WATER, AND ENVIRONMENTAL SANITATION

A report on KAP study
in rural India - Phase III

May 1989

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THE RESPONDENTS

The total number of respondents interviewed in 8 states was 4414, against planned 4400 interviews. As mentioned earlier, all data was weighted at the district level. The process of weighting, with its resultant fractions and rounding off, resulted in a weighted sample size of 4418 respondents.

The actual and weighted sample sizes by state were as follows :

	Actual	Weighted
Uttar Pradesh	602	1353
Rajasthan	604	402
West Bengal	601	595
Manipur	200	16
Tamilnadu	600	481
Andhra Pradesh	603	609
Gujarat	602	348
Madhya Pradesh	601	616
	4414	**4418**

A total of 2407 interviews were conducted in the four tracking districts*. The details were as follows :

Sultanpur, Uttar Pradesh	604
Udaipur, Rajasthan	602
24 Paraganas, West Bengal	600
Amreli, Gujarat	601
	2407

* These 4 districts will be referred to in the report as "the districts".

1.0 THE RESPONDENT

Men and women were sampled in equal numbers, across the states and the tracking districts.

1.1 Age

They represented an average age of 31 years in the states and 30 years in the districts.

Respondents were asked to state their age; simultaneously our interviewers noted their estimate of the respondents' age as prior experience with rural respondents has revealed that some of them tend to have a very poor idea if any,of their own age. The data of age, as estimated by the respondent and by our interviewers, is given below :

	8 states		4 districts	
Base :	4418		2407	
	Respondent estimate	Interviewer estimate	Respondent estimate	Interviewer estimate
Age	%	%	%	%
15 - 25 years	33	32	35	37
26 - 35 years	31	36	32	36
36 - 45 years	20	24	17	23
46+ years	5	8	3	4
Not specified	12	-	13	-
Average	**29.8**	**31.2**	**28.8**	**29.8**

In both states and in the 4 districts, 12-13% of the respondents could not tell their own age.

The majority of these respondents were from Uttar Pradesh (22%), Rajasthan (10%) and Madhya Pradesh (24%). In the districts again, 28% of the respondents from Sultanpur and 22% from Udaipur could not tell their age as compared to less than 2% from the other 2 districts.

Further analysis of these respondents reveal that of those who could not tell their own age, 83% (in the 8 states) had a monthly household income of less than Rs 750 and 92% were illiterate. Details are given below :

(Base : Those who could not tell their age)

	8 states	4 states
Monthly household income		
Below Rs 750	13	16
Rs 751 - 1500	8	6
Rs 1501+	5	8
Age		
15 - 25 years	7	13
26 - 45 years	13	13
46+ years	20	13
Literacy		
Can read	2	2
Cannot read	21	23
Sex		
Male	4	3
Female	20	23

It is interesting to note that close to one fourth of those who could not read and one fourth of women could not tell their age. The two factors were correlated since 31% - 32% of men (in states and 4 districts respectively) could not read while 69% & 68% of women could not read.

1.2 Education and Literacy

A closer look at data by schooling reveals that, across all respondents from the 8 states 54% of them had attended school. In the 4 districts, 50% had attended school.

There were variations by state. In West Bengal, Manipur and Tamilnadu over 60% had attended school. This was also reflected in the tracking districts where 66% of respondents in the 24 Paraganas had attended school.

Attended school

Base: All respondents

		%			%
Total	4418	54	Total	2407	50
Uttar Pradesh	1353	51	Sultanpur		38
Rajasthan	402	45	Udaipur		41
West Bengal	595	64	24 Paragans		66
Manipur	16	71	-		
Tamilnadu	481	67	-		
Andhra Pradesh	609	50	Amreli		53
Gujarat	348	58			
Madhya Pradesh	616	45			

(Table 7)

Those who had attended school belonged to households with a monthly household income of over Rs 750. Significantly larger proportions of those in the 15-25 year age group (65%) and men (73% had attended school as compared to others).

The younger age group attendance reveals a rising trend towards schooling in villages, by those who can afford it, for their boys at least.

73% of those who had attended school had done so for less than 9 years. 13% were matriculates while 4% were graduates. (Refer Table 7a). The highest proportion of graduates were in Manipur (16%) followed by Uttar Pradesh (6%).

Base : All respondents

	% Schooled		% matriculate or more	
Total	54		14	
Uttar Pradesh (Sultanpur)	51	(38)	19	(12)
Rajasthan (Udaipur)	45	(41)	11	(11)
West Bengal (24 Parganas)	64	(66)	11	(15)
Manipur	71		44	
Tamilnadu	67		12	
Andhra Pradesh	50		11	
Gujarat (Amreli)	58	(53)	17	(9)
Madhya Pradesh	45		7	

Figures in brackets are equivalent percentage figures for the four tracking districts.

Analysis of this data by age, income and sex reveals interesting patterns.

	8 states only	
	% schooled	% of all matriculate or more
Base: All respondents		
Monthly household income		
Upto Rs 750	49	10
Rs 751 - 1500	63	19
Rs 1501+	78	35
Age		
15 - 25 years	65	21
26 - 45 years	50	11
46+ years	38	3
Sex		
Men	73	23
Women	34	5

The proportions schooled and the better educated respondents were male, young and belonged to upper-income households.

Earlier studies and interaction with villagers over the years have shown that schooling and literacy are not necessarily related unless several years had been spent in school. Literacy was therefore checked for all respondents, irrespective of the years spent in school. This was done by showing a card to the respondent on which a simple sentence had been written in 3-4 relevant languages (for example, in Uttar Pradesh the sentence would be written in Hindi and Urdu). Respondents who could not read at all were classified

as those who cannot read. Respondents who read by picking up each individual alphabet (to connect the sounds together in phonetic languages) were termed slow readers. Those who could read the sentence with ease were termed fluent readers. The distribution of readers in these 3 categories was as follows :

	Fluent	Slow	Not at all
Base: All respondents			
% across			
Total	34	14	52
Uttar Pradesh (Sultanpur)	34 (30)	13 (4)	53 (66)
Rajasthan (Udaipur)	37 (30)	8 (10)	55 (60)
West Bengal (24 Paragans)	38 (43)	14 (13)	48 (44)
Manipur	43	26	31
Tamilnadu	32	23	45
Andhra Pradesh	26	18	57
Gujarat (Amreli)	40 (32)	16 (20)	44 (48)
Madhya Pradesh	36	7	57

64% of respondents in households with an income of RS 1500+ per month could read fluently.

2.0 HOUSEHOLDS

2.1 Income

More than half of all respondents belonged to households where the income did not exceed Rs 500 per month. This was true of the states as well as the tracking districts within the states.

Details by state and district were as follows :

Base : All respondents

(% across)	Rs 500 or less	Rs 501- Rs 1000	Rs 1000- Rs 1500	Rs 1500- Rs 2500	Rs 2500+
Total	57	29	7	5	2
Uttar Pradesh	64 (73)	16 (20)	4 (10)	5 (3)	1 (3)
(Sultanpur)					
Rajasthan (Udaipur)	49 (75)	26 (13)	12 (7)	6 (4)	4 (2)
West Bengal (24 Paraganas)	37 (39)	40 (42)	14 (12)	8 (4)	3 (3)
Manipur	34	33	19	10	5
Tamilnadu	74	20	4	2	-
Andhra Pradesh	62	29	4	4	2
Gujarat (Amreli)	44 (34)	44 (51)	7 (8)	4 (4)	1 (2)
Madhya Pradesh	57	25	8	5	5
*Can read**	48	31	10	8	3
Cannot read	65	27	4	3	1

(Refer Table 5)

* Slowly or fluently

** Literacy-based data for 8 states only

2.2 Occupation

The predominant occupation of the chief wage earner was farming followed by unskilled labour.

There were some state-wise variations. In Manipur, only 40% of all respondents were farmers and only 6% were unskilled labourers.

Tamilnadu, Andhra Pradesh and Gujarat had 12% - 14% of village householders who were employed in skilled labour, against the national average of 9%.

In West Bengal and Manipur, trade accounted for 16% and 13% of the main occupations respectively.

2.3 Family size and composition

The average family size was 6.0 members.

In nearly 40% of the households, there were elder members aged 51 years or more while in 25% of the house holds one or more siblings also lived along with the married respondent.

3.0 COMMUNITY DATA

The main religion followed in all states and districts was Hinduism. 90% of all state level respondents and 89% of all tracking districts were Hindus.

7% of all respondents in the states were Muslims while 1% were Christians.

The exceptions to this rule were the Eastern states of West Bengal and Manipur. In West Bengal, 23% of all respondents were Muslims; within West Bengal, in the tracking district of 24 Paraganas, 33% of all respondents followed the Muslim faith. In Manipur, 43% of all respondents followed the Christian faith.

In the tracking district of Sultanpur (Uttar Pradesh), 10% of all respondents were Muslims.

Scheduled castes and tribes

25% of all respondents belonged to the scheduled caste and 8% were tribal. Of these, 70% belonged to scheduled tribes. Details were as follows :

Base : All respondents

	Base	Scheduled Caste %	Scheduled tribe as % of total %
Total	4418	25	6
Uttar Pradesh (Sultanpur)	1353 (604)	29 (38)	- (-)
Rajasthan (Udaipur)	402 (602)	19 (11)	13 (39)
West Bengal (24 Paraganas)	595 (600)	20 (31)	10 (-)
Manipur	16	-	38
Tamilnadu	481	25	-
Andhra Pradesh	609	22	8
Gujarat (Amreli)	348 (601)	40 (38)	4 (-)
Madhya Pradesh	616	21	16

There were some interesting variations in the literacy levels of persons belonging to scheduled castes or tribes as compared to those who did not belong to these categories.

	Scheduled caste		Non-Scheduled caste	
	States	4 Districts	States	4 Districts
Base :	1111	713	2797	1439
	%	%	%	%
Literate	33	38	57	53
Illiterate	67	62	43	47

Clearly, literacy levels were significantly different (at 99% level of confidence) between members of scheduled castes as compared to those who did not belong to scheduled castes.

	8 States			4 States		
	Total Tribal	Scheduled Tribal	Non-Scheduled Tribal	Total Tribal	Sche-duled Tribal	Non-scheduled Tribal
Base :	347	243	35	252	233	
	%	%	%	%	%	
Literate	29	30	20	21	20	
Illiterate	71	70	80	79	80	

Tribal persons, on the other hand, appeared to have consistently low levels of literacy, irrespective of whether they belonged to a scheduled tribe or not.

SECTION A : GENERAL HYGIENE

Some data pertaining to hygiene practices of respondents was collected in order to understand current hygiene practices in rural areas as well to obtain an understanding of the respondents and their personal background.

4.1 PERSONAL HYGIENE PRACTICES

In response to direct questions pertaining to the respondent's routine of the previous day, the claimed hygiene practices emerged as being very correct. While these may have been accurately reported, it is important to remember that the questions, listed below, were an intrusion into the individuals privacy and respondents could well have claimed higher "correct" practices than were actually true since they would not wish to appear in a bad light in front of city-bred interviewers. This data is only to be seen as a stepping stone towards other details of personal hygiene.

	State	District
Base : All respondents	4418	2407
	%	%
Yesterday :		
Cleaned mouth in any manner	99	100
Took a bath	85	80
Washed hands after defecation	99	100
Washed hands before eating	99	99
Changed into fresh clothes	80	75

a/ Mouth cleaning practices

The single largest method of cleaning the mouth in villages was by the use of a twig. This practice was particularly prevalent in Gujarat, Uttar Pradesh and Madhya Pradesh.

The details regarding mouth cleaning practices were as follows :

	State	District	High in
Base: Those who cleaned mouth	4375	2397	
	%	%	
Just gargled with water	3	6	Rajasthan & Udaipur
Cleaned with a twig	46	44	Gujarat, Uttar Pradesh, Madhya Pradesh, Sultanpur
Cleaned with ash	16	13	West Bengal, Tamilnadu, 24 Paraganas
Cleaned with tooth-powder	20	18	Tamilnadu, West Bengal, Andhra Pradesh
Cleaned with toothpaste	13	14	Manipur
Others	3	4	

Usage of toothpowders was reflected in higher proportions in the upper income literate and younger age groups.

It was interesting to see that women used toothpowder in significantly higher proportions than men. 54% of all men used a twig compared to only 37% women; 24% of the women used a toothpowder in contrast to only 16% of the men. In the use of toothpaste, however, there were no significant differences between men and women. These patterns were also reflected in the tracking districts.

Of those who used ash, toothpowder or toothpaste, 58% used these products by rubbing them on the teeth with their fingers while 41% used a toothbrush.

In Manipur, 96% of the relevant respondents used a toothbrush as did 91% in Gujarat. (However, these only constituted 20% of all Gujarat respondents).

As would be expected, toothbrush usage was significantly higher in upper income, literate, younger and male groups than in others.

b/ Bathing practices

Of those who reported having had a bath on the previous day, 54% had used soap while 39% had used only water. The respective proportions in the tracking districts were 48% and 41% respectively.

Use of soap for bathing was reported by 84% in Manipur, 80% in Andhra Pradesh, 69% in Gujarat and 68% in Tamilnadu. It was reported in greater proportions by upper income respondents (69%), younger respondents (67% versus 40% of those who were over 46 years of age) and by literate respondents (64% versus 45% among illiterate respondents)

However, women used soap for bathing more than men did (57% versus 51%).

Soap usage was also reported by a larger proportion of respondents from Amreli district (Gujarat - 84% and Udaipur in Rajasthan - 63%).

Over half of those who had not had a bath yesterday had bathed 1-3 days ago. This was reported from states and from tracking districts. The distribution was as follows :

	Last bathing occasion	
	State	District
Base :	650	479
	%	%
Today	13	10
1-3 days ago	56	57
4-7 days ago	23	22
8-15 days ago	5	7
16-30 days ago	-	2
31 days or more	1	-
Don't know	2	2

4.2 DISPOSAL OF WASTE

4.2.1 Garbage disposal

The use of a pit in which garbage was thrown was mentioned by 81% of the respondents in the states and 71% of the respondents in tracking districts. These could be a private garbage pit, common garbage pit, or a manure pit. Details were as follows :

	State	District	High in
Private garbage pit	55	50	Andhra Pradesh, Uttar Pradesh, Gujarat, Amreli
Common garbage pit	9	10	Gujarat
Garbage pit (common/ private)	8	5	Tamilnadu, Rajasthan
Manure pit	8	6	West Bengal
	80	71	
Anywhere within courtyard	3	5	Manipur, West Bengal 24 paraganas
Anywhere outside courtyard	10	15	Manipur, West Bengal RAjasthan, Udaipur 24 Paraganas
Beside/in pond or river	-	2	Sultanpur, 24 Paraganas

4.2.2 Waste water disposal

The activities that mainly led to generation of waste water in a house were :

	Practiced indoors by	
	State	District
	%	%
Washing vessels	81	69
Bathing by any member	74	69
Washing clothes	54	38

Waste water thus generated was let off out onto the village streets by 33% of the respondents in the states and fully half of them in the tracking districts. Details were as follows :

	Waste water disposal		
	State	District	High in
Base:	3817	1940	
	%	%	
Out on to the road/ street	33	50	Gujarat, Rajasthan, Amreli, Udaipur
In a roadside drain	25	17	Manipur, Uttar Pradesh, Sultanpur
Thrown in open, absorbed, dries	25	29	Rajasthan, West Bengal, Udaipur, 24 Paraganas
Thrown into plants/ kitchen garden	12	5	Madhya Pradesh
Goes into private garbage pit	8	4	
Goes into private soak pit	5	8	
Accumulates into a cess pool	4	3	

4.2.3 Animal dung disposal

81% of all respondents in the states and 82% in the tracking districts possessed domestic animals. The lowest proportion of owners were in Manipur and Tamilnadu (60% and 64% respectively) while the highest proportions were in Uttar Pradesh and West Bengal (89% and 86% respectively). While there were a significantly higher proportion of owners among upper income households, ownership of domestic animals did not show any real differences by age, literacy or sex.

Cows and buffaloes were the two most widely possessed animals. 58% of those who owned animals, owned cows (80% in West Bengal and 81% in Madhya Pradesh). In the tracking districts, 60% of animal owners owned cows. 48% of animal owners in the states owned buffaloes but only 37% did so in the tracking districts. 60% in Andhra Pradesh and 71% in Gujarat but extremely low in West Bengal - 9% and Manipur-7%).

69% in the states and 78% in the 4 districts owned other animals, most probably in addition to cows or buffalloes or both.

a/ Cow dung

Cow dung was collected and stored in pits (32%) but mostly used for other purposes namely as fuel in the form of dung cakes, as manure and for plastering of floors and walls.

It is interesting to note that only 2% of all respondents said that cowdung was allowed to lie as is, that nothing was done to it (Manipur - 13%).

15% said that it was thrown away as garbage (Gujarat 82%, Tamilnadu 36%).

b/ Buffalo dung

As with cow dung, 33% collected buffalo dung and stored it in a pit.

38% used it for fuel, manure and for plastering of walls and floors.

22% threw away buffalo dung as garbage once again. Highest proportion of this practice was recorded from Gujarat 89% and Tamilnadu 48%.

Opinion on animal dung

Cow dung and buffalo dung were not believed to be harmful to health by almost half of all respondents. On the whole, more respondents believed that cowdung was harmless, when compared to buffalo dung.

Base : All respondents

	Cowdung		Buffalo dung		Other animal	
	State	District	State	District	State	District
	%	%	%	%	%	%
Yes, harmful	35	37	37	38	47	53
Not harmful	52	50	48	44	35	31
Don't know	12	13	15	18	18	16

Significantly higher proportions of respondents in the upper income category, those who were literate and men rather than women believed that all animal dung could be harmful to health. However, the believers in the potential harmfulness of cowdung and buffalo dung were in smaller proportion on the whole than those who believed in the harmfulness of other animal dung.

5.0 EXPOSURE TO MEDIA

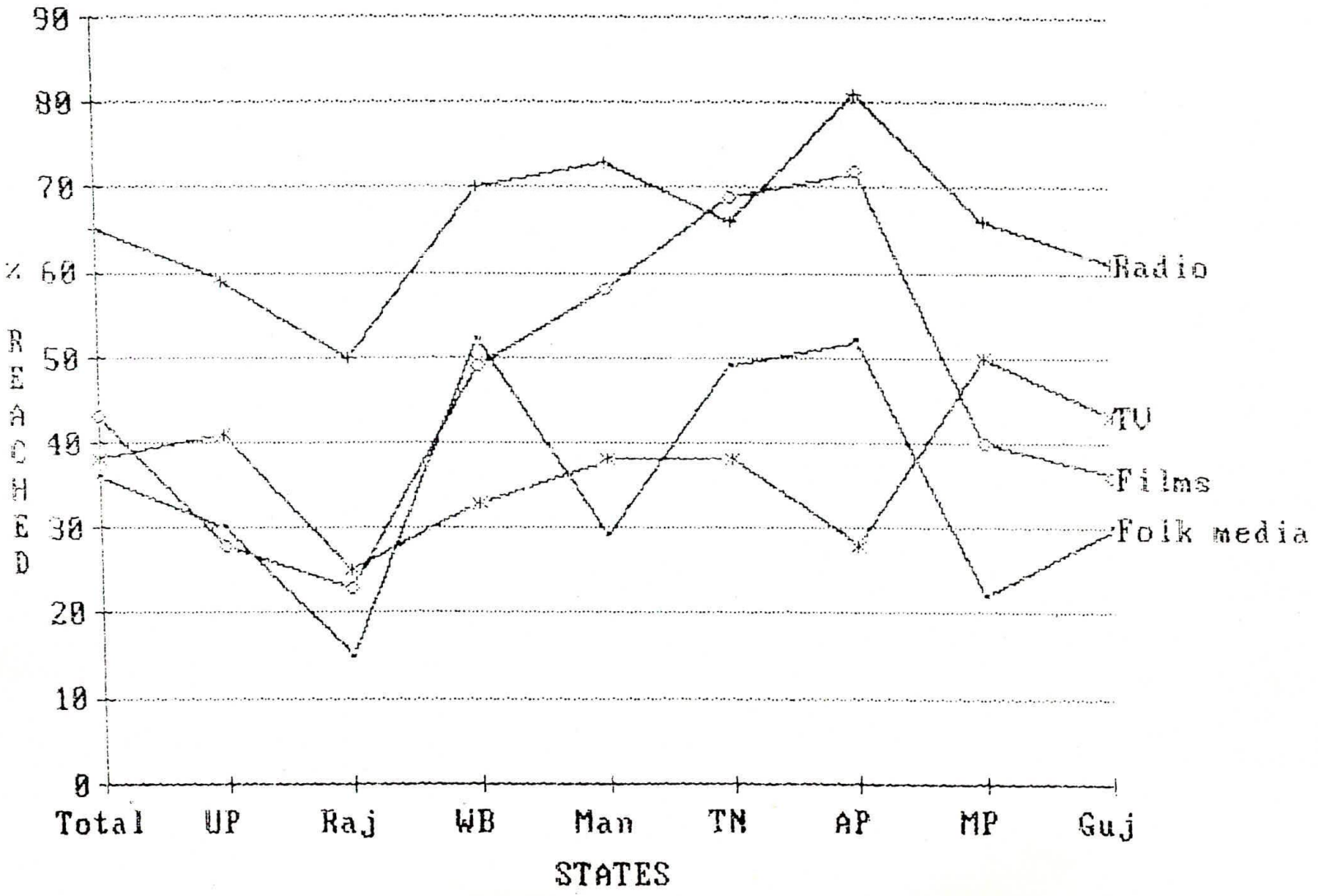
Respondents were asked a simple question on whether or not they had been exposed to various media and to people who could potentially influence their knowledge, attitudes and practices.

It must be mentioned here that the objective of understanding the exposure to media/personnel was only as a stepping stone to the next question which pertained to recall of messages received from that source in connection with water and sanitation.

Media exposure data therefore is only bare, skeletal data and cannot be used as a media plan basis since it gives an idea of absolute exposure but not of the extent of or depth of exposure to each media.

With that conditional statement we can move into an evaluation of the absolute reach of various mass media and various personnel to the rural people. Reach in this case is being defined only as the opportunity to see/hear that respondents had vis-a-vis various media without details on frequency, regularity etc.

REACH OF DIFFERENT KINDS OF MEDIA

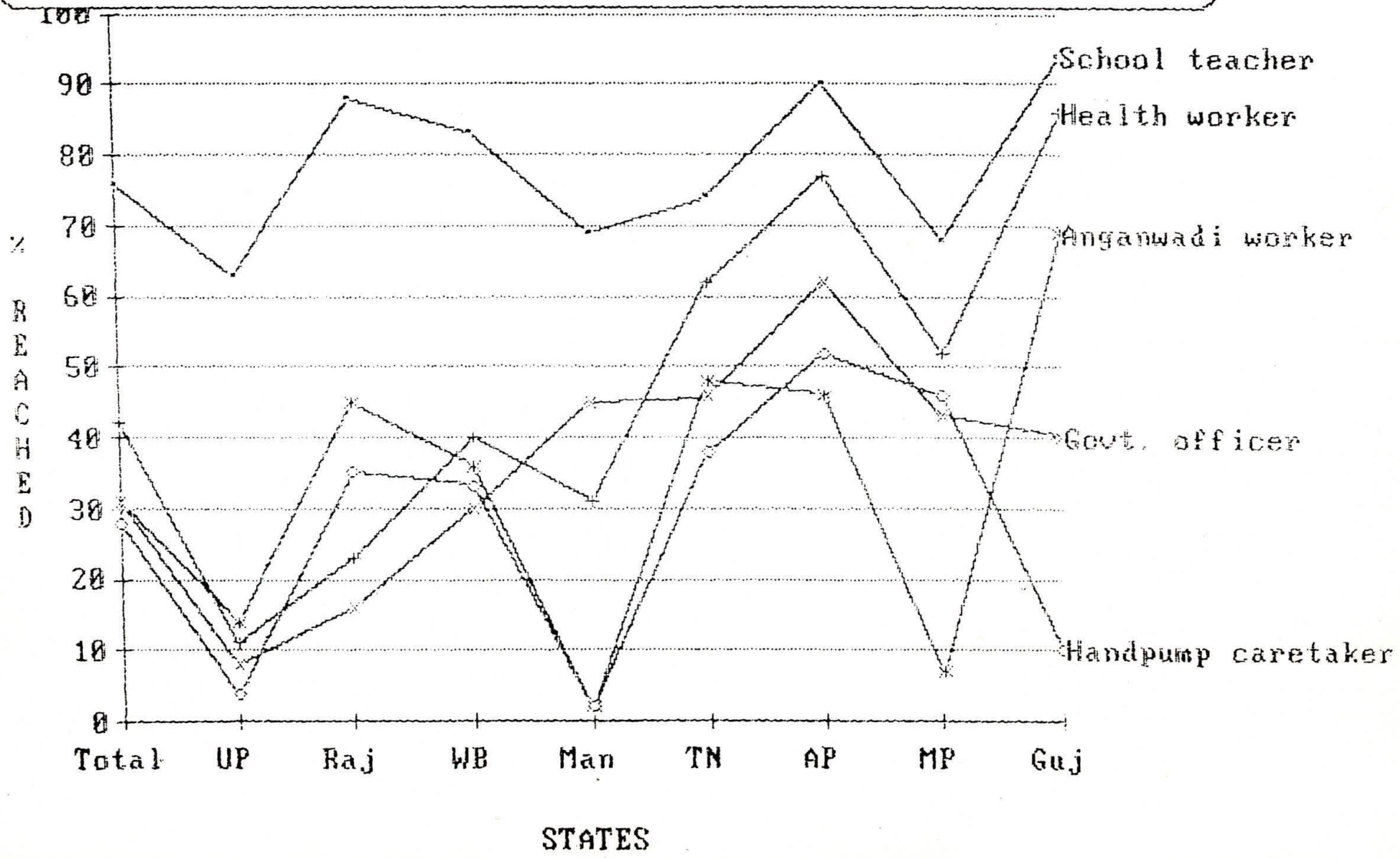


	Total	UP	Raj	WB	Man	TN	AP	Guj	MP
Base: All respondents	4418	1353	402	595	16	481	609	348	616
	%	%	%	%	%	%	%	%	%
Radio	65	59	50	70	73	66	81	61	66
TV	38	41	25	33	38	38	28	43	50
Films	43	28	23	49	58	69	72	36	40
School teacher	76	63	88	83	69	74	90	94	68
Health worker	42	11	23	40	31	62	77	86	52
Anganwadi worker	31	14	45	36	2	48	46	69	7
Handpump caretaker	28	4	35	33	2	38	52	10	46
Folk media	36	30	15	52	29	49	52	30	22
Govt. officer	31	8	16	30	45	46	62	40	43
None of the above	7	14	4	2	9	4	1	1	10

The details of exposure to media become easier to appreciate when studied in the context of demographic variables and the differences in exposure that emerge along such variables. We will look at the media that over one-third of the respondents had been exposed to.

The details were as follows :

REACH OF DIFFERENT KINDS OF MEDIA



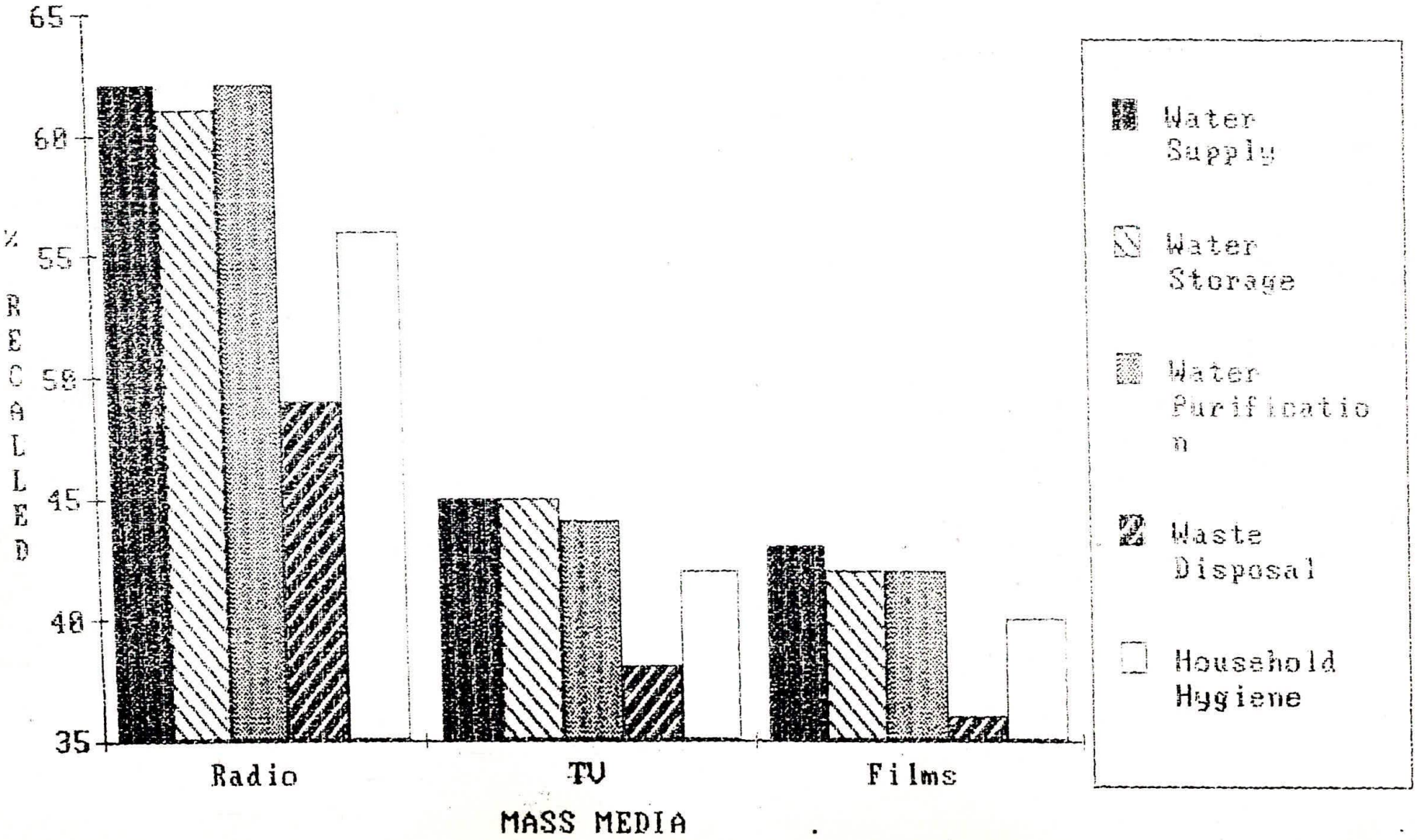
(% across)	Radio	TV	Films	School teacher	Health worker	Folk media
Income						
Below Rs 750	61	33	40	73	41	34
751 - 1500	73	47	49	86	43	41
Rs 1501+	82	63	58	83	47	40
Age						
15 - 25 years	69	43	55	78	43	39
26 - 45 years	63	35	39	76	42	34
46 + years	59	36	33	70	42	36
Literacy						
Literate	78	51	58	85	48	45
Illiterate	52	25	30	68	37	26
Sex						
Men	75	45	53	81	47	46
Women	54	30	33	71	38	25

As a general principle, it would appear that a high income and high exposure to all media were very strongly correlated. The exceptions were the school teacher and folk media.

Exposure to media did not appear to be heavily dependent on age although TV and films were reportedly seen by a greater proportion of younger people than grownups.

Literacy and being born male seemed to certainly guarantee high exposure to various media.

RECALL OF DIFFERENT WES MESSAGES



Messages received about water and sanitation

a/ Radio

Of those who had been exposed to the radio, the following proportions said that they had received messages related to water and sanitation from the radio.

	State	District	High in
Base :	2858	1306	
	%	%	
Water supply	62	65	Manipur - 82% Madhya Pradesh - 74% Tamilnadu - 72%
Water storage	61	64	Manipur - 78% Tamilnadu - 70% Madhya Pradesh - 72%
Water purification	62	65	West Bengal - 72% Manipur - 72% Tamilnadu - 74% Madhya Pradesh - 77%
Waste disposal	49	51	Manipur - 75% Tamilnadu - 61% Madhya Pradesh - 64%
Household hygiene	56	56	Manipur - 76% Tamilnadu - 68% Madhya Pradesh - 66%

The largest proportion of radio listeners who recalled such messages were found in Manipur, Tamilnadu, Madhya Pradesh and sometimes, West Bengal.

The upper income, older age group and literate respondents consistently reported greater recall of such messages, than others. It was interesting however that **women rather than men registered greater recall of each issue.**

b/ Television

Of those who had been exposed to television the following proportions recalled having heard and seen the different messages on TV.

	State	District
Base :	1666	689
	%	%
Water supply	45	43
Water storage	45	45
Water purification	44	44
Waste disposal	38	36
Household hygiene	42	40

The highest proportion of positive responses were obtained from four states :

- Madhya Pradesh (where 65% - 70% respondents recalled water related messages and 58-60% recalled sanitation related messages), Rajasthan (including Udaipur), Gujarat and Manipur. While Rajasthan's high recall was also reflected in the data gathered for Udaipur district, the high Gujarat recall was not equally reflected in Amreli district.

As with radio messages, recall was high among upper income, older and literate respondents. **Once again, recall among women was higher than that among men.** In fact, water related messages from TV were recalled by 52% to 53% of all women who

had exposure to TV as compared to approximately 40% of the men. Messages on waste disposal were recalled by 47% women compared to 32% men and messages on household hygiene were recalled by 52% women compared to 36% men. This was true and state and district levels.

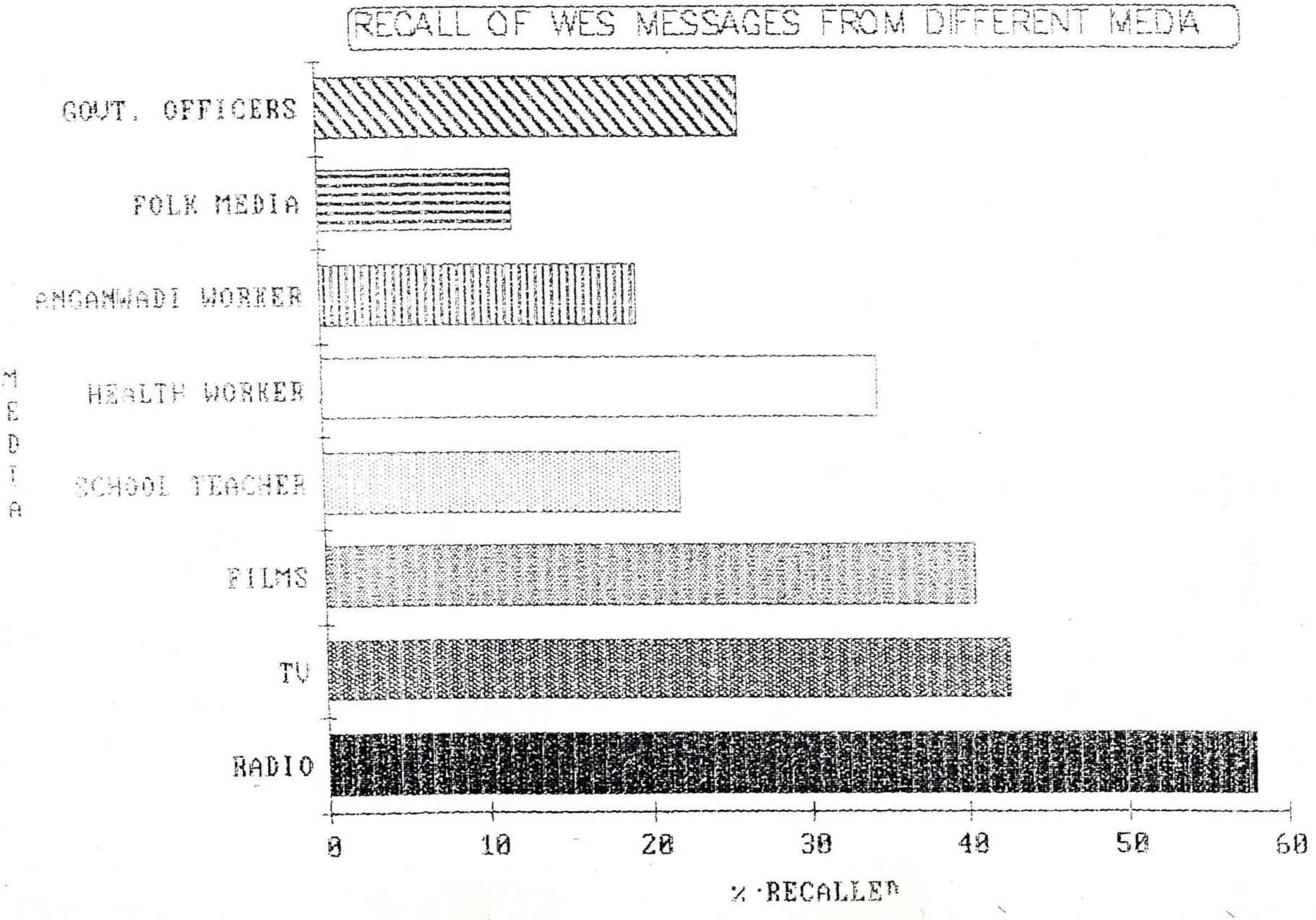
c/ Films

The following message recall from films was reported by those who had any exposure to films.

	State	District
Base :	1913	714
	%	%
Water supply	43	40
Water storage	42	41
Water purification	42	41
Waste disposal	36	37
Household hygiene	40	40

The state from which high recall was mentioned was Madhya Pradesh. Manipur recorded the lowest recall (below 20%) followed by West Bengal and, on some issues, Rajasthan and Andhra Pradesh.

In demographic terms, the profile remained similar to the earlier ones with women still registering a higher recall than men.


RECALL OF WES MESSAGES FROM DIFFERENT MEDIA
GOVT. OFFICERS
FOLK MEDIA
ANGANWADI WORKER
HEALTH WORKER
SCHOOL TEACHER
FILMS
TV
RADIO
MEDIA
0
10
20
30
40
50
60
% RECALLER

d/ Others

School Teacher : On an average, 22% of respondents at the state level and 21% at the district level said that they had received messages related to water and sanitation from the school teacher. In the districts, sanitation messages were only reported by 18-20% of the respondents.

The school teacher appeared to be playing a strong communications role in Manipur, and, to a lesser extent in Madhya Pradesh, Gujarat, Tamilnadu and West Bengal.

The demographic profile of those who reported having received messages from the school teacher was different from the earlier ones. While these respondents were also upper income and literate, they tended to be younger. The proportion of male respondents who had heard from the school teacher was higher, at both state and district levels.

Health worker : 33% to 36% of respondents at the state level and similar proportions at the district level had heard these messages from the health worker.

The highest mention of health worker as a source came from Gujarat, Madhya Pradesh and Manipur. Respondents from upper income groups and literate respondents expressed higher recall of these messages from health workers. They also tended to be younger. Men reported higher recall than women.

Anganwadi worker : 19-20% of the respondents who had been exposed to anganwadi workers in the states and 15% to 17% in the districts recalled having received any messages related to water and sanitation from these respondents.

There was high mention of such messages from anganwadi workers in Madhya Pradesh (54% regarding water storage, 38% regarding water supply, 49% regarding water purification, 42% regarding household hygiene).

Contrary to expectations, men reported higher recall of such messages from anganwadi workers even though women had, in absolute terms, higher exposure to anganwadi workers.

Folk media did not appear to be an important source of such messages with only around 12% stating this medium as a source of water and sanitation related messages. Highest proportions were again mentioned from Manipur and Madhya Pradesh.

This medium was mentioned by a smaller proportion of upper income respondents; there were no real differences by age, literacy or sex.

Government officers were a source of these messages for about 26% of respondents in the state who had any interaction with government officers and around 22% of the respondents in the districts. Higher proportions of respondents from Madhya Pradesh, Gujarat and Manipur spoke of having heard of these issues from government officers. While there seemed to be no pattern of recall by age, it was the older, literate male who spoke of having received such messages from government officers.

B WATER

IMRB
Indian Market Research Bureau

1.0 PRACTICES

1.1 Practices with regard to collection

1.1.1 Purpose for which water is collected

92% of women across the 8 states and 89% across the four districts brought water home for drinking purposes.

This constituted the single most important reason for which water was collected and brought home. Water for other reasons was brought home by smaller proportion of respondent households.

Water for cooking purposes emerged as a very close second with 91% of respondents in the 8 states and 88% in the 4 districts bringing water home for this purpose. Thus, with very few exceptions, when water was collected for drinking purposes, it was also collected for cooking purposes.

It would be useful to look at the purposes for which water was collected on the whole and also across the 8 states and 4 districts.

Base : All respondents

	8 state average	4 state average			
	% who collected and brought water home	Sultan pur	Udai-pur	24 Parag-anas	Am-reli
Purposes					
Drinking	92	88	98	87	82
Cooking	91	88	98	84	82
Washing vessels	77	66	97	5	76
Washing clothes	50	35	35	2	40
Bathing (men)	48	15	29	1	75
Bathing (women)	63	72	47	1	76
Bathing (children)	50	31	53	21	66
Animal drinking	50	53	17	47	40

(Refer Table 1 - Water)

The issue that causes concern is that in half of all households, water was collected and brought home for purposes such as bathing and for animals to drink, activities that involve large volumes of water and some that could conceivably be performed at the water source itself.

Two states where water for bathing was brought into the house by over 85% of the households (74% for children's bath) were Andhra Pradesh and Gujarat.

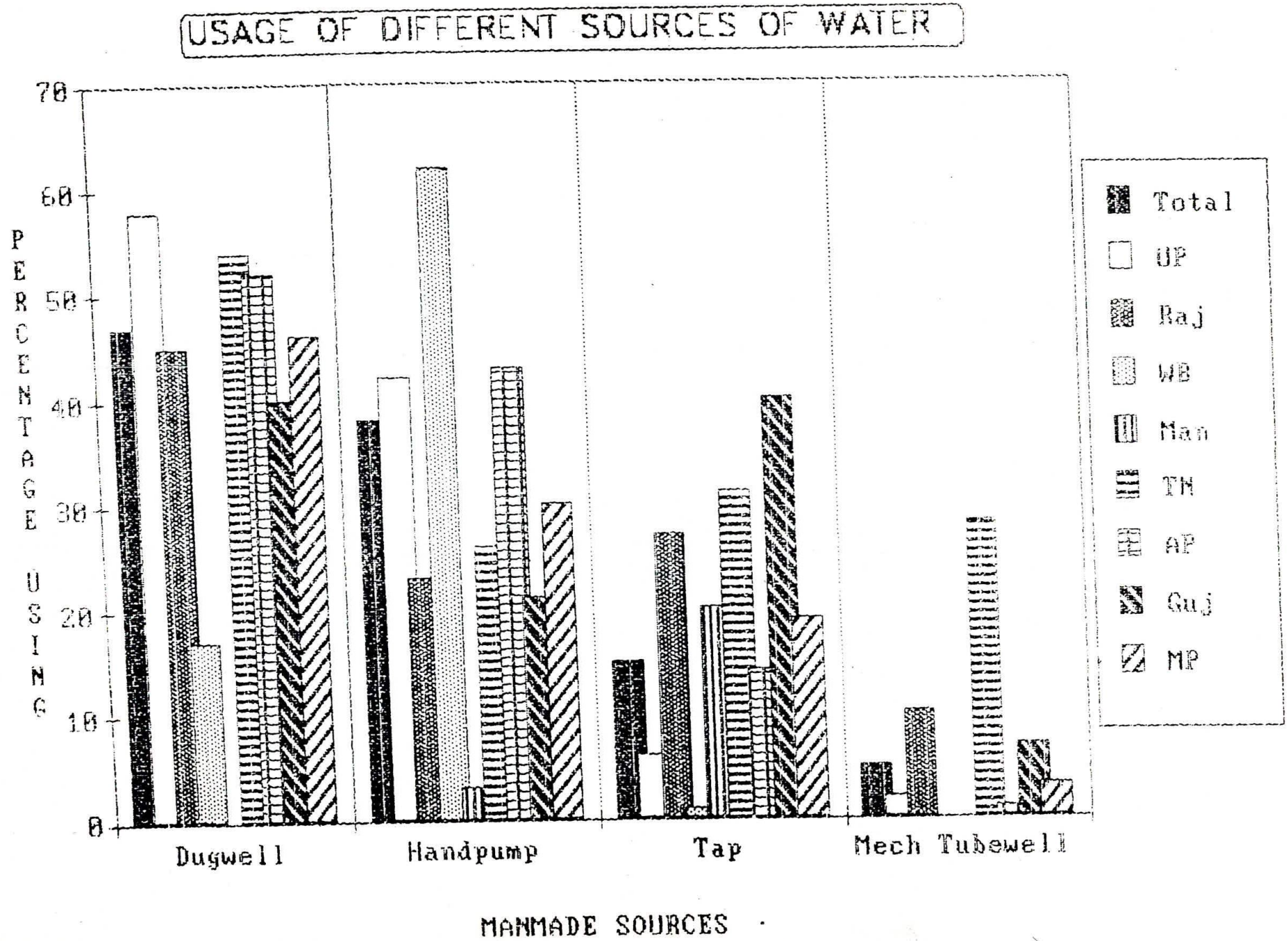
Water for washing vessels was carried home in over 80% of the households in all states except Manipur (74%) and West Bengal (18%). In Andhra Pradesh and Gujarat, water for vessels was carried home in over 90% of the households.

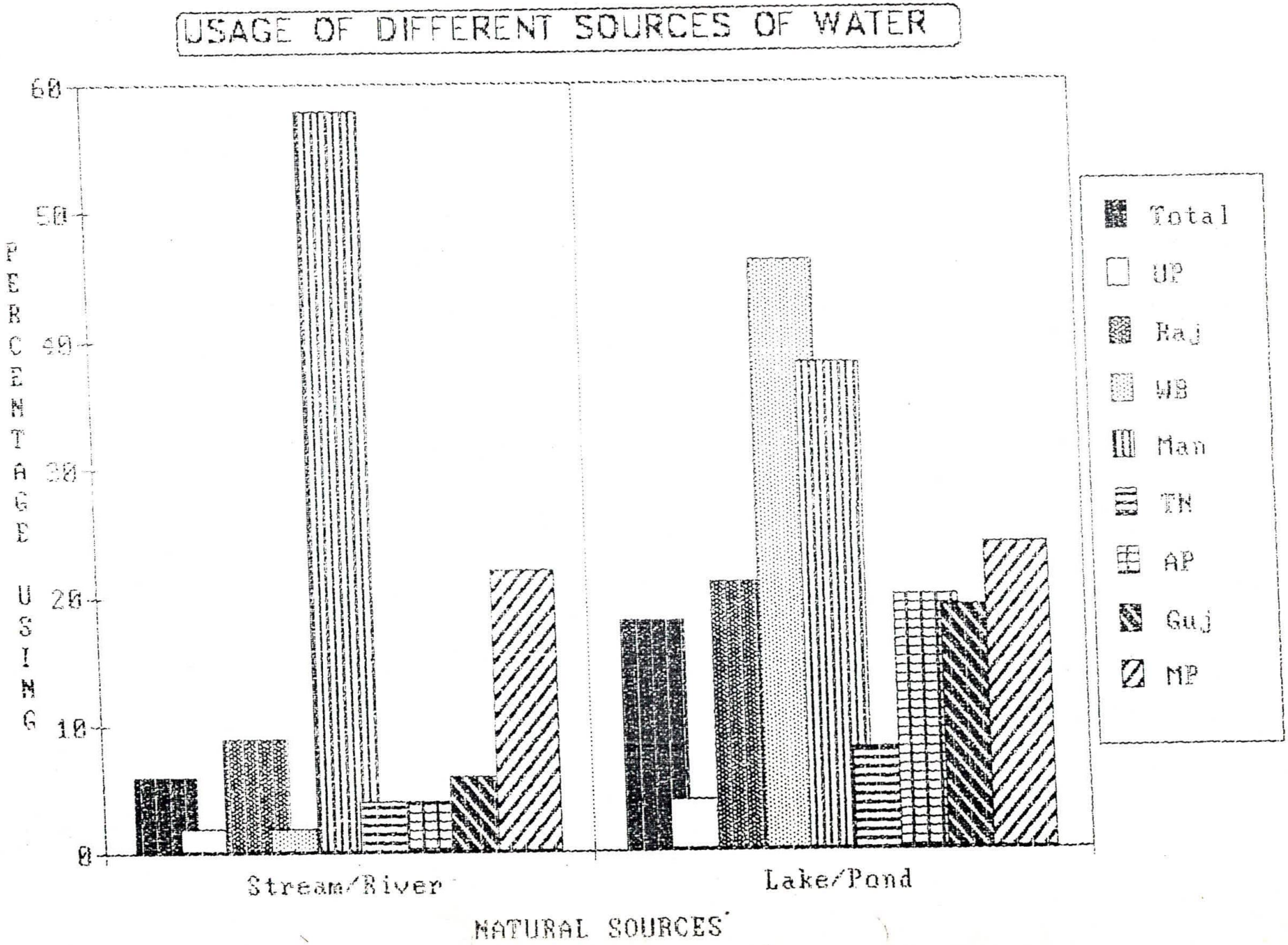
In fact, West Bengal is a conspicous exception to the rule in that, other than drinking and cooking water which was brought home by 82% and 80% of the households respectively, water was not carried home by more than 20% of households for any other reason. The details offer interesting contrasts.

Base : All respondents

Purpose	8 states	West Bengal	Andhra Pradesh	Gujarat
Drinking	92	81	94	90
Cooking	91	80	94	90
Washing vessels	77	18	92	91
Washing clothes	50	7	55	66
Bathing men	48	3	85	88
Bathing women	63	5	90	86
Bathing children	50	20	75	74
Animal drinking	50	57	54	32

(Refer Table 1 - Water)


USAGE OF DIFFERENT SOURCES OF WATER
PERCENTAGE USING
70
60
50
40
30
20
10
0
Dugwell
Handpump
Tap
Mech Tubewell
MANMADE SOURCES
Total
UP
Raj
WB
Man
TN
AP
Guj
MP


USAGE OF DIFFERENT SOURCES OF WATER
PERCENTAGE USING
60
50
40
30
20
10
0
Total
UP
Raj
WB
Man
TN
AP
Guj
MP
Stream/River
Lake/Pond
NATURAL SOURCES

1.1.2 Sources of water

When sources are looked at in entirety, the two major water sources in rural areas emerge as being the handpump and the dugwell.

However, there were differences between states on the subject of the most important source (overall) as well as the most important sources by use. We will examine both aspects separately.

Base : All respondents

Sources	Total	UP	Raj	WB	Man	TN	AP	Guj	MP	Sul	Uda	24P	Amr
Private dugwell	19	26	17	5	-	21	12	19	20	22	12	-	22
Public dugwell	28	32	28	12	-	33	40	21	26	41	57	-	27
Dugwell (Total)	**47**	**58**	**45**	**17**	**-**	**54**	**52**	**40**	**46**	**63**	**69**	**-**	**49**
Private handpump	12	30	1	7	-	3	4	6	4	21	-	14	36
Public handpump	26	12	22	55	3	23	39	15	26	18	54	74	13
Handpump (Total)	**38**	**42**	**23**	**62**	**3**	**26**	**43**	**21**	**30**	**39**	**54**	**88**	**49**
Private tap	7	3	19	-	2	7	2	20	14	1	6	-	10
Public tap	8	3	8	1	18	24	12	20	5	3	-	2	16
Tap (Total)	**15**	**6**	**27**	**1**	**20**	**31**	**14**	**40**	**19**	**4**	**6**	**2**	**26**
Stream/River	6	2	9	2	58	4	4	6	22	3	19	2	14
Lake/Pond	18	4	21	46	38	8	20	19	24	4	11	59	1
Canal	3	-	4	-	-	2	7	2	6	1	1	1	1
Mech Tubewell (Pvt)	3	1	2	-	-	22	1	1	2	1	1	-	-
Mech Tubewell (Pub)	2	1	8	-	-	6	-	6	1	-	2	1	-
Mech Tubewell (Total)	5	2	10	-	-	28	1	7	3	1	3	1	-

The statewise patterns are fairly clear. Dugwell emerges as the main source in Uttar Pradesh, Tamilnadu and Andhra Pradesh. In Udaipur (Rajasthan) the dugwell was very important; it was also important in the state as a whole.

The handpump was important in West Bengal; in the 24 Paraganas district it emerged as the single most important source by far.

Taps were important water sources in Gujarat, Tamilnadu and Rajasthan. In the tracking district of Amreli (Gujarat) taps emerged as an important water source.

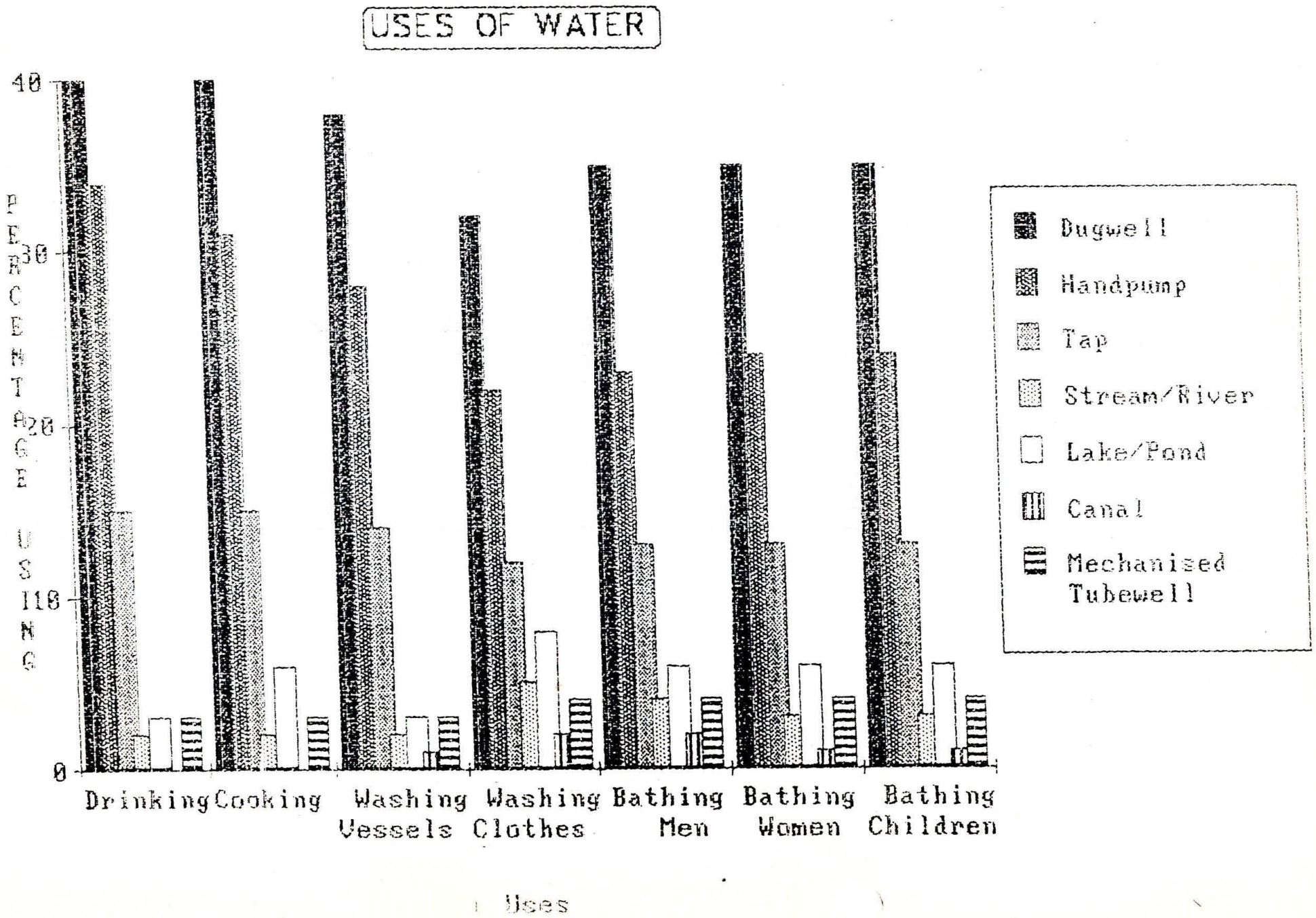
In Manipur, streams and ponds were clearly very important water sources. These were also fairly important in Madhya Pradesh.

Lakes and ponds were also important water sources in West Bengal and Rajasthan.

Finally, the mechanized tubewell (particularly the private mechanised tubewell) was an important source of water in Tamilnadu.

1.1.3 Purposes by sources

An analysis of the sources used by each purpose provides an insight into the water usage patterns across the states. Data for the 4 tracking districts will be highlighted where relevant.


USES OF WATER
40
30
20
10
0
PERCENTAGE USING
Drinking
Cooking
Washing Vessels
Washing Clothes
Bathing Men
Bathing Women
Bathing Children
Uses
Dugwell
Handpump
Tap
Stream/River
Lake/Pond
Canal
Mechanised Tubewell

The following table provides an overview of the main sources used for various purposes :

Base : All respondents in 8 states

(% across)

	Sources						
	Dug-well	Hand-pump	Tap	Stream/ River	Lake/ Pond	Canal	Mechanised Tubewell
Purposes :							
Overall	47	38	15	6	18	3	5
Drinking	40	34	15	2	3	-	3
Cooking	40	31	15	2	6	-	3
Washing vessels	38	28	14	2	3	1	3
Washing clothes	32	22	12	5	8	2	4
Bathing - men	35	23	13	4	6	2	4
Bathing - women	35	24	13	3	6	1	4
Bathing - children	35	24	13	3	6	1	4
Animal drinking	35	23	10	5	14	2	3

It is interesting to note that :

- once a non-traditional water source was used, it was used for a large variety of purposes.
- where a dugwell was used again, the use was fairly consistent
- **the dugwell, handpump and tap, in that order formed the predominant sources of drinking water.**

1.2 Water sources - Distance

The majority of public water sources (75%) were within 5 minutes walking distance from the house, as reported by respondents and, where possible, verified by interviewers.

The distances at which public water sources were located varied between states. Details were as follows :

(Base : For each source = those who mentioned use of that source)

Public source	Total	UP	Raj	WB	Man	TN	AP	Guj	MP
Dugwell									
Base	1191	422	83	71	-	155	234	67	158
	%	%	%	%	%	%	%	%	%
Less than 100 mtrs	68	81	42	95	-	58	54	44	78
101 - 500 mtrs	25	16	45	4	-	29	36	42	20
501+ mtrs	6	3	12	-	-	10	9	14	2
Average (mtrs)	131	83	242	39	-	170	178	226	95
Handpump									
Base :	1115	145	79	329	-	112	238	51	160
Less than 100 mtrs	75	91	80	87	-	51	61	77	69
501+ mtrs	4	1	3	1	-	8	8	1	6
Average (mtrs)	105	58	89	64	-	182	158	75	114
Tap									
Base	363	38	32	8	3	114	71	68	30
	%	%	%	%	%	%	%	%	%
Less than 100 mtrs	74	68	57	38	69	75	85	69	93
101 - 500 mtrs	21	32	42	29	19	15	14	26	8
501+ mtrs	3	-	1	33	11	6	2	1	-
Average (mtrs)	99	93	116	458	156	109	70	85	48

Taps and handpumps were clearly available closer to the house than traditional dugwells. There were some exceptional states.

In West Bengal, taps, where available were far away but handpumps were close. In Rajasthan too, handpumps were closer than either dugwells or taps.

In Andhra Pradesh and Madhya Pradesh, taps were closer than either handpumps or dugwells.

Rivers and streams where used, were an average of 285 metres away from the house of the respondent, ranging from a low average of 146 metres in Manipur to a high of 635 metres in Gujarat.

Lakes or ponds, where used, were usually located closer to the respondent, at an average distance of 156 metres. The range was wide, from a low of 40 metres in West Bengal to a high of over 450 metres in Madhya Pradesh.

Canal usage was reported mainly in Rajasthan where it was located at an average of distance of 307 metres. In other states, the one or two respondents who did use canals had them at an average distance of 15-65 metres from their house.

Frequency of visit to source

On an average, respondents reported that the source of water was visited 8-9 times in a day.

The lowest number of visits were reported from West Bengal (mode : 1-2 times) while the highest were reported from Uttar Pradesh and Andhra Pradesh (mode : over 16 times). In Tamilnadu, there were wide variations. 23% reported going 3-4 times to collect water, 21% going 5-6 times and 22% going 9-10 times.

There were variations in frequency of water collected by state. The average frequency by different sources were as follows :

	Average frequency of visit
Dugwell	12.6 times
Handpump	9.1 times
Tap	9.0 times
River/stream	6.4 times
Lake/Pond	6.4 times
Canal	6.2 times
Mechanized tubewell	9.1 times

(Refer Table 4a Water)

Rivers, lakes and canals were visited less frequently than other locations. One possible reason for this could be that rivers and lake/ponds were located further away than the other sources.

Assuming a walking speed of 1.5 kms an hour (25 metres a minute), the distance of water source has been converted into time to estimate total time taken over a day by the main water collector for the job of collecting water. This is given below :

Source	(a) (minutes) Time taken (one way)	(b) (No. of times) Frequency	Total time/day (a X 2 X b)
Dugwell	5.2	12.6	2.2 hrs
Handpump	4.2	9.1	1.3 hrs
Tap	4.0	9.0	1.2 hrs
River/stream	11.4	6.4	2.4 hrs
Lake/Pond	6.2	6.4	1.3 hrs
Canal	9.4	6.2	1.9 hrs
Mechanized tubewell	11.7	9.1	3.5 hrs

The rural person spends more than an hour everyday just walking to the source of water and back, if that person has access to and uses a handpump or tap. If however, the person uses a river or dugwell, this walking time could easily be over two hours. It must be noted that the time being discussed here does not include time spent in actually collecting the water, preparation prior to collection and waiting time at each visit. If we allow for just 10 minutes per visit for preparation, collection and waiting, this time would increase from 1 hour (if river/ lake/canal being used) to over two hours if dugwells are used. 10 minutes is a low estimate - the actual time could be considerably higher and vary, depending upon the circumstances.

In the four tracking districts being studied, the main water sources were as follows :

Base : All respondents	Sultan-pur %	Udaipur %	24 Paraganas %	Amreli %
Dugwell	63	69	-	48
Handpump	39	54	88	49
Tap	4	4	2	26
Stream/River	3	19	2	14
Lake/Pond	4	11	59	1
Canal	1	1	1	1
Mechanized tubewell	1	3	1	-

While the dugwell was the most important source in Sultanpur and Udaipur the handpump and lake were important sources in 24 Paraganas district. In Amreli both dugwell and handpump were important sources.

The average distances for each of these sources were as follows :

Base : Those who used each source

(Metres)	Sultanpur	Udaipur	24 Paraganas	Amreli
Dugwell	100	300	-	300
Handpump	100	100	100	200
Tap	50	-	100	200
River/Stream	100	150	20	200

The frequency with which each of these sources were visited was as follows :

	Sultanpur	Udaipur	24 Paraganas	Amreli
(No. of times)				
Dugwell	20	4	2	5
Handpump	17	4	4	7
Tap	16	-	2	7
River/Stream	10	2	6	6

Going by the earlier mentioned conversion rate based on 25 metres per minute, we arrive at the following time/source/day for the 4 districts

	Sultanpur	Udaipur	24 Parganas	Amreli
(hours)				
Dugwell	2.7	1.6	-	2.0
Handpump	2.3	0.5	0.5	1.9
Tap	1.1	-	0.3	1.9
River/stream	1.3	0.4	0.1	1.6

The respondents of Sultanpur clearly spent far more time on water collection than their counterparts in other districts, primarily because of the high reported frequency of their visits. Conversely, respondents in Amreli had water sources located at a greater distance but, because of relatively low collections frequencies, spent between 1.5 - 2 hours walking to the water source and back.

In Udaipur and 24 Parganas, on the other hand, both proximity and low frequency of visit ensured that, on an average, less than one hour walking time per day was spent on this activity.

1.3 Collection Practices

1.3.1 Containers used for collecting water

Pots and buckets were used to collect water, with pots being used somewhat more commonly than buckets (67% versus 55%)

There were clear statewise trends on this issue which are depicted below.

Base : All respondents
(% across)

	Pots		Buckets		Other		None	
Total	67		54		17		2	
Uttar Pradesh (Sultanpur)	22	(7)	95	(97)	9	(1)	1	(-)
Rajasthan (Udaipur)	91	(93)	50	(16)	28	(46)	1	(-)
West Bengal (24 Paraganas)	75	(81)	70	(69)	21	(15)	6	(4)
Manipur	44		65		43		1	
Tamilnadu	92		11		34		1	
Andhra Pradesh	96		10		6		1	
Gujarat	99	(100)	36	(16)	25	(16)	1	(-0
Madhya Pradesh	81		37		12		2	

* Figures in brackets pertain to tracking districts.

The use of buckets was particularly high in Uttar Pradesh. In West Bengal, buckets and pots were used almost equally while in the other states, pots were used more than buckets.

In terms of sole usage of one container or multiple usages, details were as follows :

(Base : All)	%	Highest in	
Used pots only	36	Andhra Pradesh	: 85%
Used buckets only	25	Uttar Pradesh	: 71%
Other containers only	2	Manipur & Tamil Nadu	: 6% each
Pots + buckets	21	West Bengal	: 48%
Pots + other containers	7	Tamilnadu	: 25%
Buckets + other containers	4	Manipur	: 30%
Pots + buckets + Other containers	4	Gujarat	: 12%

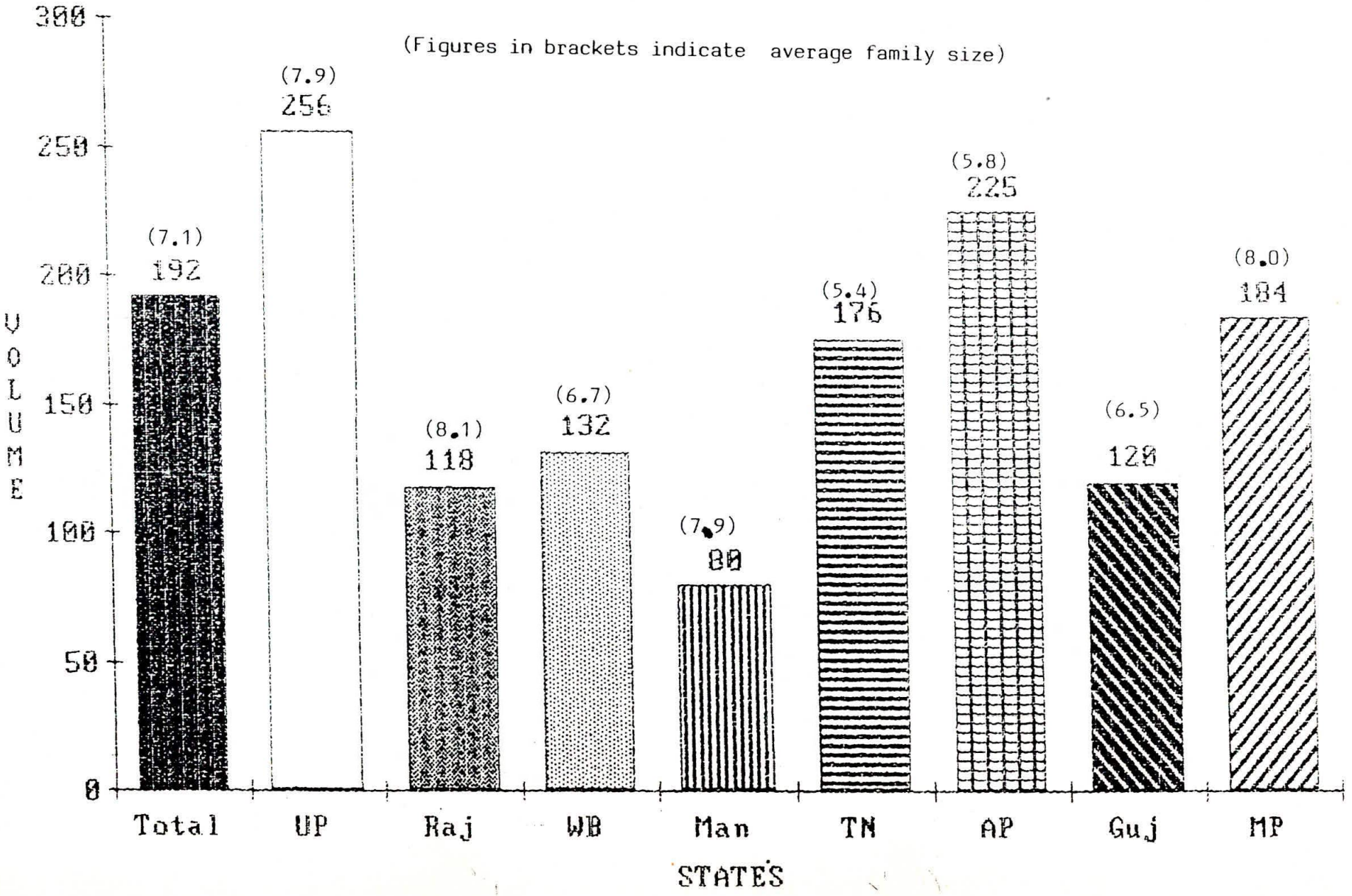
The average capacity of a pot was reported at 14.2 litres, of a bucket at 10.8 litres and of other containers at 17 litres.

On an average, respondents filled 9.3 pots of water in a day, 15.9 buckets and 6.3 other containers.

The overall picture was therefore as follows :

	Average Capacity (litres)	Numbers filled
Pots	14.2	9.3
Buckets	10.8	15.9
Others	17.0	6.3

AVERAGE VOLUME OF WATER COLLECTED PER HOUSEHOLD PER DAY(Litres)



The actual volumes filled by each respondent (data pertained to water collected on the previous day) were calculated by multiplying capacity of container into number of containers filled. The data thus arrived at revealed that on an average, a rural household collects 192 litres of water per day. There were state - wise variations which are given below :

State	Average volume/day (litres)
(Overall)	192
Uttar Pradesh	256
Rajasthan	118
West Bengal	132
Manipur	80
Tamil Nadu	176
Andhra Pradesh	225
Gujarat	120
Madhya Pradesh	184

Respondents from Uttar Pradesh and Andhra Pradesh collected the highest volumes of water while those in Manipur collected the lowest volumes. Volumes collected would be a function of the purposes for which water is brought into the house and the availability of a general water source close - by.

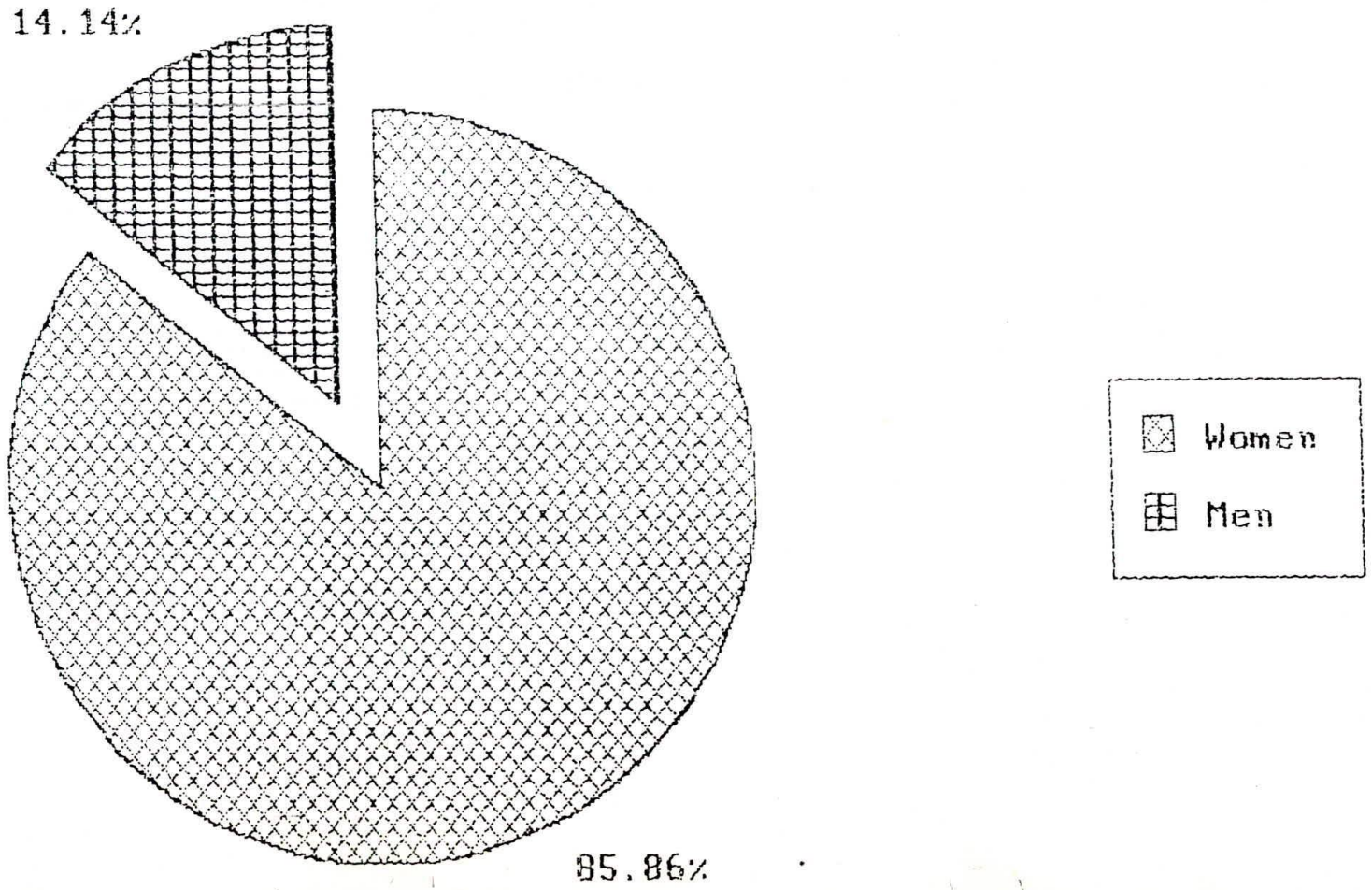
1.3.2 Water collectors

The main water collectors were women. In fact, **the young - woman, aged 15-35 years was the single most commonly mentioned water collector.**

In fact, when questions were asked for the "main" and the other collector, this young woman was mentioned in 12% of all cases as both the main and the other collector. Thus, in 12% of all households there was nobody else who collected water other than the young woman.

Data regarding the main or sole collector of water by state, is as follows :

WHO COLLECTS WATER FOR HOUSEHOLD



Data, regarding the main or sole collector of water by state, is given below:

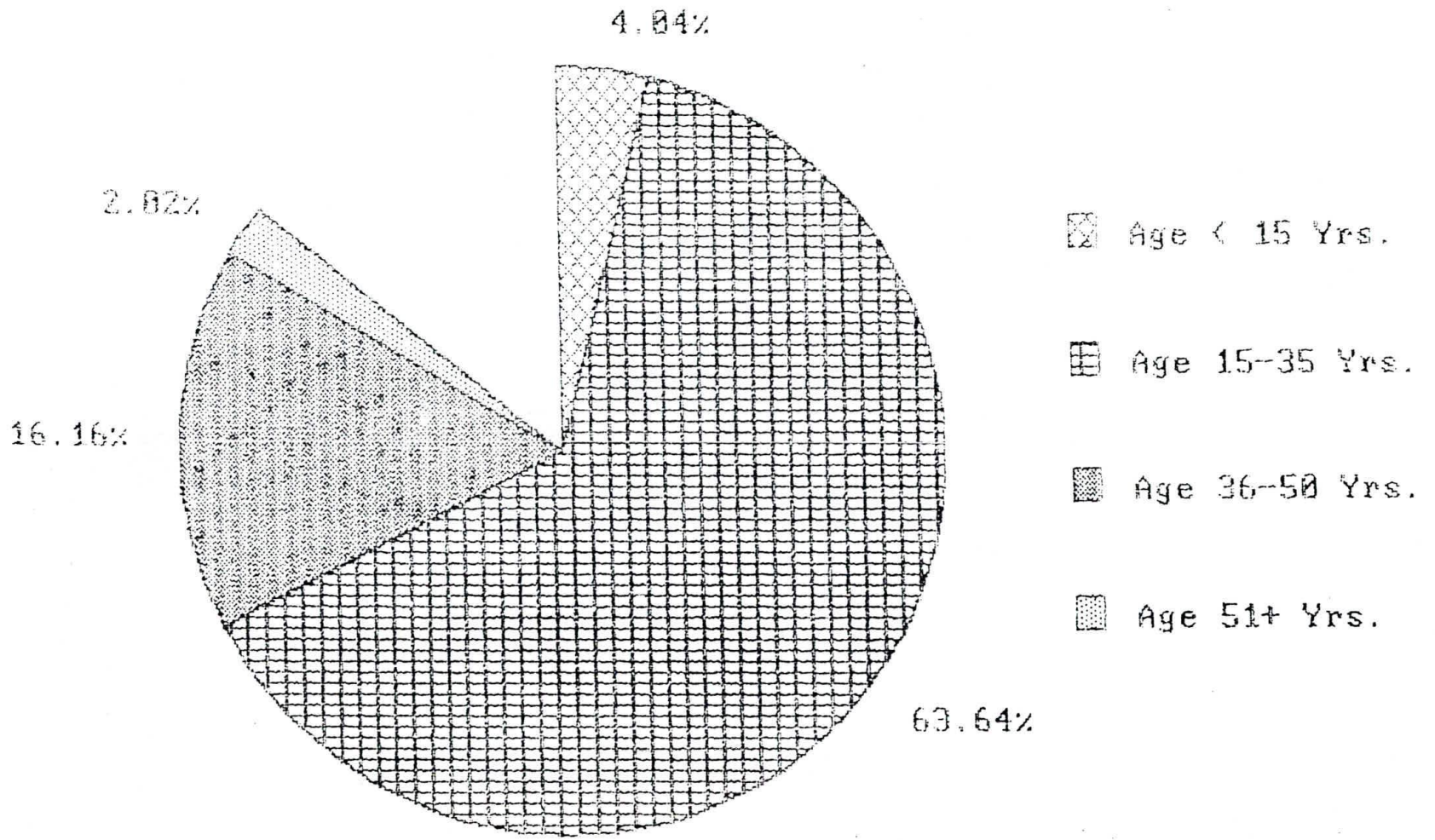
Main or sole water collector

(Base : All who collect water = 4291)

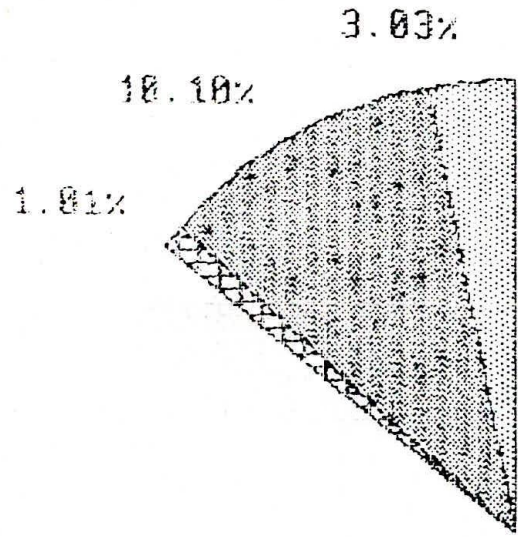
(% across)

		Women			Men			
(Age)	/ 15	15-35	36-50	51+	/ 15	15-35	36-50	51+
Total	4	63	16	2	1	10	3	-
Uttar Pradesh	3	48	19	1	2	21	5	1
(Sultanpur)	6	54	13	1	2	17	5	1
Rajasthan	4	71	16	1	-	4	2	-
(Udaipur)	3	74	15	-	-	6	2	-
West Bengal	4	74	13	1	1	3	1	1
(24Parganas)	7	65	9	4	2	2	-	-
Manipur	2	87	8	-	2	1	1	-
Tamil Nadu	3	66	21	5	1	2	1	-
Andhra Pradesh	5	59	14	2	3	10	4	-
Gujarat	2	79	13	2	-	3	1	-
(Amreli)	3	83	12	1	-	-	-	-
Madhya Pradesh	5	72	14	2	1	5	1	-

WHO COLLECTS WATER FOR HOUSEHOLD
(among women)



WHO COLLECTS WATER FOR HOUSEHOLD (among men)



- Age < 15 Yrs.
- Age 15-35 Yrs.
- Age 36-50 Yrs
- Age 51+ Yrs.

The table establishes clearly that water collection was clearly seen to be a woman's job. This is evident not only from the fact that 85% of all main or sole water collectors were women but also from that fact that, **in all states, the girl child was often the main water collector but the boy child rarely so** (in Gujarat and Rajasthan, not at all !). Similarly, women above 51 collected water more often than men above 51.

The implications cause concern. When a family presumably does not have a woman aged 15-50 who can collect water, the second choice may be the young boy aged 15-35. (mostly in UP and AP). However, in most states, the girl child aged less than 15 years would be as likely to become the main water collector as any male member of the household !

The other water collector in the house (who would presumably help out in case of illness, emergency or special circumstances) was often the young man of the household aged 15-35 years. Details are given below :

(Base : All respondents = 4291)	Sole %	Main %	Other %	Total %	Weighted average*
Girl Child 5-15 Yrs	1	3	15	19	0.23
Woman 15-55 Yrs	12	51	13	76	1.50
Woman 35-50 Yrs	1	16	17	34	0.50
Woman 51+ Yrs	-	2	7	9	0.10
Boy Child $\angle$ 15 Yrs	-	1	11	12	0.14
Man 15-35 Yrs	3	7	27	37	0.49
Man 36-50 Yrs	-	3	12	15	0.17
Man 51+ Yrs	-	-	3	3	0.04

* Sole = 3, Main = 2, Other = 1, Not mentioned = 0

The young woman was three times more important a water collector than the next person who was the middle aged woman followed closely by the young man. The girl child was one and a half times more used for this task, than a boy of the same age. Even in the relatively older aged, the woman collected water more than the man.

1.3.3. Problems regarding water collection

Two out of three female respondents said that there were problems with regard to water collection. On the whole, 62% of the respondents replied positively to this question regarding problems. The highest proportion of positive responses were received from Rajasthan (71%) and the lowest from Manipur (47%) and Madhya Pradesh (48%). There were significantly more complaints regarding water collection problems from the lower income household (65% as against 39% in upper income households) and from those who were illiterate (68%). Since these two factors do appear to be interrelated, it would appear that low incomes resulted in less convenient water sources.

The types of problems mentioned were as follows:

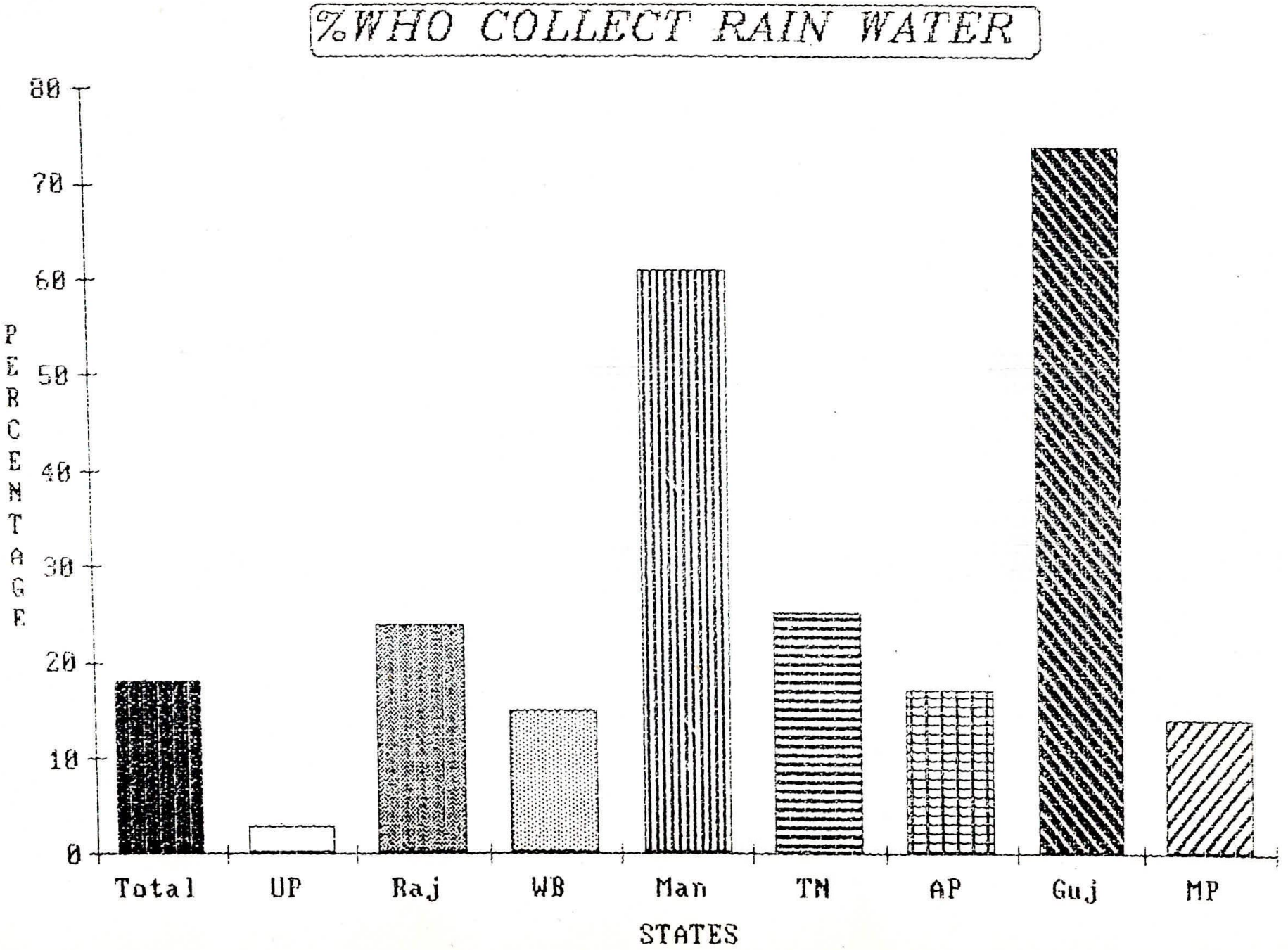
(Base : Those who said there were problems = 2720)

(%)

	Total	Male	Female	LI	MI	UI
Body ache and pain	38	27	48	39	35	39
Tiring work	34	34	34	34	36	25
Dugwell too far	17	18	15	17	16	5
Waiting time HP	13	15	11	13	12	20
HP located too far	12	13	11	11	11	14
Location too far	6	6	5	5	6	8
Water source weak/ dries up	5	5	5	5	5	8

It is interesting that the main complaint from women pertained to body ache and pain and that women complained less than men about distance and waiting time at the handpump. While there is no direct data to support this, we believe that the woman did not object to the time and distance as this task of water collection provided her with an opportunity to move out of the house and socialize. To carry the thought further, men could have thought of time and distance as a problem for the same reason i.e., it kept women out of the house and ate into time that could otherwise have been used for other household work or childcare. On the other hand, men did not complain about aches and pains being a problem with water collection.

Very few respondents from the UI households complained about the dugwell being located too far away, indicating possibly some preference towards UI households/ localities in the location of public dugwells. Secondly, UI households would also tend to have and use private dugwells.


%WHO COLLECT RAIN WATER
80
70
60
50
40
30
20
10
0
PERCENTAGE
Total
UP
Raj
WB
Man
TN
AP
Guj
MP
STATES

1.4. Rain Water

1.4.1. Collection and use of rain water.

The majority of respondents did not collect rain water. Those who did came essentially from 2 states- Manipur and Gujarat. Details were as follows :

(Base : All = 4418) + 2407	% who collected rain water		
Total States (4 districts)	18	(28)	
UP (Sultanpur)	3	(11)	*
Rajasthan (Udaipur)	24	(14)	*
W Bengal (24 Parganas)	15	(27)	*
Manipur	61		
Tamil Nadu	25		
Andhra Pradesh	17		
Gujarat (Amreli)	74	(60)	*
Madhya Pradesh	14		

The tracking districts did not accurately reflect state-wide behaviour on this score. In Udaipur and Amreli, significantly smaller proportions of people collected rain water than the Rajasthan and Gujarat averages, respectively. In the 24 Parganas and Sultanpur, significantly larger proportions than state averages collected rain water.

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* State and tracking district differences significant at 99% level of cofidence.

On the whole, the younger, literate persons were more likely to collect rain water than older and illiterate persons. In the districts, there was a clear trend that showed a greater tendency to collect rain water in upper income houses (41% in Rs 750 + MHI versus 23% in below Rs 750 MHI). However, this trend was not borne out in the state - level data.

In both state and district levels, female respondents said that they collected rain water significantly more often than male respondents (99% level of confidence). This could mean that men were sometimes unaware of this practice.

1.4.2 Uses of collected rain water

Rain water thus collected was used mainly for washing purposes. One-third of the respondents used rain water for drinking and cooking; the others did not use it for drinking but used it mainly for bathing and washing vessels.

The details of those who used rain water for drinking and cooking purposes was as follows:

Base : those who collected rain water

States = 798

Districts = 671

	Drinking		Cooking	
	%		%	
Total	34		33	
Uttar Pradesh(Sultanpur)	20	(6)	8	(3)
Rajasthan (Udaipur)	72	(24)	71	(21)
W.Bengal (24 Parganas)	30	(16)	24	(44)
Manipur	84		81	
Tamil Nadu	31		41	
Andhra Pradesh	12		10	
Gujarat (Amreli)	32	(34)	33	(27)
Madhya Pradesh	35		28	

In both state and district samples, illiterate respondents used rain water for drinking/cooking purposes more often than literate respondents. There were however no real trends or differences in usage by income or age groups.

The main reasons for not drinking rain water pertained to its appearance - respondents said that the water was muddy, unclear, had suspended impurities and was impure.

The other reasons, mentioned by small proportions (8% and 4% respectively) pertained to taste. Respondents in Gujarat, Uttar Pradesh and Rajasthan said that rain water tasted bad ; in Gujarat, some respondents also said that it had a brackish taste or that it was tasteless.

Those who did not collect rain water said that it was difficult to collect rain water (12%) and that they did not need to do so as there were other water sources available to them (18%).

26% of the respondents in the state and 14% in the districts said that rain water was not used for drinking as it caused illness and health problems. It is worth looking at these respondents in greater detail.

The respondents who spoke of rain water being a cause of illness belonged essentially to the southern states of Tamilnadu and Andhra Pradesh (43% in each). In addition, 35% from Madhya Pradesh also spoke of the same. The fact thast these 3 states were not represented in the tracking districts could account for the relatively low mention of rain-water caused illness by tracking district respondents where the highest mention was found in 24 Parganas of West Bengal (20%).

At the state level, too, 18% of West Bengal respondents and 16% of Gujarat respondents said that rain water caused illness.

This response came essentially from low and middle income respondents, from illiterate and female respondents. There was no clear trend by age.

2.0 STORAGE AND USE OF WATER

2.1 STORAGE PRACTICES

a/ The overall trend regarding storage appeared to be to store water in the same container in which it was collected. The main responses were as follows :

Base : All respondents

	States	Tracking districts
Base :	4418	2407
	%	%
. Stored in the same pots in which it was collected	52	56
. Stored in buckets	23	30
. Transferred to another pot	26	22
. Transfer not specified	7	7

The first two responses contain an element of overlap since both responses could have been coded. It is clear however that only 22-26% transfer water to another pot while the majority retain it in the same collection pot.

The practice of transferring water was most often mentioned in Manipur, followed by Tamilnadu, Andhra Pradesh and Madhya Pradesh. This practice appears to be relatively uncommon in Uttar Pradesh and West Bengal.

The issue of preferability between the two practices is not clear. On the one hand , over 95% of respondents said that they threw stale water away and washed the

storage pot before storing fresh water which would make the practice of transferring water an acceptable one. On the other hand, the container in whcih water was collected would necessarily be empty before collection and to that extent, more assuredly hygenic.

There were no real differences in this storing practice by age or household income. Literate respondents, however, practiced transferring more than illiterate respondents.

b/ Having brought the water home, 46% of all respondents stored it in a platform or in a place specifically designed for storing the pot. 29% kept the container on the floor and, as we have seen, 23% stored water in buckets which, we presume, would also be kept on the floor. 2% did not store water as they had a private water source.

Thus, only 46% of respondents stored water in an acceptable place, such that care was taken to ensure the relative seclusion of the water container from other household/ kitchen items.

As had been identified in the qualitative study, these special places could be platforms, made of mud, bricks, wood or other material; they could be niches in the wall, they could even be partition-like walls built to chest-height on which containers would be placed.

The practice of storing water on a platform was mentioned in three states in particular. These were :

Gujarat : 88% (Amreli : 95%)
Rajasthan : 72% (Udaipur : 96%)
Madhya Pradesh : 72%

In other states too there was a mention of platforms/special places to differing extents.

Uttar Pradesh	: 42%	(Sultanpur : 42%)
Tamilnadu	: 40%	
Andhra Pradesh	: 37%	
West Bengal	: 5%	
Manipur	: 5%	

This appeared to be a practice that was region specific rather than being dependant on income, sex or education. To some extent, older respondents (46 years +) mentioned this practice more than younger respondents (66% versus 60%). However, the prevalence of the practice to similar degrees in geographically contiguous states offers interesting insights into its deep socio-cultural roots.

c/ Certain direct questions were put to all respondents on issues where indirect questions could lead to incorrect/ incomplete information and thereby cause difficulties in interpretation. These questions and their responses are discussed below :

(Refer Table 7b : Water)

i/ Washing storage pot from inside before filling in fresh water.

99% of all respondents said that they did do so. Since almost all answered in the positive, no real variations

exist. Three districts where more than 1% answered in the negative were :

West Bengal	: 1%	(24 Paraganas	: 2%)
Uttar Pradesh	: 3%	(Sultanpur	: 5%)
Manipur	: 8%		

The question being such that the socially acceptable and "correct" answer was obvious, we would allow for some amount of overclaim in the response.

ii/ Throwing away stale water before filling in fresh water

97% of respondents said that they threw away stale water. In two states, West Bengal and Manipur, 11% and 21% of the respondents said that they did not do so.

Since the first activity would not be possible without the second activity, we could safely say that 96% of the respondents (or less) threw away stale water and washed the pots from inside before filling in fresh water.

If we look at the fact that only 26% transfer water to a storage pot, and that 74% therefore collect water and store it in the same pot, it stands to reason that they would not carry a pot to the water source with stale water in it. Therefore, at least 76% would be throwing away stale water before filling in fresh water.

iii/ Filter water with cloth before storing it

Only 31% of all respondents filtered water with a cloth before storing. Once again, this practice was highly prevalent in some states and very low in others.
Details were as follows :

	%	%
Total of states (Districts)	31	(49)
Uttar Pradesh (Sultanpur)	9	(5)
Rajasthan (Udaipur)	75	(91)
West Bengal (24 Parganas)	12	(6)
Manipur	26	
Tamilnadu	14	
Andhra Pradesh	33	
Gujarat(Amreli)	91	(95)
Madhya Pradesh	50	

There were clear trends in the data that indicated that this practice was more prevalent among upper income,younger and literate respondents. It was also reported more by women than by men.

iv/ Cover the pot in which water is stored

Over 90% of the respondents followed this practice, with the exception of Uttar Pradesh where 41% said that they did not do so (43% did cover the pot in Sultanpur). In Manipur and Madhya Pradesh 7% did not do so and 3% did not cover the storage pots in Andhra Pradesh. By and large, however, covering of storage pots appeared to be a common practice. Upper income and literate respondents followed this practice significantly more than lower income and illiterate respondents.

v/ Boil water before storing

Not surprisingly, 96% of all respondents did not follow this practice. Those who did reportedly boil water belonged to Manipur (16%), Tamilnadu (11%), Rajasthan (8%) and West Bengal (6%). In other states, less than 5% of the respondents followed this practice.

vi/ Use of alum/chlorine

Only 2% of all respondents responded positively to this statement.

In Manipur, 25% used alum/chlorine. In Rajasthan 4% followed this practice while in Uttar Pradesh, 3% did so.

This practice was reported significantly more by upper income, younger and literate respondents than others.

d/ Mode of taking water from storage vessel

The hygiene level of water in a storage vessel would be influenced by the way in which water was taken from the vessel. If hands were dipped in, the dirt on the hands could contaminate the water. If a container was dipped in and that container was not clean, this could again contaminate the water. The method by which water was removed from the vessel was checked at the interview.

Tap attached to vessel	: 1%
Poured out from the vessel	: 22%
With ladle/container with handle	: 7%
Container without a handle	: 68%
Other methods	: 1%

The two most acceptable methods i.e., use of a ladle and the pouring out method are being examined in greater detail below :

Base : All respondents - State : 4418
Districts : 2407

	Pouring out		Use of Ladle	
	%		%	
Total (Districts)	22	(20)	7	(5)
Uttar Pradesh (Sultanpur)	38	(20)	6	(3)
Rajasthan (Udaipur)	4	(2)	8	(4)
West Bengal (24 Parganas)	54	(59)	9	(11)
Manipur	15		53	
Tamilnadu	16		1	
Andhra Pradesh	-		4	
Gujarat (Amreli)	-	(-)	13	(2)
Madhya Pradesh	8		10	

As examination of the practices of dipping in a container with a handle and a container without a handle (which would result in finger contact with the water) shows that the **practice of using a ladle appears to be directly correlated with a good income, youth and literacy. The use of a container without a handle, on the other hand, appears to be directly correlated with poverty and older age but not with literacy.** The details are provided below :

	Use a ladle	Use container without a handle
Monthly household income		
Below Rs 750	6	71
Rs 751 - 1500	10	61
Rs 1501+	14	58
Age		
Less than 15 years	9	69
15 - 45 years	6	67
46+ years	4	74
Literacy		
Can read	9	68
Cannot read	5	68

3.0 UNDERSTANDING OF WATER

3.1 GOOD WATER AND BAD WATER

The primary questions on water pertained to good and bad water. These terms had been used in response to the terminologies that village people had been seen to use with regard to water.

They were then also questioned on their understanding of water that was good for health and bad for health. The responses are being given below :

Base : All respondents - 4418

	Good water %	Good for health %
Visually clear	93	69
Sweet	87	46
Cooks food well	80	7
Cooks food fast	15	2
Pure/free of germs	12	19
Cool	6	2
Fresh	5	3
Light/feel light after drinking	4	3
Colour of cooked food does not change	3	-
Free of odour	3	5
Refreshing/thirst quenching	2	1
Not specified	-	6
Average number of qualities mentioned by each respondent	3.2	1.8

An examination of the above responses show that there was a certain amount of commonality in perceptions regarding qualities that rendered water good and good for health. The difference was in emphasis.

Visual clarity was the first important factor in the judgement of water, in absolute terms or in terms of health.

Sweetness was the second most important factor. While the proportions of respondents who gave this response in the context was almost half of those who had mentioned it in the context of good water, sweetness still emerged as an extremely important indicator of water that would be good for health.

Clearly, almost all respondents mentioned one or more of these two factors as a consideration for water quality vis-a-vis health.

Mention of factors that pertained to the water's cooking performance dropped dramatically in the context of its evaluation from a health point of view. While these factors had received a total mention of 98% in the context of good water, this total dropped to 9% in the context of health. We conclude that while cooking properties are considered highly important for water per se, these properties are not seen to have much connection with the health. Similarly, factors such as cool, fresh, light and refreshing, which were taken into consideration in general evaluation of water were mentioned less often in the context of health.

On the other hand, two factors were mentioned more often than others in the context of water that would be good for health. These were - "free of germs" and "free of odour". In actual terms the difference in frequency of mention is higher since the number of respondents who mentioned multiple features in the context of 'good for health' were fewer.

The concept of good water was one that respondents were more familiar with rather than the concept of good for health. This is based on two observation.

a/ 6% of the respondents were unable to give any answer to the question on "water that is good for health" while all were able to describe "good water". There were significantly more female and illiterate respondents who were unable to answer this question than others.

b/ In describing "good water" each respondent mentioned an average of 3.2 features while in describing water that is "good for health" each respondent mentioned an average of 1.8 features.

We conclude, therefore, that people think of clear and sweet water as being good for health but would look for something more before labelling water as being "good". The label "good water" was a better known label, possibly more stringently measured and included "good for health" within its fold. Thus we would venture to hypothesize that all water labelled 'good' would also be considered to be 'good for health' but all water labelled "good for health." would not necessarily be considered "good water ".

Bad water and water that is bad for health were described as follows :

Base : All respondents - 4418

	Bad water %	Bad for health %
Muddy/visually unclear	80	65
Food does not cook well	68	8
Salty	41	25
Impure/visible germs, insects	26	32*
Bad tasting	22	8
Smells bad	18	16
Tasteless	14	8
Cooked for does not keep	7	1
Food takes longer to cook	6	1
Colour of cooked food changes	6	1
Brackish	6	4
Thick	3	4*
Stale	3	3
Sour	3	1
Heavy to drink	2	3*
Negative effect on digestion	1	4*
Not specified	-	4
No. of responses/respondent	3.2	2.0

As with good water, visual clarity was the first measure of bad water and for water that would be bad for health. Visible impurities and germs were the second important factor that indicated a health hazard.

Bad water was identified by absence of visual clarity, by the performance of water in its food-cooking function, by its taste and, importantly, by its smell. Other factors that defined bad water were "thick, heavy, sour, stale and brackish" - it is interesting that these features also indicated, in almost equal measure, that the water was bad for health.

As with the definition of water that is good for health, 'bad for health' water is also defined by visual and taste terms rather than by its cooking performance.

There were some state-wise differences in the relative emphasis laid on various features of water. These are being highlighted below.:

In Manipur, 39% spoke of water that was "free of germs" in the context of good water as against the average 12%. By contrast, only 51% mentioned sweet taste (average 87%) and only 35% mentioned "cooks food well" (35%).

In the context of bad water, 31% of Manipur respondents mentioned "tasteless" (overall average : 14%) and 42% mentioned impure/germs visible as against the average of 14% and 42% respectively.

In the Southern states of Tamilnadu and Andhra Pradesh, bad water was identified as salty water by over 70% (overall average : 41%) of all respondents. They also emphasized (25%) (overall average : 7%) that bad water could be identified by the fact that food cooked in it would not keep for long. In Andhra Pradesh, 28% spoke of bad water being "tasteless".

In Gujarat, 98% of the respondents spoke of sweetness as a sign of good water (overall average : 87%) while 34% said that food would cook fast in good water (overall : 15%).

Significantly more literate people spoke of visual clarity (74%) and purity (free-of-germs) (22%) as indications of water that would be good for health - than illiterate persons (65% and 17% respectively).

3.2 WATER AND HEALTH

In response to a direct question that said "can bad drinking water cause health problems?" 95% answered in the affirmative. 1% were unsure, 2% said it could not cause health problems and 1% did not respond.

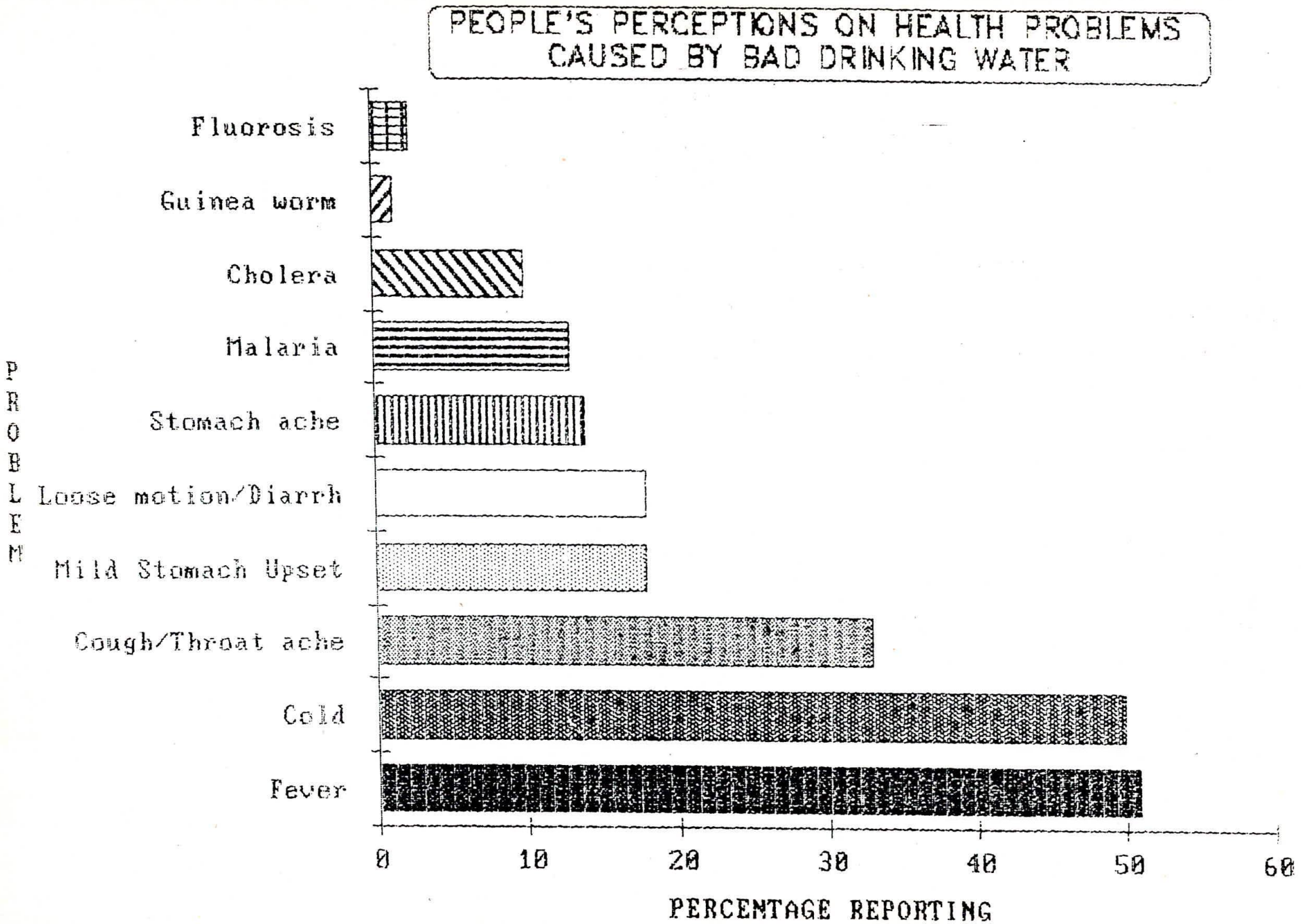
The lowest proportion of affirmative responses came from Gujarat (88%). 5% were unsure and 6% said that bad drinking water would not lead to health problems.

On this issue, it is pertinent to look at the four tracking districts separately.

The trend of relatively high negative responses from Gujarat persisted in Amreli district too where 5% were unsure and 4% replied in the negative. However, similar level of negative responses were also received from Sultanpur (Uttar Pradesh) and Udaipur (Rajasthan).

On the whole, significantly higher proportions of illiterates gave a negative response as compared to literates.

The fact that 95% of all respondents in the states and 93% in the tracking districts spoke of bad water causing health problems would, in itself, be heartening. However, a closer look at the type of health problems mentioned in this context reveals that there was a strong element of guesswork or ignorance in the affirmative responses. Several varying types of problems were mentioned, the most frequent of them being :


PEOPLE'S PERCEPTIONS ON HEALTH PROBLEMS
CAUSED BY BAD DRINKING WATER
Fluorosis
Guinea worm
Cholera
Malaria
Stomach ache
Loose motion/Diarrh
Mild Stomach Upset
Cough/Throat ache
Cold
Fever
PROBLEM
0
10
20
30
40
50
60
PERCENTAGE REPORTING

Base : All respondents

	States	Tracking districts
	%	%
Fever	51	41
Cold	50	37
Cough/Throat ache	33	26
Mild stomach upsets	18	25
Loose motions/diarrhoea	18	22
Stomach ache	14	12
Malaria	13	12
Cholera	10	10

Symptoms pertaining to the two health problems that are of direct interest namely fluorosis and guinea worm, were not mentioned in large numbers from the states on the whole. However, there was greater mention of these in some tracking districts.

	States	Districts
Guinea worm	1.5	5.8
Long worm from skin	0.1	0.3
Worms	3.0	3.8
Teeth turn black	0.3	0.3
Teeth turn pale	0.2	0.4
Pain in the joints	1.3	1.5
Body/bone become stiff	0.7	1.2
Hunchback	0.1	0.1
	2.6	3.5

Guinea worm (naroo) related mentions formed 22% of all responses in Udaipur as compared to the overall district average of 6% and the overall state level mention of 1.6%. 2% of responses in Amreli also pertained to guinea worm but in Sultanpur and 24 Paraganas the mention was negligible (0.7% and 0.2% respectively).

Symptoms of fluorosis accounted for 11% of the responses in Amreli district of Gujarat as compared to the average of all states which was 2.6%. In other tracking districts the mention of these symptoms was again negligible.

Within Amreli district "pain in the joints" was the most frequently mentioned symptom : 4.6% while 4.0% of the responses pertained to the symptom of body becoming stiff.

Other symptoms that were mentioned fairly frequently were ;

	State %	Districts %
Headache	17	9
Skin diseases	8	8
Bodyache	7	3
General health problems	6	5
TB	3	3

There were some state-wise variations in the relative frequency of mentions of health problems related to water.

The states where a health problem was mentioned more frequently than the overall average are mentioned below :

In Uttar Pradesh,* worms (5%) and cholera (12%) were mentioned to a slightly greater extent than average. In Sultanpur, worms was mentioned by 8% of the respondents and cholera - 13%.

In Rajasthan*, stomach related problems received emphasis. Stomach-ache (25%), stomach upset (23%), loose motions (20%) and vomiting (14%) were all mentioned more often than average. Guinea worm was mentioned by 5% while skin diseases were mentioned by 12%. Worms in general were mentioned by 6% of the respondents. Malaria was also mentioned more often at 29%.

In West Bengal*, the emphasis was on stomach upsets (57%) and loose motions (46%). No other health problems were mentioned with a higher-than-average frequency.

In Manipur, respondents spoke mainly of loose motions(55%) and cough (55%).

In Tamilnadu, the most frequently mentioned health problems that were associated with bad drinking water were fever (83%), cold (62%), headache (56%) and bodyache (12%).

In Andhra Pradesh, several health problems were mentioned more often than average. These were :

Loose motions	:	25%
Vomiting	:	24%
Cold	:	65%
Fever	:	66%
Headache*	:	27%

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* All data pertaining to these four states is exclusive of the data from the tracking districts in these states.

Fluorosis related* symptoms : 7% (Highest average across states)

The most important ones here were :

Pain in the joints	:	5.7%
Body becomes stiff	:	1.2%
Teeth turn black	:	0.8%

Eye disease :2.3%

Bodyache* : 12%

*The combined mention of these symptoms point to the existence of a problem that is either fluorosis or something similar in Andhra Pradesh.

In Gujarat, the problems mentioned often were loose motions (33%), vomiting (29%), worms (4%), guinea worm (10%), fluorosis related sysmptoms (3%), skin diseases (15%), cholera (20%) and malaria (23%). In Gujarat, therefore, the problem of fluorosis is known and experienced in other districts outside of Amreli; guinea worm and other worms are also known and associated with drinking water.

Finally, in Madhya Pradesh, the overall frequency of mention of any health problem was low. Problems of cold and cough were mentioned by 57% and 45% respectively. However, no other problem received above average mention.

Highest saliency regarding water related health problems was found in the states of Tamilnadu, Andhra Pradesh and Gujarat. This is based on two factors - the average number of problems mentioned per respondent and the number of respondents who did not mention any problems.

	Average responses/ respondent	% who did not reply at all
Total	2.9	1.9
Uttar Pradesh	2.4	0.7
Rajasthan	2.5	5.2
West Bengal	2.7	1.2
Manipur	2.5	2.6
Tamilnadu	3.2	0.1
Andhra Pradesh	3.5	1.5
Gujarat	3.4	-
Madhya Pradesh	2.8	5.8

4.0 HANDPUMPS

4.1 EXISTENCE AND USE

The majority of the respondents (78%) had a handpump in their village. The relative proportions by state and tracking district of those who said they had a handpump were as follows :

	%	
Total (Districts)	78	(93)
Uttar Pradesh (Sultanpur)	76	(93)
Rajasthan (Udaipur)	67	(97)
West Bengal (24 Paraganas)	82	(96)
Manipur	21	
Tamilnadu	65	
Andhra Pradesh	91	
Gujarat (Amreli)	65	(82)
Madhya Pradesh	93	

Tracking districts were clearly well covered with handpumps. In the states, Tamilmnadu, Gujarat and Rajasthan had relatively low coverage but Manipur, at 21%, was the lowest.

In the 8 states, the existence of Mark II handpumps was clearly high. In tracking districts, on the other hand, the focus was on traditional handpumps which accounted for the major type of handpumps.

Responses on type of handpumps were elicited from respondents with the use of photographs to avoid errors based on miscomprehension.

The overall scenario regarding handpumps as reported by respondents was as follows :

Base : All respondents - 4418

(% across)

States	Traditional	Mark II	Both	Neither
Total	22	39	17	21
Uttar Pradesh	27	9	39	23
Rajasthan	2	63	1	33
West Bengal	65	6	10	18
Manipur	-	19	-	79
Tamilnadu	4	52	9	34
Andhra Pradesh	14	76	1	8
Gujarat	26	30	9	34
Madhya Pradesh	-	78	13	7
Tracking districts				
Base : 2407				
Total	38	29	25	8
Sultanpur (Uttar Pradesh)	24	17	52	7
Udaipur (Rajasthan)	-	97	-	3
24 Paraganas (West Bengal)	96	-	-	4
Amreli (Gujarat)	30	3	49	17

Rajasthan clearly had essentially Mark II handpumps and very few instances of overlap. Andhra Pradesh and Madhya Pradesh also had a similar situation with two differences :

1. Madhya Pradesh had some degree of overlap where traditional and Mark II handpumps co-existed, and

2. Rajasthan had one third of respondents who were not covered by handpumps at all.

Uttar Pradesh was different in that 39% of respondents reported having both types of handpumps in their village and in Sultanpur district, 52% reported existence of both types of handpumps. This was also the case in Amreli district (49%) but was not true for the rest of Gujarat.

Usage

27% of all respondents mainly used the traditional handpump - as can be expected, the proportions using traditional handpumps were higher in West Bengal (80%) and Uttar Pradesh (44%).

33% mainly used the Mark II handpump - the proportions were higher in Rajasthan (59%), Tamilnadu (52%), Andhra Pradesh (57%) and Madhya Pradesh.

Only 1% of all respondents who had handpumps in their village used both types while 39% who had handpumps did not use either type. Non-users proportions were high in Manipur (74%), Gujarat (51%) and Madhya Pradesh (57%).

The reasons for non-use are being dealt with in a later portion of this section.

In the four tracking districts, 44% of all those who had a handpump in the village used a traditional handpump, 29% used a Mark II handpump, less than 1% used both and 27% used neither.

In 24 Paraganas (West Bengal), 100% of those whose village had a handpump used traditional handpumps. In Udaipur (Rajasthan), on the other hand, 81% of the respondents used the Mark II handpumps. In Sultanpur (Uttar Pradesh) and Amreli (Gujarat) over 55% and 34% respectively did not use either type.

We are analysing usage of handpumps on the basis of the type of handpump existing in the villages to understand non-usage on the basis of the handpump type.

	Total	UP	Raj	WB	Man	TN	AP	Guj	MP
Base: Having any handpump	3449	1022	270	486	3	314	556	227	571
	%	%	%	%	%	%	%	%	%
a/ Have traditional handpump	30	36	3	79	-	7	16	40	1
% of (a) who do not use handpump	37	54	57	6	-	86	54	70	54
b/ Have Mark II handpump	50	12	94	8	98	80	83	46	84
% of (b) who do not use handpump	42	48	38	30	73	42	39	36	49
c/ Have both	22	52	2	13	-	14	1	15	14
% of (c) who use :-									
Traditional	44	52	20	44	-	1	-	28	22
Mark II	22	16	33	50	-	49	80	20	16
Both	3	3	5	-	-	8	-	2	-
Neither	32	28	42	6	-	42	20	49	63

4.2 USES OF HANDPUMP WATER

76% of all respondents who used handpumps regularly used the water for drinking purposes.

68% regularly used it for cooking purposes.

Drinking purposes

The highest proportion of regular users of handpump water for drinking purposes came from Uttar Pradesh and West Bengal.

In Gujarat and Madhya Pradesh, close to 30% used handpump water sometimes for drinking purposes.

It is, however, more relevant to examine those respondents who said that they never used handpump water for drinking (8%). It is interesting to note that those who did not use handpump water for drinking were relatively older, illiterate and belonged to lower income groups. The differences, however, were not statistically significant.

In Manipur, none of those who used handpump water, used it for drinking. In Tamilnadu and Andhra Pradesh, 18% of the respondents who used handpump water did not use it for drinking purposes. In Gujarat and Rajasthan, the relevant proportions were 13% and 15% respectively. In Udaipur district 13% said that they never drank handpump water while in Amreli 6% said so.

68% of all respondents who used handpump water used it for cooking purposes on a regular basis. In Uttar Pradesh, 86% used handpump water regularly for cooking.

19% of all used it for cooking sometimes - In Rajasthan, Gujarat and Madhya Pradesh, such occasional use was higher (36, 28 and 30% respectively).

12% of all never used handpump water for cooking purposes. These proportions were higher in Manipur (91%), West Bengal (20%), Andhra Pradesh (18%), Rajasthan (17%) and Tamilnadu (16%). In the tracking districts, 28% of all respondents in 24 parganas and 15% in Udaipur did not use handpump water at all for cooking.

An interesting finding relates to water uses depending on the type of handpump being mainly used. Before we go into details of this, however, we need to make an important clarification. When a particular handpump is being spoken of by a villager, he is actually referring only to the visible, outward identification of the water from the handpump and his satisfaction with the pump water. His uses of that water are, thus, a reflection on the water quality and not on the pump per se.

The water quality would, to some extent, be a function of the depth to which the borewell has been sunk, the quality of pipes that constitute the well and other related features all of which contribute to the overall quality.

Assuming that this clarification has been accepted, we will now proceed to examine the findings on the basis of the type of handpump that was being mainly used.

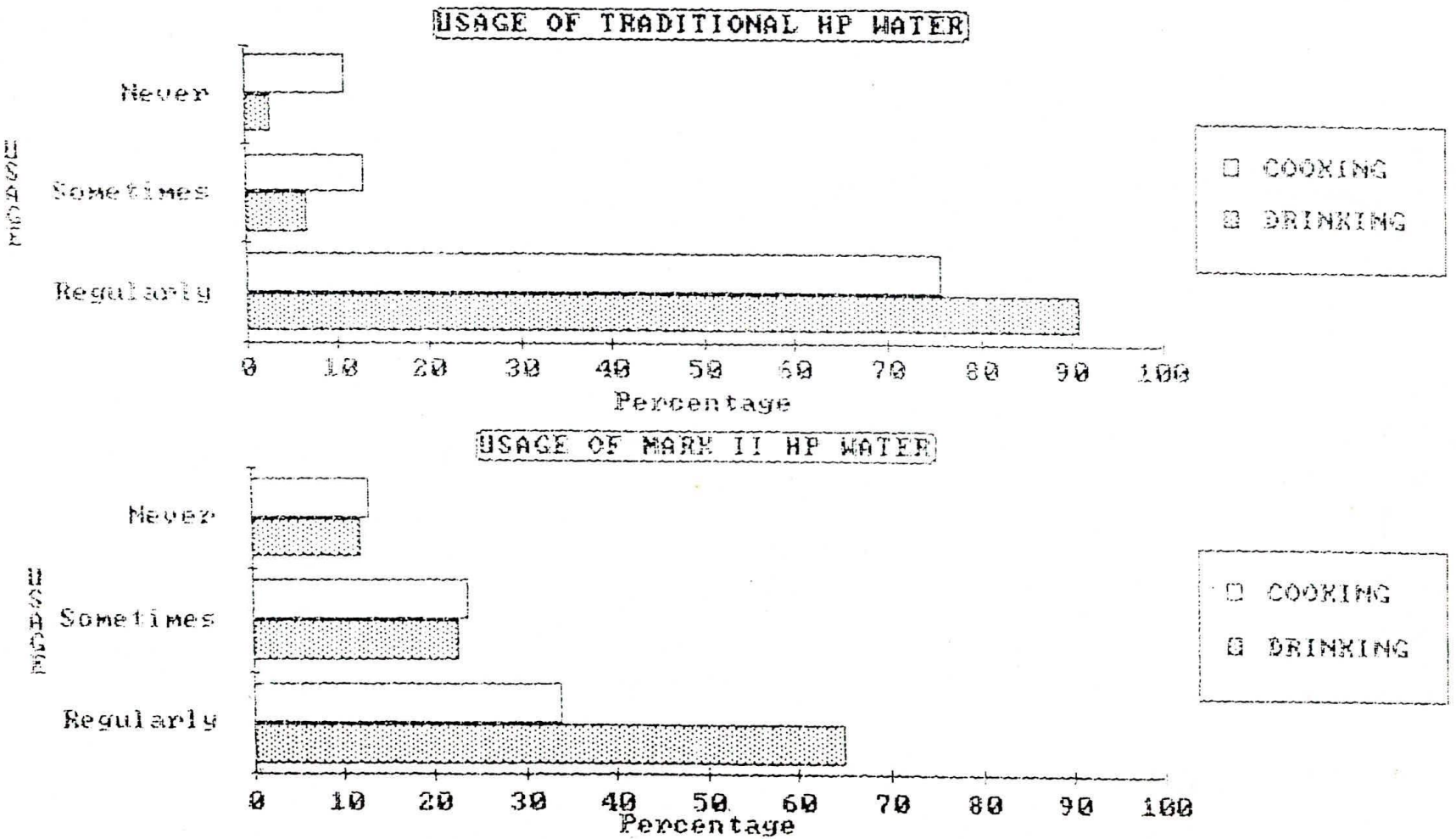
The differences that emerge have their own message with regard to the water quality delivered by the complete package of the traditional handpump (depth of drilling, site, metals used, etc) versus the Mark II handpump.

Used for drinking

Those who mainly used :-	Traditional	Mark II	Both
Base :	941	1147	26
	%	%	%
Used for drinking			
Regularly	91	65	55
Sometimes	7	23	29
Never	3	12	16

In all three cases, the differences in responses between uses of traditional handpumps and Mark II handpumps are statistically significant at a 99% level of confidence.

Thus, significantly more users of traditional handpumps used the water for drinking purposes on a regular basis; significantly more users of Mark II handpumps never used the water for drinking purposes.

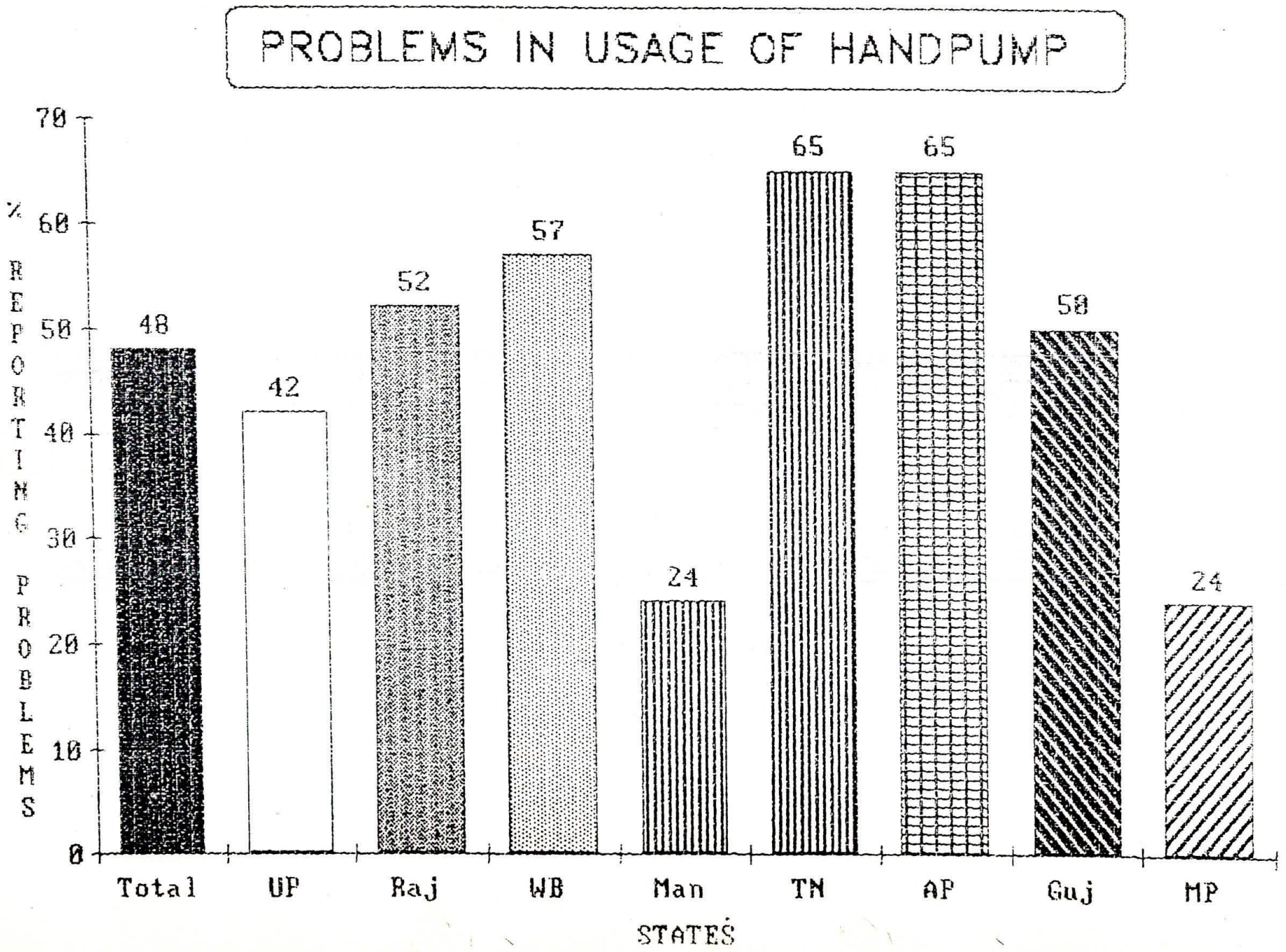

USAGE OF TRADITIONAL HP WATER
Never
Sometimes
Regularly
USAGE
0 10 20 30 40 50 60 70 80 90 100
Percentage
COOKING
DRINKING
USAGE OF MARK II HP WATER
Never
Sometimes
Regularly
USAGE
0 10 20 30 40 50 60 70 80 90 100
Percentage
COOKING
DRINKING

	Used for cooking		
	Traditional	Mark II	Both
Base :	941	1147	26
	%	%	%
Used for cooking			
Regularly	76	62	54
Sometimes	13	24	34
Never	11	13	11

(Table 12e - Water)

Significantly larger proportions of traditional handpump users used the water regularly for cooking purposes, significantly larger numbers of Mark II users used the water sometimes for cooking purposes. However, the difference between those who never used handpump water for cooking was not significant based on the type of handpump used.

Thus, we find that users of traditional handpumps regularly used the water for drinking and cooking purposes but users of Mark II handpumps tended to do so less regularly.


PROBLEMS IN USAGE OF HANDPUMP
% REPORTING PROBLEMS
70
60
50
40
30
20
10
0
48
42
52
57
24
65
65
50
24
Total
UP
Raj
WB
Man
TN
AP
Guj
MP
STATES

4.3 REASONS FOR NON-USE OF HANDPUMP

There are two types of non-use that are being studied below :

- non-use in general
- non-use for drinking purposes

We will look at both types of non-uses in detail to evaluate the factors that resulted in such non-use.

	Total non-use	Irregular/ non use for drinking
Base : All respondents (States only)	1326	496
	%	%
Location too far	59	28
Location not suitable (other than distance)	3	2
Monopolized by a few	9	6
Too much crowd/waiting	6	10
Water tastes salty	8	24
Water tastes brackish	2	3
Water tastes of iron	3	2
Water has rust	3	5
Water has bad smell	3	4
Others	49	64

(Refer Table 12g - Water)

While distance was the single largest cause for general non-use, distance as well as salty taste combined to keep people from using the water for drinking purposes.

An analysis of this non-use by type of handpump being referred to is provided below :

	Non-users and non-users for drinking		
	Traditional	Mark II	Both
Base :	441	1123	254
Reasons :	%	%	%
Location too far	40	54	55
Location unsuitable	3	3	3
Monopolized by a few	25	3	4
Too much crowd/waiting	3	9	2
Water tastes salty	10	16	5
Water tastes brackish	2	2	2
Water tastes of iron	1	4	3
Water has rust in it	2	5	2
Water has bad smell	2	4	-

(Refer Table 12g - Water)

In addition, there were other complaints regarding water that are being listed below :

- Water quality is poor - food becomes red, rusty
- Difficult to wash clothes
- Health problems caused by water
- Have other sources - will use if other sources fail

4.4 PROBLEMS IN THE USE OF HANDPUMP

Of those who had a handpump in their village, 48% said that they did have problems in actual use.

Details were as follows :

	Problems in use	
	States	Districts
Base : Those who have handpump in village	3449	2214
	%	%
Total (Districts)	48	48
Uttar Pradesh (Sultanpur)	42	23
Rajasthan (Udaipur)	52	47
West Bengal (24 Paraganas)	57	68
Manipur	24	-
Tamilnadu	65	-
Andhra Pradesh	65	-
Gujarat (Amreli)	50	53
Madhya Pradesh	24	-

(Refer Table 13 - Water)

Madhya Pradesh, Manipur and Sultanpur district (Uttar Pradesh) reported the lowest levels of problems, while Tamilnadu, Andhra Pradesh and the 24 Paraganas district of West Bengal reported the highest levels.

The complaints pertained mainly to difficulty in handling and frequent breakdown.

Complaints	Relative frequency		States from which above average frequency
	States	Districts	
Base :	1660	1060	
	%	%	
Difficult because of heavy/tough handle	43	54	Gujarat (79%) Rajasthan (65%) Tamilnadu (56% Amreli district (84%)
Frequent breakdown	32	23	Uttar Pradesh (45% West Bengal (43%)
Parts wear out	18	17	Uttar Pradesh (45%)
Crowded	15	10	Tamilnadu (25% Andhra Pradesh (29%) 24 Paraganas(WB) (16%)
Number of handpumps not sufficient	6	2	Andhra Pradesh (13%) Tamilnadu (12%)
Water flow slight/weak	13	11	Manipur (20%) Tamilnadu (22%)
Quantity of water insufficient	9	6	Rajasthan (24%) Manipur (80%)
Quality of water not good for drinking	12	10	Andhra Pradesh (20%) Tamilnadu (13%) Rajasthan (13%)

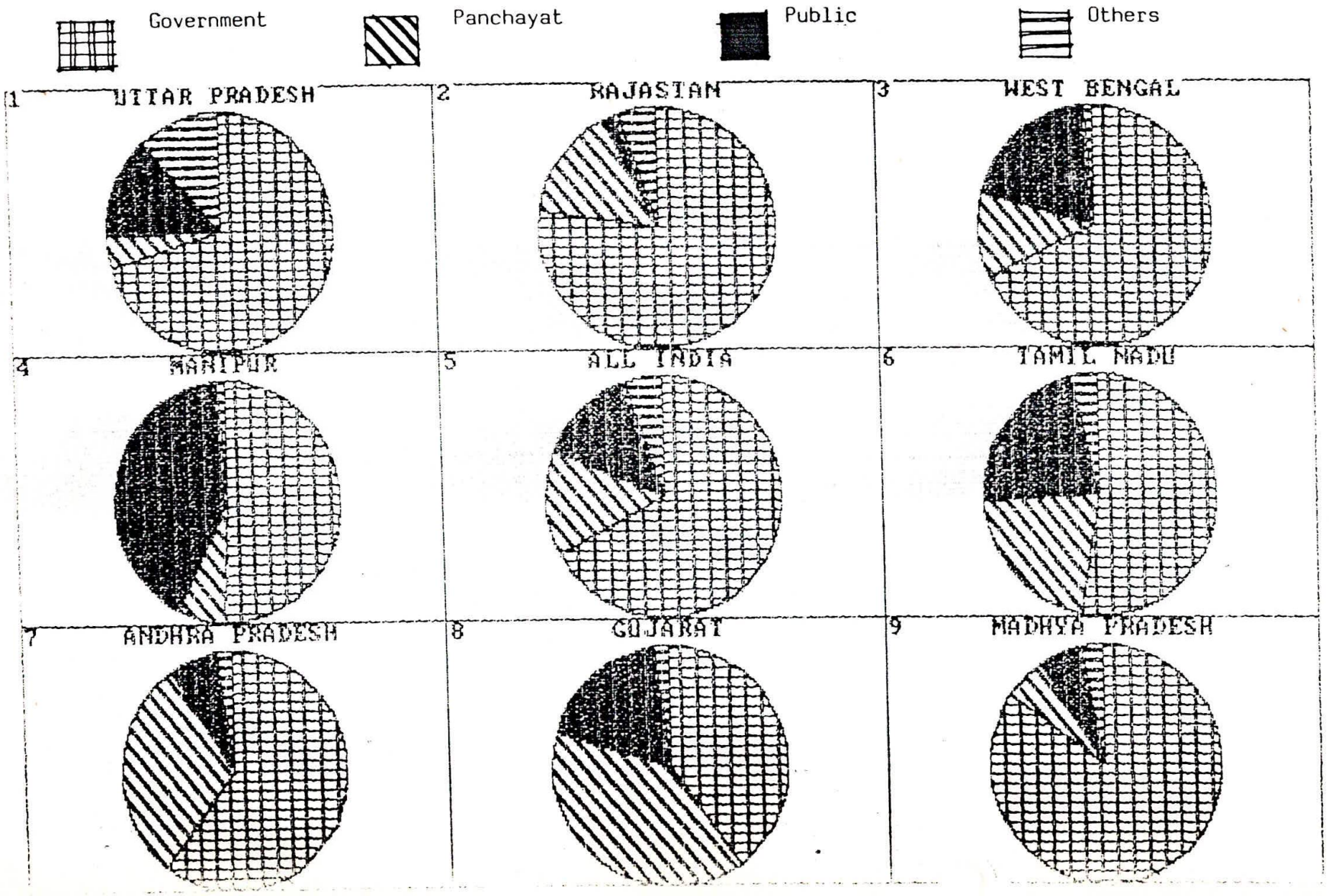
An analysis of the same set of problems on the basis of type of handpump being used is presented below :

	Users of Traditional	Mark II	Both	None
Base (States only) :	513	680	19	448
	%	%	%	%
Difficult - heavy handle	29	54	35	43
Frequent breakdown	45	23	54	28
Parts wear out	29	12	39	13
Crowded	9	22	30	13
Number of handpumps not sufficient	3	8	-	7
Water flow weak	12	16	33	10
Quantity of water insufficient	7	10	-	7
Quality of water not good for drinking	11	9	4	17

The Mark II pump suffered from problems of a heavy handle that was difficult to use; the traditional handpump suffered from the problem of frequent breakdown. Parts also tended to wear out more in traditional handpumps, possible a reflection of their longer service, assuming they were installed before Mark II handpumps.

Mark II handpumps had a large share of complaints pertaining to crowds around the pump and to there being insufficient numbers of handpumps.

PERCEPTIONS OF PEOPLE ON WHO OWNS PUBLIC HANDPUMPS



4.5 PUBLIC HANDPUMP OWNERSHIP AND MAINTENANCE

a/ Ownership

In response to a direct question pertaining to the villager's understanding of who owned the public handpumps, the following responses were received :

Base : All respondents - 4418

	Total %	UP %	Raj %	WB %	Man %	TN %	AP %	Guj %	MP %
The government	66	69	76	70	52	45	60	42	85
Panchayat	14	4	15	12	7	18	30	41	6
Total	80	73	91	82	59	63	90	83	91
Public/Villagers	13	14	2	20	42	19	7	19	6
Others	5	11	5	1	1	3	2	2	3

It is clear that the majority believe the handpump to be the property of the government or the panchayat. In three states, Rajasthan, Andhra Pradesh and Madhya Pradesh, this belief was particularly strong.

While there were no clear patterns by age and income, men and those who were literate tended to believe that handpumps were government/panchayat property somewhat more than women and those who were illiterate. The differences, however, were not statistically significant.

In the four tracking districts the beliefs were similar with an average of 82% (between 80% and 83%) believing that the public handpump was government/panchayat property.

b/ Responsibility for maintenance

Surprisingly however, this belief regarding ownership did not automatically translate into responsibility for maintenance. Inspite of believing that the government/panchayat owned public handpumps, respondents often saw maintenance as public responsibility.

Details were as follows :

Base : All respondents - 4418

	Total	UP	Raj	WB	Man	TN	AP	Guj	MP
	%	%	%	%	%	%	%	%	%
Government	33	24	46	20	27	29	37	29	55
Panchayat	24	3	30	22	27	38	45	47	22
Total	57	27	76	42	54	67	82	76	77
Public	24	33	20	41	53	12	7	24	16
Others	17	39*	7	5	1	4	9	3	10

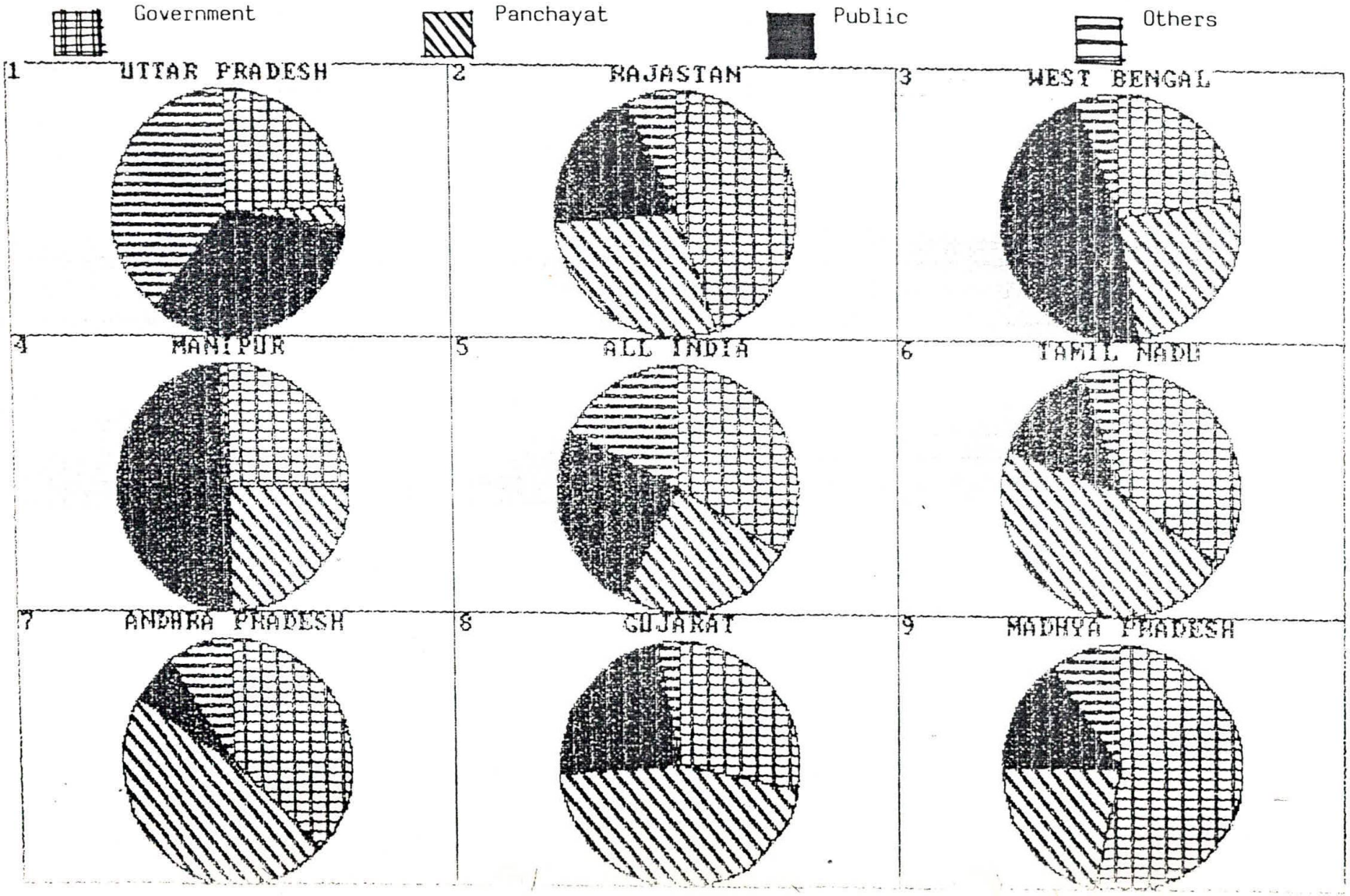
There were wide variations in beliefs, with 82% in Andhra Pradesh believing that the responsibility lay with the government while in Uttar Pradesh, only 27% believed so.

In West Bengal, Uttar Pradesh and Manipur, over one third of all respondents believed that handpump maintenance was public responsibility.

* 20% of "Others" is comprised of "Gram Pradhan".

PEOPLE'S PERCEPTION ON

WHO IS RESPONSIBLE FOR MAINTAINING PUBLIC HANDPUMPS



In the four tracking districts, 33% of the respondents in Sultanpur (Uttar Pradesh) and 42% in 24 Paraganas (West Bengal) believed that the responsibility for maintenance rested with the public. In Rajasthan, only 18% believed this.

c/ Responsibility for payment for repairs

When the issue of payment for repairs was brought up there was again a shift in opinion; the proportion of those who believed that payment was government's responsibility was higher than those who believed that maintenance was government responsiblity. This can be interpreted to mean that while people are willing to take responsibility for the actual, practical maintenance issues, they would expect the actual cost to be borne by the government. Details are presented below. The percentages add up to more than 100% because of some proportion of multiple responses.

Base : All respondents - 4418

	Total %	UP %	Raj %	WB %	Man %	TN %	AP %	Guj %	MP %
Government	41	39	60	34	56	22	32	33	67
Panchayat	25	3	33	18	20	41	53	48	22
Total	66	42	93	52	76	63	85	81	89
Villagers	23	28	13	48	46	14	13	24	9
Villagers - minor	3	6	-	3	33	1	1	-	-
Government - major	3	6	1	4	26	5	-	-	1
Others	10	23	3	2	1	4	7	2	7

Respondents in the four tracking districts expressed opinions that were similar to the opinions expressed in the parent state.

Significantly larger proportion of literate persons and men expected the authorities to pay. The difference however, was not significant among those who believed that the public should pay where 23% of literates and illiterates expressed that opinion.

It would be useful to examine the proportions by state, of those who assumed villagers were owners, responsible for maintenance and payment. This is depicted below :

Villagers/public and public handpumps

Base : All respondents - 4418

(% across)	Owners		Responsible for maintenance		Should pay	
Total (Districts)	13	(13)	24	(29)	23	(32)
Uttar Pradesh (Sultanpur)	14	(12)	33	(33)	28	(24)
Rajasthan (Udaipur)	2	(4)	20	(18)	13	(29)
West Bengal (24 Paraganas)	20	(16)	41	(42)	48	(52)
Manipur	42		53		46	
Tamilnadu	19		12		14	
Andhra Pradesh	7		7		13	
Gujarat (Amreli)	19	(20)	24	(25)	24	(23)
Madhya Pradesh	6		16		9	

4.6 WILLINGNESS TO PAY

a/ Regular maintenance fees

Villagers were asked if they would be willing to pay regular maintenance fees for the maintenance of hand-pumps and, if so, to state the amount that they would be willing to pay.

"If villagers were asked to pay a fixed amount per month regularly towards handpump maintenance, failing which the pump would not be repaired, how much would you be willing to pay per month ?"

Two out of three respondents were willing to pay a regular monthly fee.

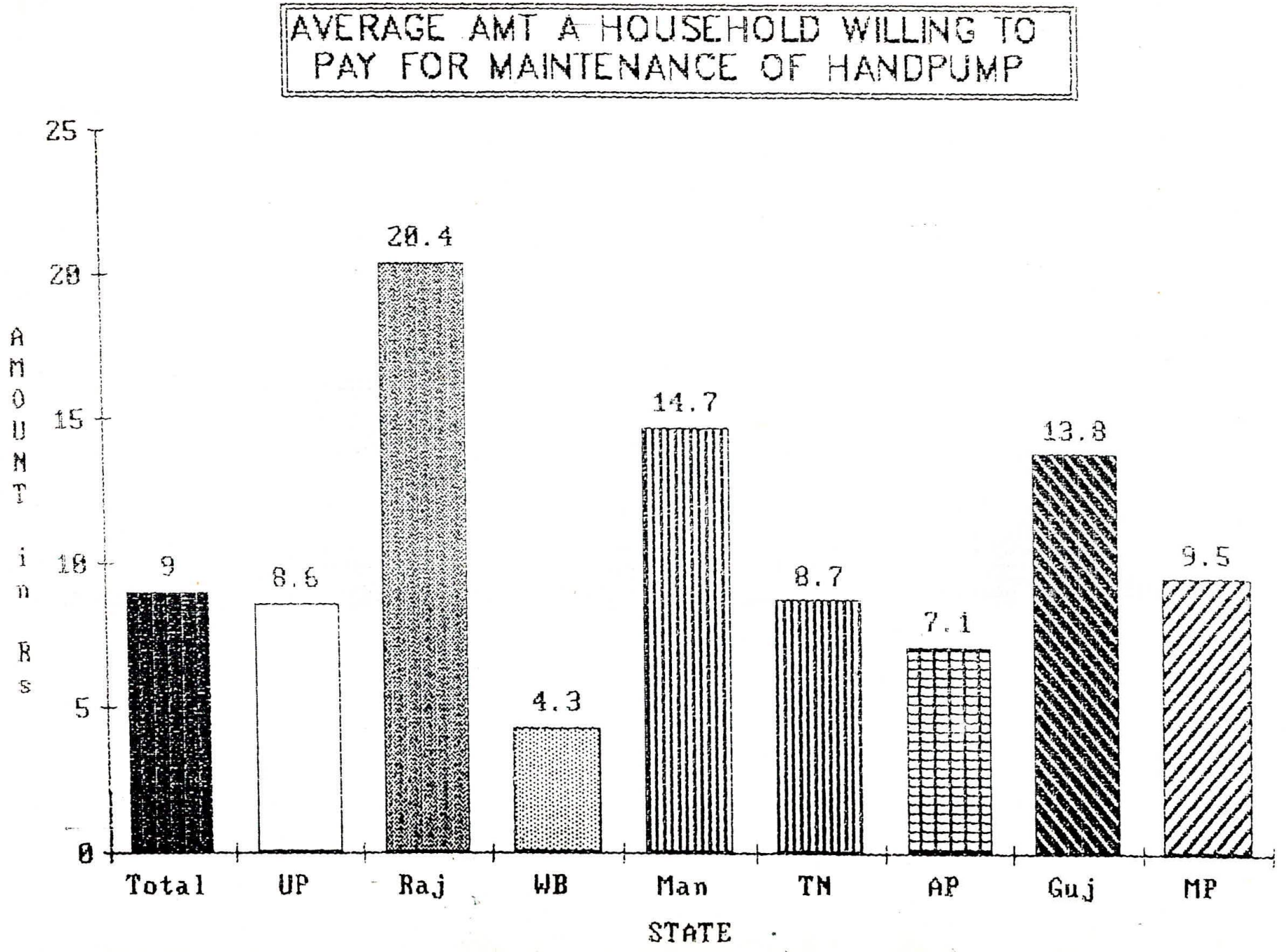
In West Bengal, 89% expressed their willingness; in Manipur, 81% were willing. In Uttar Pradesh, Andhra Pradesh and Gujarat, between 70-80% expressed willingness.

In Tamilnadu and Rajasthan, the proportions were smaller with only 51% and 57% being willing to pay. The lowest proportion came from Madhya Pradesh where only 36% of all respondents said that they would pay.

There were clear trends based on demographic variables.

73% of the people from Rs 1500+ MHI group were willing to pay as against 66% from households where the monthly income was less than Rs 750.

The younger respondents were clearly more willing to pay than the older ones. 74% of those who were in the 15-25 year age group were willing to pay; this was reduced to 65% in the middle age group and 57% in the older age group.


AVERAGE AMT A HOUSEHOLD WILLING TO PAY FOR MAINTENANCE OF HANDPUMP
AMOUNT in Rs
25
20
15
10
5
0
9
8.6
20.4
4.3
14.7
8.7
7.1
13.8
9.5
Total
UP
Raj
WB
Man
TN
AP
Guj
MP
STATE

74% of those who were literate were willing to pay compared to 61% of those who were illiterate, and 69% of men were willing to pay compared to 65% of the women.

The average amount that respondents who had expressed willingness were ready to pay was Rs 9.00. This is the mean; the median lay at a little over Rs 4.00 while the mode lay at Rs 2.00. Details by states and demographics were as follows :

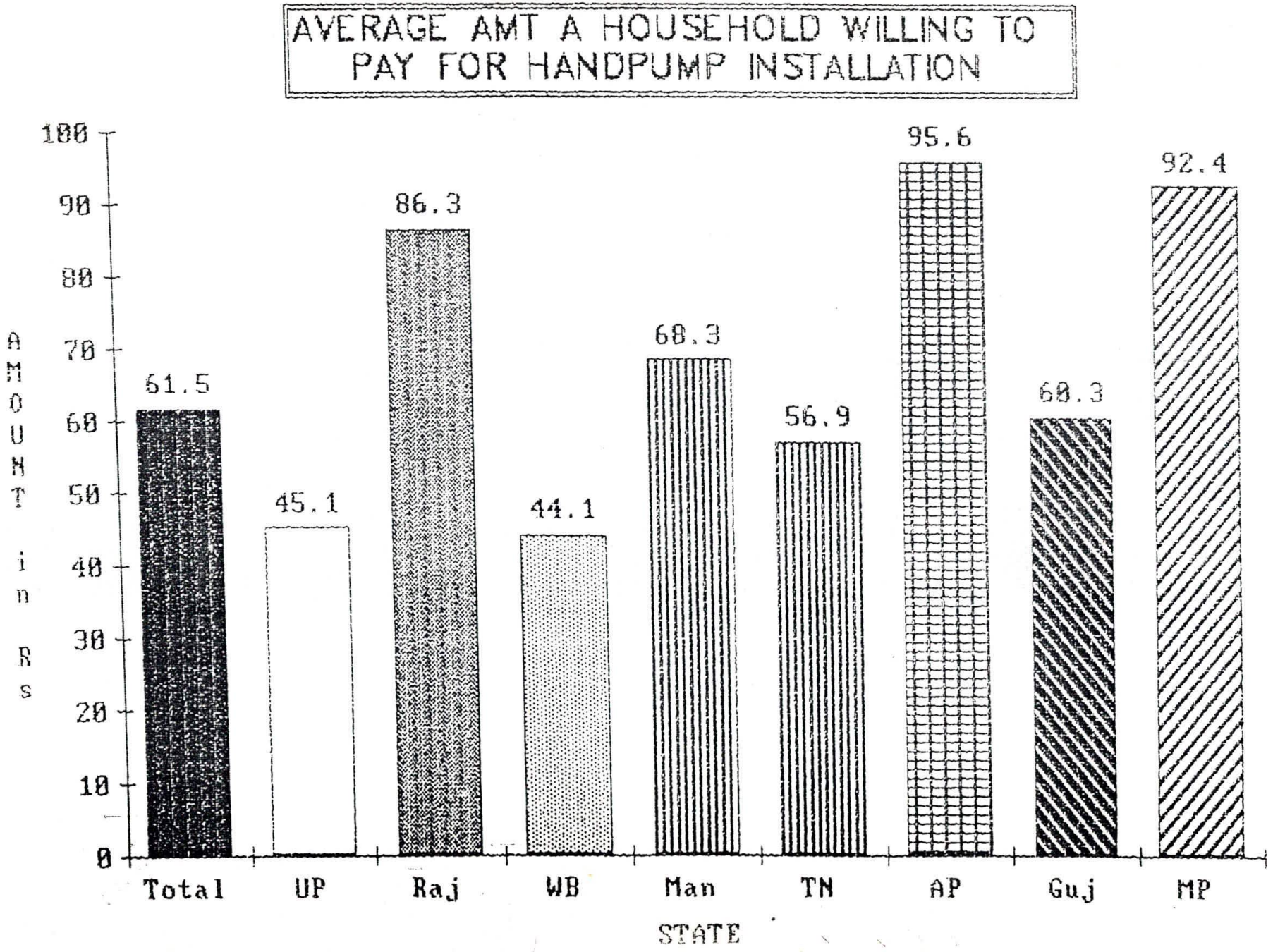
	Average amount (Rs.)	
Base : States : 2967 Districts : 1589		
Total (Districts	9.0	(6.9)
Uttar Pradesh (Sultanpur)	8.6	(7.0)
Rajasthan (Udaipur)	20.4	(13.0)
West Bengal (24 Paraganas)	4.3	(3.4)
Manipur	14.7	
Tamilnadu	8.7	
Andhra Pradesh	7.1	
Gujarat (Amreli)	13.8	(7.1)
Madhya Pradesh	9.5	

Monthly Household Income

Below Rs 750	: Rs 7.4
Rs 751 - 1500	: Rs 11.1
Rs 1501+	: Rs 16.5

Age

15 - 25 years	: Rs 9.7
26 - 45 years	: Rs 8.9
46+ years	: Rs 5.9


AVERAGE AMT A HOUSEHOLD WILLING TO PAY FOR HANDPUMP INSTALLATION
AMOUNT in Rs
100
90
80
70
60
50
40
30
20
10
0
61.5
45.1
86.3
44.1
68.3
56.9
95.6
60.3
92.4
Total
UP
Raj
WB
Man
TN
AP
Guj
MP
STATE

The average amount by literacy and sex did not vary, remaining constant at Rs 9.0.

b/ Willingness to contribute for handpump installation

While two thirds of all respondents were willing to pay on a monthly basis for handpump maintenance, similar willingness was not forthcoming for contributing to handpump installation :

- 41% said that they would certainly contribute
- 44% did not wish to contribute and
- 15% were uncertain or did not know.

The highest proportion of affirmative responses were received from Manipur (62%) while the lowest were received from Madhya Pradesh (18%). On an average, respondents were willing to pay Rs 61.50. The mode however, was low at Rs 5.00. The median lay at Rs 16.00.

Base : States : 4418
Districts : 2407

	Willing to pay		Average amount Mean	Median
	%	%	Rs	Rs
Total (Districts)	41	(36)	61.5	(42.6)
Uttar Pradesh (Sultanpur)	42	(29)	45.1	(34.8)
Rajasthan (Udaipur)	44	(24)	86.3	(85.9)
West Bengal (24 Paraganas	46	(47)	44.1	(30.2)
Manipur	62		68.3	
Tamilnadu	42		56.9	
Andhra Pradesh	49		95.6	
Gujarat (Amreli)	53	(46)	60.3	(41.4)
Madhya Pradesh	18		92.4	

In terms of demographics, those who were willing to pay belonged to upper income households, younger age groups and were literate.

An interesting deviation from earlier patterns is that **significantly more women were willing to pay for new handpump installation than men** (significant at 99% level of confidence). However, while women expressed willingness to pay an average of Rs 42.6, men were willing to pay Rs 81.00.

PART C : SANITATION

IMRB
Indian Market Research Bureau

1.0 DEFECATION

1.1 DEFECATION SITES

The majority trend appeared to be that of common defecation sites. Very few respondents (13%) spoke of different sites for different ages or sexes.

This conforms to the finding from qualitative research when it had emerged that timings rather than places were demarcated for the sexes.

87% of all respondents spoke of common sites for all. The majority went outdoors (92%) of whom 10% used sites that were close to a water source while the others went to any place outdoors.

Of the 13% who said that there were different sites for different people, the majority were unable to specify differences by children and elders which leads us to further believe that there were in fact few site demarcations, if any, and that those as existed were mainly for men and women.

	Common sites	Separate sites			
Base :	3841	577			
	%	Men %	Women %	Children %	Elders %
Outdoors	82	59	64	18	29
Outdoors, near water	10	29	13	9	8
Private latrine	8	6	15	6	6
Public latrine	-	1	2	1	-
Inst. latrine	-	-	-	1	-
Not specified	-	7	7	65	56

We will look at the differences in practice by state, concentrating for this purpose on those who have mentioned common sites only.

Base : States : 4418
Districts : 2407

	(a) Common sites mentioned by (% of total)		(b) Location (a = 100%) Outdoors		Outdoors near water		Private Latrine		Public Latrine	
Total (Districts	87	(85)	82	(81)	10	(11)	8	(8)	-	(-)
Uttar Pradesh (Sultanpur)	93	(87)	90	(85)	7	(14)	3	(1)	-	(-)
Rajasthan (Udaipur)	96	(99)	87	(93)	5	(5)	8	(2)	-	(-)
West Bengal (24 Paraganas)	75	(66)	53	(42)	35	(30)	12	(28)	-	(-)
Manipur	94		12		-		85		2	
Tamilnadu	76		75		7		7		1	
Andhra Pradesh	90		89		2		8		1	
Gujarat (Amreli)	78	(87)	89	(91)	2	(-)	10	(8)	-	(-)
Madhya Pradesh	83		80		7		12		1	

(Refer Table 1a-c)

In Manipur, 85% of all respondents used a private latrine. In Madhya Pradesh 12% used private latrines. In West Bengal too, 12% used private latrines (28% in 24 Paraganas district) while 35% went to an outdoor site that was near a water source. In fact, West Bengal was the one state where the practice of defecating near a water source appeared to be high.

Users of private latrines were clearly from upper income households.

- Rs 1500+ : 28% used private latrines
- Rs 750-1500 : 14% used private latrines
- Upto Rs 750 : 4% used private latrines

The proportion of latrine users among literate persons was significantly higher than that among illiterate persons.

Literate	:	13% used latrines
Illiterate	:	2% used latrines

1.2 CRITERIA FOR SITE SELECTION

10% of all respondents who defecated outdoors said that there were no criteria and that a person went wherever he wished. This response came significantly more often from illiterate rather than literate persons.

Of those who did have some criteria for selection, the two criteria that were most frequently mentioned were :

Privacy	:	61%
Cleanliness	:	63%

While the demand for privacy came in more or less equal measure, irrespective of income, age or literacy, the need for cleanliness was expressed more by the upper income and literate respondents.

The other criteria that were mentioned were :

Not where members of the opposite sex go	:	9%
Water should be available close-by	;	8%
Not in fields with grown crops	:	4%
Should be far from village	:	1%

3% of all respondents said that there was no choice since fixed places had been assigned. This was reported by 54% of the people in Manipur. It was also mentioned by 15% in Uttar Pradesh, 12% in Tamilnadu and 11% in Gujarat.

There were some state-wise differences in the selection critiera.

Respondents from Gujarat (84%), West Bengal (72%) and Andhra Pradesh (70%) laid greater stress than average on privacy. This was also borne out in the tracking districts where 83% in Amreli (Gujarat) and 80% in Udaipur (Rajasthan) spoke of the need for privacy.

Cleanliness was stressed in Rajasthan (73%) and Andhra Pradesh (71%). At the district level, however, the largest mention came from Sultanpur in Uttar Pradesh (84%). Those who stressed cleanliness were also more often from the upper-income and literate groups.

Respondents from West Bengal (16%), Tamilnadu (18%) and Manipur (15%) stressed the need for having water available nearby. It is interesting that this demand was made primarily by men (83% of those who spoke of water nearby were men, 17% women).

In Andhra Pradesh and Gujarat, 28% and 24% respectively said that one criteria for selection of site was that it should not be the same place as used by members of the opposite sex. This was mentioned more by women (11%) than men (7%).

1.3 ATTITUDES TO OUTDOOR DEFECATION

Positives

Respondents were asked to speak on those aspects of outdoor defecation which they considered nice or positive.

58% of the respondents in the states and as many as 72% in the districts said that there were no positive aspects to outdoor defecation. Those who said "None" are being looked at in detail in the table below :

Base : States : 4418
Districts : 2407

	None %
Total (Districts)	58 (72)
Uttar Pradesh (Sultanpur)	42 (44)
Rajasthan (Udaipur)	55 (76)
West Bengal (24 Paraganas)	88 (88)
Manipur	40
Tamilnadu	55
Andhra Pradesh	59
Gujarat (Amreli)	68 (78)
Madhya Pradesh	66

States :

Income	%
Below Rs 750	56
Rs 751 - 1500	66
Rs 1501+	62

Sex	%
Male	42
Female	74
Literate	48
Illiterate	68

It is interesting that the illiterate and middle income respondents as well as women expressed greater antipathy towards outdoor defecation than literate respondents and men.

Those who did mention positives spoke primarily of the fresh air and open space that was a part of outdoor defecation (31%). This was particularly mentioned by Uttar Pradesh and Rajasthan respondents (52% and 36% respectively).

46% in Sultanpur (Uttar Pradesh) also mentioned fresh air as a positive feature. It was also mentioned more often by men and those who were literate.

8% believed that outdoor defecation was a cleaner practice (as opposed to something that was not outdoor e.g latrines) since excreta was left far from the house (15% in Tamilnadu and 13% in Rajasthan said so). This was mentioned more often by lower income and older respondents and more often by men than by women.

8% also said that an advantage of outdoor defecation was the absence of any bad smell. This positive feature was mentioned by 22% in Manipur, 19% in Tamilnadu and 14% in Andhra Pradesh.

Other positives mentioned were :

	States %	Districts %
Outdoor defecation does not create a health problem	3	2
No cleaning up after defecation	2	1
Excreta does not accumulate in one spot	1	-

Negatives

The major problems with regard to outdoor defecation that were spoken of related largely to occasion or situation related inconvenience rather than any sustained negatives.

The main negatives mentioned were as follows :

	States	Districts
Base : All respondents	4418	2407
	%	%
Problematic during monsoon	32	24
Problematic at night	17	16
Problematic in ill-health	8	7
Problematic in emergency	2	1
Problematic in winter	7	4
Total mention of occasion related problems	66	52
Lack of privacy	30	45
Need to walk a long distance	28	36
Place is dirty	10	6
Shortage of space	7	5
Causes ill-health	7	5
Lot of time wasted	5	7
Causes flies/mosquitoes	4	3
Snakes/Scorpions	4	4
Problem of water scarcity	4	3
Bad smell	3	3

Thus, there were some problems which were present on a continuous basis such as lack of privacy and distances that had to be covered. The former was widely mentioned in West Bengal (76%) while the latter was mentioned in Gujarat (44%), Andhra Pradesh (38%) and Rajasthan (32%).

17% of all respondents in the states and 18% in the tracking districts said that there were no negatives in outdoor defecation.

The proportions of respondents who said "no negatives" were higher in Madhya Pradesh, Rajasthan and Tamilnadu than in other states. They were lowest in West Bengal, Manipur and Andhra Pradesh.

At the district level, 39% in Udaipur (Rajasthan) and 20% in Sultanpur (Uttar Pradesh) said that there were no negatives.

There were a greater proportion of such responses compared to the average from lower income respondents and those who were in the older age group. It stands to reason that lack of choice or force of habit had reconciled these groups to the practice of outdoor defecation.

1.4 PRACTICES RELATED TO DEFECATION

Respondents were questioned in a direct manner on some practices related to defecation. These are discussed below :

1.4.1 Practice of covering or disposing excreta

99% of those who defecated outdoors said that they did not cover or dispose excreta. This was true in both states and districts. Given the absoluteness of this response, the details by states, districts or demographics become irrelevant and are therefore not being discussed further.

The 37 respondents (weighted sample : 21) who did speak of disposing excreta spoke of two methods :

- 53% said that they covered it with dry soil/sand
- 13% said it was washed away with water, presumably into the water source nearby
- 5% said they covered it with leaves
- 30% gave no explanation

1.4.2 Method of cleaning hands

61% of the respondents in the states and 76% in the tracking districts said that they washed their hands with water and mud or ash.

Details were as follows :

	States	Distrits
Base : All respondents	4418	2407
	%	%
Wash with water only	24	7
Wash with water and soap	14	16
With water and ash/mud	61	76
Others/not specified	1	-

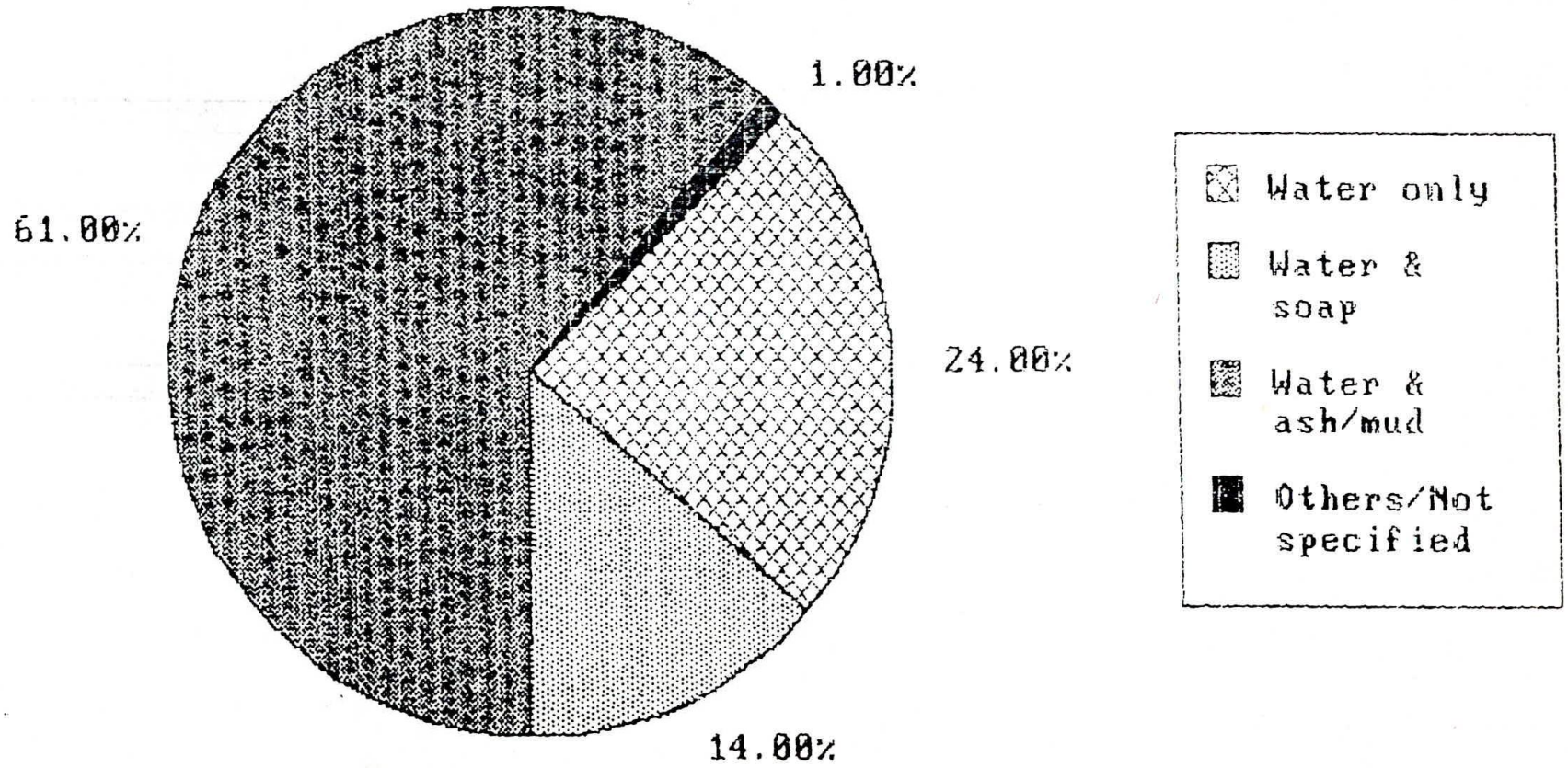
(Refer Table 8a-c)

Respondents in the four tracking districts clearly had better knowledge of the need for a good hand wash after defecation. This was evident from the fact that 92% of them used either mud or ash or soap while only 75% did so in the states.

We will examine each practice in greater detail :

Wash with water only	%	
Total (Districts)	24	(7)
Uttar Pradesh (Sultanpur)	4	(12)
Rajasthan (Udaipur)	1	(1)
West Bengal (24 Paraganas)	4	(1)
Manipur	63	
Tamilnadu	90	
Andhra Pradesh	77	
Gujarat (Amreli)	19	(16)
Madhya Pradesh	3	

HOW DO PEOPLE CLEAN THEIR HANDS ?



Differences are stark and emerge clearly. The Southern states of Tamilnadu and Andhra Pradesh and the Eastern state of Manipur have a high proportion of people who do not use 'mud/ash/soap after defecation.

These proportions of people who used water only were significantly higher in the lower income and older age group.

Wash and soap	%	
Total	14	(16)
Uttar Pradesh (Sultanpur)	11	(10)
Rajasthan (Udaipur)	11	(14)
West Bengal (24 Paraganas)	11	(11)
Manipur	33	
Tamilnadu	8	
Andhra Pradesh	21	
Gujarat (Amreli)	29	(30)
Madhya Pradesh	13	

The highest practice of soap use was reported from Manipur, Gujarat (including Amreli district) and Andhra Pradesh.

There was a higher proportion of soap users in the upper income, younger and literate groups.

Washing with water and ash/mud	%	
Total (Districts)	61	(76)
Uttar Pradesh (Sultanpur)	84	(78)
Rajasthan (Udaipur)	85	(85)
West Bengal (24 Paraganas)	84	(88)
Manipur	2	
Tamilnadu	-	
Andhra Pradesh	1	
Gujarat (amreli)	50	(53)
Madhya Pradesh	83	

Clearly, some states had a traditional practice of using mud and ash since the practice was widely prevalent in some states and conspicous by its absence in others, which were the Southern states of Tamilnadu and Andhra Pradesh and the Eastern state of Manipur.

In Gujarat the combination of those who use mud/ash/soap helps bring the total of those using any cleaning agent to 80% and 83% (Amreli). It would appear that some 30% of all respondents have upgraded to soap from the mud/ash combination. However, 20% in this state still used water only.

It would be useful to examine hand washing practices on the basis of demographic variables.

Base : All respondents - 4418

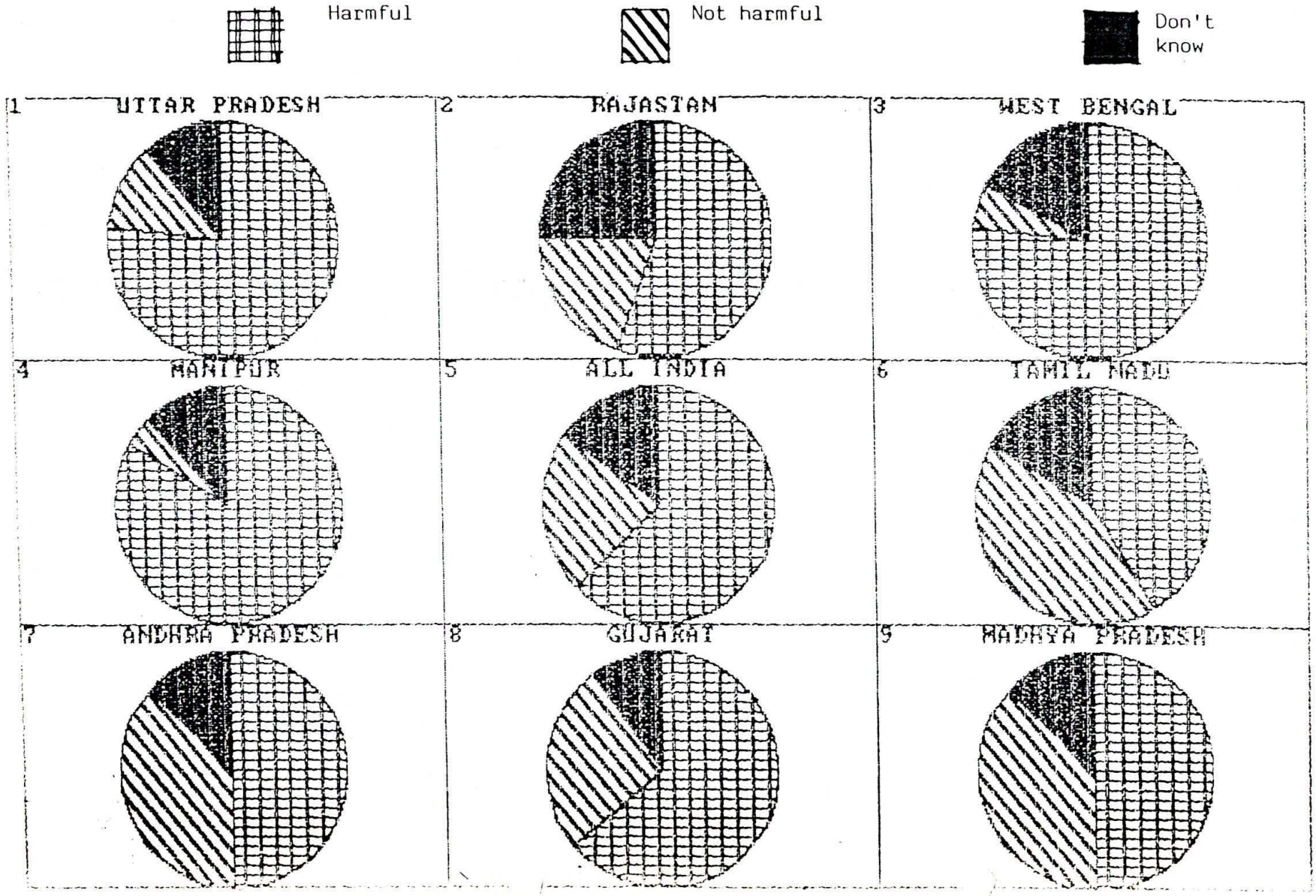
(% across)	Water only	Water + soap	Water + mud/ ash
Income			
Below Rs 750	29	10	60
Rs 751 - 1500	14	21	64
Rs 1501+	12	35	51
Age			
15 - 25 years	25	18	55
26 - 45 years	23	13	64
46+ years	32	9	57
Literacy			
Literate	23	20	57
Illiterate	26	9	64
Sex			
Male	27	11	62
Female	22	17	60

Soap usage is clearly a recent phenomenon adopted by the young, upper income and literate groups; use of water only is markedly higher in lower income groups and somewhat higher among older age groups.

Use of mud and ash is again prevalent among lower income, illiterate groups but prevalence is not considerably low in other groups either indicating a practice that runs across socio-economic parameters.

Of those who used a cleaning agent, 91% said that they always used a cleaning agent. 7% said that they did sometimes clean their hands with just water. There were a higher proportion of those who used just water (sometimes) in Manipur (23%) and Gujarat (21%).

PEOPLE'S PERCEPTION ON WHETHER EXPOSED EXCRETA IS HARMFUL TO HEALTH



1.5 KNOWLEDGE REGARDING OPEN EXCRETA AND HEALTH

63% of all respondents at the state and district levels and that open excreta was harmful to health.

22% believed that it was not harmful while 15% did not know.

Details of these responses by state and tracking district is provided below :

Base : States : 4418
Districts : 2407

(% across)

	Harmful		Not harmful		Don't know	
Total (Districts)	63	(63)	22	(17)	15	(20)
Uttar Pradesh (Sultanpur)	77	(64)	12	(27)	11	(10)
Rajasthan (Udaipur)	56	(33)	19	(18)	25	(48)
West Bengal (24 Paraganas)	77	(82)	6	(5)	17	(13)
Manipur	84		4		12	
Tamilnadu	41		42		16	
Andhra Pradesh	50		37		13	
Gujarat (Amreli)	64	(73)	26	(17)	10	(10)
Madhya Pradesh	50		37		13	

(Table 5c - C)

Those who believed that open excreta can cause harm to health did so for the following reasons :

	State %	District %
Bad smell causes headache and sickness, germs are carried by the wind, germs are breathed in	57	62
Breeds flies and mosquitoes	37	33
Causes disease/stomach ache	21	22
Flies sit on excreta then on food	18	21
People step on excreta and spread it	7	4
Infection spreads from sick person's excreta	4	2

The belief that the bad smell emanating from excreta was in itself a cause of ill-health had been mentioned even during the qualitative phase of this study where respondents had explained that the smell was, quite literally, sickening. This factor was mentioned by over 60% of the respondents in the states of Uttar Pradesh (68%) and Gujarat (64%) (In Sultanpur, 63% mentioned this point while 74% did so in Amreli).

It was mentioned more often by people with a monthly income of less than Rs 1500 and by younger respondents.

That open excreta was a breeding ground for flies and mosquitoes was mentioned by over 50% of the respondents from Manipur (60%), Gujarat (57%), Tamilnadu (54%) and Andhra Pradesh (54%). It was mentioned by upper income, literate respondents.

Open excreta was seen as a cause of stomach ache and disease by respondents from Rajasthan (47%), Andhra Pradesh and Gujarat (32% each). This was mentioned significantly more often by persons from older age groups (46 years +) than others.

Knowledge about flies sitting on excreta and then on food being a cause of disease was mentioned by upper income and literate respondents.

Those who believed that open excreta did not cause any harm to health hold this belief on the basis of the following observation.

	State	Districts
Base	970	406
	%	%
Excreta eaten up by pigs	37	23
Excreta eaten up by other animals	19	18
	56	41
Excreta dries up	31	20
Not harmful because defecation far from village	29	41

(Table 7-c)

2.0 LATRINES

2.1 AWARENESS OF LATRINES

Respondents were shown pictures of two types of latrines - the water seal pour flush type (hereafter referred to as a flush latrine) and the dry type. All were asked if they had ever seen it and, if so, if they had ever used one.

37% of the respondents on the whole and 41% in the tracking districts had seen dry type latrines. 52% of respondents at the state level and 61% in the tracking districts had seen a flush latrine.

Details of awareness and use of latrines, by type, were as follows :

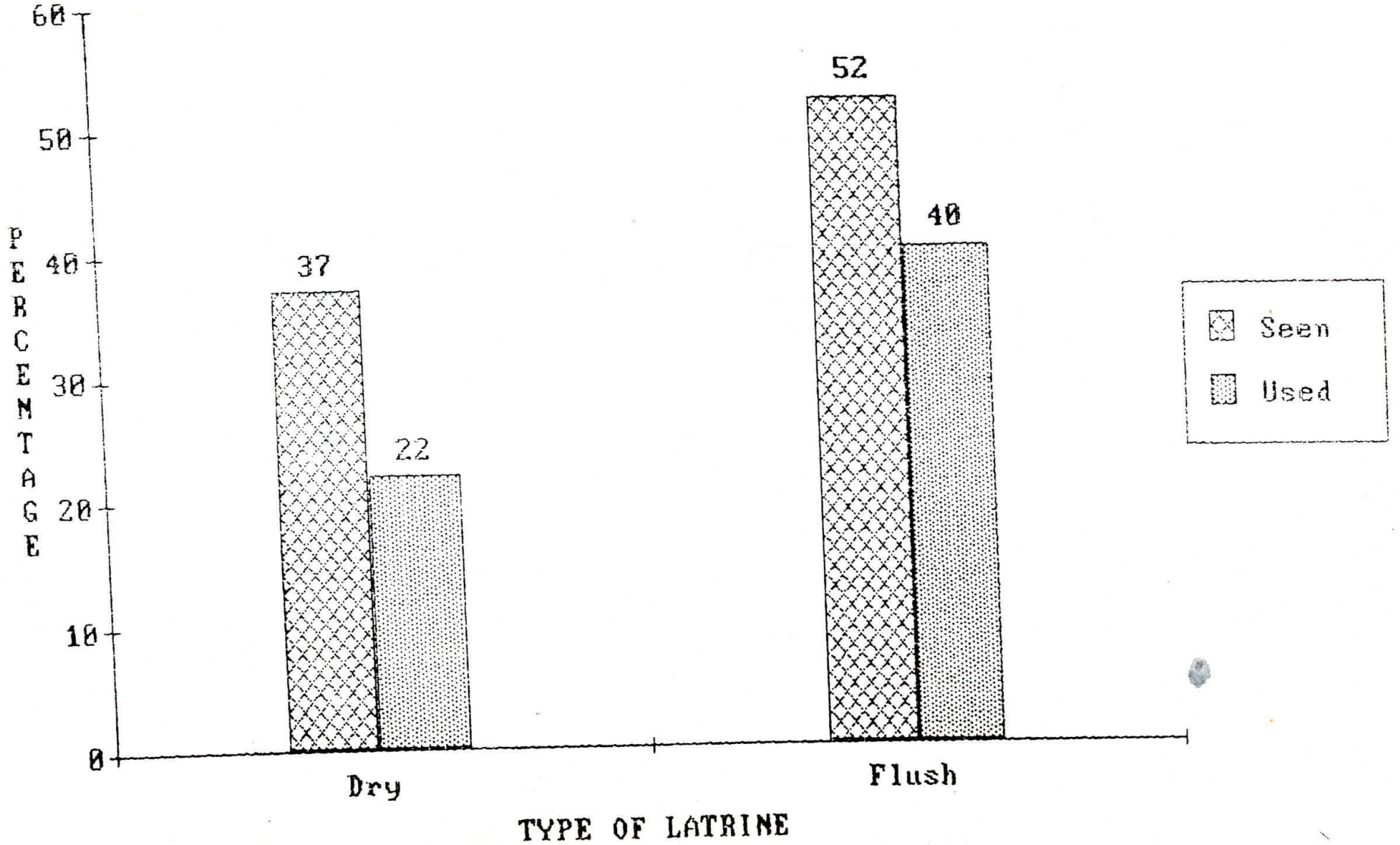
	State		District	
	Dry	Flush	Dry	Flush
Base: All respondents	4418		2407	
	%	%	%	%
Seen	37	52	41	61
Used	22	40	27	49

(Refer Table 9a - C)

The exposure to and use of pour flush latrines was higher at state and district levels, where almost twice as many people had used flush latrines rather than dry ones.

We will look at usage-related data by individual states and districts.

AWARENESS & USE OF LATRINES



(% across)

	States used		Districts used	
	Dry	Flush	Dry	Flush
Base: States : 4418 Districts : 2407				
Total (Districts)	22	40	27	49
Uttar Pradesh (Sultanpur)	21	31	32	43
Rajasthan (Udaipur)	26	37	26	34
West Bengal (24 Paraganas)	29	45	33	54
Manipur	81	6	-	-
Tamilnadu	18	49	-	-
Andhra Pradesh	17	45	-	-
Gujarat (Amreli)	17	54	16	68
Madhya Pradesh	22	36	-	-

Users of Flush latrines

(States only)

Income	%	Age	%
Below Rs 750	35	15 - 25 years	44
Rs 751 - 1500	49	26 - 45 years	38
Rs 1501+	61	46+ years	38
Sex		**Literacy**	
Men	48	Literate	56
Women	31	Illiterate	24

(Table 9b - C)

The highlights of the above analysis are :

- There was very high usage of dry latrines in Manipur and very low usage of flush latrines.

- Highest usage of flush latrines was found in Gujarat, Tamilnadu, Andhra Pradesh and West Bengal.

- Users of flush latrines came from upper income groups and younger age groups. There were high proportions of users among literate groups and among men.

Given that private flush latrines were only reported from 35% of all the villages covered (which only owner families would have had access to and not the whole village) the trend of high experience of using flush latrines indicates that **those who had experienced flush latrines had done so either in towns or in some public places such as railway stations and hospitals.**

2.2 PERCEPTIONS REGARDING EXCRETA DISPOSAL

In the long run, acceptance and use of flush latrines will depend on people having a clear understanding of the way in which a flush latrine functions and of the input of time and energy that will be required from them to maintain such a latrine. It was therefore important to estimate the level at which this understanding currently exists, to measure the extent of understanding that prevails with a view to creating appropriate communication, information and education materials as needed.

With this objective, respondents were questioned about their understanding on four issues.

- where does the excreta, flushed away from the pan, go ?
- how frequently would a pit need to be cleaned ?
- when the pit was opened for cleaning, what would be the state of the contents
- how would these pit contents be disposed off ?

Each of these questions and the resultant responses are being discussed below:

2.2.1 Where does the excreta go ?

People who were aware of a particular type of latrine, were asked to answer with reference to that type of latrine. Perceptions were somewhat different for each type.

	Dry		Flush	
	States	Districts	States	Districts
Base :	1632	987	2278	1470
	%	%	%	%
Into a pit/well in the ground	65	65	43	55
Into a sewer/tank	11	8	38	28
Others	8	13	7	6
Don't know	16	13	12	12

(Table 10 (i) - C)

The mention of sewer/tanks in the case of flush latrine supports the earlier hypothesis that flush latrines had been used in urban areas where sewage systems exist.

There were a significant proportion of "Don't know" answers from the lower income groups, the older age groups, from those who were illiterate and from women.

2.2.2 Frequency with which pit needs to be cleaned

This question was only asked to those respondents who had mentioned that excreta goes into a pit.

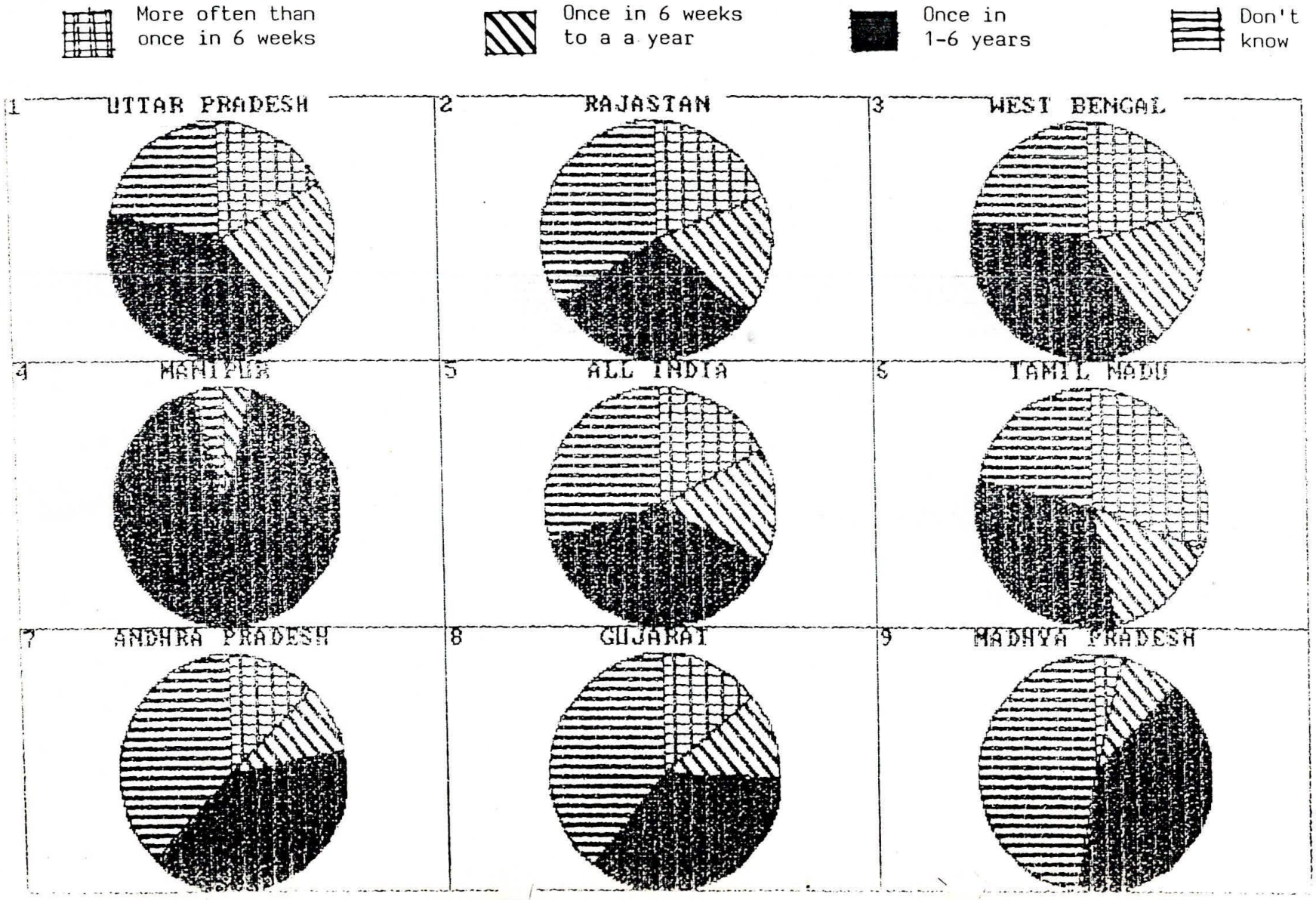
There were a wide range of responses which merit attention since they are indicative of the confusion that exists and of the need for clear communication on the subject.

	States	Districts
Base :	1850	1208
	%	%
Frequency of cleaning		
Once a week or more often	7	6
Once in 1-2 weeks	5	4
Once in 2-6 weeks	6	7
	18	17
Once in 1.5 - 6.5 months	10	11
Once in 6.5 - 12 months	6	7
	16	18
Once in 1-2 years	9	11
Once in 2-4 years	7	6
Once in 4-6 years	8	7
Once in 6 years or less often	13	15
	37	39
Don't know/Other answers	30	27

(Table 11a - C)

34% in the states and 35% in the districts believed that the pit would have to be cleaned once a year or more often. The prospect can be daunting, particularly for those who believe that the pit would have to be cleaned as frequently as once in a week or even once in six weeks.

PERCEIVED FREQUENCY OF PIT CLEANING



An analysis of the frequency of cleaning as estimated by respondents from different states and demographic groups is given below:

States only (% across)

	More often than once in 6 weeks	Once in 6 weeks to 1 year	Once in 1-6 yrs	Don't know
Base : 1850				
Total	17	16	37	30
Uttar Pradesh	17	22	40	21
Rajasthan	19	17	30	34
West Bengal	21	20	37	22
Manipur	-	4	92	4
Tamilnadu	31	16	32	21
Andhra Pradesh	13	9	40	38
Gujarat	14	12	35	39
Madhya Pradesh	4	8	41	47
Income				
Below Rs 750	20	16	34	30
Rs 751 - 1500	14	13	43	30
Rs 1500+	10	15	47	28
Age				
15 - 25 years	20	18	37	25
26 - 45 years	15	15	38	32
46+ years	43	12	9	36
Literacy				
Literate	15	16	43	26
Illiterate	23	15	23	39
Sex				
Men	16	17	44	23
Women	19	14	27	40

Respondents in Manipur were very well informed with over 90% giving an acceptable answer and none who had a totally wrong idea.

The idea of very frequent cleaning needs emerged strongly from Tamilnadu while the highest proportion of "don't know" responses came from Madhya Pradesh.

The highest proportion of the notion-holders that pits had to be cleaned once in 6 weeks or more often belonged to the older age group, possibly because of the abhorrence among older people, of the thought of excreta accumulating in one place.

Literate persons and men held more correct ideas regarding pit cleaning frequencies than illiterate persons and women, a large number of whom expressed ignorance on the subject.

2.2.3 Knowledge of pit contents

The majority of respondents (53%) expected that the pit contents at the time of cleaning would be in liquid form and that they would have a bad smell (81%).

Details were as follows :

Base : State : 1850
Districts : 1208

(% across)	Form of waste			Smell		
	Liquid	Dry	Don't know	Bad	Not bad	Don't know
Total (Districts)	53 (59)	28 (23)	19 (18)	81 (83)	9 (7)	10 (10)
Uttar Pradesh (Sultanpur)	49 (58)	44 (29)	7 (14)	95 (94)	3 (4)	2 (3)
Rajasthan (Udaipur)	58 (68)	21 (15)	21 (17)	87 (85)	4 (10)	9 (5)
West Bengal (24 paraganas)	69 (67)	22 (25)	9 (8)	86 (85)	8 (9)	7 (5)
Manipur	52	35	13	31	40	29
Tamilnadu	51	27	22	76	16	8
Andhra Pradesh	45	33	22	76	13	12
Gujarat (Amreli)	49 (46)	14 (23)	37 (31)	75 (74)	4 (6)	20 (20)
Madhya Pradesh	45	23	32	64	13	23

(Table 11b & 11c - C)

The highest proportion of correct answers came from Uttar Pradesh in the area of the form of the waste followed by Manipur and Andhra Pradesh.

Very few respondents across all regions except Manipur expected that the excreta would not smell bad. This again is an area where education of the people would be necessary.

One very interesting observation was that a higher proportion of people from older age groups expected the pit contents to be dry and also to not have a bad semll.

2.2.4 Disposal of contents of opened pits

49% of respondents in the states and 46% in the tracking districts said that the contents of opened pits would be used as manure.

However, the balance had misconceptions some of which could cause unnecessary resistance to the idea of latrines.

The first of these was that the pit contents would have to be transferred to another pit (13% at state level and 22% in the districts).

This belief was expressed by respondents from West Bengal (28%), Manipur (42%), Gujarat (16%). At the district level again this belief was mentioned by respondents from the district of 24 Paraganas, West Bengal (41%) more than from any other district.

This belief could cause acceptance problems since if such transference to new pits was to continue ad infinitum, the prospect of a countryside dotted with excreta pits could be unnerving and appear to be a mindless exercise. Education on this subject would therefore also be necessary.

The second idea was that the excreta thus removed from the pit would have to be thrown outside the village or outside the house. If we remember that respondents expected the contents to be liquid in form and have a foul

smell and one out of three expected that this exercise would have to be repeated more often than once a year, their aversion to the idea would again be understandable. This understanding was expressed from the following states :

Base : States : 1850
Districts : 1208

Thrown outside the :

(% across)	Total	Village	The house	Throw in in drain
Total (District)	16 (12)	9 (4)	5 (6)	2 (2)
Uttar Pradesh (Sultanpur)	11 (24)	5 (6)	3 (13)	3 (5)
Rajasthan (Udaipur)	20 (18)	12 (7)	7 (7)	1 (4)
West Bengal (24 Paraganas)	11 (10)	6 (4)	4 (4)	1 (2)
Manipur	4	2	2	-
Tamilnadu	13	7	2	4
Andhra Pradesh	25	16	6	3
Gujarat (Amreli)	19 (7)	10 (3)	8 (4)	1 (-)
Madhya Pradesh	9	4	5	-

Refer Table 11d - C)

Those who knew that the pit contents could be used as manure were found in significnatly higher proportions in upper income groups, among literate rather than illiterate people and among men rather than women.

3.0 LATRINES IN THE VILLAGE

3.1 INSTALLATION OF LATRINES

Dry type latrines installed in villages were reported by 32% of the respondents in the states and 23% in the districts.

Flush type latrines installed in the village were reported by 43% in the states and 50% in the districts.

Details of latrine installation as reported were as follows :

Base : Those aware of latrine type :

(% across)	Dry type	Flush type
Total (Districts)	32 (23)	43 (50)
Uttar Pradesh	17 (8)	24 (7)
Rajasthan (Udaipur)	34 (16)	32 (19)
West Bengal (24 Paraganas)	48 (47)	60 (74)
Manipur	93	45
Tamilnadu	48	62
Andhra Pradesh	36	37
Gujarat (Amreli)	17 (4)	52 (72)
Madhya Pradesh	20	35

(Table 12a - C)

3.1.1 Community latrines

The latrines at state and district levels, were essentially private latrines. At the state level, around 10% of the respondents reported the existence of community latrines while at the district level community latrines were reported by only 1% of the respondents.

Details were as follows :

(% across)	Base	Community	Private	Both	Not Specified
Dry type					
State	518	13	83	2	3
Districts	224	1	95	1	2
Flush type					
State	970	11	82	6	1
Districts	734	1	88	11	-

(Table 12b-C)

Thus, existence of community latrines was only reported by 5% of all respondents (n=4418) at the state level and 4% of all respondents (n=2407) at the district level. Of all flush type community latrines, 84% were reported from Tamilnadu.

Of these, 92% of the respondents in the states and 94% in the districts said that no member of their family used the community latrine. Thus, **less than 0.5% of the population in the states and 0.2% of the population in the tracking districts were actually using community latrines.**

(Table 12d (i) -C)

The main reasons for non use of community latrines were essentially the following :

a/ that community latrines were dirty/badly kept and full of excreta. This was reported by 46% in the state level and 21% at the district level, entirely from Amreli, Gujarat.

b/ that water was not available for cleaning : 41% at the state level and 14% at the district level.

c/ that the previous user does not clean the latrine (state : 11%. district :2%)

d/ that there were no doors, no privacy (state 7%) district 28%)

e/ that the latrine was broken down and had not been repaired (state : 1%, district : 30%)

It must be mentioned that even though 75% of all community latrines mentioned in the states were mentioned by Tamilnadu respondents, 95% of these respondents said that no member of their household used these latrines. The majority of state level complaints mentioned above came from Tamilnadu.

Similarly, at the district level, 87% of those who mentioned that community latrines had been installed were from Amreli district of Gujarat. 94% of these respondents said that no member of their house used the community latrine and the vast majority of the district level compalints came from them.

3.1.2 Potential of community latrines

In theory, 85% of the respondents, in reply to a direct question, expressed their willingness to use a community flush latrine.

It is useful here to look at the 15% who had unambigously negative feelings on the subject since it is human nature to reply politely particularly when no imminent decision needs to be taken but only an opinion on future cooperation is being sought. Those who said 'no' to such a question therefore had clearly negative views on the subject.

13% of all state-level respondents and 8% at the district level said 'no' (1% at state level did not know and 1% did not answer). These were distributed as follows :

	Negative response	
	State	District
Base : All respondents	4418	2407
	%	%
Total (Districts)	13	8
Uttar Pradesh (Sultanpur)	11	8
Rajasthan (Udaipur)	8	5
West Bengal (24 Paraganas)	15	17
Manipur	6	-
Tamilnadu	13	-
Andhra Pradesh	12	-
Gujarat (Amreli)	8	3
Madhya Pradesh	20	-

(Table 15 - C)

Respondents in Madhya Pradesh, in the two Southern states, West Bengal and Uttar Pradesh held negative views on the use of community latrines. Negative views were expressed by upper income respondents (22%), older respondents (14%) and literate respondents (16%). Men and women expressed negative views in equal proportions. The main reasons for unwillingness to use were as follows :

	State	District
Base :	557	195
	%	%
Expected to be dirty and badly kept	39	30
Have a latrine at home	18	28
People are accustomed to outdoors	15	11
Problems of cleaning and maintenance	14	5
Previous user may not clean	12	12
Attitudinal instance to latrine	6	12

(Refer Table 15(i) - C)

3.1.3 Pre-conditions for success

Since it had been expected that a direct question would bring in politely positive replies from all but the most negative respondents, respondents were asked for the condition that would make for more willing and widespread use of community latrines. The following conditions were stipulated.

	States	District
Base : All respondents	4418	2407
	%	%
. Water should be available nearby/ in plenty/tap in latrine	88	88
. Sufficient number of latrines	62	60
. Villagers should keep it clean	42	41
. Government paid cleaner should be provided	37	35
. Separate latrines for men and women	27	28
. Situation of latrine :		
- outside the village, in open space	29	29
- in the centre of the village	10	11
- in a convenient, specified place	19	26

We will examine differences in responses on the basis of other demographic criteria.

The emphasis on water availability came essentially from younger, literate, men (92%). This same group, particularly the upper income members of this segment, emphasized the need for latrines in sufficient numbers. They also emphasized the village people would have to keep latrines clean if they were to be used by other people.

Women, on the other hand stressed the need for separate latrines for men and women. 31% of the women demanded this as compared to 24% of men.

The demand for differences on the basis of sex were again higher by far in Gujarat than in any other state (65%). The second highest demand came from Tamilnadu at 52%. This was also borne out at the district level where 70% of Amreli respondents demanded separate latrines for men and women compared to 27% in Sultanpur and less than 10% in Udaipur and 24 Paraganas.

In Tamilnadu, 73% of the respondents demanded that government paid cleaners should be provided.

The other conditions that were mentioned across the states and districts were that there should be electric light connection and light in the latrine (4%), that there should be separate latrines for separate castes (4%), and that latrines should be repaired when they were out of order (2%).

3.1.4 Acceptability of community latrines

In order to obtain a second opinion on the potential of community latrines, respondents were asked for their views on whether community latrines would be used by other people in their village. The majority view was that most villagers would use community latrines. Details were as follows :

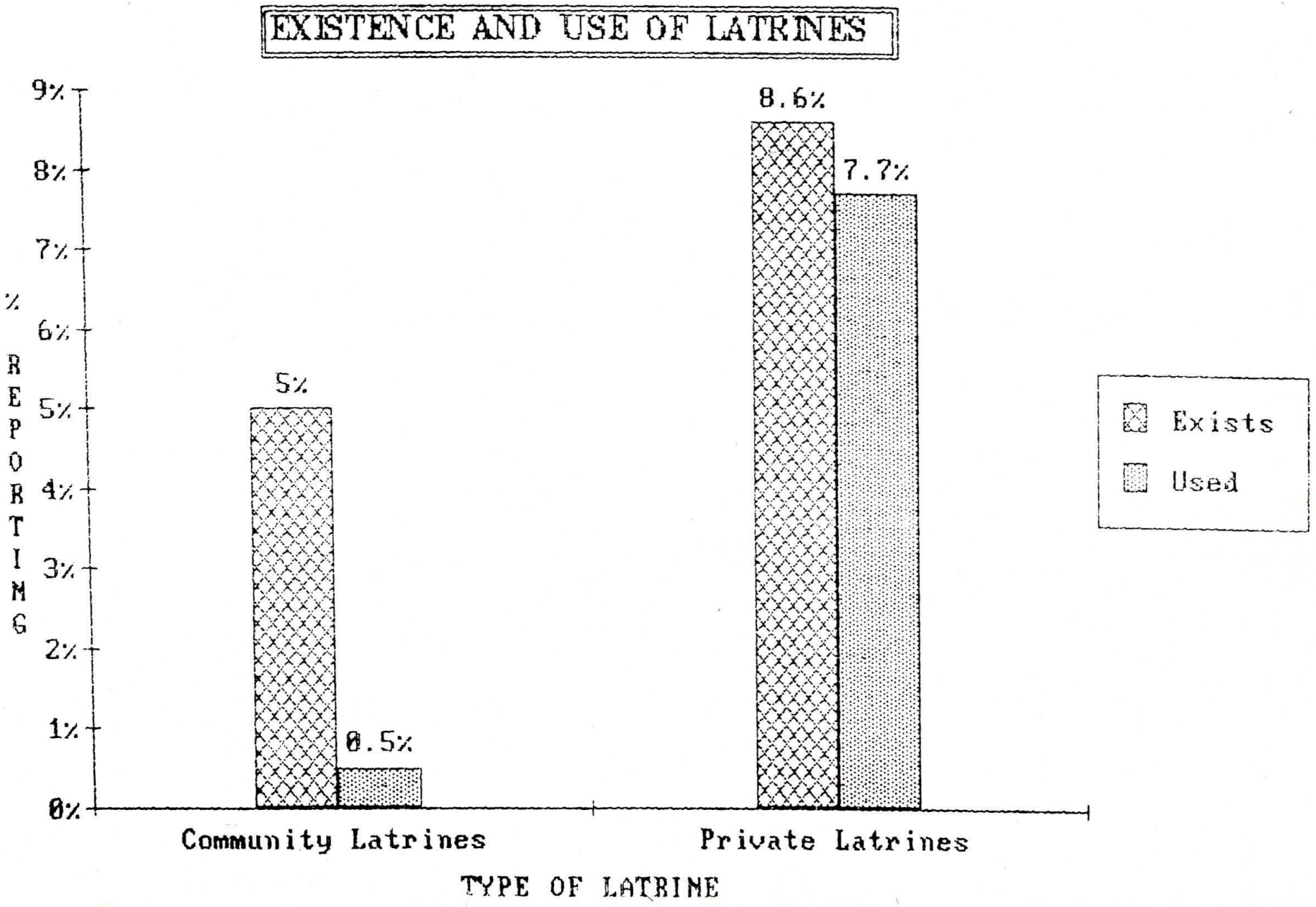
	State	District
Base : All respondents	4418	2407
	%	%
Community latrines will be used by most villagers	84	90
Community latrines will not be used our village	4	2
Will be used only in emergencies	3	2
Others	3	2
Don't know/Can't say	6	5

An interesting fact of this response is that negative/ conditional responses were rare at the tracking district level. This has to be viewed in the context of their experience if any with community latrines. Only 5 respondents in Amreli had said that their family members used community latrines. In the remaining three districts, not a single respondent or his family members had used community latrines.

At the state level, the highest proportions of negative/ conditional responses came from Manipur and Tamilnadu.

In West Bengal and Andhra Pradesh, on the other hand, attitudes were most strongly positive while in Madhya Pradesh, 12% of respondents chose to not answers the question at all.

9% of respondents aged 46 years+ said that community latrines would not be used as compared to 4% and 3% in the other age groups.


EXISTENCE AND USE OF LATRINES
9%
8%
7%
6%
5%
4%
3%
2%
1%
0%
% REPORTING
5%
0.5%
8.6%
7.7%
Exists
Used
Community Latrines
Private Latrines
TYPE OF LATRINE

3.2 PRIVATE LATRINES

9% of all respondents at the state level and equally at the district level (n=4418 and 2407 respectively) said that they had a private household latrine.

3.2.1 Existence of private latrines

Since only one member was interviewed from any given household, this can be projected to mean that in these states under study, 9% of all rural households would have a private latrine. Details by state and by district were as follows :

	% having private household latrine	
	State	District
Base : All respondents	4418	2407
Total	8.6	9.1
Uttar Pradesh (Sultanpur)	4.4	0.7
Rajasthan (Udaipur)	9.2	2.8
West Bengal (24 Parganas)	15.3	25.3
Manipur	81.3	-
Tamilnadu	8.3	-
Andhra Pradesh	7.9	-
Gujarat (Amreli)	8.0	7.7
Madhya Pradesh	10.7	-

(Refer Table 12c - C)

3.2.2 Usage of private latrines

Where there was a private household latrine, it was almost universally used. Thus, 90% of those at the state level who had a household latrine said that at least some members of their household used it ; at the district level, 99% reported usage.

(Refer Table 12d - C)

In 73% of the households at the state level and 74% at the district level, private latrine owning households reported that all members used the latrine.

There were clear variations, however by states and districts and by demographic variables in terms of the proportion of respondents who reported all-member usage.

	All members use	
	State	Districts
Base :	342	217
	%	%
Total	73	74
Uttar Pradesh (Sultanpur)	55	80
Rajasthan (Udaipur)	78	73
West Bengal (24 Paraganas)	64	68
Manipur	98	-
Tamilnadu	53	-
Andhra Pradesh	72	-
Gujarat (Amreli)	92	96
Madhya Pradesh	99	-

Only 68% of respondents from lower income households reported all-member usage compared to 84% from upper income households.

Similarly, 74% of the younger respondents reported all member usage compared to 65% of the older respondents.

Among literate respondents, 71% reported all-member usage but 81% of illiterate respondents said the same.

Finally, 80% of the women respondents said that all members used the private latrine; only 66% of the male respondents said the same. Male respondents tended to say that women, especially young women were the main users of private latrines.

Of those who did not say that all members used private latrines, the major user was reported to be female members of the household.

3.2.3 Cleaning of private latrines

Private latrine owners were questioned with regard to their practice in terms of keeping the latrine clean. Non-owners were asked about how, in their opinion, the latrine would be cleaned if they were to build a private household latrine. Responses are being listed below under the headings 'actual' and 'hypothetical' which pertain to the former and later respondents respectively.

	Actual		Hypothetical	
	State	District	State	District
Base :	294*	188	4123	2219
	%	%		
Housewife cleans it/will clean	33	23	20	21
Each member who uses, cleans	24	32	34	35
Hire a sweeper to clean	18	12	29	30
Government will provides a sweeper	1	1	9	7
Don't know/not asnwered	17	20	3	4

In actual practice, it was clear that the housewife was expected to and actually did the work of keeping private flush latrines clean. That this was indeed true was reflected in the fact that 45% of the women said that the housewife cleaned the latrines compared to 21% of the men who said so at the state level. At the district level too, 27% of the women said the housewife cleaned the latrine compared to 19% of the men.

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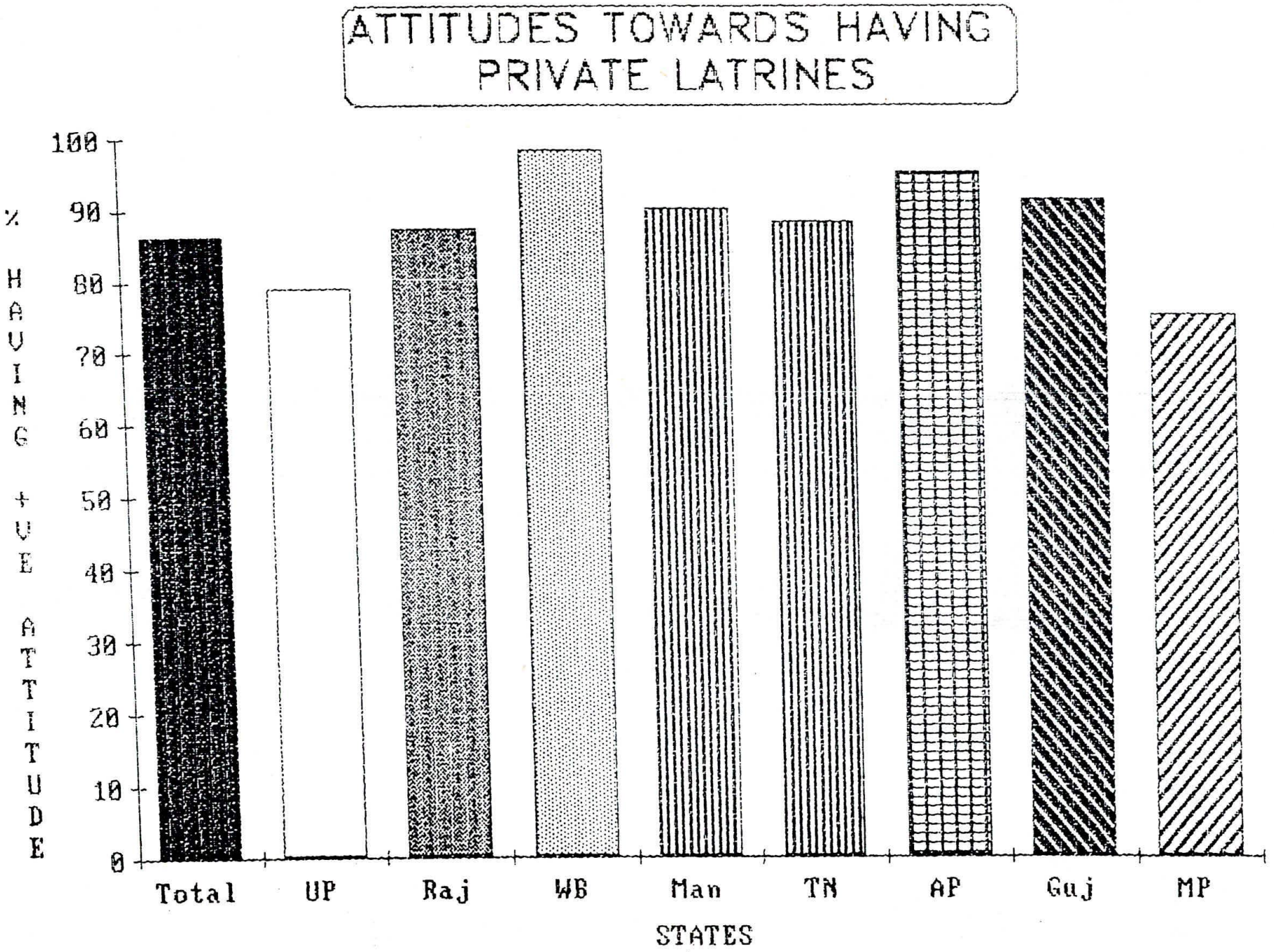
* Owners here are defined as owners of private flush latrines; non-owners are those who did not own a flush latrine.


ATTITUDES TOWARDS HAVING PRIVATE LATRINES
% HAVING +VE ATTITUDE
100
90
80
70
60
50
40
30
20
10
0
Total
UP
Raj
WB
Man
TN
AP
Guj
MP
STATES

3.2.4 Attitudes to private latrines

In order to assess attitudes to private latrines, respondents were asked if they believed that there were any advantages to having private latrines and if so, to enumerate these advantages.

All respondents were asked this question, irrespective of their status in the context of private latrine ownership.

The majority at both state and district levels (86% and 82% respectively) believed that there would be advantages of having private latrines. Details were as follows :

	Positive responses	
	State	District
Base : All respondents	4418	2407
	%	%
Total	86	82
Uttar Pradesh (Sultanpur)	79	74
Rajasthan (Udaipur)	87	65
West Bengal (24 Paraganas)	98	97
Manipur	90	-
Tamilnadu	88	-
Andhra Pradesh	95	-
Gujarat (Amreli)	91	94
Madhya Pradesh	75	-

The highest proportion of positive responses were found in West Bengal and the 24 Parganas district, in Andhra Pradesh and in Gujarat as well as Amreli district. In demographic terms, the highest proportion of those who gave a positive response were from the upper income group, the younger age group and the literate group. Even within these parameters, literacy and high income seemed to be the two that made the greatest amount of difference to a positive attitude.

Both types of respondents, those with a positive attitude as well as those who had a negative attitude were asked to explain their point of view, in order to understand perceived advantages and disadvantages of private latrines.

a/ Advantage of private latrines

Convenience was clearly the single largest perceived advantage of a private latrine. This was expressed in different ways.

	State	District
Base :	3792	1982
	%	%
Useful in monsoon/winter/night/ill-health	38	26
Will not need to go out in the open	37	36
Trouble of walking saved	32	43
Time will be saved	16	17
Privacy	15	14
Cleanliness	14	16
Useful in emergency	11	8
Useful for children	7	5
Convenient	6	7
Health will remain good	6	6

Convenience at particular times such as monsoons, winter etc was mentioned across all states but was particularly heavily mentioned in Andhra Pradesh, Gujarat and West Bengal.

The convenience of not having to go out in the open was mentioned significantly more often by women and by those who were illiterate. It was mentioned particularly from the states of West Bengal, Rajasthan and Uttar Pradesh.

b/ Disadvantages

71% of all respondents at the state level and 66% at the district level said that there were no disadvantages of private latrines.

Of those who mentioned any disadvantages, the main were as follows :

	State	District
Base : All respondents	4418	2407
	%	%
Bad smell/bad air	14	13
Having latrine near the house is dirty	8	10
Causes disease	4	3
Needs to be cleaned everyday	3	4
Do not have space near the house	2	2
Flies/mosquitoes	2	3

Fear of bad smell was mentioned in Uttar pradesh and Manipur, particularly by men and by respondents from lower income households. The attitude of a latrine near the house being dirty was also mentioned mainly by Uttar Pradesh respondents. Here again, lower and middle income groups mentioned it more than upper income respondents. It was also mentioned significantly more often by older and illiterate respondents.

93% of the respondents from West Bengal said that there were no disadvantages to a private latrine, reflecting a consistently positive attitude to latrines in West Bengal. Similarly, 79% of upper income respondents said that there were no disadvantages, against 69% of the lower income respondents; interestingly, while more literate respondents (74%) said that there were no disadvantages, this view was reflected more by women (74%) than by men (68%).

3.2.5 Interest in construction of a private latrine

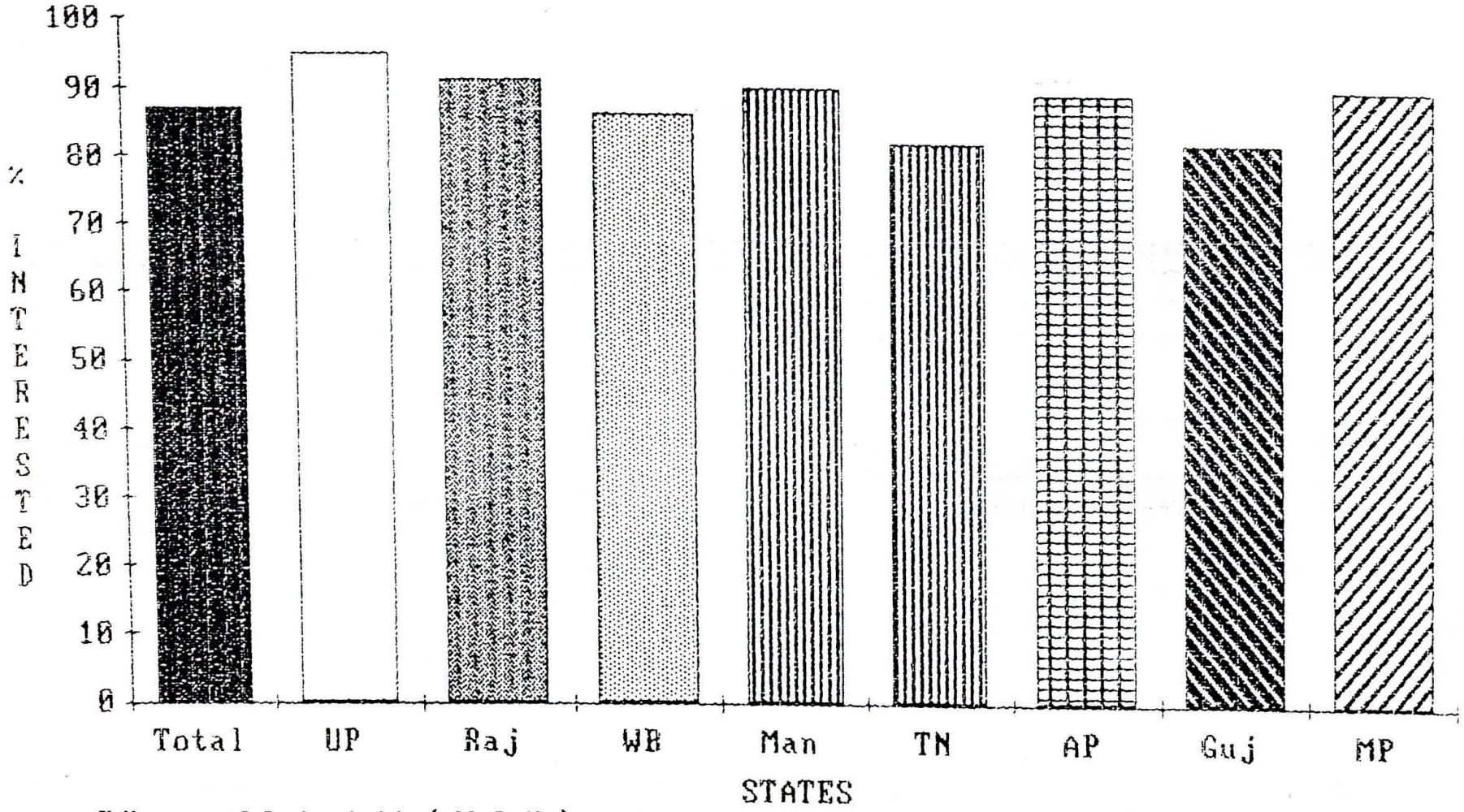
Non-owners of private latrines in villages where private latrines had been installed were asked if they would be interested in getting a private latrine constructed.

Only 5% said that they would not be interested. At the district level, only 3% gave a negative reply. Details were as follows :

Base : State : 879; District : 612

			MHI			Age			Literacy	
(% across)	State	District	LI	MI	UL	L	M	Older	Yes	No
Very interested	87	86	83	93	92	85	87	92	88	84
May be interested	7	11	9	3	5	9	7	2	6	9
Not interested	5	3	7	1	1	4	5	5	5	6
Don't know	1	-	1	2	3	2	1	1	2	1

INTEREST IN GETTING PRIVATE LATRINES



% Unaware of Govt subsidy (all India) : 71%

Average amount individual willing to pay for acquiring private latrine : Rs 570

It is very interesting to note that the highest number of 'not interested' responses came from Tamilnadu followed by Manipur, and Andhra Pradesh and Uttar Pradesh. State and district-wise details were as follows :

(% across)	Interested in private latrines					
	State			District		
	Yes	May be	No	Yes	May be	No
Uttar Pradesh (Sultanpur)	95	1	4	77	-	23
Rajasthan (Udaipur)	91	4	1	88	2	10
West Bengal (24 Paraganas)	86	12	1	83	15	1
Manipur	90	11	-	-	-	-
Tamilnadu	82	6	12	-	-	-
Andhra Pradesh	89	3	6	-	-	-
Gujarat (Amreli)	82	15	1	89	10	1
Madhya Pradesh	90	1	9	-	-	-

Those who were not interested had the following reasons for their negative frame of mind.

	State %	District %
Do not have space in my house	36	53
Do not wish to spend on a latrine	26	11
Latrine is dirty/cause dirt and bad smell	20	21
Do not have water facility	20	-
Do not want a latrine near my house	18	16
Latrine will have to be cleaned	8	-
Prefer open air defecation	3	5

3.2.6 Government subsidy

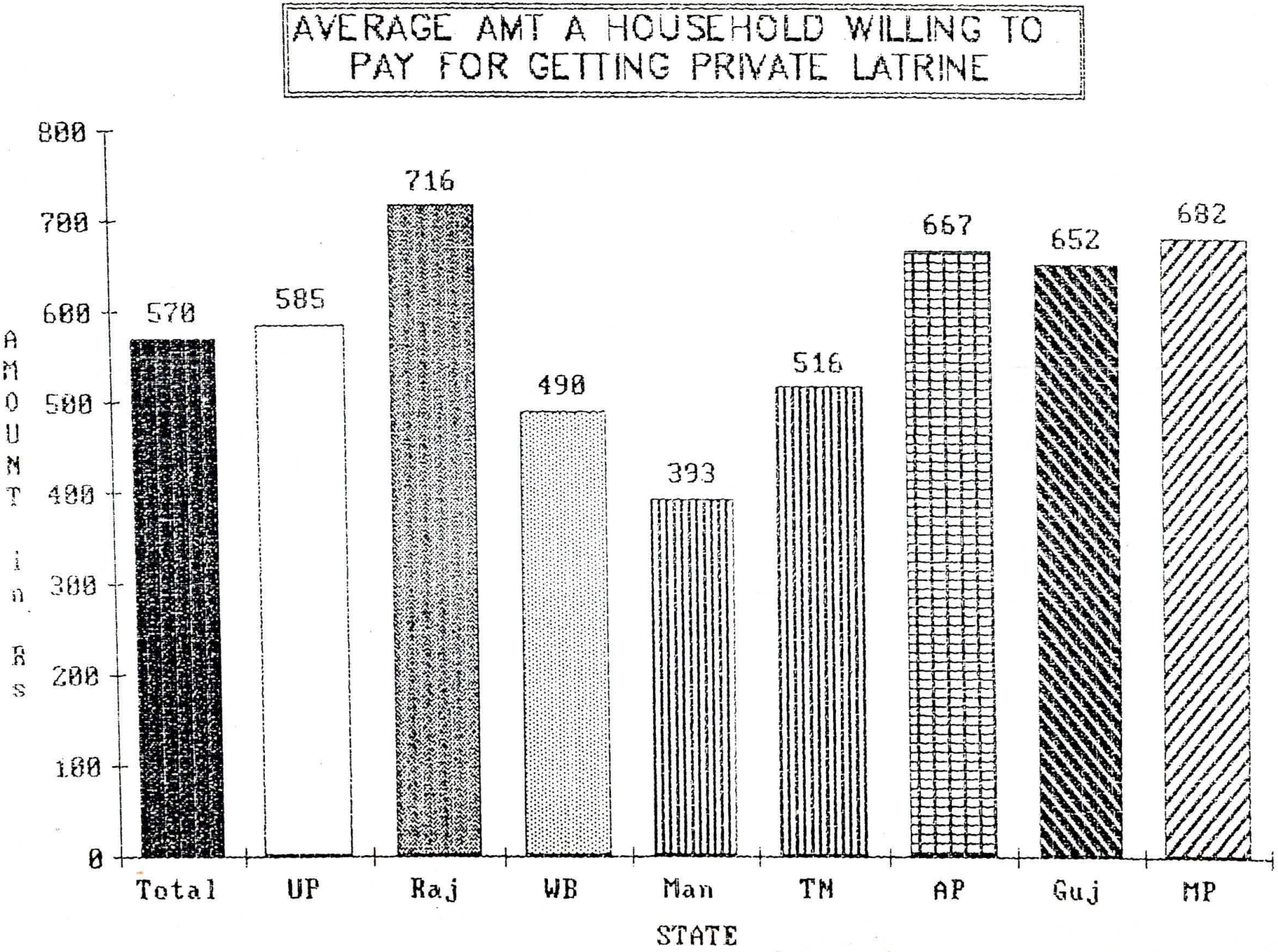
Those respondents who did not have a private latrine but had seen private latrines and would therefore be the primary target group for potential latrine construction were asked if they were aware of a **government subsidy** that was available for private latrine construction.

29% were aware of this while 71% were not, at the state level. In the tracking districts, awareness was at 30% level. 43% of Uttar Pradesh respondents expressed awareness as did 35% from West Bengal and 34% from Andhra Pradesh. In Udaipur, 41% were aware while in 24 Parganas, 39% expressed awareness.

38% of respondents who were over 46 years of age were aware of this subsidy. A greater proportion of those who were literate (32%) and men (32%) were aware than the illiterate respondents (22%) and women (23%).

Lowest awareness was expressed in Tamilnadu (15%) and Manipur (16%).

All these respondents, irrespective of their level of awareness regarding the government subsidy, were asked to respond to a question that said "suppose the government would give you monetary help for building a household latrine and assume that you also had to spend a certain amount, how much would you be willing to pay to get a latrine built for your house ?


AVERAGE AMT A HOUSEHOLD WILLING TO PAY FOR GETTING PRIVATE LATRINE
800
700
600
500
400
300
200
100
0
AMOUNT in Rs
570
585
716
490
393
516
667
652
682
Total
UP
Raj
WB
Man
TM
AP
Guj
MP
STATE

On an average, respondents at the state level were willing to pay Rs 570. In the tracking districts the average amount quoted was Rs 481.

State and district-wise averages are given below :

	Mean (Rs.)	
	State	District
Total	570	481
Uttar Pradesh (Sultanpur)	585	177
Rajasthan (Udaipur)	716	610
West Bengal (24 Paraganas)	490	296
Manipur	393	
Tamilnadu	516	
Andhra Pradesh	667	
Gujarat (Amreli)	652	652
Madhya Pradesh	682	

In Madhya Pradesh, 23% said that they were not willing to pay while 28% did not specify any figure at all.

The range of responses were wide and given that there were no prompts that would suggest expected response to the respondent, the answers offer interesting insights.

There were 0.7% of all respondents at the state level and 0.8% at the district level who said that they would pay less than Rs 5.00. On the other hand, 19% at the state level and 16% at the district level spontaneously said that they would contribute more than Rs 500.

15% of all respondents said that they were not willing to pay any amount (19% at the district level said the same).

6% at the state and district levels did not reply to this question.

Those who said that they were not willing to pay anything have been studied; details are presented below :

Base: State : 879 District : 612	Not willing to pay State %	 District %
Total	15	19
Uttar Pradesh (Sultanpur)	11	43
Rajasthan (Udaipur)	9	24
West Bengal (24 Paraganas)	17	9
Manipur	5	-
Tamilnadu	17	-
Andhra Pradesh	11	-
Gujarat (Amreli)	17	22
Madhya Pradesh	23	-

Those who were unwilling to pay were also very clearly in a specific category. They were from lower income groups, older age groups and were illiterate.

	Those who were not willing to pay	
	State %	District %
Income		
Lower	18	24
Middle	11	10
Upper	8	7
Age		
Younger	13	14
Middle	16	21
Older	22	24
Literacy		
Literate	12	14
Illiterate	21	26
Sex		
Men	15	14
Women	16	24

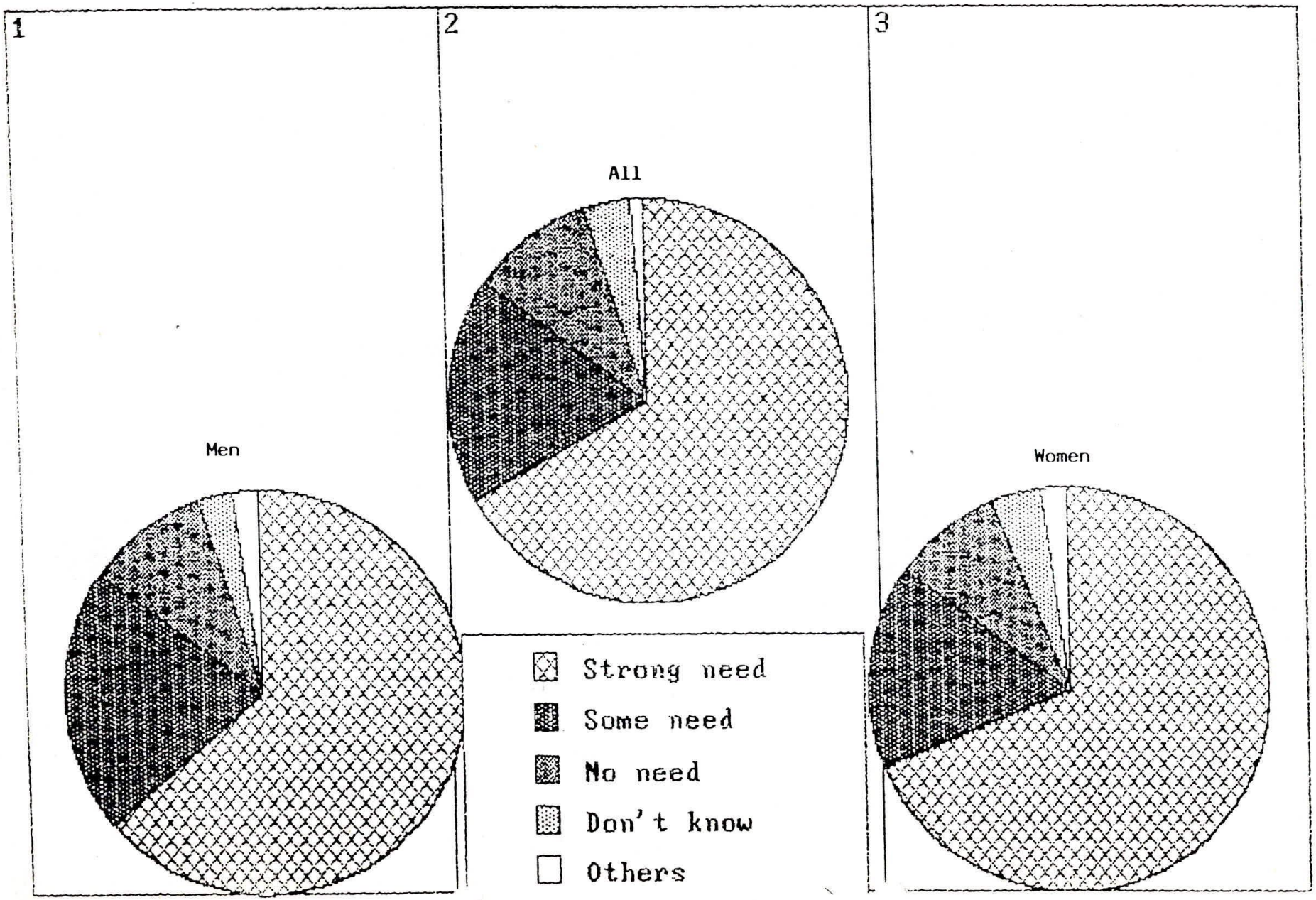
For reasons that are not immediately clear, women in the tracking districts were less willing to contribute to the construction of private household latrines than women from the states as a whole.

The reasons for this lack of willingness to contribute was primarily lack of money (81% and 85% at state and tracking districts respectively).

3% (2% in the districts) said that they did not wish to spend on latrines while 4% said that other items were more urgently required rather than latrines.

5% at the state level and 4% at the district levels said that they had no space for latrines.

IS THERE A NEED TO CONSTRUCT LATRINES IN VILLAGES ?



3.2.7 Need for latrines in the village

All respondents were asked, finally, if they felt that current defecation practices were satisfactory or if there was a need for latrines.

The responses were as follows:

	State	District
Base : All respondents	4418	2407
	%	%
Strong need	67	72
Some need	18	16
No need	10	9
Don't know	4	2
Others	1	1

The "no need" response was mainly received from Uttar Pradesh (17%), Madhya Pradesh (11%), Rajasthan and Tamilnadu (10% each). In the tracking districts, the highest proportion of "no need" responses were found in Sultanpur (18%) and Udaipur (11%).

Predictably, those who said that there was no need for latrines belonged essentially to lower income households, were likely to be older but only marginally so. There were significantly more "no need" responses from the illiterate respondents (12%) than from literate respondents (8%).

However, it was interesting to note that **at the state level, women expressed a need for latrines while men tended to be unsure or negative.** 69% of the women said that there

was a strong need for latrines compared to 64% of the men who said so. 21% of men were unsure while 10% were negative; conversely only 16% of the women were unsure while 9% were negative. Clearly, women felt the need for latrines more acutely than men did.

SECTION D : VILLAGE OBSERVATION FINDINGS

IMRB
Indian Market Research Bureau

1.0 BACKGROUND

In both Phase II and Phase III of WESKAP study a village observation sheet (VOS) was filled for each village visited in addition to individual questionnaires. The VOS was designed with a view to obtain information on certain selected parameters which would help in profiling as well as classifying villages. It was hypothesised that these parameters would have a bearing on the village KAP with respect to water and sanitation. A classification of villages on these parameters would therefore help in identifying the KAP that its villagers would have regarding water and sanitation.

The parameters selected by IMRB were :

1. Demographic
   - Population
   - Occupation
   - Literacy

2. Development
   - Television
   - Radio
   - Shops
   - Electricity

3. Facilities
   - Water related
   - Sanitation related

2.0 DEMOGRAPHIC PROFILE

2.1 POPULATION

As has been explained in the section on sampling, for any state within each TRMI category the sample was proportionately selected from the different pop - strata categories. This is reflected in the following table :

Number of Villages

Pop-strata	As per Census Estimate		As Estimated by Village Chief	
	States	Districts	States	Districts
less than 500	48	12	39	10
501-1000	40	20	44	14
1001-2000	51	32	39	30
2001-5000	60	36	76	32
5001 and above	33	4	34	18

(Table 1(a))

Total village covered were :

All states (Districts)	=	232	(104)
Uttar Pradesh (Sultanpur)	=	33	(26)
Rajasthan (Udaipur)	=	32	(26)
West Bengal (24 Parganas)	=	32	(26)
Manipur	=	12	
Tamilnadu	=	29	
Andhra Pradesh	=	28	
Gujarat (Amreli)	=	30	(26)
Madhya Pradesh	=	36	

It can be observed from the above table that the sample villages were quite uniformly distributed across the different pop-stratas. Tamilnadu and Andhra Pradesh however, exhibit a different pattern in that a larger number of villages were selected from among the higher pop-strata.

As against this in Manipur, most of the villages selected were in the low pop-strata category. This trend basically reflects the size of villages existing in these states as regards total population.

IMRB had sampled the villages based on the population statistics of the 1981 census. However the study was conducted in 1989 and the population of villages had increased. As a result some villages shifted from a lower pop-strata to a higher pop-strata as can be observed from the above table.

2.2 CASTES

As regards the number of castes existing in a village it was found that except for 13 (6) villages - about 6% of our sample - all other villages had more than one caste. The distribution of villages on the basis of the number of castes existing there is presented below:

Base: State = 232
District = 104

No's

Number of castes	states	Districts
1-2	30	17
3-4	29	12
5-6	25	11
7-8	25	15
9-10	28	19
11-12	22	7
13-14	17	7
15 and above	29	12
Not specified	27	4

(Table 1 (b))

The fact that more than 60% of the villages covered in the different states had 5 or more castes indicates the presence of a well defined caste system. Villages in Andhra Pradesh and Tamilnadu had a larger number of castes as compared to other state. In Tamilnadu 14 of the 19 villages where this information was obtained had more than 5 castes. In Andhra Pradesh 21 of the 23 villages had more than 5 castes.

The caste system does not seem to be very strong in the Eastern states of West Bengal and Manipur. In West Bengal 17 out of 30 village had 5 castes or less whereas in Manipur 12 of the 12 villages had less than 5 castes.

The presence of scheduled castes was not very strong in most of the villages covered in the study, this is evident from the following table.

Base State = 232
Districts = 104 No's

Proportion of scheduled castes	States	Districts
1-9%	64	25
10-19%	44	30
20-29%	35	15
30-39%	20	12
40% and more	18	4
No scheduled caste	51	18

(Table 1b)

About 22% of the villages covered did not have any scheduled caste . Of the villages where scheduled caste existed, in almost 60% of the cases the proportion of scheduled caste population, to the rest of the village was less than 20% . In Manipur there was no scheduled caste in any of the 12 villages covered by us.

2.3 OCCUPATION

In the VOS we recorded the three main occupation of a village.

Farming was the major occupation in most villages and was reported by the village chiefs in 218 of the 232 village visited. Of the 24 villages where farming was not mentioned as a main occupation 5 belonged to West Bengal and 7 to Tamilnadu states. Other occupations mentioned were :

Base States = 232
Districts = 104

Main occupation	No's State	No's District
Farming	218	103
Manual worker/labour	178	76
Service	52	32
Business/Trader	41	28
Skilled worker/craftsmen	23	15
Fishing/Animal Husbandry	14	11

(Table 1c)

In Uttar Pradesh and Manipur 'service' was mentioned as a main occupation in a comparatively larger number of villages - 18 out of 33 in Uttar-Pradesh and 7 out of 12 in Manipur. (about 55-58%)

Fishing/animal husbandry was mentioned mainly in Andhra Pradesh and Gujarat.

As regards occupation, there was a difference in response as obtained for the state as a whole and as obtained for a specific district in a state. For example in the Uttar Pradesh state sample only 1 of the 33 villages mentioned skilled workers/craftsmen as main occupation, As against this, in 7 of the 26 villages covered in Sultanpur district this was a main occupation. Similarly, whereas fishing/animal husbandry was mentioned in only 1 village in Uttar-Pradesh state, 6 villages in Sultanpur district atated it as one of their main occupations.

A somewhat higher number of villages in Sultanpur Udaipur and 24 Parganas mentioned Business/Trade as a main occupation compared to Uttar Pradesh , Rajasthan and West bengal states.

A possible explanation of this could be the fact that the districts were not representative of the state and hence the difference in response.

2.4 LITERACY

Literacy of the village people is of great importance both in helping create awareness as well as acceptance of health and hygiene related factors. The literacy levels as obtained for the different villages were as follows:

Base States = 232
Districts = 104

Literacy levels	States Nos Male	States Nos Female	Districts Male	Districts Female
No literate	4	16	-	4
1-9 %	17	74	7	37
10-19 %	27	57	18	22
20-29 %	38	30	18	14
30-39 %	24	21	9	12
40-49 %	25	11	11	6
50-59 %	41	20	13	7
60-69 %	24	2	11	1
70-79 %	16	-	9	1
80-89 %	9	1	7	-
90-100 %	7	-	1	-

(Table 1d)

As may be observed from this table. In case of the male population literacy levels were quite good, although more improvement is required. On an overall basis, in 42 % of the villages covered by us, 50 % or

or more of the male population was literate. However the picture is pathetic when we look at the figure for female literacy.

In 90 % of the villages covered by us, the proportion of literate female was below 50 % . This is very dissappointing, given that women play a major role in household health and hygiene.

2.5 LANDSCAPE AND LAYOUT

Most of the villages covered in our study were located on Flat ground - 148 out of 232. About one fourth of the villages - 58 in number - were located on a hilly terrain. Gujarat, Manipur and West Bengal had a higher proportion of villages located on a hilly terrain - 17 out of 30 in Gujarat, 5 out of 12 in Manipur and 12 out of 32 in West Bengal. This can be observed from the following table :

Base States = 232
Districts = 104

No's

Village landscape	State	District
Flat ground	148	54
Hilly ground	58	40
Sloping ground in one direction	22	10
Others	2	-
Not specified	2	-

(Table 8a)

As regards the layout of the houses in a village IMRB supervisors were asked to draw a description on whether the house were spaced out or not, whether these were grouped into mohallas and whether these mohallas were caste based. The descriptions obtained were :

Base		
	States	= 232
	Districts	= 104
		No's

Layout of village houses	State	District
Close together	151	69
Spaced out	72	35
Not specified	9	-
		(Table 8b)
Scattered around the village	101	43
Grouped in Mohallas	124	61
Not specified	7	-
		(Table 8d)

In Andhra Pradesh and Gujarat the houses in most of the villages were close together As against this most of the villages in Manipur had houses spaced out. This was also evident in the observation that houses in most villages of Manipur were scattered around and not grouped into mohallas.

Interestingly in a majority of cases the houses or mohallas were structured on a caste basis. The following table shows this :

Base		
	States	= 232
	Districts	= 104

Are Mohallas caste based	No's States	No's Districts
Yes	118	53
No	82	43
Not specified	32	8

(Table 8e)

The caste based structure of mohallas was very prevalent in the state of Andhra Pradesh , where it was found in 21 out of the 24 villages covered. In Manipur there was no caste based structuring of houses.

2.6 CLEANLINESS

The villages covered by us did not fare badly as regards cleanliness. Cleanliness covered such areas like - slush and garbage on the streets, condition of roadside drains and cleanliness of village houses. The observations made are presented in the following table:

Base States = 232
Districts = 104

Level of cleanliness	No's States	No's Districts
A lot of slush on the streets	57	39
A little slush on the streets	109	45
Almost no slush on the streets	61	14
Not specified	5	6
A lot of garbage on the streets	87	47
A little garbage on the streets	103	44
Almost no garbage on the streets	38	12
Not specified	4	1
Mostly all open drains on the street	134	84
Some open drains on the street	22	9
Almost no open drains	48	10
Not specified	28	1

(Table 8f)

The above table indicates that most villages were generally dirty ie,. had slush and garbage on the roads, However these were not very dirty also as the quantity of slush or garbage was only a little. This is quite good given the fact that most villages do not have any organised system of garbage or waste water disposal - like a common sweeper etc.

As regard waste-water drains , villages in Rajasthan and Gujarat had very few open drains - 5 out of 32 in Rajasthan and 7 out of 30 in Gujarat. As against this villages in West Bengal and Manipur mainly had open drains - 31 out of 32 in West Bengal and 10 out of 12 in Manipur.

As far as the village houses were concerned the observations made about their cleanliness were as follows:

Base States = 232
Districts = 104

Village houses	No's States	Districts
Most houses clean,swept, neat	63	12
Some houses clean, some dirty	129	71
Most houses dirty with flies	33	20
Not specified	7	1

(Table 8g)

As may be observed in most villages some houses were clean and some dirty. However in a very high number of villages in Andhra Pradesh and Tamilnadu most of the houses were very clean - 13 out of 28 in Andhra Pradesh and 13 out of 29 in Tamilnadu.

3.0 WATER RELATED FACILITIES

3.1 FACILITIES EXISTING

The findings obtained from the villager questionnaire have shown that handpump and dugwell are the most often used water sources for various purposes such as drinking, cooking etc,. This trend is also reflected in the water sources as existing in the different villages.

Base State = 232
District = 104 No's

Water source existing	State		Districts	
	Private	Public	Private	Public
Dugwell	121	131	66	56
Handpump	83	166	64	88
Pond/Lake	4	123	-	66
Canal	-	74	-	37
River/stream	-	66	-	35
Taps	37	66	8	16
Mechanised Tubewell	53	30	29	17

(Table 6(b) & 15)

As can be observed - dugwell, handpump and pond/lake were the more common sources of water. 51 villages across all states did not have a handpump, of these 10 belonged to the state of Manipur and 13 to Rajasthan. (Refer table 6 (b)).

If we study the pattern of water source available across the states, Manipur emerges as being very different from the rest of the states, of the 12 villages covered in this state, none had a dugwell or a mechanised tubewell. The main water source available were natural sources like river/stream and pond/lake.

Mechanised tubewells was mainly found in the Uttar-Pradesh villages where 26 out of 32 villages had a mechanised tubewell. It should also be noted here, that across all states, mechanised tubewells were mostly private.

3.2 NUMBER OF HANDPUMPS AND TAPS EXISTING

Just knowing whether a water source exists in a village or not, does not tell us whether the village has an adequate supply of water. For this it becomes necessary to find out the number of such sources that are available to the villagers for use.

In this study we had confined ourselves to studying the availability of handpumps and taps in specific. The information collected is presented overleaf :

		Private	Public
Base	States =	83	166
	Districts =	64	88

No's

Number of Handpumps in village	State		District	
	Private	Public	Private	Public
1-5	33	101	9	50
6-10	11	24	9	21
11-20	10	28	13	11
21-50	10	10	12	4
51-100	6	1	9	2
101+	12	-	11	-
Not specified	1	2	1	-

(Table 6 (c))

As can be observed from the above table the number of private handpumps existing in a village was 5 or less in almost 40% of all villages having private handpumps. This indicates that only a few people in these villages enjoyed the benefit of water supply from a private handpump.

As regards public handpumps also, the total number existing in a village was 5 or less in almost 61% of the cases. However this is not surprising since one public handpump is used by a large number of villagers.

The number of public handpumps varied depending on the population size of the village. This is evident by the fact that 84% of the villages in the below 2000 pop-strata had 5 or less public handpump. The corresponding figure for 2000 + pop-strata villages was 33% .

Similar information was collected regarding piped water taps. The findings are presented below.

		Private	public
Base	State	37	66
	District	8	16

Name of private taps	No's States private	States public	Districts private	Districts public
1-5	4	23	-	3
6-10	4	14	2	1
11-20	3	11	-	6
21-50	5	8	1	4
51-100	5	6	-	1
101 +	16	1	5	1
Not specified	-	3	-	-

(Table 6 (c))

If we study the above table we find that more than half of the villages that had private taps had 101 + taps. However in case of public taps, more than half the village had less than 10 public taps. This trend is quite similar to that observed in case of private and public handpumps.

3.3 TYPE OF HANDPUMPS

Another question in the VOS pertained to the make of the handpumps that were installed in the village. We did not study in detail the different types of handpumps that were installed in the village. Instead, handpumps were broadly classified into Mark II vs Traditional type. The following table presents the findings.

		Private	Public
Base	States	83	166
	Districts	64	88

No's *

	State		District	
Mark of Handpump	Private	Public	Private	Public
Mark II	57	142	28	64
Traditional	73	33	62	29
Other	4	-	1	-

(Table 6 (d))

As may be observed from the above table, majority of the private handpumps were of the Traditional type whereas majority of the public handpumps were Mark II types. This was to be expected as the government has been mainly installing Mark II handpumps over the past few years.

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* In the table, the column figures add upto more than the base because in any one village there could be both Traditional as well as Mark II type handpumps.

3.4 CONDITION AND MAINTENANCE OF PUBLIC HANDPUMPS

IMRB's supervisors were asked to record their assessment of whether the public handpumps installed in the village were functioning properly and were well maintained.

The assessment made by the IMRB team revealed the following :

Base State = 167
District = 88

Number of handpumps functioning	No's State	District
1-5	77	37
6-10	18	20
11-20	13	6
21-50	6	6
51-100	1	1
Not specified	52	19

(Table 7a)

If we compare the table with the table in section 3.1 showing the total number of public handpumps existing in the village covered by us, it seems that in most cases the handpumps were functional. This indicates that public handpumps were in most cases well maintained .

This is further corroborated when we look at the assessment made about the condition of hand-pump platforms which is presented below:

Base State = 167
Districts = 88

Condition of handpump platforms	No's States	Districts
Hardly any platform is cracked or broken	70	30
Some platform are cracked/broken	24	16
Most platforms are cracked/broken	28	13
Handpumps do not have platforms	45	29

(Table 7b)

As may be observed from the table,in most cases where public handpumps had platforms these were in good condition.

The fact that public handpumps were much better maintained as compared to community latrines is also reflected in the fact that the villagers were more involved in their maintenance . This is very clear from the following table:

Base States = 167
Districts = 88

Who takes care of public handpumps	No's State	District
Government appointed caretaker	53	25
Panchayat Samiti	49	39
Villagers themselves/mechanic residing in the village	31	22
Mechanic residing outside the village	31	22
Municipality	1	-
Others	8	-
Not specified	6	-

(Table 7e)

Unlike the case of community latrines where a fairly high proportion of village chiefs had responded 'Nobody maintains', for public handpumps there was greater involvement of villagers either directly or through the panchayat samiti.

A possible explanation for this would be that the need for a water source is much stronger than that for a latrine. Hence public handpumps are both used as well as maintained much better than a community latrine.

However despite a greater interest and involvement in the maintenance of public handpumps not much attention was paid to the drainage of waste water from these handpumps. This is evident from the findings shown in the table given below :

Base		
	States	= 167
	Districts	= 88

Excess water from the handpump	No's State	District
Forms a slush around the HP	82	43
Drains off into a soak pit	22	13
Drains off into the field	21	9
Drains of into a lake/pond	13	18
Drains off into a tree/bush	5	2
Drains off into a roadside drain	4	1
Others	9	2
Not specified	11	-

(Table 7c (i))

As may be observed, proper drainage method like use of a soak pit or a roadside drain were mentioned only in a few villages. In most cases the water just stagnated in the vicinity of the handpump . This could be because of a lack of awareness on the importance of maintaining cleanliness around a water source.

3.5 QUALITY OF HANDPUMP WATER

The quality of handpump water was quite good in case of most of the villages visited by our team. Quality of water was judged by its visual appearance, taste and smell. The observations made be IMRB supervisors are presented in the following table :

Base States = 167
Districts = 88

Visual Appearance	No's State	No's District
Very clear, no dirt or suspended impurities	112	66
No suspended dirt but water is not very clear	33	16
Water has rust/reddish colour	14	11
Dirty water, suspended impurities visible	14	6
Others	2	1
Not specified	7	1

(Table 7d)

Quality of water was not very good in Manipur and Uttar Pradesh. In Manipur 2 out of the 2 villages having a public handpump mentioned problems of rust in water. In Uttar Pradesh 13 out of 21 villages mentioned problems of dirt/rust in water

Next we assessed the smell of the handpump water :

Base States = 167
Districts = 88

Smell of handpump water	No's State	District
No smell	140	77
Bad smell	18	10
Others	3	-
Not specified	6	-

(Table 7d)

In most villages the water did not have any smell in it. Once again the exception was Manipur, where in both the villages the handpump water had a bad smell. In West Bengal also in 6 out of 26 villages the handpump water had a bad smell.

IMRB supervisors also tasted the handpump water in each village and then recorded their comments on it. Their comments are presented in the following table:

Base		
	States	= 167
	Districts	= 88

Taste of handpump water	State	District
Sweet	100	57
Salty	43	24
Iron taste	24	24
Brackish	19	15
Tasteless	7	4
Stale	4	3
Others	9	1
Not specified	8	-

(Table 7d)

The problem of salty water was mainly in the southern states of Tamilnadu and Andhra Pradesh - 16 out of 24 villages in Tamilnadu and 11 out of 24 villages in Andhra Pradesh. In Manipur the water tasted like iron and was brackish.

4.0 SANITATION RELATED FACILITIES

4.1 FACILITIES AVAILABLE

As regards facilities related to sanitation the areas covered by the VOS were - space available for outdoor defecation, the existence of latrines - private vs community, their usage, maintenance and overall condition. The information obtained is presented in the following section.

In about half of the villages visited, the village chiefs were of the opinion that there was enough land available for outdoor defecation by people. This is evident from the following table.

Base — State = 232
District = 104

Response	No's State	No's District
Enough land available for defecation	134	49
Scarcity of open land for defecation	90	54
Not specified	8	1

(Table 8 (h))

Scarcity of open land for defecation was more strongly felt in the state of Rajasthan and Andhra Pradesh - 21 of the 32 villages in Rajasthan and 14 of the 28 villages in Andhra Pradesh mentioned this problem.

Community latrines were installed in a comparatively smaller number of villages. Private latrines existed in a much larger number of villages, - not surprising considering the fact that even if one household in the village had a private latrine the village would be counted as having private latrines. The information obtained is presented.

Base State = 232
District = 104

No's

Existence of latrines	States	Districts
Community	47	10
Private	145	58

(Table 4 (a) 5 (a))

Tamilnadu emerged as one state where a very large number of the villages had community latrines - 23 out of 29. In contrast to this, not even a single village in Manipur state had community latrines.

Rajasthan and Andhra Pradesh were the two other states where a reasonable number of villages reported the existence of community latrines - 9 out of 32 and 28 villages respectively. In other state only 1 or 2 villages had community latrine.

The picture was quite different in case of private latrines. In Manipur state all of the 12 villages covered had at least one private latrines. Uttar Pradesh and Madhya Pradesh were the two states, where a comparatively lower number of villages had private latrines 14 out of 33 and 15 out of 36 respectively .

4.2 USE OF EXISTING FACILITIES

The existence of community latrines does not imply that the villagers are making use of these. This is brought out very clearly by the information obtained on the usage and maintenance of community latrine where these were installed.

Base State = 47
District = 10

Usage of community latrine	No's State	District
Not being used by anyone	22	3
Being used by some people	11	2
Being used by most people	6	2
Not specified	8	3

(Table 4 (b))

As can be observed, in fairly large number of villages community latrines were not being used at all. Of the village where such latrine were being used very often only some people were using these .

Interestingly enough, the incidence of non-usage was highest in Tamilnadu - 17 out of 23 villages - which happens to be the one state with the largest number of villages having community latrines.

4.3 REASONS FOR NON - USAGE OF LATRINES

Possible reasons for non-usage could either be difficulty or problems associated with the use of community latrines such as - location, cleanliness etc., or a mental block / lack of interest towards using these latrine. To understand this we looked at these aspects also.

It was found that in most cases the community latrine in a village were not maintained properly and were dirty or non-functional. This can be observed from the table below :

Base State = 47
District = 10

No's

Condition of community latrines	States	Districts
Dirty/badly kept	19	2
Broken down/non-functional	8	3
Well maintained	8	2
Not specified	12	3

(Table 4 (b))

Non-usage of community latrines could be due to their bad maintenance. On the other hand, if no one is using community latrines their maintenance will obviously be neglected. Therefore bad maintenance cannot be solely blamed for the non-usage of community latrines.

We thus studied the location of community latrine in the villages where these were installed . The findings were :

Base State = 47
District = 10

No's

Location of community latrines	States	Districts
Located within village boundaries	23	7
Located outside the village boundaries	13	1
All latrines constructed at one place	5	-
Separate latrine for different mohallas/castes	6	2
Not specified	12	2

(Table 4 (b))

Looking at the above table it seems that location of community latrines in terms of distance should not be a problem. This is so because for outdoor defecation also, villagers normally go outside the village boundaries.

A hypothesis we had was that the non-usage of community latrines was because of a lack of interest on the part of villagers. This hypothesis is somewhat corroborated when we study the table presented below:

Base State = 47
District = 10

Maintenance of community latrines	No's States	No's Districts
Not maintained by anyone	17	3
Maintained by govt paid sweeper	12	1
Maintained by a sweeper appointed by the villagers	3	-
Maintained by the villagers themselves	3	-
Not specified	12	5

(Table 4 (b))

It is very clear from this table that in most cases the villagers were not involved or concerned about the maintenance of the community latrines installed in their village.

4.4 PRIVATE LATRINES

Although a fairly high proportion of the villages covered in our sample had private latrines the number of houses having private latrine in most of the villages were not many. This shows that a small segment of the rural rich had constructed such latrines in their houses. This is evident from the following table :

Base State = 145
Districts = 58

Number of private latrine	No's State	Districts
1-2	22	6
3-4	20	6
5-6	8	6
7-10	16	8
11-20	13	7
21-30	18	8
31-40	5	-
41-60	8	2
61-100	9	7
101 +	22	7
Not specified	4	1

(Table 5 (a))

As may be observed from the above table in almost 30% of the villages having private latrines the number of such latrine was less than 5 . The total number of private latrine was less than 20 in case of more than half of the villages that had private latrine.

The villages of Uttar Pradesh and Madhya Pradesh had a comparatively lower number of private latrines. This is evident by the fact that 11 out of 15 villages in Madhya Pradesh had less than 5 latrines. In case of Uttar Pradesh 8 out of 14 villages had less than 5 private latrines. Villages in Manipur had a higher number of latrines with 6 out of 12 villages having more than 100 latrines.

As regards the type of latrine - ie.,water seal vs dry type - existing in the villages, the findings were :

Base State = 145
District = 58

Type of private latrine	No's States	No's Districts
Mainly water seal type	75	36
Mainly dry type	65	14
Same of both type	3	4
Not specified	2	4

(Table 5 (b))

As is evident from the above table, a comparatively higher number of villages had water seal type of latrine as against the dry type. This is very encouraging as water seal latrine is more hygenic as compared to the dry type.

Statewise difference did exist as regards the type of latrine installed. Most of the villages in Gujarat, Andhra Pradesh and Tamilnadu had water seal type of latrine - 17 out of 18 in Gujarat, 15 out of 18 in Andhra Pradesh and 17 out of 22 in Tamil Nadu.

In contrast to this, most villages in Madhya Pradesh, Manipur and West Bengal had dry type of latrine - 11 out of 15 in Madhya Pradesh, 12 out of 12 in Manipur amd 15 out of 25 in West Bengal.

The water seal latrine installed in most villages had a single pit and only few had double pits, as is shown in the following table.

Base		
	State	= 78
	District	= 40

Type of water seal latrines	States	Districts
Mainly single pit	50	19
Mainly double pit	19	18
Approximately same of both	1	2
Not specified	8	1

(Table 5 (b))

5.0 DEVELOPMENT RELATED FACILITIES

5.1 EDUCATION FACILITIES

A good finding of the VOS was that about 88 % of the villages in our sample had at least one school as can be seen from the table given below:

Base States = 232
Districts = 104

Existence of school	No's States	Districts
Yes	205	95
No	27	9

(Table 10)

Uttar Pradesh emerged as one state where a comparatively lesser number of villages had schools - 23 out of 33 (about 70 %)

However in most cases only a primary school existed in a village as is obvious from the following table:

Base States = 205
Districts = 95

Type of School	No's State	District
Primary School	177	81
Middle School	76	32
High School	40	14
Adult Education Centre	24	2
Not specified	1	-

(Table 10)

An interesting observation here is that a Primary School also was not existing in all the villages that had some education centre.

In most cases the number of such educational institutions existing in a village was 1-2 and not more. This is very clear from the distribution of Primary Schools in our sample villages.

Base States = 177
Districts = 81

Number of Primary Schools	No's State	District
1	120	60
2	30	15
3	14	2
4	4	2
5	2	-
6 and above	6	2
Not specified	1	-

(Table 10)

5.2 OTHER FACILITIES

The other facilities that we looked at were electricity connection and existence of shops supplying basic consumption material like food, clothing, medicine etc. The findings are presented.

Base States = 232
Districts = 104

Electricity connection	No's State	District
Yes	181	67
No	22	37

(Table 9)

As may be observed, about 10% of the sample villages did not have electricity connection. Statewise differences also existed. All the villages covered in Tamilnadu and Gujarat had electricity connections. In West Bengal, Rajasthan and Uttar Pradesh a somewhat lesser number of villages had electricity connection 14 outof 32 in West Bengal, 19 out of 32 in Rajasthan and 20 out of 33 in Uttar Pradesh.

Even if a village had electricity connection it did not necessarily imply that most houses in that village would have electricity. This is brought out clearly when we look at the number of houses having electricity connections in different villages :

Base State = 181
District = 67

No's

Number of houses with electricity	State	District
Upto 50	70	30
51 - 100	30	5
101 - 150	13	6
151 - 200	9	3
201 - 250	8	2
251 - 300	8	5
301 - 350	5	3
351 - 400	3	1
401 - 450	3	2
451 - 500	3	-
501 and more	24	7
Not specified	5	3

(Table 9)

As may be observed in almost 55 % of the villages having electricity connection, not more than 100 houses had electricity.

Our next area of interest was the existence of different type of shops in a village. Our findings here are presented below.

Base		
	States	= 232
	Districts	= 104

Type of shops existing	State	District
Small/paan/bidi/tea shop	164	75
Provision store	169	71
Ration/Fair price shop	98	51
Cycle repair/mechanic shop	88	38
Vegetable/fruit shop	53	19
Textile shop	50	25
Restaurant/Hotel	47	12
Liquor shop	41	4
Medicine/chemist shop	36	12
Durable goods type	13	5
Others	63	32
No shop	22	5

(Table 13)

Some interesting observations can be made from the table. As is obvious, provision stores and paan/bidi shops were found in most of the villages. However, medicine/chemist shops existed in a few villages only - even less than restaurant/hotels.

The fact that about 10 % of the village had no shops whatsoever is indicative of the economic dormancy of that village.

It is our hypothesis that the low mention of vegetable/fruit shops could be because of the fact that most villagers grow their own vegetables.

The low existence of textile shops indicated that the villagers in most cases have to purchase clothes from outside the village - either from a bigger town or in the village melas

5.3 MEDIA EXPOSURE

T.V and radio are the two mass media which the Government and other voluntary agencies are using extensively to educate villagers about various health and hygiene related factors. It was therefore considered important to study the extent to which these villages were exposed to these media. The findings are presented below :

Base		
	States	= 232
	Districts	= 104

Media Exposure	State	District
Reception of T.V transmission ?		
Yes	175	73
No	57	31

(Table 11a)

The number of T.V sets existing in the different villages are presented in the following table :

Base States = 175
Districts = 73

Number of T.V sets	No's State			No's District		
	Total	Private	Community	Total	Private	Community
None	24	35	129	4	5	57
1	33	25	40	16	16	15
2-3	25	25	3	16	15	1
4-5	22	24	1	8	8	-
6-7	13	9	2	4	4	-
8-10	11	14	-	9	10	-
11-20	24	21	-	8	9	-
21-50	8	9	-	7	5	-
51-100	7	7	-	1	1	-
101 +	8	6	-	-	-	-

(Table 11a)

The first interpretation that can be made from this table is that majority of the villages where a community set existed had only one such set. Infact more than half of the villages having T.V sets had a total of 5 T.V sets or less - including both household and community sets.

The number of T.V sets existing in the different villages are presented in the following table :

Base States = 175
Districts = 73

Number of T.V sets	No's State			No's District		
	Total	Private	Community	Total	Private	Community
None	24	35	129	4	5	57
1	33	25	40	16	16	15
2-3	25	25	3	16	15	1
4-5	22	24	1	8	8	-
6-7	13	9	2	4	4	-
8-10	11	14	-	9	10	-
11-20	24	21	-	8	9	-
21-50	8	9	-	7	5	-
51-100	7	7	-	1	1	-
101 +	8	6	-	-	-	-

(Table 11a)

The first interpretation that can be made from this table is that majority of the villages where a community set existed had only one such set. Infact more than half of the villages having T.V sets had a total of 5 T.V sets or less - including both household and community sets.

This indicates that even though a fairly high proportion of villages could receive T.V transmission, the number of T V sets was very low in these villages. Hence it can be interpreted that only a small segment of the villagers were exposed to T.V .

The second media that we studied was Radio. The number of villages possessing a radio or transistor are presented below :

Base States = 232
Districts = 104

Radio sets existing	State (No's)	District (No's)
Have radio set	221	96
Have private radio set	218	96
Have community radio set	46	16

(Table 12)

Unlike the case with T.V sets most of the villages - 95% had a radio set. Here too, only 20% of the villages also had community radio sets. Gujarat and Manipur were the two states where all the villages covered had a radio set.

Once again Uttar Pradesh was the only state where not a single village had a community radio set.

Next we studied the number of radio sets existing in different villages to assess the extent to which the villages were exposed to this media. The findings are presented in the following table :

Base States = 232
Districts = 104

No's

Number of radio sets	State			District		
	Total	Private	Community	Total	Private	Community
None	11	14	186	8	8	88
Upto 5	15	17	43	8	9	16
6-10	27	25	3	9	9	-
11-20	18	17	-	9	9	-
21-40	22	21	-	11	11	-
41-60	29	28	-	10	10	-
61-100	21	23	-	17	17	-
101 +	89	87	-	32	31	-

(Table 12)

As regards ownership of radio sets, the picture was better as compared to T.V sets. As can be observed almost half of the villages possessing a radio set had more than 4 such radio sets private & community combined . However in villages where community radio sets existed the number was usually not more than one.

From the above discussion it emerges that villagers were more exposed to radio as compared to T.V.

APPENDIX I

SAMPLING METHOD

The sampling method which was adopted is described in this section.

Selection of study areas (for Phase III)

Based on a number of previous studies conducted in Rural India, it was hypothesized that areas which are **economically** better developed would differ from less developed districts with respect to social and cultural practices.

It was also hypothesized that two major factors would be strong discriminators to explain differences in KAP with respect to Water and Environmental Sanitation between geographical areas.

These were :

a/ The extent of assured water availability in the district

b/ The level of literacy

If it were shown that in a Rural economy heavily dependent upon agriculture such as India's, assured water availability and literacy are strongly correlated with overall **economic** development, this would further strengthen the argument that different levels of economic development would be a meaningful way of stratifying the study areas.

We therefore undertook the following statistical analysis for seven of the eight states proposed for the study.

(Adequate data for Manipur were not available).

State	Average TRMI	Average rainfall (in cms) per year	Average % of cropped land that is irrigated	Average % of literacy	Coeffi-cient of deter-mination
Uttar Pradesh	29.1	98.5	35.5	23.9	.48
Rajasthan	15.6	56.3	16.7	17.1	.60
Madhya Pradesh	14.4	113.7	8.4	21.0	.09
Gujarat	29.1	83.6	14.1	35.3	.39
Andhra Pradesh	32.2	89.1	34.0	22.8	.54
Tamilnadu	53.8	100.7	46.5	39.4	.50
West Bengal	38.5	188.2	21.0	32.0	.33

The co-efficient of determination provides the extent of correlation between the three 'independent' variables defined earlier and the 'dependent' variable i.e the TRMI.

The analysis shows that except in the case of Madhya Pradesh, as much as between 33% and 60% of the variation in levels of development is explained by differences in assured water availability and literacy.

Since these are also the variables that would, a priori, also explain differences in KAP (especially in a year of drought) on the subject of water and environmental sanitation, a stratification of study areas by overall levels of development based on a development indicator such as the TRMI was considered to be appropriate.

Each state was, therefore, broken down into districts falling into three categories :

	TRMI Index range between
A & B Category	40.00 -- 100.00
C & D Category	20.00 -- 39.99
E Category	Upto 20.00

The total number of such districts in each of the selected states are as follows :

	District categories		
	A and B	C and D	E
Uttar Pradesh	9	34	13
Rajasthan	1	6	19
Madhya Pradesh	1	5	39
Gujarat	2	12	5
Andhra Pradesh	6	11	5
Tamilnadu	7	4	4
West Bengal	7	5	3
Total	**33**	**77**	**88**

Within a district category, e.g A & B, within a state, the sample size was **100** men and **100** women. At 95% level of confidence, this provided us with acceptable levels of precision for a KAP study.

As described in Appendix II (sampling error and Confidence limits) the expected error range around a 10% estimate would be $\pm$ 8.5% and around a 50% estimate, would be $\pm$ 14.25% on a sample size of 100 at 95% level of confidence using the cluster sampling method.

However, for the tracking study, the sample size was required to be higher. For instance a minimum 'cell' size of 300 would be needed to detect a shift in any aspect of

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* Manipur : Adequate data about Manipur was not available to construct the TRMI. However, since **all** 6 districts of Manipur are classified as 'backward' we are treating it as an 'E' category area.

KAP from (say) a 10% level in the baseline study to a 20% level at the tracking study at 95% level of confidence. This means that the total sample size would need to increase **threefold.** However, since KAP are parameters that change slowly and almost imperceptibly, it was decided that larger sample sizes would be used. A sample size of 600 which would enable detection of a 5 % shift on a basic estimate of 10% was decided upon for each 'tracking' districts. Four tracking districts were selected in a series of consultations with the client, and the tracking districts sample size was a total of 2400.

		District category					
		A + B		C + D		E	
State	Total	Men	Women	Men	Women	Men	Women
Uttar Pradesh	600	100	100	100	100	100	100
Rajasthan	600	100	100	100	100	100	100
Madhya Pradesh	600	100	100	100	100	100	100
Gujarat	600	100	100	100	100	100	100
Andhra Pradesh	600	100	100	100	100	100	100
Tamilnadu	600	100	100	100	100	100	100
West Bengal	600	100	100	100	100	100	100
Manipur	200	-	-	-	-	100	100
Total	**4400**	**700**	**700**	**700**	**700**	**800**	**800**

The total sample size for this stage of the study was therefore 6800 respondents.

1. Plotted the Thompson Rural Market Index (IRMI) for 190 districts in the 7 states. The TRMI is a widely accepted development indicator which is computed on the basis of as many as **10** different economic indicators. It classifies each district into one of 5 types (A through E) based on the value of the Index.

2. Obtained data for each of these districts on

   - average rainfall in centimeters over the past 20 years
   - the percentage of total cropped area that is irrigated and
   - the percentage of the population that is literate.

   The first two variables define the extent of assured water availability in the district. (See Appendix IV for a map of the country showing districts with assured water availability).

3. Conducted a multiple correlation analysis between the TRMI and the three variables defined in '2' above to determine the extent of correlation between assured water availability, literacy and overall development (TRMI).

Given in the table below are the results of this exercise for all districts of the state taken together.

Selection of village

The sampling procedure involved the following procedure for each district group (A + B, C + D, and E) within a state

- the total sample size was allocated between three village population strata : below 500, 500-2000, 2000-5000 and over 5000.

- the total number of villages covered were arrived at by dividing the sample size for the stratum by the average 'cluster size' per village. The average cluster size was 12 male and 12 female interviews per village.

- Each 'group' comprised one or more districts. The District Census Handbook which provides village level census data formed the sampling frame for village selections. The relevant District Census Handbooks were notionally arranged in a contiguous manner. The villages appear in running pages, by police station/ block, and have a serial number. Effectively, each village in each district in the region was given a running serial number. This running serial number was the selection basis.

- At first, the starting point was selected randomly (using a random number table). The district census summaries indicate the total number of villages in a given populaation stratum within in a region. Given

the number of villages to beselected and the total number existing, the interval of selection for circular systematic sampling was determined. From the starting point (i.e serial number), every n^{th} village in the concerned population stratum was selected, where n is the interval as determined above.

For example, if there were 100 villages in the 5001+ stratum in a certain region, and 5 villages were to be selected, then ever $\frac{100}{5} = 20^{th}$ 5001+ village was eligible for selection. For every village selected, the immediately next village which exists (in the same population stratum) was also selected as a substitute.

- The procedure outlined above was carried out for each population stratum separately.

Selection of respondents

In each selected village, the respondents (24 in number) were selected as follows :

i/ The total number of households in the village were obtained from the Patwari/Sarpanch/Mukhya

ii/ The village was judgementally segmented with 3 or 4 distinct areas

iii/ In each such area a household was randomly selected as a starting point.

iv/ Starting with this household, the interviewer followed the Right Hand Rule* and contacted very n^{th} household, where n is the interval obtained by dividing the total number of households in the village by the sample size. The total sample was equally spread across the male and female segments.

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* The Right Hand Rule of field movement predetermines the the households tht will be selected and thus precludes any discretion on the part of the interviewer in the selection of a household.

APPENDIX II

SAMPLING ERROR AND CONFIDENCE LIMITS

1. Sampling Error : Simple random sampling

Any percentage estimate obtained from sample surveys is subject to sampling error. An estimate of the standard deviation (σ: sigma) is referred to as the sampling error. In the case of a a simple random sample, the standard error is calculated as :

$$\sigma = \sqrt{\frac{P\ (100-p)}{n}}$$

Where P = estimated percentage

n = sample size

Ex : Let 60% of 400 respondents use Brand A.

Hence n = 400

P = 60

$$\text{Standard error} = \sqrt{\frac{60(100-60)}{400}}$$

$$= 2.45\%$$

2. Confidence limits around an estimate :

Simple random sampling

Often in market research one has to state the findingwith a certain degree of confidence. A 95% level of confidence is the one mostly used in sample surveys. In 95 out of 100 cases an estimate would lie within a range of $\pm$ 1.96 limits. Thus, 1.96 limits on an estimate are called the 95% confidence limits.

Ex : From a random sample of 400 respondents, 60% were found using Brand A. Then the 95% confidence limits (CL) on this estimate are :

$$CL = \pm 1.96 \sqrt{\frac{P(100-P)}{n}}$$

$p = 60\%$

$n = 400$

$CL \pm 4.8\%$

Hence at the 95% level of confidence we can conclude that the true value of the usage of Brand A lies between 55.2% and 64.8% (i.e 60% $\pm$ 4.8%). This is valied in the case of simple random sampling.

3. Cluster sampling

The sampling error for a given sample size in the case of a simple random sample is not the samefor the same sample size obtained through a clustered sample (e.g selecting a certain number of villages and selecting respondents in each). The sampling error is greater in the latter case implying that in a clustered sample the effective sample size is lower than if it were to be treated as a simple random sample.

The ratio of the sample sizes of the clustered sample and the simple random sample, both having the same sampling error, is known as the Design Effect (Deff) :

$$Deff = \frac{\text{Sample size of clustered sample}}{\text{Effective sample size of simple random sample}}$$

Deff can be determined by using the formula :

Deff = $1 + (b-1)\rho$

Where b = the number of interviews conducted in each cluster i.e the cluster size

ρ = the intra-class correlation coefficient which is a measure of the homogeneity within clusters. It can be defined as the average coefficient of correlation between all members of all clusters in the sample design.

To convert sampling errors calculated by methods valid for simple random sampling (as in Item 1) into the sampling errors appropriate to clustered sampling the sampling error is multiplied by the

$$\text{Design Factor} = \sqrt{\text{Deff}}$$

However, ρ can only be determined, in the proposed sample design, on a post hoc basis. Empirical data on the likely values of ρ for a survey in rural India are not available.

An indication of the impact of clustered sampling are illustrated below :

Illustration 1 : Design effect

The effect of various values of ρ on Design Effect for two different cluster sizes.

Cluster size	Intra-class correlation ρ 0.01	0.05	0.10	0.20
10	1.09	1.45	1.90	2.80
20	1.19	1.95	2.90	4.80

Illustration 2 : Effective sample size

The effect of various values of ρ on effective sample size for two different cluster sizes are given below :

Actual sample size	Cluster size	Intra-class correlation ρ 0.01	0.05	0.10	0.20
100	10	90	70	50	40
100	20	85	50	35	20

Thus, if ρ = 0.05 and the cluster size is 10, the effective sample size (in terms of simple random sampling) for an actual sample size (clustered sampling) of 100 is 70.

In this study the cluster size per village was approximately 12 i.e about 12 interviews per village.

Since we do not have any empirical evidence relating to the likely value of ρ in the Indian rural context, for the sake of illustration a ρ value of 0.1 could be assumed to observe the impact on sampling errors. The next section indicates the sampling error for the various sample size at the socio-cultural regional level.

4. Sampling error : Cluster sampling

Cluster size = 12

Level of confidence = 95%

Regional sample size	% error range around 10% estimate	% error range around 50% estimate
100	± 8.5	± 14.2
150	± 6.9	± 11.6
200	± 6.0	± 10.0
300	± 4.9	± 8.2
450	± 4.0	± 6.7

The error has been calculated using the formula (for 95% confidence limits)

$$\text{Sampling error} = \text{Design factor} \times 1.96 \times \sqrt{\frac{P(100-p)}{n}}$$

Where P = the estimate

n = sample size

$$\text{Design factor} = \sqrt{\text{Design effect}}$$

$$\text{Design effect} = 1 + (b-1)\rho$$

Where b = cluster size = 12

ρ = intra-class correlation = 0.1

Hence the Design factor

$$= 1 + (12-1)\ 0.1$$

$$= 2.1$$

$$= 1.45$$

APPENDIX III

SAMPLING REQUIREMENTS FOR A TRACKING STUDY

1. As described in Appendix II the sampling requirements for a tracking study would be different from a single KAP study. This is because the purpose of the tracking study would be to detect **shifts** in KAP over time at an acceptable level of precision. This is explained in following paragraphs.

2. At the 95% level of confidence, the two percentage estimates (one relating to the benchmark study and the other to the'tracking' study) should differ by atleast 1.96 times the sampling error to yield a significant difference. The higher the sample sizes, the less would be the likelihood of smaller differences in the percentage estimates being significant.

If :

P1 is a percentage estimate from the first study
N1 is the sample size of the first study
P2 is a percentage estimate from the second study
N2 is the sample size of the second study

Then :

$$\text{Standard error } (P1-Ps) = \sqrt{P(100-P)\left(\frac{1}{N1} + \frac{1}{N2}\right)}$$

$$\text{Where } P = \frac{N1P1 + N2P2}{N1 + N2}$$

If P1-P2 is greater than 1.96 times the Standard Error (SE), then we can conclude that the two estimates are significantly different at the 95% level of confidence.

3. Given this, let us take a look at the standard errors for various sample sizes and estimates. The standard error is being multiplied by the Design Factor of 1.45 as in Appendix II. This will correct for thefact that cluster sampling will be used. The significance relates to a 95% level of confidence. The results of this exercise follow :

	N1	P1	N2	P2	1.96 SE	Whether P1-P2 significant
a/	100	10%	100	15%	13.3	NO
b/	100	10%	100	20%	14.3	NO
c/	200	10%	200	15%	9.4	NO
d/	200	10%	200	20%	10.1	NO
e/	300	10%	300	15%	7.6	NO
f/	300	10%	300	20%	8.2	YES
g/	400	10%	400	15%	6.6	NO
h/	500	10%	500	15%	5.9	NO
i/	600	10%	600	15%	5.4	NO
j/	900	10%	900	15%	4.4	YES

These calculations broadly indicate that to accurately monitor changes of 5% around an estimate of 10%, a minimum sample size of 900 (as in (j) above) would be required. If the change is 10% around an estimate of 10%, a minimum sample size of 300 (as in (f) above) would suffice. This is true for a 95% level of confidence.

APPENDIX IV

MAP OF INDIA SHOWING DISTRICTS WITH ASSURED WATER AVAILABILITY