

**ILLNESS PATTERNS, HEALTH SEEKING BEHAVIOUR,**  
**AND HOUSEHOLD COST OF HEALTH CARE**  
**IN RURAL CHHATTISGARH**

**An SHRC Study**

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This support was made possible thanks to much of the costs of this study being paid for by Action Aid India Regional Office, Chhattisgarh. We gratefully acknowledge their contribution.

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**BACKGROUND:**

The State Health Resource Center ( SHRC) provides assistance to the government of Chhattisgarh in making structural changes in state health policy and in designing and implementing schemes to make health services more accessible to the poor and the marginalized people, especially TO tribal groups, women and children and other people at risk inhabiting remote hamlets or urban slums. SHRC's effort has largely been focused on strengthening community health systems around a trained volunteer known as the Mitanin. It has also been contributing to the improvement of primary and secondary level health delivery systems through identifying the constraints and piloting innovative solutions. As part of the above thrust the SHRC has undertaken a number of studies and programme and policy reviews.

One major research project, completed by SHRC was a detailed study of workforce management and organizational aspects of the public health system, trying to understand in a comprehensive way the key administrative and design issues that have led to such a weak and ineffective public health system. Based on these discussions a set of recommendations was finalized for strengthening public health systems that proposed a number of measures to rationalize existing resources, improve the quality of workforce management and develop a human resource development policy for the health sector.

As carrying forward these studies it was also suggested to examine the financing of health care. There are many reasons why the issue of financing of health care has attracted renewed interest.

One reason for the sudden increase in interest in this question of costs of care is the search for alternatives to the public provisioning of all health services. The line of argument advanced is that as public health services are cost-ineffective, further expansion is best done by the private sector with the state reimbursing costs of those below the poverty line. One form of this is a social insurance programme where the premium of the poor is paid by the government. However the cost of care per illness episode for the public sector is overestimated when we use the current poor levels of utilization as the denominator and the costs of an inefficiently organized health delivery system as the numerator. Both of these can change with a strengthening of the public health system. On the other hand when it comes to the private sector, regulation of both cost and quality would become difficult.

The other caution regarding demand side financing are the problems of reaching the poor. Targeting to reach the poor is of limited effectiveness as we know from the experience of schemes like the public distribution system and the ICDS programmes. Given the power structures operational at the local level a fair number of those who are not poor would gain access and a large number of those who are poor would fail to gain access. Meanwhile, without the public pressure of the politically active middle class as users of the public health system, even what exists of this could get further downgraded.

Another reason for a better understanding of costs of care is for strengthening public health systems itself. Today the failures of public health system to deliver also relate to poor understandings of cost effectiveness. Would it for example yield better health outcomes if we universalize immunisation against hepatitis B or if we use the same amount for increasing the ANM workforce from one per 5000, which it is presently to one per village or one per 1000? Should we link the number of staff being provided in a PHC to the patient load it is handling? If there are only 10 patients per day then one medical officer and some 8 supporting staff could hardly be merited. But if there are 100 attending per day this would probably be inadequate. Should we invest more in providing better ophthalmic services or in introducing trauma care? Today when government

services are not costed and when it is presumed that a rise in budgetary allocation per se would lead to better health outcomes- then one fails to ask these questions.

Interest in understanding cost of care also rises from the current concern to make investment in health, especially donor investment in health, a form of poverty reduction. In this context the concern is that only a small part of the poor are utilizing public health services – a larger part of them are going to private health care. The reasons for this are many and not necessarily because of poor quality of public health care. Distance may be one factor. The range of services available may be another. Trauma care or emergency obstetric care for example is not available in many government facilities in a large number of districts and the nearest available care may be private. And very often private care, especially of the informal sector, may even be cheaper or of comparable costs and allow for credit and payment in kind. Such informal care however is plagued by high degrees of irrationality. Even where public health care is accessed the costs of transport, stay for attendants, often medicines that have to be purchased from outside, all these contribute to forcing the family to seek loans at usurious rates and pushes them into penury. Therefore it is clear that in addition to public provisioning some sort of demand side financing, and some sort of risk pooling arrangement may be needed to ensure that the poor are able to access medical care when they need it without being pushed into a debt cycle. When such a demand side financing approach is being considered then the patient's choice of facility would be limited by the size of the financing package. Given the limitations of what package can be offered, this would largely mean a public health facility or a not for profit institution or at best, in the current context, a small selection of facilities that agree to abide by the cost and quality regulations that accreditation to participate would require.

Before the government plunges into an major risk pooling arrangement or decides to look at public private partnerships better data is required on not only the costs of different options to the state but also on the current household expenditure on health care, the current resort to health care of different sections, and even the pattern of illness that requires medical help in different cultural and social groups. Only with such data can we

comment on the right mix of strengthening public health system and involving the private sector, and the right mix between supply side financing and demand side financing that would provide the most cost –effective solution.

We recognize that such a plan is highly ambitious and may require two major research programme, one in epidemiology and the other in health economics and a large investment in researchers and experts, far beyond SHRC's capacity . This is precisely why such a project has been incorporated in European Union's State partnership programme with suitable international expertise sought to design and conduct such studies.

Meanwhile as a preliminary exercise the SHRC plans to look at some aspects of health financing issues to form a first impression of the trends. In doing this the urgency has been that on one hand there is a complete paucity of any sort of epidemiological or cost of care data that is Chhattisgarh specific and there is no institution today who can undertake such a work in the state. On the other hand this has not slowed down the pressures for coming up with programmes of risk pooling or health insurance or public private partnerships etc. Some information on these aspects is therefore better than, in our view, no information.

There are four components of health financing that we need to understand. Firstly we would like to understand the cost of services incurred by the government on different health facilities for different health services. This needs to be related to an analysis of the health sector budget . Some of the information on cost of care in an ideal PHC or CHC is available from a number of very good studies which we can draw upon but we need to relate it to the state 's expenditure on the health sector and the current functioning of PHCs and CHCs in this state without taking these parameters as fixed. Secondly we would need in the Chhattisgarh context need to look at what Rogi Kalyan samitis are providing in the way of alternate financing and how their contribution to the improved functioning of public health facilities could be strengthened. A third component of

interest is the unit costs for the provision of different services in the private sector( including the not –for – profit sector . Lastly we seek to get some glimpse at the community level of the pattern of illness , the health seeking behavior and related to these, the cost of health care in the poor households.

It is with the last of these components that we are initiating our tentative and cautious exploration of these questions. A study of the pattern of illness, health seeking behaviour and health expenditure by poor households has a number of compulsions other than the larger questions of the “re- architecturing of health systems,” a phrase that the national rural health mission has brought into public usage.

From such a community level study, we intend to gain insights to understand the pattern of illness and the health seeking behavior of the state and its relationship to and impact on poverty. This information would be immediately useful for improving the quality of the ongoing Mitadin (community health volunteer) programme. Currently there is a community health volunteer in every habitation and the estimation of her drug needs is made arbitrarily. Even expectations of outcomes are arbitrary. There is a need to generate some empirical data on which drug need estimates and work plans can be based.

In the longer run estimates of expenditure and patterns of illness amongst the poorest sections would prove useful for risk pooling strategies that directly address the goal of investment in health care as a form of poverty reduction.

It is in this background that this study was planned.

## OBJECTIVES

The objectives of this study are

- *To describe the household experiences on illness and healthcare and relate it to three key social determinants- poverty, nutrition and access to health care;*
- *To analyse -*
  - *The health seeking behaviour of poor tribal and non tribal households,*
  - *The choice of health care services and its relation to household healthcare expenditure;*
- *To investigate factors affecting household healthcare expenditure; and discuss policy implications to design and implement health sector reforms.*

## **METHODOLOGY:**

### **SAMPLE SIZE :**

We decided to go for a purposive sample of approximately 400 households. This we estimated would mean approximately a population of 2200 population or about 300 expected illness episodes (expected) in a month and about 50 to 70 pregnancies in the year.

To ensure that this sample was broadly representative of the rural population of Chhattisgarh and their health seeking behavior this 400 was to be drawn from two tribal villages and two non-tribal ones . Thus 200 households would be contributed from a non tribal district near an agriculturally developed place – the rural areas of Raipur district along the central plains of Chhattisgarh and 200 from the tribal district of Bastar. About 80 of 146 blocks in Chhattisgarh are classified as tribal blocks but the population density is more in the non-tribal blocks. The population of the tribal blocks of Chhattisgarh is about the same as the population of the non tribal blocks. The exact tribal population of the state is however 33% but this includes large urban areas and also reflects the fact that tribal and non tribal communities are not confined to designated tribal or non tribal blocks- but present in varying amounts in both. Recognizing that we would not be able to do a study with large enough sample sizes to compare the difference between patterns of disease and expenditure in tribal and non tribal blocks we chose just two villages from each of these two categories so as to ensure that the sample of 400 is more representative than it would be otherwise.

### **DETAILS OF STUDY AREA**

The state of Chhattisgarh, socio geographically, can be divided into three parts; South and North Chhattisgarh representing the tribal and forest areas, and the central part covering the industrial and plain area of the state. Two districts, Raipur representing the central plain and Bastar representing the tribal and forest area, were selected for the

study. Two villages, Tiberaiya and Chikhli in Dharsiwa block (Raipur) and two villages, Khachgaon and Palari in Kondagaon block (Bastar) were sampled as study villages. These villages, each having around a hundred households, were identified based on access to health facilities as described below.

**Tiberaiya (*Non tribal - near urban*):**

- Non tribal village having literate and mixed population,
- On the road within 2 kms from a functional PHC (Dharsiwa) which is in the block headquarter town and having good access to number of curative services. Also easy to access Raipur city which has adequate tertiary care facilities, with which it is well connected by the main highway

**Chikhli (*Non tribal – more interior rural*-)**

- Non tribal village with mixed population,
- At 15 kms from Dharsiwa PHC in the block headquarters town and 20 kms from Raipur (10 kms from Urla chouk) with difficult access to curative services due to very poor transport connections.

**Palari (*Tribal - near urban*):**

- Tribal village 2 kms from Kondagaon township- block headquarters town with a 30 bed functional government civil hospital and having number of private clinics,
- On the main highway with good transport access to Kondagaon and to district headquarters hospital of Jagdalpur( 71 km away) which has a number of tertiary care facilities as well.

**Khachgaon (*Tribal - rural*):**

- Forest based tribal village,

- Off the road at 7 kms from Golabundh sub centre and 25 kms from Kondegaon CHC. Poor transport access to Kondegaon town.

The reasons for selecting the two villages in each category thus are that villages near an urban area ( less than 5 km from) have better access to both public and private health care facilities. The interior village of each block was selected to be one far from a health care facility and urban area – at least over 15 kilometers away and poorly connected by transport. The presumption was that access to health care facilities and the near urban milieu would have an impact on the health seeking behavior and distance. Again the sample size does not allow us to prove or disprove it – we are only ensuring that our results are not prejudiced by our having chosen only near urban or deep rural districts. Development studies have always recognized that even the villages on the road show a different degree of utilization of services and facilities as compared to more interior villages. Both these interior villages were away from the main road and though connected by a road had only one bus coming daily and that too with irregularity.

Chhattisgarh has such diversity that stratifying for these variables does not remove all the possibilities of such variances. There is for example the block of Orchha inhabited only by primitive tribals to whom modern health care is almost unknown except for a few paramedicals they encounter and where access to private health care is non existent. There are wide cultural differences between the four tribal districts of the South and the four tribal districts of the north as well as differences between them. Sex ratio is generally high but there is a belt where the sex ratio is adverse and worsening rapidly. Since this is a preliminary study such detailed stratification and a very large study was considered difficult to achieve and we settled for choosing the

sample based on a limited two parameters- tribal status and ease of access to adequate secondary and tertiary care facilities.

The villages were also purposively selected to have about 100 households – largely BC/SC/ST population. ( That would mean about at least 30 illness episodes per village and about 7 to 9 pregnancies per village of 100 households).

Though the small sample limits the value of inter village comparison we used qualitative studies of these four villages to understand the different variations in this would try to understand inter-village differences by backing up the trends seen with a qualitative study of the four villages. We plan to deploy four teams of three persons each.and therefore we would use it only as a whole unit. However

#### **DATA COLLECTION:**

The tool used for collection of information on household healthcare experience and expenditure was developed considering the objectives of the study. This interview schedule was first developed in English and shared with different experts and their critical inputs sought . Suggestions were incorporated. Thereafter, a Hindi version of the schedule was developed and tried out in two different pockets. The final round of field tests was carried out by the trained Investigators and with some minor corrections it was considered as the interview schedule for the study.

The interview schedules had four sections. (a) Household and Individual Profiles; (b) Household Consumption Pattern and Expenditure and Household Income Pattern and Amount;(c) Morbidity and Pregnancy experiences and health seeking behaviour Reading and (d) Healthcare Expenditure & Expenditure on Maternity and Hospitalisation events

Data collection was done by 4 teams of three researchers each, one of whom at least was necessarily a woman. A maximum of five households per team would be interviewed in a day. Data entry was done in the same week. Data gathering period were in the months of November and December 2004.

The period of recall was one month for all illness and one year for pregnancy and child birth.

### **Qualitative Studies :**

A qualitative study of the selected villages preceded the survey (data collection) and followed it. The preceding qualitative study which was done for a number of villages. The objective was to help us choose for 4 villages for the study and be acquainted with the broad demographic profile and health issues of those villages. This was basically a Participatory Health Appraisal that helped in learning about the villages and subsequently designing the questionnaire -

The post survey qualitative study was done after the results were submitted and analysed for checking out gaps in the quantitative surveys and understanding better some of the features we were observing in the analysis. We also wanted to understand better, some of the determinants of the patterns we had observed and consider the response people had to some of the suggestions we were making.

## RESULTS

### SECTION 1: THE DEMOGRAPHIC DATA AND BACKGROUND PROFILE.

This section describes the broad demographic characteristics of the population sampled. The intent of this description is not to use our data to understand or describe the demographic characteristics of Chhattisgarh, but rather by comparing it with the census data of Chhattisgarh, try to understand how representative of Chhattisgarh this sample is and in what ways the sample differs from the state's averages.

In this section we describe the sex ratios, age distribution, religion and caste distribution, economic status, type of family, occupational profile, and educational levels of the sample and compare it with the state data.

#### Basic Demography:

The basic demographic details of the four villages are given below.

**Table 1.1:** *Population and Sex Ratio in Sampled Villages.*

Villages	Type of village	Total number of households	Total Number of selected Households	Population in selected Households			Sex Ratio
				Male	Female	Total	
Tiberaiya	Non tribal, near urban	121	101	343	333	676	971
Chikhli	Non tribal- Rural interior	126	105	317	294	611	927
Khachgaon	Tribal – rural	120	100	280	262	542	935
Palari	Tribal- near urban	121	101	259	285	544	1100
<b>Total</b>	<b>All type of villages</b>	<b>488</b>	<b>407</b>	<b>1199</b>	<b>1174</b>	<b>2373</b>	<b>979</b>

The four villages studied had together 488 households of which 407 were sampled. Most of the houses left out were not present at home (18) or were not available for interview (31) or had at analysis critical data gaps (32) which required their elimination. The aim had been to take villages with households as close to 100 as possible so that the intra-village stratification and sampling was not required. In Chhattisgarh the average village size is about 300 households and even this is divided into five to 15 geographically dispersed hamlets. About half the villages would have only about 100 households.

### **Family Size and Sex Ratio**

These 407 household of the sample had a total population of 2373 which is an average family size of 5.83. The sex ratio of this sample was 979 women per 1000 males (1199 women to 1174 men). This is comparable to the state sex ratio as per the Census – 990 women per 1000 men.

We also note the trends at the village level. The sex ratio was 1014 for the tribal hamlets and 950 for non tribal areas. Within the tribal villages the sex ratio varied between 1100 in the more interior rural area to 935 in the peri-urban area. Within the non-tribal areas the sex ratio was 927 in the more interior rural villages to 970 in the near urban village. It would be interesting to follow up this with a larger study to see whether there we can state that gender equity is worse in non tribal areas where education/development has reached less whereas in tribal areas given the strong gender equity situation with which they begin, the reverse is the case. We also need to know how migration and newer technologies like sex determination are affecting sex ratios.

**Table 1.2** Sex distribution in sampled villages

Sample Characteristics	Name of the Sample villages				All Villages
	Tiberaiya Peri-urban (Percentage)	Chikli Rural (Percentage)	Palari Peri-urban (Percentage)	Kachgaon Rural (Percentage)	Total (Percentage)
Male	50.7	51.9	47.6	51.7	50.5
Female	49.3	48.1	52.4	48.3	49.5
<b>Total members</b>	<b>676</b>	<b>611</b>	<b>544</b>	<b>542</b>	<b>2373</b>

**Age Distribution:**

The age pyramid of the sample is shown in table 1.3. below.

**Table1.3:** Age Characteristics of Sample Households

Sample Characteristics	Name of the Sample villages					% - for five yr intervals
	Tiberaiya Peri-urban (%)	Chikli Rural (%)	Palari Peri-urban (%)	Kachga on Rural (%)	All Villages	
0-5	16.1	12.8	15.8	17.3	15.5	15.5
6-10	10.7	14.4	11.4	14.0	12.6	12.6
11-15	11.7	10.2	11.2	13.1	11.5	11.5
16-45	45.1	45.2	45.4	47.2	45.7	7.6
46-65	14.6	12.1	13.6	7.9	12.2	3.1
66 and above	1.8	5.4	2.6	0.2	2.6	0.9
<b>Total Members</b>	<b>676</b>	<b>611</b>	<b>544</b>	<b>542</b>	<b>2373</b>	

The age pyramid shows a ratio of 45.7 % of the population in the 16 -45 , and 57.9 % of the population in the 15 to 65 age group as against 39.6% below the age of 15- consistent with the pattern of a low life expectancy situation in an underdeveloped economy. This is approximately the same as the age pyramid described for the country as a whole.

## Religion and Caste Composition.

The religion and caste -wise characteristics of the sample is given below in table 1.4.

**Table 1.4.** *Classification of HHs by Religion*

Sample Characteristics	Name of the Sample villages				All Villages
	Tiberaiya	Chikli	Palari	Kachgaon	
Age classification	Peri-urban	Rural	Peri-urban	Rural	Total
	(Percentage)	(Percentage)	(Percentage)	(Percentage)	(Percentage)
Hindu	98.0	99.0	100.0	100.0	99.3
Muslim	1.0	1.0	0.0	0.0	0.5
Sikh	1.0	0.0	0.0	0.0	0.2
<b>Total HHs</b>	<b>101</b>	<b>105</b>	<b>101</b>	<b>100</b>	<b>407</b>
<b>Classification of HHs by Caste</b>					
ST	0.0	0.0	78.0	74.0	37.4
SC	26.73	0.0	10.0	2.0	9.6
OBC	71.28	81.0	11.0	20.0	46.0
General	2.0	19.0	2.0	4.0	7.0
<b>Total</b>	<b>101</b>	<b>105</b>	<b>101</b>	<b>100</b>	<b>407</b>

Of the – 407 households sampled only three households were of religions other than Hinduism/tribal system- two of them being Muslim and one Sikh. Though it is inappropriate to call all tribals Hindus since their belief systems are different, increasingly they have been incorporated into the mainstream identity of one or other religion- and in our study sample almost all of them have assumed an identity of Hinduism with icons of Hindu goddesses prominently displayed in their homes and a participation in key religious functions – Dusshera, Diwali to name the two most important. Compared to state averages our sample has an under-representation of the religious minorities

## Family Structure:

The type of family is an interesting statistic that we also were able to assess.(table 1.5).

**Table 1.5: Type of Family**

Sample Characteristics	Name of the Sample villages				All Villages
	Non tribal		Tribal		
Age classification	Tiberaiya	Chikli	Palari	Kachgaon	Total
	Peri-urban	Rural	Peri-urban	Rural	
Nuclear family	6.0	48.6	60.0	67.0	45.2
Nuclear family with Parents	44.0	30.5	20.0	17.0	27.8
Joint family	51.0	21.0	21.0	16.0	27.1
<b>Total</b>	<b>101</b>	<b>105</b>	<b>101</b>	<b>100</b>	<b>407</b>

:

Nuclear families are the most common( 45.2%) and if we include those with parents of the earning couple this rises to almost three fourths ( 73.0%). The trend between villages is interesting. Tribal families are more likely to have nuclear families, and less likely to have parents living in the same house or have joint families( siblings with families in the same roof). Non tribal families , especially in the more developed near urban village were much more likely to have the joint family system. The sample is too small to comment on whether this is a trend or just specific to these villages. Given the age structure of the population the lack of parents in the household may be a function of earlier mortality in these sections. Higher value on landed property may promote the persistence of the joint family.

### **Occupation:**

The occupational profile of the population of the study is similar to the distribution of population by occupation in the rural population as a whole.

**Table 1.6.: Occupational profile of the respondent households**

Occupational classification	Tiberaiya	Chikli	Palari	Kachgaon	Total
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	Peri-urban (Percentage)	Rural (Percentage)	Peri-urban (Percentage)	Rural (Percentage)	(Percentage)
Agr. Farmer	42.0	43.9	46.2	49.9	46.1
Daily wage labour	41.4	42.1	39.8	43.8	42.0
Bonded labour	0.6	0.0	0.0	0.0	0.1
Petty trader	3.7	4.6	2.1	0.4	2.4
Teacher	0.6	0.0	0.0	0.0	0.1
Govt. servant	4.6	2.9	3.1	0.7	2.6
Other services	6.6	6.4	8.5	4.8	6.5
Salaried others	0.3	0.0	0.3	0.0	0.2
<b>Total Working Population.</b>	<b>326</b>	<b>280</b>	<b>329</b>	<b>489</b>	<b>1424</b>
<b>Total population</b>	<b>676</b>	<b>611</b>	<b>544</b>	<b>542</b>	<b>2373</b>

The overwhelming occupation is agricultural – 88.1% of which about half – 42.1% is daily wage labour- itself an indicator of a high degree of landlessness and poverty.

Another 11.8% is largely in the services – traders, shop-owners, teachers, government servants, health care providers. Manufacturing accounts for less than 2%- largely artisan. Since we have purposively chosen a rural sample this distribution is to be expected- though artisan production has declined and is lower than would have been expected for such an economy. This may also be because we were analyzing for main occupation and artisanal work is often a secondary occupation for many families.

### **Determining Income and Defining Poverty:**

To correlate health expenditure with financial status of the households it was important to estimate income and poverty. Estimating the income in agriculture sector is problematic, more so in the case of tribal areas. For one the income comes at irregular intervals in the form of agricultural produce which is stored as such -to sell off when ever cash is required. Forest produce is also seasonal and some of it is consumed but lot of it is sold or traded for essentials. In tribal areas, consumption patterns are also skewed with consumption increasing when income is at their disposal and bare minimal expenses and a negative balance representing borrowings when cash is low.

Studies address these problems by one of many ways. One is by proxy indicators of income – the most common being the type of house or the number of rooms and presence of consumer durables, or by a composite index composed of many such indicators including educational status.

Another commonly used approach is to measure income and economic status by productive asset ownership. Another approach possible is to quantify all crop production in money terms as cash equivalents and then use this for income estimation. Yet another traditional approach is to use consumption estimates of the household.

In the tribal Chhattisgarh context every one of these means of measurement has numerous problems that are associated with it. Proxy indicators are difficult to determine and co-relate poorly with poverty and their interpretation would vary across cultural groups. Thus tribal homes, even in very poor families may have many rooms, as rooms are added on every few years, whereas in a non tribal village the number of rooms may co-relate better with economic status. Cultural preferences may keep housing in traditional patterns of mud and stone and thus “pucca” houses as an indicator of higher economic status may underestimate income levels. Education may co-relate with distance to schools rather than income. The valuation of land varies widely. In a tribal area a person may claim 5 acres of land and still be near starvation levels of income- whereas in another non tribal irrigated area 5 acres ownership could signify a rich peasant. Thus in Kachagaon there are 20 families with over 5 acres of land but not a single family with a pucca house or semi pucca house , no one educated above 10<sup>th</sup> class .

Income estimations based on crop or minor forest produce ‘recall of sales’ over the year and estimates of poverty based on expenditure/consumption patterns are difficult to arrive at and vary widely over the months. This is not only a problem for this study. It is a problem even in determining below poverty line families for welfare benefits and has given rise to a lot of misgivings in the public about the mechanisms for the choice of beneficiary. The government undertook a BPL survey( with all the limitations of government conducted BPL surveys) but even that has been stayed by the courts. There is clearly no easy way out.

We present below the distribution of families by a number of these indicators. We have then gone on to use land ownership and income estimation as the two indicators to disaggregate the group into economic classes for co-relating income with illness, health seeking behaviors and cost of health care.

The categorization according to income groups as reflected in commonly used proxy indicators are shown in table 1.7.

**Table 1.7.: Economic Status Using Proxy Indicators**

Indicators of income	Tiberaiya	Chikli	Palari	Kachgaon	All
	Peri-urban	Rural	Peri-urban	Rural	
<b>Number of rooms in house</b>					
1-2	30.7	44.8	21.8	39.0	34.2
3-4	35.6	34.3	55.4	47.0	43.0
5 -6-7	33.7	20.9	22.8	14.0	22.8
<b>Total</b>	<b>101</b>	<b>105</b>	<b>101</b>	<b>100</b>	<b>407</b>
<b>Housing type</b>					
Kutchha	65.0	76.2	87.1	100.0	81.4
Semi pucca	22.8	22.8	12.9	0.0	14.7
Pucca	11.9	3.8	0.0	0.0	3.9
<b>Total</b>	<b>101</b>	<b>105</b>	<b>101</b>	<b>100</b>	<b>407</b>
<b>Agricultural land Ownership in Acres</b>					
No Land	30.7	22.9	29.7	19.0	25.5
<1	28.7	13.3	20.0	14.0	19.2
1-3	20.8	33.3	31.7	27.0	28.3
3-5	10.9	9.5	10.9	20.0	12.8
5-10	4.9	6.7	6.9	12.0	7.6
>10	3.9	14.3	0.0	8.0	6.6
<b>Total</b>	<b>101</b>	<b>105</b>	<b>101</b>	<b>100</b>	<b>407</b>

Thus the percentage of the population with 4 rooms or less was 77.2% while those with kutchha houses are 81.4%. Those below 5 acres total to 85.8%. So the top 20% are possibly having more than 5 rooms, a semi-pucca or pucca house and land ownership of over 5 acres.

We also carefully computed incomes from all sources. These took a lot of doing as we had to give cash values to crops grown for home consumption, as well as look at the earnings of minor forest produce etc. Based on these calculations we have arrived at table 1.8.

**Table 1.8** *Distribution Of Households Based On Income*

Monthly Income	Tivariya	Chikli	Palari	Kachgaon	All
<500	6	13	10	33	62
500- 1000	10	8	30	23	71
1000-2000	32	23	34	21	110
2000-5000	33	41	23	20	117
5000-10000	15	9	2	3	29
> 10,000	3	6	1	0	10
	99	100	100	100	399

The above table is on household income. If from this we derive the monthly per capita income using the given family size of 5.8, then the last three categories – a total of 156 ( 39 %) would have a monthly per capita income above Rs 600 . If we use per capita income of Rs 1000 the current minimum wage and a reasonable poverty line then only 39 households fall above this. Thus almost 90.3% of households would be at or near poverty levels. This co-relates with our observations regarding nutritional status. In comparison to the state’s statistics on poverty these figures of our sample are comparable if we use then Rs 600 per month per capita as the cut off line.

Table 1.9 below describes the distribution of households by land ownership and describes it separately for each village.

**Table 1.9-** *Distribution Of Households By Landholding ( By Irrigated Land In Brackets)*

Land holding	Tivariya	Chikli	Palari	Kachgaon	All
0	31	24	30	19	104
<1	29 ( 24)	14 (11)	21(0)	14(0)	78(35)
1 to 3	21(20)	35(35)	32(3)	27(5)	115(63)
3 to 5	11(11)	10(10)	11(0)	20(4)	52(25)
5 to 10	5(5)	7(7)	7(6)	12(5)	31(23)
>10	4(4)	15(15)	0	8(0)	27(19)
	101(64)	105(78)	101( 9)	100(14)	407(165)

The pattern that emerges is that landlessness ranges from 19% in Kachgaon to 31% in Tivariya . Landholding percentages are also evenly distributed across the four villages. But this is not the true reflection of the economic situation. Irrigated land on the other hand does reflect it much better for Kachgaon has only 14% of all 17% of landed households with about three acres of irrigated land each between them and Palari has only 9% of all households and 12.7 % of landed households have irrigated land, whereas in Tivariya and Chikli have 91% and 98% respectively of landholders having irrigated land. Further in Palari and Kachgaon it is minor tank irrigation that is the main source of irrigation whereas in Tivariya and Chikli the major source is tube wells irrigation ( own and neighbors' in equal measures ) with the next major source being irrigation canals.

Taken together we are able to understand the socio economic contexts of these villages better. In comparison to official poverty estimates for the state, our sampled villages taken together or separately are clearly worse off.

### **Livestock Ownership.**

In describing the economic and cultural situation of the population under study one other data would give useful insights. Since in agricultural and tribal families especially in the poor animal husbandry is a major form of asset ownership and also relates to nutrition and health we studied the data on the same-

**Table 1.10****Livestock Ownership:**

	Non-Tribal Households ( figures in brackets indicate number of animals)	Tribal Households (figures in brackets indicate number of animals)
None	70	7
Goats; piggery or poultry but no cattle	0	71
Who had any cattle	136	123
Bull	60( 125)	123(310)
cow	116(368)	65(130)
buffalo	23(44)	25(52)
pigs	0	2(15)
goats	3(34)	10(28)
poultry	4(26)	90(295)
Total Households	206	201

The above data also brings out one central variation in the cultural patterns of Chhattisgarh. In tribal Bastar area the bull is more valued than the cow the ratio being 1 bull to 0.42 cows whereas in non tribal plains it comes to 1 bull to 2.95 cows. Bastar society does not drink milk and requires cattle only as a security and for ploughing. Meat eating though is common, even if not very overt given the state laws. In contrast non tribal society sees cattle largely in relation to milk production, though ploughing still remains important. Poultry, piggery are very much part of tribal cultures though relatively peripheral or non existent ( esp piggery )in non tribal areas. Goat rearing is a less frequent activity in both groups.

**Educational Levels:**

The study also looked at educational levels of the population. Table 1.9 describes the situation in the 16 to 45 age group and as can be expected tribal villages are performing much poorer than non tribal villages. Even taken together 46.1% are illiterate and another

22.8% have less than 5<sup>th</sup> class of schooling which is usually insufficient even for fluent literacy. Only 31.1% have above this level and only 9% have completed schooling. In the percentage who have completed schooling we see a clear trend across the villages- 16.5% in a non-tribal near urban village, to 12% in a non-tribal interior village to 5% in a tribal near urban village to 0% in the tribal interior context. Obviously the degree of development and the percentage who have completed schooling are closely linked indices.

**Table 1.11.: Overall educational status of the people within the productive age group**

<b>Educational Status of productive age group (16- 45 Yrs)</b>	<b>Tiberaiya Peri-urban (Percent)</b>	<b>Chikli-rural (Percent)</b>	<b>Palari Peri-urban (Percent)</b>	<b>Kachgaon Rural (Percent)</b>	<b>All (Percent)</b>
Illiterate	17.0	33.5	61	82	46.1
<5 <sup>th</sup> class	88.5	23	22	15	22.8
6 to 10 <sup>th</sup>	38.0	31	12	2.5	22.1
11 <sup>th</sup> and above	16.5	12	5	0	9
<b>Total</b>	<b>296</b>	<b>277</b>	<b>247</b>	<b>238</b>	<b>1058</b>

**Table 1.12.: Educational classification by Sex**

<b>Educational level in 16- 45 age group</b>	<b>Male all villages</b>	<b>Female all villages</b>
Illiterate	32.94	58.39
>5 <sup>th</sup> class	23.92	21.71
6 to 10 <sup>th</sup>	29.21	15.33
11 <sup>th</sup> and above	13.92	4.56
<b>Total</b>	<b>510</b>	<b>548</b>

The distribution of educational level by sex again as expected shows a lower educational status in women though this difference is not as much as the national ratios.

## SECTION 2 : DETERMINANTS OF HEALTH:

The key determinants of health are poverty and inequities, educational level , nutrition, safe drinking water and sanitation.

We have already described the extent of poverty and gender inequity and educational levels in the sample. We would need to coorelate this with health outcomes later.

We now in this section examine the state of nutrition and the access to drinking water and sanitation.

### NUTRITION:

One of the more sensitive indicators for nutritional status is the body mass index. This is the ratio between the weight (measured in kilograms) and height ( measured in meters) and is calculated as weight in kg divided by the square of the height in meters.

Its interpretation of BMI is given in the table 2.1. below

**Table 2.1.***Interpretation of BMI*

Status	Standards
BMI <16.0	Indicates severe malnutrition
BMI 16.0-16.99	Indicates moderate malnutrition
BMI 17.0-18.49	Mild malnutrition
BMI 18.5- 20	Underweight
BMI 20 -25	Normal
BMI 25-30	Overweight
BMI >30	Obesity

The study tried to weigh all the members of every household sampled. However our final numbers weighed were only 1755 or about 74% of the population.

Of these 1755 a very high 58% had a BMI of below 18 . Only 30% were normal. At the other end a small 6% are over weight and another 6% are obese!

**Table 2.2: Body Mass Index of the household members for all age groups**

BMI- all age groups	Tiberaiya	Chikli	Palari	Kachgaon	All
	Peri-Urban %	Rural %	Peri-Urban %	Rural %	
<18	62.0	54.0	60.0	56.0	58.0
18to 25	29.0	26.0	34.0	30.0	30.0
25 to 30	6.0	7.0	4.0	7.0	6.0
>30	3.0	13.0	2.0	6.0	6.0
<b>Total number weighed</b>	<b>497</b>	<b>570</b>	<b>455</b>	<b>233</b>	<b>1755</b>
<b>Total Population</b>	<b>676</b>	<b>611</b>	<b>544</b>	<b>542</b>	<b>2373</b>

The difference between the villages are not analysed further as the numbers are not large enough to be definitive about the conclusions. However the broad trends are that it is the similar in all the four villages.

The difference between the sexes as shown in tables 2.3 . in BMI is not significant. This is an interesting finding since gender discrimination is expected to impact adversely upon nutrition in women. Our finding is however consistent with other studies on the same. Of course at times like pregnancy women would be more at risk for mortality and morbidity from the same amount of nutritional level as the men. Also one has to consider whether the quality of diet especially as regards sources for micronutrients are the same across genders- but clearly as far as basic calorie intake goes, the situation in both the sexes are similar.

### **BMI VALUES BY SEX :**

**Table 2.3a : BMI values for females**

Females	Tiberaiya Peri-urban	Chikli Rural	Palari Peri-urban	Kachgaon rural	All
<18	60.0	56.0	63.0	53.0	58.85
18to 25	28.0	24.0	32.0	30.0	28
25 to 30	7.0	9.0	4.0	8.0	6.64
>30	5.0	11.0	2.0	10.0	6.53

<b>Total</b>	<b>265</b>	<b>282</b>	<b>243</b>	<b>114</b>	<b>904</b>
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**Table 2.3.b : BMI values for males**

<b>BMI- all age groups males</b>	<b>Tiberaiya Peri-urban ( Percentage)</b>	<b>Chikli – Rural ( Percentage)</b>	<b>Palari Peri-urban ( Percentage)</b>	<b>Kachgaon Rural ( Percentage)</b>	<b>All ( Percentage)</b>
<18	63.0	51.0	58.0	60.0	57.0
18to 25	30.0	28.0	37.0	32.0	31.37
25 to 30	6.0	6.0	4.0	6.0	5.4
>30	1.0	15.0	1.0	2.0	6.22
<b>Total</b>	<b>232</b>	<b>288</b>	<b>212</b>	<b>119</b>	<b>851</b>

**Table 2.3c: BMI values for males and females**

<b>BMI all Age groups</b>	<b>Males %</b>	<b>Females %</b>
<18	57.0	58.9
18to 25	31.4	28.0
25 to 30	5.4	6.6
>30	6.3	6.5
<b>Total</b>	<b>851</b>	<b>904</b>

**In BMI the distribution of BMI across age groups is important to assess. Table 2.4 describes this.**

**Table 2.4. BMI by age distribution:**

<b>Age</b>	<b>&lt;18</b>	<b>18 -25</b>	<b>25 -30</b>	<b>&gt;30</b>	<b>Total</b>	<b>NA</b>	<b>% mal</b>
<b>0-1</b>	<b>36</b>	<b>4</b>	<b>2</b>	<b>4</b>	<b>46</b>	<b>22</b>	<b>78.2</b>
<b>2- 5</b>	<b>140</b>	<b>24</b>	<b>12</b>	<b>10</b>	<b>186</b>	<b>74</b>	<b>75.3</b>
<b>6-15</b>	<b>322</b>	<b>52</b>	<b>14</b>	<b>15</b>	<b>403</b>	<b>149</b>	<b>79.9</b>
<b>16-45</b>	<b>390</b>	<b>327</b>	<b>51</b>	<b>64</b>	<b>802</b>	<b>234</b>	<b>48.6</b>
<b>46-65</b>	<b>102</b>	<b>91</b>	<b>24</b>	<b>15</b>	<b>228</b>	<b>57</b>	<b>44.7</b>
<b>&gt; 65</b>	<b>27</b>	<b>22</b>	<b>3</b>	<b>4</b>	<b>56</b>	<b>40</b>	<b>48.2</b>
<b>Total</b>	<b>1017</b>	<b>520</b>	<b>106</b>	<b>112</b>	<b>1720</b>	<b>476</b>	<b>59%</b>

The degree of malnutrition remains above 75% upto the 6- 15 age group. It is only after that , does it start declining with a small upturn again above the age of 65. The immediate interpretation that this emphasizes is that child malnutrition is not a below 5 years of age phenomena. It is a phenomenon that extends through all of childhood-reinforcing the need for food supplementation and nutrition education programmes through all of the childhood period in such areas of high malnutrition prevalence.

If the age distribution of malnutrition is studied along with the sex distribution a few more learnings emerge.

We see that upto the age of 15 the distribution of malnutrition is the same across the sexes. But in the ages of 16 to 65 the degree of malnutrition tends to be more amongst women. Thus the effect of gender inequity on nutrition appears to be related to prioritizing food for the male only in the productive age group.

Above 65 this reverses but the total numbers available for study in this age group are too small for any comment.

**Table 2.5. BMI by Age and Sex.**

Age	Male							Female						
	< 18	18 to 25	25 to 30	> 30	total	NA	% mal	< 18	18 to 25	25 to 30	> 30	total	NA	% mal
0 to 1	17	2	0	1	20	8	85	19	2	2	3	26	14	73
2 to 5	70	15	8	4	97	41	72	70	9	4	6	89	33	79
6 to 15	164	27	6	9	206	75	80	158	25	8	6	197	74	80
16 to 45	166	165	20	28	379	133	44	224	162	31	36	423	101	53
46 to 65	50	46	11	9	116	31	43	52	45	13	6	112	26	46
> 65	18	12	1	2	33	29	54	9	10	2	2	23	11	39
total	485	267	46	53	851	317	57	532	253	60	59	870	259	61

One conclusion that becomes clear and inescapable at this stage- is that malnutrition is likely to be one of the most important contributors to ill-health in these communities.

## DRINKING WATER AND SANITATION:

One important determinant of health is the drinking water source and access to it. Access to drinking water in these villages was 76.6% having access to tubewells with hand pumps or connected to taps through a piped water system. Open wells use was however a high 21.37% and clearly unsafe surface water use was at about 2%. The usage of surface water was negligible in three of the four villages- the entire contribution to this group came from the one interior tribal village in the study. Open-wells as source on the other hand was inversely related to the penetration of tube wells and the acceptability of that water and its use varied widely from village to village but never going beyond 32%

### Health related facilities in surveyed area

**Table 2.6.**

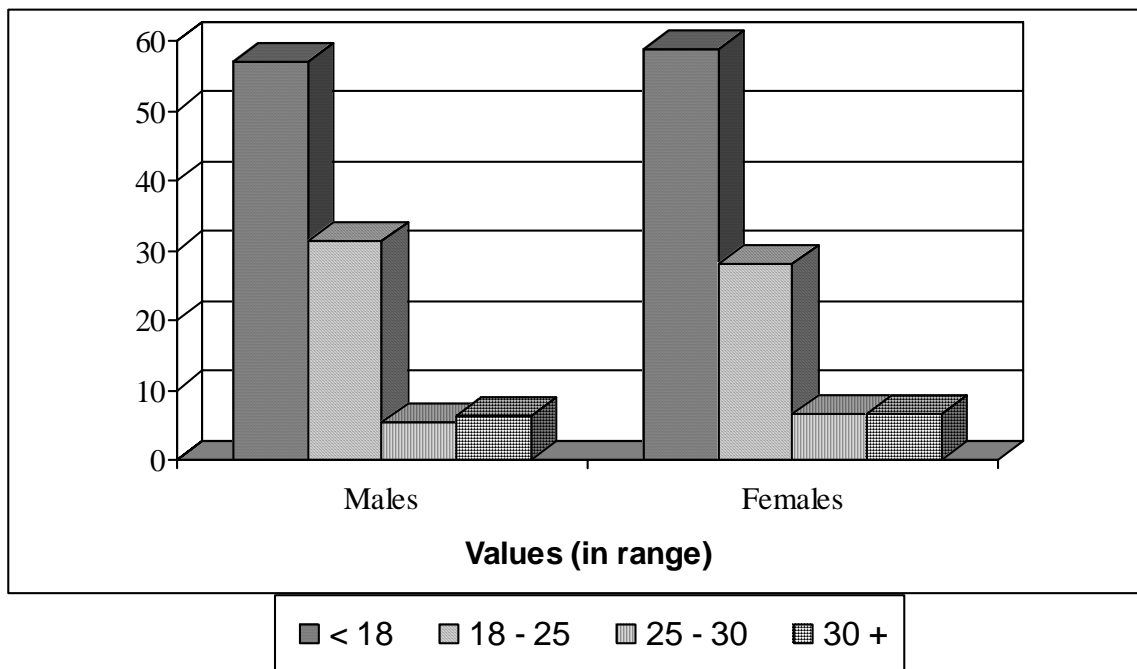
Main source for safe drinking water	Tiberaiya	Chikli	Palari	Kachgaon	All %
	Peri-urban %	Rural %	Peri-urban %	Rural %	
Tube well with hand pump/ taps	67	95.24	81	62	76.65
Open well	32	4.76	19	31	21.37
Surface water- pond, river, spring etc	1	0	0	7	1.96
Domestic latrines ( in numbers)	4	11	1	0	3.9%
<b>Total households</b>	<b>101</b>	<b>105</b>	<b>101</b>	<b>100</b>	<b>407</b>

In the use of latrines the situation was dismal. In all the 4 villages together , out of 407 households only 16 had toilets in their houses – a mere 3.9%. All of the houses who had latrines had bathrooms also and two more had bathrooms but no latrines- but for the rest they had neither bathrooms nor latrines. Only one of these 16 latrines was in the tribal villages.

Physical access to drinking water was not a problem even though there is still considerable way to go in ensuring its safety.

Table 2.7 describes this distance to source of water and we can see that only in 63 households (15.47%), most of them in Kachgaon is the source more than 100 meters away from the house. We also note from table 2.8 that distance was reported as a problem only in 22 households (5.4%) households. However about 15% of households in one village reported pollution of their drinking water source – possibly the high iron levels - is the problem.

### Nutritional Status of Members by sex



### SECTION 3 :

#### FERTILITY PROFILE:

Though pregnancy is a normal natural event and cannot be equated with an illness, the experience of pregnancy and childbirth is one of the most important stresses on the women's health. It is also a major reason for seeking health care services.

#### Fertility profile:

Table 3.1

	Taveriya Peri-urban	Chikli rural	Palari Peri-urban	Kachgaon Rural	All
Total number of married women	173	170	143	131	617
Women who have never had children	20 (11.6%)	15 (8.8%)	22 (15.4%)	20 (15.3%)	77 (12.5%)
Total number of mothers with children :	153	155	121	111	540
Total living children	521	514	397	327	1771
Children per mother	3.40	3.32	3.28	2.95	3.28
Total children ever born	611	645	484	423	2173
Children ever born per mother	3.99	4.16	4.0	3.81	4.02
Children who died	90	131	91	96	408
Children who died per mother	0.59	0.84	0.75	0.86	0.75
Children living Per Women of 26- 30 yr. age group	2.4 (48/20)	2.7 (111/41)	4.75 (76/16)	2.95 (65/22)	2.75 (300/109)

children who died Per Women of age 26 to 30 yr. age group	0.05(1/20)	0.51 (22/41)	0.56 (9/16)	0.77(17/22)	0.45 (49/109)
children living Per Women of over 35 yrs	3.45 (345/100)	3.75 (310/83)	3.61 (224/62)	3.12 (181/58)	3.48 (1081/311)
children who died Per Women of age >35yrs.	0.73 (73/100)	1.22 (101/83)	(67/62)	(52/58)	2.07 (645/311)

The average family size is 5.83 (total population 2373, total number of households 407). We note that in married women there are a significant number of women(12.5%) without children. A major part of this is due to infertility, which in most communities ranges between 5 to 10%. Another significant contribution is from married women in the first two years of their married life who may still conceive. We have not disaggregated them in our study and our figures on infertility should be qualified by this limitation. We have then gone on to look at child bearing and fertility in only those married women who have had children, excluding infertile couples. This would tend to overestimate fertility rate but as our purpose is to look at the pattern of health and illness experiences this figure is a better indicator.

The average number of children ever born to a married woman was 4.02. The average number of children living per woman is 3.28. The National Population Policy Goal is to bring this down to a figure of 2.1.

Looking at the variation between villages we see that there is a clear declining trend along the educational/development gradient for the figures of living children per mother- 3.4 and 3.32 in non tribal near and interior villages respectively and 3.28 and 2.95 in the tribal villages- near and interior respectively. On the other hand when we look at children ever born there is no trend visible and all the figures hover at around 4.0 children per mother. The larger families of the non tribal household is thus clearly the sum of these communities exposed to the same fertility experience but a differential mortality experience with tribal areas prone to higher mortality.

(In all out of 2173 children born to these women 408 have died and 1771 are living. This is not to be confused with infant mortality as the death could have been at any age and many of the children of these women are now adults. Since in our group there are women of all ages – both the pattern of fertility and of infant mortality would have decreased over the decades.)

To compare the changes in fertility, mortality and therefore family size over time, we looked at the changes in these figures for different current age of mothers and compared a group of mothers aged between 26 and 30 with the figures of these women above 35. The average numbers of children living in these groups are – 2.87 for all women above 15 yrs, 2.75 for women in age group 26-30 yrs and 3.48 in women above 35 yrs show a clear reduction in both fertility and mortality over the decades. Thus in the population, on an average 2 in 3 women has at least lost one child. Where 9 in 20 women between ages 26 to 30 have on an average lost one child, and every women above 35 yrs –on an average has lost 2 children. In the group of women between ages 26-30 yrs, 3.2 children are ever born per women. In comparison 5.55 children are born per women, in the group of women above 35 yrs of age.

The complex relationship between the fertility rate, the actual child mortality rate and the perception of risk of child mortality can be studied from the inter-village comparison. Comparing trends between the villages we find that living children per mother is now much less in the non tribal villages and in the near urban village it has reached a near ideal 2.4 and this seems related to the excellent reduction in child mortality- now only one per 20 ( 0.05 per mother). Even in the interior non tribal village the fertility is down to 2.7 living children and 0.51 child deaths per mother. In contrast in the interior tribal village the higher number of children dead (0.77 per mother) is compensated by a higher (though also decreasing) children born 2.95 per mother. The same risk perception in the peri-urban tribal village as in the interior village perhaps leads to a high fertility rate but in reality it loses only 0.56 children per mother. Thus its fertility rate over compensates with a net 4.75 children born per mother and therefore a population rise.

We are cautious about concluding thus from this study where the mortalities and reducing fertility rates go hand in hand. These figures are too small in themselves but they serve to illustrate the way falling child mortalities and reducing fertility rates go hand in hand. Reducing fertility rate needs therefore to be addressed simultaneously with child mortality reduction.

**Pregnancy:**

At the time of the survey a total of 85 women were pregnant or had delivered a child in the previous one year.

*Table 3.2. Pregnancy by Age Groups*

	Taveriya Peri-urban	Chikli rural	Palari Peri-urban	Kachgaon Rural	All Villages
15- 18	1	2	0	3	6
18-25	10	11	13	5	39
25-35	5	10	3	6	24
>35	12	2	1	1	16
Total	28	25	17	15	85
Pregnancy rate/1000	41	41	31	28	36

A total of 85 pregnancies in a population 2373 works out to a pregnancy rate of 36/1000.

Out of these by definition 6 cases are under age ( 15 to 18 age group ) and another 16 cases are over the ideal age group ( >35 years) which works out to a 26% high risk on age criteria alone. The age distribution is as would be expected and desired except for those 26% at these extreme ends of the reproductive age group.

The order of pregnancy is also important both to understand fertility and the risk level 9 and therefore health care needs of the mother.

We note with concern that one pregnant woman was having her second pregnancy before the age of 18. We also note that there is as many as 26 ( 32%) pregnant women are in their fourth childbirth or higher.

**Table 3.3** *Pregnancy Order of women pregnant in last year : total 85 women ( in population of 2373)*

	1	2	3	4	5	6	7	8	9	10
15-18	5	1								
18-25	13	9	14	2	1					
25-35	3	4	5	6	3	2			1	
>35	0	1	4	4		2	2	2		1
Total	21	15	23	12	4	4	2	2	1	1

We note with some surprise one woman on her tenth pregnancy, one on her ninth, two on their eighth, two on their seventh, and four on their sixth pregnancy. Clearly there is a failure of both demand and supply of fertility control services. And it may be that a small percentage of relatively better off families may be contributing disproportionately to the fertility indices.

However what was very revealing in the qualitative studies was that a fairly high proportion of pregnancies were happening when women were so to speak on the queue to obtain good quality family planning services. Of course they did not have the motivation and in some cases the means or the information to seek these services in private facilities or to use temporary methods in a more effective way- but nevertheless almost all the pregnant women in the fourth or higher order pregnancy and with at least one male child maintained that they wanted sterilisation and were waiting for it.

**Care at Pregnancy:**

That is 38(45%) women have at least age or high order of pregnancy as a risk factor meriting institutional delivery . If we add in first time pregnancies and complications and low Body Mass index we may find that almost all cases would qualify for high risk by one or other criteria. The resort to care at pregnancy therefore needs to be studied in some detail.

	<b>Non tribal areas</b>	<b>Tribal Villages</b>	<b>All Villages</b>
<b>Pregnancy total</b>	<b>50</b>	<b>35</b>	<b>85</b>
<b>Ongoing pregnancy</b>	<b>19</b>	<b>14</b>	<b>33</b>
<b>Order of Pregnancy</b>			
<b>First Pregnancy</b>	<b>11</b>	<b>10</b>	<b>21</b>
<b>Second and Third</b>	<b>22</b>	<b>16</b>	<b>38</b>
<b>Fourth and above order</b>	<b>19</b>	<b>9</b>	<b>28</b>
<b>Outcomes</b>			
<b>Complications/needed consultation</b>	<b>15</b>	<b>5</b>	<b>20</b>
<b>Normal delivery</b>	<b>28</b>	<b>21</b>	<b>49</b>
<b>Abortions</b>	<b>1</b>	<b>0</b>	<b>1</b>
<b>Hospitalisation for complications</b>	<b>5</b>	<b>1</b>	<b>6</b>
<b>CS</b>	<b>2</b>	<b>0</b>	<b>2</b>
<b>Private Care</b>	<b>25</b>	<b>4</b>	<b>29</b>
<b>NGO</b>	<b>0</b>	<b>2</b>	<b>2</b>
<b>Public ANM alone</b>	<b>12</b>	<b>14</b>	<b>26</b>
<b>Public Health Facility</b>	<b>6</b>	<b>0</b>	<b>6</b>
<b>No care</b>	<b>7</b>	<b>15</b>	<b>22</b>

Though the numbers when averaged out show 31 out of 85 ( 36.47%) receiving private sector care, and 32 of 85 receiving public sector care ( 37.6%) and another 22 out of 85 (25.88%) receiving no care, the inter-village variation is so marked that despite the small numbers they become significant trends. Thus the villages near Raipur have a marked predominance of private care providers whereas the private sector is almost insignificant in the tribal areas.

We also note with concern that 42.8% in the tribal area and another 14% of pregnant women in non tribal areas did not avail of any care (except in some cases the local care of the dai.).The reasons lie amongst other things in the cost of care which we would examine later.

## **SECTION 4: PATTERN OF ILLNESS .**

In this section we describe the burden of disease in a population in month and estimate what part of it can be managed at the village level by trained health care providers and what part of it needs medical and referral level of service.

The data collection is confined to a symptom based disease pattern as perceived by people themselves. Thus anemia or malnutrition is amongst the commonest problems but is not perceived as affecting them and would thus be grossly underreported in such studies. There is a large gap between perception of illness and health care needs on one hand and actual illness and medically defined health care needs on the other. However there is a large degree of overlap and correlation between the two and any medical system for its credibility must plan to meet both perceived and actual needs.

Perception of illness is also influenced by socio- economic, educational and cultural contexts. Thus some would call menstrual pain an illness or take colds as meriting medical care, while others would not. In some contexts any feeling of discomfort would qualify as an illness while in other contexts unless there is actual inability or impairment in the ability to manage one's daily work /routine one would not label it an illness.

The pattern of illness described below is thus a description of the people's perceived pattern of illness and this is important information in itself. It is closely related to, though not identical with, the medically defined illness of a population.

### **4.1.Frequency Of Illness:**

#### **Age and Inter-village Pattern:**

Table 4.1 describes the incidence of any illness at the time of the survey or within the previous one month.

**Table 4.1** Age distribution of any episode of illness in last one month.

	Taveriya Peri-urban	Chikli rural	Palari Peri-urban	Kachgaon Rural	<b>Total</b>	% of total illness in that age group
Upto 1	6(30%)	6(27%)	1(10%)	4(25%)	17(25%)	5.13
1 to 5	9(14%)	9(15%)	9(12%)	7(11%)	34(13%)	10
5 to 10	14(19%)	5(8%)	6(10%)	5(7%)	30(10%)	9
10 to 15	8(11%)	6(10%)	8(13%)	4(6%)	26(10%)	8
15- 50	48(17%)	40(14%)	37(15%)	36(14%)	161(14%)	49
>50	20(17%)	21(19%)	16(18%)	6(29%)	47(13%)	14
Total illness episodes	105(16%)	87(14%)	77(14%)	62(11%)	331(14%)	100%
Sex distribution of illness episodes	53M -52F	45M-32F	52M-35F	28M-34F	178M- 153F	

*(All Figures in brackets indicate illness episodes as percentage of population in that age group.)*

**There was a total of 331 illnesses in a population of 2373 . Thus if no one had more than one illness episode in the last month there would have been 14% of the population reporting an illness episode.**

#### **Age Distribution:**

Table 4.1 also describes the pattern of illness across age groups and across the four villages. Further in each age group, for each village, we estimate what percent of the population present in the sample have an illness episode in the last one month. Since the

numbers are very small for each of these sub-groups we draw little inference – but it is presented as an observation.

Summarizing more than 15% of all episodes occur in the first 5 years and about 32% occurs in the first 15 years of life. About half the episodes( 49%) occur in the productive age group of 15 to 50. This is about 7% for every five year period which is almost half that in the first 15 years – about 10% every five year period- an indication of the increased vulnerability of children. In the first year of life a full 25% of infants report an illness episode in the month.

This declines to 13% in the next 5years for the 5 to 10 age group and the same amount in the next 5 years period (10 to 15) as well.

**Gender Distribution:**

The gender distribution is not of 54% male and 46% female is significant. Again this may be related to when illness is reported as such rather than to any absolute difference in illness incidence.

**Table 4.2: Gender And Illness Pattern:**

	Taveriya Peri-urban	Chikli rural	Palari Peri-urban	Kachgaon Rural	<b>Total</b>
Total illness episodes	105(16%)	87(14%)	77(14%)	62(11%)	331(14%)
Episodes in Males	53	45	52	28	178
Episodes in Females	52	32	35	34	153
Ratio ( Men: women)	98	71	67	121	86

### **Inter-Village Comparison of Patterns:**

In the inter-village comparisons seen in table 4.1 there is a trend to a greater incidence of illness in peri-urban areas with greater education and easier access to health care as compared to more interior rural areas. And there is also a higher perception of illness in non-tribal areas as compared to tribal areas. These are however only small increases, indicative of trends and are these are not statistically significant. Comparing with trends in the determinants of health – education, water and sanitation and with nutritional status, we find that the trends are parallel only in respect to education.

### **4.2.Type of illness:**

We then describe the types of perceived illness that people experience.

Table 4.3.describes this.

#### **Table 4.3. *Type of Illness***

Symptom Based Diagnosis	All villages	Per cent	Tivariya	Chikli	Palari	Ka
Fever /malaria	83	25	17(16%)	21( 24%)	16(22%)	29(47%)
Pain/headache	67	20	18(17%)	7(8%)	26(35%)	16(26%)
Diarrhea / Dysentery	32	10	6(6%)	15(17%)	7(9%)	4(6%)
Injury/Wound/Ulcer	15	4.5	7(6%)	3(3%)	1(1%)	3(5%)
Resp.- Cold, coughs incl. chronic	86	26	39(37%)	26(29.5%)	13(17.5%)	5(8%)
Weakness; anemia	13	4	4(4%)	4(4.5%)	3(4%)	2(3%)
Fem. RTI (incl. menstrual problem)	5	1.5	1	1	2(3%)	1
Minor Surgical ( piles, cysts, etc)	4	1	0	0	2(3%)	2
Skin	11	3	8(7.5%)	3	1	0
Jaundice	5	1.5	0	5(6%)	0	0
Non Communicable Diseases	12	4	6(6%)	3	3(4%)	0
Total disease episodes	333	100%	106	88	74	62
Total population and % who had episodes	2373	( 14%)	676 ( 16%)	611 (14%)	544 (14%)	542 (11%)

Deriving from the above table we can make a tentative assertion that if our study pattern was applicable to the whole state – or at least its rural areas then :

***“In a population of 1000 we can predict 140 to have any illness in a month and of these 35 are likely to be fever, 28 are likely to have pain/headache, 14 are likely to have diarrhea, 36 are likely to have a respiratory infection, 6 would have an injury,***

*wound or ulcer, 6 would have weakness including symptomatic anemia, 6 would have a medical non communicable problem ( the range included hypertension, sickling, mental illness, epilepsy, cardiovascular disease, paralysis, cancer, goiter);4 would have skin problems;2 would have female reproductive tract illness, 2 would have jaundice, and a similar number would have minor surgical problems.”*

We will again add the caution that these figures would change if there was a skilled person searching for certain illness through specific queries . For example RTIs would certainly be higher if a skilled nurse was asking for it and non communicable disease would certainly be higher if everyone’s blood pressure was checked and blood tested and if obesity was considered a disease etc..

The above summary of the disease patterns would have to be qualified further based on the trends seen in the inter village difference and the effect of disease outbreaks.

#### **Education and the Cultural context of disease perception:**

There is a changed perception of illness affecting reporting down the educational / awareness gradient – non-tribal peri-urban, non-tribal rural, tribal peri-urban, tribal rural. Thus in non communicable disease, skin diseases are reported as nil in Kachagaon but this is unlikely given the conditions of life there. Since the study was on perceptions, all the subjects were not physically examined and our data therefore does not reflect what diseases they had but what they perceived as a disease. (Where wage loss is not incurred and one is able to continue with routine activities the perception of such a complaint as a disease may be muted.) Respiratory illness and weakness are also reported minimally compared to the other villages which too is very unlikely considering the tremendous level of malnutrition prevalent there. The under reporting of these illnesses may contribute to the relatively higher prevalence of fever there.

#### **Effect of Disease Outbreaks( Micro-epidemics)**

Disease prevalence is also affected by outbreaks of communicable disease. The more likely reason for the high incidence of fever in Kachagaon is that there is an ongoing malarial outbreak in an area known for high malaria, in a season where malaria peaks.

Similarly there is clearly an ongoing outbreak of jaundice and of diarrhea in Chikli which explains the higher incidence of these problems here.

**Co-relation of type of illness with age:**

If we further disaggregate the pattern to look at the pattern of illness across age groups we find the following ( table 4.4.):

**Table 4.4:** *Type of Illness in Different Age Groups.*

Symptom Based Diagnosis	All	0-1	2-5	6-15	16-45	45-65	>65
Fever /malaria	83	3	15	16	40	8	1
Pain/headache	67	0	1	11	34	16	5
Diarrhea / Dysentery	32	8	4	2	13	4	1
Injury/Wound/Ulcer	15	0	0	2	8	3	2
Respiratory- Cold, coughs incl chronic	86	8	9	19	30	14	6
Weakness; anemia	13	1	0	1	5	3	3
Female reproductive tract related(including menstrual problems & white discharge	5	0	0	0	5	0	0
Minor Surgical ( piles, cysts, small lumps)	4	0	0	0	3	0	1
Skin	11	2	1	1	3	4	0
Jaundice	5	0	0	0	5	0	0
Non Communicable Diseases	12	0	0	2	3	6	1
Total disease episodes	333	22	30	54	149	58	20
Total population in that age group	2373	68	260	551	1125	288	61
% of popn in that age group	14%	32%	11.5%	10%	13%	20%	33%

who had episodes							
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The immediate inference we can draw from the above table is that in the young child it is largely episodes of ARI and diarrhoea and fever that dominate and after that pains and other problems also become a major feature. If however we are able to provide prompt attention to fever, diarrhoea and ARI and prevent mortalities due to this we would be taking care of 71% of morbidities in all ages and 90% of all illnesses below the age of 5. This is the conceptual framework in which the content of training and monitoring of the Mitani programme is based. We emphasize that not all these cases can be managed by the community health worker- as high as 50% of them may need referral care – but knowing to which 50% it belongs and seeking care promptly and appropriately and the measures taken till medical care is reached are all taken together the difference, literally, between life and death.

Since most of these episodes are self limiting even a service to discriminate between those requiring referral care and those that can be managed locally is essential and life saving especially in young children.

### **4.3. Severity of Illness:**

One further dimension we need to explore is how many of these episodes are minor self limiting illness and how many of these can be called major diseases which have considerable impact on quality of life or are life threatening or are chronic illnesses. One proxy indicator of this is the duration of the illness episode. Another is to the extent that the illness affected normal routine- mainly going to work. And the third aspect which is not related directly to severity but may contribute to severity is the time lag between onset of symptoms and time of seeking treatment.

### **Duration of illness and the Medical- Paramedical Divide.**

Of the total of 333 episodes for which data was available, 31 lasted only 31 days, 112 were more than 2 days but less than a week, 73 lasted over a week but less than two

weeks and 30 episodes were more than two weeks and less than three weeks. As many as 87 episodes were over three weeks duration thus qualifying for being called chronic illness.

**Table 4.5:** *Duration of Illness in Days:*

<b>Symptom Based Diagnosis</b>	<b>All</b>	<b>1 to 2</b>	<b>3 to 6</b>	<b>7 to 14</b>	<b>15 to 21</b>	<b>&gt; 21</b>	<b>Mean</b>
Fever /malaria	83	14	31	19	11	6	8.3
Pain/headache	67	3	16	13	6	23	13
Diarrhea / Dysentery	32	5	14	9	3	18	12
Injury/Wound/Ulcer	15	0	4	2	1	6(++)	15
Respiratory- Cold, coughs including chronic	86	7	40	20	4	10	8
Weakness; anemia	13	1	3	2	2	5(++)	13.5
Female reproductive tract related(including menstrual problems & white discharge	5	0	0	3	1	1	15
Minor Surgical ( piles, cysts, small lumps)	4	0	0	0	2	2	21
Skin	11	0	0	2	0	9	18
Jaundice	5	1	2	2	0	0	6
Non Communicable Diseases	10	0	2	1	0	7	17
Total disease episodes	333	31	112	73	30	87	

Thus 190 episodes or 57 % of episodes are above one week duration of which 87 (26%) are chronic illness. Both these groups by most definitions in use in health programmes would require medical care beyond that of the trained paramedical. At best only 43% of cases can be managed by the Mitadin or even the ANM!!! Of course this 43% is a large amount of illness and payment to local doctors for these self limiting illnesses is a big drain on household incomes. Also, one could postulate, that at least a part of the major illness could have been reduced had it been treated when minor. Also in such an analysis

skin cases (and there were 9 of them) are being classified as major but most of them would admit to primary level paramedical care. On the other hand some of the illness reported as short duration were actually ongoing diseases and may go on to have a longer duration. Also not all short duration illness are minor and many require medical care on the first day itself.

If this is the extent of illness in a population of 2373 that requires **medical** care( as distinct from paramedical care) then in a population of 30,000 ( the PHC norm) we would about 2400 episodes in a month or about 80 cases per day ---excluding pregnancy related care!!! Of these 2400 cases some would require referral to the block hospital. We will also find that most of these 2400 cases would not travel very far to seek care for this level of ailment, for reasons of cost and perception of needs, and hence a functional sector level PHC remains a vital ingredient to achieving adequate levels of care. We note that in tribal areas where access to care is very limited the choice is between the PHC or no appropriate care – for whether it is Mitanin, or ANM or the RMP trained – it would not be adequate or legal or ethical for this level of care. This distinction between paramedical level of care and medical level of care must inform strategies of health care provider human resource deployment for the public health system. We may be justified in strengthening non medical health care providers as a stop gap arrangement for these 2400 cases, but that cannot be the health systems strategy. To appreciate this further let us explain. If a paramedical health care provider gives off chloroquine to any fever over a week he would probably manage to cure a lot of patients who would potentially otherwise have died and refer the few who do not respond. But a doctor in the same situation would also simultaneously test for and rule out the possibility of typhoid and if there is high clinical suspicion for the same even start presumptive treatment for typhoid. Delay of this treatment is also unacceptably life threatening. And even in high malarial areas only about one in ten fever cases would be malarial. Thus in nine out of ten cases of fever over a week the patient is exposed to an unacceptably high risk when provided only paramedical care. If we include into discussion conditions like hypertension and epilepsy we reaffirm the conclusion that the PHC at the 30,000 norm is a sound principle. This

study is just therefore reiterating a well known norm – but at a time when the norm is under pressure.

**Affecting normal routine:**

Another similar parameter which is even more revealing for more serious ailments that definitely require care is the number of days in which the illness affected normal routine. In poor communities inability to go to work is one of the most important reasons for seeking health care and therefore measuring this provides important information in planning for health care systems.

*Table 4.6. Number of episodes of illness which intervened with normal work in days:*

Symptom Based Diagnosis	All	0	1 to 3	4 to 7	8 to 21	>21	Mean
Fever /malaria	83	31	15	15	19	2	8.4
Pain/headache	67	26	13	16	9	10	9.4
Diarrhea / Dysentery	32	13	9	9	3	1	6
Injury/Wound/Ulcer	15	6	0	0	4	4	18
Respiratory- Cold, coughs incl chronic	86	39	7	13	16	4	12.5
Weakness; anemia	13	7	0	0	2	4	19
Female reproductive tract related(including menstrual problems & white discharge	5	3	0	0	1	1	10
Minor Surgical ( piles, cysts, small lumps)	4	3	0	0	0	1	21
Skin	7	7	0	0	0	0	0
Jaundice	5	0	3	0	2	0	7
Non Communicable Diseases	12	2	1	2	3	3	13
Total disease episodes	324	137	48	56	59	29	

Thus we see that in 137 cases or 42.28% the illnesses were truly minor in that work was not affected but in the rest work was affected. Work was affected for more than a week in 27% - a fairly high number and for more than 4 days in 44%. The pattern of causes of illness was the same except that fever and pains were more important and diarrhoeas and respiratory infections less contributory.

With reference to our earlier discussion on paramedical level of care and medical levels of care we can see that the differences as regards the percentage who would be safe with paramedical care( 42%) as against medical care is about the same as we made out in the earlier section.

**Promptness in initiating treatment:**

The time lag to seek treatment of different sorts and the number of persons who did not seek any treatment is another area of interest. This helps at look at a contributing factor to severity of illness and also helps reflect on one dimension of health seeking behavior.

The figures given below express this

**Table 4.7: Time/delay to initiate Treatment:**

<b>Symptom Based Diagnosis</b>	<b>All</b>	<b>0 days</b>	<b>1-3 days</b>	<b>4-7 days</b>	<b>8-21 days</b>	<b>&gt;21 days</b>	<b>Never</b>
Fever /malaria	83	17	40	15	3	0	9
Pain/headache	67	18	19	8	1	7	14
Diarrhea / Dysentery	32	14	13	2	2	0	1
Injury/Wound/Ulcer	15	6	2	0	1	1	1
Respiratory- Cold, coughs incl chronic	86	25	44	6	1	0	7
Weakness; anemia	13	4	3	0	1	0	5
Female reproductive tract related(including menstrual problems & white discharge	5	2	1	0	2	0	0
Minor Surgical ( piles, cysts, small lumps)	4	1	1	0	0	2	0

Skin	11	1	2	5	1	3	0
Jaundice	5	3	1	1	0	0	0
Non Communicable Diseases	10	4	5	0	0	1	2
Total disease episodes	333	95	131	47	12	14	39

We find that 226 cases representing 68% sought treatment on the same day or within three days. This is not a bad figure at all and indicates that the problem of delay in seeking treatment may not be as high. In fever and diarrhea and ARI taken together where arguably treatment without delay is undoubtedly critical to outcomes out of a total of 201 episodes 153 cases or 76% sought treatment within three days and all had sought treatment within three weeks. The lesson is that access and quality of care is what is critical not delay in seeking treatment- even for a disease like tuberculosis.

We also note that 12% had fallen through the mesh of the safety net and sought or got no treatment whatsoever.

## **SECTION 5:**

### **HEALTH SEEKING BEHAVIOUR:**

What do people do when they fall ill? This is important to understand to plan public health programmes. There is a multiplicity of choices from which the citizen chooses- they may go to a public health facility- and there are four levels at which they can go; or they may choose from the private MBBS doctor, the trained “AYUSH” doctors or from the undifferentiated mass of untrained or partially trained practitioners and RMPs that offer their services in the villages. Or there are traditional healers like the baigas and folk medicine practitioners and the dais who largely but not solely cater to services at childbirth.

There are also a number of others who do not seek any treatment altogether- either due to problems of distance, or the costs of care or due to inadequate awareness to do so.

The understanding of health seeking behaviour is also important to position the Mitadin. The Mitadin does not enter an empty field – she enters a field , that even in the most remote areas is occupied by a number of healthcare providers of varying efficacy and with different clienteles and differing perceptions of their utility.

This section traces these patterns of health seeking behavior:

#### **First Resort For Health Care:**

We had reliable data on this from 301 cases. Even in this we caution that a number of those categorized as MBBS doctors may not indeed be so, nor for that matter the BAMS doctor be actually BAMS qualified. In the highly unregulated atmosphere of clinical private practice in Chhattisgarh it is well known that a number of RMPs claim to be MBBS and the public have not only no means of distinguishing, they may even not have the awareness of the need to find this out. One could argue that given the quality of care provided even by MBBS doctors there is not sufficient utility in making a distinction. However there are studies that indicate that the non-MBBS care is more irrational and focuses on treating the self limited illnesses aggressively as compared to MBBS doctors. This study was not structured to conclude on this and even after analysis when we went back to check on this most confusing aspect of the data there were many individual

doctors where we could not reach a firm conclusion. We gave the benefit of doubt to their claim and to public perception that they were MBBS.

**Table 5.1.** *Distribution Of Episodes By Health Facility Utilized For First Resort*

<b>Resorts</b>	<b>Number of total of all types of episodes</b>	<b>Total %</b>
Jhola / RMP (non trained)	59	19.0
BAMS	14	4.7
MBBS . ( claimed/perceived)	128	42.5
<b>Private facility Total</b>	<b>201</b>	<b>66.2</b>
Sub Centre/ Nurse	24	8.0
PHC	11	3.7
CHC	10	3.3
Distt. Hospital	0	0.0
Medical collage	0	0.0
<b>Government facility total</b>	<b>45</b>	<b>15.0</b>
At home	6	2.0
No treatment	49	16.3
<b>No treatment total</b>	<b>55</b>	<b>18.3</b>
<b>Total</b>	<b>301</b>	<b>100</b>

With this caution we can still conclude from the above table 5.1. that 66.2% chose private care and note that the figure of 42.5% for MBBS is likely overestimate as at the village level it is difficult to differentiate the MBBS from the RMP- some of the latter having more established practice and even using the MBBS label in a variety of ways.

If we only gave the MBBS label to where we were sure of it, only one in three of them would qualify as MBBS which would mean that the only about 13% would be with MBBS private doctors and 45% with the RMP.

We also note the emergence of the sub-center as a significant contributor to curative care. The other interesting finding is that as high as 18.3% seek no care whatsoever not a happy state of affairs when at least half of the episodes are not self limiting and a good many of them are life threatening.( the difference between this 18.3% and 12% stated in

earlier table is because for reasons of lack of data 32 cases in the earlier table are not taken into this table.

Another interesting finding of table 1.5. is the absence of the baiga as the first choice of care. It seems that the RMP has almost completely replaced the baiga and only when the RMP does not work or in addition to meeting him is the baiga resorted to. We have also case studies of patient resorting to baigas because they could not go where they were referred to( eg district hospital ) for the care they needed. This is important to note because so much stress is laid on bringing the baiga into the pool of providers when he is almost not there except as default to a failing system or at best an additionality over seeking modern medical care. People as a rule seem to be making a rational choice on medical care than what is attributed to them- but they are constrained by what is available, functional and accessible.

### **First Resort by Type of Illness.**

Given the multiplicity of possible choices for seeking health care and the varying perceptions of their role it was interesting to study whether people are prioritizing one type of care over another for different symptoms and their seriousness.

Table 5.2 describes choice by symptom/type of illness category.

**Table 5.2.** *Choice of care by Type of Illness*

Symptom Based Diagnosis	All	Baiga	RM P	BAMS	MBBS (claimed )	HSC	PH C	CH C	Home	nil
Fever /malaria	83	0	19	6	29	9	4	1	1	13
Pain/headache	67	4	10	4	12	5	1	6	3	15
Diarrhea / Dysentery	32		4	2	18	2	1			2
Injury/Wound/Ulcer	15		2		7		3			2
Respiratory- Cold, coughs incl chronic	86		19	2	41	5		2	2	7

Weakness; anemia	13		3		4					5
Female reproductive tract related(including menstrual problems & white discharge	5				4					
Minor Surgical ( piles, cysts, small lumps)	4					2		1		1
Skin	11		2		9	1				1
Jaundice	5	1			1					
Non Communicable Diseases	10				8					2
Total disease episodes	333	5	59	14	133	24	9	10	6	48
Total population and % who had episodes( check total popn. Figures)										

Analyzing the above table we see that amongst those who seek no treatment or are treated at home 27% are cases of pains and another 16% are fever cases- the latter being of concern. In all other choices the nature of illness does not affect the choice made.

### **Hospitalization and its Causes:**

The pattern of causes for hospitalization with relation to choice of care is another area of interest.

Totally there were 41 hospitalizations in the last one month in a population of 2373.

The table below describes the choice of facility with relationship to disease.

**Table 5.3. Hospitalisation and its Causes:**

	Private	%	Public	%	NGO	Total	%
NCD	6	40	6	29.2	1	14	34
Diarrhea	4	20	10	41.6		14	34
Pneumonia	4	26.7	0	0		4	10
Jaundice	1	6.7	1	4.2		2	5
TB			2	8.3	1	3	7
Fever			2	8.3		2	5
Pregnancy	1	6.7	2	8.3		3	7
TOTAL	16	100%	23	100%	2	41	100

When it comes to hospitalization 37% was in private sector and 59% in the public sector and about 4% in the not –for- profit sector.

This is however very skewed between the different villages. Thus in the two villages near the Kondegaon civil hospital- which is a better functioning hospital and somewhat further away a NGO hospital- there is only one out 22 cases – about 4.5% that go to the private sector. In contrast 22 km away from Raipur 14 out of 19 cases of hospitalizations went to the private sector ( 74% went to the private sector.) However two out of three pregnancies went to the government sector. Even in those who chose the government sector the distant medical college hospital was the main choice – not the near by poorly functional CHCs.

**Table 5.4. Hospitalisation And Its Causes by Tribal -Non Tribal Context:**

		Private	Public	NGO	Total
Non tribal	NCD-	6	2	0	8
Tivariya & Chikli	Comm.-	8	0	0	8
	Pregnancy	1	2	0	3
Tribal	NCD-	0	4	1	5
Palari & Kachgaon	Comm.-	1	15	1	17
	Pregnancy	0	0	0	0

Total		15	24	2	
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Again whereas 47% of all hospitalization in the non tribal area was due to non communicable disease it accounted for only 24% of cases in the tribal area. Again this may have been due to higher incidence of infectious disease – the absolute number of non –communicable disease causing hospitalization being about the same. Indeed the numbers seen would indicate an ongoing micro-epidemic of diarrhea in the village under study. These numbers are too small to extrapolate to state level incidences figures- but are indicative of trends , which co-related with expenses gives us a better picture.

There is however need to be cautious about attributing this difference to tribalness as such. The two tribal villages were situated near a reasonably functional Kondegaon civil hospital /CHC and in an area of relatively low private sector penetration. The two non-tribal villages were near Raipur city and even the suburbs have considerable private sector presence as well as a relatively poor functioning of the peripheral public health system.

## **SECTION 6 : OUT OF POCKET HEALTH EXPENDITURE**

Out- of pocket health expenditure has three main components for the average citizen.

First is the visible medical expenses- that which is spent on doctors and drugs and diagnostics.

The second component is the invisible component – what is spent on transport to reach the health facility, the cost of food away from home, the costs borne for transport and food by the attendants of the patient etc.

And the third component is the loss of wages due to not being available to attend to ones productive work.

This third component needs to be factored in for everyone, even those who are salaried, for the loss is merely being borne by the state and for the housewife whose work also has value. However this component becomes critical and the main felt cost consideration determining health seeking behaviour in the case of the daily wage labourer whose entire sustenance depends on it. Since daily wage labour is available only for about 100 to140 days in a year – a loss of a working day means a disproportionately high loss of income. This can become critical where there is only one working member like in a woman headed household or a nuclear family where the woman is pregnant and nursing and these families are therefore the most vulnerable to illness.

The following three tables show the costs of health care-- successively including the three components. Table 6.1 displays the cost of medical expenses alone.

**Table 6.1.** *Pattern of Out-of- Pocket Medical Expenses.*

Symptom Based Diagnosis	No.	0	<100	101-200	201-500	501-1000	1000-2000	2000-5000	>10000
Total episodes	330	78	131	49	43	18	7	2	2
Fever /malaria	83	22	39	14	5	2	0	0	1
Pain/headache	67	23	17	11	10	5	1	0	0
Diarrhea / Dysentery	32	5	12	5	6	1	3	0	0
Injury/Wound/Ulcer	15	3	5	3	1	1	1	0	0
Respiratory- ac & chr	86	11	47	10	10	3	1	1	0
Weakness; anemia	13	5	4	2	1	0	1	0	0
RTI(incl.menstrual )	5	1	1	2	1	0	0	0	0
Minor Surgical	4	3	0	0	1	0	0	0	0
Skin	11	1	3	1	5	2	0	0	0
Jaundice	5	1	3	0	0	1	0	0	0
Non Communicable Diseases	10	3	0	1	3	3	1	0	1

This same cost projection rises if we include food and transport costs( indirect and more invisible out of pocket costs). This is given in table 6.2.

**Table 6.2.** *Medical Expenses plus Food and Transport*

Symptom Based Diagnosis		0	<100	101-200	201-500	501-1000	1000-2000	2000-5000	> 5000
Total episodes	330	74	123	46	61	19	8	3	4
Fever /malaria	83	22	27	15	5	2	0	0	2
Pain/headache	67	21	18	8	14	3	3	0	0

Diarrhea / Dysentery	32	5	9	8	4	3	1	2	0
Injury/Wound/Ulcer	15	3	5	2	1	2	1	0	0
Resp.- Ac & Chr.	86	11	43	9	15	3	1	1	0
Weakness; anemia	13	4	4	1	3	0	1	0	0
RTI(incl. menstrual)	5	1	1	2	1	0	0	0	0
Minor Surgical	4	3	0	0	1	0	0	0	0
Skin	11	1	3	1	5	2	0	0	0
Jaundice	5	1	3	0	0	1	0	0	0
Non Communicable Diseases	10	2	3	1	4	3	1	0	1

If now we factor in the cost of livelihood loss the total costs rise to and the pattern is as follows:

**Table 6.3.** *Costs -- Medical Plus Invisible Costs Including Livelihood Loss.*

Symptom Based Diagnosis		0	<100	101-200	201-500	501-1000	1000-2000	2000-5000	>10000
Total episodes	330	71	122	46	52	21	11	3	4
Fever /malaria	83	22	35	15	6	2	1	0	2
Pain/headache	67	20	19	8	12	5	3	0	0
Diarrhea / Dysentery	32	4	10	8	4	3	1	2	0
Injury/Wound/Ulcer	15	3	4	2	1	3	1	0	0
Resp. Ac & Chr.	86	10	43	9	16	3	1	1	0
Weakness; anemia	13	4	4	1	2	0	1	0	0
RTI(incl. menstrual)	5	1	1	2	1	0	0	0	0
Minor Surgical	4	3	0	0	1	0	0	0	0
Skin	11	1	3	1	5	2	0	0	0
Jaundice	5	1	3	0	0	1	0	0	0
Non Communicable	10	2	0	0	4	1	3	0	1

Diseases									
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Summarising the three tables below we find a pattern of costs that are described in table 6.4 below.

**Table 6.4. Illness Episodes Categorized According To Range Of Costs Incurred**

Symptom Based Diagnosis	Medical Expenses alone	Medical Expenses with transport/food costs	Medical expenses plus food transport plus livelihood loss.
0	78	74	71
<100	131	120	122
101-200	49	41	46
201-500	43	61	52
501-1000	18	19	21
1000- 2000	7	8	11
2000-5000	2	3	3
>10000	2	4	4
Total	330	330	330

To average the costs of care and make an estimate of costs per capita, the illness episodes were classified into two categories – Acute and primary illness and chronic illness on the basis of type of illness. Acute illnesses are largely self limiting and admit of primary care but about half of them would subsequently need referral and higher level care. In contrast in the second list are diseases that need to start on higher level( CHC level) care straight off. The following table gives the details of the illness included under these categories.

<b>Acute and primary care Illness</b>	<b>Chronic and Non communicable Illness</b>
Fever/Malaria Pain/Headache Loose motion/Dysentery Anemia Weakness Menstrual cycle problems	Ulcer/ Chronic wounds/injury Tuberculosis Piles Goiter Sickling Epilepsy

Cold/ Cough(ARI) Skin problem	Jaundice High Blood pressure Mental Disturbance Heart Attack Lump Paralysis
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In table 6.5 the composition of the costs for the acute illness and the chronic illness is described. Loss of livelihood costs are not taken into account in this table.

**Table 6.5:** *Unit Cost Per Episode- showing contribution of different Component*

Illness	Unit Cost Per Episode	%Fees	% Diagnostics test	% Drugs	% Food and Transport	% Hospitalization and others exp.
<b>Tiberiya</b>						
Acute	171.80	27.98	6.13	49.70	10.84	5.35
Chronic	1322.92	13.02	13.02	16.63	67.64	0.97
<b>Total</b>	<b>312.97</b>	<b>20.23</b>	<b>3.86</b>	<b>32.55</b>	<b>40.28</b>	<b>3.08</b>
<b>Chikli</b>						
Acute	1509.29	6.25	2.69	12.70	6.70	71.66
Chronic	2140.00	1.97	1.95	8.58	1.83	85.67
<b>Total</b>	<b>1595.295</b>	<b>5.47</b>	<b>2.55</b>	<b>11.94</b>	<b>5.81</b>	<b>74.22</b>
<b>Palari</b>						
Acute	249.86	3.73	0.79	47.33	17.16	8.55
Chronic	519.75	0.00	0.00	0.00	12.99	86.82
<b>Total</b>	<b>279.04</b>	<b>2.98</b>	<b>0.63</b>	<b>37.80</b>	<b>16.32</b>	<b>24.31</b>
<b>Kachgoan</b>						
Acute	99.57	17.68	3.59	56.22	14.72	7.78
Chronic	129.13	55.86	0.10	0.00	5.42	38.72
<b>Total</b>	<b>103.27</b>	<b>23.65</b>	<b>3.04</b>	<b>47.44</b>	<b>13.27</b>	<b>12.62</b>
<b>All villages</b>						

<b>Acute</b>	<b>526.72</b>	<b>45.67</b> <b>(8.67%)</b>	<b>15.14</b> <b>(2.87%)</b>	<b>115.33</b> <b>(21.90%)</b>	<b>45.07</b> <b>(8.57%)</b>	<b>292.75</b> <b>(55.58%)</b>
<b>Chronic</b>	<b>1172.41</b>	<b>81.07</b> <b>(6.91%)</b>	<b>19.54</b> <b>(1.67%)</b>	<b>123.49</b> <b>(10.53%)</b>	<b>309.70</b> <b>(26.41%)</b>	<b>638.43</b> <b>(54.45%)</b>
<b>All</b>	<b>606.70</b>	<b>50.05</b> <b>(8.25%)</b>	<b>15.68</b> <b>(2.58%)</b>	<b>116.34</b> <b>(19.17%)</b>	<b>77.85</b> <b>(12.83%)</b>	<b>335.57</b> <b>(55.31%)</b>

**Table 6.6 : Distribution of total health expenditure among different items**

<b>Illness</b>	<b>No. of Episode</b>	<b>Fees</b>	<b>Diagnostics test</b>	<b>Drug</b>	<b>Food &amp; Transport</b>	<b>Hospitalization &amp; others</b>	<b>Total Health.</b>
<b>Tiveriya</b>							
Acute	93	4470	980	7940	1732	855	15977
Chronic	13	2240	300	2860	11632	166	17198
<b>Total</b>	<b>106</b>	<b>6710</b>	<b>1280</b>	<b>10800</b>	<b>13364</b>	<b>1021</b>	<b>33175</b>
<b>Chikli</b>							
Acute	76	7173	3080	14564	7689	82200	114706
Chronic	12	507	500	2203	470	22000	25680
<b>Total</b>	<b>88</b>	<b>7680</b>	<b>3580</b>	<b>16767</b>	<b>8159</b>	<b>104200</b>	<b>140386</b>
<b>Palari</b>							
Acute	66	615	130	7806	2830	1410	16491
Chronic	8	0	0	0	540	3610	4158
<b>Total</b>	<b>74</b>	<b>615</b>	<b>130</b>	<b>7806</b>	<b>3370</b>	<b>5020</b>	<b>20649</b>
<b>Kach</b>							
Acute	56	986	200	3135	821	434	5576
Chronic	8	577	0	0	56	400	1033
<b>Total</b>	<b>64</b>	<b>1563</b>	<b>201</b>	<b>3135</b>	<b>877</b>	<b>834</b>	<b>6609</b>
<b>All villages</b>							
<b>Acute</b>	<b>290</b>	<b>13244</b>	<b>4390</b>	<b>33445</b>	<b>13072</b>	<b>84899</b>	<b>152750</b>
<b>Chronic</b>	<b>41</b>	<b>3324</b>	<b>800</b>	<b>5063</b>	<b>12698</b>	<b>26176</b>	<b>48069</b>
<b>Total</b>	<b>331</b>	<b>16568</b>	<b>5191</b>	<b>38508</b>	<b>25770</b>	<b>111075</b>	<b>200819</b>
<b>Non tribal villages</b>							
<b>Acute</b>	<b>169</b>	<b>11643</b>	<b>4060</b>	<b>15354</b>	<b>9421</b>	<b>83055</b>	<b>130683</b>
<b>Chronic</b>	<b>25</b>	<b>2747</b>	<b>800</b>	<b>5063</b>	<b>12102</b>	<b>22166</b>	<b>42878</b>
<b>All</b>	<b>194</b>	<b>14390</b>	<b>4860</b>	<b>20417</b>	<b>21523</b>	<b>105221</b>	<b>173561</b>
<b>Tribal s</b>							
<b>Acute</b>	<b>121</b>	<b>1601</b>	<b>330</b>	<b>18091</b>	<b>3651</b>	<b>1844</b>	<b>22067</b>
<b>Chronic</b>	<b>16</b>	<b>577</b>	<b>0</b>	<b>0</b>	<b>596</b>	<b>4010</b>	<b>5191</b>
<b>All</b>	<b>137</b>	<b>2178</b>	<b>330</b>	<b>18091</b>	<b>4247</b>	<b>5854</b>	<b>27258</b>

There is one major caution in reading these above two tables. The cost of drugs and diagnostics and fees in the government facilities while reflecting clearly the out- of pocket expenditure that the patient experiences underestimates the cost of care to society as whole for what the government spends on them is missed out. On the other hand since the use of government health services has been so skewed between the sampled villages of the two districts – we get the opportunity to look at how the costs vary between the two situations- one where the only reasonable access of service to the poor is the distant medical college hospital and another where there is a reasonably well functioning block level health facility in the vicinity.

Summarizing the average cost of treatment would be as given in table 6.7.

**Table 6.7: Averaged Costs of Care – per episode and per household**

<b>for any episode including hospitalizations:</b>	<b>Rs 607</b>
<b>For any acute episode including hospitalizations:</b>	<b>Rs 527</b>
<b>For any chronic episode including hospitalizations:</b>	<b>Rs 1172</b>
<b>Per household expenses( total expenses by total number of households)</b>	<b>Rs 493</b>

Understanding that the above summary to be the averaging out of two very dissimilar patterns of expenditure we prescribe below the dis-aggregation of this into two groups – one which was predominantly private in consumption and the second which was predominantly the consumption of public health services. Comparing between the tribal and non tribal context which in this study also overlapped with the proximity to a functional government health facility we can see the pattern described in the table 6.8.

**Table 6.8.** Average costs of care in tribal/public health dominant and non-tribal/private health care dominant contexts.

	<b>Tribal area near a functional govt facility:</b>	<b>where private care is mainly resorted to:</b>
<b>For any episode :</b>	<b>Rs 199</b>	<b>Rs 894</b>
<b>For any acute episode</b>	<b>Rs. 182.37</b>	<b>Rs. 773.27</b>
<b>For any chronic episode:</b>	<b>Rs. 324.43</b>	<b>Rs.1715.12</b>
<b>For any episode per household :</b>	<b>Rs. 135.61</b>	<b>Rs. 842.53</b>

We note that about 55% percent of the total costs are the costs of hospitalization and drugs accounts for another 19% and food and transport – the invisible costs- accounts for 12.83%.

We also note that when we look at the situation in the tribal area which had high public sector utilization then the costs of hospitalization account for 21.48% and drugs for 66.36% and food and transport for 15.58%. Since hospitalization are the highest cost category then one could be concerned that the picture is being altered by the few cases of hospitalization. However we note that the tribal near hospital area had far more cases of hospitalization than the non tribal area that utilized private facilities only. So if anything the skew would have been even more and in the same direction if we attribute the private sector costs to the patients seen in the public sector.

We further need to explore the difference in costs between different choices of health care providers. This is described in table 6.9. This table has a larger number of episodes because of resort to more than one provider for the same episode. This alters the inferences that one can draw from such a table. Thus we also have a number of patients reporting “none” for health care provider-but reporting different costs either due to self medication or other health care providers.

**Table 6.9.** *Cost Of Care By Health Care Provider.*

Code	Facility	No.	Total cost	Food & Transp(Av.t)	Cost per episode
0	None/Own	55	2750	574	60
1	Baiga /	6	471	59	78
2	RMP	62	7727	102	125
3	BAMS	15	1505	230	100
4	Pvt MBBS	160	45258	22716	283
5	ANM	28	745	0	27
6	PHC	11	2075	280	188
7	CHC	11	3737	2038	339
		348	64268	25999	185

Care needs to be taken not to see this as indicative of where the expenditure is taking place rather than as a comparison between costs of different types of care. This is because the nature of illness going to each provider in the above table is vastly different. For example if we compare the cost of care of a diarrhoea or of a fever in an RMP as compared to a the cost of care in a CHC and PHC the RMP may be costlier – or it may not be. This study was not designed to make such comparisons. The numbers in each group are too small and there is considerable multiple usage for a simple analysis.

### **The Costs of Hospitalisation:**

The difference between the private sector and public sector is so sharp that we do not take them together and average them.

The average per hospitalization episode costing the private sector worked out to Rs 6350 per episode with it always rising above Rs 15,000 if there was major surgery. Excluding food and transport the hard medical cost was Rs 5755. Food and transport was 595 per episode.

In contrast the cost of hospitalization was only Rs 1734 per episode in the government sector, of which drugs purchased outside was Rs 903.. Excluding food and transport it fell to Rs1022 and food and transport was Rs 712 . Thus it can be seen that almost all the medical costs are the cost of asking the patient to buy drugs outside and food and transport costs are similar as would be expected.

**Table 6.10** *Out-of- Pocket Costs of Hospitalisation*

	Public Sector Costs	Private Sector Costs
Total Costs Per episode	1734	6350
Medical Costs Per Episode	1022( Rs 903 was on drugs)	5755
Food and Transport Costs	712	595

Elsewhere in another study we have documented that many of these drugs are irrational or unnecessarily costly and equally useful and effective drugs are available in the health facility itself- though this dimension was not taken up for this study in this work.

Unnecessary “outside” prescription at the public health facility is one major avoidable cost and probably reflects irrational prescription more than reflecting problems of peripheral drug supply. We also need to factor in that surgery is not available in most public health care facilities and in the private sector all major surgery costs upwards of Rs 15,000- and economic catastrophe for the poor !!!

## SUMMARY & CONCLUSIONS

### Demographic description of sample:

The four villages studied had together 488 households of which 407 were sampled. These 407 household of the sample had a total population of 2373 which is an average family size of 5.83. The sex ratio of this sample was 979 women per 1000 males with 1014 for the tribal hamlets and 950 for non tribal areas.

The age pyramid shows a ratio of 45.7 % of the population in the 16 -45 , and 57.9 % of the population in the 15 to 65 age group as against 39.6% below the age of 15- consistent with the pattern of a low life expectancy situation in an underdeveloped economy.

As regards type of family, nuclear families are the most common and if we include those with parents of the earning couple this rises to almost three fourths ( 73.0%).

The overwhelming occupation is agricultural – 88.1% of which about half – 42.1% is daily wage labour- itself an indicator of a high degree of landlessness and poverty. Another 11.8% is largely in the services – traders, shop-owners, teachers, government servants, health care providers. Manufacturing accounts for less than 2%- largely artisan. Since we have purposively chosen a rural sample this distribution is to be expected- though artisan production has declined and is lower than would have been expected for such an economy.

### Determinants of Health:

#### **Poverty, Education, Nutrition and Safe Drinking Water/ Sanitation**

The key determinants of health are poverty and inequities, educational level , nutrition, safe drinking water and sanitation. We present below the distribution of families by all these indicators.

**Poverty :**

We have then gone on to use land ownership and income estimation as the two indicators to disaggregate the group into economic classes for co-relating income with illness, health seeking behaviors and cost of health care. By number of rooms 77.2% are having below 4 rooms, by type of housing 81.4 have a kutchra house and by landholding 74% have less than 3 acres of land including a 25.5% who are landless.

The pattern that emerges is that landlessness ranges from 19% in Kachagaon to 31% in Tivariya . Landholding percentages are also evenly distributed across the four villages. But this is not the true reflection of the economic situation. Irrigated land on the other hand does reflect it much better for Kachagaon has only 14% of all 17% of landed households with about three acres of irrigated land each between them and Palari has only 9% of all households and 12.7 % of landed households have irrigated land, whereas in Tivariya and Chikli have 91% and 98% respectively of landholders having irrigated land. Further in Palari and Kachagaon it is minor tank irrigation that is the main source of irrigation whereas in Tivariya and Chikli the major source is tube wells irrigation ( own and neighbors' in equal measures ) with the next major source being irrigation canals.

If we take the monthly income per capita and at the given family size of 5.8, then 156 ( 39 %) would have a monthly per capita income *above* Rs 600 .. If we use per capita income of Rs 1000 the current minimum wage and a reasonable poverty line then only 39 households fall *above* this. Thus almost 90.3% of households would be at or near poverty levels. This co-relates with our observations regarding nutritional status. In comparison to the state's statistics on poverty these figures of our sample are comparable if we use then Rs 600 per month per capita as the cut off line.

**Education:**

Educational levels of the population show 46.1% are illiterate and another 22.8% have less than 5<sup>th</sup> class of schooling which is usually insufficient even for fluent literacy. Only 31.1% have above this level and only 9% have completed schooling. Here we see a clear trend across the villages- 16.5% in a non-tribal near urban village, to 12% in a nontribal interior village to 5% in a tribal near urban village to 0% in the tribal interior context.

Obviously the degree of development and the % who have completed schooling are closely linked indices.

The distribution of educational level by sex again as expected shows a lower educational status in women though this difference is not as much as the national ratios.

### **Nutrition:**

One of the more sensitive indicators for nutritional status is the body mass index. The study measured BMI in 1755 or about 74% of the sample population. Of these 1755 a very high 58% had a BMI of below 18 . Only 30% were normal. At the other end a small 6% are over weight and another 6% are obese! The difference between the villages is not commented upon with the caution that the numbers are not large enough to be definitive about the conclusions. However the trends are that it is the same pattern in all the four villages. The difference between the sexes in BMI is not significant. This is an interesting finding since gender discrimination is expected to impact adversely upon nutrition in women. Of course at times like pregnancy women would be more at risk for mortality and morbidity from the same amount of nutritional level as the men. Also one has to consider whether the quality of diet especially as regards sources for micronutrients are the same across genders- but clearly as far as basic calorie intake goes, the situation in both the sexes are the same.

The degree of malnutrition remains above 75% upto the 6- 15 age group. It is only after that , does it start declining with a small upturn again above the age of 65. The immediate interpretation that this begs attention is that child malnutrition is not a below 5 years of age phenomena. It is a phenomenon that extends through all of childhood- reinforcing the need for food supplementation and nutrition education programmes through all of the childhood period in such areas of high malnutrition prevalence.

If the age distribution of malnutrition is studied along with the sex distribution a few more learnings are possible. We see that upto the age of 15 the distribution of malnutrition is the same across the sexes. But in the ages of 16 to 65 the degree of malnutrition tends to be more amongst women. Thus the effect of gender iniquity on nutrition appears to be related to prioritizing food for the male in the productive age group.

One conclusion that becomes clear and inescapable at this stage- is that malnutrition is likely to be one of the most important contributors to ill-health in these communities.

## **DRINKING WATER AND SANITATION:**

One important determinant of health is the drinking water source and access to it. Access to drinking water was good in these villages with 76.6% having access to tubewells with hand pumps or connected to taps through a piped water system. Open wells use was however a high 21.37% and clearly unsafe surface water use was at about 2%. The usage of surface water was negligible in three of the four villages- the entire contribution to this group came from the interior tribal village. Open-wells as source on the other hand was related to the penetration of tube wells and the acceptability of that water and its use varied widely from village to village but never going beyond 32%

In the use of latrines the situation was dismal. In all the 4 villages together, out of 407 households only 16 had toilets in their houses – a mere 3.9%. All of the houses who had latrines had bathrooms also and two more had bathrooms but no latrines- but for the rest they had neither bathrooms nor latrines. Only one of these 16 latrines was in the tribal villages.

The positive outcome of course is that physical access to drinking water was not a problem even though there is still considerable way to go in ensuring its safety. Table 2.7 describes this distance to source of water and we can see that only in 63 households (15.47%), most of them in Kachgaon is the source more than 100 meters away from the house. We also note from table 2.8 that distance was reported as a problem only in 22 households (5.4%) households. However about 15% of households in one village reported pollution of their drinking water source – possibly the high iron levels as the problem.

## **FERTILITY PROFILE:**

The average family size is 5.83 (total population 2373, total number of households 407).

The average number of children ever born to a married woman was 4.02. average number of children living per woman is 3.28. The state's population policy goal is to bring this down to a figure of 2.1.

Looking at the variation between villages we see that there is a clear declining trend along the educational/development gradient for the figures of living children per mother- 3.4 and 3.32 in non tribal near and interior villages respectively and 3.28 and 2.95 in the tribal villages- near and interior respectively. On the other hand when we look at children ever born there is no trend visible and all the figures hover at around 4.0 children per mother. The larger families of the non tribal household is thus clearly the sum of these communities exposed to the same fertility experience but a differential mortality experience with tribal areas prone to higher mortality.

In all out of 2173 children born to these women 408 have died and 1771 are living. This is not to be confused with infant mortality as the death could have been at any age and many of the children of these women are now adults.

To compare the changes in fertility, mortality and therefore family size over time, we looked at the changes in these figures for different current age of mothers and especially compared a group of mothers aged between 26 and 30 with the figures of these above 35. The average numbers of children living in these groups are – 2.87 for all women above 15 yrs, 2.75 for women in age group 26-30 yrs and 3.48 in women above 35 yrs show a clear reduction in both fertility and mortality over the decades. Thus in the population, on an average 2 in 3 women has at least lost one child. Where 9 in 20 women between ages 26 to 30 have on an average lost one child, and every women above 35 yrs –on an average has lost 2 children. In the group of women between ages 26-30 yrs, 3.2 children are ever born per women. In comparison 5.55 children are born per women, in the group of women above 35 yrs of age

Comparing trends between the villages we find that living children per mother is now much less in the non tribal villages and in the near urban village it has reached a near ideal 2.4 and this seems related to the excellent reduction in child mortality- now only one per 20 ( 0.05 per mother). Even in the interior non tribal village the fertility is down

to 2.7 living children and 0.51 child deaths per mother. In contrast in the interior tribal village the higher number of children dead (0.77 per mother) is compensated by a higher (though also decreasing) children born 2.95 per mother. Facing the same risk perception but with better socio economic and health access status, the tribal peri-urban tribal village loses only 0.56 children per mother but its fertility rate over compensates with a 4.75 children born per mother and therefore a population rise.

These figures are too small in themselves but they serve to illustrate the way falling child mortalities and reducing fertility rates go hand in hand and tackling child mortality in itself would go a long way to reducing fertility rates.

#### Pregnancy:

At the time of the survey a total of 85 women were pregnant or had delivered a child in the previous one year which for a population 2373 works out to a pregnancy rate of 36/1000.

Out of these by definition 6 cases are under age ( 15 to 18 age group ) and another 16 cases are over the ideal age group ( >35 years) which works out to a 26% high risk on age criteria alone. We note with concern that one pregnant woman was having her second pregnancy before the age of 18. We also note that there is as many as 26 ( 32%) pregnant women who are having their fourth child or more.

Of these one woman was on her tenth pregnancy, one on her ninth, two on their eighth, two on their seventh, and four on their sixth pregnancy. And it may be that a small percentage of relatively better off families with larger family sizes may be contributing disproportionately to the fertility indices.

However what was very revealing in the qualitative studies was that a fairly high proportion of pregnancies were happening when women were so to speak on the queue to obtain good quality family planning services. Of course they did not have the motivation and in some cases the means or the information to seek these services in private facilities or to use temporary methods in a more effective way- but nevertheless all the pregnant

women in the fourth or higher order pregnancy and with at least one male child maintained that they wanted sterilisation and were waiting for it.

Care at pregnancy:

That is 38(45%) women have at least age or high order of pregnancy as a risk factor meriting institutional delivery . If we add in first time pregnancies and complications and low Body Mass index we may find that almost all cases would qualify for high risk by one or other criteria.

### **Pattern of Illness .**

There was a total of 333 illnesses reported in a population of 2373 . Thus if no one had more than one illness episode in the last month there would have been 14% of the population reporting an illness episode. Though there is a trend to a greater incidence of reported illness in peri-urban areas with greater education and easier access to health care and in non tribal areas as compared to tribal areas, this is only a small increase and is not significant.

The gender distribution is not of 54% male and 46% female is significant. Again this may be related to when illness is reported as such rather than to any absolute difference in illness incidence.

About 15% of all episodes occur in the first 5 years and about 32% occurs in the first 15 years of life. About half the episodes( 49%) occur in the productive age group of 15 to 50. This is about 7% for every five year period which is almost half that in the first 15 years – about 10% every five year period- an indication of the increased vulnerability of children. In the first year of life a full 25% of infants report an illness episode in the month. This declined to 13% in the next 5years for the 5 to 10 age group and the same amount in the next 5 years period (10 to 15) as well.

*As regards the illness pattern we summarize as follows: “In a population of 1000 we there would occur approximately 140 illness episodes in a month and of these 35 are likely to be fever, 28 are likely to have pain/headache, 14 are likely to have diarrhea, 36 are likely to have a respiratory infection, 6 would have an injury, wound or ulcer, 6 would have weakness including symptomatic anemia, 6 would have a medical non communicable problem ( the range included hypertension, sickling, mental illness, epilepsy, cardiovascular disease, paralysis, cancer, goiter);4 would have skin problems;2 would have female reproductive tract illness, 2 would have jaundice, and a similar number would have minor surgical problems.”* This would only be the frequency of illness *as voluntarily reported under current health seeking behaviour patterns*. Less reported diseases like RTIs and asymptomatic diseases like hypertension would be under-reported.

There is a changed perception of illness affecting reporting down the educational / awareness gradient – non-tribal peri-urban, non-tribal rural, tribal peri-urban, tribal rural. This may be as much due to disease outbreaks as due to differing perceptions.

If we further disaggregate the pattern to look at the pattern of illness across age groups we find that in the young child it is largely episodes of ARI and diarrhoea and fever that dominate and after that pains and other problems also become a major feature. If however we are able to provide prompt attention to fever, diarrhoea and ARI and prevent mortalities due to this we would be taking care of 71% of morbidities in all ages and 90% of all illnesses below the age of 5. This is the conceptual framework in which the Mitani programme is based. We emphasize that not all these cases can be managed by the community health worker- as high as 50% of them may need referral care – but knowing to which 50% it belongs and seeking care promptly and appropriately and the measures taken till medical care is reached are all together the difference, literally , between life and death.

Since most of these episodes are self limiting even a service to discriminate between those requiring referral care and those that can be managed locally is essential and life saving especially in young children.

One further dimension we need to explore is how many of these episodes are minor self limiting illness and how many of these can be called major diseases which have considerable impact on quality of life or are life threatening or are chronic illnesses. One proxy indicator of this is the duration of the illness episode.

57 % of episodes were above one week duration and 87 (26%) are chronic illness. By presumption based on the standard advice of referring all cases persisting beyond a week these would require medical care beyond that of the trained paramedical. If this is the extent of illness in a population of 2373 that requires medical care then in a population of 30,000 we would expect at least ten times this amount or about 1900 episodes in a month or about 65 cases per day excluding pregnancy related care. Of these 1900 cases some would require referral to the block hospital. We also need note that a fair number of the acute cases (less than one week duration) would have also needed medical care and some of the chronic ailments especially of skin admits of treatment by the trained paramedical or community health volunteer.

We will also find that most of them would not, for reasons of cost ( transport costs and loss of livelihood costs) and perception of needs, travel very far to seek care for this level of ailment and hence a functional sector level PHC remains a vital ingredient to achieving adequate levels of care.

As different from duration interference with work is even more sensitive to severity of the morbidity. In 42.28% the illnesses were 'minor' in that work was not affected. Work was affected for more than a week in 27% - a fairly high number and for more than 4 days in 44% . The pattern of causes of illness was the same except that fever and pains were more important and diarrhoeas and respiratory infections less contributory.

### **Health Seeking Behaviour:**

What do people do when they fall ill? This is important to understand to plan public health programmes. There is a multiplicity of choices from which the citizen chooses-

they may go to a public health facility- and there are four levels at which they can go; or they may choose from the private MBBS doctor, the trained “AYUSH” doctors or from the undifferentiated mass of untrained or partially trained practitioners and RMPs that offer their services in the villages. Or there are traditional healers like the baigas and folk medicine practitioners and the dais who largely but not solely cater to services at childbirth.

There are also a number of others who do not seek any treatment altogether.

The Mitanin does not enter an empty field – she enters a field , that even in the most remote areas is occupied by a number of healthcare providers of varying efficacy and with different clientele and differing perceptions of their utility.

In our study 66.2% chose private care. Of these 42.5% is stated as allopathic practitioners, implicitly MBBS, but this would be an overestimate as at the village level it is difficult to differentiate the MBBS from the RMP- some of the latter having more established practice and even using the MBBS label in a variety of ways.

Our follow up qualitative study indicated that only one in three of them are actually MBBS which would mean that if the distribution was even between them, then only about 13% would be with MBBS private doctors and 45% with the RMP.

We also note the emergence of the sub-center as a significant contributor to curative care. The other interesting finding is that as high as 18.3% seek no care whatsoever not a happy state of affairs when at least half of the episodes are not self limiting and a good many of them are life threatening.

Another interesting finding is the absence of the baiga as the first choice of care. It seems that the RMP has almost completely replaced the baiga and only when the RMP does not work or in addition to meeting him is the baiga resorted to. We have also case studies of patient resorting to baigas because they could not go where they were referred to( eg district hospital ) for the care they needed. This is important to note because so much stress is laid on bringing the baiga into the pool of providers when at least in these villages he is almost not there except as default to a failing system or at best an additionality over seeking modern medical care. People as a rule seem to be making a

rational choice on medical care- but depending on what is available, functional and accessible they are constrained to make their choice.

### **Hospitalisations:**

Totally there were 41 hospitalisations in the last one month in a population of 2373 of which 37% was in private sector and 59% in the public sector and about 4% in the not – for- profit sector. This is however very skewed between the different villages. Thus in the two villages near the Kondegaon civil hospital- which is a relatively better functioning hospital and somewhat further away a NGO hospital- there is only one out of 22 cases – about 4.5% that go to the private sector. In contrast 22 km away from Raipur 14 out of 19 cases of hospitalizations went to the private sector ( 74% went to the private sector.) However two out of three pregnancies went to the government sector. Even in those who chose the government sector the distant medical college hospital was the main choice – not the near by poorly functional CHCs. Again whereas 47% of all hospitalization in the non tribal area was due to non communicable disease it accounted for only 24% of cases in the tribal area. Again this may have been due to higher incidence of infectious disease – the absolute number of non –communicable disease causing hospitalization being about the same. Indeed the numbers seen would indicate an ongoing micro-epidemic of diarrhea in the tribal village under study. These numbers are too small to extrapolate to state level incidences figures- but are indicative of trends , which coorelated with expenses gives us a better picture.

### **Pattern of Health Expenditure**

**The unit cost per episode works out to Rs 335.57 for all episodes and of this 292.7 6 for minor and 638.44 for major episodes.**

### **Out-of Pocket Cost of Care:**

The total expenditure for 331 episodes worked out to Rs 200819 of which Rs 16568 went to doctors fees, Rs 5191 to drugs, Rs 38508 to drugs, Rs25770 to food and transport, and Rs 111075 to the few hospitalization related expenses. There is a sharp difference in this

between the tribal villages which were near the government hospital and the non-tribal villages where there was a choice only between private care or the medical college hospital.

In all these figures we have taken all costs including food and transport but excluding loss of livelihood costs. Summarizing the average cost of treatment per month would be Rs 607 for any episode including hospitalizations and it would be Rs 493 per household in a one month period. For any acute episode including hospitalization it would be Rs 527 and for any chronic episode including hospitalizations it would be Rs 1172.

In a tribal context which in this study also overlapped with the proximity to a functional government health facility and predominant public sector use we can see that the cost for any episode is Rs 199 and per household it is Rs 135 while the figures for a non-tribal predominantly private provider context is Rs 894 and Rs 842 respectively.

**Table 6.8.** *Average costs of care in tribal/public health dominant and non-tribal/private health care dominant contexts.*

	<b>Tribal area near a functional govt facility:</b>	<b>where private care is mainly resorted to:</b>
<b>For any episode :</b>	<b>Rs 199</b>	<b>Rs 894</b>
<b>For any acute episode</b>	<b>Rs. 182.37</b>	<b>Rs. 773.27</b>
<b>For any chronic episode:</b>	<b>Rs. 324.43</b>	<b>Rs.1715.12</b>
<b>For any episode per household :</b>	<b>Rs. 135.61</b>	<b>Rs. 842.53</b>

We note that in the private sector non –tribal context about 55% percent of the total costs are the costs of hospitalization ; drugs accounts for another 19% and food and transport – the invisible costs- accounts for 12.83%.

We also note that when we look at the situation in the tribal area which had high public sector utilization then the costs of hospitalization account for 21.48% and drugs for 66.36% and food and transport for 15.58%. Since hospitalization are the highest cost

category then one could be concerned that the picture is being altered by the few cases of hospitalization. However we note that the tribal near hospital area had far more cases of hospitalization than the non tribal area that utilized private facilities only. So if anything the skew would have been even more and in the same direction if we attribute the private sector costs to the patients seen in the public sector.

The average per hospitalization episode costing the private sector worked out to Rs 6350 per episode with it always rising above Rs 15,000 if there was major surgery. Excluding food and transport the hard medical cost was Rs 5755. Food and transport was 595 per episode. In contrast the cost of hospitalization was only Rs 1734 per episode in the government sector, of which drugs purchased outside was Rs 903.. Excluding food and transport it fell to Rs 1022 and food and transport was Rs 712 . Thus it can be seen that almost all the medical costs are the cost of asking the patient to buy drugs outside and food and transport costs are similar ( about Rs 600 to Rs 700 in both sectors) as would be expected.

### **Discussion:**

- a. What are the implications of this study for Mitnin programme and for primary health care system design?

These could be summarized as follows:

- a) Approximately 42% of illness episodes admit of treatment by the Mitnin, provisioned with adequate drugs. In addition to the Mitnin the anganwadi worker and the multipurpose health worker can contribute to the management of this huge case load. The trained RMP , even where a strategy is adopted can contribute only to this level of care- which we would like to call the paramedical case load.
- b) The paramedical case load is largely – over 90%- made of three illnesses- fevers, diarrhoeas and acute respiratory infections and the focus of paramedical care needs to be focused on these along with first aid care for wounds and management of simple skin ailments.
- c) Currently inappropriate treatment for this paramedical case load contributes to a significant part of total health expenditure and this

can be reduced and withdrawn from the irrational and illegal private sector if the public health system is effective in this area. This would have a favorable impact on the poverty effect of illness.

- d) Treatment use of ayush practitioners who actually dispense ayush drugs or of baigas is low and the preference is towards modern medicine even where the doctor is not so qualified.
- e) About 58% of illnesses however are of a nature that medical attention is needed. This includes common non-communicable problems, numerous chronic illnesses and acute fevers and ARIs persisting over a week.
- f) The medical case load is high enough to justify a functional medical center at a one per 30,000 population norm and if paramedicals have to handle this they would need a special upgradation of skills and a different design of the health facility. The nature of CHW or RMP re-trainings precludes their use for these clinical situations.

- b. What are the implications for health care as poverty reduction- insurance mechanisms and risk pooling, regulation of private sector.

There is a high incidence of morbidity in the community and the cost of such morbidity both in health related expenses and in loss of livelihood have adverse impact on the lives of the poor.

The RMP and private MBBS doctor is the major source of curative care for illness with the sub-center also providing a supplementary role.

About one fifth of the public- the poorest are excluded from all care –public or private.

A considerable part of the morbidity admits of treatment at the health volunteer level with a substantial savings to the poor- both in health costs and in loss of livelihood if this is provided at their doorstep. Not to speak of the decrease in suffering and in mortality.

There is however a significant part of illness that does not require hospitalization but does require medical , (as distinct from paramedical )care- and therefore not only is the primary health center reiterated, there is in addition a need to provide some social security measure by which the poor can face the expenses associated with such care- even when it is from the public sector.

Hospitalisation is economically catastrophic when it is in the private sector. It is unlikely that without severe regulation of the private sector demand side financing to involve the private sector would ever be viable except in a few limited clinical contexts, where it acts as a small additional capacity to the main public system. Even in such contexts price and quality regulation would be required, with some subsidy built in for ensuring access by the poor. For the main part as long as poverty reduction is on the agenda of health systems- strengthening of public health systems would continue to have the priority.

Hospitalisation in the public sector is only one fifth as costly- but even these costs may be disastrous to the poor. The out of pocket expenses that the poor face would exclude the majority or at least adversely impact on their poverty levels unless a social security package is able to provide coverage for such catastrophic illness.

The cost of care per person would work out to Rs 85 per month or about Rs 1020 per year if all primary and secondary care is covered – given the same degree of functionality of the public health system. This could be used as a starting base norm for designing of health insurance and risk pooling strategies. Keeping in mind the small size and scope of this study and numerous limitations the actual pricing of insurance or contributions of risk pooling will depend more on the results of a pilot exercise than on these figures.