

## CHAPTER 4

### Background characteristics of study population

#### Introduction

Inadequate levels of immunization against childhood diseases remain a significant public health problem. Nonetheless, the reasons for incomplete vaccination and non-uptake of immunization services are poorly understood. Moreover, persistent lack of immunization in certain groups of children is one of the main challenges in immunization programmes. Although biological, economic and logistical factors related to vaccinations often attract attention, social determinants can have a significant effect on immunization efforts. Recent systematic reviews addressing the reasons for under- or non-vaccination of children from low- and middle-income countries (Rainey *et al.*, 2011) and in India (Mathew, 2012; Nayar, 2007) also suggest that social determinants may have a substantial impact on childhood vaccination. Therefore, understanding the effect of social determinants on routine immunization programme is important for the development of modalities to address them and optimizing vaccination coverage, particularly among weaker sections of the society.

The conceptual framework of this study using Health Belief Model (HBM) calls for examining the role of social determinants, particularly the role of social group affiliation on the coverage of child immunization among children aged 12-59 months, after controlling for other socio-economic and demographic characteristics and programme factors in Rajasthan, Odisha and Madhya Pradesh. For a better understanding of the problem, it is necessary to profile the mothers and children's demographic and socio-economic background used in the analysis, as they have a bearing on the results of the study. This chapter is divided in to two sections: the first section presents socio-economic, demographic and programme characteristics of mothers and children aged 12-59 months through bivariate analysis in the states and across four caste/tribe groups; and the second section presents construction of women's access to health facility index (a pooled index using responses from eight women's access to health facility variables – specific constrains/barriers in accessing medical advice or treatment) using the principal component analysis (PCA).

## SECTION - 1

### **Socio-economic and demographic characteristics, and exposure to programme factors**

#### **Background characteristics**

Table 4.1.1 presents background characteristics of the sample children aged 12-59 months classified in to four broad categories, namely, (a) household characteristics (i.e. caste/tribe, residence, household structure, households standard of living index); (b) characteristics of parents (mother's education, father's education, mother's work status, mother's age at the time of child birth); (c) characteristics of children (age, birth order and sex); and (d) exposure to programme factors in Rajasthan, Odisha and Madhya Pradesh. The analysis focuses on 1,519, 1,366 and 2,520 living children born in Rajasthan, Odisha and Madhya Pradesh respectively during the 12-59 months preceding the survey. All the descriptive statistics are weighted by state sampling weights.

It can be observed from Table 4.1.1 that about one-fifth (19-20%) of children in the states belong to SC. It shows that 41 per cent children in Madhya Pradesh, 47 per cent children in Rajasthan and 27 per cent of children in Odisha belong to OBCs. Scheduled tribe (ST) children comprise 15, 24 and 27 per cent in Rajasthan, Madhya Pradesh and Odisha respectively. A little more than one-quarter children (27 per cent) in Odisha and 16 to 18 per cent children in Rajasthan and Madhya Pradesh do not belong to SC, ST or OBCs. Vast majority of the children aged 12-59 months in the study states (97, 91 and 88 percent in Odisha, Madhya Pradesh and Rajasthan) belong to Hindu religion therefore, religion variable excluded from the analysis and focused extensively to assess the role of social group affiliation only on the child immunization coverage in the study states. Most children (77 to 86%) in the states are from rural areas and a little less than one-fourth of the children in Rajasthan (21%) and Madhya Pradesh (23%) followed by Odisha (14%) children are from urban areas. About three-fifths of the children are from nuclear families (59% in Madhya Pradesh and 55% each in Rajasthan and Odisha). With regards to household standard of living, more than half of the children in Odisha (56 per cent), followed by Madhya Pradesh (46%) and Rajasthan (39%) are from low standard of living households. While about one-third of children in Rajasthan and Madhya Pradesh states (30-31%), followed by Odisha (26%) are from the medium standard of living households (Table 4.1.1).

In the three states mother's level of education was very low as compared with father's level of education. Majority of mothers in Rajasthan (70 per cent), followed by Madhya Pradesh (57 per cent) and Odisha (48 per cent) were illiterate, while little more than one-third (33-35 per cent) of fathers of children were illiterate and did not have any formal education. In the three states, secondary or higher level of educated mothers ranged from 18 to 33 per cent, while among fathers, it ranged from 43 to 53 per cent. More than one-fourth children in Odisha (27 per cent) and more than two-fifths in Madhya Pradesh (41%) and Rajasthan (44%) were working mothers, i.e., they did participate in works other than their regular housework. In all the three states, the average age of the mother at the time of birth of index child was around 24 years. The proportion of higher-order births (birth order three or higher) was much more in Rajasthan (53%) and Madhya Pradesh (51%) than in Odisha (39%). Children were distributed more or less evenly by age. More than half of the sample children in the states are male children (51 to 54%) and the lowest proportion of female children was in Rajasthan (46%) (Table 4.1.1).

Table 4.1.2 presents the percentage distribution of mothers according to three programme exposure factors, i.e., exposure to electronic media, place of delivery and mother's access to health facility (index). Radio and television sets are the most informative and communicative sources of media. However, results from Table 4.1.2 show that a significant proportion of mothers had lesser exposure to electronic media as they did not watch Television or hear radio even at least once in a week. The proportion of mothers who did not listen to radio even once in a week was the highest in Rajasthan (88%) followed by Odisha (82%) and Madhya Pradesh (81%). Similarly, 67, 64 and 58 per cent in Rajasthan, Madhya Pradesh and Odisha did not watch television see even once a week respectively. Thus, the proportion of mothers who had ever exposed to electronic media (television and radio) in the states ranged from 70 per cent in Odisha to 55 per cent in Madhya Pradesh and 46 per cent in Rajasthan. Almost three out of every four births in Madhya Pradesh and Rajasthan (74 and 71 per cent respectively) took place at home, while 64 per cent of mothers in Odisha delivered at home. Thus, a significant proportion of mothers in the states delivered at home (Table 4.1.2). To assess the mother's access to health facility in the states, women's access to health facility index constructed (a pooled index using responses from eight women's access to health facility variables – specific constrains/ problems in accessing medical advice or treatment and discussed in the next

section) using principal component analysis (PCA). Detailed results from this analysis on women's access to health facility index are presented in the next section (Table 4.2.1-4.2.9). Results show that in each of the states, about one-third of mothers have higher access (no/less constraints in accessing medical advice or treatment) to health facility (Table 4.1.2).

### ***Differentials in the background and programme characteristics across social groups***

Large differences are observed across individual socio-economic, demographic and programme characteristics in the three states. Differentials in the coverage of child immunization among social groups are attributable to the background of socio-economic characteristics (characteristic hypothesis). Therefore, it is necessary to examine the differences in socio-economic and demographic characteristics and programme exposure factors across the social groups. Table 4.1.2 presents the percentage distribution of mothers and children aged 12-59 months in this light, for each of the four social groups.

Table 4.1.2 shows significant differences between social groups by rural-urban residence and the proportion of urban children was higher among OCs than any other caste/tribe groups. For instance, there was a large proportion of urban children was OC in Madhya Pradesh (47%) and Rajasthan (40%) than the children of ST (5% in each) and SC (29 and 27%, respectively) and OBC (22 and 17%, respectively). In Odisha the proportion of urban children among OC was 24 per cent compared with 14 per cent of SC and 9 to 10 per cent of STs and OBCs. Thus, differences in the proportion of urban children in Madhya Pradesh and Rajasthan are large between OCs and STs (41 and 35% respectively) than the difference between OCs and OBCs (23 and 24% respectively) and OCs and SCs (13 and 18% respectively). The corresponding differences between OCs and STs, OCs and OBCs and OCs and SCs in Odisha were 15, 14 and 9 per cent respectively. On the other hand, the proportion of children from nuclear families was large among SC (65-68%) and ST children (59-64%) than OC children (50-52%) in the three states. Thus, the difference in the proportion of children living in nuclear families between OCs and STs was relatively large (13-18%) compared to the difference between OCs and SCs (9-13%) and the differences between OCs and OBCs are negligible in the states.

With regards to parent's education and household standard of living, the proportions of illiterate mothers and those with low household living standard in the states were large among ST (79-85 and 58-79% respectively) than OC children (24-41 and 24-33% respectively). Specifically, difference in the proportion of illiterate mothers between OCs and STs were large (46, 44 and 56% in Madhya Pradesh, Rajasthan and Odisha respectively) compared with difference between OCs and OBCs (14, 19 and 31% in Odisha, Madhya Pradesh and Rajasthan respectively) and OCs and SCs (28, 29, and 39% in Odisha, Madhya Pradesh and Rajasthan respectively). Similarly, difference in the proportion of mothers with low household standard of living between OCs and STs are large in the states (42, 44 and 29 per cent in Madhya Pradesh, Odisha and Rajasthan respectively) than OCs and OBCs (5, 9 and 18% in Rajasthan, Odisha and Madhya Pradesh respectively). On the other hand, the proportion of parents with secondary or higher level of education and high household standard of living was high among OC children than SC, ST and OBC children. For instance, in Rajasthan and Madhya Pradesh, a significant proportion of OC children (47 and 54% respectively) had a high household standard of living as against the children of OBCs (24 and 34% respectively), SCs (15 and 19% respectively), and STs children (6 and 18% respectively). Similar differences in social groups exist in the case of father's education with secondary or higher level of education. In Rajasthan and Madhya Pradesh, mother's work participation was more among STs as compared with that of OCs and OBCs. Nearly, three-fourths (70%) of ST mothers in Rajasthan and more than half of them (52%) in Madhya Pradesh were working as compared with one-fifths (21-22%) of OC mothers, and 39-47% of SC and OBC mothers. Among the social groups, the average age of the mother at the time of birth of index child was around 24 years and there were not many differentials in age distribution in the three states. However, in all the social groups there was a higher concentration of mothers in the 21-25 age-group.

With regards to programme exposure variables, significant differences in social group are observed in the states. Proportion of mothers exposed to electronic media (TV and Radio), delivered at institutions and had greater access to health facility are less among children of and SCs than OCs. For instance, in Madhya Pradesh and Rajasthan, 72 and 61 per cent of OC mothers were exposed to electronic media as compared with 20 and 40 per cent of ST mothers. In Madhya Pradesh and Rajasthan, large differences (32 and 41% respectively) are observed in the proportion of mothers exposed to electronic

media between OCs and STs as compared to OCs and SCs (10-16%) and OC and OBCs (15-16%). Similarly, in Odisha and Madhya Pradesh, more than half of the OC children (52 and 59% respectively) born at institutions against eight to ten per cent of ST children. Thus a large difference is observed in the proportion of institutional deliveries between OCs and STs (45-49%), and OCs and SCs (28%) and OCs and OBCs (18 and 26%) in Odisha and Madhya Pradesh.

Besides, mother's exposure to electronic media and place of delivery, to assess the mothers' access to health facility (accessibility hypothesis) among social groups, women's access to health facility index is used (constructed as a pooled index using responses from eight women's access to health facility variables – specific constraints/problems in accessing medical advice or treatment and discussed in the next section). Significant social group differences were observed in the access to health facility (index) and the proportion of mothers who perceived high access to health facility. They are more among OCs than mothers of SCs, STs and OBCs in three states. For instance, in Madhya Pradesh and Rajasthan, 53 and 47 per cent of mothers' perceived higher access to health facility than ST mothers (15 and 24% respectively) and SC mothers (34% in each state). Thus, in Madhya Pradesh and Rajasthan, difference in the proportion of mothers who perceived high access to health facility (index) between OC and STs were considerably large (37 and 24, respectively) compared with the difference between OC and SCs mothers (13 and 18% respectively) and OC and OBCs mothers (17 % in each state).

In short the above bivariate analysis shows significant differences across socio-economic and demographic characteristics and access to programme factors in the three states in terms of social groups and the differences are large among OCs and STs, OCs and SCs than OCs and OBCs. Construction of women's access to health facility index using the PCA is presented in the following pages.

**Table 4.1.1. Percentage distribution of children aged 12-59 months according to select child, mother's level of socioeconomic and demographic characteristics in Rajasthan, Odisha and Madhya Pradesh**

<b>Characteristics</b>	<b>Rajasthan</b>	<b>Odisha</b>	<b>Madhya Pradesh</b>
<b>Religion</b>			
Hindu	87.0	96.7	91.4
Muslim	12.1	1.0	7.5
Christian	0.2	1.9	0.0
Others	0.7	0.3	1.1
<b>Caste/tribe</b>			
Scheduled caste	20.4	18.9	18.7
Scheduled tribe	15.1	26.8	23.8
Other backward class	46.9	27.4	41.3
Other caste	17.6	26.9	16.2
<b>Residence</b>			
Urban	21.0	14.3	23.3
Rural	79.0	85.7	76.7
<b>Household structure</b>			
Joint family	44.6	44.5	40.6
Nuclear family	55.4	55.5	59.4
<b>Household standard of living (Index)</b>			
Low	39.1	55.6	45.8
Medium	30.1	25.7	31.3
High	30.8	18.7	22.8
<b>Mother's education</b>			
Illiterate	70.0	47.7	56.9
Primary	11.8	19.4	17.3
Secondary +	18.1	32.9	25.8
<b>Father's education</b>			
Illiterate	33.2	34.9	34.0
Primary	14.3	21.9	19.3
Secondary +	52.5	43.3	46.7
<b>Mother's work status</b>			
Not-working	55.5	72.7	59.2
Working	44.5	27.3	40.8
<b>Mother's age at the time of (index) child birth</b>			
<20	25.8	26.5	27.1
21-25	40.0	40.0	41.2
26+	34.2	33.5	31.7
Mean ( $\pm$ SD)	24.2 $\pm$ 5.3	23.9 $\pm$ 5.1	24.0 $\pm$ 5.3
<b>Age of child (in months)</b>			
12-23	24.6	25.0	23.9
24-35	24.3	24.7	23.0
36-47	26.0	25.0	27.0
48-59	25.1	25.3	26.1
<b>Child's birth order</b>			
1	25.1	34.0	24.6
2	22.0	27.2	24.7
3+	52.8	38.8	50.7
<b>Child's sex</b>			
Male	54.5	52.2	50.9
Female	45.5	47.8	49.1
Number of children	1519	1366	2520

*Note:* This table is based on the weighted sample. Other religions include a small number (4 cases) in the state of Odisha.

*Source of data:* IIPS and ORC Macro, 2005-06, NFHS-3, Rajasthan, Odisha and Madhya Pradesh.

**Table 4.1.2. Percentage distribution of children aged 12-59 months, according to select mother's exposure characteristics in Rajasthan, Odisha and Madhya Pradesh**

<b>Characteristics</b>	<b>Rajasthan</b>	<b>Odisha</b>	<b>Madhya Pradesh</b>
<b>Frequency of listening to radio</b>			
Not at all	80.5	63.2	69.4
Less than once a week	7.4	18.6	11.4
At least once a week	6.7	6.4	9.6
Almost every day	5.5	11.8	9.6
<b>Frequency of watching television</b>			
Not at all	60.4	42.5	55.0
Less than once a week	7.0	15.2	9.2
At least once a week	10.8	9.4	10.8
Almost every day	21.8	32.9	25.0
<b>Mother's exposure to electronic (Radio and television) media</b>			
No	54.5	30.5	45.2
Yes	45.5	69.5	54.8
<b>Place of delivery</b>			
Home	70.8	64.1	73.8
Institution	29.2	35.9	26.2
<b>Accessibility health facility(Index)*</b>			
Low	33.2	33.3	33.3
Medium	33.5	33.5	33.4
High	33.4	33.1	33.2
Number of children	1519	1366	2520

Note: \*Constructed using Principal component analysis (Tables 4.2.1 -4.2.9)

This table is based on the weighted sample.

Source of data: IIPS and ORC Macro, 2005-06, NFHS-3, Rajasthan, Odisha and Madhya Pradesh.



Table 4.1.3. Percentage distribution of children aged 12-59 months according to select socioeconomic, demographic and mother's exposure characteristics by social group affiliation in the states of Rajasthan, Odisha and Madhya Pradesh

State/ Social groups/ Characteristics	Rajasthan(N=1519)				Odisha(N=1366)				Madhya Pradesh(N=2520)			
	SC	ST	OBC	OC	SC	ST	OBC	OC	SC	ST	OBC	OC
<b>Residence*</b>												
Urban	26.7	4.7	16.6	39.8	14.2	9.1	10.1	23.6	29.0	5.1	22.1	46.6
Rural	73.3	95.3	83.4	60.2	85.8	90.9	89.9	76.4	71.0	94.9	77.9	53.4
<b>Household structure*</b>												
Joint family	35.2	38.9	49.0	48.4	32.4	41.3	50.2	50.2	33.7	35.5	43.7	48.3
Nuclear family	64.8	61.1	51.0	51.6	67.6	58.7	49.8	49.8	66.3	64.5	56.3	51.7
<b>HH standard of living (index)*</b>												
Low	45.2	57.8	34.1	29.2	68.2	79.1	44.3	35.4	47.8	66.2	41.8	24.2
Medium	35.4	24.5	31.7	24.2	22.4	16.7	34.3	28.1	37.1	28.2	34.4	21.4
High	19.4	17.6	34.2	46.6	9.4	4.2	21.4	36.4	15.1	5.6	23.8	54.4
<b>Mother's education*</b>												
Illiterate	79.9	85.1	71.7	41.2	52.5	79.4	37.6	23.6	60.3	79.1	52.0	32.6
Primary	11.0	9.4	11.3	16.1	24.2	9.3	23.0	22.3	16.9	13.6	21.7	12.2
Secondary+	9.1	5.5	16.9	42.7	23.3	11.3	39.4	54.1	22.8	7.3	26.3	55.2
<b>Father's education*</b>												
Illiterate	33.4	48.3	30.8	26.3	35.2	60.4	27.4	17.3	27.8	57.7	28.1	21.2
Primary	22.7	11.3	12.5	12.3	24.7	19.2	24.0	20.4	20.5	19.1	21.8	12.1
Secondary+	43.9	40.4	56.7	61.4	40.1	20.4	48.6	62.2	51.7	23.2	50.1	66.7
<b>Mother's work status*</b>												
Not working	59.4	30.0	53.6	77.8	75.0	53.9	77.3	84.9	52.8	47.6	61.2	78.7
Working	40.6	70.0	46.4	22.2	25.0	46.1	22.7	15.1	47.2	52.4	38.8	21.3
<b>Mother's age at the time of child birth*</b>												
≤20	27.0	27.3	28.1	17.3	30.7	28.1	31.5	17.1	27.4	25.9	29.4	22.5
21-25	40.2	33.2	40.6	44.0	37.6	33.2	41.0	47.1	45.0	35.1	40.2	48.2
26+	32.8	39.5	31.4	38.7	31.7	38.7	27.5	35.7	27.6	39.0	30.4	29.3
<b>Mean (±SD)</b>	24.0	24.9	23.8	24.8	23.3	24.3	23.3	24.6	23.7	25.0	23.8	23.7
	(5.4)	(6.2)	(5.1)	(4.9)	(5.0)	(5.8)	(4.8)	(4.7)	(5.0)	(6.3)	(5.1)	(4.3)
<b>Mother's exposure to electronic media*</b>												
No	49.2	80.1	54.5	38.8	23.8	50.5	26.6	19.7	44.7	60.1	43.3	28.5
Yes	50.8	19.9	45.5	61.2	76.2	49.5	73.4	80.3	55.3	39.9	56.7	71.5
<b>Place of delivery*</b>												
Home	80.7	74.7	70.8	55.8	68.5	90.1	59.0	40.7	75.2	92.1	73.0	47.5
Institutional	19.3	25.3	29.2	44.2	31.5	9.9	41.0	59.3	24.8	7.9	27.0	52.5
<b>Accessibility health facility (Index)*†</b>												
Low	32.8	43.6	33.1	25.0	40.3	42.6	30.7	22.2	25.7	49.8	33.5	17.7
Medium	33.0	32.6	36.1	27.6	30.0	35.7	32.1	35.3	40.0	34.7	31.2	29.7
High	34.2	23.8	30.8	47.4	29.7	21.8	37.2	42.5	34.3	15.5	35.3	52.6
Total %	20.4	15.1	46.9	17.6	18.7	26.6	27.2	27.5	18.7	23.8	41.3	16.2
Number of children	310	229	712	267	256	363	371	373	472	599	1041	408

Note: This table based on the weighted sample. \* Chi-square test significance:  $p \leq 0.001$ ; †Computed using Principal component analysis (Tables 4.2.1-4.2.8)

Source of data: IIPS and ORC Macro, 2005-06, NFHS-3, Rajasthan, Odisha and Madhya Pradesh

## SECTION - 2

### Construction of access to health facility index: PCA

#### Introduction

Accessibility and availability of health care is an important component for ensuring a community's general health status and also it reflects the coverage of health facilities. Previous research shows that poor access to health care, which results in delayed or no attendance at a health facility, may be a key determinant of under or no vaccination among children. To assess this relationship, researchers have adopted simple traditional measures such as distance from the household to a health facility, availability of transportation and health-care costs. Their findings have been inconclusive. Recently, qualitative studies have suggested the need to consider additional barriers such as lack of social support for primary caregivers, limited caregiver autonomy in decision-making and financial matters, and social exclusion at health clinics. Studies that assess the relationship between these factors and child health are few. Therefore, apart from traditional measures of access to health care to non-traditional measures to the role of social group affiliation on the coverage of child immunization are considered.

The first challenge in attempting to assess the effects of access to health facility arises with the definition of the term, 'access to health facility'. There are a large number of indicators that can give us information about access to health facility. In this regard, a woman receiving any ANC is an important variable. However, NFHS the question in relation to ANC care was only to women who had live birth in the preceding three years of the survey. The current study covers children who were born in the preceding five years of the survey and among them those children who did not complete their first birth day were excluded. So, if we consider ANC as an important variable, then a large number of cases would be dropped. In the NFHS-3, questions covered included on where the household member goes for health care services. However, this information does not necessarily indicate how it affects the coverage of child immunization. Therefore, these two questions collected in the NFHS not considered in the study. As mentioned earlier, women's access to health facility Index constructed separately for the study from individual-level data for women aged 15–49 years, using the information collected on women's potential obstacles to obtain medical treatment or advice, by applying Principle Components Analysis. A total of eight variables are used in the computation of this index.

### *Data and computation of women's access to health facility*

In the NFHS-3 women were asked about the potential obstacles for obtaining medical treatment or advice for themselves when they were sick and sought treatment or advice. Although the questions did not specify any particular source of care but pertained to wherever it was the woman would seek it. Women were asked for each potential obstacle whether it posed a big problem, a small problem, or no problem at all in accessing medical advice or treatment. The set of 8 variables used in quantifying the access to health facility is shown in Statement 1.

### *Methodology of constructing access index*

The procedure employed to produce an absolute measure of access to health facility index was as follows: As a first step, for statistical significance, a descriptive analysis was carried out on the eight constraints to access health facility variables and then the variables coded as 1 - indicating big problem or of low access; 2 indicating not a big problem; and 3 indicating no problem or of high access. In the second step, the variables in each state were compared separately using Pearson's correlation coefficients. In the third step, reliability analysis was carried out. In the fourth step, the PCA was used to derive the factor score and for generating eigenvalue (variance). The derived factor score was used as a weight for each selected variable in computing the access index. In the fifth step, the sample was divided into population quartiles (low, medium and high access), with each quartile given a rank from one (Low) to three (High). These quartiles were based on the distribution of the de jure women population. Detailed description on the data and computation of index along with results are given below.

### *Magnitude of perceived constraints in accessing health care*

As mentioned earlier, in the NFHS-3 women were asked to identify the problems they encountered when trying to access medical advice or treatment for their own and the responses were coded as 'no problem', 'big problem', 'not a big problem'. Table 4.2.1 presents the percentage distribution of women aged 15-49 years who had reported specific problems for them in accessing medical advice or treatment for themselves when they were sick (which were used as a proxy to construct access index), in Rajasthan, Odisha and Madhya Pradesh.

Results from the Table 4.2.1 depict that the most commonly perceived constraint reported by in assessing the health care facility were ‘distance to health facility’ followed by ‘concern that there may be no provider available’ and ‘having to take transport’. For instance, more than two-fifths women in Odisha and Madhya Pradesh (40 – 41%) reported ‘distance to the health facility’, and more than one-third of women (33-37 per cent) in all the three states reported ‘having to take transport’. ‘Concern that there may be no provider available’ was also big problems in assessing the health facility. Among other major problems cited, about 40 per cent women reporting of getting money for treatment in Odisha, followed by 34 per cent of women reporting concern that no female provider will be available and concern about availability of the drugs was a big problem in Rajasthan and Madhya Pradesh respectively.

On the other hand, results from Table 4.2.1 show that women did not perceive getting permission, finding someone to accompany them to visit health care centre and getting money needed for treatment to be problems. For instance, 63-79 per cent women did not perceive getting permission (79, 74 and 63% in Odisha, Madhya Pradesh and Rajasthan respectively) is a problem, and half of women (49-52 per cent) in the three states perceived finding someone to accompany them to visit health care centre and getting money needed for treatment to be as serious problems in assessing the health facility (Table 4.2.1).

#### *Magnitude of perceived constraints in accessing health care among social groups*

Table 4.2.2 presents the responses of the four social groups from their experiences of barriers that they encountered when accessing health care services. By caste/tribe, there were very contrasting variations in the perceived constraints on access to health facility. As expected, among ST and SC women distance to health facility, followed by ‘having to take transport’ and ‘concern that there may be no provider available’ were the more commonly perceived constraints cited in assessing the health care facility than among OC women. For instance, about 56-61 per cent of ST women and 35-46 per cent of SC women cited distance and having to take transport as big obstacles to obtaining medical care as compared with 31-40 per cent of OBC women, and 18-30 per cent of OC women, in the states. Similarly, 40-48 per cent of ST women, 26-43 per cent of SC women perceived concern that there may be no provider available as the big problem in assessing health facility than 33-36 per cent of OBC and 23-31 per cent of OC women in the states.

Only in Odisha, 50 and 58 per cent of SC and ST women reported ‘getting money needed for treatment’ as a big problem in assessing health facility as compared with 36 and 28 per cent of OBC and OC women respectively. Among the other problems cited by many women included ‘concern about no female provider’, and ‘concern no drug available at the health facility’, were reported as significant constraints in assessing health facility in the states (Table 4.2.2).

On the other hand, a majority of women (67-81 per cent) among all the social groups in Odisha and Madhya Pradesh did not perceive ‘getting permission’ to be a big problem. Similarly in Rajasthan and Madhya Pradesh, about half of the SC and OBC women compared to 64 and 70 per cent of OC women did not perceive ‘getting money needed for treatment’ to be a problem. Among others, more than half of the SC, OBC and OC women did not perceive ‘finding someone to accompany them to visit health care centre’ to be problem in assessing the health facility (Table 4.2.2).

#### *Correlations between women’s perceived constraints in accessing health facility variables*

Table 4.2.3 presents the correlation matrix with eight women’s access to health facility variables using Pearson’s correlation coefficients for each state, separately. The correlation matrix of eight variables (Table 4.2.3) shows that the variables used to measure the women’s access to health facility are significantly correlated. When all the variables were compared, Pearson’s correlation were observed significant to the 0.001 level (two tailed) for all the pairs. There were no negative correlation coefficients observed. However, two variables in Odisha and three variables in Rajasthan and Madhya Pradesh were highly positively correlated. Specifically in the three states, distance to the health facility and getting transport ( $r=0.846$ ,  $0.855$  and  $0.821$  in Rajasthan, Odisha and Madhya Pradesh respectively), concern about no provider and concern about no drug ( $r=0.768$ ,  $0.798$ ,  $0.854$ , in Rajasthan, Odisha and Madhya Pradesh respectively), and concern about no female provider and concern about no provider ( $r=0.722$  and  $0.750$  in Rajasthan and Madhya Pradesh) were highly and positively correlated (Table 4.2.3).

#### *Reliability of the women’s access to health facility index*

In the third step, reliability analysis was carried out since all measurements are subject to error which can take the form of either random variations or systematic bias (Stanley,

1971). Random errors of measurement can never be completely eliminated, however, if the error is only small relative to size of the phenomena being studied then the measurement will be reliable. Reliable measurements are repeatable and have a high degree of precision. To check the reliability of the index, the Cronbach's Coefficient Alpha values (Cronbach, 1951; 1976; Cronbach *et al.*, 1971) were computed.

Table 4.2.4 shows how the Cronbach's coefficient Alpha values would change, if any single question was deleted from the access to health facility index. The initial reliability analysis shows high (more than 0.80) alpha Coefficients ( $\alpha$ ), suggesting that the index has high internal consistency and Cronbach's alpha ( $\alpha$ ) coefficients for the sub-constructs ranged between 0.805 and 0.866. Therefore, none of the variables is removed from the score in order to improve the internal consistency of the index. Based on these corrections, the overall Cronbach's alpha coefficient for access to health facility index items were observed at 0.869 in Rajasthan, 0.850 in Madhya Pradesh and 0.839 in Odisha. This indicates that the estimates are reliable with greater internal coherence and reliability. Also, high Cronbach's alpha coefficient for internal consistency demonstrates that the access variables clusters of index as used in the states were homogeneous (Table 4.2.4).

#### *Principal component analysis (PCA) on eight women's access to health facility variables*

In the fourth stage, PCA was carried out on the eight women's access to health facility group of variables to derive the factor score and for generating eigenvalues/variance. The derived factor score is used as weight for each selected variable in computing the access to health facility index. Each variable of constrain to access health facility was assigned a weight (factor score), and the resulting access scores were standardized in relation to a standard normal distribution with a mean of zero and a standard deviation of one. The mean values of factor score of the eight variables are given in Table 4.2.5. The factor score is positive for all these variables indicating the utility of these variables. The mean of the variables suggests that they are not in extreme, neither very high nor low percentage of women access to health facility. The sum of the scores of the access possessed by each woman resulted in her access index factor or score (Table 4.2.5).

Table 4.2.6 presents the eigenvalues from PCA using eight women's access to health facility variables. The eigenvalue (variance) for each principal component

indicates the percentage of variation in the total data explained. The first two factors had eigenvalues  $\geq 1$ , which demonstrate that much of the variance among the access to health facility variables was described by the first two factors in all the three states. Table 4.2.6 shows that of the total variance in the original data, 69, 68 and 64 per cent in the states of Rajasthan, Madhya Pradesh and Odisha respectively are explained by the first two factors. Specifically, 52, 49 and 47 per cent of the total variance is explained by the first factor; and 17, 19 and 16 per cent by the second factor in Rajasthan, Madhya Pradesh and Odisha, respectively (Table 4.2.6).

As mentioned above, using the factor scores from the principal component as weights, a continuous independent variable 'women's access to health facility score' is constructed for each woman (which has a mean equal to zero, and a standard deviation equal to one). Table 4.2.7 presents, the mean score values of women's access to health facility and the factor scores ranges from -1.938 to 1.429 in Rajasthan, -2.157 to 1.363 in Odisha and -2.014 to 1.375 in Madhya Pradesh. The women's access to health facility score variable with positive score is associated with higher access to health facility, and conversely a negative factor score is associated with lower access to health facility. In other words, the factor score is positive for all those variables indicating no constrain to access health facility. A percentile (100% distribution) of access index is obtained for each state separately. The sample was then divided into population quartiles as cut-off points to demarcate the low, medium and high access and classified into three categories (low, medium and high) of access to health facility. These quartiles are based on the distribution of the de jure women population. High access to health facility index category represents 'no constraint' and low/medium access to health facility index category represents 'some/more constraints' respectively. The internal coherence, reliability and the validity of the index is examined (Table 4.2.8).

#### *Internal coherence, robustness and reliability of women's access to health facility index*

In order to check how well the access to health facility index captures the internal coherence, all the original eight women's access to health facility variables (specific constrains/problems in accessing medical advice or treatment) were cross classified with access to health facility index and the results are presented in Table 4.2.8. They show diminutive differences between the original eight women's access to health facility variables (big problem, not a big problem and no problem) and those who have low,

medium and high access (access to health facility index) in three states, particularly in the states of Rajasthan and Madhya Pradesh. For example, 77 and 72 per cent of women had lower access when they had big problem/constrain to get permission to go, while 16 and 24 per cent of women who did not have problem, 3 and 7 per cent among who had higher access with big problem to get permission to go in Rajasthan and Madhya Pradesh respectively. Likewise, among the women with lower access to health facility in the three states, about three-fourths of women had concern (big problem) that there may be no drug (70-72 per cent), concern to take transport (71-72 per cent) and concern about distance of health facility (67-68 per cent) compared with a small proportion of women (0-3 per cent) who had higher access. The differences are statistically significant. Thus, the results suggest that the access to health facility index exhibits greater internal coherence and is reliable to include all the variables (Table 4.2.8).

### **Differentials and social determinants of women's access to health facility**

Accessibility and availability of health care is important for ensuring a community's general health status and reflects the coverage of health facilities. To capture women's access to health facility, access to health facility index constructed by taking eight related variables from individual-level data for women aged 15–49 years on a series of potential obstacles (with options of 'big problem', 'small problem' or 'no problem') to obtain medical treatment or advice for themselves when they are sick and want to seek treatment or advice, using PCA is needed. High category of women's access to health facility index represents 'higher access to health facility for medical advice or treatment for their own (no/least constraints)', and a low/medium access to health facility index category represents 'lower /medium access to health facility for medical advice or treatment for their own (some/more constraints)' respectively.

#### *Gross differentials of women's access to health facility*

Table 4.2.9 shows the differentials in the level of women's access to health facility (low/medium/high) according to social groups and select socio-economic and demographic characteristics in Rajasthan, Odisha and Madhya Pradesh. Substantial differences are observed across the social groups in the levels of women's access to health facility and the proportion of women who perceived lower access to health facility were more among STs, followed by SCs and OBCs than that of OCs in the three states. For instance, 45-54 per cent of ST women in the states (54, 49 and 45% in Madhya



Pradesh, Rajasthan and Odisha respectively) perceive lower levels of access to health facility compared to 17-22 per cent of OBC women. Similarly, more than one-third of (33-36 per cent) ST, SC and OBC women in Madhya Pradesh and Rajasthan perceived medium levels of access to health facility compared with about one-third (25 and 30 per cent) of OC women respectively. In Odisha, however, negligible differences are observed in the medium levels of access to health facility across social groups (Table 4.2.9).

Among other socio-economic and demographic characteristics, education of women, husband's education, household standard of living and women's age have positive relationship with the access to health facility. As the level of education, standard of living, and age increased the level of access to health facility also increased. Rural woman, women residing in nuclear family, and working women perceived lower access to health facility than urban women, women residing in joint family and women not working other than doing household works (Table 4.2.9).

#### *Social determinants of women's access to health facility*

In order to identify the social determinants (major influential factors) on women's access to health facility (dependent variable), multinomial logistic regression analysis has been carried out by taking high access to health facility as reference category and results of the likelihood of women being with low or medium access to health facility are presented. The adjusted values are based on the complete model including all predictor variables simultaneously. The results are shown as RRRs and not coefficients. The RRRs are ratios of absolute risk but for the specific comparison of the outcome in question against the chosen reference. Table 4.2.10 presents the results from multinomial logistic regression analysis estimating the adjusted effects of social group affiliation and select socio-economic and demographic covariates on the risk of low and medium access to health facility among women aged 15-49 years.

Table 4.2.10 indicates that as compared with OC, ST, SC women, OBC women are more likely to have low and medium access to health facility over high access to health facility. Scheduled tribe women were significantly more likely at risk of having low access to health facility in the three states (RRR=3.148, 2.394, and 1.539 in Madhya Pradesh, Rajasthan and Odisha respectively) and being at medium access to health facility

in Rajasthan and Madhya Pradesh (RRR=1.942 and 1.834 respectively) than their counterparts OC children. Similarly, SC women in Rajasthan and Odisha were also relatively more likely at risk of being at low access to health facility (RRR=1.844 and 1.712 respectively) and being at medium access to health facility in Rajasthan (RRR=1.692). OBC women in Rajasthan were relatively more likely to be at risk of low and medium access to health facility (RRR=1.635 and 1.516 for low and medium access respectively) as compared to OC women. Women from the urban areas have more access to health facility than the women in villages. Urban women in the three states were relatively less likely to be at risk of low access (RRR=0.302, 0.153, 0.152, in Madhya Pradesh, Rajasthan and Odisha respectively) and medium access to health facility (RRR=0.490, 0.383, 0.315 in Madhya Pradesh, Rajasthan and Odisha respectively) than their counterparts in rural areas. From the table it is clear that the place of residence plays an important role in the women's access to health facility.

Illiterate women were significantly 1.6-3.0 times more at risk of having low access to health facility (RRR=3.038, 2.295, and 1.566 in Rajasthan, Odisha and Madhya Pradesh respectively) and 1.3-1.8 times more at the risk of being at medium access to health facility (RRR=1.761, 1.544 and 1.281 in Rajasthan, Odisha and Madhya Pradesh respectively) than their counterparts with secondary or higher levels of education. Similarly, women with primary level of education were also relatively more at risk of being at low access to health facility (RRR=2.222, 2.020 and 1.575 in Rajasthan, Odisha and Madhya Pradesh respectively) and being at medium access to health facility (RRR=1.684, 1.492 and 1.179 in Rajasthan, Odisha and Madhya Pradesh respectively).

As compared to women from high household standard of living, women from low household standard of living were 3.3 times (RRR=3.243, 3.279 and 3.310 in Rajasthan, Odisha and Madhya Pradesh respectively) more likely to be at the risk of low access, and 1.8-2.2 times (RRR=1.821, 1.866 and 2.242 in Rajasthan, Odisha and Madhya Pradesh respectively) more at the risk of medium access to health facility in the states. Similarly, women from medium level of household standard of living were 2.2-2.8 times (RRR=2.118, 2.234 and 2.788 in Rajasthan, Madhya Pradesh and Odisha respectively) more likely to be at the risk of low access, and 1.8 times (RRR=1.660, 1.776 and 1.794 in Rajasthan, Odisha and Madhya Pradesh respectively) more likely to be at the risk of medium access to health facility as compared with high household standard of living. The

work status of women did not play any significant role in access to health facility, whereas household structure and husband's education had some significant effect on women's access to health facility. Only in Madhya Pradesh, women from joint families were relatively more likely to be at risk of low access (RRR=1.242) and medium access to health facility (RRR=1.223) than their counterparts from nuclear family. Women's access to health facility decreases analogously with each additional age of women in Rajasthan.

In conclusion, a woman who belonged to ST, SC or OBC, low or medium standard of living, residing in joint family and younger in age had low or medium access to health facility in the states. Education of women and husbands had significant positive association with the level of access to health facility. As the level of education increased, the level of access also increased. In other words, women with primary or no formal education had higher risk of low or medium access to health facility. Not working women (housewives) and women from urban areas had higher access to health facility, i.e., lower risk of low and medium access to health facility.

From the above analysis significant differences are observed with different socio-economic and demographic characteristics on access to different programme factors and along with four social groups. The next chapter attempts to examine the levels and gross differentials of coverage of specific vaccinations and full immunization among children aged 12-59 months who received each vaccination at any time before the interview by source of immunization data and across social groups in the states through bivariate analysis.

**Table 4.2.1. Percentage distribution of women according to specific constrains/barriers in accessing medical advice or treatment in the states of Rajasthan, Odisha and Madhya Pradesh**

<b>Specific constrains/problems in accessing medical advice or treatment</b>	<b>Rajasthan (N=3,892)</b>	<b>Odisha (N=4,538)</b>	<b>Madhya Pradesh (N=6,427)</b>
<b>Getting permission to go</b>			
Big problem	12.7	8.6	9.0
Not a big problem	24.7	11.9	17.1
No problem	62.6	79.4	73.9
<b>Getting money needed for treatment</b>			
Big problem	23.2	40.3	22.0
Not a big problem	25.3	23.7	27.9
No problem	51.5	35.9	50.1
<b>The distance to the health facility</b>			
Big problem	36.7	40.1	40.8
Not a big problem	26.2	22.8	24.8
No problem	37.1	37.1	34.4
<b>Having to take transport</b>			
Big problem	34.9	35.4	37.3
Not a big problem	25.8	23.7	24.5
No problem	39.3	40.9	38.1
<b>Finding someone to go</b>			
Big problem	20.7	10.0	18.9
Not a big problem	30.3	25.5	28.7
No problem	49.0	64.5	52.3
<b>Concern no female provider</b>			
Big problem	33.7	23.4	30.0
Not a big problem	29.9	22.4	22.4
No problem	36.4	54.2	47.6
<b>Concern no provider</b>			
Big problem	35.9	36.4	32.9
Not a big problem	29.2	16.3	20.7
No problem	34.9	47.3	46.4
<b>Concern no drug available</b>			
Big problem	31.7	31.7	34.7
Not a big problem	27.7	22.4	21.3
No problem	40.6	45.9	44.0

*Note:* This table based on the weighted sample for states. Currently married women age 15-49 years are unit of analysis.

*Source of data:* IIPS and ORC Macro, 2005-06, NFHS-3, Rajasthan, Odisha and Madhya Pradesh

**Table 4.2.2. Percentage distribution of women according to specific constrains in accessing medical advice or treatment by social group affiliation in the states of Rajasthan, Odisha and Madhya Pradesh**

Specific constrains/problems reported in accessing medical advice or treatment	Rajasthan(N=3,892)				Odisha(N=4,538)				Madhya Pradesh(N=6,427)			
	SC	ST	OBC	OC	SC	ST	OBC	OC	SC	ST	OBC	OC
<b>Getting permission to go</b>												
Big problem	14.6	17.6	13.8	5.8	8.5	8.0	7.9	9.7	8.8	10.6	8.4	8.7
Not a big problem	25.4	26.7	27.4	17.4	15.1	13.8	11.6	9.2	17.0	22.4	16.7	12.6
No problem	60.0	55.7	58.8	76.7	76.4	78.1	80.4	81.1	74.1	66.9	74.9	78.7
<b>Getting money need for treatment</b>												
Big problem	28.3	35.2	23.2	11.9	49.7	57.9	35.6	27.9	23.7	33.0	20.3	13.0
Not a big problem	24.5	30.1	27.7	18.0	25.3	20.5	25.9	23.1	29.2	29.6	29.1	22.8
No problem	47.2	34.7	49.1	70.1	24.9	21.6	38.5	49.0	47.2	37.4	50.6	64.2
<b>Distance to the health facility</b>												
Big problem	39.8	55.7	38.6	19.1	46.0	55.8	36.3	29.9	35.1	60.9	39.5	27.7
Not a big problem	24.3	26.4	29.4	21.0	24.2	22.9	24.8	20.2	31.0	24.0	24.7	20.9
No problem	35.9	17.9	32.0	59.9	29.8	21.3	38.9	49.9	33.9	15.1	35.8	51.3
<b>Having to take transport</b>												
Big problem	36.0	57.7	36.3	17.6	41.7	52.2	31.2	24.7	31.9	57.6	35.6	24.9
Not a big problem	25.0	23.4	29.9	19.2	23.9	24.7	26.4	20.8	29.6	26.3	24.7	18.5
No problem	39.0	18.9	33.8	63.1	34.3	23.1	42.4	54.5	38.5	16.1	39.7	56.6
<b>Finding someone to go (with you)</b>												
Big problem	24.8	28.1	23.4	7.5	12.0	15.3	9.5	5.9	16.4	27.9	19.7	10.8
Not a big problem	28.6	36.8	32.3	23.7	29.2	34.6	25.1	18.0	32.0	36.1	28.5	19.2
No problem	46.6	35.1	44.3	68.8	58.8	50.2	65.4	76.1	51.6	36.0	51.8	70.0
<b>Concern no female provider</b>												
Big problem	39.3	42.6	34.7	21.5	28.3	28.0	24.2	16.9	25.5	44.3	29.9	19.8
Not a big problem	30.0	29.2	32.0	25.8	23.5	22.8	24.0	20.2	23.4	27.8	21.2	18.4
No problem	30.7	28.3	33.2	52.6	48.1	49.2	51.8	62.9	51.1	27.9	48.9	61.7
<b>Concern no provider</b>												
Big problem	42.2	46.1	36.4	23.9	42.9	39.6	36.3	30.8	26.3	48.1	33.1	22.8
Not a big problem	27.3	28.2	31.0	27.4	16.4	16.3	19.1	13.8	21.5	24.4	19.3	18.7
No problem	30.5	25.8	32.6	48.8	40.6	44.1	44.6	55.4	52.2	27.5	47.6	58.5
<b>Concern no drug available</b>												
Big problem	34.5	44.3	32.2	20.8	39.1	35.2	31.3	25.6	28.5	49.2	35.7	23.5
Not a big problem	29.9	24.6	30.1	22.6	23.7	23.0	23.0	20.8	22.7	25.7	19.6	18.7
No problem	35.6	31.1	37.7	56.6	37.3	41.8	45.7	53.6	48.8	25.1	44.7	57.8
<b>Total number of women</b>	<b>718</b>	<b>503</b>	<b>1810</b>	<b>861</b>	<b>826</b>	<b>953</b>	<b>1276</b>	<b>1483</b>	<b>1106</b>	<b>1371</b>	<b>2559</b>	<b>1392</b>

Notes: See Table 4.2.1 above; SC – Scheduled caste; ST – Scheduled tribe; OBC-Other backward class; OC-Other caste.

Chi-square statistic significant at p<0.001 level.

Source of data: IIPS and ORC Macro, 2005-06, NFHS-3, Rajasthan, Odisha and Madhya Pradesh

**Table 4.2.3. Correlation matrix on specific constrains in accessing medical advice or treatment in the states of Rajasthan, Odisha, Madhya Pradesh**

Specific constrains/ problems in accessing medical advice or treatment	Permission	Getting money	Distance	Taking transport	Finding someone	No female provider	No provider	No drugs
<b>RAJASTHAN (N=3,892)</b>								
Permission	1.000							
Getting money	0.564	1.000						
Distance	0.378	0.514	1.000					
Taking transport	0.367	0.479	0.846	1.000				
Finding someone	0.437	0.469	0.552	0.594	1.000			
No Female provider	0.281	0.321	0.381	0.408	0.486	1.000		
No provider	0.250	0.321	0.346	0.377	0.436	0.722	1.000	
No drugs	0.259	0.338	0.306	0.346	0.439	0.631	0.768	1.000
<b>ODISHA(N=4,538)</b>								
Permission	1.000							
Getting money	0.280	1.000						
Distance	0.228	0.489	1.000					
Taking transport	0.208	0.497	0.855	1.000				
Finding someone	0.296	0.380	0.492	0.525	1.000			
No Female provider	0.241	0.295	0.373	0.393	0.433	1.000		
No provider	0.184	0.233	0.356	0.344	0.320	0.575	1.000	
No drugs	0.188	0.272	0.381	0.370	0.362	0.516	0.798	1.000
<b>MADHYA PRADESH (N=6,427)</b>								
Permission	1.000							
Getting money	0.448	1.000						
Distance	0.316	0.428	1.000					
Taking transport	0.305	0.381	0.821	1.000				
Finding someone	0.343	0.293	0.542	0.598	1.000			
No Female provider	0.202	0.202	0.393	0.439	0.491	1.000		
No provider	0.144	0.171	0.342	0.377	0.413	0.750	1.000	
No drugs	0.141	0.212	0.349	0.386	0.393	0.696	0.854	1.000

\*\* Correlation is significant at the  $p \leq 0.001$  level.

Note: See Table 1 above.

Source of data: IIPS and ORC Macro, 2005-06, NFHS-3, Rajasthan, Odisha and Madhya Pradesh.

**Table 4.2.4. Reliability analysis (Cronbach's alpha test) of components of women's access to health facility index (specific constrains in accessing medical advice or treatment), Rajasthan, Odisha, Madhya Pradesh**

<b>Specific constrains in accessing medical advice or treatment</b>	<b>Rajasthan (N=3,892)</b>	<b>Odisha (N=4,538)</b>	<b>Madhya Pradesh (N=6,427)</b>
<b>Cronbach's Alpha if item deleted</b>			
a. Getting permission to go	0.866	0.846	0.855
b. Getting money need for treatment	0.857	0.830	0.853
c. The distance to the health facility	0.848	0.805	0.824
d. Having to take transport	0.846	0.805	0.820
e. Finding someone to go (with you)	0.847	0.820	0.828
f. Concern that there may not be a female health provider	0.850	0.817	0.823
g. Concern that there may not be any health provider	0.851	0.817	0.826
h. Concern that there may be no drugs available	0.854	0.814	0.826
<b>Scale Statistics</b>			
F- test	353.065*	836.381*	802.932*
Cronbach's Alpha	0.869	0.839	0.850
Cronbach's Alpha Based on Standardized Items	0.868	0.836	0.847
N of Items	8	8	8

\* Level of significance  $p \leq 0.0001$

Notes: See Table 4.2.1 above

**Table 4.2.5. Factor score in computation of women's access to health facility index in the states of Rajasthan, Odisha and Madhya Pradesh, India**

<b>Specific constrains/problems in accessing medical advice or treatment</b>	<b>Rajasthan (N=3,892)</b>	<b>Odisha (N=4,538)</b>	<b>Madhya Pradesh (N=6,427)</b>
a. Getting permission to go	0.346	0.172	0.204
b. Getting money needed for treatment	0.466	0.381	0.256
c. The distance to the health facility	0.576	0.621	0.575
d. Having to take transport	0.603	0.628	0.617
e. Finding someone to go (with you)	0.595	0.489	0.545
f. Concern that there may not be a female health provider	0.545	0.493	0.606
g. Concern that there may not be any health provider	0.541	0.497	0.578
h. Concern that there may be no drugs available	0.504	0.519	0.567

**Table 4.2.6. Principal component analysis of eight variables on women's access to health facility (Index):Initial statistics, Rajasthan, Odisha and Madhya Pradesh**

Component	Rajasthan (N=3,892)			Odisha (N=4,538)			Madhya Pradesh (N=6,427)		
	Eigen values	% of Variance	Cumulative %	Eigen values	% of Variance	Cumulative %	Eigen values	% of Variance	Cumulative %
1	4.2	52.2	52.2	3.8	47.5	47.5	3.9	49.3	49.3
2	1.4	17.2	69.4	1.3	16.1	63.6	1.5	18.9	68.2
3	0.8	10.6	80.0	0.9	11.4	75.0	0.9	11.0	79.2
4	0.5	6.1	86.0	0.6	7.8	82.8	0.6	7.7	86.8
5	0.4	5.1	91.1	0.6	7.0	89.8	0.4	5.5	92.3
6	0.4	4.4	95.5	0.5	6.0	95.8	0.3	3.8	96.1
7	0.2	2.6	98.1	0.2	2.4	98.2	0.2	2.2	98.3
8	0.1	1.9	100.0	0.1	1.8	100.0	0.1	1.7	100.0

**Table 4.2.7. Women's access to health facility (Index) mean score values by quartile in the states of Rajasthan, Odisha and Madhya Pradesh**

	Rajasthan (N=3,892)	Odisha (N=4,538)	Madhya Pradesh (N=6,427)
<b>Mean values of women's access to health facility (Index) score by quartile</b>			
Low	-1.162	-1.163	-1.175
Medium	0.047	0.040	0.057
High	1.120	1.120	1.118
Minimum	-1.938	-2.157	-2.014
Maximum	1.429	1.363	1.375
<b>Percentage of women's constraints to access health facility (Index)</b>			
Low	33.3	33.2	33.4
Moderate	33.4	33.4	33.3
High	33.2	33.3	33.3

Note: See Table 4.2.1 above.

Source of data: IIPS and ORC Macro, 2005-06, NFHS-3, Rajasthan, Odisha and Madhya Pradesh.



**Table 4.2.8. Internal Coherence and validation of composite index on women's access (constrains) to health facility by specific constrains in the states of Rajasthan, Odisha and Madhya Pradesh**

Specific constrains in accessing medical advice or treatment	Rajasthan (N=3,892)			Odisha (N=4,538)			Madhya Pradesh (N=6,427)		
	Women's access to health facility (Index)			Women's access to health facility (Index)			Women's to access to health facility (Index)		
	Low	Medium	High	Low	Medium	High	Low	Medium	High
<b>Getting permission to go</b>									
Big problem	76.9	16.6	6.6	66.8	20.8	12.4	71.9	25.6	2.5
Not a big problem	56.0	30.6	13.4	61.8	28.5	9.7	51.7	37.7	10.6
No problem	15.6	38.0	46.4	25.3	35.5	39.2	24.4	33.2	42.4
<b>Getting money need for treatment</b>									
Big problem	75.7	20.9	3.3	59.6	30.7	9.7	66.1	26.7	7.2
Not a big problem	42.1	40.8	17.1	25.8	48.7	25.5	37.3	40.0	22.8
No problem	9.9	35.5	54.6	8.5	26.4	65.1	16.8	32.5	50.7
<b>Distance of health facility</b>									
Big problem	67.7	30.2	2.0	67.8	31.5	0.7	67.1	30.2	2.7
Not a big problem	30.3	50.5	19.2	25.5	54.5	20.0	22.7	51.1	26.2
No problem	1.4	24.6	74.0	0.8	22.5	76.7	1.0	24.2	74.8
<b>Having to take transport</b>									
Big problem	71.9	27.8	0.3	70.6	28.9	0.4	71.1	28.2	0.7
Not a big problem	30.1	52.9	17.0	31.6	56.2	12.1	24.6	56.9	18.5
No problem	1.3	25.7	73.0	1.9	24.1	74.1	2.0	23.2	74.8
<b>Finding someone to go</b>									
Big problem	88.5	11.4	0.1	95.8	3.9	0.3	87.9	12.0	0.1
Not a big problem	40.8	50.6	8.6	59.5	37.1	3.5	39.9	52.4	7.6
No problem	5.4	32.2	62.4	13.1	36.6	50.3	10.0	30.5	59.5
<b>Concern there may not be a female health provider</b>									
Big problem	70.9	26.5	2.6	78.6	18.7	2.7	80.5	18.4	1.1
Not a big problem	26.9	51.7	21.4	44.4	44.3	11.3	31.7	51.0	17.3
No problem	3.9	24.9	71.3	9.2	35.2	55.5	4.4	34.4	61.2
<b>Concern that there may not be any health provider</b>									
Big problem	68.7	28.4	2.9	64.6	32.6	2.9	74.2	25.5	0.3
Not a big problem	25.9	49.2	24.9	45.2	42.3	12.5	33.7	47.1	19.2
No problem	3.2	25.4	71.4	5.1	31.0	63.8	4.3	32.7	63.0
<b>Concern that there may be no drugs available</b>									
Big problem	70.1	26.8	3.1	71.3	27.5	1.2	72.0	27.0	1.1
Not a big problem	31.3	50.3	18.4	37.0	45.6	17.4	30.9	48.9	20.2
No problem	6.1	27.1	66.8	5.3	31.6	63.2	4.1	30.8	65.1
Total %	33.3	33.4	33.2	33.2	33.4	33.3	33.4	33.3	33.3
Total N	1298	1302	1292	1504	1513	1509	2144	2141	2143

Notes: See Table 4.2.1 above. Chi-square statistic significant at  $p \leq 0.001$  level.

Source of data: IIPS and ORC Macro, 2005-06, NFHS-3, Rajasthan, Odisha and Madhya Pradesh.

**Table 4.2.9. Per cent distribution of women according to access health facility (Index) by select socio-economic and demographic characteristics in the states of Rajasthan, Odisha and Madhya Pradesh**

State/ Characteristics	Rajasthan (N=3,892)			Odisha (N=4,538)			Madhya Pradesh (N=6,427)		
	Women's access health facility (Index)			Women's access health facility (Index)			Women's access health facility (Index)		
	Low	Medium	High	Low	Medium	High	Low	Medium	High
<b>Caste/tribe</b>									
Scheduled caste	36.3	35.4	28.3	43.5	30.7	25.8	28.3	36.0	35.7
Scheduled tribe	49.2	35.2	15.7	45.5	33.5	21.0	53.9	33.5	12.6
Other backward class	35.4	36.1	28.6	31.0	34.1	34.9	31.7	34.0	34.4
Other caste	17.4	25.4	57.3	21.5	34.3	44.1	20.2	29.7	50.1
<b>Residence</b>									
Urban	8.8	25.8	65.3	8.8	22.7	68.5	14.7	27.6	57.7
Rural	43.5	36.6	19.9	38.5	35.7	25.8	40.8	35.6	23.6
<b>Household structure</b>									
Non-nuclear	32.2	34.1	33.7	31.4	32.2	36.5	32.9	33.9	33.2
Nuclear	34.4	32.8	32.8	34.7	34.4	31.0	33.7	32.9	33.4
<b>Household standard of living (Index)</b>									
Low	51.2	33.2	15.7	42.6	35.8	21.6	44.9	35.4	19.7
Medium	38.4	39.2	22.4	33.7	36.6	29.7	36.5	36.3	27.2
High	16.4	29.6	54.0	12.9	28.0	59.1	16.9	27.9	55.2
<b>Women's education</b>									
Illiterate	42.4	35.7	21.8	45.9	34.1	20.0	41.0	35.3	23.7
Primary	30.3	36.5	33.2	35.5	35.5	29.0	35.7	33.0	31.3
Secondary/Higher	13.5	26.6	60.0	19.8	31.8	48.4	20.5	30.5	49.0
<b>Husband's education</b>									
Illiterate	39.1	33.1	27.8	37.9	34.6	27.5	38.1	34.5	27.3
Primary	37.1	38.1	24.8	38.4	35.4	26.3	40.1	33.3	26.6
Secondary +	26.8	32.3	40.9	24.5	30.9	44.6	25.5	32.0	42.5
<b>Women's work status</b>									
Not working	30.0	30.0	40.0	30.7	33.1	36.2	30.1	32.5	37.4
Working	37.3	37.5	25.2	39.6	34.2	26.2	38.1	34.5	27.3
<b>Women's age</b>									
15-19	33.4	34.0	32.6	31.7	35.8	32.5	33.3	34.6	32.1
20-24	32.9	33.8	33.3	30.8	34.4	34.8	32.7	34.0	33.3
25-29	36.8	31.6	31.7	34.8	31.4	33.9	31.2	33.7	35.1
30-34	35.1	33.2	31.7	33.9	32.2	33.9	37.5	32.0	30.5
35-39	34.3	32.3	33.5	37.1	30.6	32.3	32.4	33.2	34.4
40-44	31.2	35.3	33.5	34.6	34.2	31.1	35.3	29.4	35.2
45-49	26.5	34.6	38.9	30.2	35.3	34.5	31.6	34.9	33.5
Total %	33.3	33.4	33.2	33.2	33.4	33.3	33.4	33.3	33.3
N	1298	1302	1292	1504	1513	1509	2144	2141	2143

Notes: See Table 4.2.1 above.

Source of data: IIPS and ORC Macro, 2005-06, NFHS-3, Rajasthan, Odisha and Madhya Pradesh

**Table 4.2.10. Results of multinomial logistic regression analysis on social determinants of women's access to health facility in the states of Rajasthan, Odisha and Madhya Pradesh**

women's access to health facility index / Characteristics	Rajasthan (N=3,892)		Odisha (N=4,538)		Madhya Pradesh (N=6,427)	
	Low	Medium	Low	Medium	Low	Medium
<b>Current age of women</b>	0.980***	0.990**	0.999	0.997	0.996	0.995
<b>Caste/tribe</b>						
Other caste®	1.000	1.000	1.000	1.000	1.000	1.000
Scheduled caste	1.844***	1.692***	1.712***	0.984	1.024	1.122
Scheduled tribe	2.394***	1.834***	1.539***	1.099	3.148***	1.942***
Other backward class	1.635***	1.516***	1.182	0.917	1.167	1.062
<b>Residence</b>						
Rural®	1.000	1.000	1.000	1.000	1.000	1.000
Urban	0.153***	0.383***	0.152***	0.315***	0.302***	0.490***
<b>Household structure</b>						
Nuclear®	1.000	1.000	1.000	1.000	1.000	1.000
Non-nuclear	1.113	1.037	1.016	0.915	1.242***	1.223***
<b>Standard of living (Index)</b>						
Low®	3.243***	1.821***	3.279***	1.866***	3.310***	2.242***
Medium	2.118***	1.660***	2.788***	1.766***	2.234***	1.794***
High	1.000	1.000	1.000	1.000	1.000	1.000
<b>Women's education</b>						
Illiterate	3.038***	1.761***	2.295***	1.544***	1.566***	1.281***
Primary	2.222***	1.684***	2.020***	1.492***	1.575***	1.179*
Secondary+ ®	1.000	1.000	1.000	1.000	1.000	1.000
<b>Husband's education</b>						
Illiterate	1.188	1.042	1.243**	1.248**	1.335***	1.198**
Primary	1.132	1.174	1.102	1.165	1.429***	1.155
Secondary+ ®	1.000	1.000	1.000	1.000	1.000	1.000
<b>Women's work status</b>						
Working ®	1.000	1.000	1.000	1.000	1.000	1.000
Not working	1.059	0.844*	1.086	0.990	1.098	1.040

Notes: See Table 4.2.1 above. Woman with high access to health facility is the comparison group.

® Reference category; Level of significance: \*p<0.100; \*\*p<0.050; \*\*\*p<0.001

Source of data: IIPS and ORC Macro, 2005-06, NFHS-3, Rajasthan, Odisha and Madhya Pradesh.