Inequities in health in Tamil Nadu: A study of Dharmapuri district

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1. Inequities in health

In public health, the concept of health inequity is often used to describe inequalities in health that are perceived to be *avoidable, unnecessary and unfair* [1]. Equity – the absence of particularly unfair differences - is different from equality – the absence of differences in general. The use of equity rather than equality when assessing the nature of differentials in health arises from the recognition that there are bound to be differences in the health status of individuals, and for a number of reasons, many of these are random or biological and hence unavoidable.

There is sufficient evidence now from across the globe to show that differences in health status across social groups are not just the result of genetic endowments, life style or differences in access to health services. Many studies have found that socially and economically disadvantaged groups get more sick more often and have less access to health services as compared to their more privileged counterparts even within the same country or region. Most of these differences originate in inequities in access to social and economic resources and living conditions essential for leading a healthy life [2-8]. These differences in health are thus the consequence of denial of opportunities to be healthy, and represent health inequities.

The use of the concept of health equity may appear to be in conflict with health equality, as viewed from a human rights perspective, but this is not the case. While health equity is not the same as equality, it may be seen as a commitment to increase the equality of opportunity for health and human development for groups within a society who appear to be suffering a lower health status as a result of social disadvantages or discrimination. Equity, which embodies a dimension of justice, indicates that change should be in the direction that is fair and just even if it means preferential treatment of disadvantaged groups over others.

Pursuing equity in health means trying to reduce social disadvantages or their health effects among disadvantaged groups; it thus requires selectively focusing on disadvantaged groups. Yet, health policies and programmes continue to remain focused on disease-specific interventions and outcomes. Inadequate attention paid to addressing social determinants of health has contributed to a widening of the gaps in health status between and across countries [9]. The recently appointed Commission on Social Determinants in Health of the World Health Organization recognizes the need for gathering more evidence, and systematizing and putting to better use available evidence on inequities in health.

1.1 Health inequities in India

Most of the studies in India on differences in health across social groups have looked at either self-reported morbidity as a proxy for health status, or at extent and nature of

utilization of health care services, as a proxy for access to health care services. Few studies go beyond observing the extent and direction of differences to probing the pathways in terms of association with health differences with unequal access to resources that are necessary for good health. Also, studies that examine more than one source of social disadvantage: caste, class or gender, are rare to come by.

1.1.1. Differentials in Health status

Reports from studies examining differentials in health status across social groups provide conflicting findings. There seem to be as many studies indicating poorer health status in disadvantaged groups as those that find the social advantaged sections reporting poorer health status.

Caste

NCAER 1994 survey data of India showed that those belonging to the Scheduled Castes and Scheduled tribes had higher levels of morbidity [10]. On the other hand, using NSSO 52nd round data of West Bengal one recent paper (2004) reported that the prevalence of morbidity among the scheduled tribe population was lower [38 per 1000 population] than other castes groups (68) [11]. Another study in rural Karnataka (1994), also highlighted that the morbidity was the lowest among scheduled caste and scheduled tribe populations [12]

Income/ Standard of living

Rates of prevalence of morbidity by economic status are also reported in some studies to be positively associated (the higher the status, the higher the morbidity rate) and in others, to be negatively associated. Aditi Iyer and Gita Sen (2000) reported that morbidity rates in the top Monthly Per Capita Expenditure fractile (MPCE) were 1.5 to two times higher than the rates in the lowest fractile in rural and urban areas of India [13]. Similarly, Duggal and Amin (1989) found the prevalence of both acute and chronic diseases to be higher in upper classes than in lower classes [14]. It is also observed that the poor report less ill health than the rich even though the poor have higher mortality rates. For example, the incidence of self-reported morbidity was much higher in the state of Kerala than in Bihar despite higher education levels and greater longevity in Kerala [15].

However, other studies observe the prevalence of morbidity to be highest for those with lowest standard of living [12] and that both acute and chronic illness prevalence rates decrease with an improvement in socio economic status [15].

Gender

Gender differentials in reported morbidity are evident in number of micro level and large-scale studies. Most of studies show that the prevalence of illness was higher for females than males [11,16,17, and 18].However, one study analysing 1986-87 data for Tamil Nadu reported that the males reported to be having significantly higher morbidities than females [19]. Madhiwalla et. al. (2000) found that morbidity rates were consistently higher among disadvantaged groups of women; migrants, scheduled castes and minorities in rural areas of Maharastra [20].

Place of residence

Most studies examining rural/ urban differentials in levels of morbidity have shown that morbidity rates are higher in rural areas than in urban areas [14,21, 22, and 23]. Other studies reported that morbidity rates are higher in urban areas than in rural areas [19, 20, and 21]. One recent study in the year 2003 reported that acute illnesses were more prevalent in rural households whereas chronic illnesses were more common in the urban population [22].

Age

A considerable number of studies have found 'J' and 'U' shaped relationship between age and morbidity, an indication that elders and children are more susceptible to illnesses as compared to other age groups [10-12, 22].

1.1.2 Differentials in utilisation of health care

Of studies examining differentials in health care seeking behaviour, most examine variations across socio-economic class groups and a small number examine variations across other attributes such as gender and place of residence.

Caste

Vaguet et al (1995) examined differential access to health providers by caste. The study observed that patients of any physician were of two different spatial groups: those who went to him because they had the same caste in common and lived among that caste and those who attended his practice because it was in the quarter. The ex-untouchable castes never visited the physician or the public hospital [30].

Income/economic status

Large scale surveys have observed that a higher percentage of the poor do not seek care when ill. An analysis of NSS 52nd round survey indicates that about 24 percent of the poorest quintile do not seek care, compared to 9 percent of the richest quintile [25]**.** And according to NFHS 2 survey data of Indian states that a person from the poorest quintile of the population despite more health problems was six times less likely to access hospitalisation than a person from the richest quintile [26]. The socially less-privileged were unable to access healthcare due to geographical, social, economical or gender related distances [27].

Not much seems to have changed over time in terms of improved access to treatment for those from low-income groups. Gita sen and et al (2002) based on NSS data observed that in India untreated illness among poor had increased over a period of time (1986-96) Inequality by economic class appeared to have worsened and the divide between rich and poor in terms of untreated ailments and expenditure on health care services had grown (28).

In a study by Rao and Richard (1984) in Tamil Nadu, 90 per cent of respondents with lower incomes preferred home treatment for common ailments in the initial stages when compared to 56 per cent of those with higher incomes [24].

Gender

Gender differences within poor households in access to health care have also been observed by Gita Sen. In her study based on NSS data 2002 found members from poor households were less likely to get their illness treated and these differences by household economic class status were more acute among women than among men [29]. Another study in India indicated that proportion-seeking care for common childhood illness in India was higher for boys than girls [11].

Education

A 1984 study from Tamil Nadu found that the proportion who said they would approach a physician even during the initial stages of ailments increased significantly with education and the proportion whose first choice was a government hospital declined as education increased [24].

Place of residence

There appear to be some differences by rural-urban residence in reasons for not seeking treatment, with financial difficulties and lack of medical facilities being a more common reason in the former. The NSSO 42nd round survey (1986-87) of India highlighted that in rural areas the major causes for not seeking treatment were – the ailments were not considered serious (75 per cent) financial difficulties (15 per cent) and no medical facility (3 per cent.) In urban areas the major causes for not seeking treatment was the ailment were not considered serious (81 per cent) financial difficulties (10 per cent) and no medical facility (less than one percent) [31] .

Studies looking in to source of treatment for various morbidities reveal that private hospitals are mostly used. An all-India morbidity study conducted by NCAER in 1992 reported that in 55 percent of illness episode treatment was sought from private facilities whereas for 33 to 39 percent of episodes treatment was sought from government facilities [21]. A more recent study in 2003 reported than an overwhelming majority of patients still prefer to use private facilities for hospitalisation in India. The percentage of individuals visiting a private facility in the urban areas was about 65 percent, whereas this number was about 55 percent in the rural areas [25]. There appears to have been a steady move towards seeking health care in the private sector during the 1990s.

However, even now, government health services may be the main source of health care for the less privileged groups. NSS data shows that as late as in 2003, those from scheduled castes and scheduled tribes had a higher probability of seeking care in the government facility. Education also seems to be positively influencing seeking care in the government sector [25].

Overall, while caste, class, gender, educational status and place of residence emerge as social determinants of health status, the evidence on the direction of relationship is

inconclusive even among studies which have all relied on self-reporting of morbidity. On the other hand, a more privileged status by caste, class or gender does increase utilisation of health care.

The study presented in this paper attempted to address some of the gaps in our understanding of inequities in health in India by gender, caste and class. The study examined inequities in prevalence and utilisation of health care services for acute, chronic and reproductive morbidity. The study was carried out in Dharmapuri district of Tamil Nadu in 2004. The present study was undertaken by Rural Women's Social Education Centre in Tamil Nadu (RUWSEC), an organisation working in the Kanchipuram district of Tamil Nadu for more than two decades in the area of health, including community-based work and research.

The structure of this paper is as follows. Following this introductory section on the literature of health equity in India, the second section of this paper describes the study objectives, study area and methodology, and characteristics of the study populations. Sections three, four and five examine the prevalence and health seeking behaviour for acute, chronic and reproductive morbidity respectively. Each section describes the prevalence and patterns of treatment seeking; analyses their correlates and examines differentials by gender, caste and class in factors associated with acute, chronic and reproductive morbidity, respectively. Section six summarises the findings and discusses their implications.

II. The present study

2.1 Objectives

The overall objective of the study was to assess inequities in health by caste, class, and gender.

- To examine differences by caste, class and gender in prevalence and in correlates of morbidity
- To examine differences by caste, class and gender in rates and in correlates of treatment-seeking for morbidity

2.2 Study area

The choice of Tamil Nadu for a study examining inequities in health was to some extent influenced by the state's unique position in terms of health achievements. Tamil Nadu witnessed a rapid decline in fertility since the early eighties and reached close to replacement levels in the mid 1990s. All sections of the population have experienced large fertility declines, desire fairly low family sizes and have low fertility [32]. Maternal health care initiatives including tetanus immunization for pregnant women have been highly successful in Tamil Nadu, with near complete coverage by antenatal care (98%) and immunisation (89%), high levels of contraceptive prevalence (52%) and proportion of deliveries attended by skilled personnel (84%) [26]. To what extent do these successes mask inequities in health? This was the question that motivated this study.

The district chosen for the study was Dharmapuri district, which is known for its comparatively disadvantaged position in terms of social and economic development among districts of Tamil Nadu.[1]

The population of Dharmapuri district as per the census of 2001 constituted 4.6 per cent of the state's population. The district's overall sex ratio of was 938 females per 1000 males in the year 2001[33]. The district literacy rates were 69 and 49 percent for males and females respectively, far below the average for Tamil Nadu as a whole [34]. According to the 2001 census, nearly 70 per cent of Dharmapuri's workforce was dependent on agriculture and allied activities [35]. The district is one among most backward and drought prone area in the state.

According to Sample Registration System (SRS) estimates by the year 2000, the district recorded highest birth rate in Tamil Nadu, 21.9 per 1000 population. Of the 30 districts in Tamil Nadu, Dharmapuri recorded the highest infant mortality rate of 67 per 1000 live births [35]. The child sex ratio (0-6 years) in the district is very low, 860 and 923 girls per 1000 boys in rural and urban areas respectively [35]. It is very important to mention here that the Dharmapuri is one of the districts in Tamil Nadu where female infanticide has been found to be prevalent. A district level survey in 1996 found female infanticide accounted for more than half (59 per cent) of all female infant deaths in Dharmapuri District [36].

According to RCH-2, Female age at marriage is very low in Dharmapuri district, with about 34 percent of currently married women in the15-44 year age married before 18 years of age. Utilisation of maternal and child health services, although showing high averages, is also marked by inequalities by social groups. About 98 percent of pregnancies received some form of antenatal care, and 65.5 percent received ANC at home from health worker. During 1995-99 only 63 percent of deliveries were institutional and 27 percent were reported as not safe (Home deliveries assisted by neighbours and relatives). The survey also highlighted that 45 percent of the deliveries of women belonging to Scheduled castes and tribes were unsafe. The district recorded highest RTI/STI prevalence in Tamil Nadu, with about half of the women (48.4 percent) in 15-44 years age group reporting one or symptoms of RTI/STI [37].

2.3. Methodology

2.3.1. Sample selection and data collection

Based on the need to stratify by caste, class and gender, as well as resource availability, the sample size was fixed as 2500 households. In order to capture disparities, three blocks: Uttangarai, Morapur and Harur that had moderate socioeconomic and health indicators and a higher than district average proportion of scheduled caste population (in order to ensure an adequate sample size of this group) in Dharmapuri district were selected for the study. Fifty villages were selected randomly with probability proportion

[1] In February 2004 the district was bifurcated and a new district named Krishnagiri established

to size, and a systematic sample of 50 households was selected after carrying out house-listing in the sample villages.

A structured questionnaire was used to gather information on characteristics of the household and its members. Information on acute, chronic and reproductive morbidity; and on health seeking behaviour as reported by the person affected (or the mother, in case of children below 15 years) was collected. Field investigators consisted of trained social workers who had experience working with rural communities and prior experience in collecting data for health surveys. An intensive four-day training including piloting the questionnaire was implemented in preparation for this study. There was close field-based supervision and daily checking of the data gathered, to ensure data quality. The field survey period was March- May 2004. Of the 2500 households selected, interviews were completed in 2475 households. The remaining households were absent for an extended period. The overall response rate was 99 percent.

2.3.2. Dependent and independent variables

Dependent variables

Dependent variables included[2]:

- *Prevalence of acute morbidity*: Proportion of those reporting symptoms of an acute[3] morbidity that they had or have been experiencing at any time during the period starting 30 days prior to the survey and including the day of the survey; excluding acute episodes of chronic morbidity (for example, flaring up of wheezing in an asthmatic person, or of joint pains in a person suffering from rheumatism) and excluding any symptoms of morbidity of the reproductive system. (See Annex 1 for a list of symptoms included)
- *Prevalence of chronic morbidity:* Proportion of those reporting symptoms of a chronic[4] health condition that they have been suffering from and/or have been taking treatment for, of which they had or have been experiencing an acute episode at any time during the period starting 30 days prior to the survey and including the day of the survey; and excluding any symptoms of morbidity of the reproductive system. (See Annex 1 for a list of symptoms included).
- *Prevalence of reproductive morbidity:* Proportion of ever-married women between 15-49 years of age who report any morbidity related to their reproductive system at any time during the period starting three months prior to the survey and including the day of the survey. (See Annex 1 for a list of symptoms included).
- *Proportion seeking treatment:* Those seeking any treatment (other than self-treatment) from a health provider, whether government or private, qualified or unqualified, .as a proportion of those reporting any morbidity. This was calculated for those reporting acute, chronic or reproductive morbidity.

[2] We have listed only dependent variables used in this paper
[3] A disease or condition having a rapid onset and following a short but severe course
[4] A disease or condition that progresses slowly but persists or recurs over time

- *Proportion seeking treatment from government and private health facilities/providers:* Private health providers included both qualified and less-than qualified providers.

Independent variables

Independent variables were divided in two groups. One set of variables were what we considered 'proximate' determinants of health status and/or health seeking behaviour. The other set were caste, class and gender, which we view as variables that would have a modifying effect on the proximate determinants.

Proximate determinants chosen included:

- *Age :* Less 15 years, 15-34 years, 35-59 years and 60 years and older
- *Literacy status:* Illiterate and literate
- *Occupation:* Labourers, those in salaried employment, self-employed and those engaged in unremunerated work including domestic tasks usually performed by housewives
- *Housing conditions:* This included type of house (Cutcha, semi-pucca or pucca); number of rooms; nature of cooking fuel; existence and nature of toilet facility; nature of sanitation; and source of drinking water. Scores were given to each of these attributes using the same scoring pattern as in NFHS-2, and observations classified as below average; and above average.

In the case of prevalence and health seeking for reproductive morbidity, the following additional independent variables were included:

- *Contraceptive use:* Current use of a reversible or permanent method of contraception by the woman concerned. A number of studies have found association between contraceptive use and reproductive morbidity, especially in the case of female sterilisation.
- *Parity:* Association may be expected between number of pregnancies and reproductive morbidity, which in turn may influence treatment seeking behaviour.
- *Type of family:* Nuclear and other, and an indicator of a woman's ability to make decisions about her health or to access health care. We expect 'belonging to a nuclear family' to be associated with lower prevalence of reproductive morbidity. As for utilisation of health services for reproductive morbidity, the relationship could go either way. Utilisation of health care for those belonging to a nuclear family may be expected to be higher because they have greater decision-making power as compared to those in joint families; or a lower because they may not have the social support necessary to seek health care outside the home.

Inequality variables:

- *Gender*: Male and female
- *Caste*: Three categories were considered: Scheduled castes or tribes; Most backwards castes; and Other castes

- *Ownership of Assets* (as a proxy for class): Included ownership of a wide range of durable goods, house property, cultivable land: (all land and irrigated land), and livestock. Scores were given to each of these attributes using the same scoring pattern as in NFHS-2, and observations classified as below average; and above average.

2.3.3. Statistical analysis

For each of the dependent variables, associations were examined using bivariate analysis with independent variables: sex, caste and asset-ownership; as well as age, education, occupation, housing conditions. In the case of reproductive morbidity, associations with type of family, parity and contraceptive use were also analysed.

Subsequently, stratified analysis by sex, caste and asset ownership of the association of 'proximate determinants' of morbidity and treatment seeking was carried out. This was in order to understand whether the influence of proximate determinants on morbidity and health seeking differed significantly by sex, caste or asset ownership.

2.4. Characteristics of Sample households and population

2.4.1. Household characteristics

The study covered 2475 households, of which 94 per cent lived in rural areas. Table 1 presents characteristics of the sample households.

Demographic characteristics

More than 95 percent of the households were Hindus, about 3 percent were Muslims and the remaining were Christians. Over all, a third (32.3%) of the households belonged to the socially deprived group of scheduled caste or tribes[5]. Thirty one per cent belonged to the 'most-backward' caste groups, 33 per cent to backward castes and three percent belonged to forward caste. About two third (64.5 percent) of the households were nuclear families and 35.5. per cent were extended[6] or joint families.

Housing conditions

Overall 22 percent of households lived in kachha houses or mud huts, 56 per cent lived in semi pucca houses and only 22 per cent lived in pucca houses. In 71 per cent of the households cooking was done in the living area and there was no separate kitchen. Although firewood was the main cooking fuel used for four fifth of the households only 13 percent had smoke outlets.

Most of the households in the study depended on public water sources for their drinking water needs. About half the households (49%) depended on water from public tap. Twenty two per cent of the households fetched water from public hand pumps / bore wells. About 5 per cent depended on open ponds and streams and the only about a quarter of the households had a water source at home: well or tap.

[5] Only 35 households were schedule tribes
[6] One or both parents of the head of household co-residing with a nuclear family unit.

Toilet facilities were almost non-existent, and a whopping majority (92 percent) of rural and little more than half of urban households had no toilet facility and used open space. Even in urban areas only 37 percent of households had own toilets in their houses.

Assets owned

Two thousand two hundred and twenty five (2225) households owned the houses in which they lived. Only 50 per cent owned any agricultural land; the average land owing of the sample was 2.9 acres. As already mentioned, Dharmapuri district is drought prone, and only 25 percent of the land owned was irrigated, the remaining being rain-dependent. Only 2.6 percent of the households had four or more acres of irrigated land. About 31 per cent of households owned livestock.

Ownership of household durable goods was limited to basic furniture (67%) and entertainment media such as radio (35%) and television (48%). The most common means of transport owned was the humble cycle (45%) followed by the motor cycle (15%), with less than one per cent possessing a car. Only one out of ten households had a telephone connection. Only about 6 per cent of the households owned a 'productive' durable good such as irrigation motor, and less than one per cent owned a tractor, thresher or bullock cart, respectively (not included in table).

Thirty seven (37) percent of households belonged to medium standard of living (SLI), another 37 percent fell in low SLI and 26 per cent of households in the study belonged to the high standard of living group.

2.4.2. Population characteristics

Total population

Table 2 presents characteristics of the sample population. The population covered by the study was 11,039 (5624 males and 5415 females).The overall sex ratio was 962 females per 1000 males, which is higher than the integrated Dharmapuri district census figure (933 in 2001). The child sex ratio of 0-6 year population was 903 girls per 1000 boys, which is considerably higher than the district average. (878 females per 1000 males). The mean age of the population was 28 years (27.9 years for males and 28.13 for females).

Overall, 58 per cent of the population above 7 years of age was literate, while 42 per cent was illiterate. The male and female literacy rates were 76 and 57 percent respectively. A little more than one fourth of males (26 percent) and 17 percent of females in the sample had more than eight years of schooling. A fourth (25%) of the population (27% of men and 23% of women) worked as wage labourers in agriculture and other sectors.

Ever-married women of reproductive age

In the study area, there were 2440 ever-married women in the reproductive age group of 15- 49 years (Table 3). This was the population whose reproductive morbidity was studied. About 92 percent of them were currently married and the remaining 8 percent were either widowed or separated. The mean age of ever-married women was 31.7 years, and about 6 per cent were 19 years or younger. Age at marriage of women is low in the

study area, with more than one fourth of the women in the 15-19 years age group currently married.

The average number of pregnancies per woman was 2.59, of children ever born 2.37 and of surviving children 2.18. Sixty three (63) per cent of currently married women were using contraception, all except a negligible proportion (less than 3 %) have undergone (female) sterilisation.

Morbidity

A little over 27 per cent of the population reported experiencing either acute or chronic morbidity or both during a recall period of one month[7], giving a prevalence rate of 276 per 1000 population. Acute morbidity alone was experienced by 9.5 per cent, 13.9 per cent experienced only chronic morbidity and 4.2 per cent experienced symptoms of both acute and chronic morbidities (Table 4).

3. Acute morbidity

3.1. Prevalence of acute morbidity

3.1.1. Extent and nature

About 14 percent of the population in the sample households reported having symptoms of one or more acute illness, giving a prevalence rate of 137 per 1000 population (Table 4). "Cold and cough" was the most frequently reported acute morbidity (36%), followed by severe aches and pains: headache, toothache, abdominal pain (31%). Overall, 1510 persons had 1650 morbidities and about nine percent had more than one illness. The mean number of morbidity per person was 1.09.

Most of the acute illness episodes (67.4 percent) were of short duration i.e. 7 days or less. One fifth suffered the problems for the duration of 8-14 days. The remaining 12 percent were having the diseases for more than two weeks. The mean and median duration of illness were seven and five days respectively.

3.1.2. Correlates

Prevalence of acute morbidity was higher among females (17.5%) than among males (10%); among those belonging to most backward castes (15.5%) as compared to 'other' castes (13.5%) and Scheduled castes and tribes (12.5%); and among those who had below average asset ownership (14.4%) as compared to 'above average' asset ownership (10.7%). All the differences were statistically significant at the 1 per cent level (Table 5).

Differences in prevalence of acute morbidity were also statistically significant by age, literacy status, occupation and housing conditions. Those in the 15-34 age group had lower morbidity rates than those below 15 years as well as those above 35 years of age.

[7] It is not possible to merge serious illness with acute and chronic morbidities as reference periods vary.

Those who were literate, and lived in above average housing conditions had lower prevalence of acute morbidity than those who were illiterate and lived in below average housing conditions. In terms of occupation, those who were in salaried employment had the lowest prevalence of acute morbidity (6.8%), while those working as labourers, self-employed or not engaged in remunerated work had double this prevalence rate or higher.

3.1.3 Stratified analysis of correlates of acute morbidity

Our next attempt was to understand whether there were differences in the nature and strength of association of different 'proximate' determinants of acute morbidity by gender, caste and ownership of assets. This was done through stratified analysis (tables 6-8), yielding some interesting results.

There were major variations in the association of proximate determinants with acute morbidity in male and female respondents. For example, while for males the odds of being affected by acute morbidity *decreased* in the age groups 15-34 and 35-59 as compared to those below 15 years of age, for females the odds *increased* in the age groups 35-59 and above 60 years of age as compared to those below 15 years of age (Table 6). Being unremunerated and living in below average housing conditions significantly increased the odds of acute morbidity for females but not for males. No such variations by gender were found by literacy status.

Variations by caste in the association of proximate determinants with acute morbidity were less striking, but nevertheless noticeable (Table 7). In all three caste groups: SC/ST, MBC and other castes, the odds of prevalence of acute morbidity was significantly lower in the 15-34 age group as compared to the below 15 age group. However, while the risk of acute morbidity increased step wise in age groups 35-59 and above 60 years for SC/ST population, no such association was found for other castes.

Again, being engaged in remunerated work significantly lowered the risk of acute morbidity only for 'other' castes. For MBCs, the risk was slightly lower and for SC/STs, slightly higher for those in remunerated employment as compared to those engaged in unremunerated occupations. But these differences were not statistically significant. Below average housing conditions significantly increased the risk of acute morbidity only for MBCs and 'other' castes.

Those with 'above average' ownership of assets showed a much larger increase in risk of acute morbidity in older age (greater than 60 years old) as compared to those with 'below' average assets. This is probably because of much lower levels of morbidity in the reference age group. Being illiterate and living in below average housing conditions increased the odds of acute morbidity significantly in the 'below average' asset ownership group.

3.2. Treatment seeking for acute morbidity

3.2.1 Rate and source of treatment seeking

A large majority of those afflicted with an acute morbidity (78.5%) sought treatment from a health care provider (Table 9). Those who did not seek treatment said either that the disease was not serious enough to seek external care, or that they could not afford treatment. Almost everyone use the allopathic system of treatment (98.5%) with only a negligible proportion using either siddha or homeopathic systems.

More than half (55.7%) those seeking treatment used a private facility or provider, and only 44.3% went to a government facility. However, when examining the nature of private health care sought, we find that about two-fifths of them (37.6%) had used less-than qualified health care providers (Table In effect, then, those who sought health care from a government provider were getting technically better care than those seeking care from private health providers.

When analysing the reason behind for selecting particular source of treatment, about 70 per cent of those using government facilities gave lack of money and free treatment as the most important reasons for their choice. More than eighty percent of private service users quoted good quality of treatment and humane, caring behaviour of providers as reasons influencing their choice. Interestingly, these reasons were given also by those using less-than qualified providers.

3.2.2. Correlates

Treatment seeking for acute morbidity did not vary significantly by sex or caste. Also, neither age nor occupation appears to make a difference to the proportion seeking treatment. The only two variables significantly associated with treatment seeking are ownership of assets and literacy status. A greater proportion of literate persons and those with 'above average' ownership of assets sought treatment as compared to illiterate persons and those with below average asset ownership (Table 10).

Contrary to this result, source of treatment is influenced significantly by sex, caste, asset ownership, age, literacy status and occupation (Table 11). A greater proportion of females than males; SC/ST than MBC and other castes; those with below average as compared to above average asset ownership; older as compared younger persons; and illiterates as compared to literate persons used government health facilities.

An unexpected result is that a greater proportion of those in remunerated occupations used government health facilities as compared to unremunerated persons. The reason for this is not clear.

3.2.3 Stratified analysis of correlates of treatment seeking

Analysis stratified by sex shows that males and females are differently affected by some of the determinants of treatment seeking (Table 12). While older age increases the odds of treatment seeking for acute morbidity among females, age does not influence treatment seeking among males. Again, being literate increases the odds of treatment seeking significantly among males, but not among females.

The significant association between treatment seeking and literacy status found in bivariate analysis appears to hold only in the case of 'other castes' on analysis stratified by caste. Increasing age dramatically increases the odds of treatment seeking only in the higher asset owning group and not in those with below average asset ownership.

Thus, different variables seem to be important in determining treatment seeking for acute morbidity among different groups.

4. Chronic Morbidity

4.1 Prevalence of chronic morbidity

4.1.1. Extent and nature

Prevalence of chronic morbidity was substantially higher than prevalence of acute morbidity, with a rate of 181 per 1000 population. Painful joints affecting mobility; peptic ulcer; and visual impairment were the three most commonly reported conditions. Overall, 1999 persons reported 2367 conditions and the mean morbidity per person was 1.18. About one fifth (18%) had two or more chronic illness.

Nearly half of the persons with chronic illnesses had suffered from these problems for more than two years. A little more than thirty percent suffered with the problems between six to twenty four months. Only one out of five persons had been experiencing the reported chronic illness for less than six months. The median duration of chronic sickness was 24 months.

4.1.2. Correlates

In the case of correlates of prevalence of chronic morbidity, some associations were similar to those found for acute morbidity, while others differed (Table 5). Prevalence was much higher among females (21.7%) than among males (14.6%), and among most backward castes (21.8%) than among 'other' castes (18.4%) and Scheduled castes and tribes (14.6%). It was lower among the literate group (14.4%) than among the illiterate group (23.3%).

However, prevalence was higher among those with 'above average' assets (24.7%) as compared to those with 'below average' assets (16.4%); increased in a step-wise fashion with age, being highest in the above 60 age group; and was higher among those with above average housing conditions and self-employed (28.6%) and labourers (24.2%).

4.1.3 Stratified analysis of correlates of chronic morbidity

Unlike in the case of acute morbidity, determinants of chronic morbidity do not vary for males and females. For both sexes the odds of having a chronic morbidity increases step-wise by age, and is higher for illiterates than for literates. Those working in unremunerated occupations have twice the odds of being affected by a chronic morbidity than those working in remunerated occupations.

Again, neither caste nor asset ownership make a major difference to determinants of chronic morbidity.

4.2. Treatment seeking for chronic morbidity

4.2.1. Rate and sources of treatment-seeking

A much higher proportion of persons reporting a chronic morbidity had sought treatment (88.7%) as compared to those reporting acute morbidity (Table 5). A large majority (93 percent) sought allopathic treatment, four percent had siddha treatment, and three percent had taken recourse to traditional healers.

Private facilities or providers were the predominant source of care seeking (57.7%), and 42% sought care from government providers. Only a small proportion of the private health care providers for chronic morbidity were less-than qualified (13.5%). Eighty seven per cent were private hospitals and clinics (Table 5).

As seen for acute illness, free treatment was the single most reason for choosing government health facilities (65 percent) followed by good treatment (25 percent) and close proximity (9.33 percent). Among users of private facilities, a majority (93 percent) mentioned good medical treatment and humane and caring behaviour of providers.

4.2.2. Correlates of treatment-seeking

There were no significant differences by sex in whether treatment was sought for chronic morbidity. However, caste and ownership of assets were associated with treatment seeking for chronic morbidity, with MBCs and those with below average asset ownership having lower rates of treatment seeking (Table 10). There was also a statistically significant association between treatment seeking and age, with those above 35 years having a slightly higher rate.

Source of treatment (government or private provider) was significantly associated with caste, asset ownership, age and literacy status. It is interesting to note that while a lower proportion of those belonging to MBC sought treatment at all, a greater proportion of them used a private provider as compared to the SC/ST group. The latter has a much higher rate of utilisation of government facilities as compared to other caste groups (Table 11). A greater proportion of those with above average assets, younger persons (below 35 years of age) and literate persons used private health care facilities as compared to their those with below average assets, those above 35 years of age and illiterate persons.

4.2.3 Stratified analysis of correlates of treatment seeking for chronic morbidity

Age was associated with treatment seeking for males, but no such association was found for females. Males above 60 years of age had a significantly higher probability of seeking treatment for chronic morbidity (Table 18).

Determinants of treatment seeking varied by caste group: for SC/STs, belonging to the 35-59 year age group and being in remunerated occupation increased the odds for treatment seeking for chronic morbidity, while for 'Other' castes, remunerated employment was the only significant determinant. For MBCs, there were no major variations by age, literacy status or occupation (Table 19).

No variation in determinants of treatment seeking was observed by ownership of assets (Table 20).

5. Reproductive morbidity

5.1. Prevalence of reproductive morbidity

5.1.1 Extent and nature of morbidity

In the sample households there were 2440 ever-married women in the reproductive age group. Of them about 45 percent (1086) had one or more gynaecological morbidities (Table 4). Overall 1086 women had 1466 morbidities; about one fifth had two or more morbidities. The mean reproductive morbidity per woman was 1.4.

The most frequently mentioned complaints among ever-married women were menstrual problems (56%) white discharge (30%) and lower abdominal pain (10%). Another two percent suffered with urinary tract infection. Of the rest, nine had uterine prolapse and another five women had infertility problems. Fifty six women (2.3%) had undergone hysterectomy. Six women who had undergone hysterectomy were below 35 years of age. This is an unusual occurrence and calls for further probing.

About seventy one percent of women reporting a reproductive morbidity had suffered from these problems for more than one year. Only 17.3 percent of cases had experienced the problem for six months or less preceding the survey. The average (median) duration of illness was 3 years.

5.1.2 Correlates

An important finding that emerges is that many of the correlates of reproductive morbidity are different from factors associated with general morbidity (Table 21).

Association with asset-ownership and age are not statistically significant. Women who belonged to most-backward castes had a significantly higher prevalence of reproductive morbidity (48.5%) than their counterparts in 'other' castes (39.9%) and SC/ST (45.6%); and illiterate women had a higher rate of prevalence (47.4%) than literate women (41.8%). Similarly, those living in below average housing conditions had a higher prevalence (46.3%) than their counterparts living in better housing conditions (40.7%).

The strongest associations of reproductive morbidity were with type of family, contraceptive use and parity. A greater proportion of women living in nuclear families suffered from reproductive morbidity (48.8%) as compared to women living in joint or extended families (39.5%). Use of contraception significantly increased prevalence of reproductive morbidity (50.7% as compared to 36% among non-users). More women with parity two or less suffered from reproductive morbidity (54.9%) as compared to their counterparts with parity 3 or more (45.1%).

5.1.3 Stratified analysis of correlates of reproductive morbidity

Stratified analysis by caste and asset ownership indicate some variations in determinants of reproductive morbidity. For women belonging to SC/ST group, use of a contraceptive method is the only variable significantly increasing the odds of suffering from a reproductive morbidity. For women of most backward castes, the determinants are literacy status and contraceptive use and for women of 'other' castes, younger age and being self-employed increase the odds of reproductive morbidity in addition to ever-use of contraception.

For women from low-asset households, younger age, illiteracy, being in remunerated occupation, living in poor housing conditions and in a nuclear family increase odds of morbidity. For women from better-off households, age and occupation do not seem to matter, but illiteracy, poor housing conditions and living in a nuclear family increase the probability of suffering from reproductive morbidity.

5.2. Treatment seeking for reproductive morbidity

5.2.1. Rates and sources of treatment-seeking

Of the 1466 episodes of reproductive morbidity reported, treatment was sought for 65 per cent (Table 24). This is much lower than the rate of treatment seeking for acute (78.5%) and chronic morbidity (88.7%). A little less than half the women seeking treatment (48.4%) went to a government provider or facility, while just a little above half (51.6%) went to a private provider. About 19 per cent of those going to a private provider used a less-than qualified provider, making government health facilities the main source of qualified care for women with reproductive morbidity.

About 71 per cent of women with reproductive morbidity gave proximity and free treatment as most important factors underlying their choice of a government provider or facility for treatment. Immediate attention and humane treatment were main reasons for choosing private hospitals/ doctors. Of the 510 women who did not take any treatment for a reproductive health problem, 55 percent reported that they did not think it was necessary to seek treatment for the problem: this was especially true for menstrual problems and severe abdominal pain. Lack of money was the second most reasons for not taking treatment and another 14 per cent intended seeking treatment but had not found the time to do so. A quarter of the women suffering from reproductive tract infections did not seek treatment because they were embarrassed to report the condition to a health provider.

5.2.3 Correlates of treatment-seeking for reproductive morbidity

Many of the correlates of treatment-seeking for reproductive morbidity were different from those for acute or chronic morbidity. Neither caste nor asset ownership showed an association, nor did literacy status. Age, occupation, family type, contraceptive use and parity were significantly associated with treatment-seeking. There was an increase in treatment seeking by age. A higher rate of treatment-seeking was found among women in remunerated occupations as compared to those in unremunerated occupations, those living in nuclear families as compared to those in joint/extended families and ever-users of contraception as compared to never-users of contraception.

Source of treatment appears to be associated with a different set of factors. For example, caste and asset ownership are associated with source of treatment, with women from SC/ST more likely to use government providers/facilities and 'other' castes and MBCs more likely to use private providers or facilities. As may be expected, those with above average assets and literate had a greater proportion seeking treatment from the private sector in health. Users of contraception and those of higher parity also tended to use government facilities more than private facilities. The association of remunerated occupation with use of government facilities is unexpected and needs further analysis.

5.2.4. Stratified analysis of correlates of treatment-seeking for reproductive morbidity

Do correlates of treatment-seeking for reproductive morbidity vary by caste and asset ownership?

There are variations by caste in correlates of treatment-seeking for reproductive morbidity. For women of SC/ST group, the odds of treatment-seeking increase significantly with increasing age, and residing in a nuclear family increases the odds of treatment seeking. For women belonging to MBC, being in a remunerated occupation and residing in a nuclear family increase the odds of treatment seeking significantly, while for women from 'Other' castes, only belonging to a nuclear family matters (Table 27). As for variations by asset ownership, older age, having a remunerated occupation and living in a nuclear family increase the odds of treatment-seeking. No significant correlates were found for those with below average asset ownership (Table 28).

6. Discussion and conclusions

6.1. Summary and discussion

This study sought to to examine differences by caste, class and gender in prevalence and correlates of morbidity; and in rates and correlates of treatment-seeking for morbidity, using information on self-reported morbidity gathered from a health-interview survey carried out in Dharmapuri district of Tamil Nadu.

The reported morbidity rate in the survey was relatively high as compared to other studies in India. National Sample Survey data for Tamil Nadu (1995-96) reported the prevalence of any ailment in the population to be 54 per 1000 as compared to 276 per 1000 in the present study [17].

Prevalence of acute as well as chronic morbidity was significantly associated with age, literacy, occupation and housing conditions, all variables identified as 'proximate' determinants of health in the study. All associations were in the expected direction, with age above 35 years, illiteracy, unremunerated occupation and poor housing conditions associated with higher prevalence.

There were significant differences in prevalence of acute and chronic morbidity by caste, ownership of assets and gender. Females and those with lower level of assets had higher prevalence than males and those who were economically better-off. A higher prevalence of morbidity for females is observed also in NSSO 52nd round [17]. In the case of caste, it was not the Scheduled castes and tribes but the MBC (Most Backward Caste) group that had a significant disadvantage. This is usually interpreted as being the result of under-reporting by socially backward castes. However, this is not what we found.

An analysis of the characteristics of MBC group as against SC/ST and 'Other' castes gives some indication as to the reasons. In the study sample, the MBCs have a lower level of literacy (53.3%) as compared to SC/ST (56.1%). A higher proportion of MBCs (64%) live in houses with poor housing conditions as compared to those belonging to SC/ST group (60.5%). Further, the SC/ST group has a much higher proportion of population below 15 years of age (37%) as compared to MBC group (31%). All three factors are correlated with a higher prevalence of morbidity. This is a significant finding in that it indicates that material conditions and access to resources are sources of inequities in health, rather than membership of a caste *per se*.

Reproductive morbidity was associated significantly with literacy, occupation and housing conditions, but not with age. Contraceptive use was associated with increased reproductive morbidity, a phenomenon noted in several studies especially when the method of contraception is female sterilization (Bhatia and Cleland 1995, CV Sowmini dissertation). There was also significantly higher prevalence of reproductive morbidity in women of lower parity, and those residing in nuclear families. The reasons for these associations are not clear.

As in the case of acute and chronic morbidity, women belonging to most backward castes suffered higher levels of reproductive morbidity. However, it is interesting to note that economic status was not associated with reproductive morbidity.

Many of the findings on correlates of reproductive morbidity differ from those found in NFHS-2 with some exceptions. NFHS-2 also finds a slightly higher prevalence among women of lower parity as found in the present study. In NFHS-2 for Tamil Nadu, standard of living is the only variable associated significantly with prevalence of reproductive morbidity which is contrary to our findings above. Further it also finds that none of the background characteristics such as age, residence, education and work status made a difference to reproductive morbidity [32], unlike in the present study.

Levels of treatment-seeking in this population were high for acute as well as chronic morbidity. Literacy was associated with treatment seeking for acute morbidity, while for chronic morbidity, higher proportions sought care in older than in younger age groups.

Caste and gender did not make a difference to whether treatment was sought for acute as well as chronic morbidity, only asset ownership was significantly associated. However, caste, gender as well as asset ownership significantly influenced where treatment was sought. Females and those with lower assets tended to depend more on government facilities. Among caste groups, it was those belonging to SC/ST group who were more likely to use government health facilities. Thus, government health facilities appear to play an important role in making health care accessible to socially vulnerable populations.

Treatment seeking for reproductive morbidity by women in the present study was 65 per cent, considerably higher than the findings in NFHS-2, of 49 per cent. The proportion seeking treatment increased significantly with increasing age, remunerated occupation and residence in a nuclear family. Residing in a nuclear family may increase a woman's ability to take decisions concerning treatment-seeking.

Neither caste nor asset ownership influenced whether treatment was sought, but significantly influenced the source of treatment, with SC/ST women using government facilities significantly more than women from MBC group and 'Other' castes; and a greater proportion of women from households with lower assets using government facilities as compared to their better-off counterparts.

Stratified analysis shows that determinants of morbidity as well as treatment-seeking may differ by caste, class and gender. Tables 29 and 30 below summarise these differences. If this means that pathways to poorer health status and factors influencing access to health care differ by gender, caste and class then interventions to improve health will have to factor-in these differences.

6.2 Conclusions

Caste, class and gender are significantly associated with prevalence of acute and chronic morbidity, and caste was a significant variable associated with reproductive morbidity.

Treatment seeking was high overall, and did not differ significantly either by gender or caste but only by economic status as indicated by ownership of assets. However, dependence on government health facilities was significantly higher for females, most-backwards castes and those with lower assets, indicating the crucial role played by public health facilities in ensuring access to care of socially vulnerable groups.

The study thus found inequities in health status by caste, class and gender, but less so in treatment seeking, thanks to availability of low-cost or free-treatment. Access to resources needed for remaining healthy seems to contribute to a large part of inequities in health. Bridging these health gaps would require addressing their social determinants: education, remunerated work, better housing conditions and better economic resources. For women, in addition to these, improved quality of care in family planning would be another major focus of attention to remove avoidable reproductive morbidity.

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Table 1. Characteristics of sample households

Variables	Frequency
Place of residence	
Rural	2326 (94.0)
Urban	149 (6.0)
Religion	
Hindu	2361 (95.4)
Christian	34 (1.4)
Muslim	80 (3.2)
Type of family	
Nuclear family	1596 (64.5)
Joint /extended family	879 (35.5)
Housing conditions	
House type:	
Kachha	552 (22.3)
Semi-pucca	1375 (55.6)
Pucca	548 (22.1)
Separate kitchen:	
Yes	709 (28.7)
No	1766(71.4)
Smoke outlet:	
Yes	324 (13.1)
No	2151(86.9)
Source of drinking water:	
Public tap	1213 (49.0)
Public well/borewell	545 (22.0)
Own house well/tap	588 (24.8)
Others	129 (5.2)
Toilet facilities:	
Yes	249 (10.1)
No	2226 (89.9)

Table 1. Characteristics of sample households (continued)

Variables		Frequency
Assets		
Land:	Land owned	1145 (46.3)
	Landless	1330 (53.7)
Livestock:	Owned	767 (31.0)
	Not owned	1708 (69.0)
Standard of Living		
	Low	916 (37.0)
	Medium	927 (37.5)
	High	632 (25.5)
Total		**2475 (100.0)**

Table 2: Characteristics of the study population (percentages in brackets)

Variables	Males	Females	Total
Age group (years)			
< 15	1667 (29.6)	1514 (28.0)	3181 (28.8)
15-34	2033 (36.1)	2048 (37.8)	4081 (37.0)
35-59	1459 (25.9)	1440 (26.6)	2899 (26.3)
>=60	465 (8.3)	413 (7.6)	878 (8.0)
Educational Status			
Illiterate	1945 (34.6)	2712 (50.1)	4657 (42.2)
Primary or less	1230 (21.9)	1037 (19.2)	2267 (20.5)
Middle school	971 (17.3)	733 (13.5)	1704 (15.4)
High school	786 (14.0)	581 (10.7)	1367 (12.4)
Higher secondary	349 (6.2)	231 (4.3)	580 (5.3)
Higher education	343 (6.1)	121 (2.2)	464 (4.2)
Occupation			
Wage labourer	1501 (26.7)	1223 (22.6)	2724 (24.7)
Business/salaried employment	996 (17.7)	235 (4.3)	1231 (11.2)
Cultivation	567 (10.1)	341 (6.3)	908 (8.2)
Unemployed	582 (10.3)	329 (6.1)	911 (8.2)
Household work	0	1254 (23.2)	1254 (11.4)
Not in the work force	1978 (35.2)	2033 (37.5)	4011 (36.3)
Total	**5624 (100.0)**	**5415 (100.0)**	**11039 (100.0)**

Table 3. Characteristics of ever-married women in the reproductive age group (15-49 years of age)

Variables	Frequency
Age (years)	
15-24	567 (23)
25-34	915 (38)
35-44	728 (30)
45-49	230 (9)
Marital status	
Currently married	2236 (91.6)
Widowed	135 (5.5)
Divorced/separated	69 (2.8)
Age at marriage (years)	
< 18	1423 (58.3)
18-19	556 (22.8)
20-21	255 (10.5)
22+	206 (8.4)
Type of family	
Nuclear	1309 (53.7)
Jouint/extended	1131 (46.3)
Contraceptive use*	
Non-users	835 (37.3)
Users	1401 (62.7)
Total	2440

* data available only for currently married women, n=2236

Table 4. Prevalence of general and reproductive morbidity

Morbidity	**Male**	**Female**	**Total**
General Morbidity			
Acute morbidity only	440 (7.8)	607 (11.2)	1047 (9.5)
Chronic morbidity only	699 (12.4)	837 (15.5)	1536 (13.9)
Acute and chronic	124 (2.2)	339 (6.3)	463 (4.2)
Any general morbidity (acute or chronic)	1263 (22.5)	1783 (32.9)	3046 (27.6)
No general morbidity	4152 (77.5)	3841 (67.1)	7993 (72.4)
N	**5415**	**5624**	**11039**
Reproductive morbidity	**Frequency (ever married women of reproductive age)**		**N**
Any reproductive morbidity	1084 (44.5)		**2440**

Table 5. Correlates of acute and chronic morbidity

Variables	Acute morbidity	Chronic morbidity
Sex	****	****
Male	564 (10.03)	823 (14.63)
Female	946 (17.47)	1176 (21.72)
Caste	**	**
SC/ST	467(12.3)	556(14.6)
MBC	516(15.5)	727(21.8)
Others	527(13.5)	716(18.4)
Assets	**	**
Below average	1274(14.4)	1149(16.4)
Above average	237(10.7)	550(24.7)
Age	**	**
<15	451(14.2)	152(4.8)
15-34	430(10.5)	527(12.9)
35-59	470(16.2)	933(32.2)
>=60	159(18.1)	387(44.1)
Literacy status	**	**
Illiterate	831(17.8)	1083(23.3)
Literate	697(10.6)	916(14.4)
Occupation	**	**
Labourers	379(13.9)	658(24.2)
Salaried employment	45(6.8)	84(12.8)
Self employment	231(14.4)	458(28.6)
Unremunerated	855(14.1)	799(13.2)
Housing conditions	**	**
Below average	954(14.9)	1148(17.9)
Above average	556(12.0)	851(18.3)
Total N	**11039**	**11039**

** p<0.001

Table 6. Association of independent variables with acute morbidity stratified by sex

Variables	Sex (Odds ratio 95% CI)	
	Male	**Female**
Age		
<15	Reference	Reference
15-34	0.43 (0.34-0.54) **	1.0 (0.80-1.20)
35-59	0.62 (0.50-0.78) **	1.79 (1.48-2.16) **
>=60	1.04 (0.78-1.40)	1.68 (1.28-2.21) **
Literacy status		
Literate	Reference	Reference
Illiterate	1.60 (1.34-1.91)**	1.72 (1.49-1.99) **
Occupation		
Remunerated	Reference	Reference
Unremunerated	0.71(0.59-0.84)**	1.36 (1.18-1.58)**
Housing conditions		
Below average	0.98 (0.83-1.17)	1.26 (1.08-1.48)*
Above average	Reference	Reference

* p< 0.05 ** p<0.001

Table 7. Association of independent variables with acute morbidity stratified by caste

Variables	Caste (Odds ratio 95% CI)		
	SC/ST	**MBC**	**Other**
Age			
<15	Reference	Reference	Reference
15-34	0.70 (0.55-0.90)*	0.77(0.60-0.97)*	0.65(0.51-0.84)**
35-59	1.35(1.06-1.73)*	1.13(0.88-1.45)	1.04(0.82-1.32)
>=60	1.54(1.05-2.26)*	1.29(0.91-1.83)	1.20(0.87-1.65)
Literacy status			
Literate	Reference	Reference	Reference
Illiterate	1.85 (1.52-2.26)**	1.85(1.53-2.24)**	1.75(1.46-2.11)**
Occupation			
Unremunerated	Reference	Reference	Reference
Remunerated	1.08(0.89-1.31)	0.93(0.77-1.13)	0.72(0.59-0.87)**
Housing conditions			
Below average	1.17 (0.96-1.43)	1.26(1.03-1.54)*	1.39(1.16-1.68)**
Above average	Reference	Reference	Reference

* p< 0.05 ** p<0.001

Table 8. Association of independent variables with acute morbidity stratified by asset ownership

Variables	Assets owned (Odds ratio 95% CI)	
	Below average	**Above average**
Age		
<15	Reference	Reference
15-34	0.76 (0.65-0.88) **	1.20(0.36-3.97)
35-59	1.53 (1.31-1.78) **	1.61 (0.49-5.29)
>=60	1.14 (0.90-1.45)	4.11 (1.22-13.76)*
Literacy status		
Illiterate	1.86(1.65-2.1)**	1.54(1.19-1.99)**
Literate	Reference	Reference
Occupation		
Unremunerated	1.09(0.96-1.24)	0.61(0.43-0.87)*
Remunerated	Reference	Reference
Housing conditions		
Below average	1.15 (1.01-1.32)*	1.34 (0.98-1.83)
Above average	Reference	Reference

* p< 0.05 ** p<0.001

Table 9. Treatment seeking for acute and chronic morbidity

Treatment seeking	**Type of morbidity**	
Of all reporting a morbidity	Acute morbidity	Chronic morbidity
Sought Treatment	1379 (78.5)	2967 (88.7)
Did not seek treatment	378 (21.5)	379 (11.3)
Total episodes	**1757 (100.0)**	**3346 (100.0)**
Of those seeking treatment, used		
Govt. facilities or provider	611 (44.3)	1254 (42.3)
Private facilities or provider	768 (55.7)	1713 (57.7)
Total	**1379 (100.0)**	**2967 (100.0)**
Of those seeking treatment, with private providers, those using		
Qualified private providers	479 (62.4)	1481 (86.5)
Less-than or unqualified Providers	289 (37.6)	232 (13.5)
Total	**768 (100.0)**	**1713 (100.0)**

Table 10. Correlates of treatment seeking for acute and chronic morbidity

Variables	Sought treatment For episodes of acute morbidity	Total N (episodes of morbidity)	Sought treatment For episodes of chronic morbidity	Total N (episodes of morbidity)
Sex				
Males	529(80.5)	657	1179(89.5)	1318
Females	850(77.3)	1100	1788(88.2)	2028
Caste			*	
SC/ST	433(78.0)	555	736(89.1)	826
MBC	454(75.9)	598	1112(86.7)	1283
Others	492(81.5)	604	1119(90.5)	1237
Assets	**		**	
Below average	630(75.4)	826	1541(86.8)	1775
Above average	749(81.3)	923	1426(90.8)	1571
Age			**	
<15	401(79.6)	504	197(86.0)	229
15-34	372(76.2)	488	691(85.8)	805
35-59	448(78.9)	568	1471(90.9)	1618
>=60	158(80.2)	197	608(87.6)	694
Literacy status	*			
Illiterates	510(75.7)	674	1609(88.5)	1819
Literates	869(80.2)	1083	1358(88.9)	1527
Occupation				
Unremunerated	665(80.1)	927	1196(87.8)	1984
Remunerated	714(77.0)	830	1771(89.3)	1362
Total	**1379 (78.5%)**	**1757**	**2967(88.7)**	**3346**

* p< 0.05 ** p<0.001

Table 11. Correlates of source of treatment for acute and chronic morbidity

Variables	Sought treatment For episodes of acute morbidity From		Total N (treated episodes of morbidity)	Sought treatment For episodes of chronic morbidity From		Total N (treated episodes of morbidity)
	Govt. Facilities/ providers	Pvt Facilities/ providers		Govt. Facilities/ providers	Pvt Facilities/ providers	
Sex		*				
Males	214(40.5)	315(59.5)	529	477(40.5)	702(59.5)	1179
Females	397(46.7)	453(53.3)	850	777(43.5)	1011(56.5)	1788
Caste		**			**	
SC/ST	229(52.9)	204(47.1)	433	375(51.0)	361(49.0)	736
MBC	189(41.6)	265(58.4)	454	438(39.4)	674(60.8)	1112
Others	193(39.2)	299(60.8)	492	441(39.4)	678(60.6)	1119
Assets		**			**	
Below average	329(52.2)	301(47.8)	630	742 (48.2)	799(51.8)	1541
Above average	282(37.7)	467(62.3)	749	512 (35.9)	914(64.1)	1426
Age		**			**	
<15	162(40.4)	239(59.6)	401	76(38.6)	121(61.4)	197
15-34	138(37.1)	234(62.9)	372	226(32.7)	465(67.3)	691
35-59	223(49.8)	225(50.2)	448	621(42.2)	850(57.8)	1471
>=60	88(55.7)	70(44.3)	158	331(54.4)	277(45.6)	608
Literacy status		**			**	
Illiterates	269(52.7)	241(47.3)	510	775(48.2)	834(51.8)	1609
Literates	342(39.4)	527(60.6)	869	479(35.3)	879(64.7)	1358
Occupation		*				1196
Unremunerated	277(41.7)	388(58.3)	665	503(42.1)	693(57.9)	1771
Remunerated	334(46.8)	380(53.2)	714	751(42.4)	1020(57.6)	
Total	**611(44.3)**	**768(55.7)**	**1379**	**1254 (42.3)**	**1713 (57.7)**	**2967**

p<0.05 ** p<0.001

Table 12. Association of independent variables with treatment-seeking for acute morbidity stratified by sex

Variables	Sex (Odds ratio 95% CI)	
	Male	**Female**
Age		
<15	Reference	Reference
15-34	1.32 (0.53-3.28)	1.15(0.74-1.78)
35-59	1.57 (0.55-4.42)	1.64(0.98-2.74)*
>=60	1.67(0.54-5.13)	2.45(1.19-5.02)*
Literacy status		
Illiterate	Reference	Reference
Literate	2.24(1.34-3.73)*	1.18(0.81-1.72)
Occupation		
Remunerated	1.45(0.57-3.63)	1.39(0.96-2.02)
Unremunerated	Reference	Reference

* p< 0.05 ** p<0.001

Table 13. Association of independent variables with treatment seeking for acute morbidity stratified by caste

Variables	Caste (Odds ratio 95% CI)		
	SC/ST	**MBC**	**Other**
Age			
<15	Reference	Reference	Reference
15-34	0.87(0.45-1.68)	1.25(0.66-2.35)	1.09(0.57-2.09)
35-59	1.56(0.72-3.38)	1.17(0.56-2.43)	1.75(0.81-3.78)
>=60	2.22(0.78-6.27)	1.29(0.51-3.21)	2.18(0.83-5.75)
Literacy status			
Illiterate	Reference	Reference	Reference
Literate	1.72(1.03-2.88)	0.94(0.58-1.53)	2.02(1.17-3.49)*
Occupation			
Unremunerated	1.04(0.58-1.84)	1.37(0.76-2.46)	1.48(0.85-2.59)
Remunerated	Reference	Reference	Reference

* p< 0.05 ** p<0.001

Table 14. Association of independent variables with treatment seeking for acute morbidity stratified by asset ownership

Variables	Assets owned (Odds ratio 95% CI)	
	Below average	**Above average**
Age		
<15	Reference	Reference
15-34	1.06(0.61-1.83)	1.68(0.59-4.79)
35-59	1.20 (0.65-2.19)	3.52 (1.25-9.93) *
>=60	1.35 (0.71-2.58)	12.36 (4.29-35.59)**
Literacy status		
Illiterate	Reference	Reference
Literate	1.37(0.89-2.11)	1.39(0.91-2.12)
Occupation		
Unremunerated	1.06(0.70-1.59)	1.38(0.91-2.10)**
Remunerated	Reference	Reference

* p< 0.05 ** p<0.001

Table 15. Association of independent variables with chronic morbidity stratified by sex

Variables	Sex (Odds ratio 95% CI)	
	Male	**Female**
Age		
<15	Reference	Reference
15-34	2.09 (1.60-2.71) **	3.99 (3.04-5.22)**
35-59	6.06 (4.72-7.78) **	14.25 (10.93-18.58) **
>=60	12.01(9.00-16.01)**	21.16 (15.51.28-86) **
Literacy status		
Literate	Reference	Reference
Illiterate	1.24 (1.06-1.44)*	2.17 (1.89-2.48) **
Occupation		
Remunerated	Reference	Reference
Unremunerated	2.24(1.90-2.63)**	2.46 (2.16-2.81)**
Housing conditions		
Below average	0.66 (0.57-0.77)**	1.11 (0.96-1.28)
Above average	Reference	Reference

* p< 0.05 ** p<0.001

Table 16. Association of independent variables with chronic morbidity stratified by caste

Variables	Caste (Odds ratio 95% CI)		
	SC/ST	**MBC**	**Other**
Age			
<15	Reference	Reference	Reference
15-34	3.08 (2.21-4.31)**	2.91(2.16-3.93)**	2.89(2.05-4.09)**
35-59	9.23(1.06-1.73)**	9.60(7.16-12.89)**	9.95(7.17-13.8)**
>=60	12.70(8.50-18.96)**	14.65(10.29-20.84)**	19.03(13.24-27.36)**
Literacy status			
Literate	Reference	Reference	Reference
Illiterate	1.94 (1.61-2.32)**	1.79(1.51-2.11)**	1.72(1.46-2.03)**
Occupation			
Unremunerated	Reference	Reference	Reference
Remunerated	2.49(2.07-2.99)**	2.43(2.04-2.88)**	1.40(1.19-1.64)**
Housing conditions			
Below average	Reference	Reference	Reference
Above average	1.10(0.91-1.32)	1.24(1.05-1.47)*	0.83(0.70-0.98)*

* p< 0.05 ** p<0.001

Table 17. Association of independent variables with chronic morbidity stratified by asset ownership

Variables	Assets owned (Odds ratio 95% CI)	
	Below average	**Above average**
Age		
<15	Reference	Reference
15-34	2.87(2.36-3.50) **	1.68(0.59-4.79)
35-59	11.67 (9.62-14.15) **	3.52 (1.25-9.93) *
>=60	13.17 (10.46-16.59)**	12.36 (4.29-35.59)**
Literacy status		
Illiterate	1.95(1.74-2.19**	1.69(1.40-2.05)**
Literate	Reference	Reference
Occupation		
Unremunerated	2.39(2.12-2.68)**	0.46(0.35-0.59)**
Remunerated	Reference	Reference
Housing conditions		
Below average	1.16 (1.02-1.32)*	1.54 (1.20-1.93)**
Above average	Reference	Reference

* p< 0.05 ** p<0.001

Table 18. Association of independent variables with treatment-seeking for chronic morbidity stratified by sex

Variables	Sex (Odds ratio 95% CI)	
	Male	**Female**
Age		
<15	Reference	Reference
15-34	1.70(0.83-3.47)	0.67(0.34-1.32)
35-59	1.59(0.76-3.35)	1.50(0.75-3.03)
>=60	1.95(0.99-3.85)*	0.99(0.48-20.02)
Education		
Illiterates	1.27(0.86-1.88)	1.12(0.80-1.56)
Literates	Reference	Reference
Occupation		
Unremunerated	1.12(0.68-1.83)	1.00(0.75-1.34)
Remunerated	Reference	Reference

* p< 0.05 ** p<0.001

Table 19. Association of independent variables with treatment seeking for chronic morbidity stratified by caste

Variables	Caste Odds ratio (95%CI)		
	SC/ST	MBC	OTHERS
Age			
<15	Reference	Reference	Reference
15-34	1.24(0.58-2.62)	1.12(0.59-2.15)	0.61(0.26-1.45)
35-59	2.52(1.19-5.34)*	1.39(0.74-2.58)	1.31(0.57-3.05)
>=60	1.14(0.51-2.57)	0.96(0.49-1.89)	1.07(0.45-2.53)
Education			
Illiterates	0.88(0.56-1.37)	0.99(0.71-1.37)	1.16(0.80-1.70)
Literates	Reference	Reference	Reference
Occupation			
Unremunerated	Reference	Reference	Reference
Remunerated	1.62(1.04-2.52)*	0.86(0.61-1.23)	1.51(1.02-2.22)*

* p< 0.05 ** p<0.001

Table 20. Association of independent variables with treatment seeking for chronic morbidity stratified by asset ownership

Variables	Assets owned (Odds ratio 95% CI)	
	Below average	**Above average**
Age		
<15	Reference	Reference
15-34	0.81(045-1.05)	1.22(0.59-2.51)
35-59	1.46(0.79-2.69)	1.87(0.90-3.90)
>=60	1.18(0.63-2.19)	1.33(0.61-2.92)
Education		
Illiterates	Reference	Reference
Literates	1.20(0.73-1.43)	1.24(0.85-1.80)
Occupation		
Unremunerated	Reference	Reference
Remunerated	1.14(0.84-1.57)	0.94(0.64-1.36)

* p< 0.05 ** p<0.001

Table 21 . Correlates of reproductive morbidity

Variables	Prevalence of morbidity
Caste	*
SC/ST	379 (45.6)
MBC	366 (48.5)
Others	341 (39.9)
Assets	
Below average	1055 (44.6)
Above average	31 (42.5)
Age	
15-34	677 (45.7)
35-49	409 (42.7)
Literacy status	*
Illiterate	559 (47.4)
Literate	527 (41.8)
Occupation	**
Labourers	459 (47.9)
Salaried employment	20 (20.8)
Self employment	186 (50.3)
Unremunerated	421 (40.5)
Housing conditions	*
Below average	772 (46.3)
Above average	314 (40.7)
Family type	**
Nuclear	639 (48.8)
Joint/extended	447 (39.5)
Contraceptive use[a]	**
Non-users	301 (36.0)
Users	711 (50.7)
Parity	*
0-2	596 (54.9)
>=3	490 (45.1)
Total N	**2440**

*p<= 0.05 ** p<=0.001

a: calculated for currently married women only

Table 22. Association of independent variables with reproductive morbidity stratified by caste

Variables	Caste (Odds ratio 95% CI)		
	SC/ST	**MBC**	**Other**
Age			
15-34	1.15(0.86-1.55)	1.04(0.76-1.42)	1.39(1.04-1.86)*
35-49	Reference	Reference	Reference
Education			
Illiterates	1.22(0.91-1.63)	1.36(1.01-1.85)**	1.20(0.88-1.62)
Literates	Reference	Reference	Reference
Occupation			
Salaried employment	Reference	Reference	Reference
Labourers	2.08(0.63-6.87)	2.67(0.92-7.78)	1.81(0.85-3.81)
Self employment	3.00(0.82-10.91)	2.24(0.76-6.63)	2.72(1.26-5.88)*
Unremunerated	1.54(0.46-5.10)	1.93(0.66-5.64)	1.68(0.82-3.45)
Type of family			
Joint/Extended	Reference	Reference	Reference
Nuclear	1.44 (1.28-1.68)	1.28(1.11-1.49)	1.52(1.32-1.72)
Housing conditions			
Above average	0.79(0.59-1.07)	0.93(0.66-1.30)	0.78(0.59-1.04)
Below average	Reference	Reference	Reference
Contraceptive Use			
Ever users	2.21(1.63-3.02)**	1.61(1.19-2.18)*	1.80(1.32-2.45)**
Non-users	Reference	Reference	Reference
Parity			
0-2	Reference	Reference	Reference
>=3	1.05(0.80-1.39)	1.22(0.91-1.64)	1.22(0.92-1.63)

* p< 0.05 ** p<0.001

Table 23. Association of independent variables with reproductive morbidity stratified by asset ownership

Variables [b]	Assets owned (Odds ratio 95% CI)	
	Below average	**Above average**
Age		
15-34	1.22(1.02-1.45)*	1.33(0.46-3.84)
35-49	Reference	Reference
Education		
Illiterates	1.27(1.07-1.50)*	6.61(2.22-19.69)**
Literates	Reference	Reference
Occupation[1]		
Remunerated	1.32(1.12-1.55)**	2.08(0.64-6.68)
Unremunerated	Reference	Reference
Housing conditions		
Below average	1.23(1.03-1.47)*	2.38(0.78-7.20)**
Above average	Reference	Reference
Family Type		
Joint/extended	Reference	Reference
Nuclear	1.23(1.12-1.35)**	2.27(1.87-2.76)**
Parity 0-2	Reference	Reference
>=3		

* p< 0.05 ** p<0.001

b: The variable ‘contraceptive use’ is not included in this table because of small numbers in the ‘above average’ asset ownership category

Table 24 Treatment seeking for reproductive morbidity

Treatment seeking	
Of all reporting a morbidity Sought Treatment Did not seek treatment Total episodes	 956 (65.2) 510 (34.8) **1466 (100.0)**
Of those seeking treatment, used Govt. facilities or provider Private facilities or provider Total	 463 (48.4) 493 (51.6) **956 100.0)**
Of those seeking treatment, with private providers, those using Qualified private providers Less-than or unqualified Providers Total	 402 (81.5) 91 (18.5) **493 (100.0)**

Table 25. Correlates of treatment seeking for reproductive morbidity

Variables	Proportion seeking treatment	N=Episodes of reproductive morbidity
Caste		
SC/ST	313(64.0)	489
MBC	348(66.7)	522
Others	295(64.8)	455
Assets		
Below average	457(65.7)	696
Above average	499 (64.8)	770
Age	*	
15-34	568(62.7)	906
35-49	388(69.3)	560
Literacy status		
Illiterate	528(67.0)	788
Literate	428(63.1)	678
Occupation	**	
Unremunerated	323(60.1)	537
Remunerated	633(68.1)	929
Family type	*	
Nuclear	608(68.2)	892
Joint/extended	348(60.6)	574
Contraceptive use[a]		
Non-users	249(61.9)	402
Users	634(66.2)	957
Parity		
0-2	515(60.4)	805
>=3	441(66.7)	661
Total N	**956 (65.2)**	**1466**

a: data available only for currently married women

$p<0.05$ ** $p<0.001$

Table 26. Correlates of source of treatment for reproductive morbidity

Variables	Sought treatment From		Total N (Treated Episodes of reproductive morbidity)
	Govt. facilities/ providers	Pvt. facilities/ providers	
Caste		**	
SC/ST	180(57.5)	133(42.5)	313
MBC	167(48.0)	181(52.0)	348
Others	116(39.3)	179(60.7)	295
Assets		**	
Below average	262(57.3)	195(42.7)	457
Above average	201(40.3)	298(59.7)	499
Age			
15-24	66(41.0)	95(59.0)	161
25-34	197(48.4)	210(51.6)	407
35-44	175(53.0)	155(47.0)	330
45-49	25(43.1)	33(56.9)	58
Literacy status		**	
Illiterate	280(53.0)	248(47.0)	528
Literate	183(42.8)	245(57.2)	428
Occupation		*	
Unremunerated	138(42.7)	185(57.3)	633
Remunerated	325(51.3)	308(48.7)	323
Family type			
Nuclear	285(46.9)	323(53.1)	608
Joint/extended	178(51.1)	170(48.9)	348
Contraceptive use[a]		**	
Non-users	85(34.1)	164(65.9)	249
Users	341(53.8)	293(46.2)	634
Parity		**	
0-2	222(43.1)	293(56.9)	515
>=3	241(54.6)	200(45.4)	441
Total N	**463(48.4)**	**493(51.6)**	**956**

* p< 0.05 ** p<0.001

Table 27. Association of independent variables with treatment seeking for reproductive morbidity stratified by caste

Variables	Caste (Odds ratio 95% CI)		
	SC/ST	**MBC**	**Other**
Age			
15-34	Reference	Reference	Reference
35-49	1.22(0.83-1.79)	1.38(0.94-2.02)	1.44(0.96-2.15)
Education			
Illiterates	Reference	Reference	Reference
Literates	1.32(0.84-2.05)	0.73(0.47-1.12)	1.33(0.84-2.10)
Occupation			
Unremunerated	Reference	Reference	Reference
Remunerated	1.29(0.84-1.98)	1.61(1.04-2.51)*	1.28(0.83-1.96)
Contraceptive Use			
Non-users	Reference	Reference	Reference
Ever users	0.82(0.49-1.37)	1.26(0.79-1.99)	0.98(0.60-1.60)
Parity			
0-2	Reference:	Reference	Reference
>=3	1.20(0.82-1.73)	1.15(0.79-1.66)	1.05(0.70-1.58)
Type of family			
Joint/Extended	Reference	Reference	Reference
Nuclear	1.57(1.19-2.08)**	1.39(1.04-1.85)*	1.37(1.04-1.80)*

* $p< 0.05$ ** $p<0.001$

Table 28. Association of independent variables with treatment seeking for reproductive morbidity stratified by asset ownership

Variables	Assets owned (Odds ratio 95% CI)	
	Below average	**Above average**
Age		
15-34	Reference	Reference
35-49	1.12(0.77-1.64)	1.41(0.99-1.99)*
Education		
Illiterates	1.02(0.70-1.48)	0.97(0.69-1.35)
Literates	Reference	Reference
Occupation		
Unremunerated	Reference	Reference
Remunerated	1.44(0.98-2.10)	1.35(0.98-1.86)*
Contraceptive use		
Non-users	Reference	Reference
Users	1.21(0.82-1.77)	0.97(0.67-1.39)
Parity		
0-2	Reference	Reference
>=3	1.07(0.70-1.63	1.47(0.97-2.23)
Type of family		
Joint/Extended	Reference	Reference
Nuclear	1.26(0.91-1.74)	1.51(1.11-2.03)*

* p< 0.05 ** p<0.001

Table 29. Correlates of morbidity stratified by caste, asset ownership and gender

Type of morbidity	Caste			Ownership of assets		Gender	
	SC/ST	**MBC**	**Other**	**Below average**	**Above average**	**Male**	**Female**
Acute	Age (+) Literacy: higher for illiterate	Age; literacy and housing conditions (higher for poorer housing)	Age, literacy, occupation, housing conditions	Age Literacy Housing conditions	Age Literacy occupation	Age Literacy occupation	Age Literacy Occupation Housing conditions
Chronic	----	-----	Literacy: higher for literate	Age, literacy, occupation, housing conditions	Age, literacy, occupation, housing conditions	Literacy: higher for literates	Age: increases with age
Reproductive	Contraceptive use (+)	Literacy**:** higher for illiterate; contraceptive use	Age, occupation, contraceptive use	Age, literacy, occupation, housing conditions	Literacy, housing conditions	**NOT APPLICABLE**	

Table 30. Correlates of treatment-seeking stratified by caste, asset ownership and gender

Type of morbidity	Caste			Ownership of assets		Gender	
	SC/ST	**MBC**	**Other**	**Below average**	**Above average**	**Male**	**Female**
Acute	--Nil--	--Nil--	Literacy	--Nil--	Age, occupation	Literacy	Age
Chronic	Age, occupation	--Nil--	Occupation	--Nil--	--Nil--	Age	-Nil-
Reproductive	Age, type of family	Occupation, type of family	Type of family	-Nil---	Age, occupation, type of family	**NOT APPLICABLE**	