CHAPTER IV

RESULTS AND DISCUSSION

The results of this study will be presented in the following sections in accordance with the specific objectives of the study.

SECTION A : The Providers' perspective

In this section, the results of the in-depth investigation of selected management components will be presented.

I Manpower and material resources
II Monitoring and control

The role of Family Planning Programme (FP) in influencing the implementation of National Programme for the Prevention of Nutritional Anemia (NAP) and National Programme for the Prevention of Blindness due to Vitamin A Deficiency (VAP) will be discussed in this section.

SECTION B : The Beneficiaries' perspective

The impact of NAP and VAP on the beneficiaries is evaluated in this section in terms of:

I Responses of beneficiaries regarding utilization of iron and vitamin A supplements

II Hemoglobin levels of preschool children, pregnant and lactating women

III Prevalence of Bitot's spots in preschool children.

SECTION C : The Methodological perspective

This section will describe -

I Relative strengths and weaknesses of the various qualitative and quantitative methods used in the study with respect to achievement of the study objectives.

II Triangulation of various methods and its significance in the study.

Note: Please refer to List of Abbreviations (page 3) for abbreviations used in this chapter.

SECTION A : THE PROVIDERS' PERSPECTIVE

MANPOWER AND MATERIAL RESOURCES

The general pattern in presentation of results in this section will be that the interview data will be first presented and will be subsequently supported or contrasted by the observation data, and other qualitative data. For brevity and simplicity, if urban-rural data are similar or show no discernible trend as was the case in several instances, this will not be mentioned; only differences will be highlighted in the text. Finally, data concerning the senior district level officials will be presented.

I. PROFILE OF THE FUNCTIONARIES

1. Age : As Table 1 indicates, one-third of the functionaries were in the 31-40 years age group and an equal number in the 41-50 years age group. As regards urban-rural differences, the rural ANMs and LHVs were younger than their urban counterparts. It was observed that new recruits were usually given rural assignments; and with experience, the functionaries shifted to urban areas.

2. Education : More than half of the functionaries (mostly ANMs and LHVs had received schooling (VIII to XII Standard) but had not studied further. The rest were either graduates or post-graduates.

3. Work experience : A majority of the functionaries had more than 10 years of work experience in the health services in Indore. Above 50 percent had spent more than 5 years at their current Centre. With respect to urban-rural differences, more urban ANMs and MOs had above 5 years experience as compared to their rural counterparts. It was observed that the functionaries who have been working in their current Centres for a long time were more competent than those who have been there for a short time.

4. Sex : A majority of the urban MOs in-charge of the Maternal and Child Health (MCH) programmes were women (7 out of 9) while in the rural areas, the picture was opposite (4 out of the 5 MOs were men).

5. Marital status : A majority of the functionaries (87%) were married. It was observed that many of the rural ANMs had very small children whom they had to leave behind or carry with them when they travelled to the villages in their areas. Lack of adequate child care facilities in the rural areas was an important problem faced by them.

Senior district level officials

Five out of the six district officials were above 40 years of age. An equal number had post-graduate qualifications. Similarly, five officials had more than 10 years of experience in the health services. Four officials were males and 2 were females.

TABLE 1. PROFILE OF THE FUNCTIONARIES

S No	Profile	ANM n=19	MPW n=5	LHV n=14	BEE n=4	MO n=14	Total N=56	%
1.	Age group (years)		Number of Respondents					
	a) 21-30	7	0	0	0	3	10	18
	b) 31-40	6	3	6	1	5	21	37
	c) 41-50	4	2	6	3	6	21	37
	d) >50	2	0	2	0	0	4	7
2.	Education							
	a) VIII-XIII Std	18	1	12	0	0	31	55
	b) Graduate	1	2	1	0	6	10	18
	c) Post graduate	0	2	1	4	8	15	27
3.	Work experience							
	a) In the health services (years)							
	(i) ≤ 5	6	0	0	0	4	10	18
	(ii) 6-10	5	0	3	0	3	11	20
	(iii) >10	8	5	11	4	7	35	62
	b) In the present post (years)							
	(i) ≤ 5	6	0	5	1	7	19	34
	(ii) 6-10	5	0	5	1	4	15	27
	(iii) >10	8	5	4	2	3	22	39
	c) In Indore city & district (years)							
	(i) ≤ 5	8	0	3	0	8	19	34
	(ii) 6-10	6	0	6	0	4	16	28
	(iii) >10	5	5	5	4	2	21	37
	d) In the centre where currently working (years)							
	(i) ≤ 5	10	1	6	0	9	26	46
	(ii) 6-10	6	1	3	1	5	16	28
	(iii) >10	3	3	5	3	0	14	26

II A. KNOWLEDGE, ATTITUDES AND PRACTICES OF FUNCTIONARIES IN RELATION TO THE IMPLEMENTATION OF NAP AND VAP

NAP : Table 2 presents the responses of Centre level functionaries in relation to objectives of NAP, types and composition of the supplements given under NAP, target beneficiaries, dose, frequency and duration of supplementation and the sites of distribution of supplements.

Objectives of NAP : Fifty percent of the functionaries stated that the objective of the programme was prevention of anemia. A few (16%) were more specific i.e. the objective of NAP is to prevent iron deficiency anemia. There was a wide variation in theremaining responses : NAP is for improvement of health, nutrition and hemoglobin level, increase in strength, prevention of weakness, treatment of disease ("Sukha rog mein"), supplementing vitamins ("vitamin ki poorti ke liye"). In general, the LHVs, BEEs and MOs (supervisory cadre) were better informed than the ANMs and MPWs (field workers) about the objective of the programme whereas it is the latter who execute the task of supplementation.

Thus, it was not surprising when the observations of the investigator showed that the functionaries either did not mention any thing about the supplement while giving it to the beneficiaries; if they did (usually only when beneficiaries enquired about the purpose of giving them the tablets), it was limited to saying that the supplement was a strength giving medicine.

Four out of 6 district officials were aware of the specific objective of the programme which is the prevention of nutritional anemia. Some other responses included : improvement of nutrition, preventing the incidence of low birth weight, prevention of "bleeding at delivery time".

Types of supplement given in the programme : All the functionaries were aware that small and large iron tablets were being given under the programme but not all were aware that iron syrup is also a supplement under this programme. More urban ANMs and MOs were aware of the syrup than their rural counterparts.

All the six district officials knew that small and large iron tablets are given under the programme and five officials were aware that iron syrup is also given under NAP.

3. Composition of the supplements : A majority of the functionaries could not tell the composition (iron and folic acid content) of the small and large tablets and the syrup. Surprisingly, none of the district officials also knew the composition of small tablets and syrup while only one could tell the correct composition of large tablets.

4. Beneficiaries of the programme : Almost all the functionaries were not aware that iron syrup is supplied for children 1-3 years of age. Various age groups from 6 months to 10 years were mentioned. As with the syrup, above 90 percent of the

TABLE 2. KNOWLEDGE OF FUNCTIONARIES ABOUT NAP : MAJOR RESPONSES

S No	Knowledge aspects	ANM n=19	MPW n=5	LHV n=14	BEE n=4	MO n=14	Total N=56	%
		Number of Respondents						
1.	Objective of the programme							
a)	To prevent anemia	3	2	11	4	8	28	50
b)	To prevent iron deficiency	3	0	1	2	3	9	16
c)	Other responses	20	3	2	4	2	31	53
2.	Types of supplement given in the programme							
a)	Syrup	11	5	11	4	8	39	70
b)	Small tablets	19	5	14	4	14	56	100
c)	Large tablets	19	5	14	4	14	56	100
3.	Composition of the supplements							
a)	Syrup							
(i)	Incorrect response	1	0	4	0	5	10	18
(ii)	Do not know	18	5	10	4	9	46	82
b)	Small tablets							
(i)	Incorrect response	0	0	4	1	9	14	25
(ii)	Do not know	19	5	10	3	5	42	75
c)	Large tablets							
(i)	Incorrect response	0	0	3	2	8	13	23
(ii)	Do not know	19	5	11	2	6	43	77
4.	Beneficiaries of the programme							
a)	Syrup							
(i)	1-3 years	1	0	3	0	1	5	9
(ii)	Do not know	18	5	11	4	13	51	91
b)	Small tablets							
(i)	1-12 years	3	0	0	0	0	3	5
(ii)	Do not know	16	5	14	4	14	53	95
c)	Large tablets							
(i)	Pregnant women	19	5	14	4	14	56	100
(ii)	Lactating women	13	3	12	1	10	39	70

Table 2 contd..

S No	Knowledge aspects	ANM n=19	MPW n=5	LHV n=14	BEE n=4	MO n=14	Total N=56	%
	(iii) Family planning acceptor women	17	3	9	2	3	34	60
	(iv) Other responses	12	4	11	4	6	37	66
5.	Dose and frequency							
	a) Syrup							
	(i) 1 tsp daily	12	5	12	4	9	42	75
	(ii) Do not know	7	0	2	0	5	14	25
	b) Small tablets							
	(i) One tablet daily	19	5	14	4	13	55	98
	(ii) Do not know	0	0	0	0	1	1	2
	c) Large tablets							
	(i) One tablet daily	19	5	14	4	14	56	100
6.	Duration of supplementation							
	a) Syrup							
	(i) 90-100 days in a year	6	3	2	0	2	13	23
	(ii) Do not know	13	2	12	4	12	43	77
	b) Small tablets							
	(i) 90-100 days in a year	17	5	14	4	11	51	91
	(ii) Do not know	2	0	0	1	2	5	9
	c) Large tablets							
	(i) 90-100 days in a year	17	5	14	3	12	51	91
	(ii) Do not know	2	0	0	1	2	5	9
7.	Sites of distribution of supplement							
	a) Beneficiary's home	16	4	8	3	4	35	62
	b) Health centre	17	2	11	2	14	46	82
	c) School/balwadi /anganwadi	14	4	12	0	6	36	64
	d) A central place in the area	0	5	5	0	7	17	30

* Multiple responses.

functionaries did not know the correct age group of beneficiaries of small tablets. Varied responses in the range of 6 months to 16 years were obtained.

In contrast to the above, all the functionaries were aware that pregnant women were beneficiaries of large tablets. Similarly, 70 and 60 percent of the functionaries were also aware that lactating women and family planning acceptor women respectively are the beneficiaries. However, incorrect responses were also obtained; for example, adults, children (any age group), anemic or weak persons, women 15-45 years of age, patients complaining of back-ache or convalescing patients.

While the interview data shows that above 60 percent of the functionaries were aware of the correct target groups of large tablets, in practice, they a) were not concerned with covering these eligible beneficiaries under NAP and lost opportunities to enrol them under the programme when the target women came in contact with the health system for ante-natal care, outpatient services or for immunization of their babies; b) gave the tablets to any person who complained of any health problem like stomach ache or fever or cough as a substitute for the relevant medicine which they did not possess; c) preferred to give tablets to potential family planning acceptors or their family members to motivate them for family planning and also to build up Hb levels of potential cases so that they can be operated upon; d) gave the supplements especially to those people who had something to offer them in return, such as home produced food items, or help like locating accommodation for them.

The correct age of target beneficiaries of syrup and small tablets was not known to any of the six district officials interviewed; varied responses in the range of 6 months to 6 years were obtained. Surprisingly, only three officials were aware that pregnant women are the beneficiaries of the large tablets and one official mentioned lactating women. None of the officials mentioned family planning acceptor women.

5. Dose and frequency : A majority of the functionaries (75%) were aware that the daily dose of iron syrup is one teaspoon; this response was obtained from more rural than urban functionaries. Similarly, almost all the functionaries knew that one small tablet is to be consumed by children daily and one large tablet by women daily.

Most of the district officials (5) were not aware of the correct dose of iron syrup. While all the six officials knew the correct dose and frequency of intake of small tablets, five were aware of the same for large tablets.

6. Duration of supplementation : Less than one-fourth of the functionaries had the knowledge of duration of supplementation of iron syrup. With regard to small and large tablets, the correct duration of 90-100 days was known to above 90 percent of the functionaries. However, in spite of their being aware of the correct dose, the frequency of intake of iron supplements and duration of supplementation they did not communicate this

knowledge to the beneficiaries at the time of giving the supplement or on other occasions of contact.

Most of the district officials (5) did not know the duration of supplementation of iron syrup. While only three of them were aware that small tablets were to be taken for 90-100 days, five of them had knowledge of duration of supplementation of large tablets.

7. Sites of distribution of supplements : As Table further shows, a majority of the functionaries (82%) stated that the supplement was distributed at the health centre; about two-thirds also mentioned school/Balwadi/Anganwadi and houses of beneficiaries as distribution sites. Thirty percent of the functionaries stated that the supplement was distributed at a central place in the field area (urban slum or village). The recommended house-to-house extension approach was mentioned by more rural than urban LHVs. Distribution at a central place in the field area was mentioned by a greater number of urban ANMs, LHVs and MOs as compared to their rural counterparts; this is perhaps because this approach is less time consuming and feasible in densely populated urban slums as compared to scattered houses in rural areas. The observations showed that the distribution of the supplements neither systematic nor planned whether at the health centre or at homes of beneficiaries. The functionaries did not utilize the opportunities presented to them for coverage under NAP whenever the eligible beneficiaries made contact with the health system at the centre or in the field area. This was because, either the targets had been achieved or it was easy for them to achieve the targets given in a few rounds of distribution; or the supplies were not available at centre or had not been taken to the field.

8. Size of offtake : A majority of the functionaries stated that one offtake, in case of iron syrup, consisted of one bottle of syrup. As regards small tablets, about 50 percent of the ANMs and most of the MPWs said that they gave 30 tablets, while 20 percent gave 90-100 tablets in one offtake. While more rural ANMs and MPWs mentioned that they gave 30 tablets, more urban ANMs preferred giving 90-100 tablets in one offtake. With respect to large tablets, about 45 percent of the functionaries (mostly rural) responded that they gave 30 tablets to a beneficiary at one point of time while one-fourth (mostly urban) stated 90-100 tablets per offtake.

9. Registration of pregnant women for giving iron supplement : Fifty percent of the ANMs and MPWs stated that women are registered for giving iron supplement as soon as pregnancy is detected; a smaller number mentioned registration in third month of pregnancy (20%) or after the fourth month (20%).

Forty two percent of the functionaries mentioned that if the pregnant woman was going away for delivery to her natal home, they would give her the remaining dose to be taken with her. Twenty percent stated that they would ask her to take the remaining dose from the health centre at the natal place. However, in practice, the functionaries rarely attempted to

ensure completion of the course of supplementation of a beneficiary. Once a pregnant woman had been registered and given part dose or complete dose of the iron tablets, no attempt was made to follow up. Often, another offtake was given on a second contact and her name was re-recorded a second time on a different date. A pregnant or a lactating woman was of interest to a health functionary usually when she was a potential family planning acceptor.

10. **Administration of the supplement** : Almost all the functionaries (98%) stated that iron supplement has to be taken consecutively by the beneficiaries for 90-100 days. This fact was reiterated by the district officials. But it was observed that no attempt was usually made by the functionaries to either inform beneficiaries regarding consecutive intake for 100 days or to ensure delivery of the supplement regularly till the course was completed.

Summing up the above data, about 50 percent or more of the centre level functionaries had knowledge of the objective of NAP, types of supplements given under the programme, dose and frequency of the dosing, duration of supplementation with small and large tablets and the need for consecutive administration (awareness regarding the iron syrup however was less). Fewer than 50 percent of the functionaries were aware of the composition of the supplements given under NAP, and the target groups for iron syrup and small tablets. There was a lot of variation with respect to the sites of distribution and size of offtake of iron supplements. Unfortunately even the senior district officials interviewed were not adequately informed regarding NAP. In several instances, interview data was not validated by the observation data; with observations revealing a more dismal picture than the interviews indicated.

VAP : Table 3 summarizes the responses of centre level functionaries regarding objectives of VAP, type and composition of supplement given under VAP, target beneficiaries, dose, frequency and duration of supplementation and the sites of distribution of the supplement.

1. **Objective of VAP** : None of the centre level functionaries could state the specific objective of VAP which is to prevent blindness due to vitamin A deficiency. However, some of them (44%) mentioned the objective as the prevention of blindness. Prevention of viatamin A deficiency was mentioned by very few functionaries (16%). There was a lot of variation in the remaining responses which included : prevention of night blindness, prevention of eye diseases, for healthy eyes, for good health, for avoiding spectacles ("Aage jaakar chashma nahin lage"). The urban functionaries were, in general, more aware of the programme objective than rural functionaries.

Considering that the functionaries themselves were not adequately informed regarding the objective of VAP, it was not surprising when the observations showed that they merely told people - who asked them - that the supplement was eye medicine' and prevented poor vision'.

TABLE 3. KNOWLEDGE OF FUNCTIONARIES ABOUT VAP : MAJOR RESPONSES

S No	Knowledge aspects	ANM n=19	MPW n=5	LHV n=14	BEE n=4	MO n=14	Total N=56	%
1.	Objective* of the programme	Number of Respondents						
a)	To prevent vitamin A deficiency	2	0	2	0	5	9	16
b)	To prevent blindness	5	1	9	3	7	25	44
c)	To prevent night blindness	9	4	3	1	4	21	38
d)	Other responses	16	4	5	1	1	27	39
2.	Type of supplement*							
a)	Solution	19	5	14	4	14	56	100
b)	Tablets	1	0	4	1	1	7	13
c)	Capsules	7	1	9	1	4	22	39
3.	Composition of the supplement							
a)	2 lakhs I.U. in 2ml of solution	0	0	2	1	1	4	7
b)	Do not know*	19	5	12	3	13	52	93
4.	Beneficiaries							
a)	Children 1-5 yrs of age	4	1	7	1	5	18	32
b)	Other responses	16	5	7	3	9	40	72
5.	Dose and frequency							
a)	1 tsp every 6 months	19	5	14	4	13	55	98
b)	Do not know	0	0	0	0	1	1	2
6.	Supplement should be administered							
a)	Round the year	19	5	14	4	13	55	98
b)	During fixed months	0	0	0	0	1	1	2
7.	Sites of distribution							
a)	Beneficiary's home	10	1	5	4	6	26	46
b)	Health centre	14	2	10	4	12	42	75
c)	School/balwadi/ anganwadi	12	3	10	0	6	31	55
d)	A central place in the area	7	3	7	0	8	25	45

* Multiple responses.

Only one senior district official could state the specific objective of the programme. However, one official each stated that the programme objective is to prevent blindness and to prevent vitamin A deficiency. Some other responses were : prevention of night blindness, for growth and development, for reduction of corneal opacity and infections, including ear infections.

2. **Type of supplement** : All the functionaries were aware that vitamin A solution was distributed under the programme. More than 50 percent of the functionaries added that tablets, capsules, injections and advice of vitamin A rich foods are also given under the programme. Similarly, all the six district officials were aware that vitamin A solution was given under VAP. However, 1-2 officials also mentioned capsules and advice of vitamin A rich foods.

3. **Composition of supplement** : Less than 10 percent of the functionaries knew that the supplement contains 2,00,000 IU of vitamin A in 2 ml of solution. Similarly only one out of six district officials was aware of the composition of the supplement.

4. **Beneficiaries of the programme** : Only one-third of the functionaries knew that children 1-5 years of age were the beneficiaries of the programme. The remaining functionaries mentioned various age groups from birth to 11 years. Proportionately a greater number of urban ANMs, LHVs and MOs were aware of the target beneficiaries of VAP than their rural counterparts. Unfortunately, even the district officials (4 out of 6) did not know the correct age group. The observations confirmed that the supplement was given to children of any age from 6 months onwards. Children much older than 5 years were also given vitamin A and their ages were not recorded especially if they were covered in schools.

Dose and frequency : Almost all the functionaries (98%) knew that 1 teaspoon of vitamin A solution or 2 ml is to be given to the beneficiaries at 6 month interval. In practice, most functionaries observed did not make the attempt to measure out the supplement correctly from the given spoon. Sometimes, the supplement was either measured out in the lid of the bottle, or an approximate quantity was poured directly from the bottle into the mouth of the child. Further, when given in spoon, the spoon was contaminated with the mouth of each child; creating a risk of cross infection or causing the mothers to bring their own spoons. Functionaries rarely checked records to see if the interval of 6 months between two doses was being maintained or not. While all the six district officials knew that the supplement is given every six months, only four officials were aware that 1 teaspoon or 2 ml of solution is given to the beneficiary at one time.

5. **Time of administration** : Almost all the functionaries (98%) stated that the supplement was administered round the year and the observations confirmed this statement. A very small number stated that it was given in such a way that two doses could be given within a school calendar year i.e. June and May. The other

responses included : administration in winter, administration whenever the supplement was available or whenever achievements fell short of targets. Among the district officials, 5 officials mentioned that the supplement was given round the year. The recommended strategy of distribution is during fixed months of a year.

6. Sites of distribution : As Table 3 shows, a majority of the functionaries (75%) responded that vitamin A solution was distributed at the health centre. Several functionaries also mentioned other central places where children could be collected and given the dose : school, Balwadi, Anganwadi. The observations confirmed that the functionaries preferred giving the supplement through the clinic approach. Although 45 percent stated that they gave the supplement at homes of beneficiaries, in practice much fewer did so. In informal conversations, the functionaries mentioned that the oily vitamin A solution sticks to their hands, is not convenient to carry around (liquid in a glass bottle) and smells bad hence they prefer to dose as many children as possible in one round at a central place in the community, clinic or school. The investigator observed lack of adequate attention to hygiene at the time of distribution - functionaries wiping their hands on the wall of the school or house where they gave the supplement or on a table cloth in Anganwadi or school or on the floor after giving the supplement and not washing the spoon after dosing. The spoon was also observed to be wiped on the table cloth.

Summing up the above data, more than 50 percent of the functionaries were aware of the supplement given under the programme, its dose and frequency. Less than 50 percent of the functionaries had knowledge of the objective of VAP, the composition (vitamin A content) of the supplement and target beneficiaries. Most of the functionaries were administering the supplement round the year as against the recommended distribution during fixed months of the year; and were following the clinic approach as against the recommended extension approach. It was discouraging to note that even the senior district officials were poorly informed regarding several aspects of VAP. Observations, in most instances, confirmed the poor targetting and distribution of the supplement.

II B. KNOWLEDGE OF FUNCTIONARIES REGARDING FOOD SOURCES OF IRON AND VITAMIN A AND THE DEFICIENCIES OF THESE NUTRIENTS

Iron

1. Food sources : As Table 4 indicates, one or more green leafy vegetables (GLVs) were mentioned as sources of iron by a majority of the functionaries, followed by a variety of other vegetables such as brinjals and carrots. Other responses included animal products, pulses and legumes, whole grain cereals, milk, curds and fruits. More urban than rural ANMs and LHVs were aware of GLV, eggs, fish and meat as iron sources. Eighty four percent of the ANMs and all the MPWs stated that iron deficiency could be prevented by an iron rich diet. However, observations revealed that the functionaries usually did not communicate this knowledge

TABLE 4 . KNOWLEDGE OF FUNCTIONARIES REGARDING FOOD SOURCES AND DEFICIENCY OF IRON : MAJOR RESPONSES

S.No	Knowledge aspect	ANM N=19	MPW n=5	LHV n=14	BEE n=4	MO n=14	TOTAL N=56	%
		Number of respondents						
1.	Food sources of iron*							
	a) Green leafy vegetables	15	4	14	1	N.A	34	81
	b) Other vegetables	10	2	8	3	N.A	23	55
	c) Others	8	0	7	2	N.A	17	40
2	Signs and symptoms of iron deficiency*							
	a) Pallor of conjunctiva and/ or sclera	14	3	9	2	13	41	73
	b) Weak appearance	14	3	8	4	7	36	64
	c) Pallor of nails	8	9	1	2	5	25	45
	d) Pali skin	7	1	6	2	9	25	45
	e) Giddiness	4	2	5	4	0	15	27
	f) Pale tongue	2	0	3	7	0	12	21

* Multiple responses

N.A.= Not Available

of food sources to the beneficiaries although the socio-economically disadvantaged beneficiaries could make use of cheap locally available food sources of iron if they were adequately informed.

2. Signs and symptoms of iron deficiency : A majority of the functionaries mentioned pallor of conjunctiva and/or white sclera and weak or thin appearance as symptoms of iron deficiency. Other signs and symptoms included pallor of nails, pale skin and giddiness (Table 4).

Some local terms, which were used by functionaries to describe these signs and symptoms are reproduced below :

* "Safed aankhen, aankhon mein lali kam, peeli aankhen" (Pallor of conjunctiva and/or sclera)
* "Kamjor haalat, kamjor dikhega, dubli-patli, dubli aurat, dublapan, safed dikhega, huddian dikhti hain" (Weak or thin appearance)
* "Safed naakhoon" (Pallor of nails)
* "Chehare mein feekapan, peelapan, feeka chehara" (Pale skin)
* "Chakkar aana" (Giddiness).

The functionaries did not make use of this knowledge in reality. The observations showed that even if the beneficiaries exhibited the signs (eg. pallor) and symptoms, the functionaries did not notice them.

Pallor of conjunctiva and nails (N=4) and low hemoglobin levels (N=3) were mentioned most frequently by senior district officials as signs and symptoms of iron deficiency.

3. Hemoglobin estimation : None of the ANMs and MPWs were aware of the method of hemoglobin estimation. A majority of the functionaries (from ANMs to MOs) were not aware of the hemoglobin levels of 8 g/dl for children (96%) and 10 g/dl for women (84%) which are recommended as cut off points to put them on anti-anemic regime. Similarly, only two district officials were aware of these cut off points for the hemoglobin levels.

4. Knowledge of prevalence of iron deficiency in the community

a) Children : Only about 10 percent of the preschool and school-age children are suffering from iron deficiency anemia, according to 56 percent and 40 percent of the functionaries respectively. The supervisory personnel (LHVs and MOs) tended to give higher prevalence figures than the field workers as did the urban LHVs as compared to the rural LHVs. For any category of personnel, the range of responses for prevalence of anemia varied markedly from 0 to 90 percent.

Five of the 6 district officials also expressed ignorance regarding the prevalence of iron deficiency anemia in the community.

b) Women : As in the case of children, the most frequent figure for prevalence of iron deficiency among women was about 10 percent, as stated by 41 percent functionaries for pregnant women, 34 percent functionaries for lactating women and 55 percent functionaries for FP acceptor women. The remaining functionaries - one-fourth each - quoted higher prevalence figures of 10-40 percent or above 40 percent. The supervisory personnel (MOs and LHVs) tended to give higher prevalence values than the field level functionaries. In general, the urban functionaries as compared to rural functionaries gave higher prevalence values.

The senior district officials too had little knowledge in this regard; only 2 of the 6 giving a low figure of 40-50 percent prevalence among women. The lower prevalence figures given by the functionaries were not surprising because it was observed that functionaries rarely noticed the deficiency signs and symptoms exhibited by the beneficiaries of iron tablets.

In all categories of personnel, the range of responses was highly variable, clearly highlighting the lack of awareness among the health providers of the extent of iron deficiency in vulnerable groups.

5. **Knowledge of Action to be taken on Identification of Iron Deficient Cases** : A majority of the functionaries (73-80%) mentioned that they would treat iron deficient cases with the supplement given under NAP, i.e. they believed it to be a therapeutic (and not a prophylactic) input. Other measures such as advice for dietary modification (29%) and referral to doctor (39%) were also stated. The observations confirmed this belief of the functionaries regarding use of the prophylactic supplement as a curative supplement. They spoke of the supplement as a medicine amongst themselves and also to the beneficiaries.

The district officials gave varied responses regarding treatment for iron deficiency such as treating with the NAP supplement in addition to advising intake of iron rich foods, increase the supplement dose from one to three tablets a day or giving injectable iron/other market preparations of iron.

Vitamin A

1. **Food sources** : As Table 5 indicates, yellow fruits like mango and papaya, eggs, meat and fish, roots and tubers like carrot and radish were reported as rich sources of vitamin A by above 50 percent of the functionaries. Fewer functionaries (29-38%) mentioned other sources like vegetables, milk and milk products. Urban ANMs were better informed regarding food sources of vitamin A than the rural ANMs. Similarly, more urban than rural LHVs mentioned animal sources of vitamin A such as eggs and milk/milk products. A majority of the ANMs and MPWs (85%) were aware that vitamin A deficiency could be prevented by taking a vitamin A rich diet.

TABLE 5. KNOWLEDGE OF FUNCTIONARIES REGARDING FOOD SOURCES AND DEFICIENCY OF VITAMIN A : MAJOR RESPONSES

S.No.	Knowledge aspect	ANM N=19	MPW n=5	LHV n=14	BEE n=4	MO n=14	TOTAL N=56	%
		Number of respondents						
1.	Food sources of Vitamin A*							
a)	Yellow fruits	12	2	10	1	N.A	25	60
b)	Roots and tubers	11	4	7	1	N.A	23	55
c)	Eggs, meat and fish	10	2	8	4	N.A	24	57
d)	Other vegetables	6	2	6	2	N.A	16	38
e)	Leafy vegetables	6	1	4	1	N.A	12	29
f)	Milk and milk products	6	1	4	1	N.A	12	29
2	Signs and symptoms of Vitamin A deficiency*							
a)	Night blindness	10	5	9	2	10	36	64
b)	Bitot's spots	5	1	6	2	12	26	46
c)	Poor vision	11	2	4	2	2	21	38
d)	Rough, dry skin	1	1	2	0	3	7	13
e)	Watering in eyes	4	0	1	0	0	5	9

* Multiple responses

N.A.= Not Available

Yet, in practice, this knowledge regarding the food sources of vitamin A was rarely communicated to the beneficiaries. Observations showed that the functionaries did not make attempts to inform the beneficiaries regarding cheap and locally available vitamin A rich foods though the beneficiaries were in need of this kind of knowledge.

2. Signs and symptoms of vitamin A deficiency : The most frequent response was night blindness followed by Bitot's spots and poor vision. A few respondents also mentioned rough and dry skin, watering/redness/dryness and inflammation in the eyes. Some MOs mentioned keratomalacia (29%), xerosis (21%), xerophthalmia (21%), keratosis (14%), drying of cornea (14%) and drying of sclera (14%) as manifestations of vitamin A deficiency (Table 5).

Some local terms expressed by the functionaries to describe the signs and symptoms of vitamin A deficiency are given below:

* "Ratondhi, Raat ko dikhta nahin hai, Raat ko kam dikhta hai." (Night blindness)
* "Aankhon mein safed chatte, Aankh par safed dhabba, Ankh par baarik phunsi jaise spots, Ankhon mein jhilli, Ankhon mein murjhaipanaa, Jhilli jaisa safed spot" (Bitot's spots)
* "Kam dikhana, Ankhon mein dhundhlaapan, Saaf nahin dikhta" (Poor vision)
* "Sookhi-sookhi chamdi, Chamdi mein jhurriyan" (Dry skin)

In spite of their awareness of the signs and symptoms of vitamin A in practice, the functionaries were not observed to notice these manifestations of vitamin A deficiency nor did they seek information from the beneficiaries regarding the same.

As regards senior district officials, four of them mentioned night blindness and Bitot's spots as manifestations of vitamin A deficiency. A wide variety of responses were obtained such as conjunctivities, keratomalacia, xerosis, xerophthalmia, loss of skin elasticity and weakness.

Prevalence of vitamin A deficiency in preschool children : A prevalence of 5 percent or above 5 percent was stated by 31 and 33 percent of the functionaries respectively. A few respondents mentioned that no child suffered from vitamin A deficiency in their community (16%) while about one-fourth of the respondents (21%) had no knowledge of the prevalence figures. Similarly, 5 out of 6 district officials had no knowledge of the prevalence of vitamin A deficiency in the area while one estimated that the prevalence was as high as 60-65 percent!

3. Knowledge of action to be taken on identification of vitamin A deficiency : A majority of the centre level functionaries (59%) stated that they would refer the vitamin A deficient case to their superior/doctor/ophthalmologist. Forty eight percent of the functionaries mentioned that they would treat vitamin A deficient cases with the supplement given under VAP.

About 80 percent of the ANMs and MPWs believed that the deficiency of vitamin A could be cured by the supplement given under VAP i.e. they believed it to be a curative input. Only 21 percent stated that they would advise a vitamin A deficient person to modify his/her diet.

The observational data confirms this belief of the functionaries. The functionaries were observed to refer to vitamin A supplement as a medicine in conversations amongst themselves as well as with the beneficiaries. Further, the investigator observed that vitamin A solution was being given to children suffering from night blindness or Bitot's spots.

The district officials gave varied responses as regards the treatment of vitamin A deficient cases; ie. giving the supplement given under VAP, giving the same supplement more often (once a month or every three months), giving injectable vitamin A with AD capsules', deworming or advising intake of vitamin A rich foods.

II C. PERCEPTIONS OF CENTRE LEVEL FUNCTIONARIES AND DISTRICT OFFICIALS REGARDING THEIR ROLES IN IMPLEMENTATION OF NAP AND VAP

Highly variable responses were obtained from the functionaries in this regard. All the ANMs and MPWs perceived that their role consisted of distribution of iron and vitamin A supplements and most could not elaborate further. Some added that their role included educating the community regarding the supplements (43%), maintaining records (29%) and giving iron and vitamin A to iron deficient and vitamin A deficient cases respectively (29%). Almost one-fourth of the supervisors (22%) ie. LHVs, BEEs and MOs stated that they did not know their role in implementation of NAP and VAP. The remaining supervisors perceived that their role was to educate the community regarding NAP and VAP (28%), to see to proper implementation of these programmes (25%), to receive and send reports (25%), to provide supervision (19%) and to see to distribution of iron and vitamin A supplements (19%). Three out of 6 senior district officials stated that their role included educating the community regarding NAP and VAP. Providing supervision, acting as mid-level managers and coordinators, receiving and sending reports, setting targets, ensuring supplies and seeing to proper implementation of NAP and VAP were some other responses.

II D. PERCEPTIONS OF FUNCTIONARIES RELATED TO PRACTICES UNDER NAP AND VAP

1. Identification of beneficiaries of NAP and VAP : All the MPWs and 63 percent of the ANMs stated that they identified the beneficiaries of NAP and VAP through house-to-house survey. Identification through asking here and there' and through clinics held in the centre (in addition to survey) were the responses by 21 and 16 percent of the ANMs respectively. However, the observations showed that in a majority of the cases, though beneficiaries were identified, they were not delivered the supplement.

2. Coverage of beneficiaries per day of distribution of supplement

Table 6 presents the mean values with regard to the minimum and maximum number of beneficiaries which the functionaries stated they could cover in a day when the distribution of the supplement was carried out. For iron syrup, the minimum or maximum coverage was 10-20 infants or toddlers per day on an average. The coverage of children for small tablets was higher : a minimum of 20-200 and a maximum of 20-700 children. For large tablets, the coverage figures were similar to that of the syrup. With regard to vitamin A supplement, a minimum coverage of 25-50 and a maximum of 50-500 children was mentioned by the functionaries. In general, there was a wide range in the responses obtained from the functionaries. Further, the rural ANMs mentioned lower coverage of children than their urban counterparts which is not surprising considering the scattered population in rural areas.

3. Beneficiary response to delivery of supplements as reported by functionaries

Almost all the ANMs, MPWs and LHVs stated that the beneficiaries did not refuse to take iron syrup or small/large tablets were offered to them (Table 7). The few cases of refusal were because: "people do not have faith in Government medicine (Sarkari goli se kuch nahin hota')". Refusal by 1 percent of the pregnant women was because the supplement smells bad and they may vomit'. The ANMs, however, mentioned that they were able to convince the resistant cases to take the tablets by explaining the benefits of supplements.

The observations also showed that beneficiaries rarely refused to take iron supplements when offered. If at all refusals occur it was because the beneficiary was a) apprehensive of side effects, eg. on being offered iron tablets, one woman beneficiary stated, "Yeh goli to garmi karti hain na", (But these tablets are hot' for the body, isn't it?), b) uncertain of what was being given to her since in majority of the cases, the tablets were merely handed out without any explanation. Only when specifically questioned did the ANM gave some information to the women. For example, when an ANM gave tablets to a woman, the woman asked, "What do I do with these (tablets)?" The ANM informed her that she should eat one tablet every day, they were strength giving medicines and helped to relieve pain in the legs.

Unlike iron, the refusal by beneficiaries to take vitamin A supplement was encountered by 50 percent of the functionaries in both urban and rural areas; however, the proportion of beneficiaries refusing was less than 5 percent according to most functionaries (Table 8).

The reasons given by people for refusal, according to the functionaries, included fear that the supplement will harm the child, (Pataa nahin kya pilaa rahen hain, bacche ko kuch ho nahin jaaye'), lack of awareness (Kya karna hai pilaa kar'),

TABLE 6. RESPONSES OF FUNCTIONARIES WITH REGARD TO NUMBER OF BENEFICIARIES COVERED PER DAY OF DISTRIBUTION OF IRON AND VITAMIN A SUPPLEMENTS

S.No.	Supplement	Minimum coverage of beneficiaries per day	Maximum coverage of beneficiaries per day
I	NAP		
1.	Iron syrup	a) 10 (50%) b) 11-20 (33%)	a) 10 (42%) b) 11-20 (25%)
2.	Small tablets	a) 20-25 (40%) b) 50-200 (33%)	a) 25-50 (47%) b) 60-700 (40%)
3.	Large tablets	a) 10 (57%) b) 11-20 (25%)	a) 10 (50%) b) 11-20 (25%)
II	VAP		
1.	Vitamin A	a) 25 (33%) b) 40-50 (46%)	a) 50-80 (25%) b) 100-500 (58%)

Note : (a) and (b) denote the types of responses obtained with respect to number of beneficiaries covered; with % functionaries giving that response in parenthesis.

TABLE 7. BENEFICIARY RESPONSE TO DELIVERY OF IRON SUPPLEMENTS AS REPORTED BY FUNCTIONARIES

S.No.	Compliance	ANM N=19	MPW n=5	LHV n=14	Grand N=38	Total %
1.	Refusal by beneficiaries to take iron supplement					
	Syrup					
	a) No refusal	19	5	13	37	97
	b) Refusal by 1% beneficiaries	0	0	1	1	3
	Small tablets					
	a) No refusal	17	5	14	36	96
	b) Refusal by 1-2% beneficiaries	1	0	0	1	2
	c) Refusal by 100% beneficiaries	1	0	0	1	2
	Large tablets					
	a) No refusal	19	5	13	37	97
	b) Refusal by 1% beneficiaries	0	0	1	1	3
2	Reasons given for refusal					
a)	Inferior government medicine	1	0	1	2	50
b)	Lack of awareness	1	0	0	1	25
c)	Supplement smells bad	0	0	1	1	25

TABLE 8. BENEFICIARY RESPONSE TO DELIVERY OF VITAMIN A SUPPLEMENT AS REPORTED BY FUNCTIONARIES

S.No.	Compliance	ANM N=19	MPW n=5	LHV n=14	Grand N=38	Total %
1.	Refusal by beneficiaries to take vitamin A supplement					
a)	Yes	9	1	9	19	50
b)	No	10	4	5	19	50
2.	Percentage of beneficiaries refusing to take the supplement*					
a)	1%	1	1	2	4	21
b)	1-5 %	3	0	5	8	42
c)	10-20 %	3	0	2	5	26
d)	100 %	2	0	0	2	11
3.	Reasons given for refusal**					
a)	Fear of harm to child	4	0	3	7	37
b)	Lack of awareness regarding supplement	1	0	6	7	37
c)	Inferior government medicine	2	0	0	2	11
d)	Do not like oily texture of supplement	1	0	1	2	11
e)	Contains fish oil (non-vegetarian) supplement	1	0	1	2	11
f)	No reasons given by them	0	1	0	1	5

* Percentage calculated on the basis of number of functionaries reporting refusals.

** Multiple responses

lack of faith in Government medicine (Nahin pilvaayenge sarkaari davaa').

A majority of the functionaries (68%) said that they overcame refusal by explaining to the beneficiaries the benefits of the supplement and reassuring them by saying that side effects may have occurred because the earlier supply was bad but this supply is good' and the supplement is not polio DPT due to which some children expired last year'. The other responses were: enticing the beneficiaries by giving iron tablets, requesting neighbours to convince resistant cases and informing beneficiaries that no harm has occurred to children given vitamin A earlier. However, 16 percent of the functionaries stated that there is little they can do if beneficiaries refused to take the supplement.

4. Beneficiary adherence to iron and vitamin A supplementation as reported by functionaries

a) Iron supplementation : Table 9 shows that about two-thirds of the functionaries reported that none of the beneficiaries discontinue taking the iron supplement (whether syrup, small or large tablets) before the full course is over. Among the rest, a majority stated that less than 25 percent of the beneficiaries discontinue with the supplement. The reasons for discontinuation, as reported by the functionaries, were : the children did not like the taste of iron syrup, carelessness' and lack of awareness' on the part of beneficiaries; and there is short supply of supplement and problems in storage. Other responses were : beneficiaries do not collect the tablets or are not available; they forget to eat ;them or throw them away or believe that tablets are hot'; there is short supply of supplement and problems in storage.

In contrast, the observations revealed that functionaries were not always in a position to know whether a beneficiary has actually received the full course of 100 tablets because the quantity of tablets given was variable and there was usually no effort to utilize the available records (of date and quantity of offtake) to ensure completion of course.

i) Regularity of intake of iron supplement : Forty seven percent of the functionaries (ANMs and MPWs) stated that more than 60 percent of the beneficiaries were regular in the consumption of syrup and small tablets. The remaining functionaries either stated that this percentage was lower than 60 percent or had no knowledge regarding the regularity of intake of supplement by the beneficiaries. Women beneficiaries appeared to be more regular in the intake of the supplement as 74 percent of the functionaries stated that above 60 percent of the women beneficiaries consumed the large tablets regularly. Above 75 percent of the other functionaries mentioned that a majority of the beneficiaries required reminders to avail of the supplement or had to be given the supplement at their houses or had to be given all the 100 tablets at one time.

TABLE 9. BENEFICIARY ADHERENCE TO IRON SUPPLEMENTATION AS REPORTED BY FUNCTIONARIES

S.No.	Adherence	ANM N=19	MPW n=5	LHV n=14	BEE n=4	MO n=14	TOTAL N=56	%
1.	Beneficiaries discontinue taking the supplement							
	Syrup							
	a) Yes	3	2	2	0	2	9	16
	b) No	12	2	11	4	9	38	68
	c) Do not know/not giving the supplement	4	1	1	0	3	9	16
	Small tablets							
	a) Yes	8	2	3	3	1	17	30
	b) No	10	3	11	1	12	37	66
	c) Do not know	1	0	0	0	1	2	4
	Large tablets							
	a) Yes	6	2	5	2	2	17	30
	b) No	13	2	9	2	11	37	66
	c) Do not know	0	1	0	0	1	2	4
2.	Beneficiaries discontinuing the supplement (%)							
	Syrup							
	a) 1-25	2	1	2	0	2	7	78
	b) 26-50	1	1	0	0	0	2	22
	Small tablets							
	a) 1-25	7	2	3	2	1	15	88
	b) 26-50	1	0	0	1	0	2	12
	Large tablets							
	a) 1-25	5	2	5	2	2	16	94
	b) 26-50	0	0	0	0	0	0	0
	c) $\geqslant$ 51	1	0	0	0	0	1	6
3.	Major reasons for discontinuation*							
	Syrup							
	a) Child does not like taste of supplement	3	3	0	0	1	7	77
	b) Occurrence of side effects	2	1	1	0	0	4	44
	Small tablets							
	a) "Carelessness" and lack of awareness of beneficiaries	8	4	1	2	1	16	93
	b) Occurrence of side effects	4	1	2	0	0	7	41
	Large tablets							
	a) "Carelessness" and lack of awareness of beneficiaries	5	4	3	2	1	15	80
	b) Occurrence of side effects	4	1	4	0	1	10	59

* Multiple responses

TABLE 10. BENEFICIARY ADHERENCE TO VITAMIN A SUPPLEMENTATION AS REPORTED BY FUNCTIONARIES

S.No.	Adherence	ANM N=19	MPW n=5	LHV n=14	BEE n=4	MO n=14	TOTAL N=56	%
1.	Beneficiaries discontinue taking the supplement							
	a) Yes	6	3	7	4	3	23	41
	b) No	12	2	7	0	9	30	53
	c) Do not know	1	0	0	0	2	3	6
2.	Beneficiaries discontinuing the supplement (%)							
	a) 1-20	4	1	5	3	1	14	60
	b) 21-40	2	2	0	0	2	6	26
	c) $\geq$ 41	0	0	2	1	0	3	14
3.	Major reasons for discontinuation*							
	a) Child not available	6	2	0	0	2	10	43
	b) Side effects	2	1	4	1	0	8	35
	c) Beneficiaries do not come	0	1	3	3	1	8	35
	d) Functionaries not able to give	1	2	1	1	0	5	21

* Multiple responses

TABLE 11. FUNCTIONARY RESPONSES REGARDING TYPES OF SIDE EFFECTS EXPERIENCED BY BENEFICIARIES

S.No.	Type of side effects	Syrup n* 20	Iron small tablets n* =23	Iron Large tablets n* =33	Vitamin A solution n* =30
		Percentage responses			
1.	Diarrhoea	65	74	55	0
2.	Vomiting	40	39	39	100
3.	Abdominal pain	10	4	9	0
4.	Nausea	10	4	21	13
5.	Black stools	5	9	15	0
6.	Constipation	5	13	6	0
7.	Others	20	13	33	20

* n represents only those functionaries who reported the occurrence of side effects.

To ensure regular intake; 47 percent of the functionaries mentioned that they explained benefits, dose and frequency of dosing of the supplement to the beneficiaries, and reassured them regarding occurrence of side effects. Some functionaries (26%) stated that they enquired from the beneficiaries at their homes regarding regularity of intake.

In practice, however, monitoring of intake of iron supplementation was observed to be restricted to asking the beneficiary if she had received the iron tablets earlier; if yes, then she had consumed those tablets. This enquiry was usually made when the beneficiary come to the Centre for the second dose of Tetanus Toxoid vaccination.

b) Vitamin A supplementation : As Table 10 shows, 53 percent of the functionaries stated that beneficiaries do not discontinue taking vitamin A supplement once they have been given a dose. According to the functionaries (Table 10), discontinuation by a few beneficiaries occurs because of non-availability of children at home, at school or at the health centre, experience of side effects (mainly vomiting), lack of time on the part of functionaries to regularly administer the dose due to other duties like organizing FP camps or short supply of the vitamin A syrup.

However, it was observed that in most cases, the functionaries did not make entries of the doses given in the records such that the actual number of doses given per beneficiary could be ascertained. Even if a beneficiary came for a second dose, they merely made a new entry in their record which ultimately inflated the coverage figures. The functionary also did not enquire from the child's mother if and when a dose had been given earlier. Thus, in the present situation, it was not possible to know if discontinuation of vitamin A supplementation had occurred for most beneficiaries.

1) Regularity of intake of vitamin A supplement : Fifty four percent of the ANMs and MPWs stated that more than 60 percent of the beneficiaries were regular in the intake of supplement, but a majority of the functionaries (67%) mentioned that most beneficiaries required reminders to avail of the supplement.

To ensure regular intake of vitamin A supplement by the beneficiaries, 47 percent of the functionaries mentioned that they explained benefits, dose and frequency of dosing to beneficiaries and reassured them regarding occurrence of side effects. Other measures stated were administration of the supplement at the houses of beneficiaries (19%) and enquiring from beneficiaries at the centre or on domiciliary visits regarding regularity of intake (9%).

5. Occurrence of side effects of iron and vitamin A supplements and steps taken by functionaries to deal with them

In this sub-section, the issue of side effects of supplements is elaborated, as it is a topic of much interest and discussion in the context of acceptability of programmes.

Only 36 percent of the functionaries said that they came across the occurrence of side effects on intake of iron syrup by beneficiaries. As compared to syrup, a higher percentage of functionaries stated that side effects of small and large tablets were reported to them (41 and 59 percent respectively).

Reinforcing the earlier finding that side effects are not a major problem, above 90 percent of the functionaries said that only 10 percent or fewer beneficiaries reported side effects of iron syrup, small or large tablets or vitamin A syrup.

It was observed that side effects occurred infrequently although a few children did spit out the supplement either because they did not like the taste or because on being given the supplement forcefully, they started crying and the supplement dribbled out. Vomiting, however, was rarely observed.

a) Types of side effects : Of those functionaries who stated that side effects were reported to them by beneficiaries, a majority mentioned that the most common side effects of iron supplement were diarrhoea, vomiting, abdominal pain, nausea, black stools and constipation (Table 11). Nausea was described by the functionaries in the regional language in various ways such as Jee ghabraana', Ghabrahat' and Jee michalana'. Some of the other side effects mentioned were black teeth, insomnia, giddiness, burning sensation in stomach, bleeding from nose and weakness. The Table further shows that vomiting was reported as the major side effect of vitamin A supplement. Other side effects reported were nausea, sweating, giddiness (Sar chadhta hai peete se') and pungent or oily taste of syrup (Charkha swad', Mahua ki toli ke tel jaisa feeka', Baasta hai' and Tel jaisa swad').

b) Steps taken by the functionaries to deal with the side effects : Nearly two-thirds of the functionaries (61-65%) advised the beneficiaries to discontinue taking the iron supplement (syrup, small or large tablets) on occurrence of side effects. Some functionaries gave symptomatic treatment (25-30%), referred the beneficiary to a doctor or a hospital (13-25%) or reassured the beneficiary that there was nothing to worry about (17-21%). The other measures taken by the functionaries were advising beneficiary to reduce dosage of syrup (Take 1/2 teaspoon instead of 1 teaspoon'), to eat the tablet at night, after meals or with milk, to consume iron rich foods (curds, buttermilk'), giving calcium tablets' and prescribing some other iron preparation.

With regard to dealing with side effects of vitamin A supplement, 50 percent of the functionaries said that they reassured the beneficiaries that there was nothing to worry', the supplement is beneficial for the child', do not get frightened', may be the child was given vitamin A soon after ingesting, milk or food' and see, nothing has happened to other children'. This was confirmed by the observations of the investigator. Thirty percent of the functionaries stated that they referred the beneficiaries experiencing side effects to the doctor, and 27 percent said that they gave symptomatic treatment with anti-emetics.

6. Programme related information, education, communication (IEC) by functionaries at the time of distribution of supplement

All the grassroot level functionaries i.e. ANMs and MPWs, stated that they communicated **NAP** related information to the beneficiaries at the time of distribution, such as benefits of iron supplementation (83%), the dosage of iron tablets and frequency (38%), duration of supplement, i.e. 100 consecutive days (25%), precautions to be taken such as taking tablets after meals or at night (25%); storing tablets in a closed container and not touching them with moist hands (17%). Major benefits highlighted were the supplement gives strength (50%), cures weakness (50%), increases appetite (30%), is needed because, due to poverty, children can not be fed well (20%), prevents iron deficiency (15%), helps in food digestion (15%), cures iron deficiency (10%), leads to good growth and development of children (10%) and improves health (10%).

In contrast, the observations showed that NAP related IEC was practically non-existent in a majority of the centres most of the time. Usually the iron tablets were merely handed over to the beneficiaries without giving them any information regarding dose of the tablets. However, sometime the functionaries did instruct the beneficiaries to eat one tablet every day' or eat after meals' or eat with water/milk'. Explanation of the benefits was almost always restricted to mentioning that the tablets are strength-giving.

NAP related IEC was at times limited to instructing the patient to collect more tablets when these get over'.

Similarly, all the ANMs and MPWs stated that they communicated **VAP** related information to beneficiaries. A majority of the functionaries (87%) mentioned that they informed the beneficiaries about benefits of vitamin A supplementation and some of them said that they informed the beneficiaries regarding dose (13%) and frequency (21%) of vitamin A supplementation. Commonly mentioned benefits were : the supplement prevents night blindness (67%), prevents eye diseases such as conjunctivitis and cataract (57%), is good for eyes and vision (43%), prevents poor vision (29%) and prevents blindness (24%). Some also said that it is an eye medicine' (19%) and is a government facility hence should be availed of (14%).

7. Obstacles affecting the successful implementation of NAP and VAP as perceived by functionaries

The functionaries were asked to elaborate on what they perceived to be as the lacunae in these two programmes, the responses were varied and related primarily to :

a) The lacunae at the Providers' level
b) The lacunae at the Community level.

The lacunae at the Providers' level were described as below:
i) Functionaries' do not deliver supplements to the beneficiaries or the distribute them irregularly (52%); are not able to communicate, educate and inform the community effectively

regarding these two programmes (18%); incorrectly report the number of beneficiaries covered by them under NAP and VAP (14%) and do not follow up (13%); do not follow up (13%).

ii) Supervisors do not verify or check the work done by their subordinates and provide no guidance regarding NAP and VAP (2%).

iii) The government does not ensure that supply of iron and vitamin A supplements is regular (27%); supplies are outdated or are provided when expiry date is close (4%); number of field personnel is inadequate to cater to the increasing population (13%); no stationery is provided for record maintenance (13%).

b) At community level, beneficiaries do not consume the supplement or did not consume it regularly (45%), refuse to take the supplement (30%) and do not trust government or free medicine (14%).

Five out of 6 senior district officials also highlighted certain lacunae in NAP and VAP, namely, lack of awareness in the community regarding the importance of the supplements, refusal and poor adherence to supplementation, irregular distribution of supplies by functionaries and insincerity towards their work. The officials also emphasized that no specific guidelines had been provided for NAP and VAP and these programmes are not given priority by the health authorities at the higher levels.

It is promising to realize that the functionaries themselves are aware of the weaknesses affecting the successful implementation of NAP and VA, especially because these lacunae were observed to actually exist at various levels and are significant impediments to effective programme performance.

8. Problems faced by functionaries themselves in the implementation of NAP and VAP

Though the functionaries projected several lacunae in the nutrient programmes in a general manner as just described, most of them (79%) denied having any problem themselves in the implementation of NAP and VAP. In fact, 92 percent and 83 percent of the ANMs and MPWs stated that NAP and VAP were running satisfactorily in their area respectively.

The observations confirmed that a majority of the functionaries did not face problems in implementation of NAP because scarcely any time was devoted to its implementation in the first place! (as will be seen in subsequent section). Further, implementation', as understood by the functionaries, was a simple handing over of a handful of iron tablets or occasional dosing by the vitamin A supplement, which was not difficult to achieve. However, as the interview data reveals, some of them did face the problem of poor adherence to the supplementation regime by the beneficiaries, of irregularity of supplies and of poor accessibility of certain areas.

Nature of problems faced: Of the 21 percent functionaries who stated that they faced problems, 83 percent associated that problems with poor beneficiary compliance, and 50 percent stated problems related to irregularity and inadequacy of supplies of iron and vitamin A supplements. Difficulty in obtaining transport and non accessibility of certain areas during the monsoon were reported by some rural ANMs.

When senior district officials were asked if their subordinates reported any problems to them in relation to management of NAP and VAP, four officials stated that they were aware of certain problems such as irregular supplies, receipt of supplements close to expiry date, side effects and unsatisfactory community acceptance of the programmes. To counter these problems, the officials stated that they wrote to the higher authorities, counselled the functionaries and encouraged them to provide IEC to the community regarding NAP and VAP.

Most of the senior district officials (4 out of 6) believed that NAP and VAP are running satisfactorily in the area, giving reasons such as they received good reports, few cases of deficiency of iron and vitamin A were seen and that there was a demand for these supplements.

Although a majority of the functionaries were of the opinion that NAP and VAP were running satisfactorily in their area, the observations revealed a completely unsatisfactory scene as will be evident in several instances in this chapter. NAP and VAP were in reality, being relegated to the sidelines with planning and immunization getting more than their share of attention and resources. This is in spite of the fact that in the current set up, it was possible to effectively manage NAP and VAP without undermining the importance of family planning and immunization.

II E. ATTITUDES OF FUNCTIONARIES TOWARDS NAP AND VAP

It was necessary to know if the functionaries themselves believed in the benefits of iron and vitamin A supplements (which they said they conveyed to the people); whether they had a positive attitude towards these programmes and perceived that the community accepted these programmes.

1. Views regarding benefits of supplements : Almost all the grassroot level functionaries, i.e. the ANMs and MPWs (96%) stated that they believed that the iron supplement was beneficial for curing weakness (35%), or anemia (26%), for good health (22%) and appetite (13%). A majority of these functionaries (79%) also believed that the vitamin A supplement was beneficial for preventing night blindness (42%), improving eye sight (21%), curing night blindness (16%) and maintaining good vision (16%).

A few functionaries (13%) thought poorly of the vitamin A programme, saying that the supplement was not good.

* "Kya faayada hai lene se, bacche aise ke aise hi rahate hain" (What is the use of taking the supplement, children remain the same as before)

* "Lene ke baad bhi aankh aati hai, aankh laal hoti hai, ratondhi hoti hai" (Even after taking the supplement children get eye diseases and night blindness).

2. **Acceptance of NAP and VAP by the community as perceived by the functionaries :** The functionaries (ANMs, MPWs, LHVs, BEEs and MOs) were asked to rate programme acceptance by the community on a 5 point scale from excellent, good, fair, poor to very poor.

A majority of the functionaries (77%) in all categories rated the acceptance of NAP by the community as fair to good and 20 percent rated it as excellent. Similarly, 78 percent of the functionaries in all the categories rated the acceptance of VAP by the community as fair to good while 16 percent rated it as excellent. The reasons given by various functionaries for fair to excellent rating of both programs were similar, ie. beneficiaries took the supplement when offered (45%) or demanded it (42%); they found the supplement beneficial (21%); accepted it when they were explained about its benefits (18%). A few functionaries (18%) attributed the easy achievement of targets to community acceptance. The reasons stated for fair to excellent programme acceptance were : beneficiaries accepted the supplement when it was offered or when they were explained its benefits; they asked for the supplement on their own and found it beneficial.

3. **Opinion of Functionaries regarding Further Continuation of NAP and VAP**

NAP

All the functionaries - ANMs, MPWs, LHVs, BEEs and MPWs - were of the opinion that NAP should be continued for a variety reasons. Nearly one-third of them (29%) explained that there is poverty coupled with inflation in the country, people do not have enough food and the right kind of food to eat and this results in deficiency. Hence, it was necessaryt to continue NAP. Similarly 27 percent wanted the programme to continue because of its beneficial effects and 25 percent specifically mentioned prevention of anemia as the major reason behind the need to continue NAP.

Almost all the functionaries (98%) wanted VAP to continue for several reasons : the supplement was beneficial (36%), it was needed to prevent deficiency/occurrence of blindness/night blindness/other diseases (33%).

One-third (31%) explained that poverty and inflation resulting in poor food purchasing power and deficient food intake and justified the need to continue VAP. Some of the functionaries also added that lack of health education in the country led to poor food intake in children, thus necessitating supplementation.

All the six senior district officials wanted NAP and VAP to continue. The reasons they gave were that iron and vitamin A deficiencies exist and atleast some people are being benefitted by NAP and VAP.

4. Ameliorative measures suggested by functionaries for improving NAP and VAP : For improving the implementation of NAP and VAP, functionaries suggested several ameliorative measures which have been summarized below.

Ameliorative Measures	% Responses
A. Providers level	
Centre level	
1 Functionaries should -	
a) Educate the community about the programmes	55
b) Distribute all doses of supplements regularly and on time	23
c) Work sincerely	23
d) Conduct survey properly for identification of beneficiaries	16
e) Make house to house visits	16
f) Be knowledgeable about the importance of NAP and VAP	13
g) Conduct group meetings, camps and group discussions in the community	9
2 The supervisors should -	
a) Make spot checks	9
b) Verify distribution of supplements by cross checking with beneficiaries in the community	9
c) Be more strict with workers	9
d) Make field visits and help the grassroot level functionaries	7
e) Educate the community about NAP and VAP	7
Government level	
a) Efforts are required to educate the community through widespread publicity using loudspeakers, radio and television programmes, cinema, slogans, pamphlets and posters	50
b) Supplies of supplements should be timely and adequate	9
c) The number of health personnel should be increased	9
d) Transport facility should be provided for working in the field	9
e) Team work should be done with respect to implementation of NAP and VAP	7
B. At community level	
Beneficiaries should -	
a) Be aware of the programmes	30
b) Avail of the supplements	7
c) Be regular in the consumption of supplements	7

The suggestions given by senior district officials for improving NAP and VAP included better training to improve the

knowledge and skills of functionaries, more supplies, better management, provision of specific guidelines, linkages with school health programmes, and most important, a higher priority to be accorded to these programmes.

The observations confirmed that indeed there was a need to put ameliorative measures into action and the measures suggested by various functionaries, as described above, were quite appropriate and required translation into action.

III. PRE-SERVICE AND IN-SERVICE TRAINING PROVIDED TO FUNCTIONARIES

This sub-section deals with an assessment of NAP and VAP related knowledge of the 10 recently trained ANMs (trained less than 1 year ago) who did not have any work experience, the results of the scrutiny of the training curriculum and views of the six senior district officials regarding the training and the type of in-service training provided by them.

1. Subjects studied in the Training Programme : A total of 19 subjects were mentioned by the ANMs. Those mentioned frequently by the ANMs were Midwifery, Anatomy, Microbiology, Nursing art, Medicine, Health education, Nutrition education, Family Planning, Maternal and Child care, First aid and Hygiene. All the 10 ANMs stated that they were informed in the training about NAP and VAP.

The ANMs also elaborated on the operational aspects of NAP and VAP while managing the programmes at the field level. The ANMs mentioned that they were informed in the training about the target beneficiaries of NAP and VAP (N=5) and the functions of iron and vitamin A in the body (N=3). Only 1-2 ANMs mentioned that they learnt about the types of supplements given under NAP and VAP, the frequency of dosing, the benefits of supplements, signs and symptoms of iron and vitamin A deficiencies and the food sources of iron and vitamin A.

With regard to job functions to be carried out under NAP and VAP, 5 ANMs were aware that they were expected to inform the community about the benefits of supplements and deliver these to the beneficiaries. Two ANMs were not aware of the job functions expected of them under NAP and VAP. A majority of the ANMs (N=8) stated that the beneficiaries of NAP and vAP were to be identified through house to house visits. Five of the 10 ANMs could not elaborate on the logistics of the supplements while the remaining ANMs mentioned that they should indent for the supplements as soon as the stocks got over (or before they were over) and bring the supplies regularly to the centre to ensure regular supply. As regards coping with inadequate supply, 6 ANMs stated that they would inform their supervisors, advise beneficiaries to eat green vegetables or advise to reduce dosage.

When the ANMs were presented with scenarios depicting situations when the supplements were in short supply. ANMs responded that preference should be given to new beneficiaries rather than previously registered (old) beneficiaries. Further, 4 ANMs stated that within the new beneficiaries, pregnant women

should be given preference. The others stated that lactating women and family planning acceptor women should be given preference. With respect to vitamin A, 6 ANMs stated that they would give preference to old beneficiaries when the supplement was in short supply while 4 ANMs expressed their preference for enrolling new beneficiaries.

Almost all the ANMs (N=9) were aware that iron tablets should be kept packed in a container with lid well closed. As regards storage of vitamin A, some incredible responses were obtained such as : store the supplement in fridge, keep in a closed place, keep in "gold chain" in ice, keep in "cooker" in villages, "all vaccines are kept in fridge" (implying that vitamin A supplement is a vaccine).

The responses of ANMs regarding the entries to be made in stock register under NAP and VAP were - quantity of supplement distributed (N=5), stock available (N=2), quantity of supplement received (N=2) and date of distribution of supplement (N=2). Three ANMs had no knowledge of the entries which were to be made in the stock register.

Regarding the records of coverage of beneficiaries, 6 ANMs mentioned that they would note the names and addresses of beneficiaries. A few ANMs mentioned that age of beneficiary, date of distribution of supplement, number of iron tablets and month of pregnancy were to be noted. Two ANMs stated that they were not informed during the training about how to maintain beneficiary records.

2. Knowledge of recently trained ANMs about NAP and VAP

a) **NAP** : Six of the 10 ANMs were aware that the objective of NAP is the prevention of iron deficiency. Other responses included improvement of health and prevention of weakness. While none of the ANMs mentioned iron syrup as a supplement under NAP, 6 ANMs mentioned that tablets' were given under NAP but they were not aware that two types of tablets were given (small and large). Four ANMs were aware that tablets of two sizes - small and large - are given under the programme. None of the ANMs knew about the composition of the syrup, the small and the large tablets.

Since 6 ANMs mentioned that only one type of tablets are given under the programme, the beneficiaries according to them included both children and women. The age groups of children mentioned were between birth and 15 years of age. Almost all the ANMs (N=9) were aware that pregnant women are beneficiaries though only 3 ANMs knew that lactating women were also beneficiaries under NAP. Six ANMs knew that 1 tablet is to be taken by the beneficiaries daily while the remaining 4 ANMs mentioned the dose as 2-3 tablets per day. Further, 6 ANMs stated that the supplement was to be taken for one month or less while only 2 ANMs were aware that the duration of supplementation is three months.

Benefits of iron supplementation as stated by the ANMs included : it prevents iron deficiency (N=7) and ensures good

health (N=4). With regard to dietary sources of iron, a majority of the ANMs (6-8) mentioned green leafy vegetables and other vegetables (brinjal, carrot and radish). A few stated that eggs, meat, jaggery, milk, pulses and legumes were good food sources of iron.

Varied responses regarding the signs and symptoms of iron deficiency were obtained such as : pallor of conjunctiva, skin, nails and tongue, giddiness, whiteness in palms', irritability, lethargy, black lips and teeth, swelling in feet, weakness and sunken nails.

With respect to NAP related IEC a majority of the ANMs (N=7) stated that they would explain the benefits of the supplement to the community at the time of distribution of supplement. A few ANMs mentioned that they would inform about the frequency of dosing and the target beneficiaries under NAP.

For convincing beneficiaries who refuse to take the supplement, 5 ANMs stated that they would explain about the importance of supplement and advise the beneficiaries to consume rich food sources of iron.

To ensure regular collection of tablets by beneficiaries, a majority of the ANMs (N=7) mentioned that they would inform the beneficiaries of the next date of collection of tablets. Four ANMs stated that if beneficiaries failed to collect, they would go themselves to give the supplement at the houses of beneficiaries. To monitor consumption of tablets, the ANMs stated that they would advise beneficiaries to eat the tablets daily (N=6), go to beneficiaries' houses and enquire about regular intake (N=3) and count the remaining tablets (N=3).

A majority of the ANMs (N=7) were certain that there were no side effects of iron supplement. The remaining three ANMs stated that they were not aware of the side effects and if side effects occurred they would not know how to deal with them.

VAP : Although none of the ANMs could state the specific objective of VAP which is to prevent blindness due to vitamin A deficiency, 5 ANMs stated the objective as prevention of blindness. Other responses included : prevention of night blindness, eye diseases and vitamin A deficiency, healthy eyes and good health.

Most of the ANMs (N=7) were aware that vitamin A solution is given under VAP, but none of the ANMs was aware of the target beneficiaries of VAP. Similarly, none of the ANMs had the knowledge of composition of vitamin A solution and only 3 out of 10 ANMs were aware of the dose and frequency of the supplement.

Regarding the benefits of vitamin A supplementation, ANMs cited various benefits such as : supplement is good for the eyes (N=3), it prevents vitamin A deficiency, eye diseases and blindness and it is good for the body (N=2 for each). Two ANMs were not aware of the benefits. With regard to dietary sources of vitamin A, 4 ANMs mentioned foods like yellow fruits (papaya and

mango), milk and milk products, eggs, fish, meat and leafy vegetables (spinach and cabbage).

Most frequently mentioned signs and symptoms of vitamin A deficiency were poor vision and poor health (N=4). Night blindness, Bitot's spots and eye problems were mentioned by a few ANMs (N=2).

As regards VAP related IEC to be given to beneficiaries, a majority of the ANMs (N=8) stated that they would explain benefits of the supplement. Similarly, to convince the beneficiaries who refuse to take the supplement, 9 ANMs mentioned that they would explain about the importance of supplementation. To ensure completion of the course, 6 ANMs mentioned that they would inform beneficiaries of the next date of dosing, others stated that they would either go to beneficiary's house to give the supplement or give him a card at the time of distribution of first dose as a reminder.

As regards side effects of vitamin A supplement, 6 ANMs were sure that there are no side effects and the remaining 4 ANMs mentioned that they were not aware of the side effects of vitamin A supplement nor of the measures to take if side effects were encountered.

In the end, when ANMs were asked about the measures to implement NAP and VAP successfully, their suggestions were : field workers should educate community about NAP and VAP, establish rapport with people and should work sincerely.

3. Informal Interviews with Instructors and Scrutiny of the Curriculum at ANM Training Centre

a) According to the instructors at the Training Centre, there is no separate topic for vitamin A and iron in the curriculum and they are dealt with under Maternal & Child Health (MCH). The other topics under MCH are Immunization, Registration of Antenatal Cases, Child Care, Maternal & Child Health and Postnatal Care. When the investigator of this study expressed her desire to attend the training sessions on NAP and VAP, she was informed that it was not possible to separate out the classes devoted to vitamin A and iron as these subjects are dealt with under Immunization, Nutrition Education, Pharmacology, Child and Maternal Health and Nutrition.

The instructors talked about their awareness of these programmes. Thirty tablets of iron are given for 3 months to pregnant women along with Tetanus Toxoid immunization. Vitamin A, according to these instructors, is given to children between 6 months-5 years at 6 monthly interval and a total of 10 doses are given. When the instructors were asked about the composition of the two supplements, they stated that they were not aware of it. They responded that they taught topics like food sources of iron and vitamin A, deficiency diseases like anemia and night blindness. Regarding sites of distribution of vitamin A and iron, the instructors responded that these supplements were delivered

house to house in the field area and also a MCH clinics in the hospital.

b) Scrutiny of the curriculum for health workers : The objective stated in the beginning is : At the end of training programme, student health worker should demonstrate the ability to plan and carry out job responsibilities assigned to him/her under the MPWs scheme. Nothing more specific was mentioned. Duration of the course is a total of 78 weeks or one and a half years. These weeks included theoretical instruction, supervised practical training in laboratory, field or clinic, followed by field and clinic experience.

After a careful scrutiny of curriculum, the investigator gleaned the major subjects and topics under them in which NAP and VAP related information was likely to be imparted. The major heads are presented below:

i) Nutrition : A total of 60 hours were to be devoted on the study of nutrition in theory & practicals, field & clinical instruction. One unit included vitamins and minerals along with their functions, sources and daily requirements. Two other units dealt with nutritive value of foodstuffs, enriching subsistence diets with locally available foodstuffs, balanced diet, meal planning, diet improvement, nutritional requirements for special groups, vulnerable groups, improving maternal & child nutrition and effects of cooking on nutrients. The unit on malnutrition included causes, deficiency diseases in India including vitamin deficiencies, and principles of nutrition education for imparting nutrition knowledge.

ii) Community health nursing: Nutrition education was included as a section in this subject and it covered a total of 30 hours. Dietary habits, availability of foodstuffs, maternal nutrition, diet in pregnancy and lactation common nutritional deficiencies in women and children, prevention and treatment of anemias and improving diets were some of the relevant topics included in one section. Another section dealt with the approaches used in health education such as individual, group and mass media education, approaches, planning health education activities and communication skills.

iii) Basic medicine and pharmacology : The section on treatment of minor ailments covered conditions affecting the eyes, signs and symptoms, treatment, classification and action of groups of drugs including vitamins and hematinics. The section on health problems and plans included health problems such as nutritional problems, major health programmes related to family welfare and nutrition programmes.

iv) Anatomy and physiology : It covered blood composition and hemoglobin.

v) Fundamentals of nursing : Besides other topics, this subject included principles of organising health and nursing services, assessing needs and priorities; maintenance of supplies and equipments; records and reports; physical examination of child

and adult, collection of blood for laboratory examination, administration of tablets, calculation of dose; prevention and treatment of malnutrition; organization of MCH services; integration of nutrition, family welfare and MCH services; organization of sub-centres, clinics, surveys and home visits.

It is evident from the above that the course outline covered some major components of NAP and VAP but did not deal specifically with NAP and VAP as national programmes nor gave any specific guidelines for their implementation, especially management of these programmes at the field level. The programmes do not get the attention they deserve in the training. Little wonder then, with diffuse training and little priority accorded to NAP and VAP by senior health officials and policy makers, these programmes are so poorly implemented at field level. There is a need to adopt an integrated comprehensive approach towards NAD and VAP in the training.

4. In-service training programmes, refresher courses, seminars and workshops attended by centre level supervisors

The centre level supervisors ie. the LHVs, BEEs and MOs are in direct contact with ANMs and MPWs who actually implement NAP and VAP in the field. They provide day to day supervision to these field level workers and are also responsible for providing in-service training to the workers. Hence, it was decided to know whether the supervisors themselves are being provided in-service training for PHC in general and for NAP and VAP in particular.

As Table 12 indicates, about one-fourth of the supervisors had not undergone any training programme at all after joining the health services, while a majority of them (52%) had attended 1-4 programmes. Fifty percent of the MOs had not attended a single training programme. A majority of the supervisors had attended refresher courses or training programmes which focussed on family planning and immunization. Only a few supervisors mentioned attending programmes related to ICDS and MCH which have nutrition components.

According to nearly two-thirds of the supervisors, NAP and VAP were included as topics in one or more of the training programmes attended by them. Information imparted under these topics mainly included the types of supplements given under NAP and VAP and their dosage, the eligible beneficiaries, the benefits of iron and vitamin A supplements and the signs/symptoms of iron and vitamin A deficiencies. Field work and community education for NAP and VAP were mentioned by only 19 percent of the supervisors.

5. Views of senior district level officials regarding training and the type of in-service training provided by them

Three out of 6 senior district level officials stated that the training being given to functionaries was adequate. However, the remaining three officials felt that the training provided was inadequate and it needs to be made more comprehensive with emphasis on importance of iron and vitamin A supplements and on

TABLE 12. IN-SERVICE TRAINING PROGRAMMES, REFRESHER COURSES, SEMINARS AND WORKSHOPS ATTENDED BY CENTRE LEVEL SUPERVISORS

S No	In-service Training	LHV n=14	BEE n=4	MO n=14	Total N=32	%
		number of respondents				
1.	Total number of in-service training programmes, refresher courses, seminars, workshops attended					
a)	None	0	0	7	7	22
b)	1 - 2	1	1	4	6	18
c)	3 - 4	5	2	3	10	32
d)	≥ 5	8	1	0	9	28
2.	Major in-service programmes include					
a)	Family Planning	11	2	2	15	60
b)	Immunization	8	0	3	11	44
c)	Medical termination of pregnancy	0	0	3	3	12
d)	Integrated Child Development Services	0	0	2	2	8
e)	Maternal and Child Health	2	0	0	2	8
3.	NAP and VAP were included in any of the above					
a)	Yes	7	4	5	16	64
b)	No	5	0	2	7	28
c)	Do not remember	2	0	0	2	8
4.	Information on NAP and VAP consisted of					
a)	Supplements, eligible beneficiaries and dose	5	4	4	13	81
b)	Benefits of supplements	2	2	3	7	44
c)	Signs of iron and vitamin A deficiencies	4	1	1	6	37
d)	Food sources of iron and vitamin A	2	0	1	3	19
e)	Field work and educating the community	1	1	1	3	19

FIG.II(a): WORKING HOURS OF ANMS
DURING DIFFERENT MONTHS OF THE YEAR

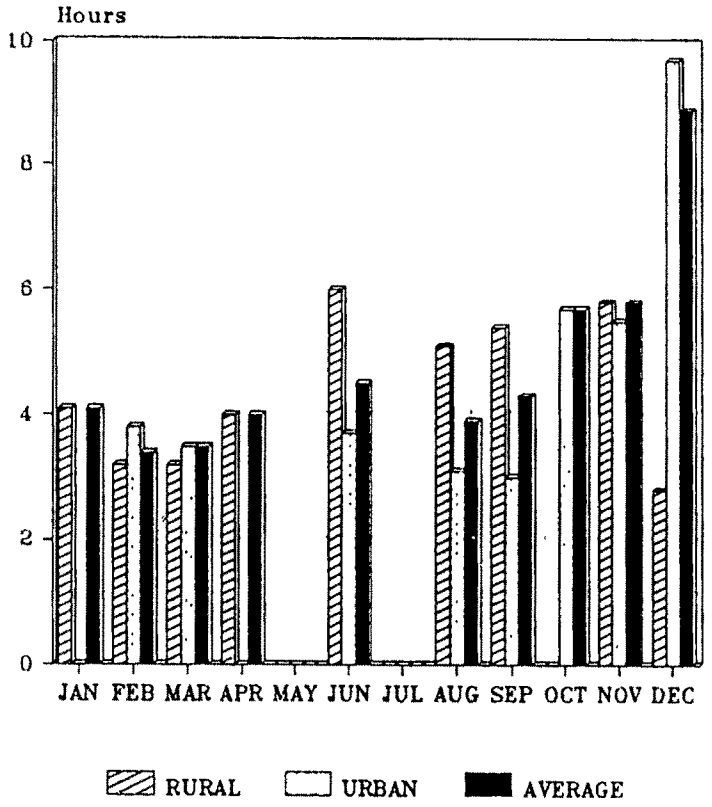
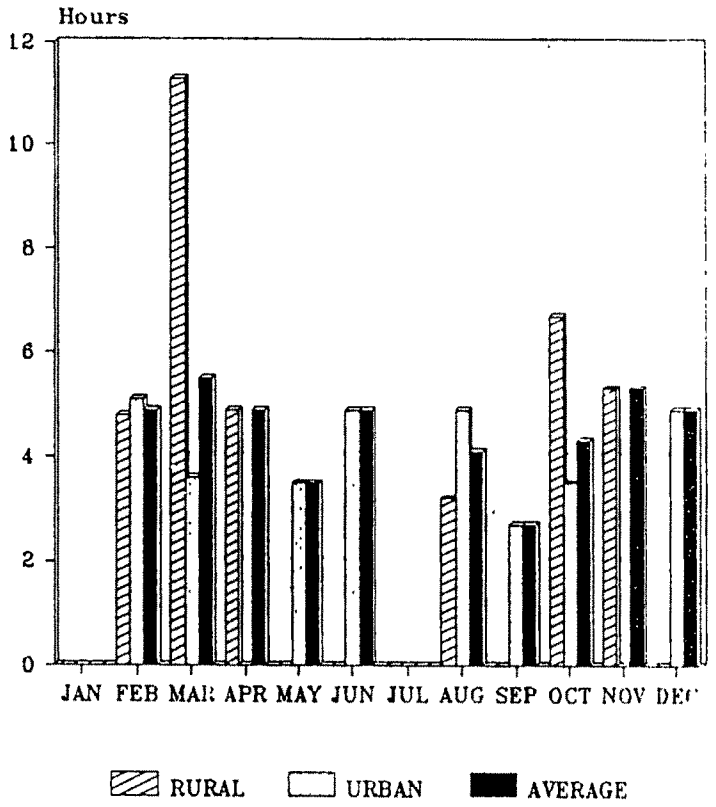


FIG.II(b): WORKING HOURS OF LHVS
DURING DIFFERENT MONTHS OF THE YEAR



result oriented delivery of the supplements. Further, in-service training should be provided regularly and should include a workshop in which all the functionaries at various levels of hierarchy and the community leaders can participate.

Five out of 6 officials mentioned that they provided in-service training related to NAP and VAP to the functionaries in which they covered aspects such as : deficiency signs of iron and vitamin A (N=3), prevention of iron and vitamin A deficiencies (N=2) and need for iron and vitamin A supplementation (N=2). However, the mention of NAP and VAP was observed to be infrequent in the meetings conducted at various levels. If at all mentioned, these programmes were mentioned with other programmes in relation to achievement of targets and availability of supplies. Observations shows that the in-service training constituted of information by supervisors to subordinates regarding the dose, frequency and eligible groups of the programmes and the suggestion that the targets of child beneficiaries could be achieved by covering children in schools.

IV. WORK ORGANIZATION AND TIME ALLOCATION TO VARIOUS JOB FUNCTIONS BY THE FUNCTIONARIES

1. Working hours of functionaries

Table 13 depicts the average working hours of ANMs, MPWs, LHVs, BEEs and MOs as reported by them. The ANMs, LHVs and MOs stated that they worked for 5-6 hours/day while the MPWs and BEEs reported that they worked for nearly 8 hours/day. There was a wide variation in the number of working hours reported by functionaries within the same category (Eg. MOs : 4-9 hours/day). The rural ANMs, LHVs and MOs reported longer working hours than their urban counterparts (Eg. rural MOs : 6.5 hours/day; urban MOs : 5.3 hours/day). Further, in the rural areas, PHC ANMs reported longer working hours than SC ANMs. Similarly, the average working hours differed between different categories of functionaries (5.1 hours to 8.3 hours).

The observations confirmed that indeed there was a wide range in the working hours of various categories of functionaries and of functionaries within the same category. The longer work days were usually found to be associated with family planning or immunization camps as these involved a lot of prior planning and preparation, as well as longer implementation and winding up time. However, once the pressure of achieving targets of these programmes eased, the functionaries tended to take it easy and correspondingly the number of working hours was considerably reduced (Fig. 11(a) and 11(b))

Table 14 compares the number of working hours of ANMs and LHVs as revealed by interview and observation data. The rural and urban ANMs in reality worked less by 30% on a weekly basis as compared to their reported data. The difference was less for LHVs. In fact, the rural LHVs in practice worked more by 30% as compared to their reported number of working hours per week. The observations confirmed that the rural ANMs and LHVs (especially

TABLE 13. WORKING HOURS OF FUNCTIONARIES : INTERVIEW DATA

S No	Item	ANM n=19	MPW n=5	LHV n=14	BEE n=4	MO n=14
		Number of Hours				
1.	Average working hours per week	33.6 (23.0-46.0)	47.6 (33.0-60.0)	30.6 (22.0-40.5)	47.5 (37.0-72.0)	34.3 (24.0-54.0)
2.	Average working hours per day	5.6 (2.0-12.0)	7.9 (5.0-11.0)	5.1 (3.7-6.8)	7.9 (6.2-12.0)	5.7 (4.0-9.0)
3.	Minimum working hours on any day by an average functionary	5.1	7.0	4.6	8.0	5.6
4.	Maximum working hours on any day by an average functionary	6.5	8.3	5.6	8.1	6.6

Note : Figures in parentheses give the range of values.

TABLE 14. WORKING HOURS OF ANMs AND LHVs : INTERVIEW AND OBSERVATION DATA

S No	Item	Rural		Urban		Total	
		I	II	I	II	I	II
		Number of Hours					
1.	Average working hours per week						
	ANMs	37.1 (23.0-46.0)	26.1 (17.2-38.4)	30.1 (24.0-39.0)	20.6 (14.7-30.9)	33.6 (23.0-46.0)	23.5 (17.2-38.4)
	LHVs	32.3 (24.0-37.0)	33.3 (19.0-57.5)	29.7 (22.0-40.5)	25.1 (14.8-31.0)	30.6 (22.0-40.5)	28.0 (14.8-57.5)
2.	Average working hours per day						
	ANMs	6.2 (2.0-12.0)	4.6 (0.3-12.0)	5.0 (3.0-8.0)	4.5 (0.8-6.8)	5.6 (2.0-12.0)	4.3 (0.3-12.0)
	LHVs	5.4 (4.0-6.2)	5.5 (2.8-12.7)	4.9 (3.7-6.7)	4.2 (1.8-5.7)	5.1 (3.7-6.8)	4.7 (1.8-12.7)
3.	Minimum working hours on any day by an average functionary						
	ANMs	4.7	2.9	4.8	2.9	4.7	2.9
	LHVs	4.7	3.2	4.4	2.5	4.4	2.5
4.	Maximum working hours on any day by an average functionary						
	ANMs	7.7	6.4	5.3	5.2	6.5	6.4
	LHVs	6.0	9.6	5.4	5.2	5.6	9.6

Note : Figures in parentheses give range of values.
I = Interview data II = Observation data Rural = SC - PHC

the latter) worked for longer hours than their urban counterparts. Further, while the rural PHC ANMs had reported longer working hours than rural SC ANMs; the opposite was observed, that their working hours were less than those of SC ANMs.

The variation in the interview data regarding the amount of work put in by different functionaries in the same category was confirmed by the observation data.

2. Time of commencing of daily work by functionaries

Table 15 shows that 54 percent of the functionaries said that they started work by 8.00 AM. More than one-third (37%) started work between 8 and 9 AM. Table 16 highlights that while 40-56 percent of the ANMs and LHVs reported that they commenced work by 8 AM, it was observed that none of them did so. Less than 10 percent of the ANMs and LHVs reported that they started work between 9 to 10 a.m., but it was observed that 44-50 percent in practice did so. Thus, the ANMs and LHVs (urban and rural) started work later than that reported by them in the interviews. Further, the urban ANMs and LHVs tended to report earlier for work than their rural counterparts. Within the rural areas, the SC ANMs usually started work later than PHC ANMs.

Field visits mentioned by the functionaries in their work schedules

Forty five percent of the functionaries, of whom a majority were ANMs (69%) and LHVs (65%), mentioned that they made 3-4 field visits per week to the community. More rural than urban LHVs gave this response. While 19 percent of the functionaries mentioned as few as 1-2 visits per week, 18 percent stated as many as 5-6 field visits per week. Of the functionaries (18%), who did not mention field visits at all in their work schedules, most were urban MOs.

3. Job functions mentioned (interview data) and actually carried out (observation data) by ANMs and LHVs

As Table 17 indicates, the job functions mentioned most frequently by functionaries while describing their work schedule were immunisation, family planning and field visits. NAP and VAP were mentioned by fewer functionaries; 52 and 25 percent respectively. More ANMs and MPWs than any other category of functionaries mentioned NAP and VAP. More urban than rural LHVs mentioned NAP and VAP.

The job functions reported and those actually carried out (observations) by ANMs and LHVs are compared in Table 18 and Table 19 respectively. The major differences were:

1. All the ANMs and LHVs were involved in non-productive interactions with other staff members, their acquaintances, friends and relatives (who happened to visit) which were not related directly or indirectly to their job functions. They also carried out personal work in the observation period; predictably,

TABLE 15. TIME OF COMMENCING OF DAILY WORK BY FUNCTIONARIES : INTERVIEW DATA

S No	Time	ANM n=19	MPW n=5	LHV n=14	BEE n=4	MO n=14	Total N=56	%
				Number of respondents				
1.	Time of commencing of daily work							
a)	6.01 - 7.00 AM	0	1	0	1	0	2	4
b)	7.01 - 8.00 AM	9	1	6	1	11	28	50
c)	8.01 - 9.00 AM	7	2	8	1	3	21	37
d)	9.01 - 10.00 AM	1	1	0	1	0	3	5
e)	10.01 - 11.00 AM	2	0	0	0	0	2	4

TABLE 16. TIME OF COMMENCING OF DAILY WORK BY ANMs AND LHVs : INTERVIEW AND OBSERVATION DATA

S No	Time	Rural I	Rural II	Urban I	Urban II	Total I	Total II
				Percent respondents			
1.	Time of commencing of daily work						
A.	ANMs						
a)	7.01 - 8.00 AM	40	0	56	0	47	0
b)	8.01 - 9.00 AM	30	30	44	44	37	37
c)	9.01 - 10.00 AM	10	50	0	44	5	47
d)	10.01 - 11.00 AM	20	0	0	0	11	0
e)	11.01 - 12.00 Noon	0	20	0	11	0	16
B.	LHVs						
a)	7.01 - 8.00 AM	40	0	44	0	43	0
b)	8.01 - 9.00 AM	60	40	56	56	57	50
c)	9.01 - 10.00 AM	0	20	0	33	0	29
d)	10.01 - 11.00 AM	0	40	0	0	0	14
e)	11.01 - 12.00 Noon	0	0	0	11	0	7

I = Interview data
II = Observation data
Rural = SC + PHC

TABLE 17. JOB FUNCTIONS MENTIONED MOST FREQUENTLY BY FUNCTIONARIES

S No	Frequently Mentioned Job Functions	ANM n=19	MPW n=5	LHV n=14	BEE n=4	MO n=14	Total N=56	%
		Number of respondents						
1.	Immunization	19	5	14	3	9	50	89
2.	Family Planning	17	5	14	3	10	49	88
3.	Field visits	18	5	5	4	4	36	64
4.	Outpatient department/ Injection room/ Ward/Operation theatre duty	12	3	3	0	14	32	57
5.	NAP	16	5	6	1	1	29	52
6.	Antenatal care	15	0	7	0	6	28	50
7.	Supervision	1	0	13	4	4	22	39
8.	Nutrition health advice to community	12	4	4	1	0	21	38
9.	VAP	5	4	4	1	0	14	25
10.	Meetings	1	1	5	3	0	10	18
11.	Orientation camp/ group meetings	2	5	1	1	0	9	16
12.	Miscellaneous	11	5	12	4	7	39	70

TABLE 18. JOB FUNCTIONS MENTIONED MOST FREQUENTLY BY ANMs IN INTERVIEWS AND THOSE CARRIED OUT BY THEM IN THE OBSERVATION PERIOD

S No	Job Function of ANMs	Mentioned				Observed*			
		Rural n=10	Urban n=9	Total N=19	%	Rural n=10	Urban n=9	Total N=19	%
		Number of respondents							
1.	Immunization	10	9	19	100	10	9	19	100
2.	Family Planning	8	9	17	89	10	9	19	100
3.	Work related productive interactions including supervision	0	1	1	5	10	9	19	100
4.	Non productive interactions	0	0	0	0	10	9	19	100
5.	Personal work	0	0	0	0	10	9	19	100
6.	Nutrition health advice to community	6	6	12	63	10	7	17	89
7.	Field visits	9	9	18	95	9	6	15	79
8.	Antenatal care	7	8	15	79	9	6	15	79
9.	NAP	8	8	16	84	7	7	14	74
10.	VAP	3	2	5	26	7	7	14	74
11.	Outpatient department/ injection room/ ward/operation theatre duty	10	2	12	63	9	5	14	74
12.	Orientation camp/ group meetings	2	3	5	26	6	8	14	74
13.	Meetings	1	0	1	5	6	1	7	37
14.	Miscellaneous	6	5	11	58	10	9	19	100

TABLE 19. JOB FUNCTIONS MENTIONED MOST FREQUENTLY BY LHVs IN INTERVIEWS AND THOSE CARRIED OUT BY THEM IN THE OBSERVATION PERIOD

S No	Job Function of LHVs	Mentioned				Observed			
		Rural n=5	Urban n=9	Total N=14	%	Rural n=5	Urban n=9	Total N=14	%
		Number of respondents							
1.	Work related productive interactions including supervision	4	9	13	93	5	9	14	100
2.	Non-productive interactions	0	0	0	0	5	9	14	100
3.	Personal work	0	0	0	0	5	9	14	100
4.	Immunization	5	9	14	100	5	8	13	93
5.	Family planning	5	9	14	100	3	7	10	71
6.	VAP	1	3	4	29	3	5	8	57
7.	NAP	1	5	6	43	3	4	7	50
8.	Outpatient department/ward/ operation theatre duty	2	1	3	21	3	4	7	50
9.	Nutrition health advice to community	1	3	4	29	2	4	6	43
10.	Orientation camp/ group meetings	0	1	1	7	2	4	6	43
11.	Antenatal care	3	4	7	50	1	4	5	36
12.	Meetings	2	3	5	36	3	2	5	36
13.	Field visits	0	5	5	36	0	2	2	14
14.	Miscellaneous	3	9	12	86	5	9	14	100

these were not mentioned in the interviews.

2. Several job functions (including NAP and VAP related) were mentioned by fewer functionaries but carried out by a higher proportion of functionaries.

4. Time spent by ANMs and LHVs in productive and non-productive* work on an average work day as indicated by observations

Observations over the year under study showed that ANMs spent two-third of their time in productive work and a considerable proportion (one-third) of their time in non-productive work (Table 20). Rural ANMs spent more time in productive work than their urban counterparts. Within the rural areas, SC ANMs spent a greater portion (73%) of their time doing productive work as compared to PHC ANMs who spent only 58 percent of their time in productive work on an average work day.

Observations of LHVs revealed a similar picture. LHVs also spent more than one-third of their time doing non productive work. However, in contrast to the ANMs, rural LHVs spent less time in productive work than their urban counterparts on an average work day.

The observations over the year under study revealed that the ANMs and LHVs did not work according to a planned work schedule. Except the immunization clinic and meeting days, all other days saw them taking last minute decisions regarding the work they would do during that particular day. An exception was the ANMs who were assigned ward/injection room/operation theatre/out patient department duties which were planned by MOs/LHVs in advance for a month.

Absence of planning decreased the effectiveness of the work done as was observed several times by the investigator. For example, the ANMs often reached a school all prepared to immunize children and discovered that it was a morning school hence children had left; or the school had a picnic the previous day hence attendance was thin or the principal was not available to give permission to vaccinate the children.

Absence of planning was also evident in field work. The ANMs often forgot to take along the necessary materials like registers, pen, and necessary supplies (eg. polio vials were taken without the dropper used to administer the oral polio vaccine) as also vitamin A or iron supplements and basic medicines for treating minor ailments. Often the community would expect some services but ANMs would have nothing to offer. Consequently, they invited comments from people like, Phir yahan kya karne aayin hein - yeh dava bhi nahin hai wah dava bhi nahin hai' (then why have you come; you have neither this medicine nor

* Non-productive Work was defined as personal work (unrelated to official duties) and non-productive interactions with others like idle conversations. All other tasks having a direct or indirect bearing on job responsibilities were included in Productive Work' for the purpose of the study.

TABLE 20. TIME SPENT BY ANMs AND LHVs ON PRODUCTIVE AND NON-PRODUCTIVE WORK* ON AN AVERAGE WORK DAY : OBSERVATION DATA

S No	Item	Time spent Hours Rural	%	Hours Urban	%	Hours Total	%
1	Time spent by ANMs	n=10		n=9		N=19	
a)	on productive work	3.0	65.9	2.3	59.6	2.7	63.3
b)	on non-productive work	1.6	34.1	1.6	40.4	1.6	36.7
	Total	4.6	100.0	3.9	100.0	4.3	100.0
2	Time spent by LHVs	n=5		n=9		N=14	
a)	on productive work	3.1	56.0	2.6	61.3	2.8	59.0
b)	on non-productive work	2.4	44.0	1.6	38.7	1.9	41.0
	Total	5.5	100.0	4.2	100.0	4.7	100.0

* Non-productive work' was defined as personal work (unrelated to official duties) and non-productive interactions with others like idle conversations. All the other tasks having a direct or indirect bearing on job responsibilities were included in productive work' for the purpose of the study.

that). Opportunities to impart IEC were also not utilized. Little wonder then that community viewed ANMs as merely family planning workers or workers who asked the same questions repeatedly (for survey). Thus people would often get annoyed, or when they spotted ANMs, they said, "Operation abhi nahin karwaana" (We do not want to get operated).

5. Time spent by ANMs and LHVs on various job functions on an average work day (Pooled data of year long observations)

Tables 21 and 22 show that the ANMs and LHVs spent maximum time on their personal work and non-productive interactions. Urban ANMs and rural LHVs spent more time on these activities as compared to their counterparts in rural and urban areas respectively. In rural areas, the PHC ANMs spent more time in these activities than SC ANMs. As regards work related tasks, all the ANMs and LHVs spent relatively more time on immunization followed by family planning, with NAP and VAP figuring in the functions where the least time was spent.

6. Monthly variations observed in the time spent on various job functions by ANMs and LHVs

As Figures 12(a), 13(a) & (b) show, non-productive work took up maximum time of ANMs during most months of the year which peaked in the festival month of October. Similarly, non-productive work also took up more time than the job related functions of the LHVs through most months, especially in May and June, probably because of the relatively slow pace of work after the hectic schedule of March-April to achieve targets and compile reports of various programmes (Figures 12[b], 14[a] & [b]).

With respect to job functions, immunization took up relatively more time, followed by FP, for both ANMs and LHVs. Immunization work peaked in January and March for ANMs since the yearly targets had to be achieved by completing all doses of vaccines for each beneficiary. For the LHVs, it peaked in August and December as August is the time when most MCH activities begin in earnest and by December the work is in full swing. Similarly, FP work peaked in February and April for ANMs and for LHVs in March, August and September.

Further, NAP and VAP were allotted much less time compared to the other job functions through most months by both ANMs and LHVs. It was observed that in August and November NAP was given more time than in other months by ANMs while in case of LHVs, March and October saw relatively more time expenditure on NAP and VAP. These peaks were probably because the MCH work in general, is the focus of health functionaries from August to Novemberwhile non-achievement of targets in any programme by March leads to hectic activity in that programme so that achievement can be reported in annual report for that year.

While on the one hand, the peaks of various job functions in different months of the year emphasize that there is a seasonal variation in the amount of time spent on each job function, on the other, they also point towards inter-functionary differences

TABLE 21. TIME SPENT BY ANMs ON VARIOUS JOB FUNCTIONS ON AN AVERAGE WORK DAY : OBSERVATION DATA

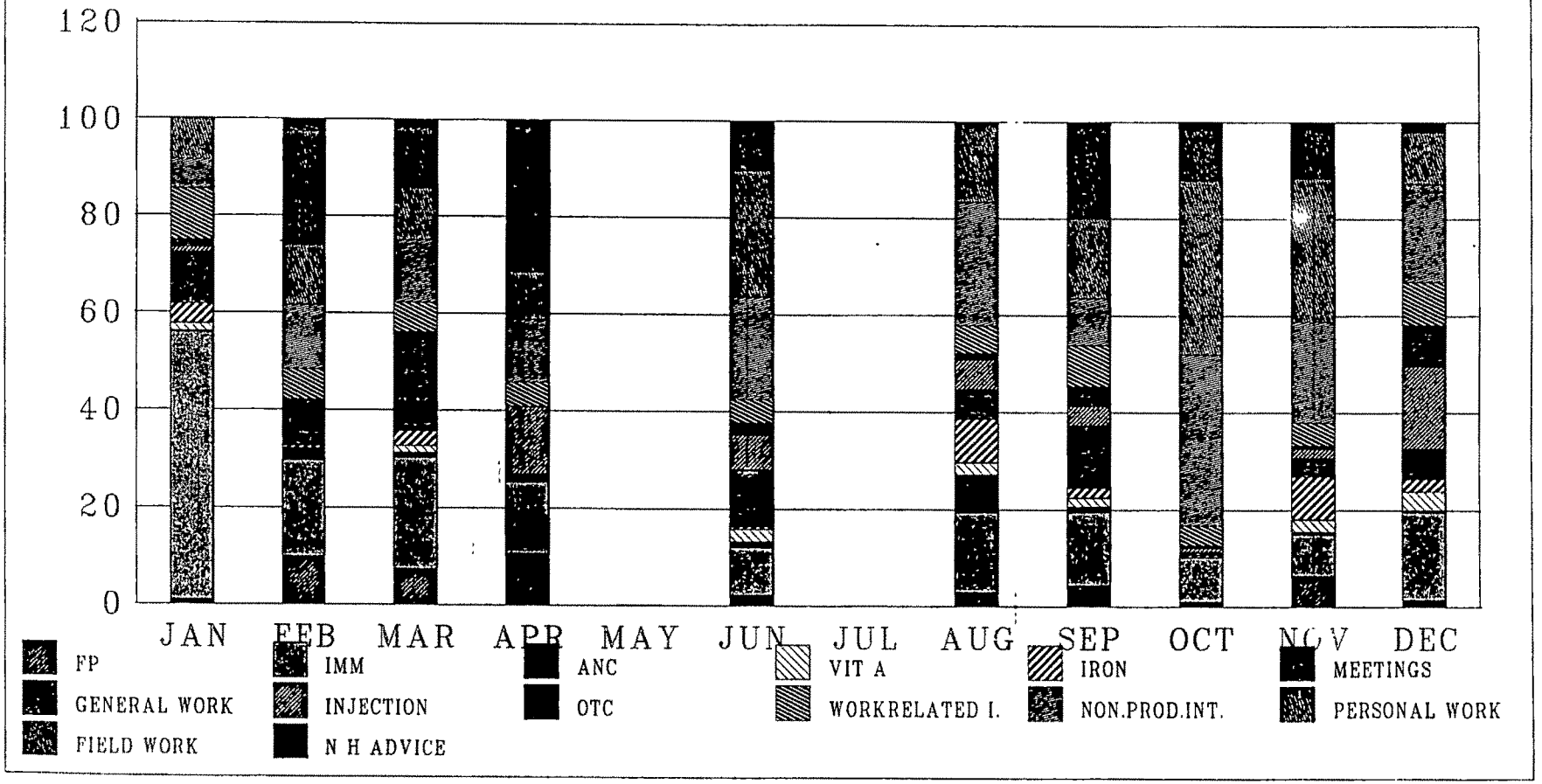
S No.	Job functions	Rural (n=10) Time spent Hours	%	Urban (n=9) Time spent Hours	%	Total (N=19) Hours	%
1.	Personal work	.89	19.5	.79	20.4	.84	19.9
2.	Non-productive interactions	.67	14.6	.77	20.0	.72	16.9
3.	Immunization	.55	12.1	.80	20.6	.66	15.6
4.	Field visits	.69	15.0	.36	9.3	.54	12.6
5.	Work related interactions	.29	6.4	.20	5.2	.25	5.9
6.	Outpatient department/injection room/ward/ operation theatre	.31	6.8	.13	3.3	.23	5.3
7.	Family planning	.26	5.7	.16	4.3	.22	5.1
8.	NAP	.22	4.8	.09	2.4	.16	3.8
9.	Meetings	.24	5.3	.01	.2	.14	3.2
10.	VAP	.11	2.3	.11	2.8	.11	2.5
11.	Orientation camp, group meeting	.03	.6	.20	5.1	.10	2.4
12.	Antenatal care	.08	1.9	.04	1.0	.06	1.5
13.	Nutrition health advice	.05	1.2	.03	.7	.04	1.0
14.	Miscellaneous	.18	3.9	.18	4.8	.18	4.3
	Total	4.6	100.0	3.7	100.0	4.2	100.0

TABLE 22. TIME SPENT BY LHVs ON VARIOUS JOB FUNCTIONS ON AN AVERAGE WORK DAY : OBSERVATION DATA

S No.	Job functions	Rural (n=5)		Urban (n=9)		Total (N=14)	
		Time spent					
		Hours	%	Hours	%	Hours	%
1.	Personal work	1.40	25.2	.92	21.9	1.09	23.3
2.	Non-productive interactions	1.04	18.8	.70	16.8	.82	17.7
3.	Work related interactions	.45	8.2	.49	11.7	.48	10.2
4.	Immunization	.26	4.6	.44	10.5	.37	8.0
5.	Meetings	.73	13.2	.10	2.3	.32	6.9
6.	Outpatient department/injection room/ward/ operation theatre	.44	8.0	.14	3.4	.25	5.4
7.	Family planning	.19	3.5	.27	6.4	.24	5.1
8.	Antenatal care	.00	.0	.23	5.5	.15	3.2
9.	Orientation camp/ group meeting	.04	.8	.17	4.0	.12	2.6
10.	Field visits	.00	.0	.17	4.1	.11	2.3
11.	NAP	.21	3.8	.04	1.0	.10	2.2
12.	VAP	.15	2.7	.05	1.1	.08	1.8
13.	Nutrition health advice	.01	.1	.04	.9	.03	.5
14.	Miscellaneous	.61	11.0	.44	10.6	.50	10.8
	Total	5.6	100.0	4.2	100.0	4.7	100.0

FIGURE : PERCENT TIME SPENT ON JOB FUNCTIONS BY ANMs IN 1990-91

12 (a)



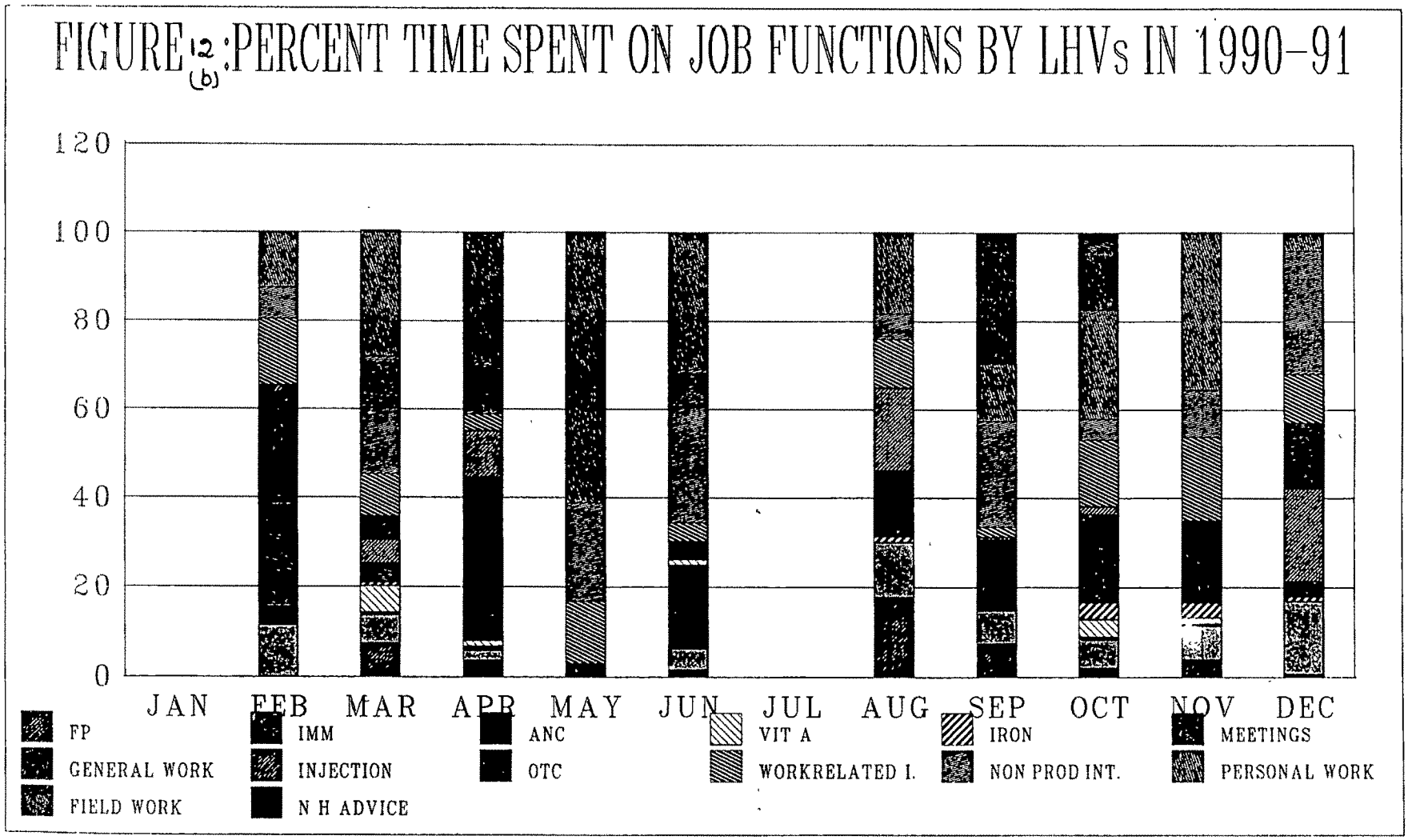


FIGURE 12 (b): PERCENT TIME SPENT ON JOB FUNCTIONS BY LHVs IN 1990-91
120
100
80
60
40
20
0
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
OCT
NOV
DEC
FP
GENERAL WORK
FIELD WORK
IMM
INJECTION
N H ADVICE
ANC
OTC
VIT A
WORKRELATED I.
IRON
NON PROD INT.
MEETINGS
PERSONAL WORK

FIGURE 13(a): PERCENT TIME SPENT BY RURAL ANMs ON JOB FUNCTION(90-91)

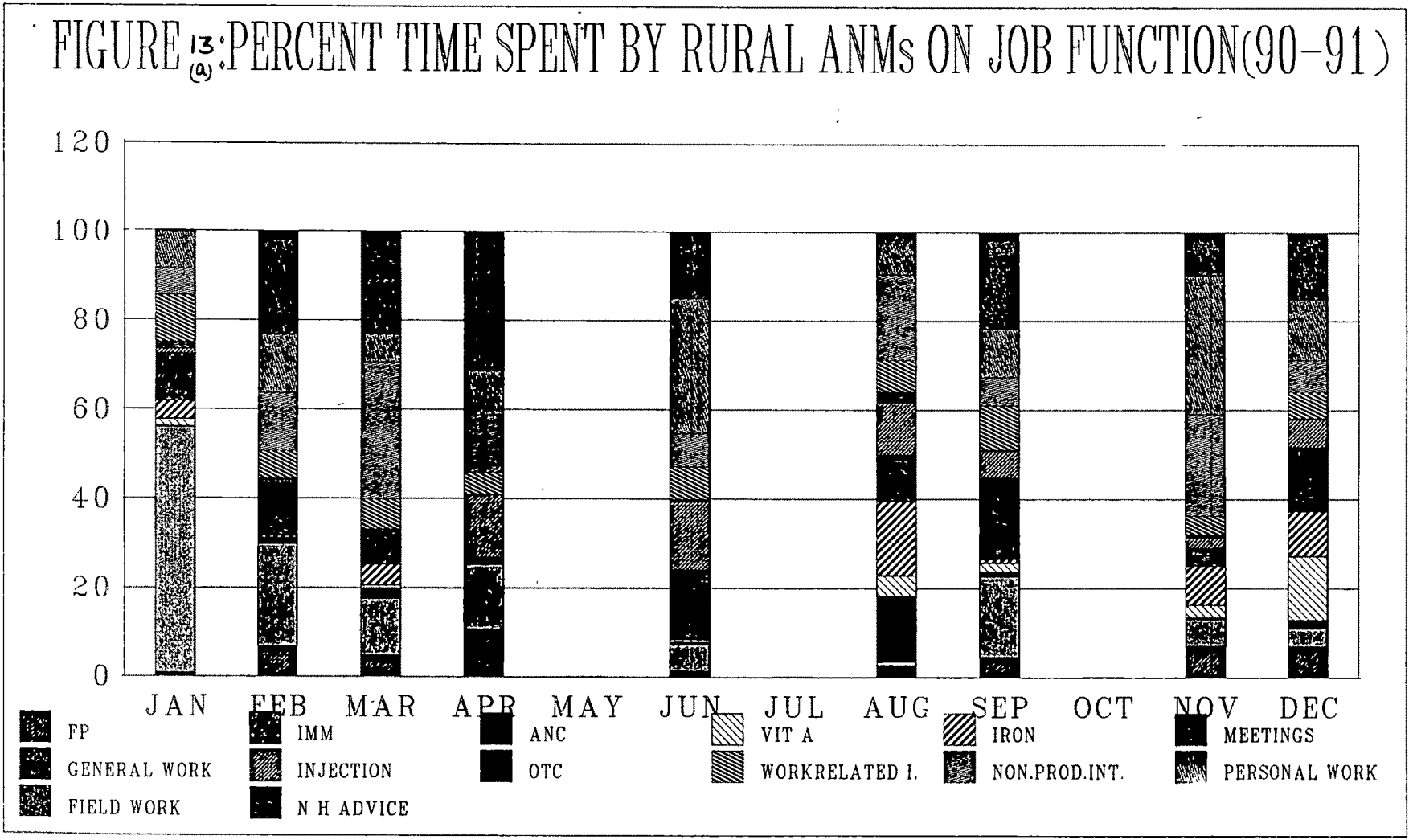


FIGURE 13(b): PERCENT TIME SPENT BY URBAN ANMs ON JOB FUNCTION(90-91)

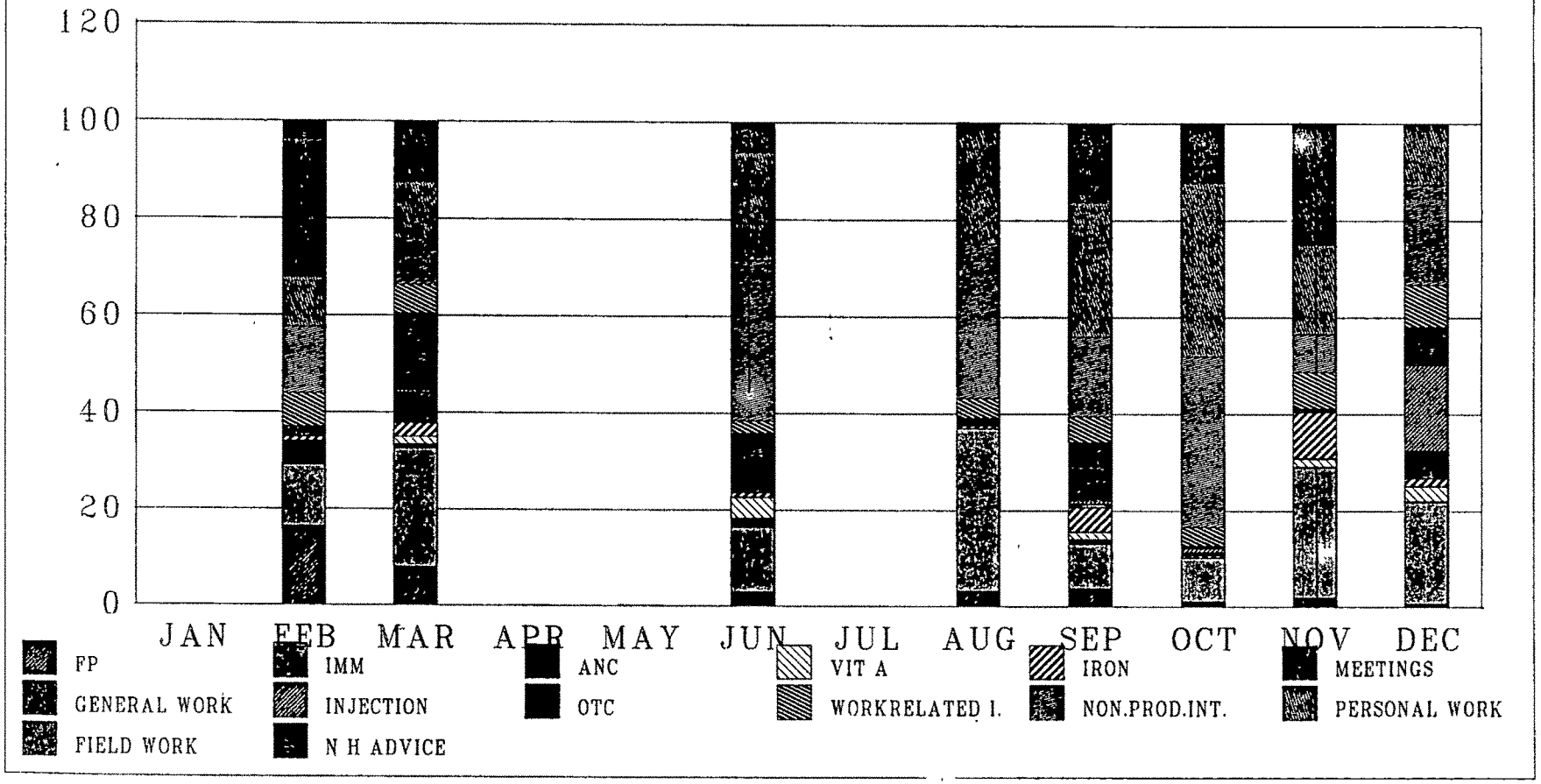
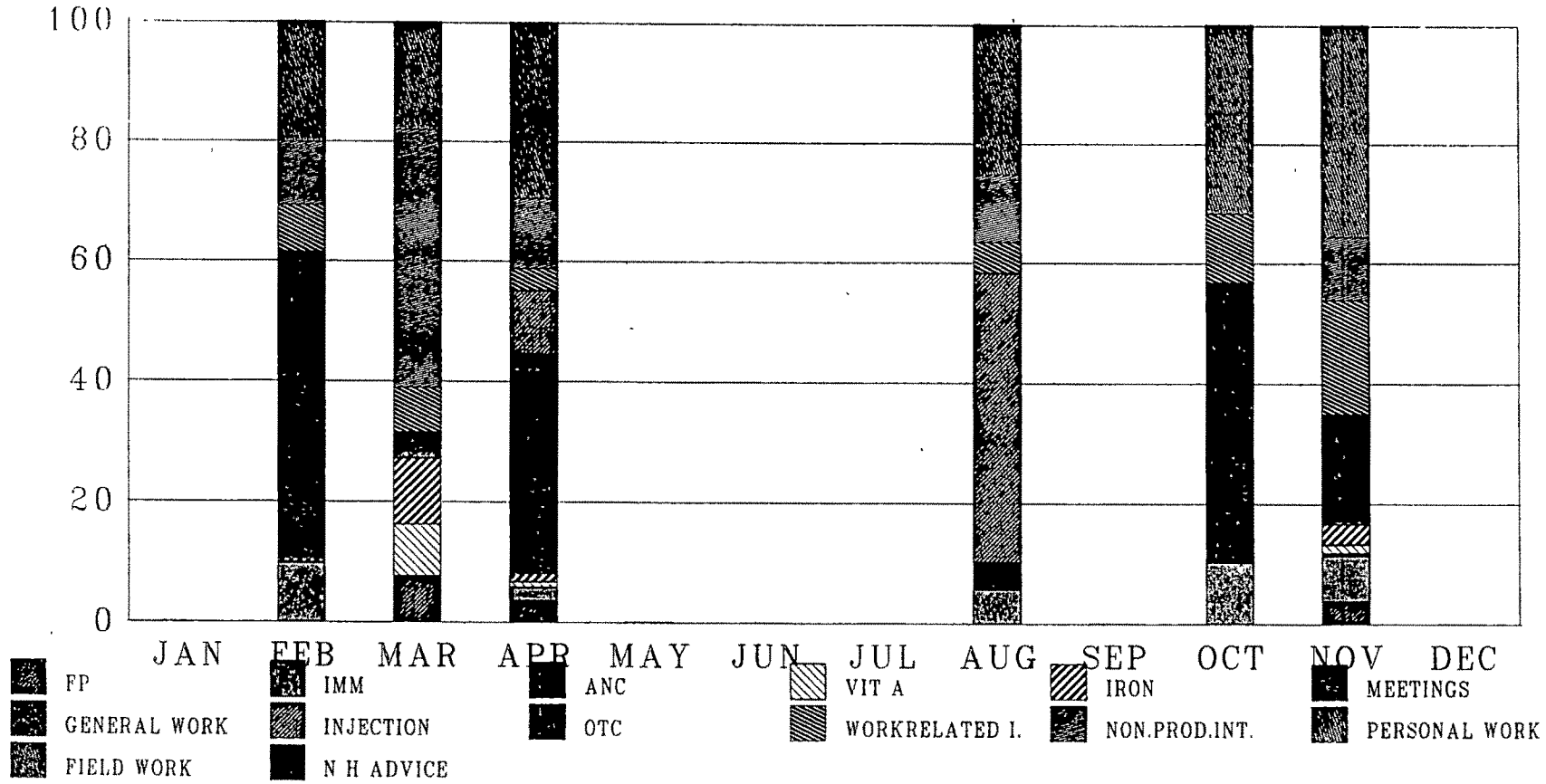


FIGURE 14(a): PERCENT TIME SPENT BY RURAL LHVs ON JOB FUNCTION(90-91)



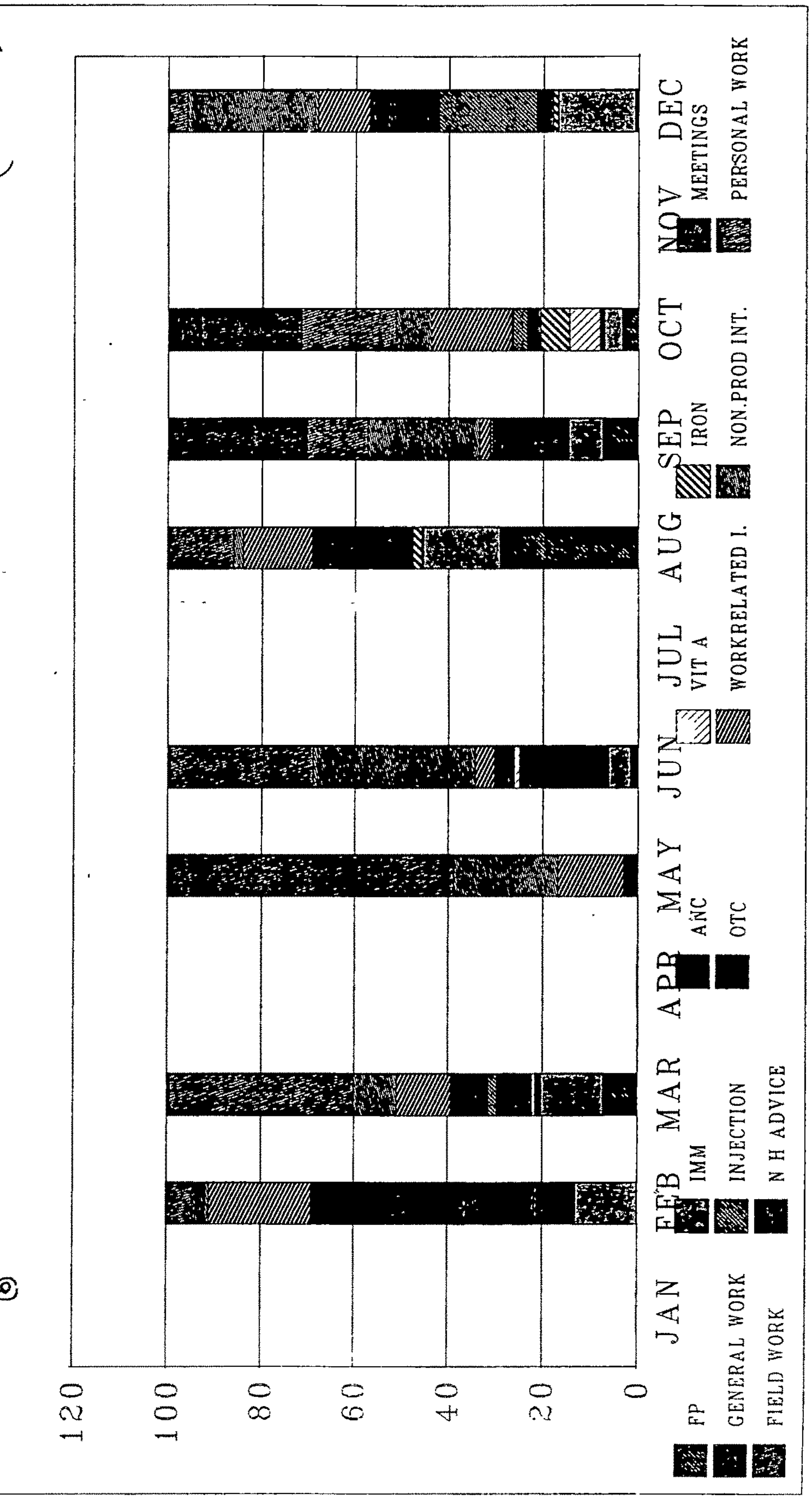


FIGURE 14(b): PERCENT TIME SPENT BY URBAN LHVs ON JOB FUNCTION (90–91)

in the time spent on different job functions over the year. For example, the peak time spent for each job function occurred in different months for ANMs and LHVs. This indicates an absence of coordinated efforts of these functionaries in implementing each programme.

7. Ranking of job functions by functionaries according to perceived relative importance, time expenditure and level of difficulty faced

As Table 23 shows, a majority of the functionaries perceived that immunization, family planning and survey were relatively more important, more time consuming and also more difficult to implement, as compared to the other job functions. More rural functionaries tended to rank immunization and survey work in the more time consuming' and difficult' categories as compared to their urban counterparts which is not surprising, given the difficult rural conditions. Family planning was considered important and most difficult to implement by a majority of both rural and urban functionaries. Most of the functionaries ranked NAP and VAP as relatively less important, less difficult and among the least time consuming functions. There was no discernible urban-rural trend in this regard.

8. Antenatal, postnatal and well-baby/child clinics

In the urban as well as rural health centres, antenatal, postnatal and child clinics are run weekly on fixed days in each centre and form a major part of the responsibilities of the centre level functionaries. Further, besides discharging curative care and other PHC services, these clinics are also distribution outlets for iron and vitamin A supplements to beneficiaries.

The interview responses of 38 functionaries who mentioned clinics in their time-activity schedule (19 ANMs, 14 LHVs and 5 MOs) are summarized below.

A majority (72%) attended 2 clinics per week. Antenatal and child clinics were mentioned by 38 percent and 26 percent of the functionaries respectively; and 25 percent mentioned both antenatal and child clinics. In rural areas, there was more uniformity as regards the days on which clinics functioned (mostly on Tuesdays and Fridays) while in the urban areas there was less uniformity. If a fixed pattern is followed everywhere (for example, clinics are run only on Tuesdays and Fridays), it would be easier for beneficiaries to remember clinic days and associate these days with the availability of specific MCH services including iron and vitamin A supplements.

According to above 60 percent of the functionaries, clinics opened at 8 a.m. or 9 a.m., and functioned for 4, 5 or 6 hours. In general, more rural clinics were conducted for longer duration than urban clinics. There was a considerable difference in the duration of clinics in various centres; varying from 2 hours to above 6 hours. This again would adversely affect community acceptance of the PHC programmes.

TABLE 23. RANKING OF JOB FUNCTIONS BY FUNCTIONARIES* ACCORDING TO PERCEIVED RELATIVE IMPORTANCE, TIME EXPENDITURE AND LEVEL OF DIFFICULTY FACED

S No.	Job functions	Importance			Time Expenditure			Level of difficulty		
		Most	Less	Least	Most	Less	Least	Most	Less	Least
		Percent responses								
1	Immunization	67	31	2	44	44	12	39	29	32
2	Family planning	60	40	0	60	31	9	60	23	17
3	Survey	47	28	25	57	40	3	43	26	31
4	Record maintenance	27	39	34	17	48	35	18	37	45
5	IEC (orientation camp/ group meetings)	20	48	32	28	38	34	20	46	34
6	NAP and VIP	14	69	17	8	65	27	13	50	37
7	Malaria	13	54	33	0	48	52	9	43	48
8	Reports	11	39	50	18	37	45	17	23	60
9	Ward duty	10	10	80	30	40	30	9	18	73
10	Outpatient department duty	0	14	86	23	13	64	13	21	66
11	Operation theatre duty	0	38	62	23	23	54	13	20	67

* Functionaries included urban and rural ANMs (n=19), MPWs (n=5), LHVs (n=14) and BEEs (n=4); Total N=42.

Several clinics were observed in the course of the one year observations of ANMs and LHVs. It was found that these clinics focussed primarily on immunization of pregnant women and children while simultaneously carrying out family planning work (motivating for family planning and distribution of contraceptives). While vaccinating a beneficiary or making entries in register, the ANMs and LHVs would be constantly motivating women for family planning, so much so that they often forgot to inform women about the next date of immunization! It is not surprising therefore that NAP and VAP got scant attention. Many a times, the pregnant women were not given iron tablets at the clinics, or if given, no instructions regarding dosage or any other NAP related IEC was imparted.

When the pregnant or lactating women came to these clinics for their own or their children's immunization, very often, they brought along their other small children. This was a valuable opportunity for the health functionaries to provide them with vitamin A solution or small iron tablets but rarely was this opportunity utilized.

V. INFRASTRUCTURAL SUPPORT PROVIDED TO FUNCTIONARIES INCLUDING LOGISTICS OF IRON AND VITAMIN A SUPPLEMENTS

1. **Transport** : Table 24 shows that transport facility was not available to more than three-fourths of the functionaries. The observations confirmed that indeed this was so. Lack of transport facility was a problem faced by a large number of functionaries especially the ANMs in both urban and rural areas. The problem was more acute in case of rural ANMs. The ANMs either commuted to their areas on foot or by public transport in which case, again they had to spend time in waiting. The time and energy spent in commuting is likely to affect their efficiency for actual work. Also, in the rural areas, there was an additional problem of going alone on foot to the interior villages. The investigator had first hand experience of going with rural ANMs to such villages and observed that the problem was compounded in the monsoon. It was also observed by the investigator that the ANMs were required to carry the materials required for field visits, vaccine carrier, making field visits difficult for the functionaries.

Senior district level officials : Four out of 6 officials stated that they had been provided transport facility and it was adequate to carry out their job responsibilities. The remaining two officials mentioned that they were not provided any transport and hence could not keep to the supervisory visit schedule.

2. **Housing** : Housing facility was provided to one-third (37%) of the functionaries. All of these were rural functionaries. However, it is relevant to note that some of these rural functionaries were not staying regularly in their allotted quarters in the rural areas and were commuting from Indore city. It was observed that housing was a major problem for SC ANMs who did not have satisfactory living quarters. In fact, one of the SC ANMs did not have premises for SC either. So she was commuting

TABLE 24. INFRASTRUCTURAL SUPPORT PROVIDED TO FUNCTIONARIES

S.No.	Infrastructural Support	ANM N=19	MPW n=5	LHV n=14	BEE n=4	MO n=14	TOTAL N=56	%
1.	Transport facility available							
	a) Yes	18	4	11	1	9	43	77
	b) No	0	0	3	3	5	11	20
	c) Available for specific purpose (eg. FP)	1	1	0	0	0	2	3
2.	Housing provided							
	a) No	11	5	9	1	9	35	63
	b) Yes	8	0	5	3	5	21	37
3.	Rewarded for any accomplishment							
	a) No	7	1	5	0	5	18	32
	b) Yes	12	4	9	4	9	38	68
4.	Programme for which rewarded*							
	a) Family planning work	6	3	9	4	9	31	56
	b) Immunization	2	2	5	0	5	14	25
	c) Maternal and child health	3	0	3	2	3	11	19
5.	Penalized for any lapses							
	a) No	19	4	11	3	14	51	90
	b) Yes	0	1	3	1	0	5	10
6.	Causes of penalty*							
	a) Unsatisfactory work performance	2	2	3	0	0	7	70
	b) Disobeying superiors	1	0	0	0	0	2	20
	c) Inappropriate behaviour with patients or doctors	1	0	0	0	0	1	10
7.	Form of penalty							
	a) Verbal censure	0	1	3	0	0	4	40
	b) Memo	0	0	2	1	0	3	30
	c) Increments withheld	1	2	0	0	0	3	30
8.	Action taken by you against subordinates in previous year							
	a) Yes	NA	NA	4	2	5	11	34
	b) No	NA	NA	10	2	9	21	66
9.	Causes of Action *							
	a) Unsatisfactory work performance	NA	NA	3	2	4	9	82
	b) Not residing at headquarter	NA	NA	1	1	1	3	27
10.	Type of action taken							
	a) Informed superiors	NA	NA	3	1	2	6	55
	b) Memo	NA	NA	0	1	4	5	45

* Multiple responses
NA Not applicable

from Indore and faced a lot of hardship as she had no place to keep her supplies in the villages in her area.

3. **Incentives** : Two-thirds of the functionaries had been rewarded atleast once in the past. More urban than rural ANMs had received awards. As evident from the Table 24, a majority of them had received rewards for good performance in family planning, followed by immunization and maternal and child health (MCH).

Seventy five percent of the functionaries knew a colleague who had been rewarded for good performance in family planning (72%), immunization (39%) and MCH (11%).

Observational data revealed that rewards were announced chiefly for family planning work. Monetary incentives for getting a specified number of cases operated for family planning were regularly announced in monthly meetings at various centres, especially as the year drew to a close.

4. **Disincentives** : Only 10 percent of the functionaries had ever been penalized though about 21 percent of the functionaries knew a colleague who had been penalized for some lapse(s) in work performance. Forms of penalty were verbal censure, memo and withholding of increments. Some of the other forms of penalty reported by functionaries were transfer to another centre and suspension from service in which case they had to stay at home at half pay. Action against a majority of the functionaries had been taken because of their unsatisfactory work performance in terms of non-achievement of targets. Rural functionaries are expected to stay in their headquarter villages and their not doing so was a cause of action against them in case of one-fourth of the functionaries.

As regards type of action taken, more than half of the functionaries just verbally informed their superiors regarding lapses committed by their subordinates and the remaining directly warned their subordinates through memos.

It was observed that non-achievement of family planning targets was the most prominent cause of an action being taken against a subordinate. The functionary would be reprimanded in front of others, often in the monthly meetings and warned of unpleasant consequences. Instances of withholding of salary were observed.

When senior district officials were asked if there were any incentives and disincentives specifically related to NAP and VAP, all of them stated that no incentives were provided for achieving the targets of NAP and vAP and there was no penalty if targets of NAP and VAP were not achieved. However, one official added that achievement of immunization targets along with those of NAP and VAP was rewarded.

5. **Budgetary provision with respect to NAP and VAP** : A majority of the senior district officials (5) mentioned that no separate budget is provided for NAP and VAP but the budgetary provisions for NAP and VAP are made under the umbrella of MCH services. This

budget is decided by Directorate of Health Services. Three officials could not comment regarding the adequacy or inadequacy of the budget provided; two officials felt that the budget is inadequate. The year long observations revealed that indeed hardly any monetary expenditure was made in connection with NAP and VAP.

LOGISTICS OF IRON AND VITAMIN A SUPPLEMENTS

6. Interview responses regarding receipts and issues of iron and vitamin A supplements

a) Who decides the quantity of supplements to be issued and the periodicity of supply: According to a majority of the functionaries (88%), fixed quantities of supplements are not supplied to various UFWCs and PHCs at fixed intervals; the centres procure the supplements when they require and in the quantities they require. Similarly, within the centres, the grassroot level functionaries (ANMs and MPWs) themselves issued the quantity of supplements they needed, when needed; this was stated by 80 percent of the functionaries.

The observations were in confirmity with the interview responses, i.e. the functionaries themselves decided the quantity of supplement to be taken by them. However, the supply eventually depended on the stocks available at the stores. Secondly, it was observed that functionaries at various levels were not in the habit of estimating their requirements in advance and giving indents. They decided the quantities to be issued on the spur of the moment when asked about their requirement at the time of issue. Thus, actual requirements in terms of the targetted population were not correctly estimated, resulting in short supply at one point and excessive stock at another point.

At the district level, fixed quantities of supplements are received every month at the district stores from the state stores, according to 4 out of 6 senior district officials.

b) Basis of decisions regarding quantity and periodicity of supplies: According to the functionaries, the UFWCs and PHCs receive supplies on the basis of targets assigned to them (36%), on the number of eligible beneficiaries (known through surveys) (32%) on the quantity received in the previous month and on the balance remaining (32%), availability of supplies at district stores (26%), on the number of beneficiaries coming to the clinics or outpatient department (18%). Sometimes it depends on the on the availability of vehicle and the storage space available (7%). Thus, these various responses (supported by observations) suggested no uniform criteria were followed in deciding the quantity of supplies to be procured.

Within the centres, the quantity issued to ANMs and MPWs depended on the estimated number of beneficiaries according to 50 percent of the functionaries. Other functionaries stated that the quantity issued depended on the quantity available in the store of the centre (24%), on the targets given to each functionary

(21%), the quantity issued in the previous month (13%) and on the balance remaining with the ANMs and MPWs (8%).

According to senior district officials, the quantity of a supplement sent from the state stores depends on stock position of state stores (N=3) or on targets assigned to the district (N=2). Similarly, the quantity supplied to various centres depends on the targets assigned to them (N=2), on the demands made by them (N=2) or on the stocks available at district stores (N=1).

c) Average interval at which supplies are procured: From the district stores, supplies are procured by the centres every month (37%) or at an interval of 3-4 months (34%). Twenty two percent of the functionaries, all of them MOs, stated that they were not aware of the periodicity of receipt of iron and vitamin A supplies. Two LHVs mentioned that iron was received more frequently than vitamin A.

Within the centres, the supplements were issued to the ANMs and MPWs every month, or whenever they asked for them (37% and 31% of the functionaries respectively). Seven percent of the functionaries (urban MOs) had no knowledge of the interval at which the supplements were issued to the ANMs and MPWs. The remaining 25 percent of the functionaries mentioned various time intervals for issue of supplies such as 8 days, 15 days, 1-2 months or 3-4 months. Iron was issued more frequently than vitamin A.

It was observed that a majority of the SC ANMs and MPWs obtained their supplies once a month, usually when they came for the monthly meetings or for taking their salaries at the PHC. The ANMs working in the PHC and UFWC did not follow any such pattern and issued supplies as and when required, usually prior to going on field visits or on immunization clinic days. It was noted that though the ANMs/MPWs were rarely denied supplies whenever they asked for them, it was not easy to issue supplies because the person issuing the supplies was not always available at the time the ANM/MPW decided to take the supplies.

It was felt by the investigator that there was a dire need to streamline the whole process of issue of supplies in order to make it more efficient in terms of time and effort. Supplies should be issued on fixed days in a month, at a fixed time, with certain amount of flexibility allowed.

According to senior district officials, the supplies of supplements are received every month at district stores (N=4) and distributed to various centres every month (N=5).

d) Checks made on the supplements on receipt of supplies: Seventy five percent of the grassroot level functionaries stated that they checked the expiry date on receipt of supplements. Checking of the condition of the supplements and the colour of the supplements was mentioned by 29 percent and 21 percent of the functionaries respectively.

e) Adequacy and regularity of supplies: It can be seen from Table 25 that nearly half of the functionaries reported that the supplies of iron syrup during the year prior to the study were inadequate and irregular. On the other hand, above 75 percent of the functionaries stated that the supplies of iron tablets (small and large) were adequate and regular. More rural than urban ANMs and MOs reported that the supplies of tablets were irregular and inadequate.

Compared to iron tablets, fewer functionaries stated that the supplies of vitamin A were adequate or regular. About one-third mentioned inadequacy or irregularity of supplies. More rural than urban ANMs reported that the supplies were inadequate and irregular.

Duration of non-availability of supplies : More than half (57%) of the functionaries reported that iron syrup was not available for 6-11 months. More rural than urban ANMs mentioned that the syrup was not available for 6 months or more. According to 30 percent, the syrup was not available for 1-5 months and 18 percent stated that they did not receive iron syrup at all during the previous year. More than three-fourths of the functionaries (78%) stated that small tablets were not available for 1-3 months; and 22 percent mentioned non-availability for about 6 months during the previous year. This was reported by more rural ANMs and MOs than their urban counterparts. Large tablets were not available for about 1-3 months according to a majority of functionaries (83%). More rural LHVs and rural MOs reported this as compared to their urban counterparts.

The investigator made an observation which throws light on the often artificially created situation of short supply of iron supplements. In one of the better performing centres of Indore, the investigator was shown a drum which contained iron tablets; several iron tins had been emptied into it. The drum was to be filled with water so that iron tablets would dissolve in it and then the water was to be thrown away. When the investigator asked in disbelief the reasons for doing so, she was informed that large stocks of iron tablets had got accumulated in the centre because the workers had not been taking away the supplies issued to them (but had been giving regular monthly reports of achievements). Hence the supply had to be disposed off.

Similarly, in one of the stores, several tins of iron tablets were lying around in a very bad condition; they had not been opened at all. They had become completely rusted and many had become date expired too. These observations point towards the poor mismanagement of the available supplies.

Non-availability of vitamin A supplement in the previous year was reported for 1-3 months (52%) or 4-6 months (48%).

Senior district level officials : Two out of 6 officials had no knowledge of the adequacy and regularity of supplies of iron and vitamin A in the previous year. Out of the remaining 4 officials 3 stated that the supplies of iron syrup and large tablets were adequate and regular while one official reported that the supply

TABLE 25. ADEQUACY AND REGULARITY OF SUPPLY DURING THE YEAR PRECEDING THE STUDY

S.No.	Infrastructural Support	ANM n=19	MPW n=5	LHV n=14	BEE n=4	MO n=14	TOTAL N=56	%
1.	Adequacy of supply							
	Iron syrup							
	a) Yes	8	1	7	3	8	27	48
	b) No	10	4	6	1	4	25	45
	Small tablets							
	a) Yes	16	5	11	3	13	48	86
	b) No	2	0	3	1	0	6	11
	Large tablets							
	a) Yes	15	5	13	3	12	48	86
	b) No	4	0	1	1	1	7	13
	Vitamin A solution							
	a) Yes	12	3	8	2	10	35	63
	b) No	6	2	6	2	2	18	32
2.	Regularity of supply							
	Iron syrup							
	a) Yes	8	1	5	2	8	24	43
	b) No	10	4	7	2	5	28	50
	Small tablets							
	a) Yes	16	4	10	3	12	45	80
	b) No	2	1	4	1	1	9	16
	Large tablets							
	a) Yes	14	5	10	3	12	44	79
	b) No	5	0	4	1	1	11	20
	Vitamin A solution							
	a) Yes	10	4	7	1	9	31	55
	b) No	8	1	7	3	4	23	41

of iron syrup was not available for one month in the preceding year and that of large tablets was inadequate. The supplies of small tablets were reported to be regular and adequate by all the four officials.

With respect to vitamin A, 3 out of the 4 officials mentioned that the supplies were inadequate and irregular in relation to targets and demands of centres.

To cope with inadequate and irregular supply, the district officials informed the higher officials in writing (N=3) and issued orders to distribute two small tablets for every one large tablet when large tablets were in short supply.

7. Receipts and issues of supplies of iron and vitamin A supplements as recorded in the stock register : Tables 26 to 33 present a summary of the findings which emerged from a detailed scrutiny of the stock registers pertaining to iron and vitamin A supplements available at various levels, from the District and Medical College Stores, down to the urban and rural centres and subcentres. The flow of the supplies was from district stores to the UFWC and PHC, and from PHC to SC. Further, the Medical College Stores also provided supplies to PHC when needed.

A common thread running through the data of all the Tables is a marked variability in the receipts and issues of supplies with respect to quantity and periodicity. To facilitate interpretation of these data, salient observation and interview findings with respect to logistics are also discussed here.

a) Receipts : On an average, 1 to 21 months had elapsed between the time the supplies of iron and vitamin A were received in the previous accounting year and the year under study at various levels. On the one hand, this could be due to actual non-supply or, as reported by some functionaries, because, the supplies were not procured in the last few months of the previous year (as targets had already been achieved) as well as in the initial months of the next year (when survey work was usually carried out to identify the beneficiaries). The first receipt of supplies by centres in the year studied was any time between April and December.

The supplies did not follow any fixed schedule. The supplements were received at the centres at various levels any number of times, ranging from 1 to 9 times in the year. Similarly, the periodicity of supplies, i.e. the interval between any two receipts at the centres was also highly variable. The interval between two supplies could be as less as one month or as long as 9 months. This irregularity of supplies implies that the distribution of supplements was not carried out in a planned manner because functionaries were not always certain as to when the next supply would be received. For example, if they planned the distribution of vitamin A on a particular day and informed the community, this may not work out because there was no certainty of receipt of supply. Further, in case of iron, a break in the supply could result in discontinuation of the supplement

TABLE 26. LOGISTICS OF IRON SYRUP (APRIL 1990 to MARCH 1991): RECEIPTS

S.No.	Receipts	District store n=1	Medical store n=1	UFWC n=8	PHC n=5	SC n=3
1.	Average time between last receipt of previous year and first receipt of year under study (months)	1	21	6 (2-15)	9 (9-11)	NA
2.	Average number of days the supplement was received in the year	6	1	1 (1-3)	2 (1-4)	1 (0-2)
3.	Average minimum time between any two receipts (months)	<1	Single receipt	6 (3-9)	<1 (1-4)	4 (4-4)
4.	Average maximum time between any two receipts (months)	2	Single receipt	7 (6-9)	2 (1-4)	4 (4-4)
5.	Average minimum quantity received at any time in the year (bottles)	500	500	64 (50-100)	87 (50-150)	3 (2-5)
6.	Average maximum quantity received at any time in the year (bottles)	1000	500	71 (50-100)	112 (100-150)	6 (2-10)
7.	Average number of months the balance was nil	1 (<1-<1)	9 (2-7)	7 (3-11)	9 (7-12)	12 (11-12)

Note : Figures in parenthesis indicate the range of values

NA : Not Available

TABLE 27. LOGISTICS OF IRON SYRUP (APRIL 1990-MARCH 1991) : ISSUES

S.No.	Issues	District store n=1	Medical store n=1	UFWC n=8	PHC n=5	SC n=3
1.	Average time between last issue of previous year and first issue of year under study (months)	2	15	8 (4-15)	10 (9-11)	NA
2.	Average number of days the supplement was issued in the year	34	5	2 (1-4)	4 (4-5)	1 (1-1)
3.	Average minimum time between any two issues (months)	< 1	< 1	< 1 (<1-1)	1 (1-1)	NA
4.	Average maximum time between any two issues (months)	3	1	3 (1-5)	2 (1-4)	NA
5.	Average minimum quantity issued at any time in the year (bottles)	50	50	67 (50-100)	13 (2-35)	2 (2-2)
6.	Average maximum quantity issued at any time in the year (bottles)	200	150	70 (50-100)	65 (2-165)	2 (2-2)
7.	Average maximum quantity the balance at any time in the year (bottles)	1000	500	75 (50-100)	149 (100-183)	2 (0-2)

Note : Figures in parantheses indicate the range of values

NA : Not Available

TABLE 28. LOGISTICS OF SMALL TABLETS (APRIL 1990 to MARCH 1991): RECEIPTS

S.No.	Receipts	District store n=1	Medical store n=1	UFWC n=8	PHC n=5	SC n=3
1.	Average time between last receipt of previous year and first receipt of year under study (months)	2	8	3 (2-4)	7 (4-9)	3 (<1-5)
2.	Average number of days supplement was received in the year	9	3	3 (2-5)	4 (2-6)	5 (3-9)
3.	Average minimum time between any two receipts (months)	1	2	2 (<1-2)	2 (1-5)	2 (1-3)
4.	Average maximum time between any two receipts (months)	2	2	3 (2-4)	3 (2-5)	3 (2-4)
5.	Average minimum quantity received at any time in the year (tins)	72	72	59 (22-72)	72 (72-72)	2 (1-5)
6.	Average maximum quantity received at any time in the year (tins)	1008	504	69 (50-72)	130 (72-216)	4 (2-5)
7.	Average number of months the balance was nil	1 (<1-<1)	0	5 (1-9)	5 (3-9)	5 (0-8)

Note : Figures in parentheses indicate the range of values

TABLE 29. LOGISTICS OF SMALL TABLETS (APRIL 1990-MARCH 1991): ISSUES

S.No.	Issues	District store n=1	Medical store n=1	UFWC n=8	PHC n=5	SC n=3
1.	Average time between last issue of previous year and first issue of year under study (months)	1	6	2 (<1-3)	3 (1-9)	2 (1-2)
2.	Average number of days supplement was issued in the year	52	13	8 (4-12)	15 (2-29)	7 (4-12)
3.	Average minimum time between any two issues (months)	1	1	1 (<1-1)	2 (<1-5)	1 (1)
4.	Average maximum time between any two issues (months)	1	2	3 (1-4)	3 (2-5)	2 (1-3)
5.	Average minimum quantity issued at any time in the year (tins)	72	72	29 (5-72)	2 (1-7)	<1 (<1-1)
6.	Average maximum quantity issued at any time in the year (tins)	216	216	81 (72-100)	24 (5-72)	2 (<1-4)
7.	Average maximum quantity in balance at any time in the year	1008	936	77 (72-102)	165 (72-314)	2 (<1 to 4)

Note : Figures in parentheses indicate the range of values

TABLE 30. LOGISTICS OF LARGE TABLETS (APRIL 1990 to MARCH 1991) : RECEIPTS

S.No.	Receipts	District store n=1	Medical store n=1	UFWC n=8	PHC n=5	SC n=3
1.	Average time between last receipt of previous year and first receipt of year under study (months)	2	4	3 (1-4)	4 (2-6)	2 (1-5)
2.	Average number of days supplement was received in the year	6	4	3 (2-4)	4 (2-6)	5 (3-9)
3.	Average minimum time between any two receipts (months)	< 1	2	3 (2-6)	2 (1-5)	1 (1-1)
4.	Average maximum time between any two receipts (months)	2	3	3 (2-6)	4 (2-5)	2 (1-4)
5.	Average minimum quantity received at any time in the year (tins)	100	200	49 (20-72)	42 (20-50)	1 (1-1)
6.	Average maximum quantity received at any time in the year (tins)	1000	300	53 (50-72)	100 (100-100)	3 (2-5)
7.	Average number of months the balance was nil	3 (<1-<1)	1 (16-16)	4 (<1-9)	3 (0-7)	4 (0-7)

Note : Figures in parentheses indicate the range of values

TABLE 31. LOGISTICS OF LARGE TABLETS (APRIL 1990 - MARCH 1991) : ISSUES

S.No.	Issues	District store n=1	Medical store n=1	UFWC n=8	PHC n=5	SC n=3
1.	Average time between last issue of previous year and first issue of year under study (months)	1	4	2 (1-3)	2 (1-4)	2 (1-2)
2.	Average number of days supplement was issued in the year	48	13	7 (4-12)	20 (4-44)	7 (4-12)
3.	Average minimum time between any two issues (months)	≤ 1	≤ 1	≤ 1 (≤ 1-1)	1 (<1-2)	1 (1-1)
4.	Average maximum time between any two issues (months)	1	2	2 (1-4)	2 (2-3)	2 (1-3)
5.	Average minimum quantity issued at any time in the year (tins)	15	50	4 (2-5)	2 (1-5)	<1 (<1-1)
6.	Average maximum quantity issued at any time in the year (tins)	100	100	29 (5-50)	19 (5-50)	2 (1-2)
7.	Average maximum quantity in balance at any time in the year	1000	390	50 (50-50)	126 (100-165)	2 (2-3)

Note : Figures in parentheses indicate the range of values

TABLE 32. LOGISTICS OF VITAMIN A SOLUTION (APRIL 1990 TO MARCH 1991) : RECEIPTS

S No	Receipts	District Stores n=1	Medical Stores n=1	UFWC n=8	PHC n=5	SC n=3
1.	Average time elapsed between last receipt of previous year and first receipt of year under study (months)	7	4	5 (2-13)	6 (5-11)	5 (1-5)
2.	Average number of times supplement was received in the year	5	1	2 (1-5)	3 (2-3)	2 (2-3)
3.	Average minimum time between any two receipts (months)	1	Single receipt	4 (2-7)	2 (<1-6)	4 (<1-8)
4.	Average maximum time between any two receipts (months)	4	Single receipt	5 (3-7)	5 (2-6)	4 (<1-8)
5.	Average minimum quantity received at any time in the year (bottles)	500	Single receipt	46 (10-100)	62 (50-100)	2 (1-2)
6.	Average maximum quantity received at any time in the year (bottles)	500	100	64 (45-100)	75 (50-100)	2 (2-2)
7.	Average number of months the balance was nil	3 (1-2)	11 (3-8)	4 (2-7)	3 (1-8)	7 (4-9)

Note: Figures in parentheses indicate the range of values.

NA : Not Available.

TABLE 33. LOGISTICS OF VITAMIN A SOLUTION (APRIL 1990 TO MARCH 1991) : ISSUES

S No	Issues	District Stores n=1	Medical Stores n=1	UFWC n=8	PHC n=5	SC n=3
1.	Average time between last issue of previous year and first issue of year under study (months)	7	4	5 (2-16)	4 (1-11)	4 (2-7)
2.	Average number of times the supplement was issued in the year	26	2	8 (2-16)	13 (4-25)	3 (2-3)
3.	Average minimum time between any two issues (months)	1	1	1 (<1-1)	1 (<1-1)	1 (<1-2)
4.	Average maximum time between any two issues (months)	2	1	2 (1-6)	4 (2-8)	5 (3-8)
5.	Average minimum quantity issued at any time in the year (bottles)	50	50	7 (3-20)	10 (1-35)	1 (1-2)
6.	Average maximum quantity issued at any time in the year (bottles)	100	50	39 (17-66)	28 (5-65)	2 (2-2)
7.	Average maximum quantity in balance at any time in the year	500	100	66 (45-100)	89 (50-124)	2 (2-2)

Note: Figures in parentheses indicate the range of values.

NA : Not Applicable.

by the beneficiary as the duration of supplementation is 100 consecutive days.

With respect to the quantities of supplements received at various levels, again, there was a lot of variation, though it is realized that the quantities received are dependent on the size of the population served by each centre. However, it should be mentioned that the targets assigned to various SCs were reported and observed to be uniform, implying that the quantities of supplies received should also be uniform, which was not the case. Thus, while on the one hand, variation in the quantity of supply received implies flexibility, in that quantity should vary according to need; on the other hand, this means that a centre could pick up a large quantity of supplement from district stores, leading to shortage of supply for the other centres. In the interviews, some functionaries justified this by giving various reasons such as they preferred to take a large quantity of supplements to avoid future inconvenience like the non availability of vehicle to bring supplies, the Stores incharge may not be available on the day they come to pick up the next lot, they themselves may not be able to come frequently (which is necessitated if small quantities are issued) due to busy work schedules. Some other functionaries stated that supplies are thrust' on them when large quantities are received at the District/Medical/PHC stores (which themselves may have storage problems) leading to a problem of storage at the centres. Further, a common problem faced by several functionaries was that sometimes large quantities of supplies are received by them which are either date expired' or the expiry date of which is in the near future, making it difficult to distribute these supplies in a short period of time.

The stock registers showed zero balance (nil') for 1-2 times in the year at various levels. It follows, therefore, that for some months in a year there would be no stock of supplement in balance; however supplies would often be in the pipeline. Non-availability of supplies could lead to an undesirable situation (more at the district than at the centre level stores) because, if a particular centre or functionary fell short of supplies, it may be long before the centre or functionary received the next supply.

b) Issues : The story of the issues of iron and vitamin A supplements followed a similar irregular pattern. An average of 2 to 15 months had elapsed between the last issue of supplements in the previous accounting year and the first issue of the year under study. The supplements were issued as frequently as 5 times in a month to as less as just twice in a year. The first issue of the year could be in April or it could as late as December. The average time between any two issues was less than one month or as much as 5 months at various levels, implying sporadic distribution. Similarly, there was a lot of variation in the quantities of supplements issued at various levels at different points of time. While functionaries generally got the supplies issued to them when the balance with them was nil, at times, they obtained supplies in fairly large quantities even when there were supplies available with them. As pointed out in the discussion on

receipt of supplies, since the receipts were irregular and the quantities received were not uniform, the result was a similar irregularity and inadequacy of supplies issued at various levels.

8. Coping with inadequate supplies - Scenario data : In response to a scenario depicting situations of short supply of supplements, 62 percent of the functionaries stated that in case of short supply of small iron tablets, preference should be given to previously registered beneficiaries, 33 percent stated that new beneficiaries should be given priority and 5 percent of the functionaries were of the view that all the beneficiaries (whether previously registered or new) should be given the supplement, though in less quantity. Further, in case of short supply of large iron tablets, 57 percent and 41 percent respectively stated that priority should be given to previously registered beneficiaries and new beneficiaries. However, the observations showed that the focus was not on the completion of the iron supplementation course for a given beneficiary. A majority of the functionaries registered new beneficiaries so as to report a larger coverage. More rural urban ANMs gave this response. Only 2 percent mentioned that less quantity of supplement should be given, to both, previously registered and new beneficiaries.

Regarding the preference to be given to the three beneficiary groups i.e. pregnant and lactating women and family planning acceptor women in case of short supply of large iron tablets, a majority stated that they would give first preference to pregnant women (86%), second preference to lactating women (60%) and third preference to family planning acceptor women (64%). More rural than urban ANMs gave this response.

Functionaries justified giving first preference to pregnant women by saying that the fetus and the mother both need the supplement; lactating women any way are given special foods to eat. Preference to lactating women was justified on the ground that they can be operated upon (tubectomy) only if they were strong and non-anemic. Low priority may be given to family planning cases because they can be given alternatives like Femeron capsules and injections' while pregnant women can be given only this supplement under NAP.

In contrast, it was observed that preference was usually given to women who were prospective family planning acceptors (or their family members) rather than to the target beneficiaries, till they were operated upon for tubectomy. Once they had been operated upon, they were no longer the focus of attention.

As regards vitamin A, the most frequent response (64%) was that previously registered beneficiaries should be given preference in case of short supply. The remaining 36 percent of the functionaries mentioned that new beneficiaries should be given preference.

The justification given by the functionaries for giving preference to previously registered beneficiaries was that the course of the supplement for that particular beneficiary could be

completed and that could be reported as their achievement. The functionaries, who stated that new beneficiaries should be given preference, gave the following reasons : New beneficiaries have not been given a single dose; beneficiaries already registered can be given the supplement later, or they may themselves come to collect it.

In practice, the question of prioritising previously registered or new beneficiaries in case of short supply of vitamin A did not arise because no effort was made by most functionaries to determine the receipt or non-receipt of a previous dose.

9. Storage of supplements :

a) Precautions to be taken while storing iron and vitamin A supplements : Only about one-third of the functionaries (38%) were aware that iron tablets were to be kept packed in a bottle, tin or polythene bag and exposure to moisture had to be prevented. Some of the other responses included prevention of exposure to air, keeping in a clean place away from dust, keeping in a cool place, keeping in dark, keeping in a cupboard or almirah and keeping away from sunlight. Eleven percent of the functionaries were not aware of the precautions. About one-third of the functionaries were aware that vitamin A was to be kept away from heat (39%) and away from light (32%). Contradictory responses were also obtained such as the supplement should not be kept in the refrigerator, should be kept refrigerated, the lid on the bottle of the solution should be replaced when the bottle was not in use or it may be kept anywhere since it does not get spoiled. A few said that the bottle should be used completely once opened, hence only if 40-50 children are available, the bottle should be opened.

It was observed that when the vitamin A supplement is administered at a central place in the field area, no effort is made to protect the bottle from direct sunlight. The bottle keeps lying in the sun most of the time; the functionaries also do not close the lid of the bottle in anticipation of arrival of children.

b) Conditions of storage : Nearly two-third (63%) of the functionaries stored the supplements at the centre and the rest did so at their homes. Only rural functionaries gave the latter response. A majority (75%) of the functionaries stated that the storage space available to them was adequate and that storage conditions were satisfactory, while remaining functionaries mentioned that the space available for storing supplements was inadequate and that the supplements were exposed to moisture and dust. More rural ANMs and LHVs stated that the storage conditions were unsatisfactory. The observations of storage arrangements at various centres and at district stores and medical college stores indicated that there is scope for considerable improvement with respect to storage of supplies. A proper system of storage of various supplies along with provision of cupboards needs to be developed. The cartons were observed to be lying around, being

exposed to sun and water at several places. The condition of storage facilities was the most unsatisfactory at SCs.

About two-thirds of the functionaries stated that they periodically checked the expiry date of the stored supplements (68%) and the condition or texture of the supplement (66%). In practice, these checks were hardly ever made. In fact, the expiry date was rarely entered in the stock registers by the functionaries and most of the time they were totally unaware of the expiry date of a given supply. Neither the ANMs nor the LHVs checked the expiry dates of the stored NAP and VAP supplements during the period they were observed by the investigator.

All the six senior district officials stated that the storage space available was adequate. Three of them, however, felt that the storage conditions were not satisfactory; there was non availability of cupboards and accumulation of water in the stores in monsoon. Four out of six senior district officials, who stated that they carried out checks, mentioned that they checked expiry dates, quantities available and in the pipeline and quantities issued.

Most of the functionaries said that they either discarded the outdated supply (47%) or returned it back to the stores (40%). The remaining functionaries mentioned that they intensified distribution of such supply or informed the MOs.

MONITORING AND CONTROL

I. TARGET SETTING

All the six senior district level officials reported that yearly targets for Indore were set by the State Directorate of Health Services (DHS), Madhya Pradesh. However, as regards the setting of targets for UFWCs and PHCs, the responses obtained were highly variable such as : the targets were set by DHS by Chief Medical Officer of Health (CMOH), by District Public Health Nurse, by CMOH in consultation with a team from Medical College. Regarding targets given to SCs, a majority of the officials (5) were aware that these were set by the respective PHCs.

When asked as to what was the basis of setting targets for the centres and SCs, 5 officials stated that these were arrived at by distributing the targets received from DHS to the various centres in accordance with the population covered by them. It was surprising that none of the officials could elaborate further. One official explained, "The targets for the UFWCs and PHCs for a given year are previous year's targets with additions made by Lower Division Clerks".

Variation was observed in the responses of the grassroot level functionaries i.e. the ANMs and MPWs, 75 percent of whom stated that they were given individual targets for NAP and VAP depending on targets given to centres, while the rest stated that only centrewise targets were given for NAP and VAP and that they did not get individual targets. A majority of the ANMs and MPWs

(85%) stated that they were able to achieve the NAP and VAP targets in the year preceding the study.

Table 34 summarizes the views of the functionaries regarding the targets given for NAP and VAP. Most of the functionaries stated that these targets were realistic as they were easily achievable, were based on target population in the area and could be achieved by distribution of iron and vitamin A supplements in the schools.

Of the functionaries who stated that the targets were unrealistic, two-thirds wanted that the targets should be decreased as they were excessive. Others stated that equal targets were given to all the centres, as well as to the ANMs and MPWs, irrespective of the target population in the area. Further, there was difficulty in achieving targets due to shortage of staff, inadequacy and irregularity of supplies and lack of community cooperation.

It is relevant to mention here the investigator's observation that as soon as she asked about targets, most of the functionaries immediately presumed that the investigator meant family planning targets. So the investigator had to learn to clarify right in the beginning of each interview that NAP and VAP targets were being talked about, much to the surprise of many functionaries.

II. SUPERVISION

In this sub-section data are presented regarding the expectations of various levels of health personnel from their supervisors, and from their subordinates and views regarding type and adequacy of supervision.

1. Expectations : In general, the expectations of the functionaries from their supervisors (Table 35) included help in solving problems, field visits, providing guidance and being fair, helpful and sympathetic to the problems faced by subordinates. The Table shows that there were some differences in the expectations from supervisors among different categories of functionaries.

As Table 35 further indicates, a majority of the functionaries had no expectations from their supervisors in relation to NAP and VAP. The remaining functionaries expected regular supply of iron and vitamin A supplements, guidance and help in motivating the community to accept these programmes. More rural than urban LHVs mentioned expectations related to supplies and need for guidance.

One-third of the functionaries (32%) mentioned that their expectations from their supervisors were not fulfilled because supervisors do not want to provide supervision, are short of time, not capable or competent enough and sometimes not in a position to help; for example when the chain of supplies is broken at higher levels. More rural ANMs and MOs stated that

TABLE 34. VIEWS OF FUNCTIONARIES REGARDING TARGETS GIVEN FOR NAP AND VAP

S No	Views regarding targets	ANM n=19	MPW n=5	LHV n=14	BEE n=4	MO n=14	Total N=56	%
1	Targets given for NAP and VAP are realistic							
	a) Yes	17	4	13	2	11	47	84
	b) No	2	1	1	2	3	9	16
2	Targets are realistic because							
	a) They are achieved easily	9	4	13	2	11	39	82
	b) They are in accordance with target population	4	0	0	0	0	4	9
	c) Supplements are easily distributed in schools	4	0	0	0	0	4	9
3	Targets are not realistic and should be							
	a) Increased	0	0	0	2	1	3	33
	b) Decreased	2	1	1	0	2	6	67
4	Targets are not realistic because *							
	a) They are excessive	2	1	1	0	2	6	67
	b) There is staff shortage	0	0	1	0	1	2	22
	c) Supply is irregular and inadequate	0	0	1	0	0	1	11
	d) Community acceptance of programmes is low	2	0	1	0	0	3	33

* Multiple responses.

TABLE 35. EXPECTATIONS OF HEALTH PERSONNEL FROM THEIR SUPERVISORS

S No	Expectations	ANM n=19	MPW n=5	LHV n=14	BEE n=4	MO n=14	Total N=56	%
1	Expectations from supervisors							
A	General							
	Supervisors should							
	(a) Solve problems of subordinates	9	3	6	1	7	26	46
	(b) Make field visits	10	3	5	1	2	21	38
	(c) Give guidance	8	2	5	3	1	9	34
	(d) Be fair, helpful and sympathetic	11	1	1	0	1	14	25
	(e) Provide vehicle for field work	0	0	1	1	9	11	20
	(f) Assess work performance and record keeping done by subordinates	6	0	1	1	2	10	18
	(g) Provide cooperation and work as a team	5	5	0	0	0	10	18
B	NAP and VAP related							
	(a) No expectations	7	4	9	0	10	30	53
	(b) Supervisors should ensure regular supply of supplements	3	1	1	3	2	10	18
	(c) Supervisors should provide guidance in implementation of NAP and VAP	3	0	3	0	0	6	11
2	Expectations are fulfilled							
	(a) Yes	12	0	6	1	7	26	46
	(b) No	6	3	4	1	4	18	32
	(c) Sometimes	1	2	4	2	3	12	22
3	Perceived reasons for expectations not being fulfilled							
	Supervisor							
	(a) Does not want to work (insincere)	3	3	3	0	3	12	38
	(b) Lacks time	1	1	1	4	2	9	28
	(c) Is not capable	1	3	1	1	2	8	24
	(d) Is constrained by extraneous factors	1	1	2	2	0	6	19

their expectations were not fulfilled as compared to their urban counterparts.

The observations confirmed the statements of functionaries that some supervisors did not want to supervise well or were not competent enough. Many supervisors - from MOs to LHVs - set bad examples by being unproductive or doing their personal work during duty hours. They themselves were not aware of the implementation aspects of various programmes and most of the time were more concerned with the achievements of targets.

On the other hand, it was observed that the MOs in the rural areas had a heavier work load than their urban counterparts and often genuinely lacked time. Besides, some MOs lived in Indore, commuted daily and spent the least possible time at the PHC before going back to Indore. Some LHVs were also observed to do the same. This situation would be expected to adversely affect the adequacy and quality of supervision.

Expectations of supervisors from their subordinates are presented in Table 36. A majority of the supervisors primarily expected their subordinates to work sincerely. In relation to NAP and VAP, the supervisors also expected sincerity towards work; and that their subordinates should distribute all the doses of the supplements regularly to all the eligible children and women, achieve targets, inform beneficiaries about the precautions required for storing iron tablets, and maintain proper records.

Less than one-third of the supervisors stated that their expectations from subordinates were not fulfilled primarily because "their subordinates did not want to work". More rural LHVs and MOs as compared to their urban counterparts stated that their subordinates were not capable of working well, were poorly trained or over-loaded with responsibilities.

The observations were in agreement with the views of these supervisors. While some of the functionaries did work sincerely, a majority of them tried to do the barest minimum possible to achieve targets and to get by without getting into the bad books of their supervisors. Poor motivation to work due to lack of professional growth was also a factor. As one ANM put it, "I have been in this job for 15 years and I am still an ANM. There has not been any promotion. I have applied for staff nurse as well as LHV training but I have not been given a chance".

According to some ANMs, their supervisors are partial towards some ANMs. One said, "When both of us work equally and go for field visits also together, then why is the other one given special treatment? I do not feel like working now. When the gold medal was received last year, the MO gave it to the other ANM. The MO sanctions her leave but not mine, I have lost all interest in work".

Given the unsatisfactory working conditions, non-supportive supervision and poor chances of promotion, it is not surprising that some workers did not put in their best in their work.

TABLE 36. EXPECTATIONS OF SUPERVISORS FROM THEIR SUBORDINATES

S No	Expectations	LHV n=14	BEE n=4	MO n=14	Total N=32	%
1	Expectations of supervisors*					
A	General					
	Subordinates should					
	(a) Work sincerely	12	3	11	26	81
	(b) Achieve targets	2	4	4	10	31
	(c) Obey instructions	3	0	1	4	13
B	In relation to NAP and VAP					
	Subordinates should					
	(a) Work sincerely	1	1	5	7	22
	(b) Cover all eligible beneficiaries	5	0	2	7	22
	(c) Distribute supplements regularly	4	1	3	8	25
	(d) None	1	0	2	3	9
2	Expectations are fulfilled					
	(a) Yes	6	2	5	13	41
	(b) No	4	1	4	9	28
	(c) Sometimes	4	1	5	10	31
3	Perceived reasons for expectations not being fulfilled					
	(a) Subordinates do not want to work	4	2	7	13	68
	(b) Subordinates are not capable of working well	2	1	4	7	37

* Multiple responses.

2. **Type and Adequacy of Supervision** : Tables 37 and 38 compare the responses of subordinates, and supervisors themselves, with respect to supervision received and provided. A higher proportion of supervisors - as compared to subordinates - reported that they checked daily diaries and reports, provided guidance and information, solved problems and observed the work done by their subordinates i.e. ANMs and MPWs. While a higher proportion of the subordinates - as compared to their supervisors - reported that their supervisors enquired about the work done and were generally helpful.

Similarly, differences were seen in the responses of LHVs, BEEs and MOs with respect to supervision received from district level officials and the responses of district level officials themselves (Table 38). A higher proportion of district officials -as compared to centre level functionaries - reported that they made field visits, solved problems of centre level functionaries, assessed the work done and the achievement of targets, rectified mistakes, were helpful and concerned about the wellbeing of functionaries and their families. Fewer centre level functionaries.

Data presented above reveals that the supervisors apparently believe that they provide better supervision than their subordinates believe they do. There are also differences in their perceptions with respect to the types of supervision provided and received.

The observations did not support the responses of the supervisors. The supervisors were rarely observed to check records and daily diaries (checking was restricted to a cursory glance at some pages and signing). At various levels, the supervision was mainly focussed on enquiring regarding work in terms of achievements of targets (usually of FP and immunization) and taking subordinates to task if the achievements fell short of targets. Cross checking and verification of work done (reports vs records, reports vs statements of community) were rarely observed. Community visits of supervisors were very infrequent; their contact with people usually occurred only when the community members came to the centres to avail of the health services.

When asked if they were satisfied with the supervision provided to them, 36 percent of the functionaries gave a negative response. Of these, a majority (70%) stated that the supervision provided to them was negligible and consisted chiefly of checking of records. More rural ANMs, LHVs and MOs gave this response. The other responses were : the supervisor/district official is not knowledgeable enough, does not come to field or comes at an inappropriate time when beneficiaries are not available, is unfair, does not see the work done by subordinate or provide guidance, or help in procurement of supplies. This view of the minority was more in agreement with the true picture as revealed by observations of the investigator.

a) Record Checking : Checking of NAP and VAP related records maintained by ANMs and MPWs : Table 39 compares the responses of

TABLE 37. SUPERVISION PROVIDED TO ANMs AND MPWs BY LHVs, BEEs AND MOs : SUBORDINATES' VS SUPERVISORS' RESPONSES

S No	Supervision provided	Subordinates' Responses				Supervisors' Responses				
		ANM	MPW	Total		LHV	BEE	MO	Total	
		n=19	n=5	N=24	%	n=14	n=4	n=14	N=32	%
1.	Check records, daily diaries, reports	12	3	15	63	9	3	12	24	75
2.	Make field visits	7	1	8	33	7	0	3	10	31
3.	Provide guidance and information	3	1	4	17	6	2	3	11	34
4.	Cross check the work done	5	1	6	25	5	1	3	9	28
5.	Solve problems	2	0	2	8	4	3	4	11	34
6.	Observe the work done	2	0	2	8	2	2	4	8	25
7.	Enquire about the work done	5	0	5	21	0	1	1	2	6
8.	Rectify mistakes	4	0	4	17	3	2	1	6	19
9.	Ensure availability of supplies	2	1	3	13	1	0	3	4	13
10.	Be helpful	5	1	6	25	2	2	1	5	16

TABLE 38. SUPERVISION PROVIDED TO LHVs, BEEs AND MOs BY DISTRICT LEVEL OFFICIALS : SUBORDINATES' VS SUPERVISORS' RESPONSES

S No	Supervision provided	Subordinates' Responses					Supervisors' Responses	
		LHV	BEE	MO	Total		Dist.Officials	
		n=14	n=4	n=14	N=32	%	N=6	%
1.	Check records, reports, daily diaries	10	1	3	14	44	1	17
2.	Make field visits	2	1	5	8	25	5	83
3.	Provide guidance and information	8	2	1	11	34	1	17
4.	Solve problems	5	0	5	10	31	3	50
5.	Enquire about work done	6	0	1	7	22	1	17
6.	Assess the work done and targets achieved	0	2	4	6	19	4	67
7.	Rectify mistakes	2	0	1	3	9	2	33
8.	Ensure availability of supplies	3	0	2	5	16	1	17
9.	Instruct to achieve targets	1	0	2	3	9	0	0
10.	Be helpful and encouraging	1	1	2	4	12	2	33
11.	Be concerned about their and their family's wellbeing	0	0	0	0	0	2	33

TABLE 39. CHECKING OF RECORDS RELATED TO NAP AND VAP BY CENTRE LEVEL SUPERVISORS AND BY DISTRICT LEVEL OFFICIALS AS REPORTED BY CENTRE LEVEL SUPERVISORS

S No	Record checking	Record Checking									
		By self					By dist.level officials				
		LHV	BEE	MO	Total		LHV	BEE	MO	Total	
		n=14	n=4	n=14	N=32	%	n=14	n=4	n14	N=32	%
1.	Records are checked										
	a) Yes	13	4	13	30	94	13	3	10	26	81
	b) No	1	0	1	2	6	1	1	4	6	19
2.	Frequency of checks										
	a) Weekly	6	0	3	9	30	2	0	0	2	8
	b) Fortnightly	2	1	5	8	27	0	0	0	0	0
	c) Monthly	4	3	7	14	47	7	2	2	11	42
	d) Bimonthly	1	1	0	2	7	0	0	1	1	4
	e) ⩾3 months	0	0	0	0	0	4	1	7	12	46
3.	Kinds of checks*										
	a) Check completeness of entries	6	3	9	18	60	80	0	2	10	38
	b) See coverage of beneficiaries and achievement of targets	8	1	3	12	40	3	3	3	9	35
	c) Detect errors in records or in work done	7	1	1	9	30	0	0	0	0	0
	d) Check whether all the doses are given	1	2	2	5	17	3	0	3	6	23
	e) Check correctness of entries	0	1	3	4	13	5	0	2	7	27

* Multiple responses.

centre level supervisors (LHVs, BEEs and MOs) regarding record checking as conducted by self and as conducted by district level officials. Almost all the supervisors stated that they checked the records maintained by their subordinates while relatively fewer district officials did so. About one-third (29%) of the rural supervisors asked the ANMs and MPWs at the SCs to bring their records to the PHC for scrutiny.

It was observed that SC workers were indeed asked by some supervisors to bring their records to the PHC for scrutiny. This seems to be an undesirable practice because a) the workers have to commute by public transport carrying the records, b) while returning from PHC, the SC workers usually issue supplies for SC and these too have to be carried back to SCs, c) there is a chance of the records getting lost or damaged, d) the supervisors no longer feel the need to visit SCs and therefore supervision of work at the crucial, peripheral level gets reduced further.

A majority of the supervisors (47%) reported that they checked the records once a month. Most of the remaining supervisors said that they checked records more often. (Actual frequency was observed to be much less.) Of those supervisors who mentioned that district officials checked the records, 42 percent stated that their records were checked at least once a month while 46 percent stated that the interval was more than 3 months.

The various supervisors checked the records from different perspectives, such as the completeness of entries, the number of beneficiaries covered or targets achieved, or the number of doses of supplements given to the beneficiaries.

b) Enquiries made by supervisors to ANMs and MPWs in the year preceding the study : Table 40 shows that 54 percent of the ANMs and MPWs stated that their supervisors (LHVs, BEEs and MOs) did make enquiries related to NAP and VAP in the preceding year. Some gave other responses like : they themselves give regular reports or their supervisors (LHVs) accompany them on field visits thus obviating the need for enquiries.

Of those who mentioned that their supervisors made enquiries, 92 percent stated that the supervisors enquired at least once a month, and mostly at monthly meetings. However, at these meetings, supervisors generally enquired about all the programmes and not specifically about NAP and VAP.

According to a majority of ANMs (mostly rural) and MPWs, the enquiry related to achievement of targets. The remaining functionaries said that their supervisors enquired about the date of distribution of various doses, whether supplements were being received and distributed, problems faced in implementing NAP and VAP and cases of side effects encountered by them. The observations confirmed these responses of ANMs and MPWs.

c) Guidelines provided by supervisors to ANMs and MPWs : Table 40 further highlights that 67 percent of the ANMs and MPWs stated that their supervisors provided them with guidelines regarding

TABLE 40. ENQUIRIES MADE AND GUIDELINES PROVIDED BY SUPERVISORS IN RELATION TO NAP AND VAP

S No	Enquiries and Guidelines	ANM n=19	MPW n=5	Total N=24	%
1.	Whether supervisors enquired about NAP and VAP during last one year				
	a) Yes	11	2	13	54
	b) No	4	1	5	21
	c) Other responses	4	2	6	25
2.	Enquiries related to*				
	a) Achievement of targets	7	2	9	69
	b) Doses given to beneficiaries	4	2	6	46
	c) Distribution of supplements	2	0	2	15
	d) Problems faced in implementation	2	0	2	15
	e) Side effects	1	0	1	8
3.	Guidelines provided for NAP and VAP during last one year				
	a) Yes	13	3	16	67
	b) No	6	2	8	33
4.	Guidelines related to*				
	a) Dose and frequency of dosing	5	3	8	50
	b) Eligible beneficiaries	6	0	6	38
	c) Imparting IEC to community	5	0	5	31
	d) Site of distribution of supplement	5	3	8	50
		3	1	4	25
	e) Other responses	4	1	5	31

* Multiple responses.

implementation of NAP and VAP. More rural ANMs mentioned this as compared to their urban counterparts.

Fifty percent of the MPWs and ANMs (mostly rural) mentioned that the guidelines related to the dose and frequency of dosing of supplements. The ANMs further mentioned that they were informed about the eligible beneficiaries under NAP and VAP and about the need for imparting IEC to the community. The latter response was given by more rural than urban ANMs. The rural ANMs and MPWs also mentioned that they were advised by their supervisors to collect the child beneficiaries at one place and to then distribute the supplement, or to distribute supplements to children in schools. Some other guidelines mentioned were : conduct group meetings, distribute supplements properly and regularly, maintain proper records of coverage and note the dates of distribution. These responses were in confirmity with the observations made by the investigator.

d) Pattern of reporting related to NAP and VAP : Fifty four percent of the centre level supervisors stated that they received reports from their subordinates (in addition to the regular monthly reports which are received by all supervisors), mentioning varied intervals such as daily, weekly, fortnightly or after every field visit made by the subordinates. This reporting may be written, oral or both.

Observations revealed that there was more frequent interaction of the ANMs working in PHCs and UFWCs with their supervisors than was the case with SC ANMs. The supervisors were generally aware of the day to day work done by their subordinates; either because of feedback obtained or sometimes, the LHVs also went to the field with the ANMs.

With regard to the reporting done by centre level supervisors to district officials, 28 percent supervisors mentioned a higher frequency of reporting than the regular monthly reporting.

e) Feedback received for NAP and VAP : Table 41 indicates that while 78 percent of the supervisors stated that they gave feedback to ANMs and MPWs on receipt of NAP and VAP related reports, only 46 percent of the ANMs and MPWs agreed that they received any feedback. The observations were more in agreement with the responses of ANMs and MPWs.

With respect to the type of feedback received, most ANMs and MPWs stated that they were told to achieve targets and asked about coverage of beneficiaries under NAP and VAP, while a majority of their supervisors (LHVs, BEEs and MOs) mentioned that they gave instructions regarding better implementation of NAP and VAP. There were no marked urban-rural differences with respect to type of feedback received by ANMs and MPWs. Again, the observations confirmed that the feedback was limited to instructing the ANMs and MPWs to increase coverage of beneficiaries and achieve targets.

TABLE 41. FEEDBACK RELATED TO NAP AND VAP GIVEN TO ANMs AND MPWs ON RECEIPT OF MONTHLY REPORTS BY SUPERVISORS

S No	Feedback	ANM n=19	MPW n=5	Total N=24	%	LHV n=14	BEE n=4	MO n=14	Total N=32	%
1.	Feedback given									
	a) Yes	9	2	11	46	12	4	9	25	78
	b) No	10	3	13	54	2	0	5	7	22
2.	Type of feedback*									
	a) Instruct to achieve targets	5	1	6	55	0	0	5	5	20
	b) Enquire about beneficiary coverage	3	1	4	36	1	1	1	3	12
	c) Give instructions	0	0	0	0	8	1	6	15	60
	d) Point out mistakes in records	0	0	0	0	1	0	1	2	8

* Multiple responses.

While all the district level officials stated that they provided feedback to centre level supervisors on receipt of NAP and VAP related reports, only about one-third (37%) of the centre level supervisors agreed that they received feedback (Table 42). Similarly, there was a lot of variation in the responses with respect to the type of feedback received. A majority of the district officials mentioned that they told centre level supervisors to achieve targets and enquired about their problems, while a majority of the centre level supervisors mentioned that they were given instructions relating to implementation of NAP and VAP and asked about coverage of beneficiaries. A higher percentage of rural than urban LHVs mentioned that they received instructions from district officials. NAP and VAP related feedback was observed to be rare in practice and consisted mainly of instructing the centre level supervisors to achieve targets.

f) Problem solving by supervisors

i) Problems reported by ANMs and MPWs to their supervisors in the year preceding the study : Table 43 depicts the types of problems that were reported by ANMs and MPWs to their supervisors in the year preceding the study - according to ANMs and MPWs themselves and according to their supervisors i.e. LHVs, BEEs and MOs.

While almost all the ANMs and MPWs (96%) stated that they had reported problems to their supervisors, fewer supervisors (63%) acknowledged that problems were reported to them.

Most of the problems were related to immunization, family planning followed by NAP, VAP, stationery and transport. A higher percentage of supervisors than ANMs and MPWs mentioned these problems. On the other hand, more ANMs and MPWs as compared to their supervisors mentioned problems related to community cooperation, supplies, housing, administration and supervision.

Problems related to immunization were chiefly concerned with difficulty in procuring vaccines on time and maintaining the cold chain and lack of community participation especially for IInd and IIIrd doses. Family planning related problems included resistant eligible couples; poor coordination between PHCs and SCs for performing sterilization operations, for inserting copper T or for making contraceptives available; and poor follow up after sterilization operations.

Problems related to NAP and VAP included inadequacy and irregularity of supplies, non-availability of transport to reach field areas, poor community acceptance of NAP and VAP. These were reported by more urban than rural ANMs. The responses of urban MOs were in agreement with them.

More rural ANMs reported problems related to community cooperation as compared to their urban counterparts, this was supported by the responses of the rural supervisors (LHVs and MOs). Some of them expressed these problems as : "The community people think that we do not have any other work; and we merely pick up registers and come to them", "People close doors; do not

TABLE 42. FEEDBACK RELATED TO NAP AND VAP GIVEN TO CENTRE LEVEL SUPERVISORS ON RECEIPT OF MONTHLY REPORT BY DISTRICT OFFICIALS

S No	Feedback	LHV	B E	MO	Total		Dist.Officials	
		n=14	n=4	n=14	N=32	%	N=6	%
1.	Feedback given							
	a) Yes	7	2	3	12	**37**	6	100
	b) No	7	2	11	20	**63**	0	**0**
2.	Type of feedback*							
	a) Give instructions	3	2	3	8	**67**	2	**33**
	b) Enquire about beneficiary coverage	2	1	0	3	**25**	0	**0**
	c) Instruct to achieve targets	0	0	0	0	**0**	3	**50**
	d) Ask about problems and solve them	0	0	0	0	**0**	3	**50**

* Multiple responses.

talk to us", "When it is festival season, people refuse to give necessary information during our survey", "Drunkards, anti-social characters and non-cooperative people harass us".

Problems related to supplies were reported by more rural than urban ANMs, who stated difficulties in procuring supplies of vaccines, medicines and nutrition supplements for the SC from the PHC. In case the supplies are made to the SC, they do not arrive during working hours of SC, resulting in poor coverage of beneficiaries.

Stationery shortage (papers, registers, carbon papers to maintain records) was reported by MPWs to supervisors. However, only LHVs and BEEs corroborated this. The rural ANMs and MPWs mentioned that they had reported housing problems. The rural LHVs confirmed this was so.

While both urban and rural ANMs stated that they had reported problems related to transport to their supervisors, only the rural LHVs and MOs mentioned that this had been reported to them. Vehicle facilities were not provided to most functionaries for discharging their responsibilities and public transport was not available to many villages. The interior villages had to be accessed on foot and were completely inaccessible in monsoon. Most rural ANMs found it difficult and unsafe to go alone on foot to the interior villages.

Some ANMs (more urban than rural) mentioned problems related to supervision : Either the supervisors did not make field visits or they arrived late; people waiting for them would have left by then, thus adversely affecting community cooperation for family planning or immunization programmes. Further, the supervisors scheduled the duties of ANMs in the centre to the detriment of field work.

ii) Problems related to community acceptance : Narrative data

When the ANMs, MPWs, LHVs and BEEs were asked to narrate a past incident in detail when they had a problem with the community they were serving (as described in Chapter on Materials and Methods), the problematic incidents were connected with family planning (36%), immunization (16%), uncooperative community people (11%), NAP and VAP (5%), cholera vaccination (4%) and transport (2%). Eleven percent of the functionaries mentioned general problems faced by them, and 14% mentioned that they could not remember the occurrence of any specific problem incident related to community in the past. The narratives pertaining to family planning (FP) primarily highlighted problems arising out of community's resistence to FP (this is the Government's need; not theirs); complications like infections/sepsis arising out of the sterilization operations, failed operations, socio-cultural factors like male doctors examining female patients or female ANMs distributing and explaining the use of condoms ("Nirodh") and finally, the reputation of the health functionaries as being only FP workers and not really concerned about community's felt problems and needs. Problems connected with immunization arose mainly because

of after-effects like sepsis/abscess at the site of vaccination; convulsions in a child attributed to immunization; failure of the immunization (e.g. a case of polio even after receiving the polio vaccine), and the lack of awareness on the part of the community that swelling and fever are normal after vaccination, resulting in anger and non-cooperation.

Appendix VII presents some narratives related to family planning and immunization. The functionaries also narrated incidents highlighting the lack of acceptance of the health workers by the community people. An urban ANM described an incident thus: "I encountered a family where the child had fever and advised the parents to take the child to the MO at the health centre. The people curtly responded, "Why do you have to come again and again. We can take care of our children ourselves". In a few narratives, transport related problems were described, mostly by rural LHVs and ANMs who often risked their safety by having to go alone, without transport facilities, to remote areas.

NAP and VAP

The incidents narrated by the functionaries chiefly described the community's reaction to the supplements. Once, after receiving the first dose of vitamin, the community people responded that health functionaries will not come for the next dose of supplement: ("Abhi to pilaa doge, phir doosri baar to pilaane nahin aaoge").

An urban ANM narrated an incident when she and other ANMs visited an area after communal riots and disturbances. She said, "People were very uncoperative and said that we were giving medicine' (vitamin A) by force; that we have come to give useless medicine ("Jabardasti pilaa rahen hain; faltu davai pilaane aayen hain"). The reaction of community to distribution of iron tablets was narrated by an urban ANM thus: You give useless tablets, they don't have any beneficial effect ("Yeh to faltu ki bekaar goliyan dete hain, inse koi faayada nahin hota"); What kind of a profession you have. You come over whenever you feel like! ("Aap logon kaa yeh kya dhandha hai, oothai moondi aur chale aaye").

This ANM explained to the people that the iron tablets were good and that they should not think that they were bad because they were government tablets or because they were being given free of cost.

An MPW narrated how he once got into trouble when he gave large iron tablets to a pregnant woman: "The woman kept the tablets on the wooden board (Patiya) in the house and one of her children ate them. He vomited, suffered from diarrhoea, got convulsions and his eyes rolled upwards ("Ankhen pher din"). When the child was brought to the centre, we asked them what they had given to the child and were told that the child had eaten the tablets meant for his mother. I referred the case to the district hospital and offered to go with them, but they said that they will get the child treated by a private doctor".

iii) Action taken by supervisors to solve the problems reported:

Table 43 further shows that while a majority of the supervisors (90%) stated that they took action to solve the problems reported by ANMs and MPWs, only 43 percent of the ANMs and MPWs corroborated this response. The action taken consisted of talking to the community members (such as motivating the cases resisting family planning or immunization), informing the district officials (in case of irregular and inadequate supplies) and guiding and helping the ANMs and MPWs (in implementation of various programmes).

It was observed that while many ANMs and MPWs did report their problems to their supervisors, quite a few did not. Further, the supervisors were often not in a position to solve the problems themselves, for example, when supplies or stationery did not arrive from the higher level, or they lacked time or they themselves had transport problems. Some supervisors, however, were not interested in solving the problems of their subordinates because they felt that the subordinates did not work sincerely.

Problems reported by centre level supervisors to district officials in the year preceding the study

Two-thirds of the supervisors stated that they had reported their problems to district officials in the preceding year (Table 44). A higher percentage of rural LHVs and MOs reported their problems to district officials than their urban counterparts.

A majority of the supervisors reported problems related to family planning, immunization, followed by supplies, transport, supervision, NAP and VAP to the district officials. More rural than urban MOs reported problems related to family planning, immunization, supervision, NAP and VAP. Similarly, more rural LHVs reported problems related to immunization and NAP and VAP while more urban LHVs reported problems related to supervision.

According to two-thirds of the supervisors, district officials did not take any action to solve the problems reported to them. In the words of a supervisor : "District officials make promises and go away". However, some supervisors realized that sometimes the district officials were not in a position to help them because of extraneous reasons like lack of supplies at higher levels or political reasons.

g) Supervision through visits to the centres and the field area:

This sub-section first describes the requests made by field functionaries to their supervisors for visits; followed by a description of frequency, duration and purpose of visits by supervisors in the year preceding the study.

i) Requests made by ANMs and MPWs for supervisory visits : Fifty eight percent of the ANMs (especially rural ANMs and MPWs) stated that they had requested their supervisors for visits during the preceding year. Of those who made these requests, 71 percent mentioned that the supervisors had made visits on their requests.

TABLE 43. PROBLEMS REPORTED BY ANMs AND MPWs TO THEIR SUPERVISORS IN THE YEAR PRECEDING THE STUDY

S No	Problems	ANM n=19	MPW n=5	Total N=24	%	LHV n=14	BEE n=4	MO n=14	Total N=32	%
1.	Problems were reported									
	a) Yes	18	5	23	96	8	4	8	20	63
	b) No	1	0	1	4	6	0	6	12	37
2.	Problems were related to									
	a) Immunization	9	3	12	52	7	1	6	14	70
	b) Family planning	8	1	9	39	8	1	1	10	50
	c) NAP and VAP	3	0	3	13	3	3	5	11	55
	d) Community participation	10	1	11	48	5	1	1	7	35
	e) Supplies	4	3	7	30	0	2	0	2	10
	f) Stationery	0	2	2	9	1	2	0	3	15
	g) Housing	2	3	5	22	2	1	0	3	15
	h) Transport	5	2	7	30	4	1	2	7	35
	i) Administration	4	2	6	26	1	1	1	3	15
	j) Supervision	6	0	6	26	0	1	0	1	5
3.	Action was taken to solve the problems									
	a) Yes	9	1	10	43	7	3	8	18	90
	b) No	9	4	13	57	1	1	0	2	10
4.	Type of action taken									
	a) Talked to community members	6	1	7	70	6	3	5	14	78
	b) Informed district officials	1	0	1	10	2	2	2	6	33
	c) Guided and helped the ANMs and MPWs	3	0	3	30	2	0	2	4	22

* Multiple responses.

TABLE 44. PROBLEMS REPORTED BY CENTRE LEVEL SUPERVISORS TO DISTRICT LEVEL OFFICIALS IN THE YEAR PRECEDING THE STUDY

S No	Problems	LHV n=14	BEE n=4	MO n=14	Total N=32	%
1.	Problems were reported					
	(a) Yes	12	2	7	21	66
	(b) No	2	2	7	11	34
2.	Problems were related to*					
	(a) Family planning	6	2	1	9	43
	(b) Immunization	3	1	3	7	33
	(c) Supplies	2	1	4	7	33
	(d) Transport	2	0	4	6	29
	(e) Supervision	2	0	3	5	24
	(f) NAP and VAP	1	1	2	4	19
	(g) Stationery	3	1	0	4	19
	(h) Staff shortage	3	0	0	3	14
	(i) Administration	1	0	1	2	10
3.	Action was taken to solve the problems					
	(a) Yes	3	2	2	7	33
	(b) No	9	0	5	14	67

* Multiple responses.

Most requests were for family planning work (43%), immunization (36%), to assess their work performance (21%) and for school health (14%).

Compared to the ANMs and MPWs, higher percentage of supervisors (66%) mentioned that ANMs and MPWs had requested them for visits. More LHVs and BEEs had been requested for visits rather than MOs. Of those who had been requested for visits, 61 percent stated that they did make the visits while 33 percent said that they could accede to the requests for visits only on some - not all - occasions. As in the case of ANMs and MPWs, most supervisors also stated that requests were made in connection with family planning (67%), immunization (38%), orientation camp for the community and to educate the community (24%) to assess work performance (19%) and to accompany ANMs as they were unable to go to the field alone (19%). More BEEs and MOs had been requested to visit for family planning work; more LHVs and MOs for immunization work and more BEEs for orientation camp and for educating the community. More rural than urban supervisors stated that they were requested to visit in connection with family planning and immunization work.

ii) Requests by Centre Supervisors to district officials : Less than half of the centre level supervisors (47%) said that they had made requests to district officials for visits in the year preceding the study. A higher percentage of LHVs (both rural and urban) rather than BEEs and MOs reported that they made such requests.

Of those supervisors who made such requests, two-thirds (67%) reported that the requested visits had been made by the district officials while the remaining 33 percent mentioned that the district officials could accede to such requests only on some occasions.

The MOs (all rural) had requested the district officials to visit only for addressing the workers in meetings, while the requests made by BEEs were only in connection with family planning programme or orientation camp for the community, and to conduct medical check up of children.

iii) Visits made by supervisors : Table 45 elaborates on the responses of grassroot level functionaries and their supervisors regarding the general pattern of supervisory visits, either to the centre or to the community. Almost all the supervisors (LHVs, BEEs, MOs) stated that they made visits and this response was confirmed by most of the ANMs and MPWs. There was a lot of variation in the frequency of visits as reported by supervisors and that reported by their subordinates (ANMs and MPWs). According to 67 percent of the ANMs and MPWs, the supervisors' visits were at an interval of one month or more (this was confirmed by the observational data), while according to 55 percent of the supervisors, their visits were more frequent and ranged from once in 15 days to every alternate day in a week. A majority of rural LHVs and MOs made visits less frequently (at an interval of one month or more) than their urban counterparts (at an interval of 15 days or less).

TABLE 45. VISITS MADE BY SUPERVISORS : AS REPORTED BY ANMs AND MPWs Vs AS REPORTED BY SUPERVISORS THEMSELVES

S No	Supervisors' Visits	ANM n=19	MPW n=5	Total N=24	%	LHV n=14	BEE n=4	MO n=14	Total N=32	%
1.	Supervisors make visits									
	a) Yes	16	5	21	88	14	4	11	29	91
	b) No	3	0	3	12	0	0	3	3	9
2.	Frequency of visits									
	a) ≤11 visits/year	9	0	9	43	2	1	6	9	31
	b) Once a month	3	2	5	24	2	0	2	4	14
	c) Once a fortnight	1	3	4	19	0	0	2	2	7
	d) 1-2 visits/week	2	0	2	10	4	2	1	7	24
	e) ≥ 3 visits/week	1	0	1	5	6	1	0	7	24
3.	Average duration of visit (Hours)									
	a) < 2	3	2	5	24	2	2	2	6	20
	b) 2-3	8	2	10	48	3	1	8	12	42
	c) 4-5	5	1	6	28	9	1	1	11	38
4.	Advance information of visits									
	a) Yes	6	3	9	42	1	0	3	4	14
	b) No	4	2	6	29	5	1	4	10	34
	c) Sometimes	6	0	6	29	8	3	4	15	52
5.	Visits are in connection with *									
	a) Family planning	11	2	13	62	13	1	6	20	69
	b) Immunization	12	1	13	62	10	0	6	16	55
	c) IEC to community	3	1	4	19	6	3	6	15	52
	d) Enquiring from community people about the services provided by ANMs and MPWs	7	1	8	38	1	1	0	2	7
	e) NAP and VAP	3	1	4	19	3	0	2	5	17
	f) Orientation camp/meeting	4	1	5	24	2	1	1	4	14
	g) Assess work done by ANMs and MPWs	2	2	4	19	0	2	3	5	17

* Multiple responses.

The average duration of each visit by supervisors was above 2 hours, according to more than three-fourths of the supervisors as well as ANMs and MPWs. A majority of the LHVs, especially rural LHVs, made visits of longer duration (4-5 hours) as compared to BEEs and MOs (2-3 hours). About one-third of the supervisors, especially LHVs and MOs, did not give any advance intimation of their visits which was corroborated by the responses of ANMs and MPWs. Some supervisors made surprise visits as well as visits with prior intimation on different occasions.

As regards purpose of visits made by supervisors, both the supervisors as well as the ANMs and MPWs stated similar purposes for most visits, ie. family planning, immunization, less often for NAP and VAP and assessing the work of ANMs and MPWs. While the supervisors stated that they imparted IEC to the community, they were in reality observed to make field visits to check the work done by ANMs and MPWs or to attend meetings. Hardly any IEC was provided by them. No discernible trends were seen in the urban Vs rural responses.

iv) Visits of rural supervisors to SCs : The SC is the most peripheral unit in the primary health infrastructure, and a direct link with most of the scattered rural population. Hence, the role of supervisors assumes special importance here.

Fifty seven percent of the supervisors, especially LHVs and MOs, stated that they made upto 12 SC visits in one month while the remaining supervisors (especially the BEEs) stated that they made more than 17 visits each month. The duration of visits, according to a majority of the supervisors (86%) was 3 hours or more. Visits of 5 hours or more were mentioned only by LHVs. Most of the supervisors (64%) stated that they sometimes gave advance intimation regarding their visits and sometimes made surprise visits.

Seventy one percent of the supervisors checked records on their visits while 43 percent of the supervisors mentioned that they talked to workers and asked about their problems (mentioned by BEEs and MOs) and supervised immunization work (mentioned by a majority of LHVs). Some supervisors also added that they checked availability of supplies, supervised family planning work, maintenance of SC and assessed work performance of ANMs and MPWs.

However, the observations showed that the visits of supervisors were infrequent and were for very short duration. The supervisors themselves mentioned that they were in a position to visit only the road-side SCs and could not visit SCs in the interior areas. While the MOs mentioned the problem of paucity of time, the LHVs faced problem of transport. Whenever LHVs did make visits, it was observed that they mostly helped the ANM in whatever work she was doing at that time and pointed out and rectified her mistakes.

v) Centre visits made by district officials : The details of the visits made by district officials to various urban and rural centres are presented in Table 46. All the district officials stated that they visited the centres atleast once in 3 months.

TABLE 46. CENTRE VISITS BY DISTRICT LEVEL OFFICIALS : AS REPORTED BY CENTRE LEVEL SUPERVISORS AND AS REPORTED BY DISTRICT OFFICIALS THEMSELVES

S No	Visits by District Officials	LHV n=14	BEE n=4	MO n=14	Total N=32	%	Dist.Officials N=6	%
1.	District officials make visits							
	a) Yes	11	4	12	27	84	6	100
	b) No/Not aware	3	0	2	5	16	0	0
2.	Frequency of visits							
	a) ≤ one month	5	2	0	7	26	4	67
	b) 1.1 - 3 months	3	0	4	7	26	2	33
	c) 3.1 - 6 months	1	1	8	10	37	0	0
	d) > 6 months	2	1	0	3	11	0	0
3.	Average duration of visits (Hours)							
	a) < 2	6	2	9	17	63	0	0
	b) 2 - 3	4	2	1	7	26	1	17
	c) 4 - 5	0	0	1	1	4	2	33
	d) > 5	1	0	1	2	7	3	50
4.	Advance intimation of visits							
	a) Yes	1	1	1	3	11	0	0
	b) No	7	3	5	15	56	2	33
	c) Sometimes	3	0	6	9	33	4	67
5.	Visits are made*							
	a) To audit work performance	1	2	5	8	30	5	83
	b) To provide guidance and information	4	1	3	8	30	3	50
	c) To assess achievement of targets	3	1	1	5	19	3	50
	d) To check records & daily diaries	6	4	7	17	63	0	0
	e) In connection with immunization	0	0	5	5	19	1	33
	f) In connection with family planning	4	0	1	5	19	2	67
	g) To attend meetings/clinics	2	0	1	3	11	2	33

* Multiple responses.

Fewer centre level supervisors confirmed this statement. Similarly, average duration of each visit was longer (4 hours) according to the district officials as compared to the centre level supervisors (3 hours).

According to a majority of the district officials, they made visits to centres to audit workers' performance, to ensure that the family planning programme was running well, to assess achievement of targets and to provide guidance and information. On the other hand, a majority of the supervisors (most of them rural) stated that the district officials made visits to check the records and daily diaries, to audit work performance and to provide guidance and information. More urban than rural MOs mentioned that the district officials made visits in connection with family planning work.

The visits of district officials to each urban and rural centre were observed to be after long intervals may be because they had many centres to cover. These visits were almost always on the days of monthly meetings during the observation period. The district officials gave instructions and guidelines to the workers some of which they had received from state level, asked them to increase their achievement and drew attention to the unsatisfactory work performance in various areas.

vi) Community visits by district level officials : Table 47 indicates that a majority of the district officials stated that they made community visits, but only 44 percent of the centre level officials agreed with this statement. During the observation period of one year, the visits by district officials to the community were found to be extremely infrequent.

While most of the district officials mentioned that they visited the community in different areas atleast once in 3 months, only 50 percent of the supervisors agreed while the remaining supervisors stated that the frequency was much less.

As Table 47 shows, varied responses were obtained with respect to the objectives of community visits by district officials - to seek community participation, to impart IEC to the community; for family planning or immunization work.

More urban than rural LHVs mentioned that the visits by district officials were in connection with immunization and family planning, while orientation camp, meetings, school health programme, verification of work done and MCH programmes were mentioned by more rural than urban LHVs. During the observation period, community visits by district officials were made : to address the community in an orientation camp and to supervise an immunization camp in the field area.

III. MANAGEMENT INFORMATION SYSTEM (MIS)

a) Circulars : A total of 59 circulars were there in the MCH circulars file at the CMOH office. Out of these, as many as 50 circulars contained information on immunization, besides other topics. There were 4 circulars on FP (besides this, a separate

TABLE 47. COMMUNITY VISITS BY DISTRICT LEVEL OFFICIALS : AS REPORTED BY CENTRE LEVEL SUPERVISORS AND AS REPORTED BY DISTRICT OFFICIALS THEMSELVES

S No	Community Visits by District Officials	LHV	BEE	MO	Total		Dist.Officials	
		n=14	n=4	n=14	N=32	%	N=6	%
1.	District officials visit community							
	a) Yes	10	2	2	14	44	5	83
	b) No, not aware	4	2	12	18	56	1	17
2.	Frequency of visits							
	a) ≤ one month	5	1	0	6	43	1	20
	b) 1.1 - 3 months	1	0	0	1	7	4	80
	c) 3.1 - 6 months	3	1	0	4	29	0	0
	d) > 6 months	1	0	2	3	21	0	0
3.	Average duration of visits (Hours)							
	a) ≤ 1	7	0	1	8	57	3	60
	b) 2 - 3	3	1	1	5	36	0	0
	c) 4 - 5	0	1	0	1	7	1	20
	d) As per need	0	0	0	0	0	1	20
4.	Advance intimation of visits							
	a) Yes	3	2	2	7	50	2	40
	b) No	4	0	0	4	29	2	40
	c) Sometimes	3	0	0	3	21	1	20
5.	Visits was made							
	a) To impart IEC to to community (orientation camp/meeting)	3	1	1	5	36	3	60
	b) To request community participation	0	0	1	1	7	4	80
	c) To assess their awareness, utilization of services provided and their problems	1	1	1	3	21	1	20
	d) To cross check the work done	1	0	0	1	7	1	20
	e) In connection with family planning	5	2	1	8	57	0	0
	f) In connection with immunization	6	0	0	6	43	0	0

* Multiple responses.

file is being maintained for FP circulars) and 3 circulars on ICDS. Circulars related to NAP and VAP were merely 2 out of the 59 sent in the entire year.

One circular contained information and instructions for achieving targets for iron and vitamin A supplement distribution through the centres; and for focussing on 1-3 year old children and on backward areas while implementing VAP. The second circular pertained to procurement/distribution of iron tablets and vitamin A solution wherever needed.

When the circulars file for the year 1990-91 at various urban and rural centres and scrutinized, it was found that these circulars were poorly maintained and filed in more than 50 percent of the rural PHCs and urban UFWCs studied; with several circulars not in chronological order; kept loose and not filed; or filed together with circulars of the previous years. In fact, functionaries had difficulty in locating the circulars file in several centres.

Thus, it is evident that the attention being given to NAP and VAP with regard to MIS at the state level is negligible. Hardly any guidelines are being provided on the operational aspects in terms of dose and frequency, target beneficiaries and approaches to administration of these supplements. No queries are being made at state level regarding the implementation of these programmes.

b) Records

i) Scrutiny of beneficiary records of NAP and VAP : ANMs and LHVs at both the urban and rural centres were requested to show the records of the beneficiaries of NAP and VAP. The following observations were made by the investigator:

1. Both the urban and rural centres were using registers with handmade columns, or printed columns, or both. In contrast to printed registers which make it more likely that uniformity is maintained in data entry, it was observed that wherever handmade columns in registers were used, the formatting was different, the column heads themselves and their sequencing were both different at various centres as well as within the same centre on different pages of the register.

Entries in iron and vitamin A columns

a) Iron : Under the heading of iron in the register, the number of columns varied from 1 to 3 in different centres and on different pages of the same register. Most of the iron columns were left blank or had entries of either the size of offtake or date of distribution or a tick mark or statements like given iron'. Further, there was a wide variation in the recorded size of offtakes within each centre which was between 30 to 200. In more than 50 percent of the urban centres, the size of offtake recorded was 30 or 100 and in most of the rural centres it was 30, 70 or 100. An important observation made was that whenever beneficiaries came for another dose of vitamin A or for another

offtake of iron tablets, in most of the instances, no effort was made to locate their names in registers. Instead, new entries were made, thereby falsely increasing the number of beneficiaries.

b) Vitamin A : Under the heading of vitamin A, some centres had 1 column, some had 2 columns while a few had 9 columns. Most of the time, these columns were left blank. Where entries were made, they were different in different centres and on different pages of the same register in a centre. For example, either dose number I or II or the date of dosing or just a tick mark or a statement like given vitamin A solution' were entered.

2. Some centres recorded only the minimum details about the beneficiary children and women while in others, some additional relevant information was entered besides the name of beneficiary and father/husband's name, such as address, age, date of registration and hemoglobin level.

3. Some centres maintained a separate register for each year while in some centres, the registers of the preceding year were continued to be used. Similarly, some centres were maintaining separate registers for iron and vitamin A beneficiaries while other centres had iron and vitamin A entries along with entries of various vaccinations in the immunization registers or in antenatal care registers.

4. The names of beneficiaries in many centres (especially in urban centres) were noted in ANMs' diaries and only the coverage figures were given to the LHV for compilation into a report. Thus, there was no record of these beneficiaries at the centres.

5. When supplements were distributed in schools, the teachers usually handed over to the ANM the lists of names of children which were copied from the attendance registers. In many such cases, the names of children who were absent on the day of distribution got included in the lists and the figure of coverage inadvertently increased. Further, these lists were often not properly preserved in the centres and could not be found in some centres when a request was made for them.

6. In almost all the urban centres, iron and vitamin A supplements were also issued to hospitals, private practitioners and charitable and voluntary organizations from whom the number of beneficiaries covered was taken at a later date. There were no records of these beneficiaries at the centres. Similarly, iron tablets distributed through the Outpatient Departments on prescriptions of MOs and tablets given to tubectomized cases in wards or in follow up visits were often not included in the reports.

All the above practices highlighted that there was no centralized system of recording beneficiary data. The available beneficiary records at the centres were also incomplete making it difficult to determine which beneficiaries had actually been covered and how many of these had completed the course of supplementation or had been covered repeatedly by mistake.

ii) Records related to NAP and VAP : The stock registers at PHCs and SCs in rural areas, UFWCs in urban areas, at district level stores and at Medical College level stores were scrutinized to study the logistics of iron and vitamin A supplements during the year preceding the study. The salient findings are presented below.

In 16 out of the 19 centres where the stock registers could be scrutinized (in 3 centres the register was not available or not accessible), it was observed that in a majority of the urban and rural centres (N=14), the stock register had records of previous years together with the current year. In all the PHCs and 50 percent of the UFWCs and SCs, printed stock registers were used. Consequently, in the remaining 50 percent of the UFWCs and SCs, the format of recording differed.

Almost all the stock registers scrutinized were incomplete with several missing entries in various columns. Entries were especially not made in the expiry date and the batch number columns. As a result, it was not possible to judge the time available for distribution before a supplement got outdated. A similar pattern was observed at the district stores as well as medical stores, though these records were relatively better maintained than the centre level records.

c) Reports : These reports contained information relating to achievements of targets set for various centres with regard to coverage of women and child beneficiaries of iron and vitamin A supplements during the year 1990-91 and were scrutinized at CMOH level.

1. **Large iron tablets** : The achievement of the target of women beneficiaries was 105 percent at district level. The urban centres had achieved 108 percent of the target (range: 11% to 264%) and rural centres had achieved 98 percent of the target (range: 45% to 164%). The UFWC selected for the study of programme impact (Bhanwarkua) had achieved 152 percent of the target given to it and the PHC selected (Harsola) had achieved 137 percent of its target of women beneficiaries under NAP.

2. **Small iron tablets** : At district level the achievement was 84 percent of the target. Urban centres had achieved 83 percent of the target (range: 4% to 225%) while the rural centres had achieved 86 percent of the target (range: 20% to 230%). UFWC Bhanwarkua had achieved 111 percent and PHC Harsola 230 percent of the targets for child beneficiaries under NAP.

3. **Vitamin A solution** : Indore district had achieved 105 percent of the target given to it under VAP. The urban centres had achieved 67 percent of the target given to them (range: 13% to 298%) and the rural centres had achieved 101 percent of the target they received (range: 10% to 208%). UFWC Bhanwarkua had achieved 164 percent and PHC Harsola 179 percent of the targets given to them under VAP.

Thus, these reports gave an incredible range in achievement of targets. At the centre level, out of the 19 centres under

study, only one centre (SC) had filed copies of all the 12 monthly reports for the year; most of the remaining had 10-11 reports. Maintenance of copies of reports was better at the urban centres than at the rural centres.

d) **Daily Diaries**

Eighteen of the 19 ANMs reluctantly made available their daily diaries of the previous one year for perusal by the investigator. Some major findings are presented below:

1. None of the 18 diaries was complete-there were no entries under certain months or for various days in a month.
2. The format for entering information was widely different in various centres even though a standard format has been provided. Besides, the quantity of information entered varied from one line entry for a day to a full page account of the day's work.
3. The signatures of the supervisors' in the diaries were seen rarely and irregularly. Their comments were even more rare and included: complete the diary, make entries according to the format provided, complete survey work, complete tasks x, y, z (usually Immunization or FP work) and so on.
4. FP was the most frequently mentioned job function in the diaries of ANMs, followed closely by immunization. Antenatal clinics, field visits, NAP and meetings/training programmes were also noted in more than 50 percent of the months for which diaries were scrutinized. VAP, NHE and community meetings were mentioned in less than 50 percent of the months.
5. Entries related to NAP and VAP: There was an extraordinarily wide variation in the ways in which NAP and VAP related work was entered in the diaries.
   i) NAP: Gave iron/iron advise, gave x number of iron tablets (no mention of beneficiary names and ages), gave iron to children, gave 25 bottles of liquid iron in 'y' school, gave iron to pregnant women (no names), gave iron to Balwadi children, gave iron to TT (tubectomized) cases/ anemic women, gave iron and advised green leafy vegetables for strength and removing blood deficiency.
   ii) VAP: Advised vitamin A, gave vitamin A, gave vitamin A first/second dose, gave vitamin A to x number of children, school or Balwadi children, gave vitamin A to 1-8 year old children, list of children given vitamin A in school will be provided by teachers on x day, vitamin A not available ("Vitamin A prapt nahin hua"), received vitamin A in x quantity.

Thus, these entries reflected the lack of systematic organization of implementation of NAP and VAP at field level and also the cursory attention given to recording of vital field based information. The fewer number of entries as compared to immunization or FP also highlighted the low priority given to these nutrient programmes.

The observations showed that most of the functionaries did not make entries in the Daily diaries 'daily'. The ANMs were observed to make entries of several days in one sitting, usually

on the day of the meeting or a day prior to it. On the other hand, some of them made entries in their diaries during the course of their work. For example, while doing immunization work at the centre or the field, the ANM would make entries in the centre register as well as in her daily diary while the beneficiaries waited for her to complete this duplicate recording so that they could receive services.

e) Meetings : The regular monthly meetings conducted by district officials and the centre level supervisors were observed to be a vital component of the MIS operating in the health system infrastructure at Indore. These meetings were conducted at three levels :

i) District level : District level officials with centre level supervisors
ii) UFWC and PHC level: Centre level supervisors with ANMs and MPWs
iii) Sector level : Sector supervisors with ANMs and MPWs in the sector.

These meetings were observed to be a very effective means of communicating guidelines for implementation of various programmes, for monitoring of achievement of targets, taking of ameliorative action by district officials/centre level supervisors to solve problems and to correct mistakes made by centre level supervisors/grassroot level functionaries.

While these meetings were the most commendable aspect of functioning in MIS, they did have some drawbacks which were revealed by various levels of functionaries in informal conversations during the observation period. Quite a few functionaries mentioned that they dreaded attending these meetings because at times some of the supervisors/officials publicly ridiculed their work performance or their queries and problems with respect to programme implementation.

Discussion

The present study focussed on an evaluation of selected management components of NAP and VAP. The salient results of this study are discussed below along with comparable findings from available literature.

MANPOWER AND MATERIAL RESOURCES

Knowledge and awareness of functionaries : The functionaries were found to have imprecise and insufficient knowledge regarding the operational aspects of the programme at the providers level (eg. objectives, target beneficiaries, distribution strategy, record maintenance) neither did they know how to promote the community acceptance of NAP and VAP at beneficiary level (eg. motivating beneficiaries to take supplement, importance of IEC and how to go about it, monitoring of adherence). There were no consistent urban-rural trends in this regard. These findings are supported by country-wide evaluations of NAP and VAP which pointed towards the poor level of knowledge of the functionaries and the need to educate the functionaries as well as beneficiaries (ICMR 1989 and Vijayaraghavan and Pralhad Rao 1978).

Valyasevi (1988) reported that inadequate knowledge of health personnel about iron deficiency anemia was related to non-compliance to supplementation by pregnant women in Thailand. Further, the personnel perceived iron supplementation as a curative measure. Thus, while iron tablets were supposed to be given to all pregnant women under the Thai health care system, the prevalence of anemia remained high.

A study conducted in 112 Subcentres from 7 states of India has similarly shown very poor awareness of ANMs about various high risk factors associated with antenatal period (15%). It was suggested by the investigators that ANMs should be given reorientation training to improve their knowledge and skills (Operations Research Group 1991a).

The evaluation of NAP and VAP in various states of India revealed that the non-target groups, who are not eligible to receive the supplements, had actually received the supplements (ICMR 1989 and Vijayaraghavan and Pralhad Rao 1978). These evaluations also revealed that clinic approach instead of house-to-house extension approach for distribution of supplements was being followed by several functionaries. The results of the present study are in agreement with these findings. Further, the VAP evaluation had pointed towards the absence of an intensive campaign approach for vitamin A distribution which was also borne out in the present study.

Training : One important factor found to be responsible for the insufficient knowledge of functionaries was inadequate training which did not elaborate sufficiently on how to manage NAP and VAP at field level. In the training, NAP and VAP were dealt with in a diffused and general way. The freshly trained ANMs were, thus, not well equipped with enough information to deal with these programmes. Similarly, the in-service training provided by supervisors and district officials also neglected NAP and VAP and focussed more on family planning and immunization.

Gandotra and Ojha (1986) reported that a majority of the supervisors perceived their role as maintenance of records (87%), supervision (77%) and implementing FP (35%). Only 22 percent perceived provision of health education as one of their functions. The investigators found that lack of training of supervisors was affecting the effective implementation of health and family welfare programmes. Similarly, the workers interviewed in their study themselves felt that "there was a lack of proper training to perform all the activities". Ninety one percent of the functionaries interviewed had undergone 3 or more training programmes while this percentage was much lower in the present study (60%).

In another study, LHVs reported that atleast half of the ANMs under their supervision were not able to maintain the records and one of the reasons, according to them, was lack of adequate training (Operations Research Group 1991a).

It has been pointed out by Bagchi (1990), that in many developing countries, nutrition is just a small component of the

training programmes of primary health care workers and their supervisors, and is commonly imparted through a few classroom lectures on foods, nutrients and their functions. The trainers are rarely even aware of the specific jobs which the trainees are expected to perform vis-a-vis the community, the potential problems and the situations in which they will have to work.

Vijayaraghavan and Reddy (1987) have pointed out that proper training of health workers is essential, with adequate emphasis on identification of children at risk of blindness, particularly those with signs of vitamin A deficiency or protein energy malnutrition and those with diarrhoea or respiratory infection. They have further elaborated on the undesirable tendency to withhold the vitamin A dose when the child is ill, particularly if there is diarrhoea. This tendency was also observed in the present study in informal conversations with MOs revealed that they condoned the practice.

The ICMR (1989) study in 11 states of India reported that there was no regular training and orientation programme for functionaries exclusively for NAP at the district level, though NAP was included in 31 percent of the districts in periodical training courses for National or State Health Programmes. Further, the training programmes were not uniform with regard to frequency, duration and functionaries trained in different districts.

Information from 6 countries where iron supplementation programmes are in operation, has clearly indicated that training and motivation of first line health workers is inadequate and there is insufficient and inappropriate counselling of mothers. Additional basic as well as in-service training of health personnel is required in the prevention and treatment of anemia which should include management, surveillance, communication with clientele and screening. Increased awareness of the problem is essential because a major hurdle is the fact that anemia is not perceived as a major health problem by district health officials, PHC managers and village health workers (ACC/SCN 1991b).

Work organization and time allocation : There was a wide variation in the amount of work put in by various categories of functionaries in the present study as evident from interview and observation data. As regards amount of time spent on work, the interview responses were not borne out by the observations. For example, the number of reported working hours were more than the observed working hours by about 7 hours/week (about 1 hour per day) in case of the ANMs. Further, one-third of the working hours was spent on non-productive work which indicates a considerable wastage of time. Thus, not only did the functionaries work for less than the expected number of hours but also spent a considerable proportion of this time unproductively. While the observations revealed that FP and immunization received maximum attention, it was not a sufficient enough reason for the neglect of NAP and VAP. By putting in some more time and using the available time effectively, NAP and VAP can be managed more successfully at field level.

The average time devoted to work by different categories of functionaries in 8 PHCs from 4 states of India was reported to range between 6.9 to 8.3 hours (Operations Research Group 1991b), while in the present study it was less, and ranged from 5.3 to 7.9 hours per day for the rural functionaries (Interview data). In the present study, ANMs spent 5.7 and 7.1 percent on FP and NAP/VAP respectively and LHVs spent 3.4 and 6.5 percent of their time on these programmes. A study carried out in 9 PHCs of Gujarat also reported a higher proportion of time being spent on FP (36%) than MCH (21%) by PHC functionaries. On an average, the functionaries were spending most of their time (3 hours per day) on FP activities, sometimes even at the cost of other programmes (Gandotra and Ojha 1986).

Infrastructural support : Besides poor time management, another factor responsible for the unsatisfactory management of NAP and VAP in Indore was the extremely inadequate infrastructural support provided, such as lack of transport, absence of incentives for good programme performance, inadequate supplies and poor MIS. The oft-quoted reason for poor coverage of beneficiaries - inadequate and irregular supplies - was not entirely borne out by the observations in the present study which revealed that even the existing supplies were badly mismanaged and that there was an excess of supplies (unused) in some centres. Further, the focus of functionaries was not on ensuring the completion of course of supplementation for the existing beneficiaries but on registering new beneficiaries thereby spreading the available supplies too thinly among many beneficiaries. These facts, again, point towards the casual approach with which NAP and VAP are implemented. Short supply of iron tablets in the PHCs in Bharuch district was reported in Gujarat (Gandotra and Ojha 1986). According to the authors, effective functioning of a PHC can be hampered by inadequate and poor quality of various material resources. Grossly inadequate supply of iron tablets was also reported in a study in 16 Subcentres of Bihar (Operations Research Group 1991a).

In the ICMR study (1989) in 11 states of India, inadequate and irregular supply of the iron supplement was stated by the MOs to be one of the major reasons for unsatisfactory performance of the programme. Further, it was found that in 3 districts (5%) the iron tablets reached with less than 3 months of age while 32 percent PHCs had no record to indicate the time period between date of receipt and the expiry date. Absence of this kind of record was also observed in a majority of the centres in the present study.

Overall supplies of iron supplements have been identified as a frequent constraint in an evaluation of operational programmes in 6 countries. It arises from failures in procedures for assessing community requirements, ordering and scheduling deliveries, ensuring quality control, adequate storage, monitoring and distribution at all levels of administration. Supply and distribution constraints have been found to be important in causing lack of adherence (compliance) (ACC/SCN 1991a).

An evaluation of VAP in 11 states had revealed that in some districts, the inadequate coverage was mainly due to short supply of the vitamin A concentrate (Vijayaraghavan and Pralhad Rao 1978).

Transport problems have also been reported in several other studies indicating that it is a common problem faced by primary health care functionaries in various states in India (Operations Research Group 1991a, Agarwal and Agarwal 1987), Gandotra and Patel 1987, Gandotra and Ojha 1986, Sharma et al 1986). Thus, the functionaries waste their time and energy in travelling to their areas either on foot or by public transport or by some other means when their effort should be primarily directed towards direct provision of services to the community. Further, the PHC vehicles are most often in use for FP work to the detriment of all other programmes (Singh and Kumar 1988, Gandotra and Ojha 1986).

Studies of Operations Research Group (1991a), Chandok et al (1988), Agarwal and Agarwal (1987), Dave (1987) and Gupta et al (1986) in different states of India have also pointed towards the housing problem faced by functionaries especially in the rural area which was mentioned by functionaries in the present study.

Incentives and disincentives play an important role in programme performance. Further, monetary incentives and rewards are only provided for FP work and not for the other programmes, as seen in the present study and those elsewhere. The findings of a study in Gujarat indicated that in order to improve the family planning performance, the MO in-charge should have the authority and power to reward the "good" workers and punish the "bad" workers. This was also indicated in the present study in Indore district where the MOs expressed a similar opinion in interviews and informal conversations. However, even non-material incentives like appreciating efforts, publicly acknowledging programme achievement in meetings and social events in the community, can boost workers' morale and improve programme performance (Hilton et al 1993). Such incentives, if applied to NAP and VAP, may improve implementation of these programmes even in the present situation.

MONITORING AND CONTROL

Targets : The data indicate that in this study the targets for various centres were arbitrarily set without taking into consideration the size of the eligible population under different centres. The reports as well as the observations clearly revealed that the targets were easily achieved often in excess of 100 percent because implementation of NAP and VAP was just a matter of ad-hoc handing over of handfuls and spoonfuls of iron and vitamin A supplements respectively to the beneficiaries (who were often not even eligible beneficiaries), and reporting incorrect coverage figures. The monitoring of achievement of FP and immunization targets was more intense, therefore these were taken more seriously.

An evaluation of NAP in 11 states of India also revealed the actual number of target population was much larger than the targets fixed by different states. Further, the different bases for determining targets as reported by the PHC and District Medical Officers could not be established in actual practice (ICMR 1989).

Supervision : The expectations of the subordinates and supervisors regarding supervision were different and not fulfilled in one-third of the cases. Supervisors, in general, believed that they provided better supervision than their subordinates reported that they did. Observations clearly showed that neither the supervisors were keen on giving adequate and supportive supervision, nor were the field workers sufficiently motivated to work sincerely. Further, FP and immunization were the focus of attention of supervisors. With regard to NAP and VAP, no specific guidance was provided to the field workers nor were the records, reports and daily diaries adequately checked. The feedback by supervisors was restricted to instructing the functionaries to achieve the targets of NAP and VAP. Problem solving by supervisors was again mainly concerned with immunization and FP because these were the programmes in which workers reported more problems. In general, the supervisors painted a better picture of supervising NAP and VAP which was not supported by the observation data.

Gandotra and Ojha (1986), in their study in 9 PHCs of Gujarat, found that more frequent interaction of functionaries with their supervisors was one of the major contributing factors in the better performance of Bharuch district in terms of delivery of health and family welfare services in comparison to Bhavnagar and Banaskantha districts.

A review of iron supplementation programmes in several parts of the world has shown a positive correlation between adequate supervision of health workers and supplement compliance by pregnant women (Morrow 1990).

The need to strengthen supervision as an effective strategy for improving SC functioning was reported in a study carried out in 7 states of India in 112 SCs (Operations Research Group 1991a). In this study, the monitoring and supervision of relevant records and registers by the LHVs was reported by only 7 out of 112 ANMs. Further, with respect to the help sought by ANMs and provided by LHVs, a majority of the ANMs sought and received help in FP motivation.

Vijayaraghavan and Reddy (1987) have reported the achievement of effective coverage with vitamin A through proper supervision and close monitoring system in the slums of Hyderabad.

Management Information System (MIS) : The positive aspect of MIS observed in this study was the regular monthly meetings at all levels which served as a vehicle for a two-way exchange of information between workers, supervisors and officials, for monitoring programme performance. However, a scrutiny of the

circulars, reports, records and daily diaries revealed poor maintenance, incompleteness and inaccuracies in terms of management of NAP and VAP related information. Thus, it was impossible to correctly assess the extent of beneficiary coverage and the completeness or incompleteness of dosing by iron and vitamin A supplements.

Gandotra and Ojha (1986), reported that a one way communication process exists in the health services in Gujarat which overlooks the difficulties of field staff in implementing various programmes and in achieving the targets. There is virtually no feedback sought from the grassroot level and, as the investigators pointed out, this one way flow of communication can become a serious bottleneck to the effective functioning of various programmes.

In another study in 7 states of India, it was found that even the ANMs who were maintaining records, were not updating them properly (Operations Research Group 1991a).

In an evaluation of VAP in 9 states of India, it was found that in some PHCs, no records were available as to how many bottles of vitamin A were received during the previous two years. The same was found to be true about the figures of coverage (Vijayaraghavan and Pralhad Rao 1978).

SECTION B : THE BENEFICIARIES' PERSPECTIVE

This section first presents the socio-economic profile followed by responses of beneficiaries regarding utilization of iron and vitamin A supplements. Subsequently, impact data are presented with respect to hemoglobin levels, percent prevalence of anemia (both women and children) and prevalence of Bitot's spots (only children).

I. RESPONSES OF BENEFICIARIES REGARDING UTILIZATION OF IRON AND VITAMIN A SUPPLEMENTS

1. Background information on beneficiaries : The profile of the beneficiaries of NAP and VAP and their families is presented in Table 48.

a) Family profile : A majority of the rural beneficiaries and all the urban beneficiaries belonged to scheduled castes and tribes. Sixty two percent of the beneficiaries lived in joint families, the percentage being higher in rural as compared to urban areas. Fifty one percent of the beneficiary families consisted of 6 or fewer family members while the remaining were larger families; the average family size being 7 members. Large families (above 6 members) were more frequently seen in rural areas. In 56 percent of the beneficiary families, the per capita income was above Rs.1000 per year (Rs.83 approx. per month) with more urban beneficiary families reporting higher incomes than the rural families. However, it is important to note here that most of the rural families had income in kind as well, eg. agricultural produce which was used at home.

TABLE 48. BACKGROUND INFORMATION ON BENEFICIARIES

S No	Background Information	SC n=62	PHC n=76	Rural n=138	Urban n=78	Total N=216
I	Family profile			Percent Responses		
1.	Caste					
	a) SC/ST	94	96	95	100	97
	b) General category	6	4	5	0	3
2.	Family type					
	a) Nuclear	29	33	31	51	38
	b) Joint	71	67	69	49	62
3.	Family size					
	a) $\leq$ 3 members	3	9	6	11	8
	b) 4 - 6 members	31	50	41	45	43
	c) 7 - 9 members	39	28	33	27	31
	d) $\geq$ 10 members	27	13	20	17	18
4.	Average family size					
	Mean number of family members	9.0	6.8	7.8	6.7	7.4
	SE	0.7	0.4	0.4	0.3	0.3
5.	Per capita income per year (Rs.)					
	a) $\leq$ 500	24	16	20	0	13
	b) 501 - 1000	31	46	39	17	31
	c) 1001 - 1500	19	17	18	27	21
	d) $\geq$ 1501	26	21	23	56	35
II	Beneficiary profile			Percent Responses		
1.	Age of beneficiaries (years)					
	Preschool children					
	a) 1 - 3	14	18	16	13	15
	b) 4 - 6	86	82	84	87	85
	Pregnant women					
	a) $\leq$ 20	50	61	57	36	47
	b) 21 - 25	50	33	39	53	46
	c) 26 - 30	0	6	4	7	5
	d) $\geq$ 30	0	0	0	4	2

Table 48 contd..

S No	Background Information	SC n=62	PHC n=76	Rural n=138	Urban n=78	Total N=216
	Lactating women					
	a) ≥20	41	46	43	32	41
	b) 21 - 25	36	48	42	56	45
	c) 26 - 30	18	3	11	12	11
	d) >30	5	3	4	0	3
2.	Education level of women beneficiaries					
	Pregnant women					
	a) Non-literate	90	67	75	54	64
	b) I - V Standard	0	17	11	32	22
	c) VI - XII Standard	10	16	14	14	14
	Lactating women					
	a) Non-literate	87	76	82	60	76
	b) I - V Standard	5	8	6	28	12
	c) VI - XII Standard	8	16	12	12	12
3.	Duration of beneficiary status					
	Pregnant women					
	a) ≤ 3	10	11	11	25	18
	b) 4 - 6	50	50	50	39	45
	c) 7 - 9	40	39	39	36	37
	Lactating women					
	a) ≤3	36	33	34	44	37
	b) 4 - 6	41	35	38	28	35
	c) 7 - 9	18	16	17	20	18
	d) >9	5	16	11	8	10
4.	Occupation of women beneficiaries					
	Pregnant women					
	a) Work in family enterprises	60	89	79	96	88
	b) Work for others	40	11	21	4	12
	Lactating women					
	a) Work in family enterprises	59	73	66	88	71
	b) Work for others	41	27	34	12	29

b) Beneficiary profile : Preschool children in the age group of 3 to 5 years constituted 85 percent of the sample while the rest were 1 to 3 years of age in the urban and rural areas. A majority of the urban and rural pregnant and lactating women were below the age of 25 years.

A majority of the pregnant women and lactating women were non-literates; the percentage of non-literates was higher in rural than in urban areas. A majority of the pregnant women were in the IInd or IIIrd trimester of pregnancy while a majority of the lactating women reported the duration of lactation as 6 months. Besides being housewives, a majority of the pregnant and lactating women were working in family enterprises (in fields in rural areas and in small businesses in urban areas).

2. Receipt and consumption of supplements by beneficiaries :

a) Small iron tablets : As Table 49 shows, less than one-third of the target beneficiaries stated that they had been offered the supplement and none of them refused to take it. The percentage of receivers was much higher in the urban as compared to the rural sample. In the urban area, some children acknowledged the receipt of supplements at the Balwadi (nursery school) while their mothers said that they were unaware of the fact.

A majority of the beneficiaries especially the urban beneficiaries, mentioned that they received the supplement at a central place in the community or at school. Some reported that they had received the supplement at the health centre in the area; a majority of these were rural beneficiaries. Most of the rural and urban beneficiaries had last received the supplement less than two months ago ie. were current beneficiaries.

Mothers of 70 percent of the child beneficiaries (both rural and urban) could not recall the interval between receipt of two doses of the supplement while the remaining reported this interval to be between 1 and 30 days. Lack of awareness of the interval between doses was more in rural area (94%) than in the urban area (61%).

Mothers of nearly half of the beneficiaries had no idea of the number of tablets received at one point of time (offtake). They responded that one handful of tablets was given to them. Twenty eight percent of the beneficiaries had received 30 tablets in one offtake (most of them urban) while 24 percent had received 1 to 20 tablets in one offtake (most of these were rural). Mothers of less than two-thirds of the beneficiaries were aware that one tablet was to be taken in one day while 24 percent reported that the child consumed 2 to 4 tablets per day either because "the dose was not known" so parents gave more or, because "child liked the sweet taste of tablets". Mothers of 48 percent of the beneficiaries were not aware of the total number of tablets received so far. Some mothers added that since the tablets were given in hand and rarely counted, it was possible that some had been lost by the child.

TABLE 49. RECEIPT AND CONSUMPTION OF SMALL IRON TABLETS BY BENEFICIARIES

S No	Receipt and Consumption	SC n=49	PHC n=51	Rural n=100	Urban n=71	Total N=171
		Percent Responses				
1.	Supplement was offered					
	a) Yes	16	16	16	54	32
	b) No	84	84	84	46	68
2.	Site of receipt of supplement					
	a) Home	13	0	7	16	13
	b) Health Centre in the area	63	88	75	0	22
	c) Central place in field area/school	0	12	6	84	61
	d) Other health centres/ hospitals	24	0	12	0	4
3.	Last receipt of supplement					
	a) ≤ 1 month ago	88	88	88	61	69
	b) 2 months ago	0	0	0	8	6
	c) 3 - 12 months ago	0	0	0	19	13
	d) > 12 months ago	12	12	12	12	12
4.	Number of tablets received at one time					
	a) < 30	25	50	38	18	24
	b) 30	0	12	6	37	28
	c) >30	12	0	6	3	4
	d) Do not know	63	38	50	42	44
5.	Number of tablets consumed per day					
	a) 0	25	12	19	15	17
	b) 1	50	63	56	61	59
	c) >1	25	25	25	24	24
6.	Number of tablets received so far					
	a) ≤ 60	25	63	44	45	45
	b) > 60	0	0	0	10	7
	c) Do not know	75	37	56	45	48
7.	Tablets were given in					
	a) Hand	25	75	50	55	54
	b) Piece of paper	75	25	50	45	46

Ninety one percent of the beneficiaries did not have any tablet remaining with them at the time of interview, suggesting that discontinuation of the course had already taken place as a majority were current beneficiaries.

b) Large tablets : Table 50 shows that 60 percent of the women beneficiaries said that they had been offered the supplement. A majority of these were lactating women; less than half of the pregnant women had been offered the supplement. More urban than rural pregnant and lactating women had been offered the supplement. None of the women said that they refused to take the supplement when it was offered to them.

A majority of the beneficiaries, especially the rural beneficiaries, had received the supplement at a health centre or a hospital. Only 10 percent had received the supplement at home and most of these were urban beneficiaries.

According to more than 50 percent of the women beneficiaries, they had last received the supplement more than two months ago (most of these were rural) while 28 percent had last received the supplement less than a month ago (most of these were urban).

Fifty one percent of the beneficiaries had received the supplement at an interval of 30 days; one-fourth each could not remember the interval or had received it at an interval of 15 days or less. Forty one percent of the beneficiaries were not aware of the number of tablets they had received at one point of time (one offtake). Responses such as "sister gave without counting ... a handful ... a little ... in plenty, ... she said she is giving 100 tablets but there were 30 tablets ..." and others were obtained. The remaining beneficiaries mentioned a range from 1 to 30 tablets per offtake.

While a majority of the beneficiaries (more urban than rural) were aware that one tablet was to be consumed each day, 37 percent (more rural than urban) stated a daily dose which ranged from 2 to 5 tablets.

Fifty four percent of the beneficiaries had received a total of 60 or fewer tablets so far. One-third (more rural than urban) were not aware of the total quantity received. The remaining had received 60 to more than 200 tablets; most of these were urban beneficiaries.

Most of the beneficiaries (more urban than rural) had received the tablets in a piece of paper while most of the remaining beneficiaries (most of them rural) had received the tablets in hand.

Eighty three percent of the beneficiaries did not have any tablet remaining with them at the time of interview (86% in rural and 78% in urban) again suggesting (as in the case of child beneficiaries) that discontinuation of the course had taken place. The investigator examined the tablets in the rest of the cases and found that in 19 percent of the samples (22% in rural

TABLE 50. RECEIPT AND CONSUMPTION OF LARGE IRON TABLETS BY BENEFICIARIES

S No	Receipt and Consumption	SC n=49	PHC n=55	Rural n=104	Urban n=53	Total N=157
				Percent Responses		
1.	Supplement was offered Pregnant women					
	a) Yes	30	39	36	50	43
	b) No	70	61	64	50	57
	Lactating women					
	a) Yes	74	65	70	72	70
	b) No	26	35	30	28	30
	Total					
	a) Yes	65	56	61	60	61
	b) No	35	44	39	40	39
2.	Site of receipt of supplement					
	a) Home	0	3	2	25	10
	b) Health centre in the area	37	74	56	6	38
	c) Central place in field area	13	0	6	16	10
	d) Other health centres/ hospitals	50	23	36	53	42
3.	Last receipt of supplement					
	a) $\leq$ 1 month ago	25	16	21	44	28
	b) 2 months ago	0	3	2	15	6
	c) 3 - 12 months ago	66	62	63	31	53
	d) $>$ 12 months ago	9	19	14	0	13
4.	Number of tablets received at one time					
	a) $<$ 30	44	26	35	16	29
	b) 30	16	52	32	53	39
	c) $>$ 30	3	6	5	3	4
	d) Do not know	44	35	40	44	41
5.	Number of tablets consumed per day					
	a) 0	0	6	3	0	3
	b) 1	56	56	55	69	60
	c) $>$ 1	44	38	42	31	37
6.	Number of tablets received so far					
	a) $\leq$ 60	47	58	52	56	54
	b) $>$ 60	19	6	13	22	15
	c) Do not know	34	36	35	22	31
7.	Tablets were given in*					
	a) Hand	9	58	33	19	28
	b) Piece of paper	100	45	73	81	76
	c) Polythene bag	0	16	8	6	7

* Multiple responses.

and 14% in urban), the tablets were badly discoloured and the condition of 6 percent of the samples (all urban) was unsatisfactory, ie. the tablets were either sticky or broken. Quite a few women reported that they had thrown away the tablets.

c) Vitamin A supplement : Only about one-fifth of the beneficiaries, most of them urban, stated that they had been offered the supplement and none had refused to take the supplement offered (Table 51).

A majority of the beneficiaries (more urban than rural) had received the supplement at a central place in field area, in the Balwadi or from an outside hospital or health centre. Only 11 percent (all of them urban) had received the supplement at their homes while an equal percentage had received it at the health centre in the area (all of them rural).

One-fourth of the beneficiaries had received the supplement 9 to 42 months back; most of these were rural beneficiaries. This indicates that the next dose of the supplement was long overdue but had not been taken/received by the beneficiaries. This implies that discontinuation had occurred even though they were still eligible for the supplement.

Mothers of 83 percent of the beneficiaries had no knowledge of the interval between two doses of supplement, but mothers of 67 percent of the beneficiaries were aware that 1 teaspoon of solution is given at one time. The remaining one-third were not aware of the correct dose, perhaps because the supplement was sometimes poured in child's mouth directly from bottle or measured out in the lid of the bottle (investigator's observations).

3. NAP and VAP related IEC received by beneficiaries : Table 52 shows the responses of beneficiaries regarding the NAP and VAP related IEC received by them at the time of receiving the supplements.

NAP : Mothers of 54 percent of the child beneficiaries and many more (80%) of the women beneficiaries reported that they had received some NAP related information from functionaries. More urban than rural beneficiaries reported this. The information consisted of informing the beneficiary about dosage (one tablet/day) and the benefits of the supplement (eg. the tablets are strength giving [Taakat ki goli'], are good for you, prevent weakness or giddiness, increase blood).

VAP : Mothers of 58 percent of the child beneficiaries (more urban than rural) reported that VAP related IEC was received by them. The responses included :

- Supplement is good for the eyes ("Ankh acchi rahti hai")
- Child will not suffer from eye problems such as poor vision, sty, stickiness and night blindness ("Ankhen kharaab nahin hongi", "ankh nahin aayegi", "ankh chipakti nahin hai", "ratondhi nahin aati").
- Supplement results in good health ("Tanduroosti ke liye").
- Supplement is a vitamin' ("Vitamin ki davai").

TABLE 51 RECEIPT AND CONSUMPTION OF VITAMIN A SOLUTION BY BENEFICIARIES

S No	Receipt and Consumption	SC n=49	PHC n=51	Rural n=100	Urban n=71	Total N=171
		Percent Responses				
1.	Supplement was offered					
	a) Yes	4	8	6	42	21
	b) No	96	92	94	58	79
2.	Site of receipt of supplement					
	a) Home	0	0	0	13	11
	b) Health Centre in the area	0	100	67	0	11
	c) Others	100	0	33	87	78
3.	Last receipt of the supplement					
	a) $\leq$ 6 months ago	0	25	17	73	64
	b) $>$ 6 months ago	50	75	67	17	25
	c) Do not know	50	0	17	10	11
4.	Interval between receipt of two doses					
	a) $<$ 6 months	0	0	0	10	9
	b) 6 months	0	25	17	7	8
	c) Do not know	100	75	83	83	83

TABLE 52. NAP AND VAP RELATED IEC RECEIVED BY RECEIVERS OF SUPPLEMENTS

S No	Information	Small Iron					Large Iron					Vitamin A				
		SC n=8	PHC n=8	Rural n=16	Urban n=38	**Total N=54**	SC n=32	PHC n=31	Rural n=63	Urban n=32	**Total N=95**	SC n=2	PHC n=4	Rural n=6	Urban n=30	**Total N=36**
1	NAP and VAP related IEC was received															
	a) Yes	25	63	44	58	**54**	78	77	78	84	**80**	50	50	50	60	**58**
	b) No	75	37	56	42	**46**	22	23	22	16	**20**	50	50	50	40	**42**
2	Information was related to															
	a) Dose and frequency	25	63	44	50	**48**	72	68	70	78	**73**	0	0	0	0	**0**
	b) Benefit/s	13	13	13	47	**37**	38	55	46	53	**48**	1	2	3	18	**21**

4. Monitoring of receipt and consumption of iron supplement

a) Small tablets : Table 53 shows that monitoring of receipt and consumption by functionaries was reported by mothers of only a negligible number of child beneficiaries. These belonged to the urban area and reported that the health worker had enquired about the regular intake of supplement when they had gone to collect the second dose of the supplement at a central place in the field area.

b) Large tablets : As compared to small tablets, relatively greater number of women beneficiaries (23%), belonging to both urban and rural areas, reported that the health workers had enquired about the receipt and consumption of the supplement. A majority of the beneficiaries stated that the enquiry had been made at the health centre or hospital mostly at the time of receipt of second dose. Only 4 percent beneficiaries (all urban) reported that the enquiry had been made when health worker made home visits.

The monitoring consisted of asking about intake ("Goli khati ho ki nahin") or of advise to consume the supplement regularly ("Baraabar khaana"). However, the beneficiaries added that they told the worker that they had consumed the supplement even when they had not eaten or thrown away the supplement. Further, some beneficiaries stated that they were given the next offtake even though they informed the worker that several tablets were remaining with them from the first offtake.

5. Perceptions of receivers regarding benefits and side effects of supplements :

a) Small tablets : Table 54 shows that the mothers of a majority of the receivers of small tablets did not perceive the supplement as beneficial. Of the few who did, the urban mothers stated that the supplement was for good health and cured giddiness while the rural mothers stated that

- "Roti nahin bhati thi, roti khane laga" (The supplement increased appetite)
- "Pet saaf ho jaata tha" (Improved bowel movement)
- "Ankh aayi thi, soojan utar gayi" (Cured eye diseases).

Similarly, a majority of the mothers reported that their children did not experience any side effect after taking the supplement. Of the remaining, more were rural mothers and they reported that the child suffered from vomiting, diarrhoea or cough after taking the supplement while the urban mothers reported occurrence of vomiting. Mothers of three-fourths of the beneficiaries stopped giving the supplement to their children while some sought advise of the health functionaries.

b) Large tablets : From among the receivers, only 23 percent of the women beneficiaries perceived the supplement as beneficial (Table 55). A majority of these were rural beneficiaries. The benefits reported by the beneficiaries included:

TABLE 53. MONITORING OF RECEIPT AND CONSUMPTION OF IRON SUPPLEMENT

S No	Monitoring	SC	PHC	Rural	Urban	Total
		Percent Responses				
I.	Small iron	n=8	n=8	n=16	n=38	N=54
1.	Health worker enquired about receipt and consumption					
	a) Yes	0	0	0	5	4
	b) No	100	100	100	95	96
2.	Enquiry was made at					
	a) Central place in field area	0	0	0	100	100
3.	Type of monitoring					
	a) Asked about intake	0	0	0	100	100
II.	Large iron	n=32	n=31	n=63	n=32	N=95
1.	Health worker enquired about receipt and consumption					
	a) Yes	25	23	24	22	23
	b) No	75	77	76	78	77
2.	Enquiry was made at					
	a) Home	0	0	0	14	4
	b) Health centre in the area	37	86	60	14	46
	c) Any other health centre/ hospital	63	14	40	58	46
	d) Centre place in the field area	0	0	0	14	4
3.	Type of monitoring					
	a) Asked about intake	100	100	100	86	95
	b) Advised to consume supplement regularly	0	0	0	14	5

TABLE 54. RECEIVERS' PERCEPTIONS REGARDING BENEFITS AND SIDE EFFECTS OF SMALL IRON TABLETS

S No	Perceptions	SC n=6	PHC n=7	Rural n=13	Urban n=32	Total N=45
		Percent Responses				
1.	Supplement is beneficial					
	a) Yes	33	0	15	6	9
	b) No	67	100	85	94	91
2.	Benefits observed*					
	a) Good health	0	0	0	50	25
	b) Cure of giddiness	0	0	0	50	25
	c) Increase in appetite	50	0	50	0	25
	d) Good bowel movement	50	0	50	0	25
	e) Cure of eye diseases	50	0	50	0	25
3.	Side effects experienced					
	a) Yes	33	14	23	3	9
	b) No	67	86	77	97	91
4.	Types of side effects					
	a) Vomiting	50	100	67	100	75
	b) Diarrhoea	50	0	33	0	25
	c) Cough	50	0	33	0	25
5.	Action taken on occurrence of side effects					
	a) Discontinued the supplement	50	100	67	100	75
	b) Sought advise of health functionaries	50	0	33	0	25

* Multiple responses.

TABLE 55. RECEIVERS' PERCEPTIONS REGARDING BENEFITS AND SIDE EFFECTS OF LARGE IRON TABLETS

S No	Perceptions	SC n=32	PHC n=29	Rural n=61	Urban n=31	Total N=92
		Percent Responses				
1.	Supplement is beneficial					
	a) Yes	22	31	26	16	23
	b) No	78	69	74	84	77
2.	Benefits observed					
	a) Gave strength	14	33	25	20	29
	b) Cured pain in limbs	71	0	31	10	29
	c) Cured giddiness	14	33	25	20	29
	d) Cured stomach-ache	14	11	13	0	10
	e) Others	14	44	31	20	33
3.	Side effects experienced					
	a) Yes	34	24	30	32	30
	b) No	66	76	70	68	70
4.	Types of side effects*					
	a) Nausea	18	57	33	70	46
	b) Vomiting	55	29	44	20	36
	c) Giddiness	18	0	6	20	11
	d) Others	54	14	39	20	32
5.	Action taken on occurrence of side effects*					
	a) Discontinued the supplement	64	57	61	60	61
	b) Continued supplement	27	29	28	30	29
	c) Sought advice of health functionaries	9	14	11	40	21

* Multiple responses.

. "Kamjori nahin lagti" (They no longer felt weak).
. "Haath pair mein aaram lagta hai" (Pain in limbs ceased).
. They stopped feeling giddy (Chakkar nahin aate).

A few beneficiaries reported benefits such as relief in conditions of fever; reduction in tiredness, leucorrhoea, burning in chest; and improvement in appetite and health.

Side effects were experienced by only 30 percent of the receivers in both urban and rural areas. More urban than rural beneficiaries mentioned nausea ("Jee michalana/Ghabrahat") while more rural beneficiaries mentioned vomiting ("Ukaai/Ulti aati thi roj"). The other side effects included giddiness, pain and burning during urination, frequent urination, loss of appetite, cough and feeling warm'. Of those who experienced side effects, a majority of the women in both urban and rural areas discontinued taking the supplement while the remaining continued the supplement, sought advise of health functionaries or tried home remedies like taking the supplement with milk.

c) Vitamin A solution : The perceptions of mothers of beneficiaries of vitamin A solution regarding benefits and side effects of vitamin A solution are presented in Table 56. Mothers of only 14 percent of the beneficiaries who received vitamin A, perceived the supplement as beneficial. The benefits mentioned by them included

. "Tanduroosti rahti hai" (Maintenance of good health)
. "Ankhon mein safed hua tha, mit gaya, Ankh mein kichad band ho gaya" (Cure of white spots and stickiness in eyes)
. "Ankh acchi ho jaati hai" (Improvement in condition of eyes)

An interesting response was "It is meant to be beneficial as it is given to children" ("Fayde ki rahti hai, bacchon ko pilaate hain"). None of the mothers reported the occurrence of side effects.

6. Discontinuation of supplements by beneficiaries : As Table 57 shows, about two-thirds of the child and women beneficiaries (more rural than urban) discontinued the supplement before completion of the full course of 100 tablets primarily because they consumed the tablets given to them and they were not aware that more tablets had to be taken. The reasons given by the remaining beneficiaries for discontinuing were the occurrence of side effects, and not perceiving them to be beneficial. Some women mentioned that they delivered before all the tablets given to them could be consumed, so they threw away the remaining tablets. Some of the other reasons given by women for discontinuation were :

* "Goli khana yaad nahin rahta" (Do not remember to eat tablets).
* "Aspataal door hai isliye doobaara goli lene nahin gayi" (Hospital is far off, so did not go to take tablets in the subsequent month).
* "Kuch Khayi, Kuch phenki. Kaun khaaye itni goli" (I ate some, threw away the rest. Who will eat so many tablets?)

TABLE 56. RECEIVERS' PERCEPTIONS REGARDING BENEFITS AND SIDE EFFECTS OF VITAMIN A SUPPLEMENT

S No	Perceptions	SC n=2	PHC n=4	Rural n=6	Urban n=30	Total N=36
		Percent Responses				
1.	Supplement is beneficial					
	a) Yes	100	0	33	10	**14**
	b) No	0	100	67	83	**81**
	c) Do not know	0	0	0	7	**5**
2.	Benefits observed					
	a) Cure of eye problems or eye diseases	100	0	100	33	**60**
	b) Maintenance of good health	0	0	0	33	**20**
	c) Improvement in condition of eyes	0	0	0	33	**20**
3.	Side effects experienced					
	a) No	100	100	100	100	**100**

TABLE 57. DISCONTINUATION OF IRON SUPPLEMENTS BY RECEIVERS

S No	Response	SC	PHC	Rural	Urban	Total
		Percent Responses				
1.	Small iron tablets were discontinued before full course	n=8	n=8	n=16	n=38	N=54
	a) Yes	50	88	69	42	**50**
	b) No	25	0	12	42	**33**
	c) Not applicable	25	12	19	16	**17**
2.	Large iron tablets were discontinued	n=32	n=31	n=63	n=32	N=95
	a) Yes	84	61	73	47	**64**
	b) No	16	32	24	50	**33**
	c) Not applicable	0	7	3	3	**3**
3.	Vitamin A solution was discontinued	n=2	n=4	n=6	n=30	N=36
	a) Yes	100	75	83	30	**39**
	b) No	0	0	0	20	**17**
	c) Not applicable	0	25	17	50	**44**

* "Kharaab hone lagi, geeli ho gayi, to phinka gavi" (Threw away tablets because they were spoilt).
* "Goli khatam ho gayi" (Was told at PHC that iron tablets were over).

Vitamin A solution : Among the children eligible for the next dose, more than one-third had discontinued the supplement after one or more doses (more rural than urban). The reason given by mothers of both rural and urban children was that they were not aware of the duration of supplementation and that the supplement has to be taken every six months till the time child reaches 5 years of age. However, mother of one beneficiary mentioned that when she took her child for the second time for vitamin A to the PHC, the supplement was not available (Dava nahin thi').

II. HEMOGLOBIN LEVELS AND PREVALENCE OF ANEMIA IN PREGNANT AND LACTATING WOMEN AND PRESCHOOL CHILDREN

1. Mean hemoglobin levels of pregnant and lactating women and preschool children in rural and urban Indore : Table 58 presents the hemoglobin (Hb) profile of the beneficiary sample in urban and rural areas of Indore. The lactating women had relatively higher mean Hb levels (11.0 g/dl) than the pregnant women (9.9 g/dl) or preschool children (9.8 g/dl). In all three groups, the urban beneficiaries had lower Hb levels than the rural counterparts though the difference was significant only in preschool children. Within the rural sample, the SC area lactating women and preschoolers had higher Hb levels than the PHC area counterparts while it was the opposite in case of pregnant women.

For the subsequent Tables which present the Hb profile of women beneficiaries by age, education and duration of pregnancy or lactation; and compare data of receivers (of vitamin A and iron) with non-receivers, Hb values of only those beneficiaries were analysed who responded to the interview schedule on "Utilization of Iron and Vitamin A Supplements".

2. Mean hemoglobin levels and prevalence of anemia in pregnant women in relation to age , education and duration of pregnancy : The mean hemoglobin (Hb) level of pregnant women was found to be the lowest in the youngest women (20 years) (Table 59). The urban pregnant women had lower Hb levels in all the age groups as compared to their rural counterparts. Similarly, the prevalence of anemia (Hb 11 g/dl) was highest in the youngest women (20 years). As age increased from 20 to 30 years, the prevalence of anemia decreased. No agewise trend was clear as regards urban-rural differences in the prevalence of anemia (Figure 15).

Table 59 further shows that non-literate pregnant women had lower mean Hb level as compared to literate women; however the

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* In interpreting data on agewise trends in Hb levels and prevalence of anemia, the age category of 30 years has not been considered as only one woman in the sample belonged to this age group.

TABLE 58. MEAN HEMOGLOBIN LEVELS OF PREGNANT AND LACTATING WOMEN AND PRESCHOOL CHILDREN IN RURAL AND URBAN INDORE

S No	Item	Rural Mean± SE	Rural Range	Urban Mean± SE	Urban Range	Total Mean± SE	Total Range	t' value Rural Vs Urban
		n=29						
1.	Pregnant women	10.2 ±.22	7.1-13.3	9.8 ±.28	5.7-12.3	9.9 ±.20	5.7-13.3	1.21 NS
2.	Lactating women	11.3 ±.17	6.4-15.6	10.9 ±.25	6.6-12.4	11.0 ±.16	6.4-15.6	1.41 NS
3.	Preschool children	10.2 ±.16	5.8-17.0	9.5 ±.16	5.7-12.1	9.8 ±.15	5.7-17.0	3.50*
	Total	n=222		n=131		N=353		

* Significant

NS : Non-significant

TABLE 59. MEAN HEMOGLOBIN LEVELS OF PREGNANT WOMEN IN RELATION TO AGE, EDUCATION AND DURATION OF PREGNANCY

S No	Item	Rural n=28 Mean± SE	Rural n=28 Range	Urban n=28 Mean± SE	Urban n=28 Range	Total N=56 Mean± SE	Total N=56 Range
1.	Age group (years)						
a)	≤20	10.0 ±0.2	8.7-10.9	9.6 ±0.6	5.7-11.6	9.8 ±0.2	5.7-11.6
b)	21 - 25	10.2 ±0.5	7.1-12.1	9.8 ±0.4	7.1-12.3	10.0 ±0.3	7.1-12.3
c)	26 - 30	13.3 ±0.0	13.3-13.3	10.6 ±0.7	9.9-11.2	11.5 ±1.0	9.9-13.3
d)	> 30	N.A.	N.A.	10.7 ±0	10.7-10.7	10.7 0	10.7-10.7
2.	Educational level						
a)	Non-literate	10.3 ±0.3	7.1-13.3	9.4 ±0.3	7.1-11.1	9.9 ±0.2	7.1-13.3
b)	I-V Standard	9.5 ±0.4	8.7-10.1	10.2 ±0.6	5.7-12.3	10.1 ±0.5	5.7-12.3
c)	VI-XII Standard	10.3 ±0.4	9.8-11.5	10.1 ±0.5	9.0-11.6	10.2 ±0.3	9.0-11.6
3.	Duration of pregnancy (months)						
a)	≤ 3	9.8 ±0.7	8.7-11.0	10.4 ±0.4	8.6-11.6	10.3 ±0.3	8.6-11.6
b)	4 - 6	10.1 ±0.2	9.0-11.5	9.0 ±0.5	5.7-10.8	9.6 ±0.3	5.7-11.5
c)	7 - 9	10.4 ±0.5	7.1-13.3	10.2 ±0.4	7.5-12.3	10.3 ±0.3	7.1-13.3

N.A. : Not available as not in sample.

difference was marginal. The urban non-literates had lower mean Hb levels than their rural counterparts. The prevalence of anemia was similarly higher in non-literates as compared to literates (Figure 17). No clear urban-rural trends were seen with respect to prevalence of anemia in relation to education received. Within the rural women, no discernible trend was evident among SC and PHC women.

With respect to the mean Hb levels in the three trimesters of pregnancy, the pregnant women in the IInd trimester had lower mean Hb levels than those in Ist or IIIrd trimester and similarly also showed the highest prevalence of anemia (Table 59 and Figure 19). In the Ist trimester of pregnancy, the mean Hb level of urban pregnant women was higher and prevalence of anemia was lower as compared to the r rural counterparts. In the IInd and IIIrd trimester, urban women tended to have lower Hb levels and higher prevalence of anemia than the rural counterparts.

3. Mean hemoglobin levels and prevalence of anemia in lactating women in relation to age, education and duration of lactation : There was no agewise trend in the mean hemoglobin (Hb) levels of lactating women in different age groups (Table 60) nor in the percent prevalence of anemia (Figure 16). The urban women in all the age groups had lower mean Hb levels than their rural counterparts. While the prevalence of anemia was higher in urban women in age groups 20 years and 21-25 years as compared to their rural counterparts, this was not so in the 26-30 years age group. Similarly, the level of education also did not appear to affect the mean Hb level or the percent prevalence of anemia. The prevalence of anemia was higher in urban non-literates and in those who had studied upto primary school level as compared to their rural counterparts (Figure 18).

As the duration of lactation increased, the mean Hb level increased and the prevalence of anemia decreased (Table 60 and Figure 20). For example, the mean Hb level was lowest and the prevalence of anemia highest in the lactating women with duration of lactation 3 months. With respect to urban-rural differences, the mean Hb levels were higher and the prevalence of anemia lower in rural women in the categories of 3 months and 7-9 months of lactation as compared to their urban counterparts. While the mean Hb levels of urban and rural women with duration of lactation 4-6 months and 9 months were equal, the prevalence of anemia was higher in rural as compared to urban women.

4. Mean hemoglobin levels and prevalence of anemia in children and women - Receivers and non-receivers of iron supplements : Tables 61 to 63 depict the mean hemoglobin (Hb) levels and the prevalence of anemia in children 1-6 years of age and pregnant and lactating women in urban and rural Indore among receivers and non-receivers of iron supplements. These children and women were selected from UFWC (urban) and PHC and SC (rural) areas as described in the Chapter on Materials and Methods.

TABLE 60. MEAN HEMOGLOBIN LEVELS OF LACTATING WOMEN IN RELATION TO AGE, EDUCATION AND DURATION OF LACTATION

S No	Item	Rural n=76 Mean± SE	Rural n=76 Range	Urban n=25 Mean± SE	Urban n=25 Range	Total N=101 Mean± SE	Total N=101 Range
1.	Age group (years)						
a)	≤20	11.1± 0.3	6.4-15.6	10.4± 0.4	8.6-12.4	10.9± 0.3	6.4-15.6
b)	21 - 25	11.6± 0.2	9.7-13.4	11.1± 0.4	6.6-12.4	11.4± 0.2	6.6-13.4
c)	26 - 30	11.0± 0.5	8.5-12.6	10.9± 0.4	10.0-11.4	11.0± 0.4	8.5-12.6
d)	>30	10.8± 0.4	10.0-11.3	N.A.	N.A.	10.8± 0.4	10.0-11.3
2.	Educational level						
a)	Non-literate	11.3± 0.2	6.4-13.5	10.8± 0.4	6.6-12.4	11.2± 0.2	6.4-13.5
b)	I-V Standard	9.9± 1.0	6.4-12.0	10.6± 0.4	9.4-12.4	10.3± 0.5	6.4-12.4
c)	VI-XII Standard	12.0± 0.6	9.6-15.6	11.9± 0.4	11.2-12.4	12.0± 0.5	9.6-15.6
3.	Duration of lactation (months)						
a)	≤ 3	10.9± 0.3	6.4-12.9	10.3± 0.5	6.6-11.9	10.7± 0.3	6.4-12.9
b)	4 - 6	11.3± 0.3	6.4-13.4	11.3± 0.4	9.6-12.4	11.3± 0.2	6.4-13.4
c)	7 - 9	11.7± 0.5	9.6-15.6	10.8± 0.7	8.6-12.4	11.5± 0.4	8.6-15.6
d)	>9	11.9± 0.4	10.0-13.0	11.9± 0.5	11.4-12.4	11.9± 0.3	10.0-13.0

N.A. : Not available as not in sample.

FIG.15 PREVALENCE OF ANAEMIA IN PREGNANT WOMEN OF DIFFERENT AGE GROUPS

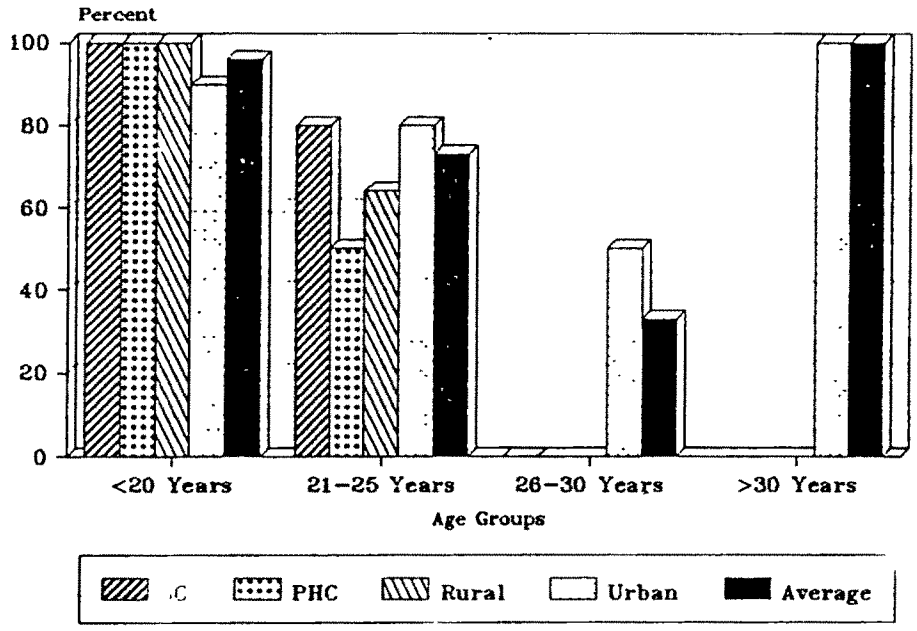


FIG16 PREVALENCE OF ANAEMIA IN LACTATING WOMEN OF DIFFERENT AGE GROUPS

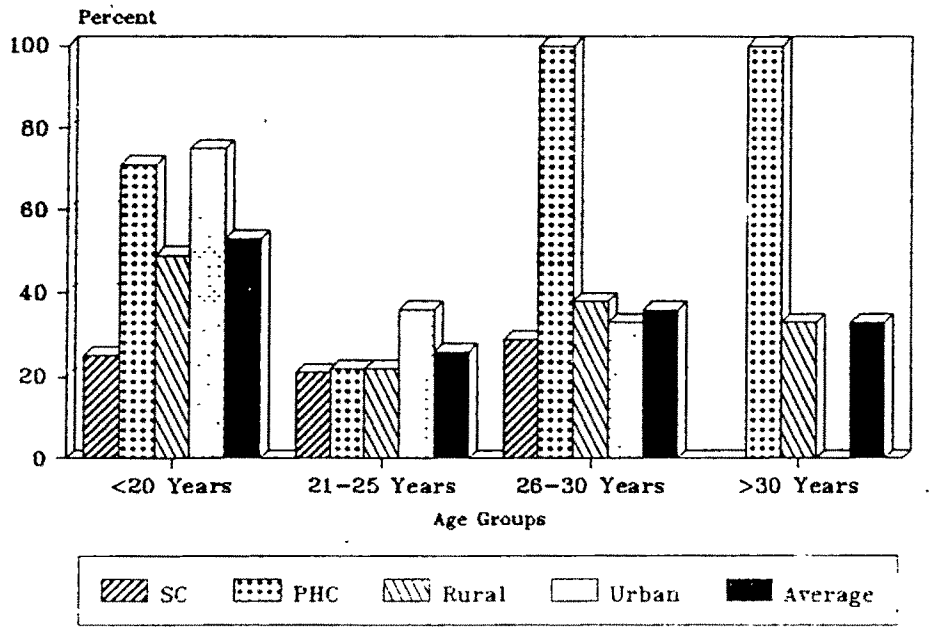


FIG.17 PREVALENCE OF ANAEMIA IN PREGNANT WOMEN IN RELATION TO THEIR EDUCATIONAL LEVEL

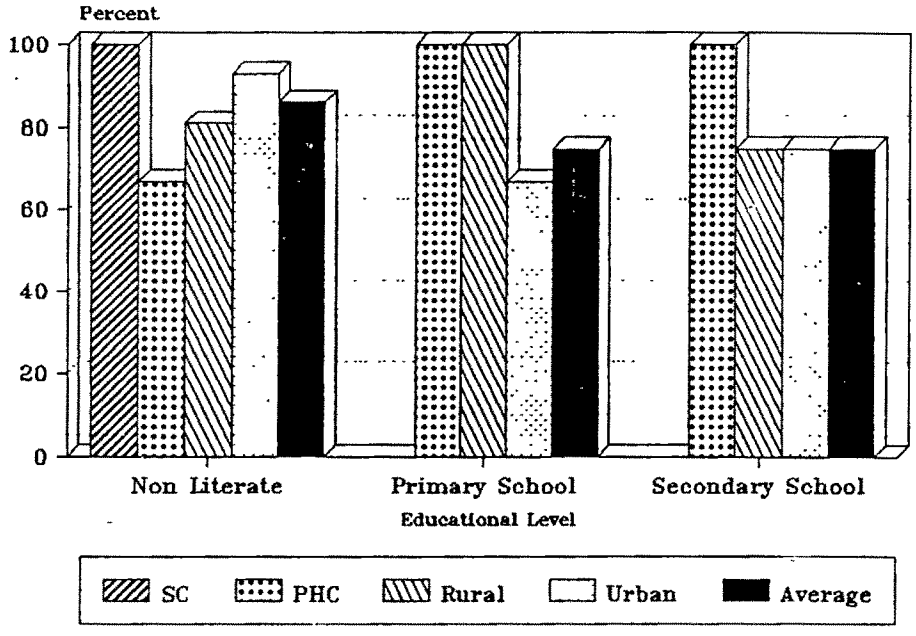


FIG.18 PREVALENCE OF ANAEMIA IN LACTATING WOMEN IN RELATION TO THEIR EDUCATIONAL LEVEL

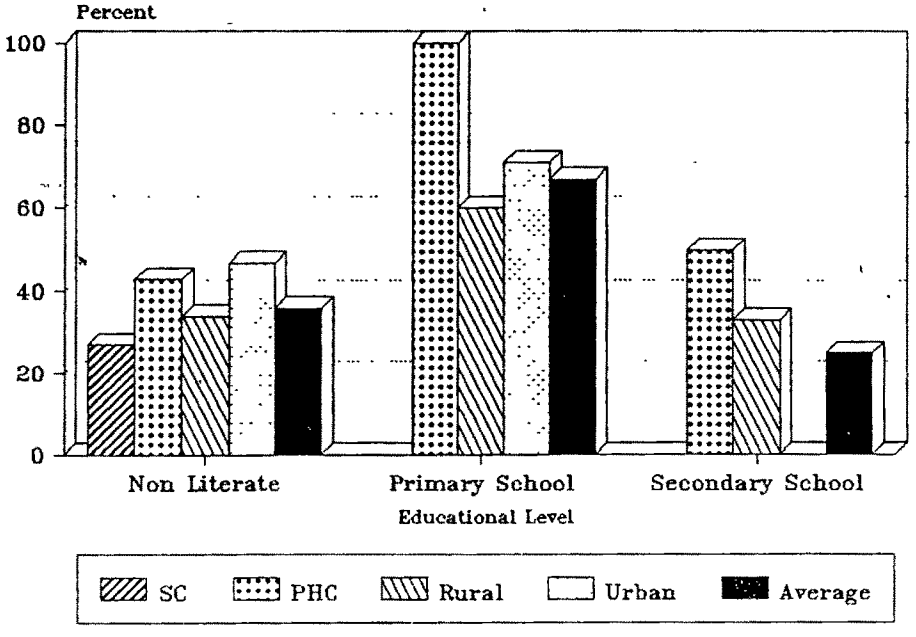


FIG.19 PREVALENCE OF ANAEMIA IN RELATION TO DURATION OF PREGNANCY

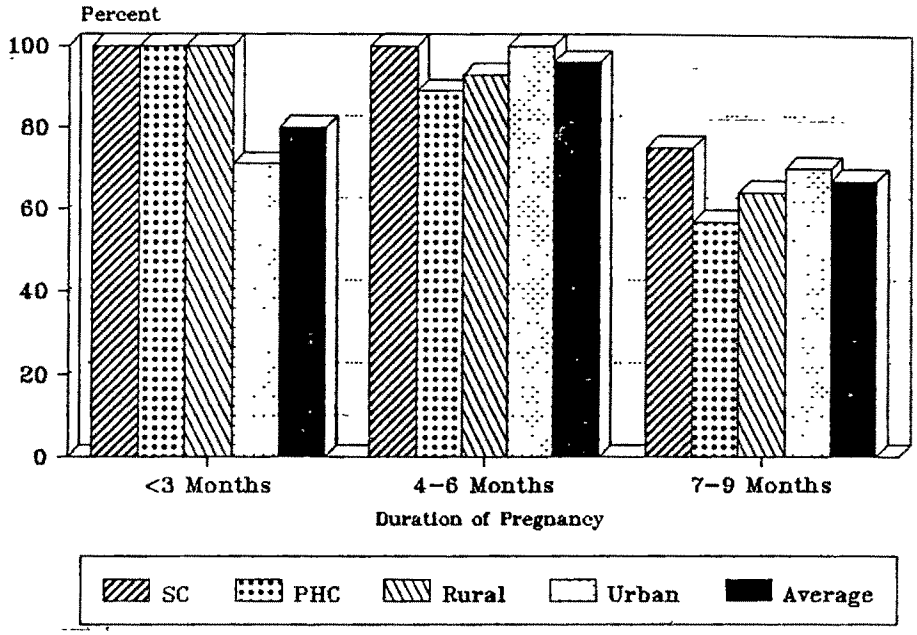
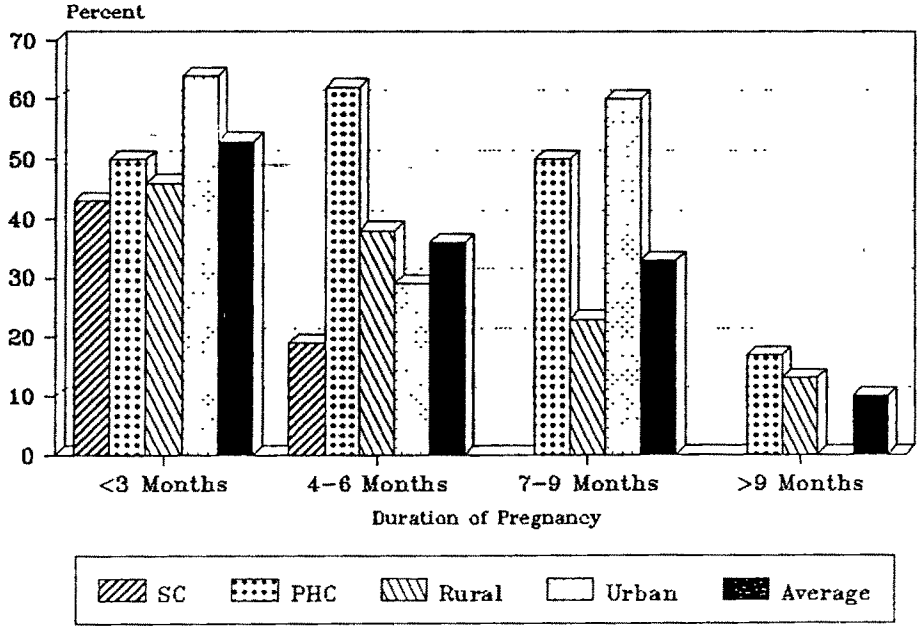


FIG.20 PREVALENCE OF ANAEMIA IN RELATION TO DURATION OF LACTATION



a) Pregnant women : The mean Hb level of pregnant women in the sample was 10.0 g/dl (Table 61). A majority of the women (82%) were anemic (Hb 11 g/dl) and 7 percent were severely anemic (Hb 8 g/dl).

Mean Hb level was lower and prevalence of anemia was higher in the urban as compared to the rural sample though these differences were statistically not significant. The prevalence of severe anemia was also higher in the urban than in the rural sample (10.7% vs 3.6%).

The receivers had higher mean Hb level as compared to non-receivers and the prevalence of anemia was lower in the receivers than in the non-receivers although these differences were not statistically significant. The prevalence of severe anemia was higher in the receivers as compared to non-receivers (41.7% vs 12.5%) perhaps because they availed of iron supplements more than those who were less anemic.

Within the non-receiver group as well as within the receiver group, there was no significant difference in the mean Hb levels of rural vs urban pregnant women. But among the receivers, the prevalence of anemia was lower in rural than in urban pregnant women whereas among the non-receivers, the prevalence of anemia was higher in rural women as compared to their urban counterparts, perhaps because the rural women beneficiaries benefitted more from iron supplements than did urban women. The differences however, were statistically non significant. Among the non receivers, the prevalence of severe anemia was higher in urban women as compared to rural women (21.4% vs 5.6%). Not a single receiver was severely anemic in either rural or urban area.

Within the rural sample, the receivers had higher mean Hb level than non-receivers though this difference was not statistically significant. The prevalence of anemia was significantly higher in the non-receivers as compared to receivers. While 5.6 percent of the non-receivers had severe anemia, none was severely anemic among the receivers.

Within the urban sample, the receivers had higher mean Hb level as compared to non receivers but this difference was not statistically significant. Surprisingly, the prevalence of anemia was higher in the receivers than in non-receivers though, again this difference was not statistically significant. The prevalence of severe anemia was 21.4 percent in the non-receivers while none was severely anemic among the receivers.

b) Lactating women : The mean Hb level of lactating women in the sample was 11.2 g/dl (Table 62). Thirty nine percent of the women were anemic (Hb 11 g/dl) while only 3 percent were severely anemic (Hb 8 g/dl). The mean Hb level was lower and the prevalence of anemia was higher in the urban as compared to rural areas, though the differences were not statistically significant. The prevalence of severe anemia was also higher in the urban as compared to the rural sample (4.0% vs 2.6%).

TABLE 61. MEAN HEMOGLOBIN LEVELS AND PREVALENCE OF ANEMIA IN PREGNANT WOMEN

S No	Item	Rural n=28 Mean± SE	Rural n=28 Range	Urban n=28 Mean± SE	Urban n=28 Range	Total N=56 Mean± SE	Total N=56 Range	t' value (Rural Vs Urban)
A.	Hemoglobin levels							
1	Non-receivers[1]	9.9± .24	7.1-11.5	9.5± .47	5.7-11.6	9.7± .25	5.7-11.6	0.7580^{NS}
2	Receivers[2]	11.0± .46	8.7-13.3	10.0± .31	8.1-12.3	10.4± .27	8.1-13.3	1.8027^{NS}
3	Total	10.2± .24	7.1-13.3	9.8± .28	5.7-12.3	10.0± .19	5.7-13.3	1.0848^{NS}
4	t' value (Non-receivers Vs Receivers)	2.1202^{NS}		0.8880^{NS}		1.9027^{NS}		

		n	%	n	%	N	%	Chi-square Value (R Vs U)
B.	Prevalence of anemia[3]							
1.	Non-receivers							
	a) Non-anemic	1	5.6	3	21.4	4	12.5	1.812^{NS}
	b) Anemic	17	94.4	11	78.6	28	87.5	
2.	Receivers							
	a) Non-anemic	4	40.0	2	14.3	6	25.0	2.057^{NS}
	b) Anemic	6	60.0	12	85.7	18	75.0	
3.	Total							
	a) Non-anemic	5	17.8	5	17.8	10	17.9	0.0^{NS}
	b) Anemic	23	82.2	23	82.2	46	82.2	
4.	Chi-square value (Non-receivers Vs Receivers)	4.87*		0.08^{NS}		1.46^{NS}		

1 Non-receivers : Did not receive iron supplements
2 Receivers : Received iron supplements
3 Anemia : Hb 11.0 g/dl

* Sig. : P≤0.05
NS : Non-significant

TABLE 62. MEAN HEMOGLOBIN LEVELS AND PREVALENCE OF ANEMIA IN LACTATING WOMEN

S No	Item	Rural n=76 Mean± SE	Rural n=76 Range	Urban n=25 Mean± SE	Urban n=25 Range	Total N=101 Mean± SE	Total N=101 Range	t' value (Rural Vs Urban)
A.	Hemoglobin levels							
1	Non-receivers[1]	11.1± .32	8.5-15.6	11.1± .34	10.0-12.4	11.1± .26	8.5-15.6	0.0[NS]
2	Receivers[2]	11.4± .20	6.4-13.5	10.8± .35	6.6-12.4	11.2± .18	6.4-13.5	1.4884[NS]
3	Total	11.3± .17	6.4-15.6	10.9± .27	6.6-12.4	11.2± .15	6.4-15.6	.6650[NS]
4	t' value (Non-receivers Vs Receivers)	.7951[NS]		0.6148[NS]		0.3162[NS]		

B. Prevalence of anemia[3]	n	%	n	%	N	%	Chi-square Value (R Vs U)
1. Non-receivers							
a) Non-anemic	10	43.5	4	57.1	14	46.7	.4026[NS]
b) Anemic	13	55.5	3	42.9	16	53.3	
2. Receivers							
a) Non-anemic	39	73.6	9	50.0	48	67.6	3.411[NS]
b) Anemic	14	26.4	9	50.0	23	32.4	
3. Total							
a) Non-anemic	49	64.5	13	52.0	62	61.4	1.21[NS]
b) Anemic	27	35.5	12	48.0	39	38.6	
4. Chi-square value (Non-receivers Vs Receivers)	6.35*		0.09[NS]		3.90*		

[1] Non-receivers : Did not receive iron supplements
[2] Receivers : Received iron supplements
[3] Anemia : Hb 11.0 g/dl

* Sig. : P≤0.05
NS : Non-significant

There was no significant difference in the mean Hb level of the receivers and the non-receivers. The prevalence of anemia was significantly lower in the receivers as compared to non-receivers. The prevalence of severe anemia was 4 percent in the receivers while surprisingly none was severely anemic in the non-receivers.

Within the group of non-receivers, the urban and the rural women had the same mean Hb level, though the prevalence of anemia was slightly higher in the rural sample as compared to the urban sample and this difference was not statistically significant. Not a single lactating woman was severely anemic in either urban or rural area in this group.

Within the receiver group, rural women had higher mean Hb level than urban women and anemia was also less prevalent in the rural as compared to urban sample, though these differences were statistically non-significant. The prevalence of severe anemia was similarly higher in the urban as compared to rural sample (5.6% vs 3.8%).

Within the rural sample, the mean Hb level was higher though this difference was statistically non significant. The prevalence of anemia was significantly lower in the receivers as compared to non-receivers. The prevalence of severe anemia in the receivers was 3.8 percent which was surprising considering that none of the non-receivers was severely anemic.

Within the urban sample, in contrast to the rural sample, the mean Hb level was lower and the prevalence of anemia higher in the receivers as compared to the non receivers. However, these differences were not statistically significant. Further, while none of the non-receivers was severely anemic, 5.6 percent of the receivers were severely anemic.

c) Children : The mean Hb level of children in the sample was 10.0 g/dl (Table 63). More than three-fourths of the children (77%) were anemic (Hb 11 g/dl) and 20 percent, were severely anemic. Mean Hb level was lower and prevalence of anemia was higher in the urban as compared to rural areas and these differences were statistically significant. The prevalence of severe anemia was similarly higher in urban than rural children (31% vs 12%).

Considering overall receivers and non-receivers, the mean Hb level was higher and the prevalence of anemia was lower in receivers as compared to non-receivers although these differences were not statistically significant. However, the prevalence of severe anemia was slightly more in receivers than non-receivers (20.4 vs 19.7%). One reason for this finding could be that the parents of severely anemic children might be more motivated to take iron supplements for their children or the health functionaries might be urging them to avail of the supplements. However, it is clear that the dose of supplements received was inadequate to combat severe anemia.

TABLE 63. MEAN HEMOGLOBIN LEVELS AND PREVALENCE OF ANEMIA IN PRESCHOOL CHILDREN

S No	Item	Rural n=100 Mean± SE	Rural n=100 Range	Urban n=71 Mean± SE	Urban n=71 Range	Total N=171 Mean± SE	Total N=171 Range	t' value (Rural Vs Urban)
A.	Hemoglobin levels							
1	Non-receivers[1]	10.2± 0.18	5.8-17.0	9.1± 0.28	6.3-12.1	9.9± 0.16	5.8-17.0	3.31*
2	Receivers[2]	10.4± 0.46	7.2-12.9	10.0± 0.22	6.9-11.8	10.2± 0.21	6.9-12.9	0.78NS
3	Total	10.2± 0.16	5.8-17.0	9.6± 0.18	6.3-12.1	10.0± 0.13	5.8-17.0	2.49*
4	t' value (Non-receivers Vs Receivers)	0.40NS		2.53*		1.14NS		

B.	Prevalence of anemia[3]	n	%	n	%	N	%	Chi-square Value (R Vs U)
1.	Non-receivers							
	a) Non-anemic	24	28.6	1	3.0	25	21.4	9.2*
	b) Anemic	60	71.4	32	97.0	92	78.6	
2.	Receivers							
	a) Non-anemic	8	50.0	6	15.8	14	25.9	6.9*
	b) Anemic	8	50.0	32	84.2	40	74.1	
3.	Total							
	a) Non-anemic	32	32.0	7	9.8	39	22.8	11.6*
	b) Anemic	68	68.0	64	90.2	132	77.2	
4.	Chi-square value (Non-receivers Vs Receivers)	2.84NS		3.24NS		0.44NS		

1 Non-receivers : Did not receive iron supplements
2 Receivers : Received iron supplements
3 Anemia : Hb 11.0 g/dl

* Sig. : P≤0.05
NS : Non-significant

Within the non-receivers as well as within the receivers, the rural children had higher Hb levels than urban children, though this difference was significant only in the non-receivers. Similarly, the prevalence of anemia was significantly lower in rural children as compared to urban children among the non-receivers as well as receivers, though the difference was more in the non-receivers. The prevalence of severe anemia was higher in urban children as compared to rural children in both non receivers (42.4% vs 10.7%) as well as receivers (21.0% vs 18.7%).

These differences are seen perhaps because the urban children were more anemic to begin with and thus benefitted more from the iron supplements; thus the group of urban receivers could narrow the gap in their Hb levels vis-a-vis the rural counterparts.

Table 63 further shows that within the rural sample, the receivers had higher mean Hb level and lower prevalence of anemia than non receivers but these differences were not statistically significant. However, the prevalence of severe anemia was higher in receivers than non receivers (19% vs 11%).

Within the urban sample, the receivers had significantly higher mean Hb level than non receivers. The prevalence of anemia was lower in the receivers than in non-receivers though the difference was statistically non significant. Unlike the rural area, the prevalence of severe anemia was higher in non receivers than receivers (42% vs 21%).

Summing up, the impact of iron supplements on Hb levels in the three beneficiary groups shows that

a) The receivers of iron supplements had a better Hb profile than the non-receivers, with the child beneficiaries showing a more significant impact than women beneficiaries.

b) More urban beneficiaries had lower Hb levels and a higher prevalence of anemia than their rural counterparts. This may be one reason why urban child beneficiaries benefitted more from iron supplements than their rural counterparts though this was not observed in the women beneficiaries.

III. PREVALENCE OF BITOT'S SPOTS AMONG PRESCHOOL CHILDREN

As seen in Table 64, a prevalence figure of 4 percent was found in the study sample which is much higher than the cut off point of 0.5 percent indicative of public health significance of the problem (WHO 1982). The prevalence was higher in urban area than in the rural area. The receivers had a lower prevalence than the non-receivers; however, no significant difference was observed between the urban and rural, and receiver and non-receiver groups.

TABLE 64. PREVALENCE OF BITOT'S SPOTS AMONG PRESCHOOL CHILDREN

S No	Prevalence	Rural n=98	%	Urban n=93	%	Total N=191	%	Chi-square value
1	Bitot's spots are present							
	a) Yes	3	3.0	5	5.4	8	4.2	0.635NS
	b) No	95	97.0	88	94.6	183	95.8	
2	Children with Bitot's spots							
	a) Non-receivers[1]	3	100.0	4	80.0	7	77.5	0.685NS
	b) Receivers[2]	0	0	1	20.0	1	12.5	

[1] Non-receivers : Did not receive vitamin A supplement

[2] Receivers : Received vitamin A supplement

NS : Non-significant

Discussion

Utilization of iron and vitamin A supplements by beneficiaries :

The data of the present study revealed that the main bottleneck which hindered the utilization of iron and vitamin A supplements by beneficiaries was their extremely infrequent contact with functionaries for receiving the supplement. Further, the contacts made (eg. at the health centre) were not made use of by the functionaries to distribute the supplements. The coverage of beneficiaries for vitamin A was extremely poor (21%), followed by small iron (43%) and large iron (61%). Refusal to accept the supplement as well as discontinuation due to side effects was negligible; the discontinuation occurred primarily on account of non-receipt of the subsequent dose. The virtual absence of IEC was again highlighted from the beneficiary data which revealed that the beneficiaries were not convinced of the benefits.

The knowledge of beneficiaries about anemia in 11 states and about VAP in 9 states of India was similarly found to be much lower than the desired level. These studies showed that the educational component of NAP and VAP had not received adequate attention (ICMR 1989, Vijayaraghavan and Pralhad Rao 1978).

The coverage of beneficiaries found in the ICMR (1989) study was found to be a negligible 0.8 percent for preschool children, 11.5 percent for pregnant women and 26 percent for lactating women in the rural areas in the 11 states. These coverage figures were much lower than those found in the present study (16, 36 and 70% respectively). In another study conducted in seven states in India, the coverage of 69 percent of pregnant women was reported which is similar to that found in the present study (Operations Research Group 1991a). The coverage of rural preschool child beneficiaries under VAP in this study was 6 percent which was considerably lower than that found in another study (20% to 87%) in 7 states of India (Vijayaraghavan and Pralhad Rao 1978). However, rather than a true difference, these different coverage figures between studies may be due to different sample sizes and criteria adopted for defining coverage.

Non-compliance has been reported to be a major problem in most anemia control programmes in the world in a review of several studies by Morrow (1990). Different reasons have been given for poor compliance (adherence) by different investigators. Side effects have been associated with only a small proportion of dropouts from supplementation programmes; supply and distribution constraints tend to be more important in causing lack of adherence. Further, iron supplementation requires regular contact with those in need of the service, which is commonly lacking in areas most affected by anemia (ACC/SCN 1991). Gove (1987) also reported that high rates of iron tablet use in Somalia were linked with receipt of iron by women during home visits of traditional birth attendants. In the present study, also, functionary-beneficiary contacts were few.

Poor awareness of benefits of iron supplementation and prevalence of misconceptions related to it among beneficiaries

have been some of the factors resulting in non-compliance in Thailand (Valyasevi 1988). According to Nyazema (1984), better drug compliance can be achieved through health education.

It has been reported that routine intake of as little as 15-30 gms of dark green leafy vegetables per day may extend to several months the protective period afforded by a single large dose of vitamin A (West and Sommer 1987). Thus, the role of IEC or nutrition education of beneficiaries assumes greater importance.

According to Vijayaraghavan and Reddy (1987), the lack of awareness of the community regarding VAP is one of the weakest links of the programme in India and it is because the peripheral workers do not make any effort to educate the mothers about VAP and the other measures to improve vitamin A status.

Impact : The prevalence of anemia and Bitot's spots was extremely high in the beneficiary groups of this study, especially in pregnant women and preschool children. The prevalence of both the deficiencies was found to be higher in urban as compared to rural area. At the existing level of supplementation, the receivers of supplements were found to have lower prevalence of anemia as compared to non-receivers of supplements. However, even the receivers had a high prevalence of anemia, suggesting the inadequacy of supplementation.

In the nationwide evaluation of NAP by ICMR (1989), it was concluded that the programme did not make any impact on prevalence of anemia, which was similar in the supplemented group of pregnant women (88%) and the unsupplemented group (87%).

It has been pointed out by West and Sommer (1987) that the effectiveness of universal distribution in preventing mild xerophthalmia is directly related to coverage. A 75 to 80 percent reduction in prevalence is associated with atleast 65 percent coverage while no measurable impact on xerophthalmia has been observed with less than 25 percent coverage. Hence, in view of the above, a high prevalence of Bitot's spots (4%) found in the present study was not surprising where the coverage was 21 percent.

SECTION C : THE METHODOLOGICAL PERSPECTIVE

The present study was an integration of both qualitative and quantitative research tools so as to obtain an in-depth and holistic picture of selected management components as they pertain to NAP and VAP within the context of overall PHC services in Indore. The major strength of the study lies in its multi-method approach, in its social science orientation towards the assessment of national nutrition programmes and in its combination of longitudinal and cross-sectional experimental designs.

Table 65 elaborates on the objectives of the use of the qualitative and quantitative methods which were used in the study, the strengths and limitations of these methods as they

TABLE 65. STRENGTHS AND LIMITATIONS OF MAJOR QUALITATIVE AND QUANTITATIVE METHODS USED IN THE STUDY

S No	Type of Method	Objectives	Strengths	Limitations	Comments
1	Observations	1. To obtain first hand information about management of NAP and VAP and the various factors affecting the management 2. To validate data obtained from other methods especially interviews	1. Reliable and rich contextual information obtained regarding management of NAP and VAP in terms of a) relative allocation of manpower and material resources to FP and immunization vis-a-vis NAP, VAP and other programmes b) work organization and time management of functionaries c) Attitudes of functionaries towards NAP and VAP as revealed through their comments and interactions 2. Validation of interview and other data possible; especially the gap between reported and observed practices highlighted. 3. Designing and use of other data collection tools facilitated. 4. Use of subsequent methods and interpretation of findings facilitated.	1. Patience, preserverence and concentration to face trying field situations for long periods required in the investigator.	1. Planning for observations should include buffer periods to account for holidays and unexpected leave taken by subjects. 2. There is a trade-off between time expenditure on uncooperative subjects and its implications on sampling design if such subjects are removed from the study.
2	Scenarios	1. To assess the knowledge of functionaries related to NAP and VAP. 2. To assess their practices related to distribution of iron and vitamin A supplements under conditions of short supply.	1. Provided "true" answers rather than socially desirable answers regarding coping with inadequate supplies. 2. Local terms describing signs, symptoms and treatment of iron and vitamin A deficiencies obtained.	1. Time required for administering scenarios and for recording of information. 2. If not properly constructed, scenarios may not sound convincing or authentic.	1. Scenarios in this study could have been better constructed to sound more authentic. 2. Requesting responses to written scenarios may be tried out.

Table 65 contd..

S No	Type of Method	Objectives	Strengths	Limitations	Comments
			3. An interesting way of eliciting information.	3. Categorization of responses sometimes difficult.	
3	Narratives	1. To know whether functionaries had a major problem with the community in the past and the programme with which the problem was associated (eg. FP, Immunization, NAP, VAP or others).	1. Real field situations highlighted. 2. Relative priority of various PHC programmes indicated as those programmes which figured repeatedly in the problems faced were likely to have received more attention.	1. Time and patience required on the part of investigator to enable informant to remember a past event. 2. Familiarity with field conditions and the programmes necessary to accurately record the event as narrated.	1. Conscious effort needs to be made to record and interpret the narrative as faithfully as possible reflecting the perceptions of the informants and the biases of the investigator.
4	Ranking	1. To assess the perceptions of functionaries regarding the relative importance, time expenditure and level of difficulty faced in the implementation of various programmes especially NAP and VAP vis-a-vis other programmes.	1. Clear and precise information obtained with very little investment of time. 2. Activity based, hence easier and more interesting to administer than interview schedules.	1. Unfamiliar to the functionaries hence had to be explained in great detail. 2. The question Explain reasons behind each ranking' was redundant as informants could not elaborate on the reasons behind the rankings that they gave.	1. It is advisable to use less than 10 cards, preferably 7 or fewer, in this exercise.
5	Structured domain interviews	1. To collect precise information about the management of NAP and VAP and to compare it with observational data.	1. Yielded quantitative data which was relatively easy to record, analyse and interpret; at the same time qualitative data such as explanations and remarks of functionaries also obtained.	1. Yielded information on what is the management situation but not on exactly why was that so. 2. Interview schedules too long to sustain interest of functionaries and beneficiaries.	1. It is important to realize that stated responses may not reflect the true situation therefore triangulation with other methods, especially qualitative, is very essential.

Table 65 contd..

S No	Type of Method	Objectives	Strengths	Limitations	Comments
			2. A large amount of information from different management perspectives obtained from all categories of functionaries from the most senior (district officials) to the most junior (recently trained ANMs) as well as the beneficiaries. 3. Gave a focus to the study.	3. Interviewee often interrupted/corrected/ "helped" by others gathered round.	2. The shorter the interview schedule, the better it is.
5	Informal conversations	1. To gain further insight into the functioning of primary health care services. 2. To seek clarifications from respondents. 3. To study the human element in programme management.	1. Reliable and insightful information obtained as the informant is at ease with the investigator. 2. Rather than being conducted, they were more spontaneous.	1. Trust and rapport required between the informant and the investigator before meaningful informal conversations took place.	1. This method of generating a wealth of information was possible because it was associated with continuous observations.

emerged during the course of the study and the investigator's comments. The text below compares the study findings with relevant experiences of other investigators as reported in the literature.

1. **Observations** : The observations demonstrated that while the excessive emphasis on FP and immunization did contribute to the neglect of NAP and VAP, they added another important dimension to the picture. The observations made it abundantly clear that the total amount of time devoted to work (which was considerably less than that stated) and the quality of time devoted (one-third of the time of ANMs and LHVs was spent in non-productive work) were both partly responsible for the neglect of programmes other than FP and immunization. In other words, lack of sincerity was the basic issue.

The casual and indifferent attitude of functionaries towards NAP and VAP also surfaced repeatedly during the observation period, and was evident through their comments and their interactions related to these two programmes. For example, during informal conversations in many instances, several functionaries mentioned that they were well aware of the fact that many beneficiaries threw away the iron tablets, yet rarely was it observed that an attempt was made by the functionaries to motivate the beneficiaries to consume the tablets or to impart relevant IEC to them.

Thirdly, observations greatly facilitated the design and use of other tools used in the study especially the interview schedules and scenarios. Most important, the observations validated the interview data and clearly brought out the gap between stated and actual practices. For example, the observed reality was very different from the statements of functionaries in interviews with respect to time management, amount and quality of supervision and operational management of NAP and VAP at the field level; for instance, knowing that pregnant women are target beneficiaries and yet not covering them adequately, not adhering to the recommended dosage schedule despite being aware of it and poor record maintenance.

Bentley et al (1988) also state that one way to minimize the discrepancy between what people say they do and what they actually do, is to combine observations with interviews. The investigators observed child feeding practices during episodes of childhood diarrhoea in North India and also interviewed the mothers of these children. Several investigators who have conducted observations have reported these strengths of observational method such as increased reliability of data (Lafond 1992, Mota 1992, Annett and Rifkin 1990, Hubeis 1990 and Srinivas 1974).

In the present study, to ensure highly valid and reliable data which could successfully meet the study objectives, continuous day long observations were carried out over one year. This entailed a heavy investment of time and called for considerable patience, perseverence and concentration on the part of the investigator, often in trying field conditions. If these

requirements of time and certain attributes of the investigator are not met, the richness of the observation data may be compromised. These demands of time and basic investigator-attributes are not viewed here as an inherent weakness of the method but rather as a challenge to be faced by researchers who want to use observations as a field technique. Further, the issue of non-cooperation of the subjects and their consequent removal from the study assumes special significance in the observation method because of the investment of time required in this technique. There is a trade-off between unproductive time expenditure on uncooperative subjects in longitudinal observations, and its implications on representativeness of sample if such subjects are removed from the study.

Planning for observations needs to take into account the time required for recording and analysing the voluminous textual data generated and the need to keep buffer periods to compensate for government holidays and unexpected leave taken by the subjects.

Observations in rural field situations present their own set of difficulties and problems. Besides tackling the problem of community over long distances to unfamiliar areas with few transport facilities, the present investigator as an outsider, was viewed with suspicion as she took down notes continuously over the day; she had to make extra efforts to build rapport and trust with the functionary being observed and with the people the functionary interacted with. Other investigators have also reported several difficult field situations faced in observations such as caste conflicts, problems of accommodation and privacy, initial lack of acceptance of investigator by the community. Writing down voluminous notes and adequately analysing the massive amount of data generated is another challenge (Vlassoff 1989 and Srinivas 1974). According to Vlassoff (1989) a researcher planning to undertake observations should have the following characteristics : honesty and openness towards the local population concerning the goals of investigation, patience and willingness to spend a large amount of time in unfamiliar and sometimes inconvenient circumstances, the ability to achieve a desired balance of involvement and detachment in local affairs, and willingness to involve the study population in the research process.

2. **Scenarios** : The scenarios were extremely useful for obtaining varied responses of the functionaries regarding the course of action they would take for coping with inadequate supplies of iron and vitamin A supplements. However, the course of action stated in the scenarios was often not followed in practice as evident from observations.

Out of the two scenarios presented to the functionaries, one scenario -which experimented on the orientation to community regarding NAP and VAP - had to be excluded from data analysis. The reason for this was that the presentation of this scenario followed the interview which had some questions similar to that described in the scenario and hence sounded repetitive to the

informants. Thus, the sequencing of data collection methods also needs to be given due consideration.

The time required for administration of a scenario essentially depends upon the scenario presented and the willingness of the informant to respond. The categorization of the responses obtained was difficult in some cases. Attention should be given to the construction of the scenario to make it sound authentic to the respondents ie. it should closely resemble a given situation so that the informants state their real practices rather than give responses which they believe are "correct" responses.

A similar problem was faced by Kanani (1990) when scenarios presented were not convincing enough and hence did not elicit much information from some informants who were indigenous health practitioners.

3. **Narratives** : The narratives yielded rich and varied information regarding the perceptions of functionaries about community level problems. The programmes which figured repeatedly in the problems faced were the ones more likely to have received more attention, thus indicating the relative priority of various programmes in PHC. The narratives clearly indicated that family planning and immunization programmes were the centre of attention of functionaries at all levels and hence were the ones with which most of the problems were associated. The functionaries generally had a casual and simplistic approach towards implementation of NAP and VAP and hence could not recall many problems associated with them. It also became clear that problems arose with community members because of the poor quality of services provided, and lack of rapport between the community and the functionaries.

Narrating a sequential description of events is not always possible for the informant. In the present study, the investigator was told by some informants that their problems with the community were either of a recurring nature and hence could not be narrated or that the informants had never faced any such problem. Kanani (1990) also faced this problem when women suffering from specific illnesses were asked to narrate their treatment seeking behaviour. The informants whose illness had become chronic could not narrate any specific illness episode, as the illness was recurrent.

Familiarity with field conditions and various programmes on the part of the investigator is essential to be able to record the entire narrative with the speed with which it is being described by the informant. While recording and interpreting narratives, a conscious effort is required on the part of the investigator to ensure that the perceptions of the informant are faithfully reflected and not influenced by the biases of the investigator.

4. **Ranking** : The ranking exercise was activity based and was found to be more interesting to the respondents than giving verbal responses to interview questions. Once they understood the

purpose of the exercise, they could quickly rank the cards for various job functions giving an estimate of the relative importance/time expenditure/level of difficulty faced in the implementation of their various job functions. This, perhaps, would not have been as simple through any other method. However, the functionaries could not elaborate on the reasons for the ranking that they gave to various job functions. It may be more desirable to use the ranking exercise by employing fewer cards. This was, however, not possible in the present study since all the major job functions had to be represented in the cards.

Weller and Romney (1990) have also reported that ranking gives a great deal of information and is productive for the time spent for the informant. They add that if one considers the amount of information obtained per minute of informant time for several qualitative methods, the ranking method would perhaps be the best "producer". Bernard et al (1986) also support this view and add that individual differences are highlighted through this method.

5. **Structured domain interviews** : Structured domain interviews gave a wealth of information which could be quantified into percentages and gave a sense of the proportion of the functionaries who were aware/not aware of the key management elements studied with respect to implementation of NAP and VAP. Bernard et al (1991) and Bernard (1986) have stated that structured domain interviewing not only has advantages of unstructured interviewing but also adds a systematic dimension and structure to the investigation which is lacking in completely open ended interviews. Further, allowing people to open up and letting them express themselves in their words and at their own pace within a given structure yields several anecdotes and comments from the informants which give a valuable insight into the informant's point of view. These advantages of structured domain interviewing also held true in the present study.

A limitation of the interview technique observed in the present study was that when a functionary was being interviewed, he/she was often interrupted/corrected/ helped' by other functionaries who happened to be around. Similarly, when beneficiary interviews were conducted, the functionary who was accompanying the investigator would often "correct" the beneficiary. For example, when a beneficiary responded that she had not received iron tablets, the ANM interrupted her and said, "Dee to thi, yaad nahin tumhe?" (But of course, I gave you iron tablets on this date, don't you remember?)

Another limitation is that the reported data of interviews may not give a true picture of the field situation and thus may have to be validated by observations.

6. **Informal conversations** : Informal conversations presented the investigator with several insights off and on during the course of the study because they took place spontaneously along with the observations, and truly reflected the functionaries' thoughts and perceptions. The human element, which plays a crucial role in programme management, could be studied in greater depth. For

example, the resentment among functionaries which arose when the supervisors did not practice what they preached (eg. punctuality at work) was evident from the spontaneous remarks of the functionaries. The fact that iron tablets often served as substitutes in case of non-availability of basic medicines to treat minor ailments, was also revealed in these informal conversations.

Blending and integrating methods and data for studying the same phenomenon, that is, triangulation, captures a holistic and contextual picture that transcends mere complementarily and also uncovers biases inherent in individual methods (Pederson 1992, Glik et al 1987). The present study made use of these strengths of triangulation and could uncover the major and minor processes of implementation of NAP and VAP. More importantly, it could validate the data obtained from different methods. Thus, just as the use of different methods repeatedly pointed to the primary focus on FP and immunization in Indore, it also uncovered other less visible but equally important factors underlying the neglect of nutrient programmes - factors relating to indifferent attitudes of functionaries, their lack of enthusiasm towards work, and mismanagement of available time.

Unfortunately, as Pederson (1992) has said, there is reluctance to accept the multimethod approach in the health field. This is partly because, the dominant paradigm of the natural sciences in bio-medical research has looked with disdain at the use of qualitative methods proposed by social sciences and because, the norms and requirements of scientific publications often emphasize quantitative criteria.

In conclusion, based on the experiences of the present study, it appears that a multi-method approach requires careful consideration of the following aspects:

1. Clarity is required regarding the objective with which each method is being used in a given situation.

2. A researcher should gather only as much data as is necessary to fulfill the study objectives, that is, one needs to strike a balance between inputs in terms of time and effort, and outputs in terms of quality and quantity of data obtained.

3. The sequencing of various methods to be used in the study needs to be given prior attention. For example, if interviews are conducted before observations, they may create a bias in the observations by giving a clue to the subjects about the investigator's focus of study. Similarly, scenarios in the present study would have yielded better information if they had preceded the interviews.

4. A lot of thought needs to be given to the format of recording and documenting of the data generated from various method, as this will facilitate data analysis at a subsequent stage.

5. As compared to the time required for data collection, perhaps twice the amount of time (if not more) needs to be put aside for categorizing, tabulating, analyzing and writing up the textual data, especially the observational data.