

CHAPTER III

REVIEW OF LITERATURE

3.1 INTRODUCTION

Issues pertaining to HIV/AIDS are multifaceted. HIV infection not only strikes at the health of an individual, but it affects his/her social, economical and psychological character to a great extent. Hence, the studies conducted in this field, are comprehensive and comprise different issues related to different groups of society. At the earliest onset of the infection, it was believed that HIV is primarily a disease of marginalized groups of society. Here marginalized groups of society consist of those, whose behaviour is believed to be bad. In this category FSWs, MSMs, LGBTs and IDUs are included. These groups of society are socially discarded and in a society like India, where cultural and religious values are considered to be of great importance, these groups are having no place in the main stream of society. In the earlier stage of HIV pandemic, major thrust was these groups of society. Studies were conducted on the socio-economic, behavioral aspects of these groups of society. However, later studies had a wider scope. HIV related studies are classified into different categories. These categories varies from biomedical research related studies to studies on the social, psychological, economical, behavioral, cultural, demographic and gender related issues. Likewise, the thrust areas, group of society varies from HRG to LRG. However, in the scope of this study, major thrust is on socio-economic aspects, particularly in relation to LRG.

There exists vast literature on the potential and actual impact of HIV. Most important contribution from the social science to the HIV related studies may be best summarized in a series of three articles in the Review of Development Studies (*see* Barnett, 2002, Barnett and Clement, 2005, Barnet *et al.*, 2001).

Theoretically as well as empirically, economic impact of HIV seems clear at household level, in the capacity of decreasing the avenues to generate income on the one hand and increased medical treatment cost on the other hand.

At the macro level, HIV impact is more visible in the countries with high HIV prevalence or more specific under the assumption of high HIV prevalence. In a country like India, where the HIV prevalence is low for the country as a whole (0.29 percent, NFHS-III), at macro level, the impacts of HIV are not clearly visible.

However, a need is felt to address the issues related to specific sectors worst hit due to HIV related illness.

In SSAR, at macroeconomic level impact of HIV is soundly visible due to high HIV prevalence, with a changing pattern of demographic structure of population (adverse impact of HIV epidemic observed at life expectancy), productivity (absenteeism at job), supply of labour (death due to HIV related illness) and intergenerational transfer of human capital (loss of skills and expertise especially artisans).

Barnett has suggested taxonomy for the studies of the social and economic impact of HIV/AIDS, according to which impact studies can be categorized as follow:

1. Demographic modeling of the population impact,
2. Economic modeling of the impact on the health provisions and health services,
3. Sectoral impact,
4. Social impact at micro and meso level (institutional level),
5. Social effects at the level of social system.

In the sphere of this thesis, the literature available on studies related to HIV impact would be presented based on this taxonomy.

3.2 DEMOGRAPHIC IMPACTS OF HIV/AIDS

Demographic impact of HIV/AIDS is mainly concerned with the estimation of HIV prevalence and incidence of HIV epidemic and using population projections to model affects of HIV on population composition, structure, growth, mortality and life expectancy. Demographic impact of HIV is found to be severe under the assumption of high HIV prevalence. Empirically it is proved in the case of SSAR. There are many different methods employed. As early as in 1989 a World Health Organization workshop identified at least eight methods (United Nations and World Health Organization, 1989). Stover (1998) provides an excellent review of demographic impact studies, suggesting that most studies only differ in the assumptions used to arrive at the population projections. A more recent review is provided by Zaba *et al.* (2004). Some early studies concluded that population growth might become zero or negative in Sub-Saharan Africa (Anderson *et al.*, 1988; 1991; Garnett and Anderson, 1993; Rowley *et al.*, 1990). However, Bongaarts (1989) concluded that population growth rates in Central Africa would drop by less than fifty percent due to relatively high birth rates, and would not become negative. Similarly, Bos and Bulatao (1992)

estimated that population growth would be reduced by less than one percent point in sub-Saharan Africa.

Studies on population growth rely on crucial assumptions about the effects on fertility, mortality, marriage and household formation, and migration. The studies noted above assumed that high fertility rates would remain fairly constant, whereas studies in Zimbabwe (Gregson *et al.*, 1997; Terceira *et al.*, 2003), Uganda (Carpenter *et al.*, 1997), and sub-Saharan Africa in general (Lewis *et al.*, 2004) have all demonstrated a decline in total fertility associated with HIV/AIDS.

All studies of the impact of HIV/AIDS on mortality and life expectancy found significant negative impacts, although the exact extent to which these are attributable to HIV/AIDS is not always clear (e.g. *see* Blacker, 2004; Dorrington *et al.*, 2004; Feeney, 2001). Johnson and Dorrington (2006) estimated a significant demographic impact on South Africa, with prevention programs having little positive effect on mortality in the short term. The effects of HIV/AIDS on marriage patterns is unclear, although Mukiza- Gapere and Ntozi (1995) found that young people in Uganda were delaying marriage due to fear of HIV infection, as well as delaying both sexual initiation and fertility decisions.

In the brief review above, most of the studies on demographic impact have concentrated on relatively heavily-affected regions of the world such as Sub-Saharan Africa.² There have been fewer studies in Asia. Especially, with reference to India, studies on the demographic impact of HIV are few in number. This is because of low HIV prevalence for the country as a whole. A study by Mukherji (Mukherji, 1989) represents one of the earliest Indian attempts at the modeling data in AIDS. This model used annualized South Asia regional data for future extrapolation of HIV prevalence. Study by Basu (Basu *et al.*, 1998) attempts the information on spread of AIDS in a comprehensive manner with the limited data. A study by Srinivasa Rao (Srinivasa Rao *et al.*, 2003) gave mathematical modeling of AIDS epidemic in India, which was guided by the general nature of HIV in India.

² Epstein (2004) provides a useful summary of the estimated impacts of HIV/AIDS on a range of demographic and mortality indicators, for countries in sub-Saharan Africa as well as Latin America and Vietnam.

3.3 ECONOMIC IMPACTS OF HIV/AIDS ON HEALTH-RELATED SERVICES

At the onset of HIV epidemic it was recognized that it would have a significant impact on the health sector. Most early studies and some more recent studies provided estimates of the cost of care of individual AIDS patients (e.g. *see* D. E. Bloom and Glied, 1993; Cordeiro, 1988; Nandakumar *et al.*, 2000). Other studies attempted to estimate the burden of the epidemic on the healthcare system as a whole (e.g. *see* Henry and Newton, 1994; Over *et al.*, 1988; Postma *et al.*, 1995), often using the direct and indirect costs method.³ However, most recent studies have instead concentrated on the impacts on the health sector in terms of the significant costs of up-scaling antiretroviral treatment (e.g. *see* Haacker, 2002a; Laguide *et al.*, 2003; Over, 2004). For instance, Kitajima *et al.* (2003) compared the costs of care for HIV/AIDS patients in Khon Kaen Province with and without antiretroviral treatment, finding that with antiretroviral treatment average cost per outpatient visit and per inpatient day were higher by US\$250 and \$US300 respectively. As this thesis does not directly consider the impacts on the healthcare system, we will move to the impact on other issues pertaining to HIV infection.

3.4 SECTORAL IMPACTS OF HIV/AIDS

Like, healthcare sector, there has been extensive study of the impact of HIV/AIDS on businesses and industry sectors.⁴ Most of this research has been conducted by private firms and as such neither published nor released into the public domain because of its commercial sensitivity (Barnett *et al.*, 2001).

Unsurprisingly, most of the published research on sectoral impact is concentrated on the agriculture sector, and often only on subsistence agriculture (e.g. *see* Barnett and Blaikie (1990) for an early example). Gillespie (1989) concluded that farming systems most vulnerable to the impact of HIV/AIDS are those that exhibited highly seasonal demand for labour, high degrees of labour specialization, increasing returns to scale of labour, and limited substitutability of labour for capital. Jayne *et al.* (2004) noted the impact of HIV/AIDS on the intergenerational transfer of agricultural knowledge; making agricultural systems increasingly vulnerable.⁵ Mushala (2002) found that

³ This method was first proposed by Rice (1967), and applied to HIV/AIDS by Scitovsky and Rice (1987) and Scitovsky (1988).

⁴ Many studies of the sectoral impacts of HIV/AIDS do not concentrate on a single sector, but are macroeconomic studies which consider all sectors simultaneously (e.g. *see* Arndt and Lewis, 2001). These studies are considered in Section 2.5.5

⁵ *See* also du Guerny (1999).

subsistence farming systems in Swaziland were especially vulnerable to the impact of HIV/AIDS, posing significant challenges for government policy. More recent studies in the agricultural sector have concentrated on estimating the impact of HIV/AIDS on food security at the regional or national level (e.g. *see* de Waal and Whiteside, 2003). The impacts on other sectors have also been considered. Guinness *et al.* (2003) looked at the impacts on the Zambian business sector and confirmed on staff shortages, reduced productivity, and increased costs. Matangi (2006) studied the impacts on the mining sector in Zimbabwe, and found the impact in terms of increased rates of absenteeism and labour turnover and declining skills availability, particularly firm-specific skills. Bloom *et al.* (1997) estimated the impact on the tourism sector in Sri Lanka, estimating that tourist numbers would reduce by approximately one percent. A brief review of the literature on impacts on the health and education sectors is provided by Whiteside (2002). Grassly *et al.* (2003) estimated the impact of HIV/AIDS on the education sector in Zambia at US\$1.3-3.1 million in 1999 and up to US\$41.3 million over the period 1999-2010, mostly consisting of salaries paid to chronically morbid teachers, training costs, and funeral costs. Coombe (2000) described the likely impacts of HIV/AIDS on the education system in South Africa, estimating that between 88, 000 and 133,000 educators would die of HIV related illness by 2010. Haacker (2004b) looked more generally at the impact of HIV/AIDS on the provision of government services including health and education, and found significant negative effects on government budgets due to increasing resource requirements and a reducing tax base (*see* also Section 2.5.5). Similar results have been found for a number of countries in sub-Saharan Africa (e.g. *see* Bennell, 2005a; Jukes and Desai, 2006). In one of the few studies considering specific sectors of countries outside sub-Saharan Africa, Giraud (1993) considered the impact on the transport sector in Thailand, finding that transport firms would face significant direct and indirect costs of HIV/AIDS, mostly through increases in sick leave costs and replacement of workers. Whiteside (2001) notes that major concerns for firms include reduced productivity and increased costs due to absenteeism, morbidity⁶, the training of replacement employees, and increased wages as the supply of skilled and unskilled labour falls.

⁶ *See* also Baggaley *et al.* (1994).

Similar conclusions are drawn by Forsythe (2002) and USAID (2004). Aventin and Huard (2000) extended their analysis of the effects on business to include deterioration of firm socialisation, reducing the transfer of firm-specific knowledge. An early World Bank study in 1994 found that HIV/AIDS raised firms' labour costs significantly in five African countries (World Bank, 1997). Rosen *et al.* (2002) estimated an increase in labour costs of 1-10 percent for several large African firms as effect of HIV/AIDS. Morris *et al.* (2000) studied the impact on male sugar mill workers in South Africa and projected a tenfold increase in firm costs associated with HIV/AIDS by 2006, while Rosen *et al.* (2004) estimated the present value cost of HIV infection at 0.5-3.6 times the annual salary of a worker.

For tea estate workers in Kenya, Fox *et al.* (2004) reported significantly lower productivity and more sick and annual leave days taken by HIV-positive workers in the eighteen months before death or retirement due to HIV/AIDS, when compared with other workers. Several other firms have undertaken institutional audits as detailed in Barnett and Whiteside (2000), and there have also been numerous case studies conducted on the specific responses of firms to the epidemic (e.g. *see* Barnett *et al.*, 2002; UNESCO Division of Higher Education, 2006; United States Agency for International Development, 2004; Whiteside, 2001). However, as Rosen and Simon (2002; 2003) note, the private sector is generally able to shift the burden of HIV/AIDS impacts onto households and the government by pre-employment health screening, restructuring employee contracts, changing or eliminating health benefit schemes, outsourcing, and substituting capital for labour. This shifts many of the most significant impacts of HIV/AIDS onto individuals and households, studies of which are reviewed in the next section. However, many firms have recognized the potential long-run impacts on labour supply and assumed some of the financial burden, even offering antiretroviral treatment for their workers (e.g. *see* Eholie *et al.*, 2003). In India major contribution in the literature of sectoral impact of HIV infection is from (Pradhan *et al.*, 2006)⁷. It was a comprehensive study first of its kind to assess the impact of HIV infection in the framework of computable general equilibrium (CGE) model. Based on a five sector CGE model of Indian economy this study attempt to assess macro and sectoral impact of HIV in India. An extended 28-sector CGE model of the Indian economy is used to enable a more detailed analysis of the sectoral

⁷ For detail *see* V.P. Ojha, B.K. Pradhan (2006), the Macro-Economic and Sectoral Impacts of HIV and AIDS in India

impact of the HIV epidemic – particularly the impact of AIDS on the Indian industry. At the sectoral level, this study came up with the inferences that sectors that use unskilled labour intensively, is worst hit due to HIV infection. This study highlights that tourism, which is the second most unskilled labour intensive sector, would suffer maximum loss of 18 percent in value added terms in the with AIDS scenario in the year 2015-16. It is followed by manufacturing and industry sector (12 percent).

3.5 SOCIO-ECONOMIC IMPACTS OF HIV/AIDS AT THE MICRO LEVEL

There have been a large number of studies on socio-economic impact, employing a wide range of methodologies from quantitative or qualitative methodologies to cross-sectional descriptive analyses. However as will be seen from the review below (as well as the extensive recent review of over 150 studies in Gillespie and Kadiyala (2005a), and nearly 40 African studies in Murphy *et al.* (2005)), despite the extensive and growing base of evidence on the impacts of HIV/AIDS there has been surprisingly little empirical research on the socio-economic impacts of HIV/AIDS in moderately affected communities and countries with low prevalence and densely populated like India. Most of the research has been conducted in heavily HIV-affected countries in SSAR, in heavily affected regions of other countries (such as the Northern region in Thailand), or in well-defined high-risk groups such as men who have sex with men or commercial sex workers. Part of the reason for this is the lack of longitudinal household data with details about the causes of morbidity and mortality so that impacts of HIV/AIDS can be isolated from other concurrent effects on the household. The two most comprehensive early studies of the impact of HIV/AIDS on households were conducted in the Kagera region of Tanzania (Ainsworth *et al.*, 1992) and Rakai district of Uganda (Serwadda *et al.*, 1992). The main findings of the Kagera Demographic and Health Survey (1991-1994) were reported in report of the World Bank (1997), and suggest that the economic impact of an adult death on surviving household members depends on (i) the age, gender, income, and cause of death of the deceased individual; (ii) the composition and assets of the household; (iii) the characteristics of the community. They also found that an AIDS death results in a lengthy period of depressed household resources, resulting in greater impact than other causes of death, and that there is evidence that women bear a particularly heavy burden from an AIDS death. Finally they suggested that the poor, having fewer assets to draw on, had more difficulty coping with the impacts of HIV/AIDS. The results of

the Rakai study reported in Menon *et al.* (1998) and elsewhere, were that households with an HIV-infected person incurred economic losses due to depletion in durable goods, and coped with an adult death by altering in size and composition. Following these early studies, there has been a large and growing literature which have confirmed and expanded the range of impacts considered, including impacts on household size and composition, migration, agricultural and non-agricultural livelihoods, income, consumption and expenditure, nutrition, education, poverty and inequality, and so on.

3.5 (I) HOUSEHOLD SIZE AND COMPOSITION

Gillespie and Kadiyala (2005a) suggest that households experiencing adult mortality tend to become smaller than other households. Menon *et al.* (1998) found that household size fell by 1.7 people for households which suffered an adult death in Uganda, significantly more than for those that did not.⁸ Yamano and Jayne (2002; 2004) also found households that suffered an adult's death were significantly smaller in Kenya, and that the change in household composition depended on the gender and former position of the deceased household member. However, Bachmann and Booyesen (2004) found that affected households in Free State, South Africa were larger than unaffected households, but did not differ in age or gender distribution.⁹ Ntozi and Nakayiwa (1997) found a reduction in polygyny and delayed marriage as a result of the HIV/AIDS epidemic in Uganda. Dependency ratios might also increase, as observed by Mather *et al.* (2004) for five countries in sub-Saharan Africa and Menon *et al.* (1998) for Uganda.¹⁰ Overall, Heuveline (2004) estimated that the household-level demographic effects of the HIV epidemic were actually quite small because they were becoming diffused throughout the entire population and all households. Hosegood *et al.* (2004) found that households in Kwazulu Natal were four times more likely to dissolve following an AIDS-related death than other households after controlling for household and community level risk factors, while Mushati *et al.* (2004) reported that one tenth of affected households in their study in eastern Zimbabwe dissolved and one quarter relocated. Urassa *et al.* (2001) found that

⁸ A significant decrease in household size was also reported for a study in Tanzania (Urassa *et al.*, 2001).

⁹ Mather *et al.* (2004) found similar results for panel data sets from Kenya, Malawi, Mozambique, Rwanda and Zambia. They also found that the effects on the household are strongly conditioned by the gender and household position of the deceased household member.

¹⁰ A significant increase in dependency ratio was also reported by Konde-Lule *et al.* (1997) for Uganda. Similarly, Nakiyingi *et al.* (1997) found that the number of extended family households increased significantly in Uganda between 1990 and 1995. Menon *et al.* (1998) also reported higher incidence of child-headed households as a result of adult deaths in Uganda.

the death of a male household head in Tanzania was more likely to cause a household to dissolve than the death of a female household head, but the death of adults other than the household head did not cause households to dissolve and dissolution was more likely if the deceased was younger.

3.5 (II) MIGRATION AND MOBILITY

HIV/AIDS might result in increases in household mobility. In a study in Uganda, Ntozi (1997) found that 37 percent of widows and 17.3 percent of widowers migrated from their original homes, and younger spouses were significantly more likely to migrate. In a study of 333 households in Zambia, Nampanya-Serpell (2000) found that approximately 61 percent of AIDS-affected families had moved from their original home, mostly to cheaper housing with less access to sanitation, electricity, and so on. Ntozi and Nakayiwa (1997) found that many people in Uganda coped with HIV/AIDS-related widowhood by migrating. However, Hosegood *et al.* (2004) found no association between adult mortality and migration for households in Kwazulu Natal, South Africa.

3.5 (III) AGRICULTURAL AND NON-AGRICULTURAL LIVELIHOOD

Subsistence agriculture, typically heavily dependent on household labour, is especially vulnerable to the impacts of HIV/AIDS. In ten in-depth case studies in Tanzania, Tibaijuka (1997) found labour reallocation (due to nursing the ill) and labour loss (due to morbidity and mortality) resulted in significant losses in agricultural production for households. In a study of 1584 households in rural Rwanda, Donovan *et al.* (2003) found that following a prime-age adult death most households experienced reduced farm labour. Following a male death, the area of cultivated land reduced, and households with a male death substituted cash crop production for food crops,¹¹ and following a female death all crop production was reduced. Prime age adult morbidity had qualitatively similar effects. Yamano and Jayne (2002; 2004) reported similar results for Kenya, with death of a prime age male household head associated with a 57 percent reduction in gross crop value.¹² However, only poor households suffered a reduction in farm income, with both poor and non-poor households suffering a reduction in non-farm income. In contrast,

¹¹ A result similar to that observed by Barnett *et al.* (1995) in Uganda, Tanzania, and Zambia.

¹² With a 68 percent reduction in net crop output, after taking into account the costs of fertilizer, seed, and land preparation

Mather *et al.* (2004) found no significant change in cropping patterns or crop income for adult mortality-affected households in panel data from five sub-Saharan African countries.

3.5 (IV) INCOME

Oni *et al.* (2002) reported income for HIV/AIDS-affected households in Limpopo province, South Africa. It was 35 percent lower in affected households than in unaffected households. Similarly, Yamano and Jayne (2002; 2004) reported declines in off-farm income for HIV/AIDS affected households in Kenya of about 79 percent. Bachmann and Booysen (2003) studied 404 households in Free State, South Africa and found that income in the 202 HIV/AIDS-affected households was 25 to 40 percent lower than that of unaffected households over a six month follow-up period, after controlling for household demography and employment. After controlling for morbidity and mortality there was no significant difference, suggesting that the income differential was due to HIV/AIDS-related causes. However in a later article they reported that, after 18 months of follow-up, the decrease in income was not apparent either in absolute and relative terms, and concluded that at baseline many affected households had already experienced decreased income as a result of HIV/AIDS-related morbidity. Kebede and Retta (2004) surveyed 408 households in two states of Ethiopia, and found that HIV/AIDS had greatest effect on families where only one person in the family had a job. This was due to the low labour participation rate amongst women.

3.5 (V) CONSUMPTION AND EXPENDITURE

Household consumption is similarly affected as income. Bechu (1998) studied 200 households in Cote d'Ivoire identified by local health facilities as containing at least one person living with HIV/AIDS over a period of up to 20 months. She compared the data from those households with data obtained from another study of 2064 (assumed) unaffected households, and found the structure of consumption was similar, but families with HIV/AIDS spent almost twice the proportion of their budget on health expenditure of the infected individual, substituting away from expenditure on health care for uninfected members and from other expenditure. Bachmann and Booysen (2003) found average per capita food expenditure was 22 to 32 percent lower in HIV/AIDS-affected households in Free State, South Africa. Using panel data sets

from Indonesia and Mexico, Gertler *et al.* (2003) found that the death of a prime age adult household member resulted in a significant reduction in consumption per capita in both countries. Empirical studies noted for Tanzania (Tibaijuka, 1997), South Africa (Bachmann and Booyesen, 2003; Oni *et al.*, (2002), and Cote d'Ivoire (Bechu, 1998), conformed that Much of the change in consumption is explained by significantly higher expenditure on health. Duraisamy *et al.*, (2006) studied medical and non-medical out of pocket expenditure on care and support services to PLHIV and financial burden on household. They collected data from 153 clients of YRG CARE; Chennai (India) based NGO and come up with the results that the results show that the median out-of-pocket medical and non-medical expenditures (direct cost) for treatment and services are Rs. 6,000 (US \$ 122) in a reference period of six months. Clients on antiretroviral (ARV) drugs spend five times more than those not on ARV. The median direct cost significantly increases with stage of disease, household income, and poverty level. The financial burden of treatment, measured as the ratio of direct cost to household income, is greater for lower income households (82%) than on higher income households (28%). Thirty one percent and forty five percent of the clients reported loss of income and workdays respectively.

3.5 (VI) NUTRITION

Changes in expenditure may also cause negative impacts on nutrition (Gillespie *et al.*, 2001; Haddad and Gillespie, 2001). Decreased nutrition reduces energy – an important endowment which impacts the individual's decision about labour supply – less energy, i.e. lower nutritional intake, means less energy for work. For an individual in a mainly agricultural household, this may mean less food is grown for themselves and for other household members. For an individual in an urban household, this may mean less labour supplied for income and therefore less food can be purchased. In either case, the individual (and household) may be trapped in poverty. Mason *et al.* (2005) found significant increases in the proportion of underweight children as a result of HIV/AIDS in Mozambique, Zambia, and Zimbabwe, and that nutrition was deteriorating most rapidly in areas that previously had better nutrition. Ainsworth and Semali (2000) showed that orphanhood resulted with significant reductions in nutritional outcomes, with significant reductions in child height-for-age and with worse outcomes for maternal orphans than paternal orphans in Tanzania. Similar results have been reported for eastern Uganda (Aspaas,

1997) and Indonesia (Gertler *et al.*, 2003). These are particularly worrying results. There is considerable evidence of the nutritional status of children being a determinant of future well-being in terms of lifetime health and poverty (Harper *et al.*, 2003), and combined with the results described above this suggests a significant negative generational effect of HIV/AIDS, in the absence of any intervention.

3.5 (VII) EDUCATION

Sheldon Shaeffer (1994, UNESCO) provided a review of literature and experience of impact of HIV on education. This report gave a gist of impact of HIV on demand, supply and process of education.¹³ HIV/AIDS affects both the supply and demand for education. On the supply side, increasing numbers of teachers are succumbing to HIV/AIDS, placing financial burdens on education systems and increasing the ratio of students to teachers (Hamoudi and Birdsall, 2002). On the demand side, HIV/AIDS-related costs reduce the amount of money available for households to pay for school-related costs, implying that children in HIV/AIDS-affected households may be removed from school. Further, lower life expectancy reduces the lifetime returns to education even for those who are not *a priori* HIV-infected, leading to a reduction in school attendance. Yamano and Jayne (2005) report significant impacts of adult mortality on primary school attendance in Kenya for the lower half of the wealth distribution (but not for the top half), and that the negative impact is greater among girls than boys in the time before death, but greater among boys following death. Further, they found that school attendance was negatively correlated with HIV prevalence even after accounting for child fixed effects, suggesting that HIV/AIDS also indirectly affects school attendance in ways other than through the death of an adult household member.¹⁴ Case *et al.* (2004) also found that orphans in ten sub-Saharan African countries were less likely to attend school, even after accounting for their relative poverty. Bicego *et al.* (2003) found that losing one or both parents was significantly associated with lower educational attainment by age for children from five sub-Saharan African countries. Nyamukapa and Gregson (2005) found significant negative impacts on school completion rates for maternal orphans in Zimbabwe, but not paternal orphans or double orphans.

¹³ Sheldon Shaeffer (1994) The Impact of HIV/AIDS on Education- a review of literature and experience commissioned by UNSECO and SIDA

¹⁴ Gertler *et al.* (2003) also found similar results for Indonesia and Mexico, as did Nampanya- Serpell (2000) for urban (but not rural) households in Zambia

3.5 (VIII) POVERTY AND INEQUALITY

In addition to increasing susceptibility to HIV infection, household or individual poverty increases vulnerability to the impacts of HIV/AIDS. There have been several published studies which have looked directly at the impact of HIV/AIDS on the income distribution, including poverty. Greener *et al.* (2000) simulated the effect of HIV/AIDS on the Botswana economy over a ten year period using data collected in two earlier household income studies, and concluded that the percentage of households in poverty would increase by 5 to 7 percentage points, and that the poor will become more poor with incomes among the poor falling by 13 to 18 percent. Many studies have found clear differences in the impacts of HIV/AIDS between poor and non-poor households (e.g. *see* Mather *et al.*, 2004; Yamano and Jayne, 2004). Finally, socioeconomic status (including income and education) has been shown to be significantly positively associated with the time of progression from infection with HIV to AIDS, i.e. higher incomes and education result in a longer non-symptomatic period of infection¹⁵ (Schechter *et al.*, 1994). This implies that HIV-infected people from lower socio-economic groups will face the impact of symptomatic AIDS sooner than those from higher socio-economic groups. In Indian scenario, no clear cut differential has been noticed. NFHS-III (2005-06) has shown no evidence of interlink between HIV prevalence and poverty in India. However, most of the respondents in households in the next-to-highest wealth quintile are most likely to be infected with HIV.¹⁶

3.5 (IX) COPING STRATEGIES

To reduce the negative impacts of HIV/AIDS, households and individuals employ 'coping strategies' (Sauerborn *et al.*, 1996). However, these coping strategies themselves may have negative effects on the household or individual, such as causing resources to be diverted away from long-term productive capital, and reducing human and social capital development.

Mutangadura *et al.* (1999) categorized coping strategies as being either: (i) aimed at improving food security; (ii) aimed at raising and supplementing income to maintain household consumption patterns; or (iii) aimed at alleviating the loss of labour. Sauerborn *et al.* (1996) earlier provided a wider taxonomy of eleven distinct types of

¹⁵ These associations were robust to health care access since all study participants had universal health care coverage

¹⁶ National Family Health Survey, NFHS-III (2005) IIPS, Mumbai India, www.nfhsindia.org

coping behaviour which have either the effect of avoiding the costs of disease, or minimizing the impacts of costs on the household. Dissaving and borrowing appear to be among the most common coping strategies. In Limpopo province, South Africa, Oni *et al.* (2002) observed that HIV/AIDS affected households had 36 percent lower savings and 300 percent higher borrowings than unaffected households. Sales of land, livestock, or other assets are also common. Yamano and Jayne (2002; 2004) report significant decreases in agricultural assets and small livestock (e.g. goats, chickens) ownership, and the value of these assets for HIV/AIDS affected households in Kenya.¹⁷ Lundberg *et al.* (2000), using data from the Kagera study mentioned previously, studied the role of inter-household transfers in mitigating the impacts of adult death. They concluded that wealthier households relied on private transfers while poorer household relied on (largely private) credit, and that richer households trust each other more to repay loans. These results demonstrate the importance of social capital in mitigating the impacts of HIV/AIDS on households. A wide range of other coping strategies in addition to those mentioned above have also been noted, including changes in labour allocation, and sending children and the elderly to live with relatives. These strategies have been reported in many countries, including Rwanda (Donovan *et al.*, 2003), and South Africa (Oni *et al.*, 2002). Young and Ansell (2003) looked specifically at the qualitative impacts on children of migration as a response to HIV/AIDS, and found significant temporal changes in the structure of families and the formation of inter-familial relationships for children from Malawi and Lesotho.

However, the explanation of household responses to HIV/AIDS using the concept of coping strategies has been criticised. Rugalema (2000) reviewed the literature on the impact of HIV/AIDS-related morbidity and mortality in rural Africa, and concluded that the concept was of “limited value in explaining household experience” (Rugalema, 2000, p. 537), while Baylies (2002, p.618) suggested that “coping... tends to divert attention from a reality which is often very different”.

¹⁷ Mushati *et al.* (2004) found similar results for Zimbabwe.

3.5 (X) OTHER IMPACT STUDIES AT THE MICRO LEVEL

In addition to studies already noted above, there have been many other studies on specific population groups, including women, children and orphans, and the elderly. The impacts of HIV/AIDS on women are particularly important in light of the literature presented earlier. In many parts of the world, including Southeast Asia, women make up the majority of the agricultural workforce engaged in food production. For instance, in Thailand, in 1990, women made up more than 50% of the agricultural workforce, and over 69% of employed women were involved in agriculture (United Nations Economic and Social Commission for Asia and the Pacific, 1996). As more women become infected with HIV and begin to suffer from AIDS-related morbidity, food production is likely to fall, with a consequent negative impact on nutrition in rural areas. If decreased food production results in increases in the price of food, this may also have a negative impact on nutrition for poor urban people. Few studies noted earlier have explicitly considered the special impacts on women, although much has been written on gender-specific impacts of HIV/AIDS (e.g. *see* Ashraf and Godwin, 1998; Gupta *et al.*, 2003). Pradhan and Sundar (2006) studied the gender impact of HIV/AIDS in six high prevalence states in India and found that women from HIV-affected households were disproportionately affected emotionally, physically and financially. Among other effects, these women had significantly less leisure time than those in unaffected households, typically due to the burden of care for others in the household falling on them. They also found that the income of both rural and urban widows was over 20 percent lower than other households, with significantly more of these households in poverty. Hunter and Williamson (1997) studied children orphaned as a result of HIV/AIDS in 23 African countries, finding that “children in households affected by HIV/AIDS face loss of their family and their identity along with psychosocial distress, increased malnutrition, loss of health care (including immunization), increased demands for labour, reduced opportunities for schooling and education, the loss of their inheritance, forced migration, homelessness, and exposure to HIV infection” (Hunter and Williamson, 1997, p.14).¹⁸ Foster *et al.* (1995) found that orphans in Zimbabwe were being increasingly cared for by maternal relatives, in contrast to the traditional

¹⁸ *See also* Subbarao *et al.* (2001) on the plight of orphans in Africa.

practice of care within the paternal extended family.¹⁹ Crampin *et al.* (2003a) studied the mortality and physical well-being of children in rural Malawi, and concluded that the HIV/AIDS orphans had significantly higher mortality rates than non-orphans, but not higher rates of stunting, wasting, or reported ill health.²⁰ Ainsworth *et al.* (2005) studied the impacts of parental death on orphan's schooling in Tanzania, and found that school attendance was delayed, or for those already attending school, hours were significantly reduced in the months leading up to adult death, but seemed to recover after mortality. However, Kamali *et al.* (1996) found limited effects of orphan hood on school attendance for rural Uganda, while Bennell (2005b) found similar results for a range of countries in sub-Saharan Africa, and concluded that the impact of parental mortality on educational attainment had been overstated in earlier studies.

Brown *et al.* (1995) studied the impacts on children in Thailand using data from the previously mentioned Pitayanon *et al.* (1997) study, and found that 15 percent of children were removed from school to help support the family – many of whom were forced get a job after the death of a household member. Orphans were often sent to be cared for by their grandparents, or other relatives, or temples. More than half of the children interviewed “felt their household economic status had declined after the death of the household member” (Brown *et al.*, 1995, p. 147). The burden of care for adults infected with HIV and for the children (including orphans) of HIV-infected individuals often falls on their parents, most of who are elderly.

Also, as the HIV epidemic matures, more households that are caring for elderly household members need to divert resources from that care to the care of chronically morbid HIV-infected household members. There have been few studies directly on the impact of HIV/AIDS on the elderly. Zimmer and Dayton (2003) studied the living arrangements of older people in sub-Saharan Africa and found that the number of persons caring for orphaned or double-orphaned grandchildren was strongly associated with levels of HIV/AIDS-related mortality, confirming the burden of care as a result of HIV/AIDS increasingly falling on the elderly. Ainsworth and Dayton (2003)²¹ studied the impact of prime-age adult morbidity on the nutritional level (measured by BMI) of people aged over 50 in Tanzania. They found that prior to the death of a prime-age adult, the BMI of older people declined suggesting worse

¹⁹ Although the authors concluded that this is not evidence of the breakdown of extended family methods of caring, but simply a necessary change in the community coping mechanisms.

²⁰ See also Preble (1990) for an early study on the potential impacts of HIV/AIDS on child and infant mortality.

²¹ See also Dayton and Ainsworth (2004).

nutritional outcomes. However after the death the BMI typically recovered to its former level, suggesting that the worse nutritional outcomes do not persist in the long run.

Finally, stigma is a significant impact on the households of HIV-infected individuals, and few studies have accounted for the effects of stigma while estimating the socio-economic impacts on households or individuals. McGrath *et al.* (1993), in a study of 24 families in urban Uganda, concluded that people with HIV/AIDS and their families were afraid of rejection from those outside the household, and that as the disease progressed they increasingly avoided outside contacts. The impact of stigma has important implications for policies selected to address the HIV/AIDS epidemic.

3.6 SOCIO-ECONOMIC IMPACTS OF HIV/AIDS AT THE MACRO LEVEL

Studies of the impacts of HIV/AIDS at the regional or national level have employed a wider range of methodologies, including estimating total economic costs, empirical studies with cross-sectional or panel data, theoretical work, demographic and other projections, and simulations and modeling studies that compare two or more scenarios with a base case involving the economy with no HIV/AIDS epidemic.²² The conclusions drawn from these studies have varied widely (Gaigbe-Togbe and Weinberger, 2004). The most rudimentary analyses of the impacts of HIV/AIDS on the economy involve simply adding the direct and indirect costs of HIV infections. These costs might include healthcare and treatment costs, losses in output and productivity, and so on. In one such study of the macroeconomic impact on Thailand, the aggregate costs of the epidemic were estimated at US\$7-9 billion by the year 2000, not including reductions in tourism, foreign investment, and labour exports (Harvard AIDS Institute, 1994). Bloom *et al.* (1997) used this method and estimated the total costs of HIV/AIDS in Sri Lanka in 1993 at \$4 million per annum. Also using this method, Anand *et al.* (1999) estimated the annual cost to the Indian economy over the period 1986-1995 at between 0.1 and 1.1 percent of GNP. An alternative to the direct and indirect costs approach is to estimate the economic cost of the HIV epidemic as the sum of the willingness to pay to avoid the burden of the epidemic of all people in the economy (Mishan, 1971). Using this approach, Bloom *et al.* (1997) estimated the value of averting each HIV infection in Sri Lanka in 1993 at between

²² The various methods are reviewed in detail in Haacker (2002b) and critiqued in Drouhin *et al.* (2003).

US\$1.11 million and US\$9.41 million, and the total aggregate costs of AIDS from 1994 to 2005 at between US\$2.34 billion and US\$7.96 billion.

Demographic projections have been an important focus of research (*see* Section 4.2 for a review of the demographic impacts of HIV/AIDS), and have been used to develop projections on the economy-wide impact of HIV/AIDS. For instance, Shapouri and Rosen (2001) projected the negative impact of HIV/AIDS on grain production and food security in Africa. Other studies have avoided attempts to quantify the epidemic, instead using demographic and other projections and explaining the susceptibility and vulnerability of the social system as a whole.²³ Many studies have involved the use of empirical data or structural models to model the impacts of the HIV/AIDS epidemic on the macro-economy. The simplest empirical studies have involved the use of cross-sectional or panel data sets to investigate the impacts on macroeconomic variables. For instance, Bloom and Mahal (1997a; 1997b) used data from 51 countries and found that HIV/AIDS had no significant effect on the growth rate of real GDP, and no evidence of reverse causality. Other similar studies have established negative impacts of HIV/AIDS on the macro-economy. Bonnel (2000a; 2000b) used two stage least squares and ordinary least squares regression analysis and a system of three equations to test whether HIV/AIDS had any effect on macroeconomic variables. He found that HIV prevalence had a significant negative impact on per capita GDP growth, e.g. for a typical sub-Saharan country with an HIV prevalence of 20 percent, the per capita GDP growth rate would be 2.6 percentage points lower per year. Another common method of modeling the macroeconomic impacts of HIV/AIDS has been to use extended Solow-style models of growth.²⁴ Cuddington (1993b) applied this approach and population projections to the Tanzanian economy over the period 1985-2010, and compared scenarios with AIDS and no-AIDS. He found average GDP growth rate would be lower by 0.6 percentage points in the AIDS scenario, but per capita GDP was only negatively affected under some sets of assumptions. Cuddington (1993a) later extended this analysis to a dual-sector model with surplus labour, and found similar results, with GDP 15 to 25 percent lower in 2010 in the AIDS scenario, and per capita GDP approximately the same or slightly lower.

²³ For example see Barnett *et al.* (1998) for Ukraine, Shell (2000) for South Africa, or Srinivasan and Sukumar (2006) for Kerala, India.

²⁴ Extending the original Solow (1956) model to incorporate the key macroeconomic causes and consequences of HIV/AIDS. *See* Drouhin *et al.* (2003) for a detailed explanation.

Similar results were also found for Malawi (Cuddington and Hancock, 1994, 1995). Cuddington *et al.* (1994) further extended the analysis to show that appropriate policies could be used to return the economy to the non- AIDS equilibrium. However, Bloom *et al.* (1997) estimated only a moderate impact for Sri Lanka using a similar method, with GDP per capita growth reduced by just 0.04 percentage points. A similar approach was adopted by World Bank in a series of studies on the impacts of HIV/AIDS on Lesotho (Sackey and Raparla, 2000), Swaziland (Sackey and Raparla, 2001), and Namibia (Sackey *et al.*, 2001), as did the Botswana Institute for Development Policy Analysis (2000). All these studies had results similar to those of the Cuddington studies above. Haacker (2002a) used a similar model (neo-classical framework) for nine countries in sub-Saharan Africa and found HIV/AIDS resulted in long-run increases in GDP per capita of between 3.9 and 9.6 percent for a closed economy model, but long-run decreases in GDP per capita of between 1.2 and 3.2 percent for an open economy model. Nicholls *et al.* (2000) used a Solow growth model with three sectors, supplementing it with a network model of the epidemic spread, and applied it to study the impacts of HIV/AIDS on Jamaica and Trinidad and Tobago over the period 1997-2005. They found the epidemic would lead to a significant decrease in savings of between 10.3 and 23.5 percent and to negative GDP growth of between 4.2 and 6.4 percent. Cuesta (2001) used a partial equilibrium model of the Honduran economy and found that GDP growth would be only between 0.007 and 0.027 percentage points lower as a result of HIV/AIDS. Early studies that concluded either a positive impact or no significant impact on per capita output caused some disquiet within the development community, leading some people to begin to emphasize instead the “human cost” of HIV/AIDS while acknowledging a limited economic cost (e.g. *see* Ainsworth and Over, 1994). For instance, Cohen (1997) instead estimated the impact on the Human Development Index²⁵ (HDI) for Namibia and found a significant negative impact. Dixon *et al.* (2001) criticised earlier studies that grouped all countries together in empirical analyses, and instead studied the relationship between HIV prevalence and per capita GDP growth separately in countries from southern and eastern Africa and the ‘rest of Africa’. They used an augmented Solow model where growth in GDP per capita is partially determined by

²⁵ *See* United Nations Development Programme (1990-2005, annual).

'health capital', and found that in countries (within their sample) where HIV prevalence is relatively low, the economies appear to be able to absorb the shock of the HIV epidemic, while in countries with high HIV prevalence, typically in southern or eastern Africa, economic relationships become distorted. For instance, they found that economic growth would decline despite an increase in the capital/labour ratio in some countries. McDonald and Roberts (2006) used a similar model and found significant negative effects of HIV/AIDS on per capita income, e.g. in Africa the marginal impact of a one percent increase in HIV prevalence was a 0.59 percent decrease in income per capita. Most of the studies projecting the impact of HIV and AIDS on the growth rate of per capita GDP use some version of the neoclassical growth model and typically estimate declines of 0.5 percent to 1.5 percent, even for the worst affected countries with more than 20 percent HIV prevalence rates. For countries like India, with an HIV prevalence rate of less than 0.5 percent, this translates into very small effects of HIV and AIDS on growth (*see* Haacker). Somewhat differently, Young (2005) emphasizes the decline of fertility associated with the HIV epidemic. Using South African data, he estimated that the positive effects of lower population growth on real wages would be strong enough to offset other adverse effects. Another common method of estimating the macroeconomic impacts of HIV/AIDS has been to use a computable general equilibrium (CGE) model, and use simple assumptions to simulate the impacts of HIV/AIDS on the various sectors and their interactions. This method provides a theoretically consistent approach to measuring both the sectoral and economy-wide impacts of HIV/AIDS. Kambou *et al.* (1993) used an eleven-sector model of the Cameroonian economy, with three categories of labour. They assumed the impact of HIV/AIDS to result in a decrease in labour supply to each market of 10,000 workers (i.e. 30,000 in total) over the period 1987-1991, and compared an AIDS and non-AIDS scenario. They found significant macroeconomic impacts including higher wages, a loss in competitiveness of local industry and a decline in trade revenues, lower public saving, and a reduction in investment growth, while the GDP growth rate would fall by half. Arndt and Lewis (2000) performed a similar analysis using a CGE model of the South African economy containing 14 productive sectors over the period 1997-2010. Unlike earlier CGE analyses, such as Kambou *et al.* (1993), Arndt and Lewis took into account costs beyond those in the health sector and impacts beyond labour supply, and also included a time dimension. They concluded that GDP was 17 percent lower in the AIDS

scenario, and that nearly half of the deterioration in performance was due to government substitution of expenditure into healthcare. Arndt and Lewis (2001) then extended the analysis to consider specifically the impacts on the labour market and unemployment, and found that HIV/AIDS would depress labour demand and have virtually no effect on unemployment of unskilled or semi-skilled labourers compared with a no- AIDS scenario. Arndt (2003; 2006) used a similar model with 19 sectors, but focusing on human capital accumulation through education, to analyse the impacts on the economy of Mozambique. He found real GDP growth would be between 2.8 and 4.3 percent lower by 2010. Quattek (2000) used an extensive model of the South African economy with ninety equations, and estimated that annual GDP growth would be 0.3-0.4 percentage points lower than in the absence of HIV/AIDS, and that domestic savings as a percentage of GDP would be 2 percent lower. Many researchers have criticised earlier methods for assessing macroeconomic impacts, arguing that methods such as the Solow framework systematically underestimate the full impact of HIV/AIDS on the population as, among other things, they do not adequately account for the impacts on human capital. This has resulted in a move to more complex macroeconomic modeling techniques. For instance, Over (1992) projected the economic growth of 30 countries in sub-Saharan Africa, with and without AIDS by modeling the link between economic growth and the labour force, capital accumulation, and other growth determinants and applying demographic projections. He also modeled the effect on human capital and savings rates, and similar to the results of simpler Solow models described above, he found that the GDP growth rate was between 0.5 and 1.5 percentage points lower in the AIDS scenario, and GDP per capita growth could be lower or higher, depending on the assumptions employed. Young (2004; 2005) used a Beckerian household framework with a constant savings rate and endogenous participation, fertility, and education decisions to model the impacts of HIV/AIDS on the South African economy. He found that HIV/AIDS would cause reduced human capital investment (children born in 1995 would on average receive 1.5 fewer years of schooling), but significantly higher output per capita over a fifty year period (with output per capita lower than the no-AIDS scenario after that time) and increased living standards. Bruhns (2005) developed a similar household model for the Kenyan economy and found that, in the absence of intervention, GDP would be 54 percent lower by 2030 than the no-AIDS scenario and household incomes 63 percent lower. Government policies were found to only

partially reduce the negative impacts of the epidemic. Drouhin *et al.* (2003) developed an exogenous growth model and showed theoretically that, if growth falls below an epidemiological threshold the economy could become trapped in a vicious downward spiral of lower productivity, lower production, and lower spending on human capital. Bell *et al.* (2003; 2004) developed an overlapping generation's model, which quantifies how HIV/AIDS affects the formation and transmission of human capital and the intergenerational returns to human capital. They considered three channels of impact on human capital: (i) parents' mortality affects the intergenerational transfer of human capital; (ii) loss of income causing reduced investment in schooling; and (iii) investment in education is made less attractive by the change that children will become infected with HIV. Their dynamic system can result in multiple equilibriums. Families with low human capital have low earning and low investment in the next generation, perpetuating a poverty trap as described in Section 4.5 (viii), while families with high human capital invest more in their children, who in turn have higher incomes upon adulthood. They calibrated their model using data from South Africa, and estimated three growth paths for the South African economy: a scenario without AIDS, and two scenarios employing different assumptions of parental expectations about future mortality. They found that investment in schooling and family incomes would fall dramatically as a result of HIV/AIDS. Parental expectations concerning their children's future and the returns to education were a key determinant of the extent of the impacts. For example, in a scenario where expectations about future mortality are rational the investment in schooling would fall to zero by 2020. Corrigan *et al.* (2005) used a similar overlapping generations model which ignored the third channel mentioned above, and calibrated their model for a 'typical sub-Saharan African country'. They found that for a range of different assumptions, and HIV prevalence of about 15 to 20 percent, the growth rate of per capita income is 30 to 40 percent lower than a no-AIDS scenario. Ferreira and Pessoa (2003) used a similar model for twelve sub-Saharan African countries and found that per capita income would be 15 to 46 percent lower and schooling up to 72 percent lower than a no-AIDS scenario. A growing body of relatively recent literature emphasizes the transmission of human capital across generations and concludes that by disrupting the mechanism that drives the process of the transmission of knowledge and abilities from one generation to the next, the AIDS epidemic will result in a substantial slowdown of economic growth. Part of the analysis relies on the dynamic

Implication of the mechanism that AIDS lowers investment in human capital of children since “. . . the expected pay-off (from *this investment*) depends on the level of premature mortality among the children when they attain adulthood” (*see* Bell, Devarajan, and Gersbach). This mechanism may be applicable for high-prevalence countries such as South Africa, but is not quite relevant for India, with a prevalence rate of just 0.36 percent and where there are many other compelling reasons for not sending children to school. Overall, it thus appears likely that the adverse impacts of HIV and AIDS on economic growth or GDP per capita in India will remain limited.

Other recent studies have shifted from analyzing the macroeconomic impacts on standard economic indicators such as labour and output, to measurement of the welfare impacts of HIV/AIDS. The rationale is that the most direct welfare effects of HIV/AIDS are associated with increases in mortality; therefore the value of the lost life expectancy can be evaluated using the value of statistical life. Crafts and Haacker (2004) evaluated the welfare costs using estimates of the value of statistical life for seven developing countries with different HIV prevalence, and estimated average welfare losses of between 92.9 percent (Botswana) and 2.9 percent (Vietnam) for 2004, projected to increase to 93.4 percent and 4.3 percent respectively in 2010. Crafts and Haacker (2003) presented similar results for a different set of countries including Thailand, where they estimated the average welfare impacts at 6.2 percent in 2003 and projected to be 6.5 percent in 2010. Finally, micro-simulation has also been used to estimate the macro-level effects of the HIV epidemic. Cogneau and Grimm (2002) developed a demo-economic micro-simulation model of the Cote d’Ivoire economy, and estimated that the size of the economy would shrink by 6 percent after 15 years, but income per capita, income inequality, and poverty would be roughly unchanged. Other studies have looked at further international or macro issues such as social security and social protection (Bonnerjee, 2003; Plamondon *et al.*, 2004), public services (Haacker, 2004b), governance (de Waal, 2003), democracy (Manning, 2002), security (Bartels, 2003; Garrett, 2005; Heinecken, 2001), political stability (Elbe, 2003), peacekeeping (Tripodi and Patel, 2002), and humanitarian action (Harvey, 2004).

3.7 HIV AND WELFARE IMPACT, IMPACT ON QUALITY OF LIFE AMONG PLHIV

A different approach estimated the welfare impacts of HIV and AIDS as a decline in the utility that can be derived from a consumption stream over the lifetime of an individual. Using this type of model, Crafts and Haacker (2003, 2004) find that the primary impact of HIV and AIDS arises from its impacts on mortality (reducing the expected duration of the lifetime consumption stream). For India, Haacker, using this approach, estimates that the annual welfare costs of HIV and AIDS amount to around 3 percent of GDP, much higher than any estimates of the impact of HIV and AIDS on GDP. Most directly, counselors and doctors working with HIV patients in India are unanimous in their opinion that the psychological and emotional costs on the HIV patients and their families are enormous. The medical science literature has long appreciated this aspect of terminal illnesses. In social sciences, this is related to an emerging body of literature on happiness and mental well-being (*see*, Easterlin 1974, 2003; Blanchflower and Oswald 2004, 2007; Clark and Oswald 1997; Frey and Stulzer 2002; Gilbert 2006; Graham 2007; Helliwell 2006; Kahneman *et al.*, 2006; Layard 2005; Lucas *et al.*, 2004; Smith *et al.*, 2005; Ubel *et al.*, 2005). The mental well-being research is proven to be well suited in situations with limited information on welfare effects of unemployment, divorce, smoking, and so on. This approach can be used to evaluate effects of HIV and AIDS on significant fear of early death and stigma. While researchers have worked in painstaking details to investigate the determinants of happiness and mental well-being (*see*, for example, Andres 2004; Blanchflower and Oswald 2004, 2007; Case and Deaton 2006; Helliwell 2006), very little research has been done to quantify the value of mental health. Given the importance of the psychological and emotional costs, the HIV experience in India gives us this unique opportunity to integrate mental health in welfare evaluation and to quantify its significance in welfare loss of the family.

3.8 EXPERIENCES FROM INDIA

The most significant household survey regarding the impacts of HIV and AIDS in India to date is the one by Pradhan and others (2006, also discussed by Haacker). Their findings highlight the adverse impacts of HIV and AIDS in particular on households in poorer wealth quintiles and on widows affected by HIV and AIDS. More generally (not specific to India), studies using household data find a

considerable impact of HIV and AIDS on income, consumption, and children's education.

In India studies conducted on HRG and vulnerable group of society like MSM, truck drivers, industrial migrant workers, adolescents, FSWs, IDUs and members of LGBT groups, examined that in the earlier phase HIV pandemic in the country, it was found that there was a lack of accessibility of knowledge about the HIV/AIDS. However, in the due course of time there has been a tremendous achievement in the coverage of dissemination of knowledge about the HIV/AIDS in the country. Still there is a need to address the issue at the grass root level, particularly, with reference to rural India. In Indian context, recent studies on the vulnerable groups have shown mixed results, with respect to different vulnerable groups of society. (Patel P, Solanki B 2006, Balakrishnan A, Shanmuganandan S, Mohana R, Easwari S, G Rekha Devi) addressed the knowledge of HIV/ AIDS among the truck drivers and attempted to study the sexual behaviour of truck drivers which make them more vulnerable to HIV infection. Industrial migrant workers, is another important group which is vulnerable to HIV infection to a great extent was studied by (Konanur S R, Rao A S- 2006). A. Mahal and B. Rao (2005) gave an overview of economic perspective of HIV/AIDS epidemic in India. This review gave a hunch of economic impact of HIV at household level in India. Verma (Verma *et al.*, 2002) studied the impact of an adult HIV/AIDS related death on the household in general and children in particular. That study is based on a comparative evaluation of three types of households.²⁶

As stated earlier, in the sphere of this thesis, main thrust is on socio-economic impact of HIV infection at general population, in this content of review, experience of India, shows little empirical work done so far.

Indian HIV epidemic is different from the other affected countries. As with the low HIV prevalence for the nation as a whole (NFHS-III), high HIV prevalence is concentrated in the few pockets of the country. Further, cultural diversity of India and its geographic structure makes it more difficult to study an overall impact of HIV infection (Jayati Ghosh, 2002).²⁷

However, in the recent past, attempts have been taken by numerous researchers to estimate socio-economic impact of HIV in India. International Labour Organization

²⁶ Ravi K. Verma, S. Salil, Veera Mendonca, S. K. Singh, R. Prasad and R.B. Upadhyaya (2002), HIV/AIDS and Children in the Sangli District of Maharashtra (India)

²⁷ Jayati Ghosh (2002), A GEOGRAPHICAL PERSPECTIVE ON HIV/AIDS IN INDIA, The Geographical Review, 92(1): 114-126)

(ILO) in 2003 conducted a study on socio-economic impact of HIV/AIDS on people living with HIV/AIDS and their family. It has revealed that HIV has, in general, made a deeper impact on women who have faced more discrimination, more hardships and had to assume more responsibilities to run the households once their husbands died of AIDS.²⁸ Pradhan's Study (Pradhan *et al.*, 2006), gave a holistic view of impact of HIV epidemic in India. This study has been cited in the above review, and infact is the benchmark for this thesis. Here, this is worth mentioning about the individual states reports which were made from the overall India report from the above study. Six high HIV prevalence states were studied, namely Tamil Nadu, Karnataka, Maharashtra, Andhra Pradesh, Manipur and Nagaland. These reports present the states' depiction of impact of HIV infection at socio-economic ground at household level. Maharashtra is one of the high HIV prevalence states in India and fourteen districts of state are categorized in the category of high HIV prevalence districts in India. This report highlights the socio-economic conditions of people living with HIV in Maharashtra state.²⁹

NFHS-III states report has highlighted that in Maharashtra, 0.62 percent of adults age 15-49 are infected with HIV. HIV prevalence is more in men than women. This report also gives data on HIV awareness level, in slums of Mumbai and Nagpur city.³⁰

In Maharashtra itself, major thrust is on marginalized group of society and majority of studies done so far have reflected this bias one or other side. Most of the studies had been conducted either on the behavioural aspects, awareness aspects, or socio-economic profile of either FSWs, or other sub groups of marginalized population.

Geographically, most of the studies confined to Mumbai (city having the highest number of PLHIV in India), Pune, and Sangali district of state. S. Bharat (1999), study on household responses to HIV /AIDS in Mumbai, shows that responses are greatly influenced by prevailing gender relations, with men being responded to more positively than women, as well as other variables such as social status. A study by Mawar (Nita Mawar *et al.*, 2004) on social consequences of HIV/AIDS provides an overview of social response to AIDS characterized by high levels of stigma and discrimination. Ignorance about the disease, fear of discrimination and consequent denial for testing and treatment, contribute to spread of the disease. The disease status

²⁸ see Socio-economic impact of HIV/AIDS on people living with HIV/AIDS and on their families, International Labour Organization 2003

²⁹ see, Pradhan *et al.*, (2006) Socio-economic impact of HIV and AIDS in Maharashtra India

³⁰ see National Family Health Survey 2005-06 Maharashtra, Ministry of health and family welfare, IIPS Mumbai

adds to vulnerability especially in women. The disease is often identified with groups like intravenous drug users (IDUs), and homosexuals who face a double stigma as a result of HIV.³¹

Pune city is the second largest city of Maharashtra state, second only to state capital Mumbai and ranks among top five high HIV prevalence cities in the state. Pune is having the highest number of MSM population (NACO) in India and population in other high risk population is also large in the city. In the past, studies have been conducted to assess HIV awareness and knowledge in the marginalized groups of society and vulnerable groups like slum dwellers women etc. Despite having high HIV prevalence no initiative have been taken to assess the socio-economic characterization of people living with HIV in Pune city. This thesis, explore the hidden facts about the socio-economic features of HIV household in Pune city, using a judicial mix of quantitative and qualitative data.

³¹ Nita Mawar et al, 2005, the third phase of HIV pandemic: Social consequences of HIV/AIDS stigma & discrimination & future needs IJMR, 122: 471-484

