

CHAPETER VI

ECONOMIC BURDEN OF HIV RELATED ILLNESS

HIV related illness causes household expenditure to rise as a result of out of pocket health spending. Frequent illness associated with HIV infection can undermine livelihood and contribute to impoverishment (Ainsworth et al., 1998; Barnett & Whiteside, 2001; World Bank, 1997). This chapter of the thesis investigates major health conditions among PLHIV individuals and their contribution to BoD, incidence of illness, hospitalized illness, out of pocket health payments and catastrophe to economic well being of households. From the analysis in chapter V, it is quite evident that medical expenditure constitutes a major proportion of total expenditure in HIV households.

This chapter broadly comments on the costs of illness for HIV households, impact of out of pocket health payments on wellbeing of HIV households and strategies adopted by HIV household to cope up with escalating medical expenditure associated with HIV related illness.

This chapter is categorized into three sections: Section A, comments on the non hospitalized illness episodes among PLHIV individuals, Section B, investigates hospitalized illness episodes among PLHIV individuals during last one year and Section C, explores the linkages between out of pocket health spending and catastrophic economic impact leading to impoverishment.

6.1 BURDEN OF ILLNESS

Burden of illness associated with HIV infection is a serious concern for health policy makers. HIV infection is a fatal accident, which leads to chronic illness related to various opportunistic infections. As inscribed earlier, HIV infection is majorly concentrated among working age adults, opportunistic infections can have ruinous impact as such OI's are extremely expensive to treat, especially due to lack of insurance mechanism. Out-of-pocket expenditure on treatment and services was reportedly Rs 6000 per HIV-positive person over a six-month reference period, while for clients on antiretroviral treatment (ART), the expenditures were markedly higher, nearly Rs 18,150 per person over a six-month period. Roughly 40%–70% of these expenditures are financed by borrowing (NCMH, 2005). An escalated burden of disease (BoD) can have adverse impact on the well being of affected households- social, psychological and economic.

SECTION A: DETAILS ABOUT NON-HOSPITALIZED ILLNESS EPISODES
6.2 FREQUENCY OF ILLNESS (NON-HOSPITALIZED)

HIV weakens the body’s immunity system and as a result, PLHIV are prone to various severe opportunistic infections (OI), some of which (e.g. Kaposi’s sarcoma, PCP etc.) are rarely seen in the life course of any individual. These opportunistic infections take advantage of the compromised immune system of body among PLHIV. The prevention and treatment of OI is an important component of HIV management.

Table 6.1 shows the frequency at which PLHIV respondents were falling ill during the last one year for which they were not hospitalized. As high as, 56.4 percent reported that they were frequently ill during the last one year and 4.2 percent reported that they were almost continuously ill during the last one year.

Table 6.1: Frequency of Illness Reported by PLHIV by Stage of HIV Illness (Non-Hospitalized Illness Episodes)

Characteristics	Frequently Ill (%)	Continuously Ill (%)	No of Persons
Gender			
Male	22.7	1.0	157
Female	33.7	3.2	244
Stage of HIV illness			
AIDS symptoms	22.9	1.5	141
Symptomatic	26.2	2.5	198
Asymptomatic	7.2	0.2	62
Number of Years since HIV Diagnosed			
Less than or equal to one year	13.2	1.0	95
1-3 year	18.2	0.2	110
3-5 year	12.5	1.2	101
5 and more years	12.5	1.7	95

Source: Author’s Own estimates, based on primary data

Percentage of respondents reported frequently ill is high among the PLHIV having AIDS symptoms or symptomatic (22.9 and 26.2 percent respectively). A few observations have emerged from the above table. First, the percentage reporting frequently ill and continuously ill is higher among female PLHIV. Secondly, as the stage of HIV infection increases *i.e.* from asymptomatic to symptomatic, the percentage reporting frequently ill goes up and come down at AIDS symptoms stage. Thirdly, no clear trend emerges as per the numbers of years back HIV was diagnosed among PLHIV individuals and frequency of non hospitalized illness during the last one year. Apparently, the year of diagnosing the HIV infection may not be very

accurate in judging the stage of infection. It is possible that the individual may be infected with HIV long before, but he/she had not gone for HIV testing till any mishap occurred. Table 6.2 shows the distribution of PLHIV reporting prolonged illness as a reason for going in for HIV test. It is quite possible that an individual may have been carrying HIV infection much before, he/ she had gone for testing for HIV due to prolonged illness. Hence it also substantiates an unclear trend that emerged between numbers of year back HIV was diagnosed among PLHIV individuals and frequency of non hospitalized illness during the last one year.

Table 6.2: Distribution of PLHIV Reporting Prolonged Illness as a Reason for Going in For HIV Test

Percent reporting prolonged illness	Men (49.0)	Female (25.4)	All (34.7)
Common cold, nose and throat discomfort, pneumonia	5.2	4.8	5.0
Malaria	...	1.6	0.7
Fever	19.5	11.3	15.8
Headache, body ache	1.3	3.2	2.2
Weakness, dizziness/ Anemia	6.5	9.7	7.9
Loose motions with/without vomiting diarrhea, dysentery	13.0	12.9	12.9
Stomach problem, indigestion, acidity, constipation, ulcer	1.3	...	0.7
Typhoid	3.9	3.2	3.6
Jaundice/ cirrhosis of liver/liver related problem	...	3.2	1.4
Eye problem	1.3	...	0.7
TB	24.7	27.4	25.9
Skin disease/herpes, infections(ringworm, boils abscess)	14.3	14.5	14.4
Urinary/genital infection	1.3	...	0.7
Breathing problem/asthma	1.3	...	0.7
Disease of mouth, teeth and gum, ulcer etc	...	1.6	0.7
Filarial	1.3	...	0.7
Epilepsy/fits	1.3	...	0.7
Cancer	...	1.6	0.7
Sexually transmitted disease	1.3	3.2	2.2
Any other	2.6	1.6	2.2
All	100.0	100.0	100.0
Number of persons	77	62	139

Source: Author's Own estimates, based on primary data

Table 6.2 shows that Tuberculosis (TB) has emerged as the most important reason for the PLHIV going for the HIV test. 24.7 percent of male and 27.4 percent female PLHIV have mentioned this reason. It is well known that TB is the most common OI among PLHIV (S. Bharat *et. all*). In India, it was reported in the recent past years that the cases of TB are increasing due to HIV infection. There is identified significant positive correlation between TB and HIV infection. In many countries HIV serial surveillance is carried out among TB - patients to ascertain the level of HIV

prevalence. Undiagnosed fever emerged as the second most important reason. In Pune city, skin diseases particularly Herpes is also one of the most commonly found reason for PLHIV to go for HIV testing.

Table 6.3 shows the distribution of non-hospitalized illness by nature of illness reported among PLHIV individuals by gender.

Table 6.3: Distribution of Non-Hospitalized Illness by Nature of Illness Reported

Nature Of Illness	Male	Female	All
Common cold, nose and throat discomfort, pneumonia	31.6	33.8	32.9
Fever	31.6	31.8	31.7
Headache, body ache	2.1	4.7	3.7
Weakness, dizziness/ Anemia	13.7	6.1	9.1
Loose motions with/without vomiting diarrhea, dysentery	5.3	10.1	8.2
Stomach problem, indigestion, acidity, constipation, ulcer	1.1	1.4	1.2
Jaundice/cirrhosis of liver/liver related problem	1.1	0.0	0.4
Eye problem	1.1	0.0	0.4
TB	3.2	2.0	2.5
Skin disease/herpes, infections(ringworm, boils abscess)	8.4	6.1	7.0
Disease of mouth, teeth and gum, ulcer etc	0.0	1.4	0.8
Sexually transmitted disease	1.1	0.7	0.8
Any other	0.0	2.0	1.2
Total	100.0	100.0	100.0
Number	95	148	243

Source: Author's Own estimates, based on primary data

Table 6.3 shows the major non hospitalized illnesses among PLHIV. Common cold and fever account for a fairly high percentage of the illness reported by PLHIV during a reference period of one year. It should be noted that the table only depicts the reported major non hospitalized illness, not the episodes of illness.

6.3 SOURCE OF TREATMENT

The percentage distribution of non hospitalized illness for which treatment was sought is presented in the following table by source of treatment.

Table 6.4: Distribution of Non Hospitalized Illness by Source of Treatment for Male and Female PLHIV

Source of Treatment	Male	Female	All
Government hospital	16.8	22.4	20.2
Charitable hospital/NGO	3.2	5.4	4.5
Private doctor	44.2	46.9	45.9
Private hospital/nursing home	35.8	24.5	28.9
Chemist shop	0.0	0.7	0.4
Total	100.0	100.0	100.0
Number	95	147	242

One respondent reported not to seek treatment because of financial constraints

Source: Author's Own estimates, based on primary data

Most of the PLHIV (45.9 percent) rely on private doctors to seek treatment for non hospitalized illness. This is in resemblance with the findings of the number of morbidity surveys in India which shows a high dependence on private sector for the treatment of non-hospitalized illness (NSSO, rounds). As per NSSO 60th round, 19 percent of non-hospitalized illnesses are treated at government health care settings and 81 percent are treated at private health care settings in urban area. Similarly, the study conducted in Delhi and Chennai found that more than 40 percent of the illness episodes in households had sought treatment in a private health facility (Sunder *et. al* 2002). Like general population; most of PLHIV individuals depend on the private sector to seek treatment for non hospitalized illness. This may be so because of the trusted faith and quality of treatment in private health facilities rather than feeble public health care in a developing country like India. The source of seeking treatment has economic implication on HIV households and puts extra burden on the limited economic resources of the household.

Out of pocket expenditure incurred by the HIV households includes the amount spent on fees and medication, clinical tests, transport costs and other miscellaneous expenditure which is directly or indirectly incurred to avail health care. Table 6.5 shows the average annual expenditure incurred by PLHIV on the treatment of non hospitalized illness by source of treatment.

Table 6.5: Expenditure* Incurred By PLHIV for Treatment of Non-Hospitalized Illness by Source of Treatment

(In Rupees)

Source of Treatment	Male	Female	All
Government hospital	1500	733	977
Charitable hospital/NGO	450	586	556
Private doctor	1395	822	1037
Private hospital/nursing home	1713	1428	1566
Chemist shop	...	110	110
Total	1509	940	1162

Source: Author's Own estimates, based on primary data, * expenditure includes all monetary expenses incurred in seeking medical treatment (medication and non-medication expenditure).

Few important observations emerged from Table 6.5. First, even if the treatment is sought from public health facility, the households have incurred substantial average annual expenditure though less than the amount spent while seeking treatment from private health facility (private doctor, private hospital/ nursing home). Leaving aside treatment sought from a chemist shop, average annual out of pocket health spending

on non hospitalized illness is least when treatment is sought from charitable hospital or NGO. There exists substantial significant gender gap in the average expenditure incurred, irrespective of the source of treatment. While for male PLHIV, average annual out of pocket health spending on non hospitalized illness is Rs. 1509, for women PLHIV this average is much lower at Rs. 940. This difference could be the result of identification of disease among male and female. Where, male members in the household are given special consideration, among female members, infections are many times untreated or ignored. Differentials are consistent with results of NSSO findings where, in an urban region, average medical expenditure (Rs.) for non hospitalized ailments per ailing person during a period of 15 days was Rs 306. The gender gap is prevalent, as males spend Rs 322 and females spend Rs 291 on non-hospitalized illness episodes in the last 15 days. Likewise, in urban Maharashtra, average medical expenditure for non-hospitalized illness per treated person during 15 days was Rs 316; in government public health facilities an average urban Maharashtra inhabitant spent mere Rs. 2 on medical expenditure and at private health faculties this expenditure tolled to Rs 300 on medical care apart from other expenditure. NSSO 60th round's findings also substantiate the argument that, for PLHIV individuals, treatment sought at public health facilities is itself not free and they have to incur considerable average expenditure more than that of any average Urban Indian and Maharashtra household to seek treatment.

6.4 DURATION OF ILLNESS, TREATMENT ETC

For each of the non hospitalized illness, during the reference period of last one year prior to interview, the information on duration of treatment, number of days bedridden and number of days not going to work is obtained. Sixty percent of PLHIV respondents reported for being frequently or continuously ill during the last one year prior to interview for which they were not hospitalized and sought treatment as out-patients. The treatment lasted for an average 19 days. On an average, PLHIV individuals were bed ridden for 13.79 days in the last year. However, the average number of days not going for work (21.78 days) was more than the duration of treatment or bed ridden for the affected individuals.

Table 6.6: Average Number of Days Ill, Bedridden and Not Going for Work during the non - Hospitalized Illness in the Last One Year

Stage of infection	Percent reporting frequently / continuous ill	Duration of treatment	Number of days bed ridden	Number of days not going to work
Aids symptoms	69.50	16.33	10.23	25.17
Symptomatic	58.08	21.15	16.07	16.55
Asymptomatic	48.39	26.10	22.14	24.38
All	60.60	19.81	13.79	20.79

Source: Author's Own estimates, based on primary data

Average number of days not going for work, *i.e.* man days lost is estimated for those who are currently employed was 20.79 days for a reference period of one year for non hospitalized illness.

Percentage reporting frequently / continuously ill increase with the stage of illness, 70 percent of AIDS patients reported frequently or continuously ill during the last year. Percentage goes down with the increase in CD4 count category *i.e.* symptomatic (200-499 CD4 count) and asymptomatic (more than or equal to 500 CD4). However, no significant difference was observed in duration of treatment, number of days bed ridden and number of days not going for work as per HIV infection stage.

SECTION B: DETAILS ABOUT HOSPITALIZED CASES

6.5 Frequency of Hospitalization Reported by PLHIV Respondents

During the interview of 401 adult PLHIV respondents, they were asked details about the hospitalized illness cases after diagnosed HIV positive and number of times hospitalized during the last one year prior to the date of interview.

Average number of times hospitalized was estimated only for those reporting hospitalization. The percentage of PLHIV respondents reporting hospitalization since they were diagnosed HIV positive is substantially higher among female PLHIV respondents. 50.0 to 59.1 percent of the PLHIV, who were interviewed, have reported hospitalization. Female PLHIV respondents reported substantially higher percent of hospitalization than their male counterparts. A few important observations are worth considering. First, the percentage reporting ever hospitalization has been much higher for female PLHIV respondents than male. However, there is only marginal difference in the percentage reporting previous year hospitalization. Secondly, no visible marked difference was reported as per the stage of HIV illness. Similarly, a mixed trend is seen as per the number of years back HIV was diagnosed. Ever hospitalized increases

with the number of years since PLHIV tested positive. However, last year reported hospitalized illness is much higher among those who are recently diagnosed HIV positive.

Table 6.7: Frequency of Hospitalization Reported By PLHIV by Stage of Infection and Numbers of Year Back HIV Diagnosed

Characteristics	Hospitalized Since HIV Diagnosed		Hospitalized In The Last Year	
	Percent reporting hospitalization	Average Number of times	Percent reporting hospitalization	Average Number of times
Gender				
Male	52.20	1.29	48.8	1.18
Female	63.52	1.18	50.6	1.13
Stage Of HIV Illness				
AIDS symptoms	66.70	1.23	50.0	1.09
Symptomatic	51.50	1.25	52.0	1.25
Asymptomatic	66.10	1.10	45.2	1.00
Number of Years Since HIV Diagnosed				
Less than or equal to one year	38.90	1.19	89.2	1.18
1-3 year	57.30	1.25	30.2	1.05
3-5 year	71.30	1.18	37.5	1.15
5 and more years	68.40	1.25	60.6	1.15
All	59.10	1.22	50.0	1.14

Source: Author's Own estimates, based on primary data

6.6 NATURE OF ILLNESS (HOSPITALIZED CASES)

Respondent PLHIV were asked the major ailment for which they were hospitalized in the last year. Table 6.8 shows the distribution of last year hospitalization cases by nature of illness suffered by PLHIV by gender and number of days hospitalized.

Table 6.8: Distribution of last year Hospitalization Cases by Nature of Illness suffered by PLHIV and Number of Days Hospitalized

Nature of illness	Percent of cases			Average no of days hospitalized		
	Male*	Female	Total	Male	Female	Total
Common cold, nose and throat discomfort, pneumonia	2	7.6	6.7	22.5	7.7	11.4
Fever	2	11.4	9.2	3.0	12.2	10.5
Headache, body ache	...	2.5	1.7	...	16.0	16.0
Weakness, dizziness/ Anemia	2	19.0	14.3	17.5	9.1	10.1
Loose motions with/without vomiting diarrhea, dysentery	10	17.7	20.2	12.6	9.4	10.7
Stomach problem, indigestion, acidity, constipation, ulcer	...	3.8	2.5	...	6.7	6.7
Typhoid	4	2.5	5.0	6.0	17.0	9.7
Jaundice/cirrhosis of liver/liver related problem	2	1.3	2.5	25.5	60.0	37.0
TB	8	11.4	14.3	75.3	25.8	49.1
Skin disease/herpes, infections (ringworm, boils abscess)	2	3.8	4.2	34.0	20.0	25.6
Gynecological problem (irregular and painful menstruation)	...	2.5	1.7	...	37.0	37.0
Breathing problem/asthma	1	0.0	0.8	60.0	...	60.0
Disease related to pregnancy and child birth	...	3.8	2.5	...	15.0	15.0
Disease of mouth, teeth and gum, ulcer etc	...	1.3	0.8	...	19.0	19.0
Filaria	...	1.3	0.8	...	8.0	8.0
Epilepsy/fits	1	0.0	0.8	15.0	...	15.0
Cancer	...	1.3	0.8	...	2.0	2.0
Accident/ violence/injury	3	1.3	3.4	65.0	3.0	49.5
Dog bite/snake bite/insect bite	1	0.0	0.8	30.0	...	30.0
Sexually transmitted disease	...	1.3	0.8	...	7.0	7.0
Any other	2	6.3	5.9	11.5	15.0	14.0
All	---	100.0	100.0	32.0	13.8	19.9
Number of hospitalization cases	40	79.0	119.0	...	...	...

*absolute numbers

Source: Author's Own estimates, based on primary data

In the case of major hospitalized illness in a reference period of last year prior to the date of interview, weakness, dizziness / anemia, loose motion and TB emerge as common health problem among PLHIV for which they were hospitalized in the last year. These three main ailments respectively account for 14.3, 20.2 and 14.3 percent of illness for which PLHIV were admitted in a hospital. The average number of days admitted in a hospital in a reference period of last year among PLHIV is 19.9; there is visible marked gender difference in the average number of days admitted. Among three most common ailments, the average number of days hospitalized has worked to be highest for Tuberculosis (49.1), TB is considered to be the most common found OI among PLHIV.

6.7 SOURCE OF TREATMENT (HOSPITALIZATION)

The percentage distribution of the hospitalization cases by the source of treatment is presented for males and females in table 6.9. There is marginal difference for the percentage of the cases of PLHIV, who had gone to government hospital and private hospital/ nursing home (47.9 and 48.7) respectively. However, the gender differential is quite significant. The percent seeking health care in a private hospital or nursing home as an in-patient has been lower for women as compared to their male counterparts (41.8 and 62.5 percent) respectively. This probably indicates that the households are willing to spend more on the treatment of a male family member as compared to female member. For as many as 55.7 percent of the cases, women had sought treatment from the government hospital, only 32.5 percent of the cases for men had sought admission in a government hospital. This also highlights the gender differentials among health treatment seeking behaviour among PLHIV. Female PLHIV are more discriminated in the family, when it comes to health care.

Table 6.9: Distribution of Hospitalization Cases by Source of Treatment

Source of Treatment	Male	Female	Total
Government hospital	13 (32.5)	44 (55.7)	57 (47.9)
Charitable institute/ NGO	1 (2.5)	1 (1.3)	2 (1.7)
Private doctor	1 (2.5)	1 (1.3)	2 (1.7)
Private hospital/ Nursing Home	25 (62.5)	33 (41.8)	58 (48.7)
Total	100	100	100.0
Number	40	79	119

Source: Author's Own estimates, based on primary data

As per NSSO, 60th round, for urban region, 38 percent of hospitalized illness episodes are treated at government hospitals and 62 percent are treated at private hospitals. Whereas, a large number of PLHIV are dependent on public health facilities (47.9%) because of their compromised economic status and medical costs at private health facilities is quite hefty for their pockets.

6.8 SOURCE OF FINANCING HOSPITALIZED ILLNESS

Any hospitalized illness involves huge expenditure, which is difficult for the household to finance. A number of studies have reported that out of pocket health spending on hospitalized illness is catastrophic, especially for poor households, which are completely ruined due to health expenditure. Table 6.10 shows the distribution of source of financing hospitalized illness as per socio-economic status of household.

Table 6.10: Distribution of Hospitalization Cases by Source of Financing Hospitalization and Socio-Economic status category

(Absolute numbers)

Source of Financing	Socio-Economic Status					Total
	Poorest	Poor	Middle	Rich	Richest	
Past saving	9	16	8	3	1	37
Employer reimburse	...	2	1	...	...	3
Liquidation of assets	4	1	...	...	...	5
NGO support	3	...	...	...	...	3
Borrow from relatives and friends	15	14	2	...	...	31
Helped by parents, family	8	14	5	2	...	29
Any other	5	5	1	...	...	11
Number	44	52	17	5	1	119

Source: Author's Own estimates, based on primary data

It is quite evident from the table 6.10 that PLHIV categorized in the group of high socio-economic status, finance their hospitalization from past savings or help from parents/ other member of family, where as PLHIV categorized in lower group of socio-economic status either borrow from relatives or friends or apart from help from other members of family depends on NGOs or liquidate their assets.

SECTION C: OOP HEALTH PAYMENTS AND ITS IMPACT ON WELLBEING OF HOUSEHOLD

6.9 OUT OF POCKET SPENDING – CATASTROPHE AND IMPOVERISHMENT

Health spending can be expensive. In the absence of any insurance coverage and any social security scheme, treatment of ailment and duration of treatment, can lead to devastating impact on household budget and households with immediate and severe medical needs can be forced to expend a large fraction of household budget on health care. In case of household with HIV positive member, health payments become a routine spending and hence need to be studied more carefully. Such spending on health payments more or less are accommodated by cutting back on consumption on other goods and services, by accumulating debts, by running down savings, by liquidating durable assets or mortgaging assets and by other means. Whichever financial strategy is adopted; the household suffers a cost that can be labeled as “catastrophic”. According to catastrophic health expenditure methodology, a household is in a catastrophe if it's out of pocket health budget share exceeds a certain critical threshold level. Thus it has been proposed to ascribe to a situation where OOP health expenditure exceeds a critical share of the household's total outlay, the state of

catastrophic health expenditure (Xu et al 2003; Wagstaff and van Doorslaer 2003). There is no exact consensus about the critical threshold level. Some studies choose values of 5% (Berki, 1986), 10% (Waters et al., 2004) and up to 40% of non-subsistence spending (Xu et al., 2003).

Measurement of catastrophic out of pocket health spending appears to serve two main objectives here: (I) to identify the change in the level of wellbeing, (II) to assess the extent of poverty / low level of living at the household level.

In the absence of health insurance, high expenditure on health care can severely disrupt household living standards. For instance, Berki (1986) states that “expenditure for medical care becomes financially catastrophic when it endangers the family’s ability to maintain its customary standard of living”. Ideally, this change in welfare can be assessed with longitudinal data through examination of how health shocks disrupt the consumption paths (Gertler and Gruber, 2002; Wagstaff, 2007). In the absence of longitudinal data, out of pocket health spending in excess of a threshold budget share; have been used as a proxy for severe disruption in household living standard. Secondly, there is found to be an explicit association between the state of poverty and state of catastrophic health expenditure. Every member of society is entitled to a minimum level of resources. In other words, no one ought to spend more than a given fraction of income on health care. Some researchers suggest that catastrophic expenditure is associated with low level of living and to spend more than a critical threshold level of income on health care may push many households into poverty. More explicitly, raises in out of pocket health spending for public and private health care services may push many households in the grip of poverty *i.e.* into below poverty line and may increase the intensity of poverty among already defined poor households. This may be ascribed as **MEDICAL POVERTY TRAP**.

According to World Health Organization, “*households with catastrophic expenditures were defined as those with health expenditures over than 40% of household’s capacity to pay*”. We had followed the same methodology to estimate the incidence and extent of catastrophic out of pocket health payments among HIV households.

In this section of the thesis, out of pocket health payments among HIV households, incidence and intensity of catastrophic expenditure and impoverishment is examined.

6.10 OUT OF POCKET HEALTH EXPENDITURE

Out of Pocket health expenditure is defined as all the payments made by household / individual at the point they receive health services. This includes all direct and indirect cost to the household. Typically, this includes doctor's consultation fees, purchase of medication, hospital bills, cost incurred on transportation and other related costs. Though out of pocket health spending should be net of insurance reimbursement, in the study group, PLHIV were asked about holding any health insurance and majority claimed not to.

Household Consumption Expenditure

Household consumption expenditure comprises all food and non food expenditure (goods and services) incurred in a month preceding the interview month.

Food Expenditure

Household food expenditure is the amount spent on all food stuffs by the household. However, it excludes the amount spent on alcohol consumption, tobacco, cigarette etc.

Poverty Line and Household Subsistence Expenditure

The household subsistence expenditure is the minimum requirement to maintain basic life in the society. Food share based poverty line is used in the analysis of subsistence spending. As per the food share based poverty line, poverty line is defined as the food expenditure of the household whose food expenditure share of total expenditure is at the 50th percentile. In order to minimize the measurement error, average food expenditure of households whose food expenditure to total expenditure is within 45th and 55th percentile of the total sample is used. Household equivalent scale is used rather than actual household size, considering the economies of scale.

$$eqsize = hsize^{\beta}$$

Where, hsize is household actual size. Value of β parameter has been estimated from the previous studies based on 59 countries' household survey data and it equals 0.56.

6.11 SUBSISTENCE SPENDING IS CALCULATED AS FOLLOWS

1. Generate food share to total expenditure for each household by dividing food expenditure of household by total expenditure.

$$foodexp = food / exp$$

2. Generate equivalent household size for each household as

$$eqsize = hsize^{0.56}$$

3. Divide each household's food expenditure by equivalent size of household to derive the equivalent food expenditure.

$$eqfood = food / eqsize$$

4. Identify the food share of total household expenditure that are at 45th and 55th percentile and average of this gives subsistence expenditure (per equivalent) capita, which is also the poverty line.

5. Estimate the subsistence expenditure for each household as

$$se = pl * eqsize$$

A household is regarded as poor when its total household expenditure is smaller than its subsistence expenditure.

$$poor = 1 \text{ if } exp < se$$

$$poor = 0 \text{ if } exp \geq se$$

6. Household capacity to pay: Household capacity to pay is defined as household's non subsistence spending. It is also known as effective income of the household. Hence, it is defined as the over and excess of that minimum entitled which is required to maintain life in the society.

$$ctp = exp - se \text{ if } se \leq food$$

$$ctp = exp - food \text{ if } se > food$$

Few household may report food expenditure that is lower than their subsistence expenditure ($se > food$). This indicates that household's food expenditure is less than the estimated poverty standard. In this particular case, non-food expenditure is used as non subsistence spending.

7. Out of Pocket health spending: Burden of OOP health payment is defined as the OOP health payments as a percentage of the household's capacity to pay.

$$oopctp = oop / ctp$$

8. Catastrophic health expenditure: Catastrophic health expenditure occurs when a household's total out of pocket health payment exceeds or equal to 40 percent of

household's capacity to pay or non subsistence spending. Here, variable catastrophic health spending is a dummy variable where 1 signifies a household with catastrophic expenditure and 0 without catastrophic health payments.

$$cata = 1 \text{ if } oop / ctp \geq 0.4$$

$$cata = 0 \text{ if } oop / ctp < 0.4$$

9. Impoverishment: A non poor household is impoverished by health payments when it becomes poor after paying for health care. The variable reflects the poverty impact of health payments.

$$impoor = 1 \text{ if } exp - se \text{ and } exp - oop < se \text{ otherwise}$$

$$impoor = 0$$

On the basis of this methodology, distribution of out of pocket health payments across a number of related characteristics is given in the table 6.11. This includes whole sample mean of out of pocket health payments per household, out of pocket health payments as a share of total household consumption expenditure and OOP health payments as a share of household capacity to pay, Out of pocket health payments different socio-economic, demographic and clinical determinants of catastrophic health spending in HIV are estimated. Later, an attempt is made to identify the explanatory variables for the incidence of catastrophic OOP health payments.

Table 6.11: Distribution of Sample and Bivariate Analysis

Characteristics	Sample Distribution	Average Monthly Household Health Payments	Monthly household health expenditure as percent of Household		Incidence of catastrophic-I	Incidence of catastrophic-II
			Monthly Total Expenditure	Capacity to pay		
Overall	100	426	9.6	16.2	28.9	10.0
Gender of Head of Household						
Male head	63.1	496	10.2	16.5	30.0	9.1
Female head	36.9	306	8.5	15.5	27.0	11.5
HIV status of Household Head						
HIV Positive	76.8	410	9.5	15.8	27.9	9.7
HIV Negative	23.2	477	9.9	17.4	32.3	10.8
Household Size						
1 to 4	67.8	445	10.2	16.8	29.8	10.3
5 and more	32.2	384	8.3	14.9	27.1	9.3
Locality of Residence						
Slum	32.9	302	7.7	13.9	20.5	9.1
Low	44.9	430	10.2	17.3	30.6	10.0
Middle	22.2	600	11.3	17.3	38.2	11.2
HIV stage of an Adult member						
AIDS symptoms	35.2	322	8.7	15.8	25.5	8.5
Symptomatic	49.4	484	10.6	17.3	32.3	11.1
Asymptomatic	15.5	476	8.6	13.4	25.8	9.7
Caste of Head of Household						
SC	32.2	347	8.4	15.1	25.6	10.1
ST	13.7	421	9.7	16.7	23.6	10.9
OBC	12.5	240	6.8	11.7	22.0	6.0
Others	41.6	544	11.4	18.1	35.3	10.8
Socio-Economic Status						
Poorest	34.7	391.1	10.6	18.8	31.7	15.1
Poor	40.6	411.3	8.9	14.9	25.8	7.4
Middle	19.2	493.9	10.0	15.6	29.9	9.1
Rich	5.0	444.3	6.6	9.7	25.0	0.0
Richest	0.5	1183.3	16.3	20.0	100.0	0.0

Source: Author's Own estimates, based on primary data

6.12 MONTHLY HOUSEHOLD HEALTH PAYMENTS

The monthly household health payments (Private, public institutional and HIV, non HIV health care spending) were Rs. 426. Female headed households spend lesser amount on health care than that of male headed households. OBC spent less than half of the amount that other castes spent on health care. Households with symptomatic and asymptomatic HIV stage of an adult member of household, spent more than that of a household with an adult member having AIDS symptoms. It may be attributed to increased life span of PLHIV individual in the household who is not having AIDS related symptoms. Households in the richest category of socio-economic status can

afford to spend more on health care due to their higher capacity to pay, whereas, households at the lower end of society spend much lesser than that of the richest class. They cannot afford to pay for expensive health care; hence at times many infections remained untreated.

6.13 PROPORTION OF HOUSEHOLD EXPENDITURE ON HEALTH PAYMENTS

Household health payments were 9.6 percent of the total (including food and non food) household expenditure and 16.2 percent of capacity to pay (effective income). Proportion of health payments to total household expenditure varied from 16.3 percent in richest category of household to 10.6 percent in poorest category of household as per socio-economic status. Proportion of health payments to total household expenditure and capacity to pay was higher in male headed households than female headed households. Health payment proportion was lowest for households, where an adult member of household is asymptotically HIV infected.

6.14 INCIDENCE OF CATASTROPHIC-I AND CATASTROPHIC-II

The incidence of catastrophic-I (proportion of households with out of pocket health spending more than 10 percent of the household overall consumption expenditure) was 28.9 percent, and incidence of catastrophic-II (proportion of households with out of pocket health payments equal or more than 40 percent of capacity to pay of household) was 10 percent. Incidence of catastrophic health payment was higher among households, with a symptomatic HIV infected adult member. Both catastrophes were higher in other castes and lowest in other backward class (OBC). As per the economic profile of households, incidence of catastrophic OOP health payments was higher among households living at the lower end of the society. Both catastrophic-I and catastrophic-II were higher among middle locality residents than slum inhabitants. It should be noted the above observations are affected by the limitation of the bivariate analysis.

6.15 DETERMINANTS OF CATASTROPHIC OUT OF POCKET HEALTH SPENDING AMONG HIV HOUSEHOLDS

Analysis of HIV household health expenditure has produced certain observations regarding the incidence of economic burden on the HIV household, owing to major health care payments. The burden, though universal, as far as HIV households are concerned, has got distinct variation due to frequent ailments regarding HIV infection and hospitalized illness episodes among PLHIV members of household. In other words, there are certain demographic, socio-economic, behavioral, individual and household factors that determine whether health spending is catastrophic.

This section deals with the identification of the determining factors of catastrophic out of pocket health spending among HIV households by applying logistic regression. In the current analysis we assume a health expenditure of 10 percent or more of total consumption expenditure to be catastrophic (Incidence of catastrophic-I) and out of pocket health spending 40 percent or more of capacity to pay is catastrophic (Incidence of catastrophic-II). Hence two separate models were estimated. In the thesis we had used two types of multivariate models- (i) Multiple linear regression model and (ii) Logistic regression model.

On the basis of bivariate analysis in earlier section, group of predictor variables is identified. We hypothesized that the probability of out of pocket health payments being catastrophic to a HIV household depends on certain demographic, socio-economic characteristics. In the proposed model it is expected that number of PLHIV members is significantly associated with the probability of incurring catastrophic OOP health spending. Greater the number of PLHIV members in the family, higher are the chances of frequent ailments, hence OOP health spending. Socio-economic status of HH also predicts the probability of incurring catastrophic OOP significantly. It is expected that HHs belonging to lower economic strata of society, are expected to incur more catastrophic OOP health spending. Female headed HHs, because of their compromised socio-economic status are more prone to incur catastrophic OOP health payments. Hospitalized illness episodes significantly predict the probability of incurring catastrophic OOP health spending. Higher the frequency of hospitalized illness, the higher is the probability of incurring catastrophic OOP health spending. Likewise, employment and education status and caste of head of household is expected to influence the probability of incurring catastrophic OOP health payments

significantly. The various socio-economic, demographic and ailment episodes related explanatory variables included in the model, are shown in table 6.13.

Table 6.12: Explanatory Variables Included In Logistic Model and Description

Sr. No.	Variables	Description
1	Household size (N)	Number of members in household
2	HIV positive members (N ₊)	Total number of HIV positive
3	Socio-Economic status (WI)	Wealth Index based on PCA
4	Gender of head of Household (S)	1 for male, 0 for female
5	Occupation of head of household (O)	Dummy
6	Educational status of head of Household (Ed)	Dummy
7	Caste of head of household (C)	Dummy
8	Age of head of household (A)	Age in complete years
9	Hospitalized illness episodes among HIV adult member (H)	No of Episodes
10	Out Patient illness among HIV adult member (OP)	Dummy

Where, 4, 5, 6, 8, 9 are dummy variables designed to capture differential impact of these heterogeneous categorical variables on the estimated probability.

Logistic regression³⁷ equation, therefore we have

$$\log \Omega = \alpha + \beta_1 N + \beta_2 N_+ + \beta_3 WI + \beta_4 D_{4G} + \beta_5 D_{5O} + \beta_6 D_{6O} + \beta_7 D_{7O} + \beta_8 D_{8Ed} + \beta_9 D_{9Ed} + \beta_{10} D_{10Ed} + \beta_{11} CD + \beta_{12} D_{12M} + \beta_{13} D_{13C} + \beta_{14} D_{14C} + \beta_{15} D_{15C} + \beta_{16} A + \beta_{17} H + \beta_{18} D_{18Op} \quad \dots (1)$$

Where,

$$D_{4G} = 1, \text{ if household head is male} \\ = 0, \text{ otherwise}$$

Households with female head being reference category

$$D_{5O} = 1, \text{ if occupation of head of household is regular} \\ = 0, \text{ otherwise}$$

$$D_{6O} = 1, \text{ if occupation of head of household is casual worker} \\ = 0, \text{ otherwise}$$

$$D_{7O} = 1, \text{ if occupation of head of household is own account} \\ \text{Not working head of household being reference category}$$

$$D_{8Ed} = 1, \text{ if education status of head of household is primary} \\ = 0, \text{ otherwise}$$

³⁷ Logistic regression model see appendix

D_{9Ed} =1, if education status of head of household is secondary
=0, otherwise

D_{10Ed} =1, if education status of head of household is secondary plus
=0, otherwise

Household head as illiterate being reference category

D_{12M} =1, if household belongs to migrant category
=0, otherwise

Native household being reference category

D_{13C} =1, if household belongs to SC category
=0, otherwise

D_{14C} =1, if household belongs to ST category
=0, otherwise

D_{15C} =1, if household belongs to OBC category
=0, otherwise

Households from other category being reference category

D_{18Op} =1, if HIV adult member is frequently / continuously ill
=0, otherwise

Households with no reported Out Patient adult HIV member is reference category

The rest of the explanatory variables i.e. N, N+, WI, A, H are quantitative and continuous variables and have been already specified. Equation (1) therefore constitutes the basic econometric model that we intend to estimate/ test on the available data on HIV households. Proposed model is first run with the share of out of pocket health payments to total consumption expenditure (capacity to pay). This is simply a multivariate regression exercise since the dependent variable is continuous. Explanatory variables are same as in the above equation

6.16 RESULTS

We had estimated four separate models for the same:

1. Share of out of pocket health payments to total consumption expenditure of household
2. Share of out of pocket health payments to capacity to pay (effective income)
3. Incidence of Catastrophic-I OOP (10% or more, share of OOP to total consumption expenditure)

4. Incidence of catastrophic-II OOP (40% or more, share of OOP to capacity to pay of household)

We have 12 qualitative variables in the model. In view of base (reference) categories for each regressor, that have been discussed earlier, we can arrive at a composite base (reference category). All comparison would be made in relation to that category. Thus the composite reference category for the models represents a household belonging to the poorest economic strata, belongs to female headed household, head of household not working and illiterate, is native and belongs to other caste category.

Interpretation of linear regression models, share of OOP expenses in total expenditure (share of OOP expenses in capacity to pay) is relatively straightforward. Coefficient β represents the percent change in the predicted variable in response to predictor variable, while controlling the other variables. R^2 shows the percent of variation in the model explained by the predictor variables.

Table 6.13: Linear Regression Results

Sr. No.	Variables (Explained Var) \longrightarrow	Share of OOP expenses in total expenditure		Share of OOP expenses in capacity to pay	
		β	Std. Error	β	Std. Error
	Explanatory Vars \downarrow				
1	Constant	0.023	0.044	0.031	0.059
2	Household Size	-0.014 **	0.005	-0.011 *	0.006
3	Gender of head	0.015	0.015	0.012	0.020
4	SC	-0.025	0.015	-0.031	0.020
5	ST	0.001	0.020	0.003	0.027
6	OBC	-0.051 **	0.021	-0.072 **	0.028
7	Age of head of Household	0.002 **	0.001	0.002 **	0.001
8	HIV Members	0.016	0.010	0.024 *	0.013
9	Hospitalized illness among PLHIV member	0.093 ***	0.011	0.122 ***	0.015
10	Regular employed	-0.008	0.021	-0.021	0.028
11	Casual employed	-0.001	0.017	0.012	0.022
12	Own account	0.009	0.026	-0.009	0.035
13	Primary	0.028	0.020	0.028	0.026
14	Secondary	0.015	0.017	0.005	0.023
15	Secondary Plus	0.036	0.024	0.031	0.032
16	Out Patient illness among PLHIV	-0.010	0.013	0.003	0.018
17	Socio-Economic Status	-0.007	0.007	-0.020 **	0.009
R^2		0.212		0.209	
F		6.452 **		6.327 **	
N		401		401	

*Significant at 10%, ** significant at 5%, *** significant at 1%

Source: Author's Own estimates, based on primary data

Household size and economic character of household is found to have negative impact on the share of health expenditure. Compared to reference category, the average OOP

share of other backward class was slightly lower by 0.051 percent. One time increase in the number of times an HIV positive member of household is admitted in hospital increases the OOP share by 0.093 (0.122) percent. Socio-economic status and share of OOP to capacity to pay is negatively related. One unit increase in socio-economic status decreases the share of OOP. A few observations that emerged from both models are: first, with the increase in size of household share of out of pocket health payments decreases. It may be attributed to increase in the number of earning members in the household. Secondly, hospitalized illness episodes due to HIV infection has liability on limited resources of household and leads to increase in share of OOP to total consumption expenditure (capacity to pay). Therefore, it can be said that hospitalized illness episodes have a bearing on the health expenses. Thirdly, socio-economic status and share of OOP is negatively related. Households at lower end of society spend higher proportion of their total expenditure (capacity to pay) on health payments.

Logistic models depict how a unit change in the predictor variables, affects the probability of a household incurring catastrophic out of pocket health spending. While, coefficient β represents the additive effect of one unit change in predictor variable on the log – odds of incidence of catastrophic OOP health payments, the odds ratio $E(\beta)$ represents the multiplicative effect of one unit change in N on the odds of a household experiencing catastrophic impact of health care payments. Technically, the antilog of β yields $E(\beta)$. The percentage change in the odds for a unit change in the regressor is obtained by subtracting 1 from $E(\beta)$ and multiplying the result by 100.

Table 6.14: Logistic Regression Results

Sr. No.	Variables (Explained Var) →	Incidence of Catastrophic-I			Incidence of catastrophic-II		
		Explanatory Vars ↓	β	Std. Error	E(β)	β	Std. Error	E($\beta$)
1	Household Size	-0.071	0.091	0.931	-0.104	0.135	0.901
2	Gender of head	0.236	0.286	1.266	-0.426	0.439	0.653
3	SC	-0.520 *	0.294	0.595	-0.158	0.458	0.854
4	ST	-0.361	0.383	0.697	0.371	0.565	1.450
5	OBC	-0.892 **	0.426	0.410	-0.762	0.715	0.467
6	Age of head of Household	0.015	0.012	1.015	0.041 **	0.018	1.042
7	HIV Members	0.210	0.185	1.234	0.421	0.272	1.523
8	Hospitalized illness among PLHIV members	1.251 ***	0.219	3.492	1.438 ***	0.275	4.214
9	Regular employed	-0.281	0.434	0.755	0.058	0.686	1.060
10	Casual employed	0.547 *	0.321	1.728	-0.049	0.471	0.952
11	Own account	-0.132	0.509	0.876	-0.258	0.745	0.772
12	Primary	0.663 *	0.364	1.941	0.740	0.531	2.096
13	Secondary	0.144	0.332	1.154	0.305	0.525	1.357
14	Secondary Plus	0.655	0.469	1.925	0.726	0.806	2.067
15	Out Patient illness among PLHIV	0.074	0.255	1.077	-0.261	0.384	0.770
16	Socio-Economic Status	0.022	0.131	1.022	-0.546 **	0.239	0.579
17	Constant	-2.397 **	0.852	0.091	-4.899 ***	1.347	0.007
	-2 Log likelihood	425.074			210.543		
	Cox & Snell R ²	0.133			0.117		
	Nagelkerke R ²	0.190			0.244		
	Omnibus Tests of Model Coefficients χ^2 (df 16)	57.331 ***			49.734 ***		
	Hosmer and Lemeshow Test χ^2	6.209 (df 8) sig (.624)			8.564 (df 8) sig (.380)		
	N	401			401		

* Significant at 10%, ** significant at 5%, *** significant at 1%

Source: Author's Own estimates, based on primary data

The model estimates how a unit change in the predictor variables affects the probability of an HIV household incurring catastrophic expenditure on account of illness corresponding to HIV and non HIV individual of household (out-patient illness and hospitalized). Two separate models were estimated for incidence of catastrophic expenditure *viz.* incidence of catastrophic-I (10% or more OOP share to total consumption expenditure) and incidence of catastrophic-II (40% or more OOP share to capacity to pay).

In the model incidence of catastrophic-I, caste of head of household, hospitalized illness among PLHIV adult member; occupation and educational status of Head of household were statistically significant variables. Other variables although not statistically significant demonstrate a largely expected direction of association with

the regressand. In case of incidence of catastrophic –II, age of head of household, hospitalized illness episodes, and socio-economic status have turned out to be significant with the highest coefficient for hospitalized illness. This is an important result, considering one of our objectives, to examine the differentials in the economic burden at different stages of HIV infection. Generally, it is observed that higher number of hospitalized illness episodes is related to advanced stage of HIV infection. In the model incidence of catastrophic I and catastrophic II, **Omnibus Tests of Model Coefficients** gives us a Chi-Square of 57.331 & 49.734 on 16 df, respectively significant beyond .001. This is a test of the null hypothesis that adding the predictor variable to the model has not significantly influenced the probability of being incurring catastrophic OOP health spending. The **Cox & Snell R^2** is interpreted like R^2 in a multiple regression. The **-2 Log Likelihood** statistics is 425.074 & 210.543 in respective models. This statistic measures how poorly the model predicts the decisions - the smaller the statistic the better the model.

The **Hosmer-Lemeshow** tests the null hypothesis that there is a linear relationship between the predictor variables and the log odds of the criterion variable. A chi-square statistic is computed comparing the observed frequencies with those expected under the linear model. Chi-square statistic for respective models is 6.209 & 8.564 on df (8). A non- significant chi-square indicates that the data fit the model well.

In the model incidence of catastrophic-II, age of head of household, hospitalized illness episodes among HIV infected individuals and socio-economic status were statistically significant variables. One unit increase in SES decreases the probability of the household incurring catastrophic OOP health payments by 42.1 percent. One year increase in age of head of household increases the probability of the household incurring catastrophic OOP expenditure by 4.2 percent. Similarly, households with increased number of times an HIV positive member admitted in hospital are more likely to experience catastrophic burden of treatment cost.

Thus, hospitalized illness episodes among PLHIV individual of households, age of head of household and socio-economic status emerged as principal determinants of economic burden of illness account due to HIV infection at household level. Expected policy response should therefore comprise of a suitable blend of targeted health insurance intervention or some social security scheme to save HIV household from economic catastrophic due to HIV related illness. From the above models it is visible that treatment cost of hospitalized illness episodes among HIV infected individual at

the household level has significant bearing on the limited economic resources of the household. This visibly marked impact is catastrophic for certain households. . More explicitly, raises in out of pocket health spending for treatment of HIV related illness may push many households into the grip of poverty *i.e.* into below poverty line and may increase the intensity of poverty among already defined poor households.

6.17 POVERTY AND OOP HEALTH SPENDING AMONG HIV HOUSEHOLDS

This section explores the impact of out of pocket health spending on the economic status of HIV household. In the absence of insurance coverage for PLHIV members, ailments related to HIV infection among PLHIV members of the household, not only reduce the wellbeing of the household directly, but also increase the risk of impoverishment due to high treatment expenditure related to various OI. Health care expenditure can drive individuals and households into poverty. HIV infection related illness put extra burden on the already limited resources of the household and lack of health insurance for PLHIV and flimsy public health facilities, individuals/ households spend from their out of pocket expenses, which may lead to impoverishment among HIV household due to health spending. Based on the operational guidelines entitled “Analyzing Health Equity Using Household Survey Data” (O’ Donnell *et al*, 2008) given by an expert team led by World Bank institute, we had attempted to estimate the impoverishment among HIV households due to out of pocket health spending. It is given in detail as follows:

Suppose that poverty head count is estimated gross of out-of-pocket (OOP) payments. In other words, if the household expenditure includes health payments, the Head Count Ratio H^{gross} can be written in the following manner:

$$H^{gross} = \sum_{i=1}^N s_i p_i^{gross} / \sum s_i$$

$i=1, \dots, N$

Where, $p_i^{gross} = 1$ if $x_i < PL$ and is 0 otherwise, s_i is the household size. N is the Number of Households in the sample and PL is poverty line.

The net of health payments head count is obtained by replacing p_i^{gross} with $p_i^{net} = 1$ if $(x_i - T_i) < PL$ (and 0 otherwise), where T_i is Health expenditure

The poverty gap gross of health payments is:

$$g_i^{gross} = p_i^{gross} (PL - x_i)$$

And the mean of this gap is:

$$G^{gross} = \sum s_i g_i^{gross} / \sum s_i$$

The net can be obtained by using $g_i^{net} = p_i^{net} (PL - (x_i - T_i))$, the second equation where T_i is the out of pocket health expenditure.

One can normalize the poverty gap on the poverty line such that

$$NG^{gross} = G^{gross} / PL$$

Where, the mean of this gives the intensity of poverty.

$$MPG^{gross} = G^{gross} / H^{gross}$$

The net of payments normalized poverty gap can be obtained similarly.

6.18 RESULTS

The analysis uses the poverty line estimates arrived at by the Planning Commission India, and based on that enumeration poverty head count is estimated for study group HIV households. We had used state specific poverty line (2004-05) Rupee per capita per month, estimated by Planning Commission. Separate poverty lines were estimated for rural and urban areas, because of noticeable difference in the standard of living. For Urban Maharashtra, poverty line was estimated at 665.90 Rs per capita per month. We had used the same poverty line to arrive at our estimates of impoverishment among HIV study group households due to out of pocket health spending. In urban Maharashtra, 32.2 percent of urban population was living below the poverty line. Based on the above methodology and poverty line mark, head count ratio for HIV study group households is estimated with and without health expenditure adjustments, poverty gap, increase in poverty and increase in poverty gap were estimated for male headed and female headed households.

Table 6.15: Estimation of Poverty with and without Health Expenditure among HIV Study group Households

Sr. No.	Variables	Gender of Head of Household		All
		Male	Female	
A	Headcount Ratio (%)	50.7	53.4	51.6
B	Health Expenditure Adjusted Headcount Ratio (%)	68.3	79.3	72.0
C	Poverty Gap (Rs) – mean	97.3	113.3	102.6
D	Poverty Gap Health expenditure adjusted (Rs.) -mean	152.4	180.0	161.6
E	Percentage Increase in Poverty (%)	17.7	25.9	20.4
F	Increase in Poverty Gap (Rs)	55.1	66.8	59.0

Source: Author's Own estimates, based on primary data

Table 6.12 shows that poverty increase by 20% in the study HIV households, when OOP spending is adjusted for. The poverty gap shows how much would have to be transferred to the poor to bring their expenditure up to the poverty line. Table indicates that an additional Rs 59 per capita per month is the increase in poverty gap because of OOP health payments. Female headed households are more vulnerable in terms of the number of the individuals in the respective group, who were impoverished due to health spending among HIV households.

6.19 COPING UP MECHANISM

Economic consequences of HIV infection have bearing on the economic condition of a household. This raises an important aspect of economic vulnerability of the household due to HIV infection in the family. An important question for HIV households is the method they adopt to cope up with the additional financial burden because of an HIV positive member in the household. Empirically it is proved that HIV infection is a serious threat to household economy. This section explores the possible coping up mechanism adopted by HIV households. This is of utmost importance, so that policies may be designed to complement existing strategies for PLHIV. Table 6.16 shows the multiple responses given by PLHIV respondents while seeking answer to question about how they cope up with the additional financial burden due to HIV.

Table 6.16: Coping up Strategies Adopted

Characteristics*	Gender of PLHIV Respondents		All
	Male	Female	
Used past saving	29.6	13.5	138 (19.6)
Medical insurance/employer reimburse	0.7	0.0	2 (0.3)
Mortgage assets	0.7	1.4	8 (1.1)
Liquidation of assets/durables/ornaments	18.0	26.8	165 (23.4)
Borrow from money lenders and other financial institution	10.9	8.5	66 (9.4)
Borrow from relatives and friends	19.5	15.8	121 (17.2)
NGO support	9.0	18.5	105 (14.9)
Support from other family members	10.1	14.9	92 (13.1)
Any other specify	1.5	0.7	7 (1.0)
Numbers	267	437	704 (100.0)

* Multiple responses

Source: Author's Own estimates, based on primary data

Most of the PLHIV resort to liquidation of assets / durables / ornaments. This practice restricts their wealth possession and causes decline in socio-economic status in future.

Similarly, use of past saving is the second most common method adopted to cope up. One observation is worth mentioning here that liquidation of assets and using past saving can lead to impoverishment among HIV household significantly. However, the relationship is not analyzed in the thesis. This observation is just made from the above stated mechanism adopted for coping up from the additional burden due to HIV infection. Secondly, NGO sector is of greater help to HIV households to restrain additional financial burden.

6.20 QUALITATIVE EVALUATION OF ECONOMIC CONSEQUENCE OF HIV INFECTION AT HOUSEHOLD LEVEL

In addition to quantitative assessment of economic consequences of HIV infection at household level, case studies were conducted to explore in detail, the qualitative aspect. Cases were selected on the basis of their uniqueness and severity. HIV positive Female headed households are living in acute shortage of financial resources, making it difficult to make both ends meet. A further exploration would be required to identify links between urban poverty and HIV infection. Here, qualitative assessment gives an idea about poverty or economic crunch as a cause and consequence of HIV infection. Further, qualitative assessments emphasize the needs of orphan children living with HIV, and economic burden put on the extended families.

Qualitative assessment also highlights the need to study sexual behaviour of migrants working in unorganized sector in big cities like Pune. Migrant labour is one of the crucial bridge population and a connecting link between urban and rural area.

6.21 CASE STUDIES

An explanation of qualitative information, provided above, helps to construct a clear picture of the problems that PLHIV and households have experienced due to HIV infection. However, the human dimension can be further explored by looking in detail at the life experience of PLHIV who were interviewed. This section provides three cases studies drawn during the field survey and identifying the case based on their severity and uniqueness from other PLHIV interviewed. Case studies were conducted after getting a detailed demographic profile of PLHIV from key informant (social worker). A checklist was made before the case study, mentioning the issues needed to be explored during the case study. Notes were taken during the interview session and immediately afterwards. In each case study, name of PLHIV is kept strictly

confidential to protect individual's identity. In the thesis, PLHIV individuals in the case studies are addressed without names, as 'he' or 'she'.

Case Study I Married Woman Indulging in Paid Sex Due to Economic Crunch

She is residing in a slum area of Pune city, since last twelve years. Filthy lanes of the slum, lead to a small cottage of tenement divided horizontally by a wooden partition, where she is residing with her two daughters and an aged lady relative. Twelve years before, they migrated from some rural area of Maharashtra state to Pune city in search of employment. After the death of her father, her uncle seized all the property in the village. In order to survive, she married a man, who was much older than her and was already married.

BOX 6.1

KEY STATISTICS

Age:	39
Gender:	Female
Marital Status:	Abandoned
Education Status	Secondary
Mover:	Yes
Locality:	Slums
Symptomatic:	Active TB
Household size:	4
Occupation:	Domestic Servant
Family Income	1200 P.M.
Poverty Probability	↑

Marriage did not prove to be a social and economic security for her. Her husband is not living with her and comes off and on. She works as a domestic servant and earns a mere Rs. 1200 per month. But the earning from this is not sufficient to make both ends meet. Hence she had to go for paid sex often to earn extra money to maintain her family. She was not aware about the sexually transmitted disease, which she can contract because of indulging in unsafe sexual practices. In the last two years, she was falling sick often; hence health provider suggested that she go for HIV testing. When she got to know about her HIV positive status, she was shattered. Since last two years life has become more difficult for her and to make things worse she is suffering with TB too. Hence TB and HIV co-infection has deteriorated her health effectively.

She has maintained silence about her HIV status. She fears that she would lose her job if she discloses her HIV status at her work place. In the neighborhood, she has not disclosed her status to avoid societal discrimination. She is very anxious about the future of her daughters and the very thought haunts her always. She has no social security, excepting getting some nutrition from some NGO, but NGO's are also limited in their means.

Discussion

This story highlights the problems faced by HIV positive women headed household and their indulgence in paid sex due to economic crunch. Every time, it is not in their power to negotiate for safer sex with customers.

This case also depicts economic hardships faced by women, which leads to their vulnerability to HIV infection. On the contrary, it raises the issue of stigma and discrimination against people living with HIV. Hence most of the people living with HIV maintain silence about their status, which curtails their human rights and their access to health facilities.

Case II Orphan Child and Burden of Care on Elderly of Family

He is seven and was studying in second standard. His mother left her in-law's home after the death of her husband due to HIV related illness. Since last two years, she was residing with her parents, who shifted from Solapur (Maharashtra), to Sangli, because of economic hardships. She used to work as an agricultural laborer.

BOX 6.2

KEY STATISTICS

Age:	7 year
Gender:	Male Child
Education Status	2 nd standard
Symptomatic	Paralyzed
Parents Alive	No, died Due to HIV related Illness
On ART	Yes

After the death of her husband, she had gone for HIV testing herself, and the result came out to be positive, to make the things worse, her child was also diagnosed HIV positive.

She died one and half year back. Now this seven year old HIV positive child is looked after by his grandparents, who are struggling, themselves, for every day's survival. They are not much aware about the HIV related issues. He was on ART, getting from some government hospital in Pune. Due to transportation cost, they stopped ART without the consultation of any health provider. This deteriorated his condition severely. Now he is suffering from paralysis. He cannot move on his own, is not able to have food on his own. Every single day is a challenge for him. Now they have started ART again and are keeping regular contact with the health provider and some

local NGO's working for the welfare of children living with HIV. For this they had borrowed from some money lender. They are not getting any other support excepting nutritional support from some local NGO. In an hour of despair they have left every hope of his survival.

Discussion

This study highlights the urgent need of dissemination of knowledge and prevention strategies to avoid mother to child transmission (MTCT), and the burden of care on elder of families followed by economic crunch. This case study also sheds light on the need of some policy measures for the social security to children living with HIV.

CASE III Migrant Male Worker, Working In Unorganized Sector of Economy

He is thirty, married, with a daughter. He has to look after his aged mother as well. In search of employment, he migrated from West Bengal India to Pune city in 2006. In West Bengal he was working as a small artisan and was earning mere Rs. 1200 per month. It was very difficult to make both ends meet with such a mere family income, so he came to Pune to get a good job. In Pune, he was working in unorganized sector of economy as semi skilled laborer and was earning Rs. 2500 per month.

BOX 6.3

<u>KEY STATISTICS</u>	
Age	30
Gender	Male
Marital Status	Married
Mover	Yes
Education Status	Senior Secondary
Occupation	Semi-Skilled Labourer
Symptomatic	No
On ART	Yes
Threat to Exposure to Spouse	↑

After spending a mere amount on his basic needs he was able to send money to his family, which is staying back in some village in West Bengal.

Separation from family for a long time led him walk to brothels of RED LIGHT AREA of Pune city off and on. All was going well for one year except some prolonged fever, but as he got to fall sick frequently, he was suggested to go for HIV testing by health counselor. He was diagnosed HIV positive; he was embarrassed and shocked to get the result. He has not disclosed his status to any one in his family. Before he got to know his own HIV status, he went to his native village and non protective sexual activities between him and his wife had increased her chances to

exposure to HIV infection. To the best of his knowledge, he is not sure about her status, neither had he asked her to go for HIV testing.

His CD4 count is good, but due to psychological pressure and depression, negative feelings like blue mood, anxiety about the future or to commit suicide often come in his mind. Due to economic and social deprivation, he is not having a good quality of life.

Discussion

This study depicts the migrant workers vulnerability to HIV infection. Unemployment and economic insecurity often leads to migration to mega cities. This case study also highlights the vulnerability of women and exposures to HIV infection, who are left behind, as their husband migrated to some other place in search of employment.

6.22 OBSERVATIONS

This chapter examines two main issues of thesis- first, economic burden due to HIV related illness and second, impoverishment due to HIV in the household

It is observed that medical expenditure of HIV household forms a fairly large proportion in household budget, which is large enough for some households to drag them to below poverty line. This is because households have to cope mostly with health care spending through their out of pocket expenses in absence of social support schemes and health insurance for PLHIV. On the other hand, feeble public health care services force PLHIV to seek medical care from private health units, shafting more financial burden. This out of pocket health payments is catastrophic for certain households, particularly for those households in which some HIV member is reported to be hospitalized with the passage of time, drag the household to poverty. Households resort to liquidation of assets/ durables or ornaments or use past saving to cope up with the additional financial burden due to HIV infection. This puts poor households under greater stress.

It is evident from the above analysis that HIV infection can prove to be a catastrophic event for a household, especially for poor households. HIV could increase the incidence as well as severity of poverty; linkage could also be the other way *i.e.* poverty could have been responsible to make certain household to make sub optimal choices that were responsible for their being affected by HIV. However, this linkage

is not commented/ analyzed in this thesis. The arguments put forward in this chapter are supported by the qualitative analysis of case studies of HIV positive individuals. What emerges from the above analysis is that, poor HIV households and HIV positive female headed households, call for the need and hence a greater attention should be paid to these households while drafting policies with respect to welfare of PLHIV.

