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Economic impact of HIV/AIDS on rural households in Suba Distict, Kenya.

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Abstract
Poor rural communities in sub-Saharan Africa have been affected most by HIV/AIDS pandemic. This paper analyzed the socio-economic impacts of HIV and AIDS on rural households, at different stages of disease progression, to determine economic impact of HIV/AIDS. The study was quasi-longitudinal assessing the impact of HIV and AIDS on economic status in Suba District. The study population were PLWHA who were registered for care at the local Health Centre. A sample of 200 HIV+ cases was randomly selected from patient support register.The findings showed that there was shortage of labor at household level due to drop out from work, and selling of assets in affected households as the disease progressed to more severe stages. Depletion of assets and savings to cope with increased expenditures in medical costs, food intake requirement as well as funeral costs was high in households with advanced stages of the disease.
Key words: HIV, AIDS, stages, progressive, impact

1.1 Introduction

HIV/AIDS, if considered to directly affect the life of four people other than the ill person, affects at least 160 million people in sub-Saharan African [Barnett 2002]. Incremental impact has been reported with severe impact seen among those with advanced stages of HIV/AIDS [Foster 2002]. Poor rural households are particularly vulnerable. The direct economic consequences for affected households include decreased productivity and income.

A study in Zimbabwe showed that the death of a breadwinner due to AIDS will cut the marketed output of maize and cattle owned in small scale farming and communal areas by 61 percent and 29 percent respectively [Kwaramba 1997]. It has also been observed that as a result of AIDS diversity of crops grown is declining, changes in cropping patterns are occurring and cash crops are being abandoned for less labor-intensive subsistence crops [Guerney 2000]. In Kagabiro village, Tanzania, when a household contained an AIDS patient, the household labour supply was severely affected, 29% of household labour was spent on AIDS-related matters, including care of the patient and funeral duties, with total labour loss of 43% [Jayne 2005]. In Rwanda, 60-80 percent of the households reported reduced farm labour due to illness and death of infected households [Gillesple 2005]. Reduction in household labour supply due to HIV/AIDS has been shown elsewhere [Tibaijuka 1997], with devastating consequences on livelihoods [Kgathi 2007]. The epidemic not only affects the productivity of the infected, but also diverts labour of the household and extended family from productive activities to taking care of the sick [Drimie 2003]. The impact is also dependent on various factors as seen elsewhere that the difference-in-differences estimations indicate that the effects of adult mortality are highly sensitive to the gender and position of the deceased family member in the household, [Yamano 2004].

Studies have shown that expenditure and income fall even by up to 67% of mean income [Moris 2000]. The most serious situations are found in rural settings, where most of the time agriculture represents the main source of income as well as also being the first means of subsistence.

Expenditure on health care in households with an HIV/AIDS patient spent twice as much compared to other households [Bechu 1998]. In Uganda, for example, the economic impact of HIV-related deaths was stronger than other types of death, as households lost much of their savings in order to pay health care and funeral expenditures. Asset ownership declined when the death of an HIV+ member occurred, but remained stable when the death was of an HIV- member [Menon 1998]. Food consumption has been found to drop by 41% [UNICEF 1998]. In Kenya studies have established that for orphans the most serious problem is inability for households to afford school fees, although lack of food, medicare and clothing were also prominent [Nyambetha 2001]. Loss of income of breadwinners may lead to selling of assets to pay for health care and funeral costs. This may deplete all current and future financial reserves of households [Pinder 2004].

Households react straight away by redistributing resources in favour of the person/s [Ainsworth 2003] living with HIV/AIDS. Nevertheless, consumption will not decrease immediately because of the use of savings. Once savings are exhausted, consumption will start decreasing, except for sanitary and burial expenditures and especially food consumption.

Consequences have also been observed household saving choices with respect to the perception of risk and life expectancy. If people forecast that they will not have a future, they are unlikely to save money. A simulation produced in 2002 on South African data showed that saving rate in 2015 will be 15% lower than in a scenario without HIV/AIDS [Freire 2002]. This reduction is caused mainly by the diminishing life expectancy. Some studies have shown that even we may not have the full picture of impact but go by estimations in such cases as real reason of children withdrawing from school [FAO 2002].

HIV/AIDS sets lose negative impact on the economic apparatus of a household, and available income is reduced. The previous studies have focused on the economic impact of HIV and AIDS comparison between affected and non-affected households without looking at the effects of progressive stages of the disease. This study focused on analysis of the impact of HIV and AIDS among rural households by various stages of the disease. The result from the study is important as it gives information on the differential impact of the disease through its progressive stages, an element consistently missed in earlier studies on the subject.

1.2 Study objective

To examine the economic impact of HIV and AIDS among rural households in Suba District.

1.3 Methodology

The study adopted quasi-longitudinal design. The study population comprised of PLWHA registered for care at Ogongo Health Centre, Suba District. A sample of 200 HIV+ cases was randomly selected from patient support register for inclusion in the study as index households. Sample size for each village was computed proportionally, and then random table of numbers used to select the patients for study. Medical records of selected patients were subsequently used to identify the patient and their household for consent and face-to-face interviews at their respective homes. Out of the 200 identified patients, 146 (73%) consented to interview and 11 (5%) were found to have died. Index households were grouped into four categories based on four stages of WHO classification of HIV/AIDS. A fifth stage (Stage V) was added to include index households where selected HIV cases were found to have died during interview visits.

For each index household, two to three control households were interviewed. Selection of immediate neighbouring households assisted to protect index households from stigma that may arise from participating households. However, on analysis, control households were further classified into pure controls (referred to as controls in the study) and households with chronically ill members. Control households with members who had been ill for four weeks or more were classified as "households with chronically ill members". This was important to sieve from controls households what could have been HIV+ but untested patients. Households with chronically ill members constituted their own category on analysis and presentation of results. Enumerators were blinded to index and control households during the interviews.

Quasi-longitudinal design was suitable to enable precision in identification of HIV+ patients since the study did not undertake testing for HIV status in the households.

2.1Findings

Households with chronic illnesses had the highest proportion (38%) of members dropping out from work. Among index households, the trend of dropping out of work due to HIV/AIDS and/or caring for those with HIV/AIDS appeared to increase from stage I households (15%) to stage II (25%), and to stage III (27 %). This was followed by declines among stage IV households (17%), and stage V households (14%) (table 2).

Trend in cattle ownership reduced with advanced stages of HIV (Table 2). Stage I households had the highest proportion of their households (23%) and stage IV did not have any cattle. After death of HIV cases, level of cattle ownership among index households (36%) was almost similar to control households (39%).

Nearly half of household incomes are obtained from farming followed by business (Table 2). Income arising from farming activities among index households declined from Stage I (55%) to stage III (43%). Income seemed to return to near stage I levels at 54% and drops to very low levels after death (27%). Income from business on the other hand continued to decline even after death.

Households with chronically ill members and households in stages one through four recorded high proportions of their households having spent Kshs 501 – 1000 (6% - 13%), while only 4% of the control households spent a similar amount. Conversely, a majority (52%) of the control households spent less than Kshs 100 in the last two

weeks as compared to the rest of the categories which had between 26% to 43% proportions of their households as shown in table 2.

Results show that households in stages I to IV spent more on food by 11% to 14% compared to the control houses. Houses with chronically ill members spent the least (43%) while stage five houses spent similar proportion on food (49%) with the control houses. Households with chronically ill members and stages I to IV houses, spend 5% to 2% more than the control and stage V houses on health care. Households with stage IV patients spend 7% on farm inputs, which is 5% more than all the other categories of houses. In the same way, households with stage V patients spend 10% on social events, higher than other categories of houses by 7% as indicated in table 2.

Houses with chronically ill members spent 14% on capital investments while the control houses spent 7% on the same. However, the proportion spending for control houses on capital investment was still better compared to that of stage one, two, three, four and five which spent as low as 4%, 5%, 5%, 3% and 1% respectively. On education, control houses spend more than stages I to IV by 11% to 8%. The controls and households with stage V patients spend 16% and 19% on education respectively. Expenditure on house construction and repairs started at a high of 6% among the control houses, 4% for households with chronically ill members and reduced to between 1% and 3% among households with stages I, II, III and IV patients. Households with stage V patients spend nil on house construction and repairs as shown in table 2.

Households in all categories generally cultivated 1-3 acres of land, control households have 55% under this size of land cultivation, households with chronically ill members 44%, those of patients in stage I have 49%, stage II with 72%, stage III at 55%, stage IV at 58% while those of stage V have 64%. Households with patients in stages II and III have the lowest proportions (10%) cultivating more than 3 acres. House of patients in stages I, IV and V have very similar proportions (29%, 25% and 27% respectively) cultivating more than three acres of land as compared with the control households (25%). Households with chronically ill members had the highest proportion (37%) cultivating more than 3 acres. All categories, except for houses with patients in stages III and V have 17 – 23% cultivating less than 1 acre. Households with patients in stage III have the highest proportion cultivating less than an acre while those with stage V patients show lowest proportion (9%) as shown in table 2.

Control households produced maize, beans and sorghum/millet just about twice as much (974kg) as each of the stages one, two, three and four households (450, 549, 649, 510kg respectively) during the previous harvest season. Households with chronically ill members and those with patients in stage V produced 895kg and 851kg respectively.

Overall on total harvest, the control households with chronically ill members, and households with patients in stages I, II and V have a higher proportion of maize as compared to sorghum/millet, while stages II and III patient households have more millet than maize proportionally. The control households had the highest proportion of maize at 66% of its total harvest, followed by households of patients in stage V with 61%, stage IV with 57% and stage I with 54%. Households with patients in stage III recorded the lowest proportion in maize production at 30%, stage II at 39% and households with chronically ill members having 48%. Stage III patient households have the highest proportion in sorghum and millet production of the total harvest at 70% followed by stage II patient household with 59%.

All the categories of households operated some savings with differing proportions among the households. The control households, households with chronically ill members and households with patients in stages I, III and V had similar proportions of their households operating savings account ranging from 34% to 36%. Houses Stage I households have 28% of their households operating savings account while only 15% among the stage four households had a savings account.

At least some households from all the categories had withdrawn from their savings accounts. The rate of withdrawing of savings was highest among the stage V households at 36% while the category with the lowest proportion of households withdrawing from their savings was stage IV households with only 8%. Control households, stages I and III households had similar proportions of their households withdrawing savings at 27%. Households with their sick members in stage II recorded the second highest in proportion for withdrawing savings at 31%.

Up to 9% of the stage V households utilized their withdrawn savings on funeral expenses. This was followed by stage III households with 6%, 5% for stage II and 3% for households with chronically ill members while only 1% of the control households utilised withdrawals from their savings on funeral expenses. Medical expenses as a

reason for withdrawing savings was highest among households with stage patients at 10% followed by those with stage IV at 8% and 6% for stage III households. Control households and households with chronically ill members have 4% and 3% respectively.

Education cost was the main reason for withdrawing savings among households with patients in stage V household (18%). Stage V patient households lead in utilizing savings on education at 18%, households with patients in stage I households 11%, while the control households, households with chronically ill members, and stage III patients each have 6% proportion. Stage I patient households have 5% withdrawing for education, while none of the households with patients in stage IV households have withdrawn savings for education in the last six months. Of all the households, it is only those with patients in stage IV that had not utilized withdrawals of savings on household basic essentials.

The findings indicate that school going children have been used in caring for the sick among the control households (1.6%), households with patients in stage I (2.2%), stage II (10.5%), stage III (4.7%) and stage V (6.3%). Households with chronically ill members and stage four households had not used school going children for the care of the sick.

3.1 Discussion

Overall the findings show incremental deterioration of key economic variable including work drop-out rate by household members, cattle ownership, and income from business and farming in households with patients in stages I to stage III. The results also showed improvement in drop out from work, farming and cattle ownership at stage IV. This was unexpected finding; it is perhaps an indication of households acknowledging and accepting the impending death of their loved ones, they begin to pull together and get back to work.

Farming activities decline seem to follow death of HIV patients in the household, in spite of more household members getting back to work and improved productivity at stage IV. This may be related to cultural difficulties faced especially by widows, in female headed households, in accessing their husbands land for faming activities after the husband has died [Kwaramba 1997].

Business activities continued to decline up to the time of death. This may suggest lack of inter-generational transfer of businesses often seen amongst the Luo communities in Kenya, and unique technical skills of the sick one that may not be replaceable for successful continuation of the business [Topouzis 1998].

High dropout rate from work among affected households lead to several consequences such as reduced size of land cultivated. The impact is also dependent on various factors as seen elsewhere that the difference-in-differences estimations indicate that the effects of adult mortality are highly sensitive to the gender and position of the deceased family member in the household, [Yamano 2004]. While this study did not disaggregate analysis to show the difference-in-differences estimations based on gender and position of the sick person in the household, results indicate households with patients in stages II and III were worst impacted on in terms of reduced acreage of land cultivated. This scenario could be the effect of reduced labour due to other household members having not adjusted to live with the disease. As the disease progresses into stage V, members learn to cope and indeed they realises that they have to work hard to earn and replace lost income of the sick member especially if it's an adult who had income to the household.

This study found a progressive reduction on maize production as the disease progresses. Conversely, families affected with the disease tended to resort to sorghum/millet production as demonstrated by increasing trend from the control household through stage III. Households with patients in stage V tended to reduce towards the control households. While maize production requires strict adherence to crop husbandry practices, sorghum/millet is relatively resistant to temperature and farm practice compromises and hence preferred by households affected by labour and capital shortage.

This study found the highest impact of the disease on farming in households with patients of stage V which had the most reduced farming. This may be attributed to the effects of lost experience and knowledge in farming due to the loss of household adults and lack of capital for farming inputs. The findings also indicate that where options in farming and other sources of income were adequately viable, fishing business was less preferred and a lesser contributor to household income and hence households operated fishing business as a last coping mechanism. These findings concur with Jayne (2005) that Under-developed status of the market environment have been shown to reinforce the effects of HIV and AIDS. Similarly, high casual labour rate among the households with patients in stage V implied a coping mechanism as a result of the shocks corroborating the findings of Kagera, Uganda by

Kathleen (2006) which showed that crop shocks lead to a significant increase in the level of child labor. These findings, therefore, imply that most important sources of income that determines differential impact of HIV and AIDS include farming, fishing and casual labour work.

The study shows a differential effect on health care expenditure among households with HIV/AIDS patients on support program and households with chronically ill patients (untested cases).There was absence of a noticeable trend between stages I through IV of the disease, which could be explained by the fact that ARV is freely given by government facilities under the patient support program. Therefore, the study underscores the importance of government provision of subsidized ARVs as a mechanism to cushion affected households. However, eexpenditures on health care in households with an HIV and AIDS patient are much more compared to control households, consistent with results of other studies [Bechu 1998].

The study show a striking pattern of households with patients in stage IV which spent higher on farm inputs compared to the rest. This could be explained by the heavy reliance on hired labour as a copping mechanism to mitigate shortage of own household labour. The reduced income and change in spending priorities inform the lower spending in capital investment, house construction and repairs among the affected households but more especially among households with patients in stage IV and V. Households with patients in stage V households also registered highest proportion in education signifying the difficulties experienced by orphans in raising fees as found by Nyambedha (2001). These effects have been analysed in other studies on redistribution of resources as well [Ainsworth 2003].

This study found highest utilization of savings among households with patients in stages V being on funeral costs while use on medical expenses is highest for stage II followed by stage IV and stage III. Stage IV utilized all withdrawals on medical care. Stage V households also utilized savings on education which imply inadequate sources of income to the household due to loss of adult members and hence difficulties in raising fees from current income as shown by Nyambedha (2001). High utilization of savings on funeral, medical and education costs explains emerging strain on diminishing income among the HIV and AIDS affected households and therefore, need to fall back on any savings as also explained by Freire (2002).

The findings show incremental decrease in cattle ownership with disease progression. The trend is evident from stages I through to IV. This could be explained by the effects of diminishing income against increasing demand for high costs in medical besides other basic needs .This study outcome are in agreement with results of Freire (2002).Households with patients in stages III and V, are worst affected by incidence of school absenteeism, which could be explained by the lack of fees due to reduced income and need for the children to support in income generation as shown in other studies [Kathleen 2006]. However, non-clear incremental effect could be due to the strong social capital nature of the community in rural areas of rural Luo communities in Kenya.

4.1 Conclusion

Mitigating the impact of HIV/AIDS requires adequate information on how households under the various disease progressive stages are affected. Using household data from a rural district in Kenya, we have shown the characteristics of the impact of HIV/AIDS along progressive stages of the disease on labour, farm cultivation and production, expenditure pattern, asset holdings, savings and withdrawals and school absenteeism.

The study showed that there is incremental impact of the disease on household labour reduction up to stage three and a sudden decline of that impact recorded among the stage four and five households. As a result of differential impact on labour, the acreage of land under cultivation also shows incremental impact with progressive disease stage levels up to stage three with a sudden reverse in stage four and five households. Effects of these two factors combine to produce similar results in production and the type of crops grown. Fishing business is preferred among affected households as disease progresses.

Spending on health care is cushioned by free ARV treatment for the tested positive patients and consequently minimised the differential effect among various stages of the disease. Key expenditures with exceptional higher variance between stages included farm inputs for stage four and expenditure on social events among the stage five households implying heavy reliance on hired labour due to shortage of own household labour and inadequate controls in expenditure rationalization. Spending in capital investment, house construction and repairs among the affected households was low indicating priority change on expenditure of affected households.

As a coping mechanism, households affected by HIV and AIDS deplete savings for use on medical expenses, although there was no marked difference among the various stages except for stages one and five which had not

utilized savings on medical. Expenditure on basic essentials saw a declining trend from stages I to IV households. Stage V was severely affected with use of savings on funeral costs. Other coping mechanism with economic impact was the sale of assets (cattle) as demonstrated by a clear trend of decline in households owning cattle among the disease affected households. School absenteeism was also recorded high among the affected households with stages two and five being worst affected.

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Table 1: Demographic characteristics of study participants

Variable	Stage 1	Stage 2	Stage 3	Stage 4	¢Stage 5
Sex					
Male	29	26	16	7	5
Female	15	22	25	6	6
Age					
0-4 year	0	0	0	0	0
5-14 year	0	0	0	0	0
15-49 year	31	33	30	4	6
50+	13	15	11	9	5
Marital status					
Married	34	31	26	8	4
Single	10	17	14	5	7
Separated	0	0	1	0	0

***CI-hh = households with chronically ill members**
¢Stage 5 = Index household where HIV case was found to have died

Table 2: Effect of HIV infection on index households by stage of disease compared to controls and household with chronically ill members

	Frequency (%)						
Variable	**Control**	**CI-hh**	**Stage 1**	**Stage 2**	**Stage 3**	**Stage 4**	**Stage 5**
Household income							
Salaried	54(11)	4(5)	3(7)	1(2)	3(8)	1(8)	1(9)
Business	103(20)	18(22)	12(27)	14(29)	10(25)	3(23)	2(18)
Remittance	11(2)	19(11)	0(0)	0(0)	3(8)	0(0)	1(9)
Farming	208(41)	38(47)	24(55)	23(48)	17(43)	7(54)	3(27)
Fishing	22(4)	3(4)	0(0)	2(4)	5(13)	1(8)	2(18)
Casual labourer	16(3)	4(5)	1(2)	1(2)	0(0)	0(0)	1(9)
Others	89(18)	5(6)	4(9)	7(15)	2(5)	1(8)	1(9)
Household spending on health care							
<100	192(52)	56(26)	18(43)	19(43)	16(41)	5(42)	3(30)
100-500	146(39)	60(28)	14(34)	13(28)	12(32)	4(33)	7(70)
501-1000	14(4)	29(13)	4(6)	6(8)	4(6)	1(8)	0(0)
>1000	18(5)	70(33)	8(17)	10(23)	9(21)	2(17)	0(0)
Household expenditure							
Food	621(49)	558(43)	383(60)	358(63)	448(61)	450(62)	856(49)
Capital invest	96(7)	176(14)	25(4)	31(5)	40(5)	24(3)	10(1)
Farm input	31(2)	32(2)	20(3)	10(2)	14(2)	47(7)	44(2)
Social exp	41(3)	45(3)	17(3)	15(3)	19(3)	12(2)	171(10)
House const. $ rep	75(6)	55(4)	6(1)	16(3)	16(2)	7(1)	8(0)
Education	214(17)	212(16)	41(6)	32(6)	50(7)	65(9)	339(19)
Health care	75(6)	123(10)	53(8)	61(11)	70(10)	64(9)	100(6)
Other expenditure	123(10)	94(7)	92(14)	49(9)	82(11)	58(8)	219(13)
Household cattle ownership							
Current	168 (39)	23 (28)	15 (41)	13 (31)	10 (28)	0 (0)	4 (36)
6 months ago	169 (39)	24 (29)	16 (43)	13 (31)	10 (28)	3 (23)	4 (36)
Member (s) of household dropped out of work							
	118(13)	50(38)	11(15)	15(25)	15(27)	4(17)	2(14)
Savings utilization							
Basic essentials	36(8)	8(10)	4(11)	3(7)	1(3)	0(0)	1(9)
Luxuries	2(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)
Education	27(6)	5(6)	4(11)	2(5)	2(6)	0(0)	2(18)
Medical care	17(4)	2(3)	0(0)	4(10)	2(6)	1(8)	0(0)
Funeral expenses	3(1)	2(3)	0(0)	2(5)	2(6)	0(0)	1(9)
others	344(80)	63(79)	29(78)	30(73)	28(80)	12(92)	7(64)
Size of land cultivated							
<1 acre	85(20)	15(19)	8(23)	7(18)	10(34)	2(17)	1(9)
1-3 acres	225(55)	35(44)	17(49)	28(72)	16(55)	7(58)	7(64)
>3 acres	106(25)	29(37)	10(29)	4(10)	3(10)	3(25)	3(27)
Harvests (kg)							
Maize	646	430	236	217	192	290	517
Beans	25	117	13	8	6	8	16
Sorghum/millet	304	348	192	325	451	212	318