each in the Osudoku and Prampram subdistricts.The Prampram subdistrict is noted by the DHMT to be performing favourably in childhood immunisation.

The results of the surveys showed that the Osudoku subdistrict compared favourably with the Prampram subdistrict.

Notwithstanding the observed favourable performance in the study some factors were identified which could explain the apparent poor performance of the Osudoku subdistrict. These were:

1. The exaggeration of the target population estimates being used by the subdistrict to calculate its childhood immunisation coverage.

2. The reduction in size of the numerator (ie. the 0– 11 month old children) the subdistrict is supposed to immunise in a given year.

3. Poor data management (MIS) by the MCH staff.

Other minor, but equally important factors identified in the coverage survey that could contribute to the apparent low EPI coverage in the Osudoku subdistrict were:

1. Missed opportunities
2. Drop – outs
3. Poor– timing for administering the vaccines.

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ABBREVIATIONS AND THEIR MEANINGS

ABBREVIATIONS	MEANINGS
EPI	Expanded Programme on Immunisation
WHO	World Health Organisation
DHMT	District Health Management Team
SDHT	Subdistrict Health Team
OPV3	Third dose of Oral Polio Vaccine
BCG	Bacillus Calmette Guerin Vaccine
DPT3	Third dose of Diphtheria, Pertussis and Tetanus vaccine
TT2	Second dose of Tetanus Toxoid vaccine
UNICEF	United Nations Children's Fund
WIFA	Women in Fertile (Reproductive) Age
UTD	Up-to-date
AAI	Age Appropriate for Immunisation.
FGD	Focus Group Discussion
MIS	Management Information System

DEFINITION OF KEY WORDS/PHRASES

Mothers:	Biological or surrogate/foster mothers who usually take children for immunisation.
MCH staff	Community health nurses or other staff Involved with immunisation.
Management Practice:	Activities like the planning of EPI sessions, and distribution of personnel, provision of supplies, monitoring and evaluation of activities of the personnel performed by the DHMT to achieve a coverage objective.
EPI Coverage Objective:	The proportion of the Target Population that the subdistrict sets itself to reach and to immunise within a given year.
Up-to-date (UTD):	Children who are up-to-date on the recommended immunisation series are those who have received all immunisation by the particular age being evaluated.
Age Appropriate for Immunisation (AAI):	Children who are described as having received all scheduled immunisation within 30 days of the recommended age.
Indicator Vaccines/Antigens:	Vaccines/antigens the DHMT uses to assess the EPI coverage of the district . These are BCG, OPV3, DPT3 and Measles vaccines.

Target Population:	Children aged 0-11 months old in a subdistrict in a given year.
Fully Immunised Child within 1 year:	A child who receives all EPI vaccines at the appropriate age and an interval of at least 1 month (28 days) between the adjacent doses of the multiple vaccines before age 1 year.
Expanded Programme on Immunisation:	A programme schedule stating the type of vaccine and the age at which the vaccine should be given.

CHAPTER ONE

1.0 INTRODUCTION

1.1 BACKGROUND TO THE PROBLEM

Measles, whooping cough, diphtheria, tuberculosis, poliomyelitis and tetanus have been described as the commonest childhood killer diseases[1]. These diseases had until recently caused childhood morbidity and mortality all over the developing world. In view of this, international concerns have been raised to either control or eradicate these diseases from the world through a programme called EPI[2].

In an attempt to eradicate or control these diseases, Ghana in 1978 launched the WHO EPI with the objective of fully immunising 80% of its children aged 0-23 months by 1983. Since then the programme has been evaluated and the necessary modifications in the strategies have been made to improve coverage. However, despite improvement in infrastructure, immunisation coverage in Ghana is still low. This is illustrated by a report in the Ghanaian daily newspaper "The Daily Graphic" The March 16, 1999 issue of the paper reports that "Managers of EPI in West Africa have begun a meeting in Accra to analyze why immunisation coverage in the sub-region remains low despite all efforts to increase coverage". Dr. Martin Mandara, WHO representative in Ghana, in the said paper had this to say. "It is worrying that although the target dates set for the elimination or eradication of certain diseases under EPI are drawing near, we still have a long way to go".

With the deconcentration of the health service delivery system in the country each of the 110 districts has administrative structures such as DHMT and SDHT for managing its health activities which include immunisation of children against the six childhood killer diseases, and yellow fever, as well as Tetanus Toxoid for women in their reproductive age.

The Dangme West district has not been left out in the drive to achieve the coverage objective of the nation. The district has four subdistricts to facilitate the management of its health programmes including EPI.

The DHMT's annual report for 1997 shows that the district gradually increased EPI coverage between 1992 and 1996 (OPV3 and BCG recorded shortfalls in 1994 and 1995 respectively). Since then there has been consistent decline in target coverage for all six (6) vaccines against the childhood killer diseases (See Appendix 1).

Three subdistricts, namely, Prampram, Dodowa and Great Ningo have been described as doing reasonably well and therefore the fall in the overall district coverage has been attributed to low coverage in the Osudoku subdistrict. For example, for the 0-11 months coverage, whilst Prampram recorded 105%, 94%, 91% and 97% for BCG, DPT3, OPV3 and Measles respectively, the Osudoku subdistrict recorded 34%, 28%, 27% and 28% for BCG, DPT3, OPV3 and Measles respectively. The coverage for TT2 were 58.5% and 4% respectively for Prampram and Osudoku[5] (see table 1). This means that for the 0-11 months old immunisation, Prampram covered over 3 times higher in all the vaccines and about 15 times higher in the TT2 vaccine than Osudoku.

Table 1

Health Services Coverage - Communicable Disease Control Jan-Dec. 1997

Indicator		Dodowa		Prampram		Old Ningo		Osudoku		Total	
		No.	%	No.	%	No.	%	No.	%	No.	%
BCG	# administered	863	85%	774	105	1262	92	347	34	3246	79
	Total 0-11 months	1013		735		1367		1013		4128	
DPT3	# administered	929	92%	688	94	1088	80	287	28	2992	72
	Total 0-11 months	1013		735		1367		1013		4128	
OPV3	# administered	922	91%	668	91	1098	80	271	27	2959	72
	Total 0-11 months	1013		735		1367		1013		4128	
Measles	# administered	683	67%	715	67	948	69	282	28	2628	64
	Total 0-11 months	1013		735		1367		1013		2114	
Yellow fever	# administered	406	40%	680	40	743	54	285	28	4128	51
	Total 0-11 months	1013		735		1367		1013		1290	
TT2	# administered	387	38%	430	38	435	32	38	4	4128	31
	WIFA (20% pop.)	1013		735		1367		1013			

Source: DHMT Annual Report, Dangme West District, 1997.

From these findings the questions that arise are: what factors are causing the differences? Could it be that the recordings of the immunisation coverage are inaccurate in any of these subdistricts or both? What are the problems peculiar to Osudoku that militate against the achievement of high EPI coverage?

The purpose of this study was to assess the accuracy of the report of the low EPI coverage in the Osudoku subdistrict and then to identify the factors that contribute to the low EPI coverage in the subdistrict, if confirmed.

The results obtained in the study will be made available to the DHMT, to help improve its strategies for managing childhood immunisation services in the district.

1.2 LITERATURE REVIEW

Simple, cheap, and effective health interventions that now exist (and other that are being developed, such as malaria vaccine) hold out the prospect of substantially reducing infant and child mortality in developing countries[6-9] Unfortunately the access to, and utilization by children of, health care services that could provide these interventions remain poor in many countries. For example, it was estimated that 3.5 million children died from vaccine-preventable-diseases in 1985[6] and that only 40 percent of children under age 5 were then vaccinated against the six diseases targeted by the WHO's EPI[10]. That immunisation coverage is falling has been an issue of global concern. For example, global immunisation against polio was slightly down from 85% in 1991 to 80% in 1992[11].

Health workers have employed strategies to improve coverage. Among these are mass immunisation campaigns and health education. While mass campaigns may be attractive politically and many have provided high rates of coverage, several problems have been encountered. These include low coverage among those most in need of attention[12]. In Malawi,[13] Ghana[14] and Tanzania[15] studies have shown that using teams of health workers to provide basic health services including EPI to rural villages indicate that only 50% of eligible children were likely to attend.

Attendance at stationary well child clinics decreased with the distance of the village from the health centre.[16, 17]

In 1989, a situational analysis of EPI coverage in Ghana showed that in spite of the success of the EPI, coverage of third dose vaccinations was still low. Only 50.7% for DPT3 and 51.2% for OPV3 including a drop out rate of approximately 40% for multiple dose antigens.[18]

The ability of high immunization coverage to prevent measles transmission assumes a homogenous and stable population, rarely found in sub-Saharan Africa where populations are culturally, socio-economically and linguistically heterogenous and scattered.[19]

Brugha and Kevany [20] report of others' studies which show that urban factors which reduce the demand for services include: poor social cohesion, migration and high mobility, cultural, ethnic and other barriers to the uptake of services, and lack of contact or friction between immigrants/minority groups and authorities. Again, Brugha and Kevany have observed that despite a developed immunisation infrastructure, Ghana continues to experience difficulty in achieving high coverage levels.[21]

Ndumbe [22] reports that an evaluation of the Cameroon EPI which began in 1975 for children

under age 3, with the goal of 80% showed that the goal could not be reached. According to him a poor vaccination system that lacked a method for finding unvaccinated children, parents' lack of information about, and bad experiences with vaccinations and socio economic characteristics were the main reasons for the failure to attain the goals.

A study in America by the National Vaccine Advisory Committee identified the following as known barriers to successful immunisation of all children:

1. Missed opportunities, for administering vaccines,
2. Shortfalls in the health care delivery system with barriers to immunisation;
3. Inadequate access to care; and
4. Incomplete public awareness of the lack of public request for immunisation.[23]

The health services system serving as a barrier to high immunisation coverage has also been found by Oliver Razum.[24]

A study found that in addition to practical difficulties due to geographical location and poor infrastructure which make the task of immunisation difficult for both managers and health workers, motivation and attitudes to immunisation among people play an important role in the acceptance of vaccination which ultimately affect immunisation coverage in the population.[25]

Onta et al[26] in a study in Nepal conclude that, the official report overestimated the immunisation coverage in their study district. This was attributable to centralised planning that ignored the local conditions. Lack of proper supervision and feedback could also have fostered inaccurate reporting .

Adogboba et al [27] report that mothers who send their children for immunisation are more likely to have heard of childhood diseases than those who do not send theirs. Also mothers who receive

prior information on the day before immunisation are 2.1 times more likely to get their children immunised; education of parents (one or both) has a positive correlation with taking children for immunisation.

These studies conducted from far and near have thrown light on some of the causes of low EPI coverage. Are these reasons also the same why the Osudoku subdistrict is recording low EPI coverage?

1.3.0 OBJECTIVES OF THE STUDY

This study had as its major objective to identify the factors that contribute to the low EPI coverage in the Osudoku subdistrict in the Dangme West District.

1.3.1 The specific objectives were:

a) To conduct vaccination coverage evaluation survey in the Osudoku and Prampram subdistricts to ascertain the accuracy or otherwise, of the coverage report for Osudoku.

b) The other specific objectives will be categorized under

1. Health Sector factors and
2. Community factors

1.3.2.1 Health Services Factors

1. To identify the logistic factors, if any, that may constrain the achievement of EPI coverage objective set in the osudoku subdistrict.
2. To assess how the immunization personnel in the subdistrict manage the EPI activity.
3. To assess the management practices of the DHMT on EPI in the subdistrict.

1.3.2.2 **Community Factors**

1. To find out mothers' knowledge about immunisation
2. To determine mothers' attitudes to immunisation
3. To identify socioeconomic factors that may constrain mothers to take their children for immunisation.

CHAPTER 2

2.0 METHODOLOGY

2.1 : STUDY SETTING

The study was conducted at the Dangme West District, (greater part of the work was done in the Osudoku subdistrict). The Dangme West District is one of the forty-five new districts created in 1988 as a result of a government re-demarcation exercise carried out in response to decentralisation reforms. With a land size of 1442 square kilometres the District is the largest in the Greater Accra Region covering about 41.5 percent of the regional land area [32]. The capital is Dodowa.

Although the district is large, its population is not dense. In 1997, the estimated mid year population, with an annual growth rate of 3%, was 103,210. The bulk of the population is scattered in relatively small settlements with population under a thousand. The scattered nature of the population requires a lot of effort to reach a few people.

The district in spite of its proximity to the national Capital, Accra, is basically a rural district with a poor state of socio-economic and infrastructural development.

The district is divided into 4 sub-districts, which are:

Dodowa (shai sub-district).

Prampram sub-district

Great Ningo sub-district (formerly Old Ningo)

Osudoku sub-district.

The Osudoku and the Old Ningo sub-districts cover a greater land area than the Prampram and

Dodowa sub-districts. At the same time Osudoku and the Old Ningo sudistricts have the worst roads in the district. The map of the district is shown in appendix 2.

The most recent national census was in 1984. According to that census the sub-districts' population were :

Sub-district	**Population**
Dodowa	15,743
Osudoku	12,673
Prampram	14,413
Old Ningo	27,021

The 1997 mid-year population for the sub-districts estimated from these figures were :

Subdistrict	**Population**
Dodowa	25,326
Osudoku	25,326
Prampram	18,379
Old Ningo	34,179

According to the DHMT's 1997 Annual report, these estimations were done at the regional level to ensure uniformity in the denominators used for reporting by the various units in the region. Each of the sub-districts has a health centre and some community clinics. Because a greater part of the study was done in the Osudoku sub-district, the sub-district will be described a bit in detail. The Osudoku sub-district is in the north-eastern part of the District. It is also the poorest in terms of accessibility.

In addition to its large size, poor accessibility and scattered settlement, its population might be different from its estimated population. This is because two censuses which were carried out in the subdistrict in 1993 and 1998 recorded a population of 16,473 and 17397, respectively for the sub-district.[4] Moreover, in the 1984 national census the Dodowa sub-district's population was greater than that of Osudoku but the population estimates for 1997 which appeared in the DHMT report were equal for both sub-districts even-though, the same growth rate was used for the two sub-districts.

Apart from the Akuse road leading to Asutsuare and the old Asutsuare road none of the roads in the Osudoku sub-district is tarred. In the rainy season some of the villages are inaccessible except with a four-wheel-drive vehicle.

In addition to the subdistrict's health centre situated at Asutsuare, the sub-district capital, there are two other health facilities, one can be found at Duffor and the other at Osuwem. In all there are 10 MCH staff in the sub-district. The sub-district as at the period of the study had a 12- year-old van and 3 motor bikes for use by the MCH staff.

2.2 : MATERIALS AND METHODS

For the coverage surveys, children between the ages 12-23 months were targeted. The 'weighing' cards (Road to Health Cards) of these children, if they had, were collected from their mothers and the recordings (i.e. dates of immunisations) as entered into them were copied on the data collection instrument (questionnaire) used for the study (see appendix 3). The children without weighing cards were treated as not having received the antigens/vaccines.

The WHO/EPI methodology for immunisation coverage was used. This involved selecting 30 clusters from each of the two subdistricts and also selecting at least 7 children from each of the clusters giving a total of at least 210 children in each subdistrict. Random sampling technique was used to select the 30 clusters. Also the first house in a cluster was selected randomly. From the first house the next house to go was selected by using the house whose main door was closet to the first one. This procedure was followed until the 7 children for a cluster have been obtained. If all the 7 children could not be obtained in the selected cluster the nearest community was used. Six pairs of interviewers and 2 supervisors were used for each subdistrict.

The duration of the Osudoku coverage survey was extended by a day because it rained in one of the originally scheduled days.

Sixty households summary forms (see appendix 4 for copy) were used. Unto these forms were transcribed the data on the questionnaire. From the household forms the data were further transferred unto two cluster summary forms (See appendices 6,7).

In analysing the results, each child was categorised for a particular antigen/vaccine by the symbol '+' and '0' for having received the antigen/vaccine correctly (ie., age appropriate for immunisation and correct interval between the adjacent doses of the multiple dose vaccines) and incorrectly or not at all, respectively (see appendices 6&7). The totals for the '+s' and '0s' were calculated for each antigen/vaccine. The proportion of the '+s' of the 210 children surveyed in each of the two sub-districts for each particular antigen/vaccine was found.

A graphical presentation to illustrate the percentage coverage of the various antigens/vaccines in the Osudoku and Prampram sub-district was then drawn (See fig 3.1, pg 15) to enable

comparison of the two sub-districts to be made.

The immunisation registers, and monthly returns on EPI coverage of the Osudoku subdistrict for 1997 were also used to assess the accuracy of the district report.

Therefore, the original objective of the study to find the community factors that might have contributed to the purported low coverage in the subdistrict through the use of FGD was changed.

However, health services factors such as the accuracy of the reporting system (M.I.S.), target population figures being used for the calculations of the percentage coverage were looked at.

CHAPTER 3

3.1.0 : RESULTS AND ANALYSIS

3.1.1 : CHARACTERISTICS OF THE SURVEYED CHILDREN

The surveyed children were within the ages of 12 to 23 months with only a few being over 23 months (table 3.1).

Table 3.1 The percentage distribution of the surveyed children in the two subdistricts according to their ages.

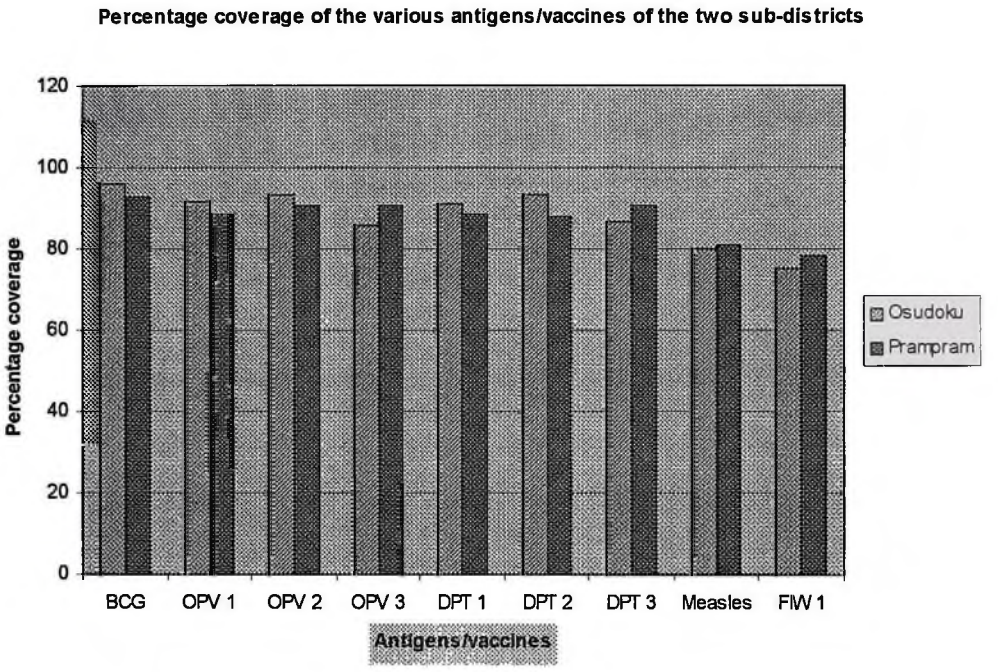
Age Group	Subdistrict			
	Osudoku	%	Prampram	%
12-14	59	28.1	59	28.1
15-17	56	26.6	37	17.6
18-20	37	17.6	58	27.6
21-23	53	25.2	53	25.2
≥23	5	0.02	3	0.01
Total	210	99.5	210	99.5

There was not much difference in the age distribution of the surveyed children. Thus, comparison can be made from the results obtained from the coverage surveys.

3.1.2 Percentage coverage of the various antigens/vaccines of the 2 subdistricts for the immunisation coverage survey.

The performance of the 2 subdistricts in the immunisation coverage are as illustrated in the

Figure 3.1: A Bar Chart of percentage (%) coverage of the various vaccines/antigens obtained from the coverage surveys in the subdistricts.



Fully immunised within (1) year(FIW(1))

By applying the Age Appropriate for immunisation criteria, and the interval of at least 1 month (28 days) between the given of the multiple dose vaccines the study observed that some of the vaccines were not given at the correct times (appendix 5). Normally one expects the multiple dose vaccines to decrease as one moves towards the higher doses. In this study the trend changed because by applying the criteria, invalid vaccines were detected particularly with the first doses of the OPV and DPT.

For the Measles the relatively low coverage observed in the 2 subdistricts were due to drop-outs and also wrong timing for giving the vaccine (see appendix 5). Some were given earlier than the stipulated 9 months in both subdistricts.

Missed opportunities were also detected, although not common. For example some children were not given BCG, however, they received all the other vaccines (Note: BCG vaccine can be given anytime after birth).

3.2.0 : MANAGEMENT INFORMATION SYSTEM (MIS)

The information flow (Management Information System, (MIS)) in the Dangme West district can diagrammatically be presented as below.

Figure 3.2. A diagram of the information flow in the Dangme West district with regard to immunisation data.

Legend → Normal channel of information flow with regard to immunisation data.

---------→ Possibly minimal feedback. However, quite common when directives are being issued

Below are tables showing the immunisation records (figures) of the indicator vaccines for the 0-11 months old children in 1997 in the Osudoku Sub-district.

Table 3.2: Immunisation figures of the indicator vaccines as appeared in the DHMT report in respect of Osudoku subdistrict

Vaccine	Children 0-11 months immunised in 1997
BCG	347
OPV3	271
DPT3	287
MEASLES	282

Source: DHMT Annual Report, 1997, Dangme West

Table 3.3. : Immunisation figures as compiled from the subdistrict 1997 returns sent to the DHMT office and kept at the office

Vaccine	Children 0-11 months immunised in 1997
BCG	347
OPV3	271
DPT3	287
Measles	283

There is a difference of 1 in the figures for measles from tables 3.2 and 3.3. This may seem trivial to comment on but it is worthy of note.

Table 3.4. : Immunisation figures as compiled from copies of the 1997 monthly returns forms from the 3 facilities to the subdistrict office, Asutsuare, and which were kept at the facilities

VACCINE	FACILITY			TOTAL
	Asutsuare	Osuwem	Duffor	
BCG	235	61	80	376
OPV3	173	33	74	280
DPT3	189	38	67	294
Measles	133	44	74	251

The immunisation registers used at the immunisation points (either outreach or static) were so poorly kept that they were not useful for the purpose of the study. For example, some of the Osuwem registers had portions of them torn off. The vaccines/antigens given to the children 0-11 months, therefore, could not be compiled so as to check with the figures in the table 3.4.

Table 3.5: Summary of the Monthly Returns Forms for the 0-11 months old children vaccinated in 1997 in the subdistrict.

Vaccine	MONTH												TOTAL
	J	F	M	A	M	J	J	A	S	O	N	D	
BCG	51	63	_	16	15	31	26	54	86	13	35	_	390
OPV3	37	17	6	15	20	20	16	38	51	9	47	20	296
DPT3	35	25	25	3	20	23	17	19	32	22	30	29	280
Measles	22	28	22	5	24	18	19	14	28	20	32	22	254

Source: Compiled from the returns from the facilities which were submitted to the sub-district office, Asutsuare.

Table 3.6: The figures of the 4 sources - DHMT report (A); subdistrict Returns Forms kept at the DHMT office (B); subdistrict returns kept at the subdistrict office, Asutsuare (C); and the returns kept at the facilities (D)

VACCINE	SOURCE			
	A	B	C	D
BCG	347	347	390	376
OPV3	271	271	296	280
DPT3	287	287	280	294
MEASLES	282	283	254	251

The figures in sources (A) and (B) for the antigens were the same except a difference of one observed in measles. These figures were quiet different from those that appeared at sources (C) and (D). The figures for the vaccines at sources (C) and (D) were different for each particular vaccine.

Data appearing in the DHMT reports were transcribed from subdistrict monthly returns forms sent to the DHMT office. Records from sources (D) to (C) and from (C) to (B) were supposed to be the same but they were not.

3.3.0. : SUBDISTRICT POPULATIONS FROM WHICH TARGET POPULATIONS ARE CALCULATED

3.3.1.: Target Population

The population size as estimated from the 1984 census of Ghana gave the subdistrict total population of 1997 as 25,325. A 4% of this population used by MOH and the DHMT was 1,013 as the 1997 figure for the target population of the 0-11 months old children.

However, the 1998 DHMT report gave the figures of two censuses carried out to prepare the grounds for a pilot study of a community health insurance scheme as 16,473 and 17,397 for 1993 and 1998 respectively.

Using these two population figures and by applying the population projection formula, $P_t = P_o e^{rn}$ the population of the subdistrict for 1997 was estimated to be 17,208. Thus, giving the target population as 688 instead of the 1,013 used by the DHMT. With this new target population figure it shows each of the coverage obtained in 1997 would have seen an increase of at least 47.1% (see table 3.7).

The coverage of the indicator vaccines that would have been obtained in 1997 in the Osudoku subdistrict had the new target population been used, displayed along-side that which appeared in the 1997 DHMT's report.

VACCINE	Children Immunised in 1997 who were within 0-11 months	% Coverage based on target population		Observed increased in coverage (%)
		1013	688	
BCG	347	34.2	50.4	47.4
OPV3	271	26.7	39.4	47.6
DPT3	287	28.3	41.7	47.3
Measles	282	27.8	40.9	47.1

3.4.0. : **The Numerator used for the Immunisation Coverage Calculation**

Part of the 0-11 months children (the numerator) that the subdistrict is supposed to cover has been taken up by other subdistricts. The major reason being that due to the poor nature of the road network in the subdistrict coupled with the subdistrict's large area, scattered distribution of the communities (towns and villages) the DHMT prior to 1997 performed a good managerial function by attaching four communities within the subdistrict to two other subdistricts. These communities are Agortor (for the Ningo subdistrict) and Luom, Muete, and Asutsuare Junction (for the Dodowa subdistrict). However, the figures of children immunised in these communities were not included in the Osudoku subdistrict MCH records. The Dodowa MCH staff, in 1997 for example, immunised the children in Asutsuare Junction and had the following figures (see table 3.8)

Table 3.8. : The number of children within 0-11 months immunised at Asutsuare Junction in 1997 with the indicator vaccines by the Dodowa MCH staff.

VACCINE	No. of 0-11 months old children immunised in 1997
BCG	7
OPV3	18
DPT3	24
Measles	18

Source: Extracted from the 1997 immunisation register of the Dodowa MCH staff and kept at the MCH office, Dodowa Health Centre.

These figures together with those obtained from the 3 other communities were lost to Osudoku subdistrict thus shrinking its numerator.

A further reduction in the numerator is the fact that some mothers in Agbekotsekpo and some 3 other communities along the subdistrict's border with the Volta Region prefer to take their children for immunisation in the Volta region (to Battor). When asked, during the survey, why they were doing that , some responded that they are from the Volta Region and would prefer to seek care for their children and themselves there. Others also said the Battor staff were more regular than the Osudoku staff. The head of the Duffor Clinic did not deny this allegation of irregularity of their visits.

CHAPTER 4

4.0.: DISCUSSIONS, CONCLUSION AND RECOMMENDATIONS

4.1.0. : Discussion

Contrary to the view held by the DHMT that the district's inability to achieve its childhood immunisation coverage objective is due to the persistent poor performance of the Osudoku subdistrict, this study did not establish this fact.
The two coverage surveys conducted showed that the Osudoku subdistrict compared favourably with the Prampram subdistrict.

Notwithstanding the comparable performance of the Osudoku subdistrict in the coverage survey there were some factors (health services factors) identified as contributing to the perceived poor performance of the subdistrict. Among these were:

(1) The target population estimates being used by the subdistrict to calculate its childhood immunisation coverage.

(2) Reduction in the numerator size.

(3) Poor data management (MIS) by the MCH staff.

4.1.1: The Target Population being used in the immunisation coverage calculation.

The study showed that the Osudoku subdistrict's estimated population is exaggerated every year.

In the study the subdistrict's population growth rate was found to be just over 1% instead of the 3% being used by the DHMT.The continuous use of the target population based on the

3% growth rate will make the achievement subdistrict's childhood immunisation coverage objective a mirage. This problem of non-achievement of objective can lead to dissatisfaction and loss of morale in the staff. Consequently, this may have a cascaded effect of poor performance due to the low level of motivation in the staff.

4.1.2 Reduction in size of the Numerator.

The determination of childhood immunisation coverage depends on two factors:

(1) The size of the numerator, and

(2) The size of the denominator.

In this study, the numerator (ie., the number of 0-11 months old children immunised) of the subdistrict was found to have been reduced as some of the children were immunised outside the subdistrict. This, therefore, means that the childhood immunisation coverage in the subdistrict for the various antigens/vaccines would be reduced.

4.1.3: Poor Data Management by MCH staff.

Data appearing in the DHMT's reports are usually transcribed from the subdistricts' data sent to it (the DHMT). Apart from the difference of one(1) in the figures appearing in DHMT report and the subdistrict data sent to the DHMT in respect of Measles, all the three other vaccines were the same as in the two data sources. This means that the changes in the data observed (table 3.8) were not due the DHMT statistics staff. The changes might be due to poor arithmetic capabilities of the MCH staff at the facility level and/or of the staff at the subdistrict office. This finding supports that of Onta et al[26] in Nepal where similar disparities in the figures at the various levels of data gathering and compilation were found.

4.1.4: Other Factors observed in the study.

Apart from these three major factors identified as contributing to the perceived low immunisation coverage in the Osudoku subdistrict other minor, but equally important observations made from the coverage surveys were: (1) missed opportunities; (2) drop-outs; and (3) poor- timing for administering the vaccines.

4.1.4.1: Missed Opportunites

Some of the children surveyed received all the vaccines but were not given BCG. BCG vaccine can be given anytime from birth so it is assumed if a child is not given at birth (possibly not born at or near a health facility)once he/she is given the other vaccines he/she will be given the BCG vaccine. Behind the study, information received from some of the MCH staff indicates that vaccines vials/ampoules are not opened unless a certain number of children attend for immunisation in a clinic or at an outreach point. This finding of missed opportunities contributing to low EPI coverage has also been observed elsewhere[23,24].

4.1.4.2: Drop-outs and non-completion of the EPI schedule.

Some of the children did not complete the immunisation schedule. This involved those for the multiple dose vaccines (OPV and DPT).

4.1.4.3: Poor- timing for administering the vaccines.

Another factor identified was the poor-timing for administering the vaccines. There were some of the children who received measles vaccine when less than the stipulated 9 months of age. Some were immunised as early as two and a half months old (see appendix 5). This finding has also been observed by Oliver Razum[24] as invalid doses resulting from poor quality of EPI services.

The multiple dose vaccines also revealed poor-timing for the initial dose and the interval between subsequent doses were less than 1 month (28 days). An examination of the 1998 and 1999 immunisation registers of Asutsuare, Duffor, and Dodowa revealed that OPV3 and/or DPT3 had been recorded while nothing in the registers indicated that the same children received OPV2 and/or DPT2.

4.2.0. : CONCLUSION AND RECOMMENDATIONS

The Osudoku subdistrict is not performing badly in childhood immunisation coverage as thought by the DHMT.

The study has shown that by using the right target population, assigning data to its proper source, and a little improvement in arithmetical exercises by the MCH staff, the Osudoku subdistrict will be seen to compare favourably like the other subdistricts in terms of chilhood immunisation coverage.

Some suggested or recommended interventions to solve the identified problems are as follows:

4.2.1 Target Population.

The DHMT/MOH should conduct periodic censuses in the district in order to obtain accurate population figures for its activities. This is because accurate population figures are important to assess certain important health indicators for a given community. Proper planning of any intervention programme depends on good indicators which are also dependent on accurate population figures.

4.2.2 Reduction in the size of the numerator.

(a) The DHMT, though did well by attaching part of the formerly 'distressed' subdistrict (Osudoku) to other subdistricts to serve. It should, however, consider compiling data based on the source of data since the study identified the underestimation of the numerator of the Osudoku subdistrict. This will not be difficult to do. The supporting subdistricts, after immunising the children, should give the figures to the Osudoku subdistrict so that accurate coverage data could be calculated. Another way would be that the DHMT statistics clerk/officer organises the data according to their sources of origin.

(b) The Osudoku SDHT., and the subdistrict parent should supervise the Duffor MCH staff so that they become more regular in their visits to Agbekotsekpo and its surrounding communities where the staff have admitted the irregularity of their visits. The mothers too should be encouraged to continue taking their children for immunisation irrespective of where the staff come from provided they are MOH recognised personnel. This is because what is important in the subdistrict is the attainment of herd immunity for the vaccine–preventable diseases.

4.2.3: Poor Data Management (MIS) by the MCH staff.

The MCH staff should be advised on the importance of accurate records so that they would send correct records to their next higher level of data processing. The MCH staff should be assisted to improve on their data management skills through staff education workshops.

The MOH should consider providing its staff with Monthly Returns Forms which can be filled in multiple copies at a time using carbon sheets.

The DHMT and the SDHT should intensify their supervisory roles so that they can detect any poor data compiled before they are sent to the DHMT Office.

Immunisation register is a basic data source of the immunisation status of the child population in an area[26]. Inefficient immunisation records keeping system does not allow programmes to track or notify families routinely when immunisations are due[23]. Because of these two findings the MCH staff should ensure that the immunisation registers are properly kept.

4.2.4: Refusal to open vaccines.

The MCH staff should comply with the MOH's EPI policy on vial opening since studies elsewhere have found that lack of vaccines during immunisation could discourage mothers from patronising immunisation services.

4.2.5: Annual Immunisation Coverage Survey

The WHO/EPI coverage survey has been proved to be inexpensive[31] and it is a useful tool to assess the immunisation status of children, women in their fertile age(TT vaccine) in a given community. Therefore, this study will suggest that the survey becomes an annual affair for the DHMT. By so doing the staff will become conversant with how to conduct it. The results from such annual surveys could be used to assess the district's performance and to improve upon when necessary. These surveys could be funded from the DHMT's health fund.

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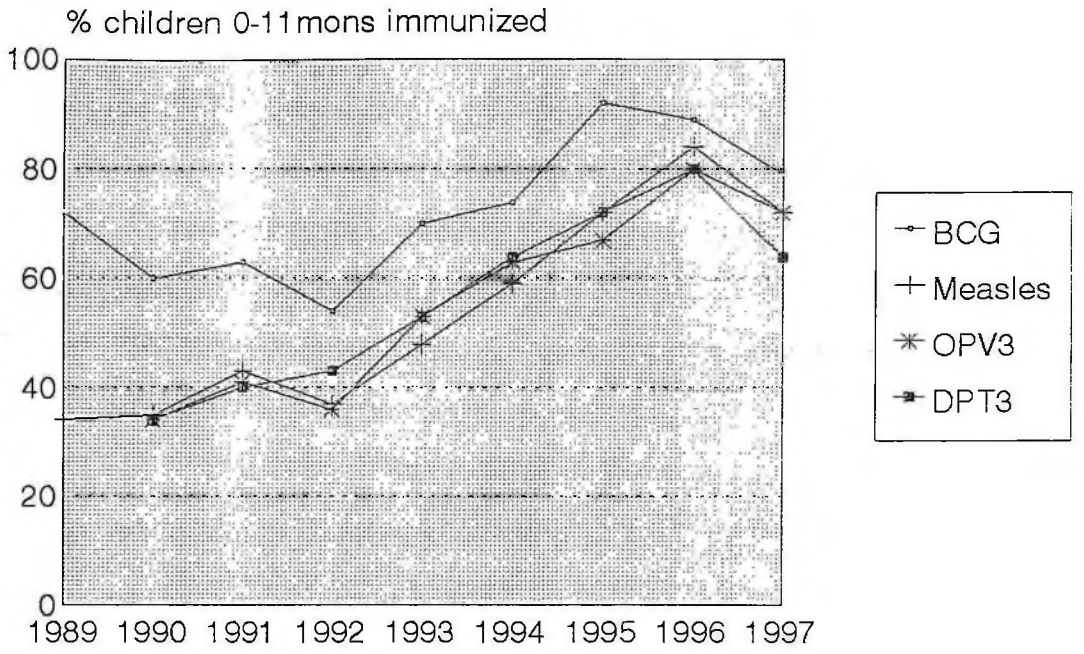
APPENDIX 1

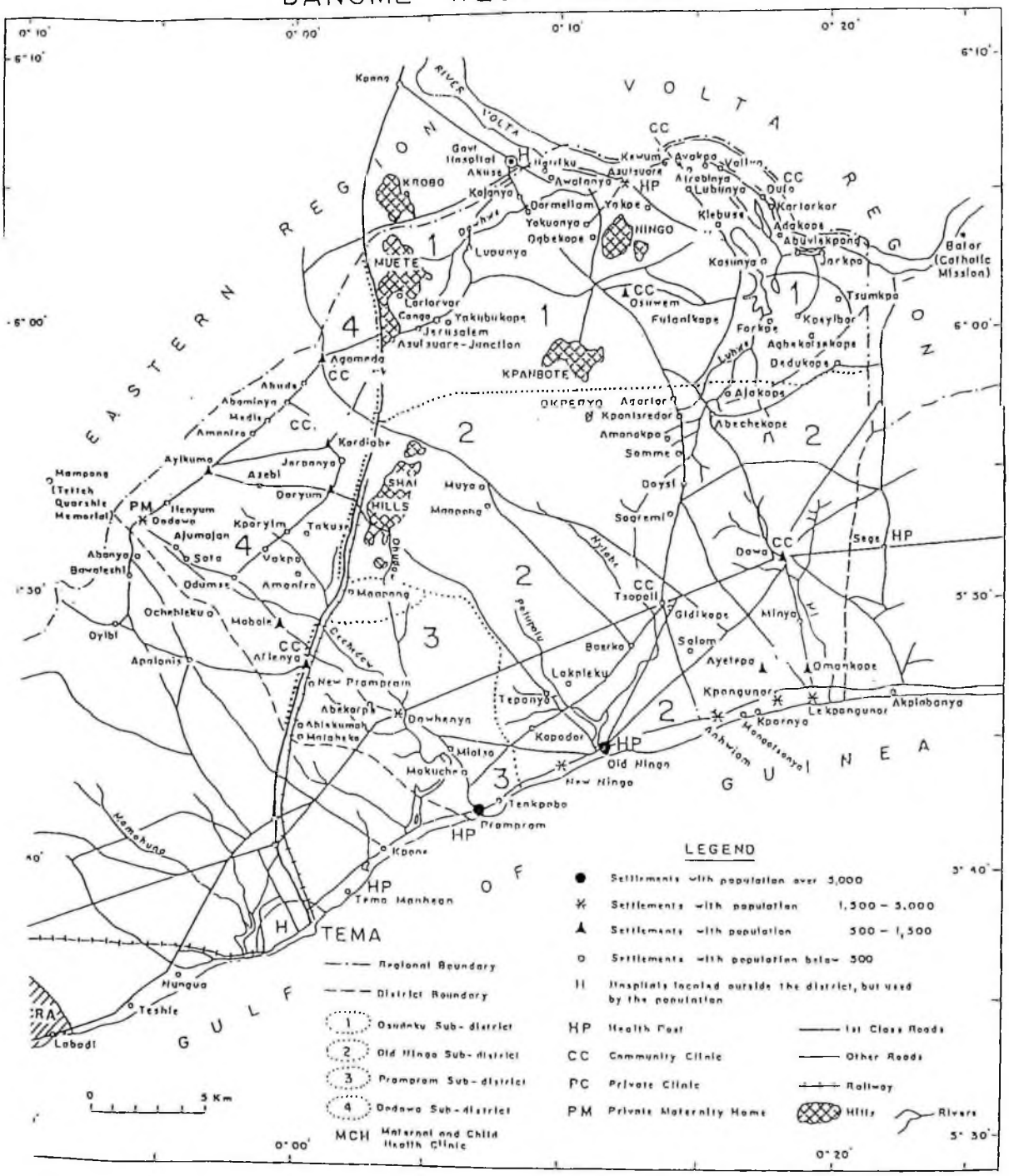
Figure 4 Trends in immunization coverage over time

Trends in EPI coverage 1989 - 1997

Dangme West district



DANGME WEST DISTRICT



APPENDIX 3

QUESTIONNAIRE FOR EPI COVERAGE SURVEY ON

12-23 MONTHS OLD CHILDREN

A: GEOGRAPHICAL INFORMATION

Cluster Number:	House Number:
Visit Information:	
Date of Visit:	
Criteria for Selection of Child:	
Earliest acceptable date: _____/05/97	Latest Acceptable Date: _____/05/98
Interviewer/Supervisor Information:	
Interviewer:	
Supervisor:	Checked (Yes or No):

B: GENERAL INFORMATION ON CHILD

Name and Age of Mother

Name:_____ Age (years)_____

Name and Age of Child 12-23 months of Age

Name:_____

Birth Date:_____/_____/_____ Age (in Months) _____months

(dd/mm/yy)

CHILDHOOD IMMUNISATIONS

Has (name of child) ever received any immunisations?

1. yes
2. no
3. doesn't know

What is the source of immunisation?

1. Health Centre/Community Clinic
2. Hospital
3. Private/non-governmental
4. Outreach
5. Others (specify).....
6. Not applicable

Do you have an immunisation card for (name of child)?

1. Yes (must see card)
2. Lost it
3. Never had one

Look at the vaccination card and record the receipt and dates of all the immunisations in the space below

Vaccine/Antigen		**Received**?	**(dd/mm/yy)**
BCG		Y [ ] N [ ]	------/------/------
OPV	1st	Y [ ] N [ ]	------/------/------
	2nd	Y [ ] N [ ]	------/------/------
	3rd	Y [ ] N [ ]	------/------/------

DPT	1st	Y [ ] N [ ]	------/------/------
	2nd	Y [ ] N [ ]	------/------/------
	3rd	Y [ ] N [ ]	------/------/------
Measles		Y [ ] N [ ]	------/------/------

All: BCG + OPV3 + DPT3 + Measles Y [ ] N [ ]

Fully Immunised before one year of age Y [ ] N [ ]

APPENDIX 4

HOUSEHOLD SUMMARY FORM

(1) Cluster Number _____

(2) Age Group Being Evaluated _____ To _____ Months

(3) Date of Interview _____

(4) Birthdate of Age Range To Be Evaluated _____ To _____

(5) Region _____

(6) City, Town, or Village _____

(7) Interviewer(s) _____

Person Number	(8) Household Number	(9) Name of Child In Age Range	(10) Birth-Date	(11) Vaccination Card (+,-)	(12) Vaccination Record (Record Date of Vaccination)								(13) Fully Vaccinated(+,-)
					BCG	Polio 1 (P_1)	Polio 2 (P_2)	Polio 3 (P_3)	DPT 1 (D_1)	DPT 2 (D_2)	DPT 3 (D_3)	Measles (M)	
1													
2													
3													
4													
5													
6													
7													
8													
9													
10													

TOTAL FULLY VACCINATED _____

APPENDIX 5

HEADING: Examples of vaccines given at wrong times as extracted from the Osudoku Sub-district survey records

Cluster Number	Date of Birth	Vaccination Records (Vaccination dates Recorded)						
		OPV 1	OPV 2	OPV 3	DPT 1	DPT 2	DPT 3	Measles
3	25/5/97	21/7/97	18/8/97	**15/8/97**	21/8/97	**18/8/97**	**15/8/97**	2/6/98
3	05/6/97	15/9/97	15/12/97	**18/8/97**	15/9/97	**15/9/97**	15/12/97	2/6/98
3	30/1/98	**03/3/98**	02/6/98	02/9/98	**03/3/98**	02/6/98	02/2/99	-
6	10/5/98	13/7/98	10/8/98	14/9/98	13/7/98	10/8/98	14/9/98	**10/5/98**
6	16/4/98	**20/4/98**	-	-	-	-	-	-
7	07/5/98	20/7/98	17/8/98	**02/9/98**	20/7/98	17/8/98	**02/9/98**	19/4/99
7	15/6/97	28/7/97	**04/8/97**	03/11/97	28/7/97	**04/8/97**	03/11/97	06/1/98
7	31/10/97	**17/11/97**	**15/11/97**	16/2/98	**17/11/97**	**15/11/97**	16/2/98	20/7/98
8	27/12/97	16/3/98	20/4/98	**15/5/98**	16/3/98	20/4/98	**15/5/98**	19/10/98
10	17/2/98	**17/3/98**	19/4/98	26/5/98	**17/3/98**	19/4/98	26/5/98	15/12/98
12	27/1/98	**02/3/98**	01/6/98	06/7/98	**02/3/98**	01/6/98	06/7/98	02/11/98
12	04/7/97	**08/7/97**	-	-	-	-		-
19	29/6/97	28/10/97	08/12/97	**12/1/98**	28/10/97	08/12/97	**12/1/98**	08/6/98
20	28/11/97	20/1/98	17/2/98	15/3/98	20/1/98	17/2/98	17/3/98	**22/2/98**

NB: The emboldened ones were those wrongly given.

APPENDIX 6

Cluster summary form of the Osudoku subdistrict for children aged 12-23 months as at 24-29 May, 1999

			Summary of vaccination status for all children falling in the																
			Age group being evaluated for all 30 clusters in the sample)																
1	Age Group Being Evaluated: 12 to 23 months																		
2	Date: 25 - 28/5/99	Sub-district: Osudoku																	
Cluster Number	Vaccination cards	BCG		Polio 1		Polio 2		Polio 3		DPT 1		DPT 2		DPT 3		Measles		Fully vaccinated	
		0	+	0	+	0	+	0	+	0	+	0	+	0	+	0	+		
1	7	-	7	-	7	-	7	-	7	-	7	-	7	-	7	1	6	6	
2	7	-	7	-	7	-	7	2	5	-	7	-	7	2	5	2	5	5	
3	7	-	7	1	6	-	7	2	5	1	6	1	6	1	6	2	5	5	
4	7	-	7	-	7	-	7	-	7	-	7	-	7	1	6	1	6	6	
5	7	1	6	1	6	1	6	3	4	1	6	1	6	2	5	2	5	4	
6	7	-	7	-	7	1	6	1	6	1	6	1	6	1	6	2	5	5	
7	7	-	7	1	6	2	5	2	5	1	6	2	5	2	5	1	6	5	
8	7	-	7	-	7	-	7	1	6	-	7	-	7	-	7	-	7	6	
9	7	-	7	-	7	-	7	1	6	-	7	-	7	1	6	1	6	6	
10	7	-	7	1	6	-	7	-	7	1	6	-	7	-	7	2	5	5	
11	7	-	7	-	7	-	7	1	6	-	7	-	7	1	6	1	6	6	
12	7	1	6	1	6	1	6	1	6	2	5	-	6	1	6	1	6	5	
13	7	2	5	1	6	1	6	2	5	1	6	1	6	2	5	3	4	4	
14	7	-	7	-	7	-	7	-	7	-	7	1	7	-	7	1	6	6	
15	7	-	7	1	6	-	7	-	7	1	6	-	7	-	7	1	6	6	
16	7	-	7	1	6	-	7	-	7	1	6	-	7	-	7	-	7	6	
17	7	-	7	-	7	-	7	-	7	-	7	-	7	-	7	1	6	6	
18	7	1	6	-	7	1	6	2	5	-	7	-	7	2	5	2	5	6	
19	7	1	6	1	6	2	5	4	3	2	5	-	6	4	3	4	3	5	
20	7	-	7	3	4	-	7	1	6	2	5	1	6	1	6	2	5	3	
21	7	-	7	-	7	1	6	-	7	-	7	1	6	-	7	-	7	4	
22	7	1	6	1	6	1	6	2	5	1	6	1	6	2	5	1	6	6	
23	7	-	7	-	7	-	7	-	7	-	7	-	7	-	7	1	6	5	
24	7	-	7	-	7	-	7	-	7	-	7	-	7	-	7	1	6	6	
25	7	-	7	1	6	-	7	-	7	1	6	-	7	-	7	-	7	6	
26	7	-	7	1	6	-	7	-	7	1	6	-	7	-	7	1	6	6	
27	7	1	6	1	6	2	5	2	5	1	6	2	5	2	5	1	6	5	
28	7	-	7	1	6	-	7	1	6	-	7	-	7	1	6	2	5	5	
29	7	-	7	1	6	1	6	2	5	1	6	1	6	2	5	4	3	3	
30	7	-	7	-	7	-	7	-	7	-	5	-	7	-	7	1	6	6	
Sub-Total	-	8	202	18	192	14	196	30	180	19	191	14	196	28	182	42	168	-	
Total	210	210		210		210		210		210		210		210		210		158	

APPENDIX 7

Cluster summary form of the Prampram subdistrict for children aged 12-23 months as at 24-29 May, 1999 who were involved in the study

			Summary of vaccination status for all children falling in the																
			Age group being evaluated for all 30 clusters in the sample)																
1	Age Group Being Evaluated: 12 to 23 months																		
2	Date: 25 - 28/5/99	Sub-district: Prampram																	
Cluster Number	Vaccination cards	BCG		Polio 1		Polio 2		Polio 3		DPT 1		DPT 2		DPT 3		Measles		Fully vaccinated	
		0	+	0	+	0	+	0	+	0	+	0	+	0	+	0	+		
1	7	-	7	1	6	-	7	1	6	1	6	-	7	1	6	3	4	4	
2	7	-	7	2	5	-	7	1	6	2	5	-	7	1	6	2	5	5	
3	7	1	6	1	6	1	6	1	6	1	6	1	6	1	6	3	4	4	
4	7	1	6	1	6	-	7	-	7	1	6	-	7	-	7	1	6	6	
5	7	-	7	-	7	-	7	-	7	-	7	-	7	-	7	-	7	7	
6	7	-	7	-	7	-	7	-	7	--	7	-	7	-	7	1	6	6	
7	7	-	7	-	7	-	7	-	7	-	7	-	7	-	7	-	7	7	
8	7	-	7	1	6	-	7	-	7	1	6	-	7	-	7	-	7	6	
9	7	-	7	-	7	-	7	-	7	-	7	-	7	-	7	-	7	7	
10	7	-	7	-	7	-	7	-	7	-	7	-	7	1	6	1	6	6	
11	7	1	6	1	6	1	6	1	6	1	6	1	6	1	6	3	4	4	
12	7	-	7	2	5	1	6	-	7	2	5	1	6	1	7	-	7	5	
13	7	-	7	-	7	-	6	1	6	-	7	1	6	1	6	1	6	6	
14	7	1	6	1	6	1	6	1	6	1	6	1	6	1	6	1	6	6	
15	7	-	7	-	7	1	6	-	7	-	7	1	6	-	7	1	6	6	
16	7	-	7	-	7	-	7	-	7	-	7	-	7	-	7	-	7	7	
17	7	-	7	-	7	3	6	1	6	-	7	1	6	1	6	1	6	6	
18	7	1	6	2	5	3	6	2	5	2	5	1	6	2	5	3	4	4	
19	7	-	7	-	7	2	7	-	7	-	7	-	7	-	7	1	6	6	
20	7	2	5	2	5	-	4	2	6	2	5	3	4	2	5	2	5	4	
21	7	3	4	2	5	1	4	3	4	2	5	3	4	3	4	3	4	4	
22	7	2	5	2	5	1	5	2	5	2	5	2	5	2	5	2	5	4	
23	7	-	7	-	7	-	7	-	7	-	7	-	7	-	7	-	7	7	
24	7	-	7	-	7	-	6	-	7	-	7	1	6	-	7	-	7	6	
25	7	1	6	1	6	-	6	1	6	1	6	1	6	1	6	1	6	6	
26	7	-	7	2	5	-	7	-	7	2	5	-	7	-	7	1	6	5	
27	7	-	7	-	7	-	7	1	6	-	7	-	7	1	6	3	4	4	
28	7	-	7	-	7	-	7	-	7	-	7	-	7	-	7	-	7	7	
29	7	2	5	1	6	2	5	2	5	2	5	2	5	2	5	3	4	4	
30	7	-	7	1	6	-	7	1	6	2	5	-	7	-	7	2	5	5	
Sub - Total		15	195	24	186	20	190	21	189	25	185	20	90	21	189	39	171	-	
Total	210	210		210		210		210		210		210		210		210		164	