



Labour Markets and Social Policy

A Review of Labour Markets in South Africa: The Impact of HIV/AIDS on the Labour Market

J. Vass

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THE IMPACT OF HIV/AIDS ON THE LABOUR MARKET IN SOUTH AFRICA

Jocelyn Vass

**Senior Research Specialist
Employment & Economic Policy Research Programme
HSRC**

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Human Sciences Research Council**

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Produced by Jocelyn Vass
Senior Research Specialist, EEPR

E-mail: jvass@hsrc.ac.za
Tel: +27 12 302 2412

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1. Introduction

The United Nations Secretary General Kofi Annan recently declared that HIV/AIDS is “not only the world’s biggest public health challenge, but in some countries the biggest single obstacle to development” (cited in World Economic Forum 2004). This statement rings particularly true in a high HIV prevalence country such as South Africa, where at a micro-level there is increased manifestation of the AIDS epidemic given AIDS-related absenteeism, illnesses and premature deaths in the population and labour force.

Much of the current analysis on labour market trends does so without taking into consideration HIV/AIDS as a key co-factor underpinning such trends. This is understandable, in that the HIV/AIDS impact is as yet, not a clearly distinguishable co-factor, especially at the macro-level. This is partly due to its long-wave nature, in that the long-term consequences of AIDS morbidity and mortality on productivity, structure and functioning of the labour market only become evident over time. It is more often the case that the short-to medium term effects manifest firstly at a micro-level, as firms and sectors and sections of the labour force report more pronounced effects, before it feeds through to the labour market as a whole.

The structure and functioning of the labour market is one of the key mechanisms to address developmental inequities in South Africa. Thus, an understanding of the HIV/AIDS impact on the labour market is key in assessing the extent to which it adversely affect ongoing efforts to redress historical inequities, especially for those historically disadvantaged and vulnerable groupings.

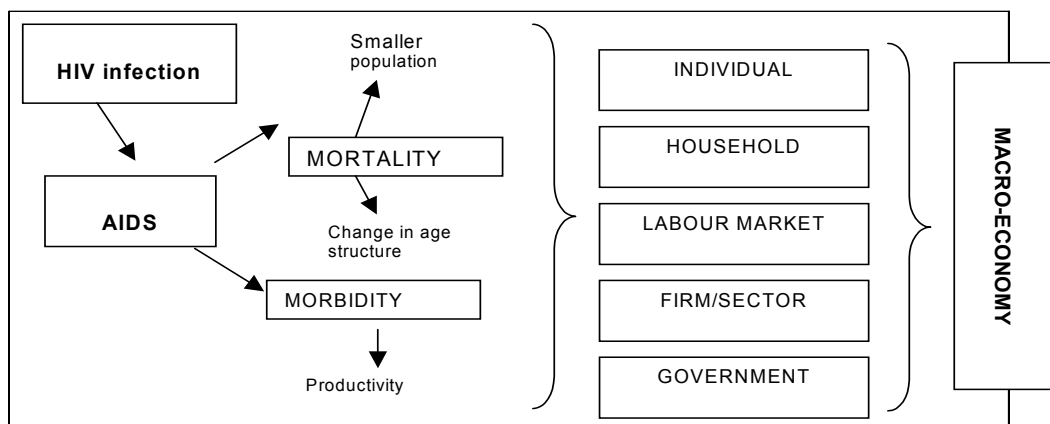
This paper outlines the main anticipated effects of HIV/AIDS on the size, structure and composition of the labour market focusing on the demographic and skills effects; it contrasts this with current labour market trends in terms of labour supply and demand in the last 7-10 years; it considers current labour market segmentation based on race, sex, age, skill and occupation, and the impact on human resources development through education and training and employment equity; the impact on sectors, including SMMEs, supply chains and the informal sector is considered. It concludes with an assessment of the response at an institutional and policy level. Brief comments are made on the nature and limitations of the available empirical data and research. Finally, a gap analysis provides an overview of key knowledge and research gaps in extending our understanding of the HIV/AIDS impact on the labour market.



2. Background

Figure 1 provides a conceptual framework of the main structural channels of HIV/AIDS impact as it feeds through all levels of society and the economy. It shows how the twin impacts of HIV infections and AIDS morbidity and mortality feed through at a micro-level (firm, household, firm, sector and labour market) to the macro-economy. While relevant, this paper will not comment on the household and macro-economic impact in detail.

Figure 1: Structural channels of HIV/AIDS impact



Thus, whereas as little as two years ago, South African businesses were not reporting any major impact of HIV/AIDS, many more now perceive a more significant impact on their business in terms of productivity and profits (BER 2004a; 2004b). This is partly informed by an increased awareness and knowledge of the importance of the HIV/AIDS epidemic. Further, it is also acknowledged that while the SABCOHA survey findings are derived from business perceptions (instead of quantitative assessments), they are in line with other evidence that point towards a marked increase in the AIDS mortality and AIDS-related mortality rates among young adults [15-49 years] (StatsSA 2002; Groenewald *et al*, 2005). Thus, the epidemic is now entering the AIDS phase, which is much more visible than the HIV epidemic.

Understanding the HIV/AIDS impact is partly a function of the scope and quality of current data available. The picture remains mixed in South Africa, in that though more information is now in the public domain, much of it is not. Further, macro-level impacts such as changes to the demographic profile and size of the labour force are not yet focused upon. Data on trends in productivity are still based on international studies. There is more work available on the cost implications of interventions (Rosen *et al* 2003), especially in regard to antiretroviral treatment.

Micro-level data vary in terms of its scope and nature, but in the last few years there has definitely been an improvement. The Antenatal Clinic (ANC) survey remains the most widely used HIV surveillance data, from which national population and company estimates are derived. However, the Nelson Mandela Foundation/HSRC national household prevalence survey (2002) extends the understanding of the size

and scope of the epidemic in other sub-populations (men, non-pregnant women, children, older people, and population groups other than Africans), as well as other socio-economic categories not covered in the Antenatal Clinic data. There are also smaller household level studies, focusing on poverty and survival strategies, child-headed families and AIDS orphanhood.

At a company and sector level, the picture is more mixed. More companies are now conducting HIV prevalence surveys as part of their disease management programmes. However, most publicly available company estimates are derived from large formal sector companies. More medium-sized companies are conducting HIV prevalence surveys or risk assessments, but the results are generally kept confidential. Very little is known about the impact in small and micro-sized companies, and given the cost involved in procuring such HIV/AIDS services (Connelly and Rosen, 2003), the situation is not likely to improve.

At a sector level, there is very little HIV/AIDS data in the public domain, except high-risk sectors such as mining. Cross-country company studies (Evian, Slotow, Rosen, Thea, Fox, Macleod and Simon, 2002) in Southern Africa extrapolate sectoral estimates for the mining, heavy manufacturing and transport sectors. These are not strictly sector studies, but they do provide an alternative in the absence of such studies. Results on a study in the banking sector have been released at an aggregate level, but otherwise very little is known about the disaggregated impact. Anecdotal evidence suggests that there is more company data available; however, concerns about confidentiality, shareholder and consumer concerns are major obstacles to public release.

In the public sector, 2 recent studies conducted in the health (2002) and education sector (2004) have vastly improved our understanding of HIV/AIDS dynamics in a significant proportion of the civil service labour force.



3. Overview of the macroeconomic impact

An understanding of the aggregate impact on the labour market is generally derived from macro-economic studies on the HIV/AIDS impact. However, given the relative newness of these approaches, it is important to use such findings as indicative only; and to validate projected results with those from surveys at household, firm and /or sector levels.

At a macro-economic level, the existing studies range from predictions of a relatively small decline in terms of GDP growth, to predictions of “economic collapse” in the absence of intervention (Quattek, 2000; Bureau for Economic Research [BER], 2001; Arndt & Lewis, 2000; Bell, Shantayan & Gersback, 2003). Those studies predicting relatively modest declines are in line with other studies done in other parts of Africa.

However, one may argue that the main reasons for the apparent differences relate, to a certain extent, to the theoretical frameworks and assumptions adopted by these models. Thus, in the first group (modest impact) it is assumed that those mostly affected will be the unskilled and semi-skilled; and thus a HIV/AIDS-related decline in the economically active population will not necessarily translate in an economic shock. This is also in line with the relative shift in the nature of labour demand towards skilled and highly skilled labour in the last decade, which may be further consolidated given the differentiated impact of HIV/AIDS. It may be concluded that given that the labour market drivers of growth in the SA economy are based on a reliance on a relatively small proportion of the labour force (the highly skilled and skilled in selected sectors), and a capital intensive cost structure, that the distribution of HIV infections and mortality will not impact significantly on aggregate economic indicators. This of course does not deny the hugely negative social impact on the broader society and human development indicators. Nor does it assess the impact on future human capital development, in terms of current initiatives in terms of education and training of the historically disadvantaged section of the population.

On the other hand, the high impact World Bank study assumes primacy to the negative effect of HIV/AIDS on the continued development of human capital. Thus, it predicts that HIV/AIDS is likely to have a devastating impact on the intergenerational (from parent to child) transfer of human capital (skills, knowledge and experience), given the premature death of parents or caregivers. It further argues that, contrary to other studies, that in the absence of intervention, per capita GDP will decline by 50% in three generations.

However, SA human capital development starts off from a low basis, including low levels of existing school enrolments and poor completion rates at general, further and higher education for the Black majority. Thus, while it is true that HIV/AIDS will exacerbate school enrolment and completion rates, the decline may not necessarily be of the magnitude as predicted here.

Further, education and training has never been a strictly private choice, especially among the vast majority of poor Black parents, but a structurally determined circumstance, over which they (parents) do not have much control. Further, given their general low skills, most Black parents may not necessarily play as key a role in facilitating the intergenerational transfer of skills, as posited by the theory underpinning the World Bank study. Thus, it may be argued that the World Bank

study adopts theoretical assumptions (intergenerational human capital transfer) that may be of limited applicability to the South African context.

Approaching the issue of macro-economic impact from a different angle, McPherson (2003) criticises current approaches to macro-economic modelling of HIV/AIDS, in that these regard HIV/AIDS as an “external” factor to the economies under scrutiny. Instead, he believes that HIV/AIDS has become “endogenous” to affected economies, lending less credence to HIV/AIDS versus non-HIV/AIDS scenario planning. Such an approach may result in under-estimations of the impact, and he furnishes the following reasons in support. Firstly, these macro-economic predictions are based on the assumption (from demographic projections) that the epidemic has not reached its peak yet. Thus, all the South African studies assume peak HIV prevalence to be reached in 2004/05 according to the demographic projections by ASSA, that is, impact may in fact be postponed. Secondly, given the lag time between infection and AIDS death, the full impact of high AIDS mortality accompanying high HIV prevalence rates, has yet to be fed back through the economy. Thus, the intensification of the epidemic through AIDS mortality is yet to be felt. Following on this, McPherson argues that this will result in a loss of human capital, the ‘erosion of critical institutions and economic networks’ and a ‘major collapse of investment’ (2003:6). As indicated elsewhere, there is definitely more evidence that the AIDS epidemic in terms of AIDS sickness and deaths is making itself felt in more concrete ways than before.

In summary, given the differences in macro-economic projections, and the lag time between the initial HIV infection and its macro-impact, labour market impact is best assessed at a micro-level.

4. Impact on the labour force

This section focuses on the impact of HIV/AIDS on the structure and functioning of the labour force. It is derived from the aggregate demographic impact of the epidemic on the size and nature of labour supply. This is followed by an impact analysis on the quality of the labour force, given the skills distribution of HIV prevalence. All of these are related to existing trends in the labour market in terms of trends in the supply and demand of labour for the last 7-10 years.

4.1. Impact on the size of labour supply

HIV/AIDS has a disproportionate impact on the economically active population, as HIV infections and premature deaths related to AIDS are concentrated among those 15-49 years (Quattek 2000, Bureau for Economic Research [BER] 2001, Rehle and Shisana, 2003).

Table 1 illustrates the progression of HIV/AIDS in the labour force and how the initial HIV infection is followed after some time by increased AIDS morbidity and mortality. Thus, between 0-7 years after the initial HIV infection, increased AIDS-related illnesses may contribute to temporary labour turnover as increased absenteeism and a general decline in productivity take place. Permanent labour losses follow as sick employees develop full-blown AIDS, approximately 1-2 years before death or ill-health retirement (Rosen *et al*, 2001).

Table 1: Progression of HIV/AIDS in the labour force

Timeframe	Projected effect on the workforce
Year 0	Employee becomes infected with HIV.
Year 0-7	Morbidity begins (secondary infections, increased absenteeism, sick and compassionate leave)
Years 7 -10	Employee leaves workforce by resigning, retirement or death due to AIDS.
Years 7-10	Company hires replacement employee.

[Source: Rosen *et al* (2001)]

Macro-modelling studies predict that AIDS-related mortality, disability and reduced life expectancy will result in a smaller labour force compared to a no-AIDS scenario, as shown in Table 2. Quattek (2000) predicts an 18% decline in the labour force by 2015, while Abt/Metropolitan predicts a decline of 21% by 2015 (BER 2001), compared to a non-AIDS scenario.

Table 2: Projected changes in the size of the labour force (millions), 2000-2015

Year	No AIDS scenario (millions)	AIDS scenario (millions)	Difference (%)
2000	14.5	14.4	-0.7
2005	15.8	15.1	-4
2010	17.2	15.1	-12
2015	18.7	14.8	-21

[Source: Abt Associates-Metropolitan Life, as cited in Bureau for Economic Research 2001:12.]

These projected results are derived from antenatal clinic survey results, which may overstate the impact of the epidemic in the working age population, as suggested by Udjo (2004). A study on the mortality effects of HIV/AIDS impact by Udjo (2004) based on the Nelson Mandela/HSRC household sero-prevalence study, concludes that by 2001, the absolute size of the population of working age (15-65 years) has declined by 1%, largely as a result of the disproportionate impact on Africans.

Further, a comparison with data on existing trends in the growth of the economically active population from the Labour Force Surveys also suggest that instead of declining in size, that it has been growing over the last 7-10 years. Borat and Oosthuizen (2005:3) show that in the period 1995-2002, those of working age have increased from 24.2-million to 28.0-million, growing at a rate of just under 16%. Further, the labour force has expanded at more than double the EAP rate, at 37.4% to 37.8%, based on the narrow and broad definition of unemployment. Thus, contrary to the expected AIDS-induced declines in Table 2, in 2002 the labour force size ranged from approximately 16-million to 19-million, at least one million more than predicted for 2005 under an AIDS scenario. Of course, given the lag time between the initial infection and AIDS sickness and deaths, these long-term negative effects may still be working its way through the labour force.

This depends partly on when epidemic peak is assumed to occur, and when the most significant effects are expected. Existing studies differ in regard to the exact magnitude of the decline in life expectancy, as shown in Table 3, as well as the timing of peak prevalence. However, by all accounts the decline in life expectancy is severe. Rehle and Shisana (2003) predict that in the period 2005-2010, life expectancy will be 22 years less than in the absence of AIDS. ASSA2002, an updated version of ASSA2000 now also indicates that life expectancy at birth is likely to be closer to 50 years, given interventions to mitigate the impact.

Table 3: Projected life expectancy, 1999-2010

	1999	2005	2010
Life expectancy: female (Abt/Metropolitan)	54 years	43 years	37 years
Life expectancy: male (Metropolitan)	50 years	43 years	38 years
Life expectancy: general population (ASSA2000)	55 years (2001)	46 years	41 years
Life expectancy: Rehle and Shisana (2003)	50.4 years (2000)	45.2 years	47.2 years

[Source: Moore, D. (1999); ASSA (2000); Rehle & Shisana (2003)]

Projected declines in life expectancy will have an adverse effect on the labour supply. However, the average probability of survival of HIV infected persons between the

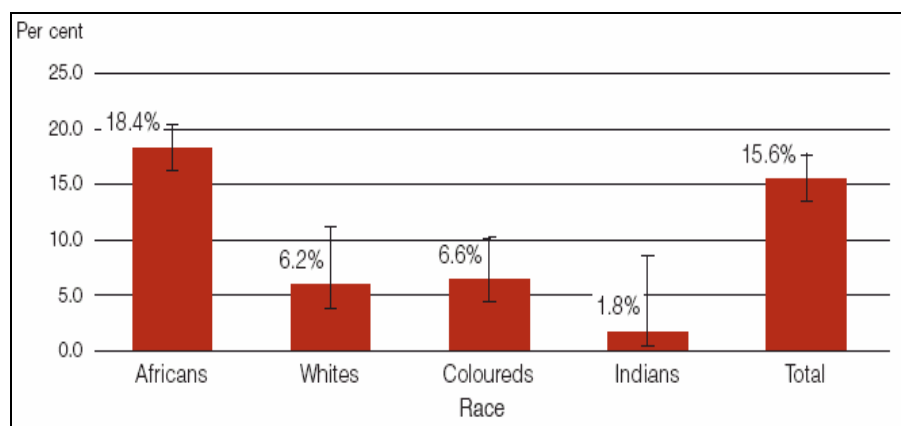


initial HIV infection and the onset of AIDS-sickness can be mediated by treatment and care. The next section reviews the demographic effect on labour supply in terms of age distribution, population group and sex. This is presented in the context of current trends in the growth and structure of current labour force.

4.2. Impact on the demographic structure of labour supply

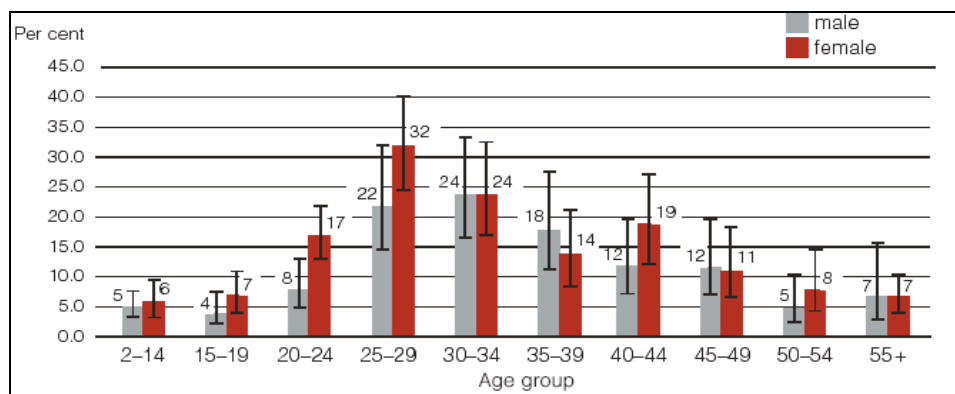
The HIV/AIDS epidemic in South Africa shows a particular distribution by age, population and sex. Thus, the core of the labour force, aged 15-49 year is most severely affected, in their most economically productive years. Figure 2, based on the NMF/HSRC study shows an HIV prevalence rate of 15.6% in 2002 in this age cohort. Further, all studies on the distribution of HIV prevalence by population group, consistently shows that the highest HIV prevalence rates are concentrated among Africans at 18.4%, relative to other population groups (ASSA2000, NMF/HSRC 2002), as shown in Figure 2. However, the most recent studies also suggest that the epidemic is relatively serious among Whites, in that higher prevalence rates are recorded when compared to similar populations in other Western countries (NMF/HSRC 2002). The concentration of the disease among Africans is related to their poorer socio-economic status, as well as demographic dominance in the population.

Figure 2: HIV prevalence among adults aged 15-49 years by race, South Africa, 2002



[Source: NMF/HSRC (2002)]

Figure 3: Prevalence of HIV by sex and age, South Africa, 2002



[Source: NMF/HSRC (2002)]

Further, the NMF/HSRC study, as shown in Figure 3, confirms the age and sex effect, as shown in other studies, including the ASSA2000 projections. Thus, HIV infections are higher among women and are concentrated among younger adults, while women are infected at a younger age than men.

The disproportionate effects of HIV/AIDS by age, population group and sex are also reflected in mortality data. The Medical Research Council (Dorrington, Bourne, Bradshaw & Laubscher 2001:5-6) argues that there is a decline among those in their mid-thirties, which it attributes to a general increase in adult mortality (15-49 years) between 1985 and 1999/2000, and a doubling of the mortality rate in the 30-35 year age range, to HIV/AIDS.

A more recent analysis of death registration certificates by the Medical Research Council (2005), suggests that for 1997-2001, there is a “distinctive age pattern” related to total deaths attributed to AIDS-related conditions. Thus, using the ASSA2000 model, they estimate that there has been an increase in the general mortality rates for the period. Further, that excess mortality is attributable to deaths among young children, women aged 25-39 years and men aged 30-49 years (2005: 196). Thus, AIDS-related mortality among women peak at a younger age compared to men (Dorrington, Bourne, Bradshaw & Laubscher 2001: 5-6). Further, this age-specific mortality distribution follows that for HIV infections (2005: 196). The study does sound a cautionary note, in that the cause of death registration data tends to under-report HIV as a cause of death for a range of reasons. Thus, the study derives its findings on AIDS-deaths “indirectly” from so-called AIDS-related conditions.

On the other hand, the analysis of cause of deaths by the StatsSA (2002:vi) is based strictly on HIV recorded as a cause of death, and does not derive indirect AIDS deaths. It does show though that while deaths due to unnatural causes ‘declined significantly’, there has been a “steep rise” in mortality related to HIV, TB, influenza and pneumonia, which are technically regarded as AIDS-related (Groenewald et al 2005). HIV deaths increased from 4.6% to 8.7% for 1997 and 2001 respectively, and are especially evident among children and those in the age range 15-49 years, the core of the economically active population. As before, a distinctive pattern emerges for young women, echoed by the MRC estimates. Thus, the female mortality rate for those aged 15-29 years is triple that for males – 22.5% versus 8.5%. Further, women



aged 15-39 years are more likely to die of HIV than men. If AIDS-related conditions (TB and influenza) are considered, again women are disproportionately affected. In terms of population group distribution, TB, HIV, influenza and pneumonia are the leading causes of death among Africans and Coloureds. Whites and Indians tend to die of lifestyle diseases, such as diabetes and heart disease (StatsSA 2002:vii). Further, young African females recorded the highest HIV deaths (13.5 %), with over 40% concentrated among those 15-29 years (24.3%) and those 30-39 years (20.5%).

The implications of these AIDS-related mortality data are particularly important for the composition of the labour force, and the structure and functioning of the labour market. Thus, while there are currently no clear indications that the labour force is as yet showing a decline in the rate of growth, the AIDS related mortality statistics points towards the possibility of structural changes in relation to the age effect, in that the labour force may become both younger and older. Lisk (2002) refers to the “hollowing out” effect as the number of those in their peak productive years (mid-thirties) in the labour force declines at a faster than normal rate.

There is a real possibility of increased child labour (AIDS orphanhood), given the absence of parental supervision (due to AIDS morbidity and mortality) and a failure of community and government intervention and care, given increased AIDS-induced pressures.

The gender effect is particularly dire, as women are disproportionately affected. Given the historically disadvantaged position of women, especially African women, attempts at redress are put at a severe disadvantage as a result of premature AIDS-related deaths. Given the declines in their productive lives women are less likely to accumulate sufficient skills and experience to advance sufficiently in the labour market, or take advantage of employment equity and training opportunities.

A preliminary comparative analysis of the Census 1996 and 2001, shows that the share of both men and women in most age cohorts have increased over the period (Statistics SA, 2004). However, those age groups where declines have taken place include those aged 20-24 years and 30-34 years. The declines in share are small, -0.1% across both sexes, but 0.2% for women aged 20-24 years. It is thus important that changes in the share of the population, especially for those 15-49 years be tracked, as well as the distribution by sex. For now, the male and female shares in both the population and the economically active population have remained constant.

4.3. Implications for research gaps

One of the key areas for future consideration is the extent to which HIV/AIDS is a key co-factor in the size and structure of the labour force. This relates particularly to tracking shifts in the age and sex-related shares of the labour force. Changes in the age-related shares of Africans, given the adverse impact of HIV/AIDS would be important to track.

In terms of women, it would be important to track whether there are any discernible trends in terms of the age structure of the female working age population and labour force. This will also assist in measuring the extent to which the increased feminisation of labour supply as well increased youth participation is sustained given the impacts of HIV/AIDS.

5. Impact on skills profile of labour supply

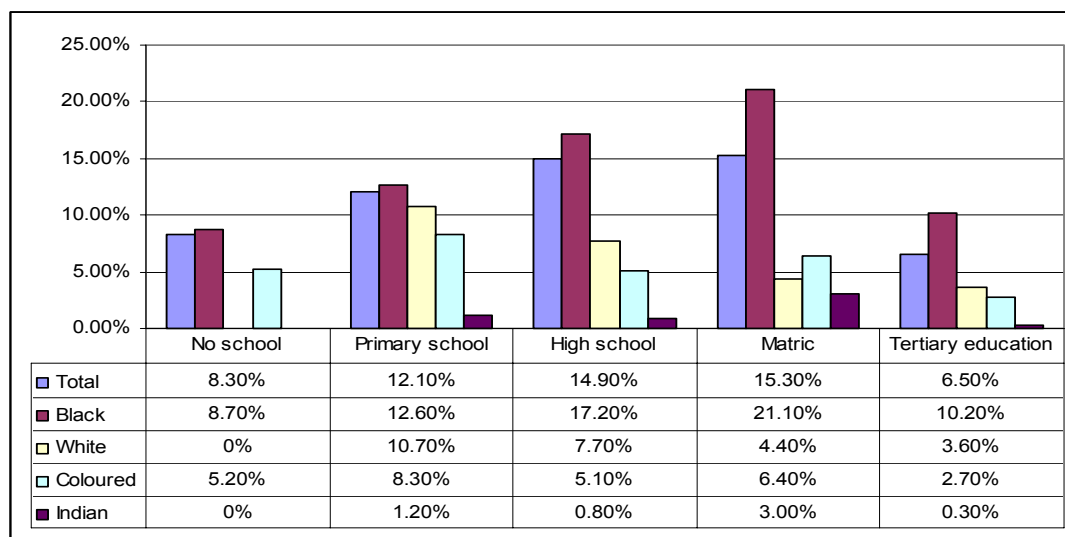
This section reviews the HIV/AIDS impact by education and skill levels. The triple impacts of the age, skills and gender effect of HIV/AIDS are likely to impact negatively on the composition of the labour force, as well as the range of skills, knowledge and experience available in the labour market. Losses in this regard may result in declines in labour productivity, depending of course on the extent of capital substitution. Potential losses of prime working age adults, the rising share of older and younger people may contribute to a potential generational deficit in skills and experience.

South Africa has a highly stratified human resources base (by race, gender, education), an endemic shortage of skilled and especially highly skilled labour, and a large pool of unskilled, poorly educated and unemployed people. This manifests itself in occupational segmentation patterns that are racially distributed given historical uneven educational attainment and labour market discrimination. Thus the educational and skills distribution of HIV prevalence is of necessity going to relate very closely to these segmentation patterns.

Given its importance as a pre-labour market indicator of human capital endowment, the distribution of HIV prevalence by education levels is looked at in Figure 4(NMF/HSRC 2002). It shows that for those older than 15 years, HIV prevalence is positively related to educational levels, except at tertiary level where it declines. Thus, at increased levels of education, higher HIV prevalence occurs. This is largely driven by the pattern of HIV prevalence among Africans, which shows the highest rate of HIV prevalence at Matric level. HIV prevalence trends among other population groups decline with higher levels of education, which is the generally expected trend elsewhere. Thus, if as suggested by these findings, education is not a protective factor against HIV/AIDS among Africans, it has serious implications for education and training investment, as it suggests potentially high rates of turnover as a result of AIDS-related morbidity and mortality among educated Africans. At the same time, this is the first finding of its kind, and needs to be backed up with similar data¹.



Figure 4: HIV prevalence rate of persons 15 years and older by educational level and race, South Africa, 2002 (%)



Most other micro-level studies focus on the skills or occupational distribution of HIV/AIDS, which in South Africa is a fair indication of educational endowments as well. Thus, it is particularly true that most semi-skilled workers are likely to have Matric or incomplete secondary schooling. Most highly skilled and skilled employees are likely to have a post-Matric level of education and/or tertiary education.

Projections generally suggest a skills gradient of infection as shown in Table 4, in that there is an inverse relationship between skill level and HIV/AIDS prevalence levels. Thus, higher HIV/AIDS prevalence levels are projected for lower -skilled workers compared to higher skilled (Quattek 2000, Bureau for Economic Research 2001). Given the relatively large differences between the studies quoted here, findings generated at micro-level are relevant as projections may be either under-or overestimations of the real impact. Workplace studies tend to confirm the skills distribution of HIV infection in projections, but they also differ in terms of the actual magnitude.

Table 4: Projected HIV prevalence rates by skill levels, 2005-2015

	Highly skilled (%)			Skilled (%)			Semi-and unskilled (%)		
	2005	2010	2015	2005	2010	2015	2005	2010	2015
Quattek (2000)	13	11.2	9.3	22.6	21.7	20.2	31.6	32.7	32.6
BER (2001)	13.3	16.7	18.7	20.2	23.8	25.4	22.8	26.3	27.6

[Source: Quattek (2000) .ABT Associates, as reported in BER 2001]]

Selected company studies shows that HIV infection levels for highly skilled professionals may be substantially lower than those suggested by projections. Evian *et al* (2001) report that in selected South African companies surveyed, managerial level staff has the lowest infection rate (4%). However, HIV prevalence rates among

managers suggest that that the disease may not necessarily have a negligible effect. Thus, a HIV surveillance study in 2001, at Daimler Chrysler found a 3.8% infection rate among senior management, and 7.2% among line management (Colvin, Connolly and Gouws 2002). Evian *et al* (2001) confirm that in selected South African companies surveyed, managerial level staff has the lowest infection rate (4%), skilled staff (6.5%) compared to higher infection rates of 15% to 21% among lower skill staff. Given the relatively small pool of highly skilled in the SA labour market, the absolute effect of these HIV prevalence rates may be more serious in the long-term.

Most studies generally conclude that the differentiated HIV/AIDS impact on skills is a function of the age, racial and gender profile of skills categories (BER, 2001; Abt Associates *et al*, 2000) and its interplay with existing occupational segmentation trends. Thus, the concentration of Africans and women, both high-risk groups, in semi-skilled and unskilled occupations may account for high HIV prevalence levels. In contrast, Whites have lower prevalence levels and are in predominantly highly skilled occupations. However, relatively high prevalence levels in the skilled occupations, where the racial distribution is more balanced, begs the question as to whether race or skill is the primary indicator of HIV risk.

HIV/AIDS may further contribute to the consolidation of existing race-and gender based patterns of occupational segmentation. It may undermine current efforts to redress the skills deficit, and increased investment in education and training. Thus, a more nuanced analysis of the interaction of skills, demographic profiles and HIV prevalence is essential.

AIDS induced morbidity and mortality will have a significant and adverse impact on the capacity on skills replacement, especially given the current small pool of skilled and highly skilled unemployed. This will erode possibilities for substitution from within the labour market. Immigration is obviously a possible consideration, although this may be hampered by the existing outflow of skills, as well as the stigma attached to high HIV risk economies.

There is also an assumption among many companies that given the pool of unemployed, replacement of unskilled workers may be fairly easy. There is currently no analysis of the HIV/AIDS impact on the unemployed, but given its demographic and skills profile, it is likely to be a high-risk group. Thus, replacement from among the unemployed may imply the importation of HIV risk. There are also gender implications for the quality and composition of labour supply. All the evidence points towards the fact that women are more susceptible to HIV infection for physiological, socio-economic and cultural reasons. However, the labour participation rate in the labour market of women has increased, more so than that for men. Thus, more women are indicating that they are available for work- and many are also unemployed. On the other hand, it may also mean that even though more women are available for work, the adverse impact of HIV/AIDS may in fact mean that fewer are able to remain in the labour market, as they are likely to contract AIDS related illnesses and die earlier than men. There is very little evidence of this, but the losses of skills and experience among women may be one of the first casualties, given mortality losses.

Overall, the existent structural inability in the South African labour market to increase the pool of sufficiently skilled employees may in fact exacerbate increased replacement needs of skill intensive sectors such as transport, manufacturing, chemicals, finance, government and health. In the absence of anticipatory succession planning and



training, the skills deficit may worsen as the size and quality of the skill pool decreases faster than the skills replacement capacity. This compounds the possibility of a skill *cum* replacement deficit in the period 2000 to 2010.

5.1. Implications for research gaps

Research in South Africa on the skills and occupational distribution of HIV/AIDS prevalence suffers from methodological weaknesses, relating to nature of the projections and their underlying empirical data.

A more nuanced analysis of the differentiated skills impact may be developed through increased micro-level studies at company and/or sector level. The consolidation of existing company databases with due regard to confidentiality requirements is key to this process. The impact on historically disadvantaged groups, including Africans and women, as well as youth must be looked at. Finally, in order to prevent deterioration in the current skills deficit, there is a need to conduct an assessment of the replacement requirements by skill, and within sectors, as well as the institutional capacity to replace lost skills. This will also provide an assessment of critical posts for succession planning, training and recruitment (UNAIDS, 2002). This is especially critical, given that very few companies have adopted the concept of retraining of staff, in order to replace lost skills.

6. Impact on size and nature of labour demand

This section focuses on the impact on sector labour demand as mediated by increased labour costs as well as the current trajectory of sector employment growth and relative skills intensity of labour demand. Very little is known as to the HIV/AIDS impact on the size and nature of labour demand, job creation and income levels. Some of the key challenges facing post-apartheid development include rising unemployment, poor levels of job creation and a failure to stem the rise in wage and income inequality among individuals and households. Further, given its propensity to prey on inequalities and developmental fault lines, AIDS is likely to become a key factor in accentuating and exacerbating existing inequality, especially in regard to its impact on labour demand.

Aggregate labour demand of HIV/AIDS in different sectors will to a large extent depend upon the effect of HIV/AIDS on market demand, including the customer base, the type of products and services provided, investment perceptions, profitability and so forth. Change in labour cost structure is a key factor in changes in future labour demand. Arndt *et al* (2000) and BER (2001) argue that changes in total factor productivity will occur given increased business costs of mitigating the impact of HIV/AIDS. Table 5 illustrates the progression of HIV/AIDS through the labour force and potential impact in terms of the increased cost burden to companies and sectors.

Table 5: HIV/AIDS costs in the labour force

Timeframe	Projected effect on the workforce	Effect on company costs
Year 0	Initial infection	Prevention and awareness; peer counselling and training
Year 0-7	Morbidity begins (secondary infections, increased absenteeism, sick and compassionate leave)	Morbidity-related costs (e.g. absenteeism, individual and workforce productivity, management resources, medical care and benefits)
Years 7 –10	Employee leaves workforce by resigning, retirement or death due to AIDS.	Termination –related costs including death benefits from retirement benefits, funeral costs, loss of morale, loss of skills and experience, loss of workplace cohesion.
Years 7-10	Company hires replacement employee.	Turnover costs including recruitment, training, loss in productivity.

[Source: Adapted from Rosen *et al* (2003)]

The costs related to HIV/AIDS morbidity and mortality and increased labour turnover, losses in skills, experience and productivity are of a direct, indirect and systemic nature. However, these costs need to be posed against the cost of total AIDS-related losses. A report by Anglo American (2005) indicates that the cost of ARV treatment is partly off-set by increases in productivity as a result of infected employees remaining productive and at work.

Employment growth in the post-apartheid period has generally been poor, and not at sufficient rate to absorb new entrants into the labour force and part of the unemployed. Differentiated sectoral growth has also mixed effect on the absorptive capacity of the labour market. For the period, 1995-1999 the fastest growing sectors include the financial and business services sector, construction and internal trade. The mining sector suffered the greatest decline in employment growth, followed by community, social and personal services (mostly public services), utilities and agriculture (Bhorat, 2003).

At the same time, Bhorat (2003) argues that the occupational distribution of employment gains and losses over the period, 1995-1999, shows that much of the job losses have been concentrated in unskilled, and to a lesser extent, semi-skilled occupations, while much of the employment gains have accrued to the highly skilled. Thus, in mining and agriculture, there has been an aggregate decline in employment, mostly concentrated among clerical staff, craft employees and elementary labour (2003:8). Similarly, the largest employment losses in the public services sector have occurred among low skilled workers.

It is evident that there is a clear overlap between the projected disproportionate burden of HIV/AIDS on low skilled workers and the overall skills-biased trajectory of the shifts in employment across most economic sectors, in the recent past. Given the added cost burden of AIDS, the evidence suggest that even in growth sectors, the demand for unskilled labour will continue to decline. Further, across all sectors, despite the added AIDS cost burden of replacing skilled and highly skilled workers, the demand for these workers will continue to grow.

The predicted slow-down (albeit small) in general economic growth is likely to exacerbate current declines in unskilled labour demand. Hence employment levels will not increase, whilst the unemployment rate will not change significantly (Arndt and Lewis 2000). Further, they argue that unemployment among the unskilled increases marginally, but will not result in major changes in the overall unemployment rate. This is largely due to the offsetting effect of the AIDS-induced reduction in the unskilled labour force and a reduction in labour demand due to slower economic growth. BER (2001) argue that wage rates, especially at skilled level, will increase as a consequence of skill shortages. However, this will be offset by increased direct costs related to benefit payments by the private and public sector and productivity declines. The overall result is a decline in the demand for labour (BER, 2001) and thus incomes.

AIDS-induced deaths among the employed and the subsequent loss of income have a direct impact on the distribution of household income. Given the high rates of unemployment in the labour market, many 'very poor' households (earning less than R1000 a month) rely predominantly on remittances from working household members living in or outside the household (Torres, Drury, Eldring, Lewis and Vass, 2001). Increased job losses among the unskilled and semi-skilled will exacerbate income poverty within the labour market, and reduce sources of remittance income. While there is currently very little evidence available, increased AIDS deaths among the economically active population is likely to impact negatively on the dependency ratio, and poor households will face increasing income vulnerability. Furthermore, these households may have to carry the financial burden when those employed, but infected, retire from work and return to receive care.

6.1. Implications for research gaps

In a highly differentiated society such as South Africa, projected increases in per capita income as a result of the HIV/AIDS impact provide a rather limited perspective of real human suffering experienced in society.

A major research gap is the impact of HIV/AIDS on employment, and its interaction with differentiated trends in skills-intensive employment. Finally, the adverse impact of HIV/AIDS on income poverty and skewed distribution of income is absolutely fundamental, given the potential exacerbation of existing developmental fault lines.

7. Impact on human resources development

The next section reviews the implications of HIV/AIDS for important efforts to redress deficits in terms of employment equity, education and training, key factors of an effective human resources development strategy.

7.1. Impact on employment equity

Current interventions in terms of employment equity practices may be undermined, given the susceptibility of those regarded as historically disadvantaged, including African men and women, the lowly skilled and low paid. Further, at this point much of employment equity is focused on the mobility and development of those at middle to senior management level. However, the available pool of skills among the historically disadvantaged is very small. Thus, given the negative implications of HIV/AIDS on educated Africans, this pool of expertise will be under even greater threat, in the absence of concerted efforts to grow it.

7.2. Impact on education

The expected AIDS-induced decline in life expectancy negatively influences all planning and investment decisions regarding education and training. Given the age related patterns of HIV prevalence susceptible young adults (15-25) years at FET and HET levels, it is likely to have a negative effect on the demand for education. Studies predict that given morbidity and mortality rates among learners, students and their families, the demand for education will decline as enrolments decrease, drop out rate increases and completion rates decline. These adverse AIDS-induced effects will exacerbate existing stagnant enrolment growth at higher education.

A recent HSRC study shows that the number of teachers have been declining over the last seven years, and is attributed to contract termination of temporary teachers, resignation and mortality (ELRC, 2005). Mortality related attrition has more than doubled from 7.0% to 17.7% in the period 1997/8 to 2003/4. Younger teachers (25-34 years) had higher HIV prevalence rates (21.4%), followed by those aged 35-44 years at 12.8% (ELRC, 2005). The implication is that the supply and quality of education is likely to suffer as a result of HIV/AIDS. Student-teacher ratios are likely to deteriorate given the negative effects on both students and teachers. This may compromise the capacity of the education system to ensure a constant supply of sufficiently skilled labour to the rest of the economy. Moreover, given that the education constitutes the largest proportion of provincial budgets, the cost of replacement of educators will add a further burden.

7.3. Impact on training capacity

The National Skills Development Strategy (NSDS) and the Sector, Education and Training Authorities (SETAs) are geared at improving training levels especially among the historically disadvantaged, redress of sectoral skills deficit and facilitate the achievement of employment equity. There is currently hardly any research available on the HIV/AIDS impact on institutional capacity to effectively meet the demand for AIDS-induced skill and labour replacements. Research has shown that companies

often do not have a clear idea what the HIV/AIDS implications would be in terms of training, succession planning and medium to long-term skills replacement levels. For instance, SABCOHA (2002) reports that less than 10% of companies surveyed have budgeted for increased recruitment and training expenditure.

The main target groups for training are also those most susceptible to the HIV infection, including Africans, women, youth, the unemployed, the unskilled and semi-skilled. The most recent NSDS progress report for 2000-2005, shows that while there have been improvements, certain equity targets by population group, sex and disability are still not being met (Department of Labour, 2004). For instance gender targets for NQF level 1 qualifications and entry into learnerships are not met. HIV/AIDS may exacerbate these difficulties.

There have been attempts by some of the SETAs to address HIV/AIDS through the provision of conditional grants for HIV/AIDS related training, mostly. The CHIETA (in the chemical industry) is one of the few SETAs to have established a training and intervention programme in 150 of its registered companies. Further, the Sector Skills Plans of most SETAs have not factored in the HIV/AIDS effect in terms of skills demand and current and future investment in training. Thus, learnerships may be at risk as training and replacement cost of HIV positive learners escalates. Training expenditure on learnerships, the semi-and unskilled and the unemployed may decline, given the risk of losing such investments. This may adversely affect employer participation in training, as well as the demand for training.

7.4. Implications for research gaps

The differentiated impact of HIV/AIDS on skills is key to understanding the implications on current and future training demand. An impact analysis on current efforts to redress the skills deficit through the implementation of the NSDS is required, with sectoral foci for each of the Sectoral Education and Training Authorities (SETAs). The development of national skills projections, factoring in the impact of HIV/AIDS, based on sectors, will strengthen the validity of the Sector Skills Plans developed by individual SETAs.

8. Impact on sectors

An understanding of the HIV/AIDS impact on sectors is key in terms of future patterns of labour demand and supply, and the skill intensity thereof. There is very little empirical data available in the public domain; more is known about the formal sector, especially the corporate sector; whereas much less is known about the impact on SMMEs and the informal sector.

Table 6: HIV prevalence rates among selected companies/sectors

Company/sample populations	Average HIV prevalence rate (%)	Approximate workforce size	Date
Anglo American	23%	134 000	2000
AngloGold	25-30%	44 000	2002
Anglo Platinum	7-24%	Not known	
Anglo Vaal Mining	14%	7 500	2002
Goldfields	26%	Not known	2000
	40%		2009
Lonmin Platinum	26%	8 000	2001
	45%		2005
Sasol	15%(estimate)	24 580	2002
	18 %(peak)		
Eskom	26%	38 000	2005
BMW	6%(estimate)	4 800	2001
Daimler Chrysler SA	9%(national)	4 840	2001
Agricultural workers in KZN	22.9%	5 000-10 000	1999
Sugar mill workers in KZN	27%	406	1999
Retail workers in KZN	7.9%	<1 000	2001
Heavy industry	8.8%	>20 000	1999
Old Mutual	5%		2002

[Source: Various sources]

While sector projections tend to be relatively higher than survey results, it is evident that sectors will be differentially affected as shown in Table 6 (Quattek, 2000; BER, 2001). This relates to the interplay between differential skill patterns and underlying demographic profiles. Sectors such as construction, mining and agriculture that employ predominantly low-skilled, African workers display high HIV prevalence rates. This is also confirmed in company studies. On the other hand, finance and business services that have higher proportions of skilled and highly skilled, and a more differentiated demographic profiles display low HIV prevalence rates. A study in the banking sector confirms this trend.

The high-risk sectors also constitute the most important contributors to the employment creation in the South African economy. These include trade, community services (largely government), manufacturing and the agricultural sectors. This potentially increases the overall vulnerability of the economy as the impact of

increased morbidity and mortality results in productivity declines in these sectors, adversely affecting employment generation and growth capacity.

With the exception of the mining sector, very little is known about the HIV risk profile of various sectors, except insofar as it relates to their respective demographic profiles.

The economic effects of the disease will be distributed unevenly across sectors, given differential labour cost structure in terms of replacement requirement, current benefits (medical and retirement, funeral etc) and the nature and level of HIV/AIDS interventions. Thus, in low risk sectors with a high proportion of low risk skilled and highly skilled workers, replacement cost may be higher, given the scarcity of such labour. On the other hand, high-risk sectors, employing unskilled and semi-skilled workers may have reduced benefit and replacement costs.

8.1. Impact on SMMEs and supply chains

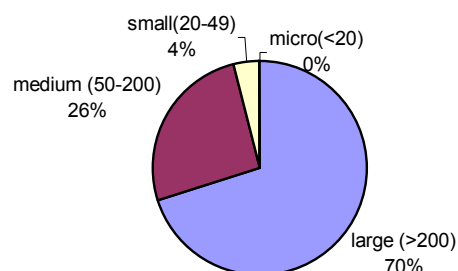
SMMEs are regarded in the policy-making environment as a key employment creator. However, SMMEs struggle to survive for a range of structural and institutional reasons. HIV/AIDS may worsen their capacity to survive.

Given the impact of globalisation and the drive for increased competitiveness, larger companies outsource productive or service activities to smaller companies. In doing so, large companies may also be shifting HIV risk on to smaller companies. Given poorer conditions of employment and lower wages in the latter companies, as well as the higher incidence of temporary and contractual work, an unstable lifestyle and consequent risky sexual behaviour patterns may manifest in SMMEs. As yet we know more about the low levels of response in SMMEs, and particularly small companies, as opposed to the level of HIV risk they face.

Very little is known about the distribution of HIV risk along the supply chain. Thus large firms may run the risk of AIDS-induced supply chain interruptions from suppliers and distributors, if they determine their own HIV risk exposure in isolation of risk in their supply chains. While this applies to all industries, it is particularly pertinent to export-oriented industries, given the risk-averse nature of multi-nationals in global supply chains.

Further, while most corporates can afford treatment and care to infected employees, the opposite is true for small, medium and micro-sized companies. Figure 5 shows that the bulk of HIV/AIDS services (prevalence surveys, VCT, etc.) is consumed by large companies, compared to SMEs (Connelly & Rosen, 2003). This implies that small companies have reduced capacity to manage the epidemic.



Figure 5: Purchasing of HIV/AIDS services by company size

[Source: Connelly and Rosen (2003)]

In the public sector, recent studies provide a slightly better grasp of the HIV/AIDS impact. Projections show that while HIV prevalence and AIDS death rates are relatively lower in the health sector, the general government sectors has among the highest rates (Quattek 2000). This largely relates to the predominance of low skilled employees in the latter sector. A recent study in the public education sector point out that HIV prevalence among teachers is 12.7%, in line with the adult population. This points towards increased future volatility in labour supply and turnover in critical public sub-sectors, which will impact negatively on the capacity and efficiency of government to deliver services to the general public and the private sector. AIDS related losses in the health sector have a direct consequence on the capacity to fulfil the government roll-out of anti-retroviral treatment and care.

8.2. Impact on the informal sector

Very little is known about the specific risk exposure of informal enterprises, but given the demographic profile (largely African, female, young and poorly educated), low skill and income levels, HIV prevalence levels are likely to be high. Moreover, informal activities are predominantly trade-related, which has an unstable nature, as traders are likely to be away from home more often, and exposed to hazardous conditions, including violence, ill health and so forth. The absence of medical benefits also implies that treatable conditions such as sexually transmitted infections (STIs) may create the conditions for HIV infection.

HIV/AIDS is likely to increase informal sector marginalisation in terms of employment and income. Cohen (2002) argues that the re-allocation of household savings towards increased health spending will reduce capital available for informal sector investment. In addition this re-allocation of consumer expenditure will also reduce the customer base, creating even larger losses of income. The lack of regulation in the sector poses an obstacle to information dissemination and education and awareness.

8.3. Implications for research gaps

The current sector projections are underpinned by limited empirical information. Differentiated sector HIV prevalence rates suggest that the differential risk environment in critical economic sectors need to be unpacked more systematically. This should move beyond demographic characteristics, including specific structural characteristics and other community-based factors that enhance or reduce susceptibility among subpopulations. Other factors include the extent to which HIV/AIDS will adversely impact on the capacity to grow labour intensive employment and value added production or services. Further, the supply chain impact in critical sectors (public and private) needs to be explored, as well as the HIV risk environment in the SMME and informal sector.



9. Private sector responses

This section reviews private sector responses to mitigate the impact of HIV/AIDS. Much of the response to HIV/AIDS has been concentrated within the formal sector; and there is an assumption that very little is happening in the informal sector. Even in the formal sector, the response has been uneven and diffuse, with large corporates, given access to financial resources, knowledge and information leading the establishment of best practice intervention. Small companies have been lagging behind others in their management of the epidemic, with medium-sized companies performing better. SABCOHA studies (BER 2004a; 2004b) show that manufacturing companies are showing more awareness of HIV/AIDS. However, in 2003-2004, only 13% and 17% of smaller companies had a HIV/AIDS policy, whereas medium-sized companies remained at just over 60%. Further, policy responses seem to be based on perceptions as only 14% of all companies had conducted an assessment of the impact on their workforces; 8% on production costs; and 6% on the consumer base. This may partly be attributed to the lack of affordability of HIV/AIDS services, especially for SMMEs.

The private sector response is still regarded as largely geared towards cost-reduction or cost-avoidance. Rosen *et al* (2003) describe the practice of shifting the AIDS cost burden away from employers to employees, government and households as 'burden-shifting'. Supporting studies cite the reduction of medical benefits and the replacement of defined retirement benefit schemes with defined contribution schemes as further evidence (Connelly, 2002; Rosen and Simon, 2003).

AIDS 'burden-shifting practices' effectively reduce the 'social security' safety net in the private sector. This can be potentially ruinous for unskilled and semi-skilled employees who generally have much reduced access to medical and retirement benefits, placing greater pressure on the public sector health and welfare systems.

However, more recently, in sections of the private sector there seems to be an increased appreciation that the long-term benefits of treatment and care may outweigh future AIDS-related costs. Anglo American argues that the benefits of its free antiretroviral treatment programme instituted in November 2002, "almost balance out" the cost of the intervention (Keeton, 19 June 2005). The conglomerate says that the programme has resulted in reduced absenteeism and improved productivity as the deaths and disability as a result of AIDS-related sickness are reduced. At least 95% of those on treatment, were still productive, and at work. Other non-measurable benefits such as motivation and morale also accrue, despite the negative effect of AIDS on its pension fund, for instance.

There is a clear need for companies in the private sector to regard AIDS intervention as an investment, and part of corporate social responsibility given the long term benefit of extending productive lives. Also, there is very linkage between the current state rollout of anti-retrovirals (ARV) and the private sector.

9.1. Implications for research gaps

Prevention programs are the most popular means of intervention, but need to be evaluated in terms of their effectiveness. These include changes in behaviours, reductions in the incidence of new infections etc. Further, costing the impact of AIDS intervention strategies over time needs to be extended to a wider range of sectors and company size categories.



10. Conclusion

The increased manifestation of the AIDS epidemic suggests that labour market trend analyses should start considering HIV/AIDS as a key co-factor. This is especially the case insofar as adverse micro-level impacts start feeding through at a macro-level as well. Finally, HIV/AIDS threatens efforts to address historical inequities in the labour market, requiring targeted and knowledge-driven interventions to mitigate its impact.

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12. Glossary

ELRC	Education Labour Relations Council
FET	Further Education and Training
HET	Higher Education and Training
STI	Sexually Transmitted Infection
SETA	Sector, Education and Training Authority
SMME	Small, Medium and Micro Enterprise
NSDS	National Skills Development Strategy



Endnotes

- ⁱ Some of the findings among Whites (10% prevalence among those with primary school) and Indians are unusual, and without further study cannot be regarded as conclusive.