

Poverty and HIV/AIDS in South Africa: an empirical contribution



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ABSTRACT

This study sets out to establish and explain the empirical link between HIV/AIDS and poverty using data collected by the 1998 South African Demographic and Health Survey (SADHS). Analysis is restricted to women of reproductive age (15 - 49 years). The results indicate an increased risk of HIV infection among the poor, due to poverty-related characteristics of low education and low knowledge of the means of avoiding HIV infection, as opposed to the non-poor. Moreover, the poor and the less educated were found to be more likely not to use condoms than the non-poor. The results do not, however, provide the reasons for these relations and as such further research is required. One possible explanation was financial dependence on their partners, as it was found that women who received money from their partners, as well as those who came from households where hunger was a common phenomenon, were more likely not to use condoms because their partners disliked condoms, than those who did not receive money from their partners. The results also hinted at the intricacy of the poverty-HIV/AIDS relationship, so that it was not only low socio-economic status that increased susceptibility to HIV infection but also high socio-economic status.

Keywords: HIV/AIDS, poverty, HIV knowledge, condom use.

RÉSUMÉ

Cette étude a pour but d'établir et d'expliquer un lien empirique entre le VIH/SIDA et la pauvreté en utilisant des données recueillies par l'Enquête Démographique et de Santé sud-africaine (SADHS) de 1998. L'analyse se limite aux femmes d'un âge de reproduction (15 - 49 ans). Les résultats indiquent un risque plus élevé d'infection de VIH parmi les pauvres. Ceci à cause des traits particuliers d'une éducation très basse liée à la pauvreté et la connaissance très réduite des moyens d'éviter l'infection par le VIH chez les pauvres en comparaison aux personnes aisées. D'autant plus qu'on a constaté que les pauvres et moins éduquées étaient plus disposés à ne pas utiliser les préservatifs par rapport aux personnes aisées. De ce fait, il est nécessaire de prendre la recherche plus loin. Une explication possible fut la dépendance financière de femmes sur leurs partenaires, puisqu'on a constaté que les femmes qui reçoivent l'argent de leurs partenaires ainsi que celles qui vivent dans des foyers sans nourriture étaient plus disposées à ne pas utiliser les préservatifs parce que leurs partenaires n'en veulent pas, que pour les femmes qui ne reçoivent pas d'argent de leurs partenaires. Les résultats ont aussi fait allusion à la complexité de la relation pauvreté-VIH/SIDA en montrant que le statut socio-économique assez bas n'est pas le seul responsable de la susceptibilité à l'infection du VIH élevée mais que le contraire et aussi vrai.

Mots clés: VIH/SIDA, pauvreté, connaissance du VIH et l'utilisation des préservatifs.

INTRODUCTION

That poverty and disease are inextricably linked is widely accepted, as is evident from the mounting literature on the subject (Barnett & Whiteside, 2002; Booyen, 2004; Wojcicki, 2005), as well as public debate on the issue (*The Chatroom*, SABC 1, 25 July 2004). Recent research has tended to extend this link to HIV/AIDS. However, there is still a big lacuna in what is known about this link, both regarding how the

epidemic aggravates poverty and vice versa (Barnett & Whiteside, 2002). Attempts to explain the dual link between poverty and HIV/AIDS have employed either of the following approaches: the behavioural or lifestyle approach, and the material or structural conditions approach. Scholars subscribing to these schools of thought argue that different levels of poverty (individual, household and community) and their related characteristics (low education levels, low

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marketable skills, lack of knowledge or information regarding the risk of infection and the lack of resources to act on this knowledge, lack of capacity to negotiate sex, and high population mobility) create a 'fertile terrain' for HIV/AIDS to flourish at the different stages of infection (Alban, 2001; Barnett & Whiteside, 2002; Booyesen, 2002, 2004; Whiteside & Sunter, 2001; Wojcicki, 2005, among others).

In his study on poverty, knowledge of HIV/AIDS and risky sexual behaviour, Booyesen (2004) found that while it was only a small percentage of women (less than 4%) who were knowledgeable about HIV/AIDS and had engaged in risky sexual behaviour, the likelihood of engaging in risky sexual behaviour was higher among women from poorer households relative to those from more affluent ones. The large majority (92%) of women stated lack of control over decisions pertaining to financial issues as one of the reasons for engaging in risky sexual behaviour. Lack of knowledge about condoms was also a factor for non-use at last sexual encounter among poorer women, whereas the more affluent stated negative perceptions about condom use as the main reason for non-use. The results of Booyesen's logistic regression model suggested that poverty had little role to play in explaining risky sexual behaviour as defined in his study (Booyesen, 2004), in which women with some primary education as well as those with secondary education were found to be more likely to have engaged in risky sexual behaviour relative to their non-educated counterparts. The same results were observed for women residing in urban areas relative to those from non-urban areas. This therefore hints at the intricacy of the poverty-HIV/AIDS cycle.

The intricate nature of this relationship is further highlighted by Wojcicki's review paper entitled 'Socioeconomic status as a risk factor for HIV infection in women in east, central and southern Africa' which reviewed 36 studies addressing the link between socioeconomic status (SES) and HIV seroprevalence or seroconversion in sub-Saharan Africa. These studies were selected on the basis of 'type of study design; representativeness of study sample of country or regional population; completeness of follow-up for cohort studies; measurement of SES and measurement of outcome indicators or other indicators of sexual risk-taking' (Wojcicki, 2005, pp.5-6). Fifteen of these studies found no association between SES and

HIV infection; 12 found an association between low SES and HIV infection; and 1 yielded mixed results (Wojcicki, 2005).

Other studies have shown how HIV/AIDS can aggravate poverty by making it hard for the poor to mitigate its impact. Steinberg, Johnson, Schierhout and Ndegwa (2002) conducted a study among 728 households in selected provinces (Gauteng, Mpumalanga, Free State and KwaZulu-Natal) that had an AIDS-sick member or had recently experienced an HIV/AIDS-related death, which aimed to assess the impact of HIV/AIDS on households. Almost half (44%) of these households had an income of less than R1 000 and could therefore be classified as being poor. Approximately two-thirds of households reported having lost income due to AIDS: firstly due to increasing expenditure on medical (53%), then as a result of absenteeism for caregiving purposes, and later as a result of the high cost of funeral expenses. In more than 40% of the households, the primary caregiver had taken time off from work or school to take care of the ailing person. The households reported that on average the sick person was chronically ill for a year before passing on. Considering the number of paid leave days that employees are entitled to, such ongoing ailment is guaranteed to result in loss of income, consequently reducing household income. The loss of schooling, on the other hand, further reduces the chances of alleviating household poverty, as a result of loss of both the education and skills necessary for gaining employment. This study also found that HIV/AIDS increased the likelihood of households suffering from chronic poverty as a result of increasing orphanhood status – approximately 22% of all children aged 15 and below had lost one or both parents to HIV/AIDS (Steinberg *et al.*, 2002).

The results of this study are consistent with those of Booyesen's study of the impact of HIV/AIDS on households in the Free State, which indicated depreciation in the adult equivalent per capita income of HIV-affected households that had experienced illness or death relative to those that had not. However, approximately 40% of affected households that had experienced illness or death remained in poverty compared with more than half (59.3%) of those that had not experienced illness or death. This not only confirms the complexity of the HIV/AIDS-poverty relation, but also suggests that while HIV/AIDS might

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be pushing households into poverty, at least in the short term, households are moving out of poverty following illness or death (Booyesen, 2002).

In an attempt to escape the impoverishing effects of poverty, households might adopt the following strategies: alter household composition, draw on savings, sell assets or use assistance from other households and from other informal rural institutions (Desmond, Michael & Gow, nd; Topouzis, 1999).

However, at times when people reach the point of destitution, the range of strategies they adopt may become unpredictable. A study by Natrass (2004) illustrated how destitution as a result of a combination of HIV/AIDS, high poverty and unemployment rates can lead people to behave in ways that they would not adopt in more favourable conditions. The findings of this study suggest that the high unemployment rates and poverty experienced in South Africa contribute to the high HIV infection levels experienced in this country. This study showed how people might refrain from taking antiretroviral treatment to remain eligible for the disability grant, since HIV/AIDS-infected people have to be ailing or disabled to qualify for the grant and their intake of treatment poses a threat to eligibility, due to the positive effect it tends to have on the individuals' health. The quote below extracted from a study by Steinberg *et al.* (2002) illustrates this situation: 'I love this HIV, now at least with the grant I'm trying ... I get the disability grant and the child support grant ... before I was staying with my mother and father and my sister, they didn't work...the only thing that was helping was my grandmother's pension. Concerning the illness, our lives [have] changed completely...' (female respondent, Steinberg *et al.*, 2002, p.29).

While it is not known how widespread this situation is, it has definitely caught the attention of many South Africans, and was the subject of debate on a programme called *The Chatroom* which was aired on SABC 1, 25 July 2004), during which the following question was posed: 'Should we sympathise with people who deliberately acquire HIV in order to qualify for the government grant?'. While this might seem a straightforward question, the answer is more complex than a simple yes or no. It is apparent that the disability grant is a lifeline for the majority of the poor as well as those living with HIV/AIDS. Therefore depending on the extent of their poverty, they might

put themselves at risk of infection in order to be eligible for the grant. However, since eligibility does not always ensure provision of the grant, people may be risking their lives unnecessarily and instead increasing the burden on household economy (as a result of changes in household expenditure to cover the cost of treatment and care and later funeral costs. Steinberg *et al.* (2002) found in their study that while all the households were eligible for at least one form of government grant, less than 16% were recipients of grants of any kind.

In order to best address such issues, it is necessary to first gain a rounded understanding of the intricate relationship between poverty and HIV/AIDS. This study therefore aims to contribute to this understanding in South Africa by empirically examining this relationship using the 1998 South African Demographic and Health Survey (Department of Health, 1998).

THEORETICAL FRAMEWORK

There are several theories that can be adopted in explaining the poverty-HIV/AIDS cycle. Social epidemiology is one such theory (Krieger, 2001). However, for purposes of this paper, the 'drive' theory is adopted. This theory arises from the idea that drives are the motivating force behind human behaviour. The theory dates back to 1930 during the heyday of behaviourism and indicates that there are certain necessities of life without which human beings cannot survive, and that the drive to obtain these necessities is part and parcel of human life. Therefore when a need arises, e.g. basic survival needs like hunger and thirst, it leads people to act in ways that are aimed at satisfying that need (Jordaan & Jordaan, 1989).

As applied in my study, this theory holds that I would expect my independent variable (poverty) to influence or explain the dependent variable (HIV/AIDS infection rates) because poverty deprives people of the necessities of life, e.g. food and shelter, thus causing them to respond in ways that, although harmful, will ensure that they obtain these necessities. The extent to which people can protect themselves from HIV infection depends on their knowledge of perceived risk and their capacity to apply that knowledge, the amount of power a person has to negotiate safer sex and the prevailing cultural and societal norms. However, I argue that although cultural, societal and religious

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norms have an influence on sexual behaviour, a person's sexual behaviour is mostly influenced by their education levels and financial situation, both usually low in situations of poverty, thus leading them to behave in ways that they would not in the absence of poverty. Examples of how low socio-economic status influences sexual behaviour have already been provided above. This is not to say that HIV/AIDS is exclusively confined to the poor, for a rise in income levels can also place individuals at a higher risk of infection. For instance, individuals who have a good financial situation can afford to have several sexual partners, thus increasing their risk of infection.

To support this theory, I will also adopt an argument contained in the United Nations Development Programme's (UNDP, 2002) concept paper 'Conceptual shifts for sound planning: Towards an integrated approach to HIV/AIDS and poverty'. 'The argument states that sexual behaviour does not occur in a void but is influenced by external factors in the social, political, economic and technological environment, and that in many instances ... the freedom of choice regarding sexual behaviour is circumscribed by external factors such as social norms and values and one's socio-economic position in the society (UNDP, 2002, p.4)'. Hence the unsustainability of assumptions of mutual consent and power in sexual relations made by the ABC (Abstain, Be faithful and Condomise) prevention strategy when sexual activity is a strategy in exchange for money, goods or survival (UNDP, 2002).

RESEARCH HYPOTHESIS

Poor individuals are more susceptible to HIV infection than their non-poor counterparts, for the following reasons:

- poverty and its associated factors, such as low education, reduce the chances of the poor having good knowledge of the means of preventing HIV infection
- poor women are less likely to use condoms or to negotiate condom use due to both low education levels and economic dependence on their partners.

METHODOLOGY

This paper makes use of the 1998 South African Demographic and Health Survey (SADHS) which covered the population living in private households. This survey employed a probability sample of

approximately 12 000 women aged between 15 and 49 who were selected from all nine provinces in South Africa. The sampling frame constituted a list of approximately 86 000 enumeration areas created by Statistics South Africa for the 1996 Census. The enumeration areas ranged from 100 to 250 households and were stratified according to province, urban and non-urban residence and by type of enumeration area, with the exception of the Eastern Cape which was stratified according to its five health regions and type of residence within each region. There were a total of 26 sampling strata and within each stratum, a two-stage sample was selected.

To measure poverty status, those earning between R0 and R600 per month were classified as very poor, R601 to R1 000 per month as poor and those earning above R1 001 per month were classified as non-poor. The risk of HIV infection and transmission was measured at two levels: the knowledge base and the sexual behavioural level. The dependent variable, HIV knowledge, was a composite index of the different variables measuring knowledge of means of avoiding HIV/AIDS. To create this variable, the following procedure was applied. Firstly an HIV score was constructed using the variables 'AIDS: safe sex', 'AIDS: use condoms during sex', 'AIDS: injections with clean needles', 'AIDS: touching person with AIDS'; 'AIDS: avoid mosquito bites', 'AIDS: having a good diet'; 'AIDS: avoid public toilets', 'AIDS: avoid sharing food with infected person', and 'AIDS: avoid sharing razor blades'. For each variable where a 'yes' response was true (e.g. AIDS: safe sex) 1 was added to the HIV score; and for each variable where a 'yes' response was wrong, 1 was subtracted from the HIV score. Initially all the variables that were used to create the variable 'HIV knowledge' had three response categories: 'Yes', 'No' and 'Don't know' but were later recoded to two categories (Yes/No) owing to the argument that if the respondents knew the means of avoiding HIV/AIDS, they would have responded 'Yes' instead of giving a 'Don't know' response, which reflects uncertainty.

After computing this variable, a frequency procedure was done to investigate the distribution of cases across categories. It was evident from this frequency distribution table that most respondents had a score greater than -2, so that only 1.1% had a score below -1. Following this frequency distribution, the variable HIV knowledge score was categorised into two

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groups: good knowledge and poor knowledge. Respondents with a score ranging from -4 to 2 were considered as having low knowledge of HIV/AIDS and therefore classified as 'poor' whereas those with an HIV knowledge equal to 3 or 4 were classified as 'good'. This was done in order to enable binary logistic regression analysis.

The independent variables that were used in establishing the link between poverty and HIV/AIDS at level I (the knowledge base) were: poverty status, level of education, media exposure, and place of residence. The reason for the inclusion of poverty status and level of education has already been provided earlier. The variable 'media exposure' is employed in analysis due to the important role that media plays in educating people about HIV/AIDS and the ways of protecting oneself from infection. Studies have shown that knowledge of HIV/AIDS varies according to place of residence, hence the inclusion of the variable 'place of residence'.

Poverty and sexual behaviour

This section focused on the influence of economic status on the 'adoption' of safer sexual behavioural practices. To date, condoms are the most effective means of avoiding HIV infection, in the absence of abstinence. While the number of sexual partners is an important risk factor for HIV infection, I argue that even when the number of sex partners is high, the risk is significantly reduced with consistent condom use. Moreover, the inclusion of the variable 'men had sex with in the past 12 months' would not yield meaningful results as the majority of respondents (72%) reported having had sex with only one partner in the 12 months preceding the survey. Therefore emphasis was on the effect of economic status on condom use. The variables that were used were 'condom use last sex', 'didn't use: low risk' and 'didn't use: partner disliked'. Independent variables used in establishing the link between poverty and risky sexual behaviour were 'poverty status'; 'level of education'; 'marital status'; 'extent of household hunger' as well as 'husband provided money'.

STUDY LIMITATIONS

A major limitation of this study was its reliance on data collected through self-reports – these have been shown to be highly biased, especially when dealing with sensitive issues such as sexual behaviour, because people tend to misreport their true behaviours.

RESULTS

It is very important that the respondents' background characteristics be provided before continuing with analysis, so as to allow the reader to identify group dynamics. These are given in Table 1.

TABLE 1. PER CENT DISTRIBUTION OF RESPONDENTS' SELECTED BACKGROUND CHARACTERISTICS BY PLACE OF RESIDENCE, 1998

	Urban (%)	Non-urban (%)
Age group		
15 – 19	18	23
20 – 24	17	19
24 – 29	15	15
30 – 34	15	12
35 – 39	15	13
40 – 44	11	10
45 – 49	9	8
Race group		
Black	66	91
Coloured	18	7
White	10	2
Indian	6	0.2
Marital status		
Never married	50	49
Married	34	34
Living together	7	10
Widowed	2	3
Divorced	3	1
Living alone	4	3
Highest education		
None	4	11
Primary	20	34
Incomplete secondary	46	42
Higher	30	13
Employment status		
Working	38	22
Not working	62	78
Total	100	100

An observation of the results in Table 1 according to age group seemed to indicate no major urban-rural differences of respondents (that is, almost the same number of people belonging to each age group were found in either place of residence). However, major differences occurred when breaking down the results according to racial group, so that the highest percentage of those residing in non-urban areas (90%) were black compared with less than 10% coloureds, 7% whites, and less than 1% Indians. The same results were observed in urban areas. These results were to be expected, considering the fact that almost 80% of the survey respondents were black, 13% were coloureds, 7% white and only 3% Indian.

As with age group, there seemed to be no major differences in marital status between urban and non-

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urban dwellers. Half of respondents in both urban and non-urban areas had never been married, 35% had been married, fewer than 10% were cohabiting and a further 10% or less were either divorced, living alone or separated. As was expected, there was variation in the highest level of education by place of residence. Most of those with no education were concentrated in the non-urban areas (11%) of the total compared with only 4% in the urban areas. Furthermore, while the percentage of those with incomplete secondary education was almost similar between urban and non-urban areas, only a few (13%) of those residing in non-urban areas had attained a higher education compared with 30% of urban dwellers. With these observed differences in educational level between urban and non-urban dwellers, it is not surprising that only 22% of non-urban dwellers were employed at the time of the survey compared with almost 40% of urban dwellers.

Having provided respondents' background characteristics, it seems logical to now provide the various economic indicators before carrying out data analysis (see Table 2).

While literacy levels were not too low for all economic groups (above 70%), educational level varied greatly. Less than 4% of the poor and non-poor had no education at all, relative to over 10% of the very poor. Moreover, for the majority of the very poor and the poor (37% and 46% respectively), the highest level of education attained was incomplete secondary, whereas the majority (60%) of the non-poor had a higher education. These low literacy and education levels can be attributed to the environments within which the majority of the poor and the very poor populations reside. High levels of education are dependent on high literacy levels, which in turn are influenced by environmental factors. Surprisingly, the low levels of education among the very poor and the non-poor were not matched by high unemployment rates. Only 17% of the very poor and 8% of the poor were not working, compared with 5% of the non-poor. These low unemployment levels could be attributed to the fact that all types of employment (formal/informal and cash/kind) were included in this category. However, despite these low unemployment rates, hunger was a common phenomenon for more than 40% of the very poor and 32% of the poor, but appeared to be infrequent among the non-poor (18%).

TABLE 2. SELECTED POVERTY INDICATORS BY POVERTY STATUS (%)

	Very poor	Poor	Non-poor
Source of drinking water[*]			
Piped	62	79	88
Not piped	38	21	12
Type of toilet facility[†]			
Flush toilet (own)	39	62	79
Flush toilet (shared)	4	6	3
Has electricity[‡]			
	63	84	90
Ability to read[§]			
Easily	74	88	94
With difficulty	14	8	5
Not at all	12	4	1
Educational level[#]			
None	11	3	2
Primary			
Incomplete secondary	37	46	29
Higher	13	26	60
Employment status^{**}			
Working	83	92	95
Not working	17	8	5
Extent of household hunger^{††}			
Often	12	6	3
Sometimes	32	26	15
Seldom	5	7	5
Never	51	61	77

* $\chi^2 = 294.507, p < 0.001$

† $\chi^2 = 577.327, p < 0.001$

‡ $\chi^2 = 345.734, p < 0.001$

§ $\chi^2 = 264.329, p < 0.001$

$\chi^2 = 1007.577, p < 0.001$

** $\chi^2 = 365.07, p < 0.001$

†† $\chi^2 = 269.144, p < 0.001$.

Since all p -values are less than 0.001, the observed differences are statistically significant.

The poor as determined by monthly income

Earlier the poor were defined as those with monthly income levels between R601 and R1 000, the very poor as those earning below R600 and the non-poor as those earning more than R1 000. This definition of the poor was adhered to in this section.

Table 3 provides the distribution of poverty according to racial group. Overall there were more respondents who were very poor (47%) as opposed to the non-poor (39%). As expected, blacks and coloureds constituted the majority of the very poor (more than 40%) compared with approximately 20% for whites

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TABLE 3. CROSS-TABULATION OF ECONOMIC STATUS BY RACE

	Very poor	Poor	Non-poor	Total
Black	(1 378) 56%	(362) 15%	(731) 30%	(2 471) 100%
Coloured	(274) 42%	(92) 14%	(283) 44%	(649) 100%
White	(87) 19%	(47) 10%	(334) 71%	(468) 100%
Indian	(32) 20%	(21) 13%	(105) 67%	(158) 100%
Total	(1 771) 47%	(522) 14%	(1 453) 39%	(3 746) 100%

Note: figures in parentheses refer to the actual number of people in each category.

and Indians, whereas whites and Indians constituted the majority of the non-poor (more than 60%).

Influence of economic status on knowledge of HIV/AIDS

This section is divided into two parts: the first part explores the relationship between economic status and knowledge of HIV/AIDS, and seeks to determine whether low economic status was associated with low knowledge of the means of avoiding HIV/AIDS. The second part examines the relationship between economic status and high-risk HIV-related sexual behavioural practices, with the aim of determining if low economic status was indeed a driving force behind risky sexual behavioural practices.

Table 4 examines the relationship between knowledge of HIV/AIDS and various socio-economic indicators. To test this relationship, poverty status was first entered into the model, followed by other variables that were thought to be likely to influence the relationship between knowledge of HIV/AIDS and economic status: educational level, media exposure, race and place of residence. Two models were produced. In model 1 the last category for the variables 'poverty status' and 'educational level' was the reference category, whereas in model 2 the first category was the reference category. This was done to allow thorough testing of the earlier hypothesis, namely that the poor are less likely to have good knowledge of the means of preventing HIV infection than the non-poor, thus increasing their risk of HIV infection.

Regression model equation:

$$\ln(\text{Odds}) = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \dots + \beta_k X_k$$

where α = model constant; β is the parameter estimate for the independent variables and X_k represent each independent variable.

Model 1 equation:

$$\ln(\text{odds of having good knowledge of HIV/AIDS}) = .836 + (-.379) \text{ very poor} + (-.386) \text{ poor} + (-1.805) \text{ no education} + (-1.221) \text{ primary education} + (-.673) \text{ incomplete secondary} + .335 \text{ (reads)} + .222 \text{ (has TV)} + (-.785) \text{ coloured}$$

Model 2 equation:

$$\ln(\text{odds of having good knowledge of HIV/AIDS}) = 1.347 + .379 \text{ (non-poor)} + .583 \text{ (primary)} + 1.131 \text{ (incomplete secondary)} + 1.805 \text{ (higher)} + .335 \text{ (reads)} + .222 \text{ (has TV)} + (-.785) \text{ coloured}$$

TABLE 4. ODDS OF HAVING GOOD HIV KNOWLEDGE BY SELECTED SOCIO-ECONOMIC INDICATORS

	Model 1	Model 2
Constant	2.307(.836) [‡]	.260(-1.347) [‡]
Poverty status		
Very poor	.685(-.379) [‡]	
Poor	.680(-.386) [‡]	
Non-poor		1.461(.379) [‡]
Educational level		
None	.164(-1.805) [‡]	
Primary	.295(-1.221) [‡]	1.792(.583) [†]
Incomplete secondary	.510(-.673) [‡]	3.100(1.131) ^{††}
Higher		6.079(1.805) [‡]
Media exposure		
Reads newspaper	1.398(.335) [‡]	1.398(.335) [‡]
Watches TV		
Listens to radio		
Has radio		
Has TV	1.249(.222) [*]	1.249(.222) [*]
Racial group		
Coloured	.456(-.785) [‡]	.456(-.785) [‡]
Indian		
White		
Model chi-square	(546.368) [‡]	(546.368) [‡]

^{*}Significant at 10% level

[†]Significant at 5% level

[‡]Significant at 0.1% level NB!

Coefficients in parentheses.

The model chi-square for the regression model testing the relationship between poverty and knowledge of HIV/AIDS was significant at a 0.1% significance level, thus indicating the overall importance of the set of

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predictors in predicting the log odds of having good knowledge of HIV/AIDS. Overall poverty had a significant effect on the odds of having good knowledge of HIV/AIDS. However, it was only in model 1 (reference category = the non-poor) where the effects of different components of poverty contributed to the prediction of the outcome variable. Being very poor and non-poor had the same effect on the odds of having good knowledge of HIV/AIDS, serving to increase the odds by a factor of 0.68, at a 99% level of certainty, controlling for the effects of education, media exposure and racial group. Being non-poor, on the other hand, had a higher effect on the odds of having good knowledge of HIV/AIDS, increasing the odds by a factor 1.461 compared with the very poor, controlling for the effects of education, race and media exposure.

A comparison of the results of model 1 and model 2 highlighted the importance of economic status further. This was illustrated by the effects of educational level (an indicator of economic status) on the odds of having good knowledge of HIV/AIDS. In model 1, in which high education was the reference category, the odds of having good knowledge of HIV/AIDS increased with the increase in the level of education, albeit at a lower rate. However, in model 2, when 'no education' was the reference category, the odds increased greatly. The odds of having good knowledge of HIV/AIDS were 0.164 times higher for those with no education compared with those with higher education (model 1), whereas the odds of having good knowledge of HIV/AIDS were 6.079 times higher for those with higher education as opposed to those with no education at all (model 2), controlling for the effects of economic status, media exposure and race. This relationship between educational attainment and having good knowledge of HIV/AIDS was linear – an increase in education was associated with an improvement in the knowledge of the means of avoiding HIV infection.

Looking at the variables measuring media exposure, it can be said with 99% accuracy that reading a newspaper or magazine improved the odds of having good knowledge of HIV/AIDS by a factor of 1.398. Since the ability to read is dependent on education, it can be said that those with no or low education were less likely to have good knowledge of HIV/AIDS than their educated counterparts. Having shown earlier that

the poor constituted the majority of those with no education and with low literacy levels, these findings therefore imply that the poor were less likely to have good knowledge of HIV/AIDS prevention methods than the non-poor.

Influence of economic status on sexual behaviour

It was hypothesised earlier that low economic status increases the risk of HIV infection, since the poor are more likely to have unsafe sexual behaviours, due partly to lack of knowledge as a result of poverty as well as harsh circumstances that force them to resort to unsafe sexual practices for survival. This section aims to establish if poverty can indeed be held accountable. Table 5 represents the regression model testing the relationship between economic status and condom use, using the variable 'condom use during last sexual intercourse' as the dependent variable.

Model 1 equation:

$$\ln(\text{odds: condom use last sex}) = -0.62146 + (-0.357) \text{ non-poor} + 1.158 \text{ (primary education)} + 1.655 \text{ (incomplete secondary)} + 2.061 \text{ (higher education)} + 1.801 \text{ (knows condom)} + 0.673 \text{ (AIDS: condom use)} + 0.372 \text{ (knows someone with/who has died of AIDS)}$$

Model 2 equation:

$$\ln(\text{odds: condom use last sex}) = -6.599 + 1.065 \text{ (primary education)} + 1.454 \text{ (incomplete secondary)} + 1.841 \text{ (higher education)} + 1.756 \text{ (knows condom)} + 0.688 \text{ (AIDS: condom use)} + 1.297 \text{ (never married)} + 0.982 \text{ (widowed)} + 1.163 \text{ (divorced)} + 1.802 \text{ (living alone)}$$

Looking firstly at the model chi-squares for both model 1 and model 2, it is clear that both models are significant at 0.1% level, implying that the sets of predictors (independent variables) in each model contributed to the prediction of the log odds of the outcome variable. In model 1 overall poverty had a significant effect on condom use. However, when looking at different components of poverty, it was only being non-poor that had a significant effect on condom use. Those who were non-poor were 0.7 times more likely to have used a condom during their last sexual encounter compared with those who were very poor, controlling for educational level, knowledge of condoms and knowledge of someone with, or who had died of, HIV/AIDS.

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TABLE 5. REGRESSION MODEL OF CONDOM USE DURING LAST SEX BY SELECTED SOCIO-ECONOMIC INDICATORS

Variable	Model 1	Model 2
Constant	.002(-6.2146) [‡]	†
Poverty status		NS
Poor	NS	
Non-poor	0.7 (-0.357) [*]	
Educational level		†
Primary	3.18 (1.158) [*]	1.90 (1.065) [*]
Incomplete secondary	5.23 (1.655) [†]	4.28 (1.454) [†]
Higher	7.85 (2.061) [†]	6.30 (1.841) [†]
Condom use		
Knows condom	6.06 (1.801) [*]	5.79 (1.756) [*]
Knows someone with/has died of AIDS	1.45 (.372) [†]	1.36 (.307) [*]
Use condom to avoid HIV/AIDS	1.96 (.673) [*]	1.99 (.688) [*]
Marital status		†
Never married		3.66 (1.297) [†]
Living together		NS
Widowed		2.67 (.982) [*]
Divorced		3.20 (1.163) [†]
Living alone		2.95 (1.082) [†]
Model chi-square	(91.859) [‡]	(192.116) [‡]

*Significant at 5% level

†Significant at 1% level

‡Significant at 0.1% level

NS = not significant.

As anticipated, educational level was linearly related to condom use, whereby the odds of having used a condom during the last sexual encounter increased with an increase in the level of education attained, controlling for poverty, knowledge of condoms and knowledge of a person who died of or had HIV/AIDS. The highest effect was produced by having a higher education, which increased the odds by a factor of 7.85 when controlling for poverty, knowledge of condoms and of someone who had died of AIDS, and by a factor of 6.30 when marital status was included in the model. The reduction of the odds with the inclusion of marital status indicates the importance of social factors in sexual behavioural practices. This shows that social factors take precedence over economic factors in influencing sexual behaviour, such that even when an individual is not poor, they might practise unsafe sexual behaviour as a result of the social norms within which they exist. An example could be that of married people not using condoms because the use thereof is associated with infidelity.

To examine this link more clearly and to demonstrate the importance of social factors in determining sexual behaviour, focus now shifts to the exploration of the effect of socio-economic factors on the reasons for

non-use of condoms. The two reasons that will be looked at are 'non-use due to low perceived risk of HIV infection' and 'non-use as a result of partner's dislike of condoms'. The results of the regression models exploring these relationships are provided in Table 6. For each reason of non-use of condoms, two models are presented. In Model 1, the last category for the variables 'poverty status', 'educational level', 'race' and 'extent of household hunger' was the reference category, whereas in model 2 the first category was the reference category. The decision to swap categories was taken to allow for better exploration of the relationship between socio-economic factors and sexual behavioural practices.

The model chi-squares for all models were significant at 0.1% level, thus reflecting overall model significance. Focusing firstly on model 1 of the regression model with 'low risk of HIV infection' as the reason for non-use during the last sexual encounter, it can be seen that overall poverty significantly contributed to the prediction of the outcome variable (didn't use: low risk); however, being very poor and poor did not have a significant effect compared with the non-poor. This changes when the category 'very poor' is used as the reference category, whereby being poor had a significant effect on non-use of condoms due to low perceived risk. The respective odds were .502. Based on the results of Table 6, knowledge did not appear to have a positive effect on the adoption of safer sexual behaviours. This is illustrated by the high odds of non-use of condoms due to low risk of HIV infection among those with incomplete secondary education, those who knew condoms, those who knew someone with or who had died of AIDS, as well as those who knew that one could protect themselves from HIV infection by practising safer sex (see model 2). Respondents who had incomplete secondary education were .467 times more likely not to have used a condom due to low perceived risk of HIV infection compared with those with no education.

Model 1 regression equation for non-use of condoms due to low perceived risk of HIV infection:

$$\ln(\text{odds of non-use: low risk}) = -6.428 + (-.569) \text{ incomplete secondary} + (-1.401) \text{ often hungry} + (-1.060) \text{ sometimes hungry} + (-.986) \text{ seldom hungry} + 2.535 \text{ (knows condom)} + .030 \text{ (age)} + .786 \text{ (AIDS: safe sex)} + .310 \text{ (knows someone with/who has died of AIDS)} + (-.774) \text{ coloured} + 1.976 \text{ white}$$

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Model 2 regression equation:

$$\ln(\text{odds of non-use: low risk}) = -6.428 + (-.688) \text{ poor} + (.762) \text{ incomplete secondary} + 1.401 \text{ (never hungry)} + 2.535 \text{ (knows condom)} + .030 \text{ age} + .786 \text{ (AIDS: safe sex)} + .310 \text{ (knows someone with/who has died of AIDS)} + (-.882) \text{ coloured} + 1.868 \text{ white}$$
Model 1 logistic regression equation for non-use as a result of partner's dislike of condoms:

$$\ln(\text{odds of non-use: partner dislike}) = -3.563 + .367 \text{ (very poor)} + .591 \text{ (no education)} + .490 \text{ (primary)} + .329 \text{ (incomplete secondary)} + .736 \text{ (often hungry)} + .648 \text{ (sometimes hungry)} + .984 \text{ (knows condom)} + .624 \text{ (AIDS: condom use)} + .445 \text{ (husband provided money)}$$
Model 2 logistic regression model:

$$\ln(\text{odds of non-use: partner dislike}) = -1.869 + (-.367) \text{ non-poor} + (-.591) \text{ higher education} + (-.736) \text{ never hungry} + .984 \text{ (knows condom)} + .624 \text{ (AIDS: condom use)} + .445 \text{ (husband provided money)} + .006 \text{ (age)}$$

The odds were much higher among those who knew condoms (12.620 times) compared with those who did not, indicating that knowledge does not always translate into positive behavioural change. Even knowing someone with or who had died of AIDS did not appear to encourage positive sexual behaviour, as can be seen in the results provided in Table 6. Instead, those who knew someone with or who had died of AIDS were more likely (1.364 times) not to have used condoms due to low perceived risk of HIV infection. These results are consistent with the findings of the 1998 SADHS, which reported high knowledge of HIV/AIDS and of the means of avoiding infection not being matched by positive behaviour.

An exploration of the effect of the extent of household hunger on condom use in model 2 hints at the stigmatisation of HIV/AIDS as a disease of the poor. This is illustrated by the significant effect of the variable 'never go hungry' on non-use of condoms due to low perceived risk of HIV infection. Respondents who reported never experiencing hunger were four times more likely not to have used a condom due to low perceived risk of HIV infection compared with those who often experienced hunger. Aside from stigmatisation, this could also highlight the increased risk of HIV infection among the poor. For example,

the reason for the insignificance of the variables 'sometimes and seldom' against those who often experienced hunger could be that respondents in all these categories did not report low risk as they knew that their poor circumstances often forced them into behaviours that carry a high risk of HIV infection. Such behaviours would be non-use of condoms in exchange for food.

The regression model for non-use of condoms due to a partner's dislike also highlights the complex nature of the relationship between economic status and sexual behaviour. Starting with model 1, it can be seen that the very poor were more likely (1.443 times) not to use a condom due to a partner disliking condoms than the non-poor, when controlling for education, knowledge of condoms, knowing that condoms could be used to avoid HIV infection, extent of household hunger, as well as husband's provision of money. Unlike with non-use due to low perceived risk, education had a positive effect on safer sexual behaviour. This was indicated by a decline in the odds of non-use due to a partner's dislike of condoms with an increase in the level of education reached. This regression model also highlights the link between poverty and sexual behavioural practices better, as can be seen by the significance of the variables 'extent of household hunger' and 'husband provided money' in the prediction of non-use as a result of partner's dislike of condoms. Women who were financially dependent on their men (that is those whose partners provided them with money for other things apart from rent, food, or bills) were 1.56 times more likely not to use condoms because their partners did not like them, compared with those women who did not receive any money from their partners.

The regression results of reasons for non-use of condoms during last sex highlight the complexity of the poverty and HIV/AIDS relation. Looking firstly at the odds ratio of having not used a condom due to low perceived risk of HIV infection, it can be seen that low socio-economic status was associated with increased risk of HIV infection, so that the poor were 0.63 times more likely not to have used a condom compared with the very poor. However, being non-poor had no significant effect on the odds of not having used a condom during the last sexual encounter due to low perceived risk of HIV/AIDS. Furthermore, an increase in the occurrence of hunger increased the

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TABLE 6. ODDS OF REASONS FOR NON-USE OF CONDOMS BY SELECTED SOCIO-ECONOMIC INDICATORS

Variable	Didn't use: low risk		Didn't use: partner dislike	
	Model 1	Model 2	Model 1	Model 2
Constant	.002 [†]	.001 [†]	.028 [‡]	.191 [‡]
Poverty status				
Very poor			1.443 (.367) [†]	
Poor		.502 (-.689) [†]		
Non-poor				.693 (-.367) [†]
Educational level				
None	†	†	*	†
Primary			1.805 (.591) [†]	
Incomplete	.566 9-.569) [†]	.467 (-.761) [†]	1.632 (.490) [†]	
Secondary			1.390 (.329) [†]	
Higher				.554 (-.591) [†]
Condom use				
Knows condom	12.620 (2.535) [†]	12.620 (2.535) [†]	2.674 (.984) [†]	2.674 (.984) [†]
AIDS: safe sex	2.196 (.786) [†]	2.196 (.786) [†]	n/a	n/a
AIDS: condom	n/a	n/a	1.867 (.624) [†]	1.867 (.624) [†]
Age	1.030 (.030) [†]	1.030 (.030) [†]		
Knows someone with/has died of AIDS	1.364 (.310) [*]	1.364 (.310) [*]		n/a
Race				
Black	‡	‡	n/a	n/a
Coloured	.461 (-.774) [*]	.414 (-.882) [†]		
White	7.213 (1.976) [‡]	6.476 (1.868) [‡]		
Indian				
Extent of household hunger				
Often	.246 (-1.402) [†]		2.088 (.736) [†]	
Sometimes	.347 (-1.058) [‡]		1.912 (.648) [‡]	
Seldom	.373 (-.986) [†]			
Never		4.057 (1.400) [‡]		.479 (-.736) [†]
Husband provided money				
n/a	n/a	n/a	1.561 (.455) [†]	1.561 (.445) [†]
Model chi-square	(389.351) [‡]	(389.351) [‡]	(106.832) [‡]	(106.832) [‡]

*Significant at 10% level

†Significant at 5% level

‡Significant at 0.1% level

n/a = not applicable.

risk of HIV infection, as those who often and sometimes experienced hunger were more likely not to use condoms if their partner disapproved, as opposed to those who never experienced hunger. Although it cannot be said with certainty that these women often relied on survival sex, the relationships demonstrated by the regression results characterised such behaviour, and as such it cannot be ruled out.

DISCUSSION

In this section I review the findings of the data analysis and relate them to the hypothesis stated earlier. These findings are discussed according to their appropriate sections.

Economic status and HIV knowledge

It was hypothesised that low economic status increases the risk of HIV infection through its associated factors like low education that reduce the likelihood of having the knowledge necessary to adopt safer sexual behaviours. The results of data analysis provide support for this argument. As was hypothesised, the non-poor were more likely to have good knowledge of the means of avoiding HIV infection as opposed to the poor. The same applied to level of education – an increase in the level of education was associated with an increase in the likelihood of knowing the means of avoiding AIDS. These results are supported by a multitude of articles, both in Africa and elsewhere. The

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results also indicated that even with similar levels of education, the poor were less likely to have good knowledge of effective means of avoiding HIV infection. The results do not, however, provide reasons for this and as such further research is required to establish the factors at play.

Economic status and sexual behavioural practices

This section aimed to provide evidence for the hypothesis stated earlier that the poor were less likely to adopt safer sexual behaviour due to low levels of education and financial dependence on their partners, which reduce their sexual negotiating power. This claim was supported by the results of the data analysis which showed that the non-poor were more likely to use condoms than the very poor. As with knowledge of the effective means of avoiding HIV infection, the chances of having used a condom during last sexual intercourse improved with an increase in the level of education attained.

The relationship between economic status and sexual behavioural practices is perhaps better reflected by the association between economic status and non-use of condoms as a result of a partner's dislike of condoms. Respondents who received money from their partners, as well as those who came from households where hunger was a common phenomenon, were more likely not to use condoms because their partners dislike them than those who did not, that is, controlling for level of education and economic status, among other factors.

More interesting were the findings of the regression of non-use of condoms due to low perceived risk of HIV infection, which indicated that knowledge does not always guarantee the adoption of safer sexual behaviours. This is indicated by the high odds of not using a condom due to low perceived risk of HIV infection among women who knew condoms (12.62) and among those who knew that practising safe sex helped to avoid HIV infection (2.96). Even more interesting is that these results demonstrate the intricacy of the poverty and HIV/AIDS relationship, whereby it is not only low economic status that increases susceptibility to HIV infection but also high socio-economic status. While being poor increases susceptibility much more than being non-poor, the stigmatisation of HIV/AIDS as a disease of poverty, which provides the poor with a false sense of

protection from HIV infection, may hinder their adoption of safer sexual behaviours. This is evidenced by the increased odds of non-use of condoms due to low perceived risk of HIV infection among the poor compared with the very poor and among those who never experienced hunger as opposed to those who came from households where hunger was frequent and even among the white population (which has few poor people) as opposed to blacks.

CONCLUSION

Poverty and its associated factors, low education and decreased decision-making power, can indeed increase the risk of HIV infection. Low socio-economic status robs the poor of the knowledge necessary for the prevention of infection with HIV/AIDS, and also increases susceptibility to infection by making the poor more likely to practise unsafe sexual behaviour. However, the stereotypes associated with high economic status, such as the view of AIDS as a disease of the poor, increase susceptibility to infection among the non-poor, as they discourage the adoption of safer sexual behaviours. While the results contained in this study do not provide direct evidence of the role of such stereotypes, the increase in the odds of non-use of condoms due to low perceived risk among the educated and those who never experience household hunger hint at this relationship.

The evidence contained in this study has proven how inseparable poverty and disease are – in this case HIV/AIDS. Therefore any efforts to reduce HIV infection rates successfully should take poverty into consideration, just as poverty reduction programmes aiming at success should take HIV/AIDS into consideration.

The continued growth of the South African AIDS epidemic is evidence of a loophole in the current strategies to prevent new infections and also of poor behavioural changes. Poverty and its related factors, such as low education and financial dependence on partners, are the main culprits responsible for the escalating prevalence. Poor people often sacrifice the future to ensure a better today. Therefore HIV prevention programmes that aim to tackle the HIV problem successfully in South Africa need to take this into serious consideration. However, non-use of condoms among the non-poor due to low perceived risk of HIV infection implies that HIV prevention

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programmes are not really succeeding in removing the stigma associated with HIV/AIDS. Much needs to be done in order to avoid a catastrophe in the future. The key challenge is to find effective and sustainable methods of changing unsafe sexual behaviours. This requires an intense exploration of the economic, social, cultural and political factors that influence such behaviours. Direction can be sought from existing studies as well as from public opinions regarding what could be done.

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