The cost of HIV/Aids-related morbidity and mortality to households: preliminary estimates for Soweto

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Abstract

This article has two main aims: to provide data on the cost of HIV/AIDS to urban South African households and to contribute to the development of a methodology that could be used in later studies. Data on the costs of HIV/AIDS-related morbidity and mortality were collected from a purposively selected sample of households in Soweto on four occasions between September 2002 and August 2003. The sample comprised 61 affected households, which had at least one member with a CD4 count of 200 or less at the start of the study, and 52 non-affected households. Three types of costs were examined – financial, economic and the present value of lost future earnings. The data suggest that the financial costs of morbidity and mortality were three and two times greater, respectively, for affected households than for those non-affected households that reported disease and/or death. Mortality costs far exceeded morbidity costs. The present value of lost future earnings, where the deceased had previously been an income earner, proved to be the major cost incurred by an affected household.

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1 Introduction

Despite the fact that between five and six million South Africans are HIV-positive (UNAIDS, 2006), there have been very few studies of the economic impact of HIV/AIDS on South African households. The main exceptions are the studies in two communities – one rural and one urban – in the Free State province by Booysen *et al.* (2001; 2002; 2003) and that by Oni *et al.* (2002) in seven rural communities in the Limpopo Province. A review of 32 studies of the economic impact of HIV/AIDS on households carried out in a number of countries (Naidu & Harris, 2005) drew attention to wide variations in the definitions and categorisations used in examining the economic impacts of HIV/AIDS. Consequently, the present study had two main aims: to provide more data on the impact of HIV/AIDS on urban South African households, and to contribute to the development of a methodology that can be used in later studies.

2 Research methods

2.1 Sampling

Soweto is an urban township that forms part of Johannesburg; it has a population of more than one million (Naidu *et al.*, 2004). The sample households were identified and recruited in the second half of 2002, using a purposive sampling procedure. Potential households were identified from women who attended public antenatal clinics in Soweto or the HIV clinic at the Chris Hani Baragwanath Hospital. Public health practitioners assisted in selecting the households, based on the willingness of patients to be tested for HIV and to participate in the study. Each household had to have at least one member engaged in an income-generating activity. Affected households included a member with a CD4 cell count of 200 or less. The study began with 125 households, of which 113 (61 in the affected cohort and 52 in the non-affected

cohort) were followed between September 2002 and August 2003.

2.2 Data collection

Cost data were collected by the person in each household who was responsible for its finances. Diary entries were checked, corrected and amplified during four visits over the 12 months by fieldworkers who were trained and supervised by the first author.

2.3 Discussion of the study design

In an ideal world, the households would have been chosen through random methods. However, it is almost impossible to randomly select households in this type of study. To be methodologically pure, we would need to take several hundred households, test the HIV-status of each of their members and exclude any household with an HIV-positive member. We would then need to follow the remainder over, say, 10 years and engage in regular testing of HIV-status. If a household member became HIV-positive, their household would become part of the experimental group. This would enable before versus after and with versus without comparisons. The ethical, time and financial constraints obviously make such a method impossible to utilise. The studies by Booysen *et al.*, which were also based on purposive sampling, make similar admissions concerning methodology (2004: 28). Oni *et al.* selected their households randomly and then assigned them to affected and non-affected categories on the basis of whether the household reported any premature (i.e. below the age of 70) adult deaths in the preceding three years which had "obvious" HIV/AIDS-related symptoms, and/or whether there was any adult household member who was chronically ill at the time of the survey (2002: 1175). Clearly, considerable subjectivity was involved in allocating households to affected and non-affected categories and it seems likely that some deaths and illness were not HIV/AIDS-related.

Our view is that we need to accept the use of less pure methodologies in HIV/AIDS household studies. If a number of such studies come to similar conclusions, then we can have some confidence in them. In recognition of our study's methodical impurity, we use the terms "affected" and "non-affected" households rather than experimental and control groups. Given that our households were not randomly selected, tests of significance can not legitimately be used and apparent differences between the two groups of households may not represent real differences.

It might be questioned whether the apparent costs of HIV/AIDS to affected households, that we identify, might in fact be a consequence of differences between the households in the two groups, e.g. in their size, age composition or economic circumstances. It is difficult to prove that the two groups of households were similar before the advent of HIV/AIDS, because the affected households had already experienced some of its negative consequences before the study commenced, and it was not possible to secure retrospective data in sufficient detail. In some important respects, however, including their size, age composition and the value of their marketable assets (largely housing), the households were very similar. Generally speaking, we believe that the differences we identify between affected and non-affected households do reflect the economic impact of HIV/AIDS. This belief is strengthened by the longitudinal nature of the study, which allowed observation and documentation of changes over a 12-month period.

Before presenting the findings concerning morbidity and mortality costs, we first consider the effects of HIV/AIDS on household income and expenditure; this provides important background to the subsequent data on costs.

3 Findings

3.1 The effects of HIV/AIDS on households' income and expenditure

The effects of HIV/AIDS on affected households' income and expenditure patterns is the subject of an article currently in preparation and is dealt with briefly here to provide important background data. The study distinguished between regular and irregular income. Regular

income included earned income (from employment or self-employment) and income from non-market sources (from social grants or monthly transfers from people outside the household). HIV/AIDS can reduce regular income flows into a household in at least four main ways:

- Temporarily, as a result of absence from work by a HIV-infected worker.
- Temporarily, and possibly permanently, through loss of earnings by caregivers.
- Income may increase temporarily from a disability pension granted to a person with HIV/AIDS, but this will cease at death.
- Permanently, through loss of employment as a result of sickness and/or death.

Irregular income comprised earnings from property and investments (including rental of rooms and sale of assets), income from non-market sources (such as child maintenance, irregular transfers from people outside the household and profit from the sale of home production) and income as a result of death. The last item included lump sum payments or income from burial societies, life insurance, relatives and non-relatives. The incomes of affected and non-affected households over the year are reported in Table 1.

Using mean annual adult equivalent figures, affected households received 31 percent less earned income than non-affected households. This was more than compensated for, however, by affected households receiving 65 percent more regular income from non-market sources, in particular social grants and irregular income as a result of death. The total income received by the two groups of households was similar. Social grants were very largely disability grants, old-age pensions and child support grants. The proportions of affected households receiving these grants (24, 18 and 22 percent respectively) were much greater than the proportions for non-affected households (4, 8 and 12 percent respectively). For affected households, these grants contributed 30 percent of annual household income compared with 11 percent for non-affected households.

Table 2 reports the frequency of these effects which helps explain the finding that affected households earned 31 percent less than non-affected households. Absence from work did not always result in lost earnings, as almost 40 per cent of absences were supported by sick leave or workers' compensation. However, absences as a result of HIV/AIDS led to subsequent loss of employment.

As to expenditure, Table 3 shows that over the 12 months more than three-quarters of the sample households' expenditure was made on regular monthly categories. The "basic essentials" (housing [rent, electricity, water], food, non-food groceries, clothing and public transport) made up about half of total expenditure. There was little difference between affected and non-affected households as regards regular expenditure, expenditure on basic essentials or total expenditure. The difference in irregular expenditures is largely explained by the much higher health care and funeral costs incurred by affected households, which made up 18 percent of this category's total expenditure compared with 4 percent among non-affected households.

To sum up: affected and non-affected households in the sample received similar total incomes, but affected households earned less regular income and were heavily dependent on social grants. Both groups of households spent similar total amounts and similar amounts on basic necessities, but affected households spent more on health care and funeral costs.

3.2 The costs of HIV/AIDS morbidity and mortality

Illness and death were common, with one or both being reported by 85 percent of households in the sample. All affected households and almost half of non-affected households reported at least one episode of illness during the study period. Illness in affected households involved 93 individuals (64 females and 29 males) who averaged 1.5 episodes, while 36 individuals (21 females and 15 males) from non-affected households were sick for 1.2 episodes each.

Of the 51 deaths reported, 44 occurred in 36 affected households, including 12 deaths that were not HIV/AIDS-related. Of those who died, 13 had been employed before their illness made

continuation of work impossible and 28 were unemployed. The average age at death was 33 years. The 129 individuals who suffered illness were looked after by 163 caregivers, three-quarters of whom were unemployed female members of the household. Caregiving was a full-time task when the person was sick, and involved the use of time that would otherwise have been spent on housework or gardening (62 percent of the total time allocated to caring) or on leisure (30 percent). By far the largest cost associated with caregiving was the opportunity cost of foregone housework and gardening.

The financial costs of HIV/AIDS morbidity and mortality can be categorised as direct or indirect costs. Direct financial costs involved cash payments by the household and include the costs of consultation, medicines, hospitalisation, transport and food associated with hospitalisation and funerals. Most households, it should be noted, used Soweto's public health services, where the hospital fee of R13 covered all the services provided. Thus, the bulk of health care costs were met by the state. Indirect financial costs measured income foregone by sick members and/or their caregivers as a result of absenteeism and/or because they left (or were dismissed from) their job, or lost social grants. Some sick members and their caregivers had already lost employment or earnings prior to the study period, but only the loss occurring during the two months prior to the first interview and onwards were captured.

Morbidity and mortality costs were estimated from data collected from the 96 households that experienced illness and/or death during the study period. The data were collected during four visits, each of which focused on costs incurred during the preceding two months. The data therefore covered eight months; an approximation of annual values can be made by multiplying the cost data by 1.5. Table 4 reports the cost of morbidity for sick persons who were still alive at the end of the study period and the cost of mortality for household members who died during the study period, including the cost of their illness prior to death. Two main points are apparent from Table 4:

- Average financial costs were far greater for affected households than for those non-affected households reporting sickness and/or death. The ratios for morbidity costs and mortality costs respectively were 3.1 and 1.9.
- The financial costs from mortality (R17,112 for all households) were 15 times higher than those from morbidity (R1127).

There are some important additional costs that may be added. Economists recognise that time has alternative uses and its use on one activity incurs costs in terms of foregone unpaid opportunities. Economic costs were estimated by valuing the time used in caring for sick members. Since domestic work in the household was the most common alternative to caregiving, the latter can be valued at the minimum wage for domestic work in 2003 (R36.90 per day). It is not obvious how the time lost by unemployed sick members could be valued and this is not attempted. An additional loss calculated in a few studies (e.g. Pitayanon *et al.,* 1997) is the present value of lifetime earnings lost as a result of premature death, based on assumptions concerning the level of income earned by the deceased member.

Table 5 presents estimates of total annual costs for one affected household: it is assumed that this household had one HIV/AIDS-related death plus associated illness during the year. The table shows that if the deceased member had been employed, the present value of lost lifetime earnings would by far be the largest cost faced by the household. It might also be argued that the discontinuation of the disability allowance following death would also be a loss to the household; however, this would be compensated for by reduced costs elsewhere, e.g. reduced caregivers' time. In interpreting Table 5, it should be noted that financial and economic costs include the costs of non-HIV/AIDS-related illnesses incurred by affected households.

3.3 The cost of funerals

Data from Table 4 suggested that the average cost of a funeral was between R7 500 and R10 000. However, there is evidence that the cost of funerals was underestimated by the respondents who focused on costs incurred on

the day of the funeral; pre- and post-funeral costs were usually not mentioned. Table 6 provides an estimate of the cost of a 'typical' funeral, based on in-depth interviews with two households that had experienced a recent death, and with three funeral directors. The funeral was for a person who died at home and involved around 500 mourners. Costs incurred on the day of the funeral were less than a third of the total costs and 61 percent of total costs were for food for mourners. The household met only a small proportion (less than one-tenth) of the total cost; roughly equal contributions came from relatives and friends, non-government organisations and burial societies.

4 Conclusion

This study of a sample of Sowetan households points to the high financial costs of HIV/AIDS-related morbidity and mortality, although the affected households, in fact, met only a small proportion of these costs. The financial costs of mortality were, on average, 15 times those of morbidity for HIV/AIDS-affected households, largely because of the high cost of funerals, and there is evidence that the cost of funerals is grossly underestimated. Total costs increased greatly when allowance was made for the value of time spent in caregiving and the present value of lost lifetime earnings, if the deceased had been an income earner. Lost future earnings were the largest of the costs borne by households as a result of premature death associated with HIV/AIDS.

Endnote

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Table 1
Annual household income by source (rand, mean adult equivalent)

	Affected households (61)	**Non-affected households (52)**
Regular income		
Earned	7540	10940
Non-market sources	4527 [1]	1604
Irregular income		
Property, investment	277	53
Non-market sources	509	407
As a result of death	1703	145
TOTAL	14556	13149

Note 1: Of which R4381 (96.7 percent) comprised social grants

Table 2
Frequency of income-reducing effects (number of households)

	Affected households (61)	**Non-affected households (52)**
Sick member absent from work	17	4
Caregivers absent from work	9	1
Loss of employment	12	1
Loss of social grant	9	1

Table 3
Annual household expenditure patterns (rand, mean adult equivalents)

	Affected households (61)	**Non-affected households (52)**
Regular expenditure	7788	8541
Basic essentials	5336	5486
Irregular expenditure	3245	1603
Health care	341	62
Funerals	1883	355
Total expenditure	11033	10144

Table 4

Average financial costs of morbidity and morbidity on households (8 months, rand)

	Morbidity			Mortality		
	Affected households (61)	**Non-affected households (25)**	**Total (86)**	**Affected households (36)**	**Non-affected households (7)**	**Total (43)**
Direct financial costs	381	164	318	10212 (1)	7434 (2)	9760
Indirect financial costs	1022	288	809	8337 (3)	2286 (4)	7352
Total	1403	452	1127	18549	9720	17112

Notes: 1. Of which funeral costs were R9 888.

2. Of which funeral costs were R7 413.

3. Of which loss of earnings by deceased members were R6 269; losses by caregivers were R2 068.

4. Entire loss of income by deceased members.

Table 5

Annual costs of morbidity and mortality to one affected household (rand)

	Total
Financial costs[1]	
Direct	13,240
Indirect	11,700
Economic costs[2]	
Value of time spent in caregiving	4,800
Present (2003) value of lost lifetime earnings[3], assuming current earnings of	
R9,600[4]	81,700
R15,000	127,700
R25,000	212,800

Notes:

1. The study's data on financial and economic costs found an average of 1.2 deaths per affected household. The figures (e.g. R10,593 for direct financial costs for affected households for Table 4) were therefore divided by 1.2 and then multiplied by 1.5 to provide an estimate of the annual costs of one death and associated sickness.
2. Assumes R36.90 per day for five days a week for an average of 26 weeks.
3. Assumes that in the absence of HIV/AIDS, the person (if employed) would have worked for another 20 years and that the rate of discount is 10%.
4. The income of a full-time domestic worker.

Table 6
The costs of a typical funeral (rand)

Items	Amount
Pre-funeral (5 days)	
Storage of body at mortuary/issue of death certificate	350
Phone calls to relatives	200
Food for relatives and visitors	2500
Clothing for the deceased and immediate family	1200
Newspaper announcement	300
Transport	90
	Sub-total: R4640
Day of the funeral	
Wreaths	450
Hire of tent, tables, chairs, etc.	850
Coffin (range R750 – R6500)	750
Hire of buses, hearse	3500
Food	5000
Other	1000
	Sub-total: R11550
Post-funeral	
Food for bathing and cleansing ceremonies	2000
Food for unveiling ceremony	5000
Food for one- year ceremony	5000
Tombstone (range R2500-R8000)	4000
	Sub-total: R16000
	Total cost: R32190