



## The demographic impact of HIV and AIDS across the family and household life-cycle: implications for efforts to strengthen families in sub-Saharan Africa

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HIV is no longer a new or emerging disease in southern Africa. In the era of HIV and AIDS, families and households have continued to form, build, migrate and dissolve. Children born in the 1980s with the risk of mother-to-child HIV transmission have already gone on to start the next generation of families and households. Isolating the impact of HIV and AIDS on families and households is complex given that the epidemic has become part of the direction and force of contemporary demographic, social and economic processes and trends. Cycles of family and household life have occurred in a changing HIV and AIDS public-health environment, one in which HIV treatment access has increased rapidly. As part of an on-going process to assess the relevance and effectiveness of policies and programmes designed to protect and support children affected by HIV and AIDS, it is necessary to update our knowledge about the family and household circumstances in which children live. This paper summarises findings from a review on the “Demographic Evidence of Family and Household Changes in Response to the Effects of HIV/AIDS in Southern Africa: Implications for Efforts to Strengthen Families”. The review examined published literature presenting data from empirical studies, primarily large, cross-sectional or longitudinal population-based or sample surveys. The family or household life-cycle is used as a conceptual and organisational framework. The implications of the demographic evidence are discussed in relation to policy and programme responses to strengthen families and households in the region.

**Keywords:** demography; HIV/AIDS; families; households; demographic impact

### Introduction

More than two decades on from the start of the HIV epidemic, several countries in Africa have mature epidemics with stable or declining HIV incidence (UNAIDS, 2008a). During this period, families and households have continued to form, build, migrate and dissolve. Children born in the 1980s facing the risk of mother-to-child HIV transmission have already gone on to start the next generation of families and households. These cycles of family and household life have occurred in a recently changing HIV and AIDS public-health environment in which HIV treatment access has increased rapidly (UNAIDS, 2008b).

As part of an on-going process to assess the relevance and effectiveness of policies and programmes designed to protect and support children affected by HIV and AIDS, it is therefore necessary to continually update our knowledge about the family and household circumstances in which children live. It is difficult to completely isolate the socio-demographic effect of the HIV epidemic (Setel, 1999). HIV and AIDS are among a plethora of structural and behavioural processes and events that shape

contemporary African families and households. Any effect of the HIV epidemic is not loaded on top of the prevailing demographic, social and economic trends but has become part of their direction and force. Influences may occur in both directions, with these population factors affecting HIV transmission dynamics and AIDS mortality patterns. However, we can gain valuable insights by considering the way in which patterns and trends in social and residential arrangements are influenced by the direct and indirect consequences of the HIV epidemic.

This paper summarises the findings of a review paper commissioned as part of the Joint Learning Initiative on Children HIV/AIDS (JLICA) Learning Group on Strengthening Families: “Demographic Evidence of Family and Household Changes in Response to the Effects of HIV/AIDS in Southern Africa: Implications for Efforts to Strengthen Families” (Hosegood, 2008). The review examined published literature presenting data from empirical studies in order to identify evidence of demographic change in southern African families and households as a consequence of HIV and AIDS. The empirical studies reviewed primarily analysed cross-sectional or

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longitudinal data collected in large population-based and sample surveys. Conceptual and methodological issues related to HIV and AIDS demographic impact studies were also highlighted. In addition, the review discussed the implications of the demographic evidence for policy and programme responses to strengthen families and households in the region.

### ***Family and household life-cycle conceptual framework***

The review used the concept of a family or household life-cycle as a framework for examining evidence of HIV and AIDS demographic impact. In brief, the concept refers to the dynamic stages through which families and households may pass over time, and which are often linked to processes such as marriage, childbearing, children leaving home, death and dissolution (see for example, Murphy & Staples, 1979; Tienda, 1980; Wilkes, 1995). There is considerable heterogeneity in the exact living and kinship arrangements that each person, family or household experiences, nonetheless, in any population and period particular life-cycle stages and trajectories will be more common (normative) (Burch, 1995).

Why is this framework useful for examining the demographic impact of HIV and AIDS? Primarily because it encourages us to consider how social, demographic and economic factors shape contemporary, normative families and households, with or without experiences of HIV and AIDS. For example, increases in single-parent households may be a consequence of widowhood due to AIDS, however, the increase may also result from changes in marriage, divorce and marital fertility patterns, or even labour migration. The framework also ensures that we place as much emphasis on the early stages of family life, e.g., union formation and childbearing, as we do on the latter stages, e.g., older people living alone or household dissolution.

### **Summary of findings from the review**

#### ***Family and household formation and building***

Union formation and childbearing are central demographic events in the family and household life-cycle (Meekers & Calves, 1997; van Imhoff, Kuijsten, Hooimeijer, & van Wissen, 1995). Impacts of HIV and AIDS have been anticipated on: (a) union formation (age at marriage or first cohabiting union, type of union and subsequent re-marriage/partnering); (b) union instability (widowhood, divorce or separation); and (c) fertility (fecundity, fertility decisions and widowhood). However, understanding the complex inter-relationships between HIV and AIDS and these demographic processes is made

more difficult in many parts of sub-Saharan Africa, where declines in fertility and marriage were underway before the start of the HIV epidemic (Locoh, 1988). Since the late 1980s, fertility rates fell in most sub-Saharan African countries (Cohen, 1993). These demographic changes were accompanied by an increase in premarital childbearing and non-marital cohabitation, particularly in southern Africa (Van de Walle, 1993), factors with a strong influence on the way that families and households form.

#### ***Impact on marriage and re-marriage***

Qualitative studies in Uganda and Tanzania conducted early in the HIV epidemic suggested that due to concerns about HIV, young people might be delaying marriage, undergoing HIV testing before marriage or remaining unmarried (Lugalla et al., 2004; Mukiza-Gapere & Ntozi, 1995; Ntozi, 1997). However, while later empirical studies have examined the association between marital status and trajectories on HIV risk (see for example, Boerma, Gregson, Nyamukapa, & Urassa, 2003; Mermin et al., 2008), the association between HIV and AIDS attitudes and experiences and delayed age at first marriage or remaining unmarried has not been described.

In contrast, there is strong evidence that HIV and AIDS increases the risk of union instability, i.e., separation and divorce, and widowhood (Boerma et al., 2002; Floyd et al., 2008). In a longitudinal study of married couples in rural Malawi, the proportion of widowhood among partners of HIV-positive men and women was three times than the partners of HIV-negative people (Floyd et al., 2008). Parental bereavement due to child deaths may also have negative consequences for union stability (see for example, Wijngaards-de Meij et al., 2007), but has not been examined in relation to child AIDS deaths in sub-Saharan Africa.

The partnering and re-marriage of widows or widowers whose partners have died can have a profound effect on the social and residential arrangements not only for themselves but also for their own children and those of their new partners. While studies have examined re-marriage with or by people widowed due to AIDS in relation to HIV transmission dynamics (Bongaarts, 2007; Floyd et al., 2008; Gregory, 2005; Stein, Nyamathi, Ullman, & Bentler, 2006); little is known about the way in which future partnering choices made by a surviving parent influences the long-term impact of a parental death on children's health and wellbeing. Community knowledge and attitudes about HIV and AIDS have been shown to influence the partnering options available to widows and widowers. For example, levirate – the

practice by which a widow is subsequently married to her brother-in-law – has been transformed by the HIV epidemic as affected communities accelerated its abandonment or ritualisation (Beswick, 2002; Gausset, 2001; Lugalla et al., 2004; Malungo, 2001; Ntozi, 1997; Oleke, Blystad, & Rekdal, 2005; Welch & Martin, 1981).

#### *Impact of HIV on fertility and reproductive choices*

Childbearing is another major driver of family formation and building in southern Africa. A decade ago, researchers hypothesised that women and men at high risk of becoming infected with HIV would seek to increase the pace of childbearing in order to meet their fertility goals (see for example, Gregson, 1994; Temmerman et al., 1994). However, empirical data on trends in HIV and fertility has not borne this out. Instead, HIV has been shown to exert a downward pressure on fertility in HIV-infected people, and to a lesser extent on fertility in the general population in high prevalence countries (Heuveline, 2004). In HIV-infected people, many factors have been shown to contribute to reduced fertility including: biological effects on the fecundity of HIV-infected women (Ahdieh, 2001; Gregson, Zhuwau, Anderson, & Chandiwana, 1997; Ronsmans & Graham, 2006; van Leeuwen et al., 2007; Zaba & Gregson, 1998); and the indirect effects of reductions in sexual activity and new partners; a desire to avoid subsequent pregnancies; the use of condoms to prevent HIV transmission; and the negative impact of HIV and AIDS on the quality and stability of relationships (Feldblum et al., 2007; Tangmunkongvorakul et al., 1999; VanDevanter, Thacker, Bass, & Arnold, 1999). A review of empirical studies by Lewis, Ronsmans, Ezeh, and Gregson (2004) found that fertility was lower among HIV-infected women than HIV-uninfected women with the exception of those 15–19 years. In the youngest women, the pressure of sexual debut on pregnancy and HIV infection resulted in higher fertility rates among the HIV-infected (Lewis et al., 2004).

Although fertility is lower in HIV-infected women and men, the contribution of the HIV epidemic to fertility declines over the last two decades is unclear. This is in part because it has been difficult to isolate the impact on fertility declines amongst HIV-negative people in affected countries (Lewis et al., 2004), but also because fertility declines in most sub-Saharan African populations had begun before or around the same time that the HIV epidemic started (Heuveline, 2004). Modelling studies have estimated a substantive impact of HIV and AIDS in reducing population-level fertility, around 0.4% for each percentage increase in

HIV prevalence (Lewis et al., 2004; Terceira et al., 2003, Zaba & Gregson, 1998). However, to what extent these estimates of fertility reduction are being realised across the region has not been conclusively documented. Fertility declines may have stalled in at least one South Africa population with high HIV prevalence (Moultrie et al., 2008), and findings from Malawian studies showed weak or no association between HIV prevalence and fertility intentions, particularly in younger women (Ezeh, 2003; Noël-Miller, 2003).

It is little too soon for any impacts of recent increases in access to HIV treatment to be observed in population-level fertility data. As treatment programmes become more established it is also possible that a downward pressure on fertility might be ease off. Among heterosexual participants in higher-income country treatment programmes, there has been an increase in demand for medical interventions for conception, delivery and infertility (Delvaux & Nostlinger, 2007; van Leeuwen et al., 2007). Studies in South Africa have found that while participants are fearful about the possibility of infecting partners and children (Cooper et al., 2007), childbearing aspirations are high among HIV treatment participants, and increase with treatment duration and improvements in health (Myer, Morroni, & Rebe, 2007).

#### *Family and household dissolution and migration*

On the other end of the cycle from family formation are the events and processes associated with the dissolution of families and households. While there is a tendency in the HIV and AIDS impact literature to describe household dissolution as a wholly negative event, such a characterisation fails to recognise that dissolution is an intrinsic part of the normative household life-cycle. Household dissolution will often be unrelated to HIV and AIDS, for example, upon divorce or as older people move in with younger relatives. Even if related to HIV and AIDS, the dissolution of a household can in some cases be a successful strategy on the part of its members to ameliorate its adverse consequences.

In the review we consider household migration alongside household dissolution. Household migration often occurs around the same time that households dissolve and results in new social and residential arrangements for adults and children. Moreover, some longitudinal household studies conflate the processes of household migration and household dissolution.

HIV and AIDS have been postulated to increase the risk of household dissolution and migration through several pathways including: (a) adult death

(death of the last adult member or death of a household head, main income earner and primary caregiver); (b) economic vulnerability due to increased costs/reduced income (household members disperse either through migration and/or joining other households); (c) widowhood and survival (surviving partner joins another household); and (d) widowhood and subsequent re-marriage (surviving partner (and children) joins another household upon re-marriage).

Longitudinal data is required to observe the effect of HIV and AIDS on household dissolution and migration (Hosegood et al., 2007b; Booyesen & Arntz, 2003). Two studies using demographic surveillance data in two high HIV prevalence populations in Tanzania and South Africa had similar findings (Hosegood, McGrath, Herbst, & Timæus, 2004; Urassa et al., 2001). They found no association between the risk of household dissolution and whether the cause of death of a prime-aged adult was AIDS or non-AIDS. However, households experiencing multiple adult deaths within the previous two years were at an increased risk of dissolving. In Tanzania, household dissolution was significantly increased if the household experienced the death of a male household head, in particular a younger head (<60 years) (Urassa et al., 2001). For households in the South African study, the likelihood of household dissolution was highest when one or more members died due to violence or accidents (Hosegood et al., 2004).

#### *Household composition and living arrangements, in particular of children*

The review next turns to the stages between household formation and dissolution in order to examine evidence for an impact of HIV and AIDS on household size and composition, and whether the impact has affected the social and residential arrangements of children. In countries undergoing transitions in family and household demography (Bongaarts, 2001; Locoh, 1988), impact might be suggested by the extent of departure from prevailing trends after the start of the HIV epidemic, i.e., a counterfactual or “benchmark household living arrangements” (Heuveline, 2004). However, not only are such contemporary trends far from clearly identified in southern Africa, but other economic, social and demographic determinants are also subject to change.

#### *Changes in household size and composition*

Studies examining the impact of “prime-aged” adult deaths (defined variously but often between 15 and 50 years) on household size and composition

using longitudinal, household data have very mixed results. In rural Uganda, household size declined by approximately one person following a prime-age adult death (Menon, Wawer, Konde-Lule, Sewanlambo, & Li, 1998), whereas in rural Tanzania, despite prime-aged adult deaths households maintained their size and dependency ratios (Ainsworth & Semali, 1995). Studies using household panel surveys in Kenya, Malawi, Mozambique, Rwanda and Zambia suggest that although average household size declined in households experiencing a prime-age adult deaths, the average number of prime-age adults in affected households actually increased (Mather et al., 2004). The effect on household size was dependent on the age, sex and position of the member(s) who died, for example, households with a female prime-age death were twice as likely as non-affected households to attract a new prime-age female (Mather et al., 2004). In contrast, the death of a household head, particularly a female head, was associated with a reduction in the household prime-aged adult size (Yamano & Jayne, 2004). Studies in rural South Africa show that while average household size declined over the period 1996–2003 there was a concomitant increase in extended, complex household types, such as multi-generational or related households (Madhavan & Schatz, 2007; Wittenberg & Collinson, 2007).

#### *Changes in the children’s living arrangements*

Comparative studies of household survey data in southern Africa reveal the considerable heterogeneity in children’s living arrangements. One striking finding is the variation in children’s social and co-residential arrangements with their parents. In Botswana, Namibia and South Africa a much lower proportion of non-orphaned children co-reside with parents than in other countries in the region (Hill, Hosegood, & Newell, 2008; Monasch & Boerma, 2004). This phenomenon can be attributed largely to differences in the patterns of marriage and labour migration (Hosegood, McGrath, & Moultrie, 2009; Spiegel, 1987).

The consequences of orphaning for children’s living arrangements is one of the most widely discussed impacts of HIV and AIDS. While the definitions and methods used in the measurement of orphanhood are subject to debate (Grassly & Timæus, 2005; Hosegood et al., 2007a; Meintjes & Geise, 2006; Sherr, Varrall, Mueller, & JLICA Learning group 1, 2008); there is unequivocal evidence from multiple sample and population-based surveys that all types of orphanhood have risen since the start of the epidemic in southern Africa (Bicego, Rutstein, & Johnson, 2003; Hosegood et al., 2007a; Monasch & Boerma,

2004). The rate of increase and the relative proportions of maternal, paternal and double orphans in each population are determined by the age – and sex patterns of adult mortality from AIDS and non-AIDS. The diversity of normative family and household arrangements creates differences in the living arrangements of children whose parents become ill or die. For example, the proportion of maternal orphans living with their father in rural Malawi is almost double (68%) that in South Africa (38%) (Hosegood et al., 2007a).

Irrespective of these variations, population-based or national household surveys suggest that the majority of children in southern Africa, whether orphans or non-orphans, are members of households with at least one surviving parent. It is therefore, important to consider how this finding fits with predictions that the HIV epidemic will, or indeed has, led to an increase in the proportion of children living without parents or prime-aged adults, i.e., in households with no adult members (child-headed households) or households where the only adult members are older adults and/or grandparents (skip-generation households) (Lloyd, 2008; Sachs & Sachs, 2004).

A comparative analysis of 40 sub-Saharan Africa surveys conducted between 1999 and 2005 identified very few child-headed households (<1%) (Monasch & Boerma, 2004). Studies analysing data collected in four longitudinal, population-based surveys in high HIV prevalence areas of Malawi, Tanzania and South Africa, identify few or no child-headed households despite large increases in orphanhood (Floyd, Marston, Hosegood, Scholten, & Zaba, 2005; Hill et al., 2008; Hosegood et al., 2007a; Madhavan & Schatz, 2007; Wittenberg & Collinson, 2007). Similarly, less than 1% of households enrolled in five different South African national household surveys conducted between 1995 and 2005 were composed only of children (<18 years) (Desmond & Richter, 2008).

While the prevalence of skip-generation households reported in southern African household surveys is higher than that of child-headed households, nonetheless they are also not common. In an analysis of Demographic and Health Survey (DHS) data in 17 sub-Saharan African countries, the prevalence of skip-generation households had not risen markedly despite increasing rates of orphanhood (Bicego et al., 2003). In Uganda, the prevalence of such households was less than 1% in 1992 and 1.6% in 1995 (Ntozi & Zirimenya, 1999). In several South African studies, the proportion of skip-generation households in the last 10 years was found to be less than 3% (Hosegood & Timæus, 2005b; Merli & Palloni, 2004; Noubissi & Zuberi, 2001; Wittenberg & Collinson, 2007).

## Discussion

Box 1 summarises the reviews' six main findings. While the HIV epidemic has taken a huge toll on families and households, there is no empirical evidence of large-scale increases in the kind of extreme social phenomena, such as child-headed households, that attracts so much commentary and donor responses. Instead, its demographic impact on children's living arrangements occurs through more nuanced demographic changes, for example, if their bereaved parent remarries, other adults join their household to assist with their care and support, or if HIV-positive parents receive HIV treatment and go on to have more children. However, much less attention has been given to the health and welfare outcomes of these types of changes in children's lives.

Examining the demographic evidence using the framework of the family and household life-cycle highlighted several areas that have received little research or programmatic attention. The focus on impacts due to adult AIDS deaths, whether on household dissolution or orphans, has over-shadowed

### **Box 1. Impact of HIV and AIDS on families and households supported by evidence from empirical studies.**

1. HIV and AIDS have been shown to have direct and indirect effects on fertility, in particular reducing fecundity in HIV-infected individuals; nonetheless, the epidemic is only a secondary determinant of fertility decline in African countries.
2. The HIV epidemic has been shown to impact on widowhood and widow inheritance traditions, however, there are few empirical studies examining whether there has been an effect on marriage rates or age at first marriage.
3. Adult AIDS mortality is associated with increased risk of household dissolution when the deceased is the household head or multiple deaths have occurred.
4. Household size appears to be buffered against the effect of adult mortality due to AIDS. The impact on household composition is to increase the proportion of extended, complex households rather than smaller, nuclear households.
5. The majority of non-orphans and orphans live with surviving parents, with the exception of maternal orphans in some southern African countries.
6. There is no evidence for a substantive increase in the proportion of households headed by children or skip-generation households.

our knowledge of the way in which HIV and AIDS may have shaped family and household formation and building. However, it is the processes of generation and extension that are key to understanding changes in the families and households.

Four main implications for efforts to strengthen families and households emerge from this review of the evidence for the demographic impact of the HIV epidemic.

*1. Efforts to strengthen families should prioritise support for parents*

Young adults are the drivers of family and household life. Not only do they form relationships, bear and raise children, in most households they are the income generators, providers of labour and care to younger and older generations, and forge and maintain the households' social networks. Despite the rapid and severe HIV epidemic, the majority of children affected in southern Africa continue to live with or be supported by one or both parents. Thus parents and children need to be placed in the centre of programme responses rather than at the margins. Madhavan and Schatz (2007) have described child-headed and skipped generation households as "fragile families". These households certainly exist and may be more likely to emerge following an adult AIDS death. However, these studies suggest that the members of such households or their relatives can actively seek to rearrange such atypical household arrangements. The reviews add weight to concerns about the widespread use of orphanhood or household composition as isolated screening indicators to identify vulnerable children (Desmond & Richter, 2008; Hosegood et al., 2007a; Meintjes & Geise, 2006).

*2. More information is needed about the impact of HIV and AIDS on marriage and partnership*

Most children in Africa are born within unions, mostly marital unions. In seeking to strengthen families and households, more attention should be given to understanding and mitigating the impact of the HIV epidemic on marriage and partnership patterns. Support to couples facing the challenges of coping with HIV and AIDS as partners and parents can take many forms, ranging from involving partners in HIV/AIDS prevention and treatment programmes to couples-focused counselling addressing wider issues of communication and coping. Understanding how marital and family dynamics evolve in the era of HIV treatment, as well as how they influence people's experience of illness, mortality and

treatment, will enable better planning of these treatment programmes.

*3. The demographic impact of the epidemic on children, families and households may profoundly change in the era of HIV treatment*

At the time of previous reviews examining the impact of HIV and AIDS on household structure in Africa were written, for example by Belsey (2005) and Heuveline (2004), HIV treatment for the prevention of mother-to-child transmission, warranted little or no discussion. Today, the reality of treatment, or perhaps even the possibility that treatment might be available, may modify or re-direct the way in which families and households respond to HIV and AIDS. Improvements in health and survival post-infection, together with changes in the fertility and reproductive choices for HIV-positive people and their partners; could potentially influence family formation, building, union formation and stability, and children's care and residential arrangements. While it may be premature to look for evidence of treatment-related impacts on family and household demographic processes, studies in southern Africa have started to explore reproductive attitudes and behaviour of HIV-positive people and their partners in the context of treatment (see for example, Myer et al., 2007). In order to ensure that existing HIV and AIDS mitigation efforts remain relevant in the era of treatment, it is necessary to anticipate and document the consequences of HIV treatment for families and households. As well as ensuring that information and support for couples and families are integrated into treatment programmes in southern Africa.

*4. Greater use should be made of empirical data from the regions' national and population-based censuses, surveys and surveillance system*

In the early 1990s, researchers and policy makers decried the lack of empirical data with which to monitor the impact of HIV and AIDS on families and households in sub-Saharan Africa (Barnett & Whiteside, 2000). Many studies have subsequently tried to fill this knowledge gap using primary and secondary data from a variety of sources including censuses, demographic and health surveys, household panel studies and demographic surveillance systems. It is therefore troubling that these empirical findings appear to be overlooked or set aside during the formulation or re-direction of HIV and AIDS programmes and policies. This is clearly illustrated by the contrast between the evidence that child-headed and skip-generation households remain rare even in

high HIV prevalence populations and the amount of targeted support for children living in such extreme household types.

In conclusion, there have been considerable advances in the collection of the kind of longitudinal demographic data needed in order to measure the impact of HIV and AIDS on children, families and households (Booyesen & Arntz, 2003; Hosegood, Benzler, & Solarsh, 2005a). Should policy makers and donors feel that the existing data contributes little or no information of value to assist in their development or prioritisation of programmes to strengthen families, such agencies have considerable leverage to motivate for the collection, analysis and presentation of additional family and household data.

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