

Socio-demographic Implications of HIV/AIDS in Malawi

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Abstract: Malawi is one of the countries in the sub-Saharan Africa with high prevalence of HIV/AIDS. This paper analyzes socio-demographic effects using estimates and projections by the United Nations Population Division. It compares estimates and projections for both short term (2005-2020) and also long term (1980-2050), with the reality of HIV/AIDS and without the scenario of it. Detailed comparisons are made on population structure and main demographic processes for Malawi (mortality and fertility). The paper compares stock and period indicators, including life expectancy, crude birth rates, crude death rates, age specific fertility rates and child dependency ratios. Considerable effects of HIV/AIDS on mortality and child dependency ratios are observed with the highest point of impact around 1995. With the HIV/AIDS scenario, there is about 6-13 years of reduction in life expectancy at birth for the period from 1995 to 2050. Most likely, persisting HIV/AIDS demographic impacts will continue perpetuating socio-demographic impacts.

Keywords: Child Dependency Ratio, Fertility, HIV/AIDS, Life Expectancy, Malawi, Mortality.

INTRODUCTION

Malawi

Malawi faces many socioeconomic and demographic challenges, including rapid population growth, low economic growth, high levels of inequality and poverty, food insecurity and a high level HIV/AIDS epidemic [1-6]. The economy is agro-based whereby agriculture accounts for 30% of the gross domestic product [7]. Tobacco farming is the main cash crop and main source of foreign exchange earnings for the country. Tobacco farming is labor intensive and is the biggest source of employment in the country [8, 9]. However, tobacco farming is also increasingly under threat due to global anti-smoking campaigns [10]. Poor economic conditions imperil the already struggling public health system [11].

Although Malawi is superficially westernized (that is, western consumption patterns have a wider appeal), the country is somewhat traditional and conservative especially in rural areas where about 85% of the population lives [12, 13]. Hitherto, public discussions on sexual behaviors had been taboo.

HIV/AIDS

The HIV/AIDS pandemic is one of the deadliest epidemics of modern times. Sub-Saharan Africa, including Malawi, is at the epicenter of the epidemic [14, 15]. AIDS deaths are concentrated among young adults and children. The reason for the large impact of the epidemic among young adults is that sexual intercourse is the dominant mode of HIV transmission, especially in sub-Saharan Africa. The secondary mode of transmission, from infected mother to infant around the time of birth, leads to substantial infection levels among

infants in countries where fertility is high and mother-to-child prevention measures are inadequate.

This HIV/AIDS scenario asserts considerable economic and socio-demographic effects. Among the most affected are young professionals and skilled young adults. This affects critical accumulation of both human and financial capital for economic growth [16]. The World Bank declared HIV/AIDS an economic crisis in 2000 [17]. It is estimated that per capita growth in some of the countries in sub-Saharan Africa has fallen by about 0.5 to 1.2% [18]. The HIV/AIDS impact on life expectancy at 15 years of age amounts to reductions of over 10 years in most Southern Africa countries [19, 20]. Age 15 is at the beginning of the reproductive span and just before the average age at first sexual intercourse in many countries, including Malawi where the average age at first sexual intercourse is about 17 and 18 years of age for females and males respectively [20]. This is particularly noted because the main mode of HIV transmission in Southern Africa is through unprotected heterosexual intercourse [21]. In [22], in addition to analyzing the demographic impact of HIV/AIDS, the United Nations also highlights the impact of HIV/AIDS on families and households, and on agricultural sustainability, business, the health sector, education and national economic growth. Some detailed and summarized analyses of socioeconomic effects of HIV/AIDS in Malawi are discussed in [2-6, 9, 11, 14, 18, 23-35].

This paper highlights some of the socioeconomic effects of HIV/AIDS in Malawi and focuses on the socio-demographic impacts.

LITERATURE REVIEW

Previously, effects of HIV/AIDS on the economy, social fabric, sexual behavior, agriculture, and the labor force had been analyzed in great depth [23]. However little is known about the effects of HIV/AIDS on demographic parameters. Main HIV/AIDS drivers have been poverty, sexually trans-

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mitted infections, migration (both internal and also the international labor migration to South Africa), gender inequality, stigmatization, harmful traditional practices and risky behavior patterns [25, 36-39]. Risky behavior patterns include views on safe sex and use of condoms, among others. Furthermore, in traditional Malawi, sexual topics have been taboo. Initially, deaths due to HIV/AIDS could not be disclosed as such but rather attributed to witchcraft. Thus response to HIV/AIDS was slow.

It is particularly important to note that a) HIV/AIDS and poverty are mutually reinforcing; b) HIV/AIDS has a severe impact on agriculture and food security; c) HIV/AIDS has weakened the public sector and the civil service; d) HIV/AIDS has gender implications; e) and also there is now an increased knowledge and signs of behavioral change [23]. HIV/AIDS impacts on livelihoods include direct costs e.g. medical expenditure, funeral expenses, hiring temporary labor, emergency sale of assets or borrowing to meet unexpected and increased costs. Other costs include caring for children orphaned by HIV/AIDS. Economic impacts of HIV/AIDS in several sectors of the economy, as well as case studies on some of the biggest firms in Malawi have also been documented [8].

Macroeconomic impacts of HIV/AIDS studied in [23] include economic growth, in particular the evolution of GDP, capital stock and productivity, human and financial capital accumulation, and labor supply. Also included are effects of HIV/AIDS on the real economy (agriculture and manufacturing). Earlier on, Cuddington and Hancock [26] concluded that HIV/AIDS would have substantial impact on the economic performance for Malawi. Other researchers have commented on the negative impact of the epidemic on economic development for Africa in general [40] and Malawi in particular [15].

Public sectors affected by HIV/AIDS include health, education, and security services, including the police and the army. There are human resource shortages and worker absenteeism due to morbidity and workers going to funeral ceremonies [6, 41]. These affect service delivery, expenditure on human resource, staff morale and workload. There is a perpetual need for training as experienced and skilled staff members prematurely die due to HIV/AIDS. Several authors have discussed effects of the crisis on education in high prevalence countries [27-29, 41-43].

Gender implications of HIV/AIDS include the creation of an environment which is more disadvantageous to women and girls. For example, HIV/AIDS-related morbidity and mortality affect time use for women [30, 44]. Women are increasing their already overloaded time-share for household chores and engage in laborious income generating activities to compensate for lost income or cover increased expenses. HIV/AIDS also has a severe impact on agriculture and food security [2, 23, 31, 45, 46] especially for women and girls.

Also considered in [23] are responses and consequences, especially economic and social implications in a short to medium term period, say by 2015. Demographic effects are briefly considered. These include impacts on population structure and also on key demographic indicators e.g. mortality rates, life expectancy at birth, infant and under-five mortality rates, maternal mortality ratios and, total fertility rates.

Poverty, Culture and HIV/AIDS in Malawi

One of the main factors that fuelled HIV/AIDS in Malawi is behavior [47]. There was a very slow response to adapt practices for safe sex, especially in cases of casual relationships and commercial sex industry. To some extent, there has been also some cultural practices that exposed individuals to risks of infection. Risky cultural practices include “*kulowa fumbi*” i.e. a practice in some rural areas whereby girls take part in sexual intercourse during initiation ceremonies at menarche [21, 48]. Furthermore, a widow also might undergo this practice after the death of her husband. Other similar cultural practices include child marriages, marriage by abduction, virginity testing, polygamy, “*fisi*” and “*chokolo*” [49]. *Chokolo* refers to a practice whereby widowed women are expected or obliged to remarry a close relative of the deceased husband whereas *fisi* refers to a practice of hiring a man to have sex with a married woman if the husband is believed to be impotent. *Fisi* also refers to a hired man having sex with girls at initiation or virginity testing ceremonies [48]. Poverty plays some roles in reinforcing some of the conditions that perpetuate HIV/AIDS including polygamy, the commercial sex industry and inadequate general health and nutritional status of the population [21].

Epidemiological and Socioeconomic Effects of HIV/AIDS in Malawi

There are many links between health and economic development [24, 40]. However, economic consequences of HIV/AIDS are difficult to precisely quantify [15, 16, 23]. For example, [50-52] give some approaches to quantifying economic effects and also [32, 33] model different scenarios of HIV/AIDS and their effects on rural household livelihoods and economy in Malawi.

It is important to note that the epidemiology of HIV/AIDS in Malawi is also a gender issue. For example, HIV prevalence among population aged 15-24 is 5.2% for females and only 1.9% for males [7]. Malawian women become infected with HIV at younger ages than men for both biological and behavioral reasons [21]. Although reasons are not fully understood, some of the contributing behavioral factors would be that girls become sexually active earlier and with older partners than their male counterparts; and conditions under which sexual intercourse take place are more controlled by men rather than women. For example, use of male condom is more practical and accessible than female condoms. Also, high male-to-female transmissibility of HIV compared to female-to-male transmissibility is considered likely to play a significant role. But there is limited evidence of an association between intravaginal practices that are practiced in Malawi and vaginal infections, which in turn may be associated with HIV acquisition [21].

Another problem exacerbated by HIV/AIDS in Malawi is the high prevalence of orphanhood, which increases children vulnerability. For example, it is more likely that an orphan is denied schooling and is exposed to child labor or other exploitive forms of labor [53].

Increased Knowledge and Signs of Behavioral Change

There is ample evidence that knowledge about HIV/AIDS among the population at large has increased to a point where it may be considered to be reasonably good [20,

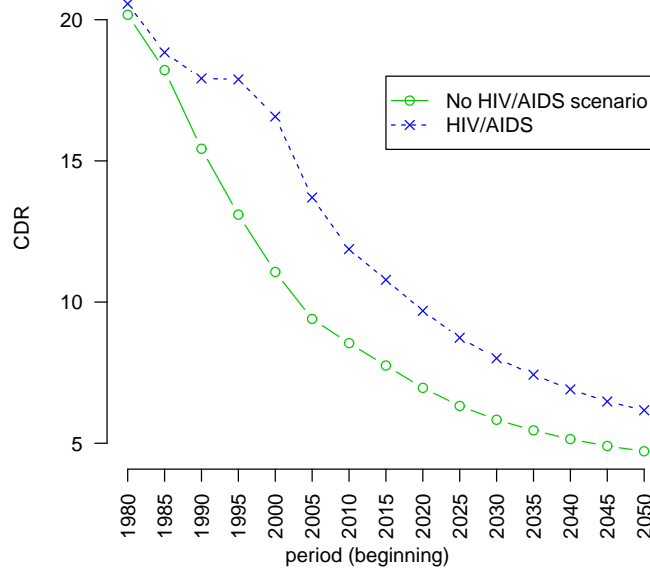


Fig. (1). Crude death rates for five-year periods: 1980-2050.

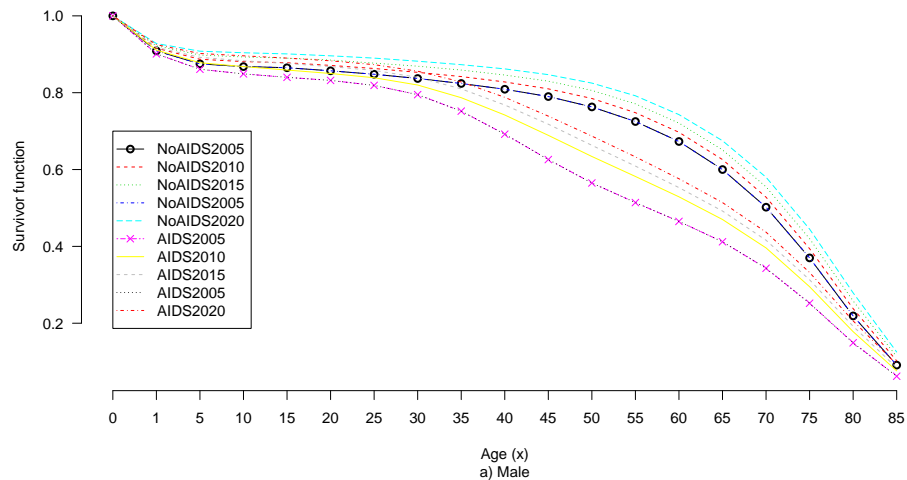


Fig. (2). Survivor function for 2005, 2010, 2015 and 2020.

21]. Most people are aware of the danger of contracting the disease and have at least some rudimentary knowledge about how to protect themselves against the risk. There is also evidence that this knowledge is slowly being translated into behavioral change. This is crucial for reducing the spread of infection, which in turn is the single most important factor determining the future of the society concerned. Achievements to date suggest that this is a battle that can be won. However, achieving sustainable behavioral change will require addressing the problem of poverty as well as that of the position of women.

DATA AND METHODS

Some detailed and summarized analyses of socioeconomic effects of HIV/AIDS are discussed in [14, 23, 24]. This paper highlights some of the socioeconomic effects of HIV/AIDS and considers socio-demographic effects in much more detail. Detailed comparisons are made on population structure, mortality and fertility for Malawi, with and without the reality of HIV/AIDS. Estimates and projections computed by United Nations, Department of Economic and Social Affairs, Population Division [54] are used in this study.

DEMOGRAPHIC EFFECTS OF HIV/AIDS IN MALAWI

The HIV/AIDS epidemic is having huge demographic impacts on population dynamics, especially on mortality but also fertility [14]. Furthermore, the paper considers effects on age structure and population growth.

Mortality

HIV/AIDS is the most common cause of death in sub-Saharan Africa [14]. That is, HIV/AIDS is slashing life expectancy in many sub-Saharan African countries, including Malawi [24]. Fig. (1) shows crude death rates with and without HIV/AIDS. The HIV/AIDS impact is conspicuous between 1990 and 2000 where the downward mortality trend was stopped. After 2000, mortality rates, as measured by crude death rates started the downward trend of pre-HIV/AIDS crisis. Without HIV/AIDS epidemic, the survivor function would have been considerably rectangularized by 2010 (Fig. 2). Fig. (3) is life expectancy at birth for five-year periods from 1980 to 2050 whereas Fig. (4) is life expectancy at specific ages. It is important to note that life expect-

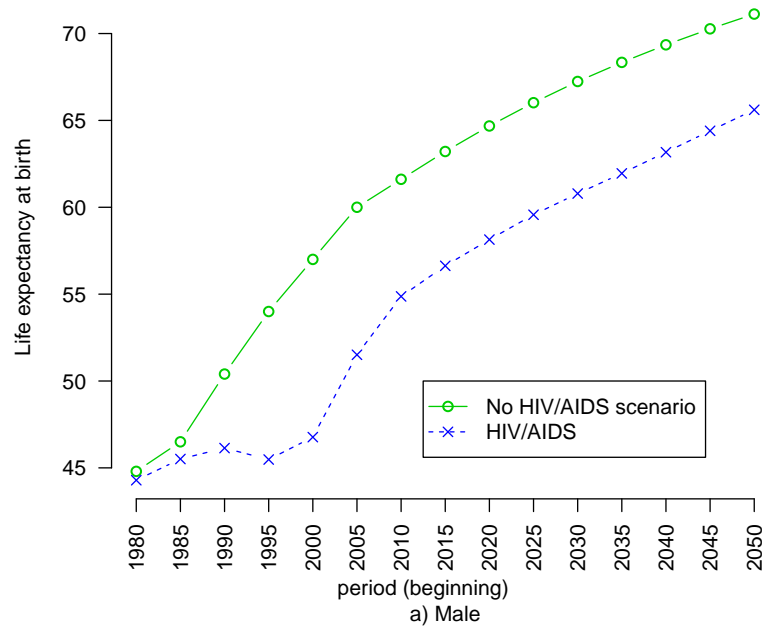


Fig. (3). Life expectancy at birth for five-year periods: 1980-2050.

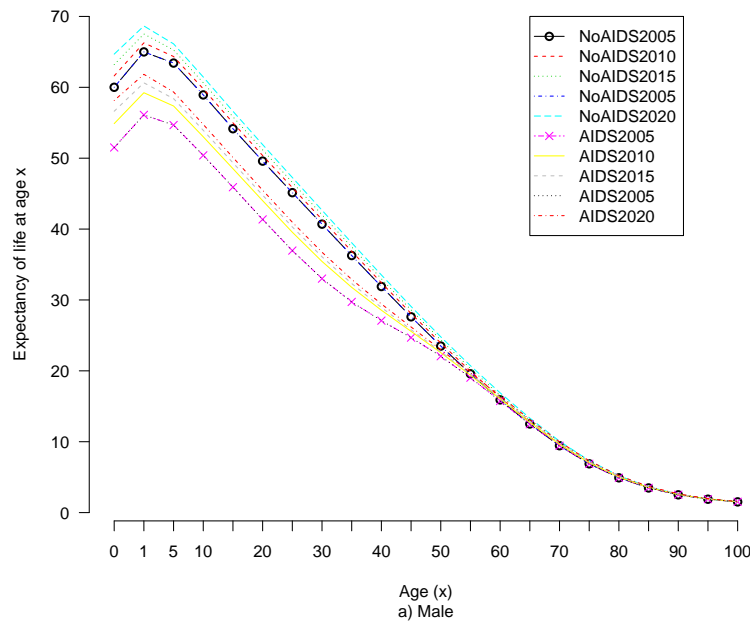


Fig. (4). Life expectancy at specific ages.

tancy profiles for 2005 and 2010 with HIV/AIDS reality are comparable with 2008 census data [12]. Thus assumptions for the United Nations population data are quite robust.

Fertility

HIV/AIDS is observed to affect fertility especially for older HIV positive women. Fertility is believed to decline mainly for physiological reasons [55]. However, there might also be some general social and behavioral responses to the HIV/AIDS epidemic. There could be changes in sexual behaviors to avoid infection. It is observed that HIV/AIDS in Malawi increases the probability that a young woman would give birth to her first child, while it decreases fertility for older women and also young women who have already given birth [55]. Fig. (5) shows crude birth rates for five-year periods: 1980-2050. Fertility as measured by crude birth rates

was lower with HIV/AIDS epidemic before 2000 and somehow rose after that. This could be a response to high mortality rates. However, it is important to note that changes in fertility rates have been conservative for the country within this period and are sensitive to methodological and parameter assumptions. Nonetheless, crude birth rates are expected to remain high until 2015. Age-specific fertility rates do not significantly change from 2005 to 2020 (Fig. 6). HIV/AIDS seems to have minimal impact on fertility in Malawi. Higher crude birth rates might be as a result of the feedback sensitivity to high mortality rates experienced in the 1990s.

Age Structure

AIDS related deaths are altering the age structure of populations. As previously noted, most HIV/AIDS deaths occur in childhood and prime working ages with most infec-

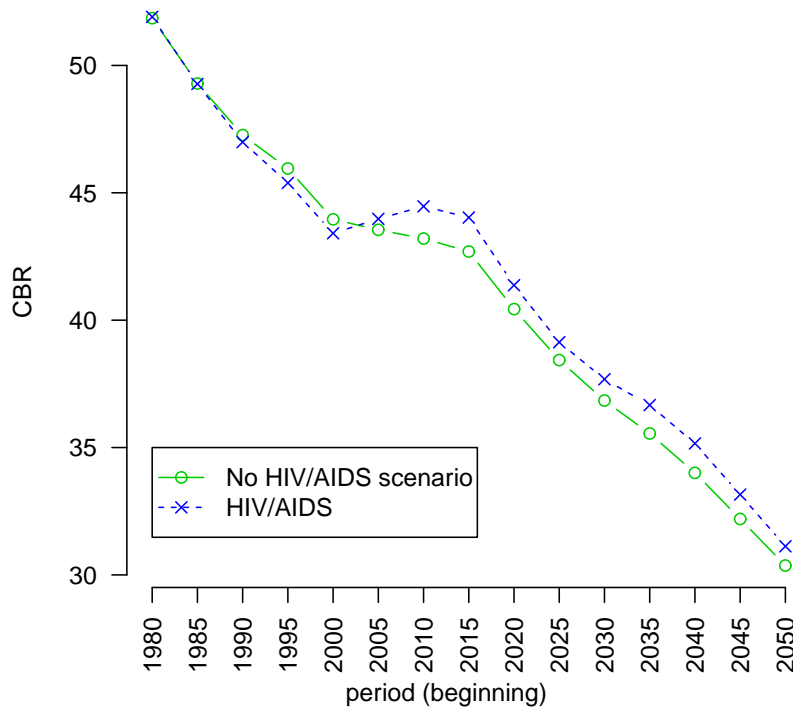


Fig. (5). Crude birth rates for five-year periods: 1980-2050.

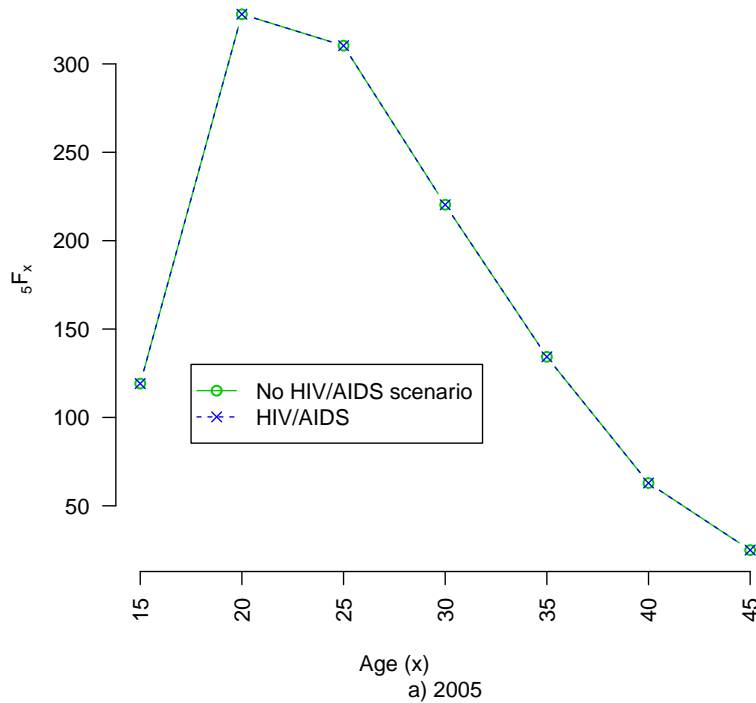


Fig. (6). Age specific fertility rates for five-year period: 2005-2020.

tions occurring during the adolescence or young adulthood [14]. Some infections are also mother-to-child transmissions. Fig. (7) shows attrition of age pyramids between 30 and 60 years of age. Furthermore, there is also attrition below 15 years of age which would be due to deaths of children infected by mother-to-child transmission. The fertility analysis above would hardly suggest any attrition below 15 years of age due to slowed population growth because of uncompleted fertility of individuals dying during the reproductive period or reduced fertility in older HIV positive women.

Fig. (8) shows child dependency ratio. Effects of HIV/AIDS are clear after 1995 when the dependency ratio abruptly increased. This would be caused mainly by higher mortality rates for ages 15 years and above. However, some contribution is from deceleration of the downward trend for fertility rates (Fig. 5). It is important to note that child dependency ratios are probably very sensitive to projection assumptions, and especially assumed fertility profiles. Slight increments in fertility, even in the case of no HIV/AIDS scenario, result into substantial increments in child dependency ratios.

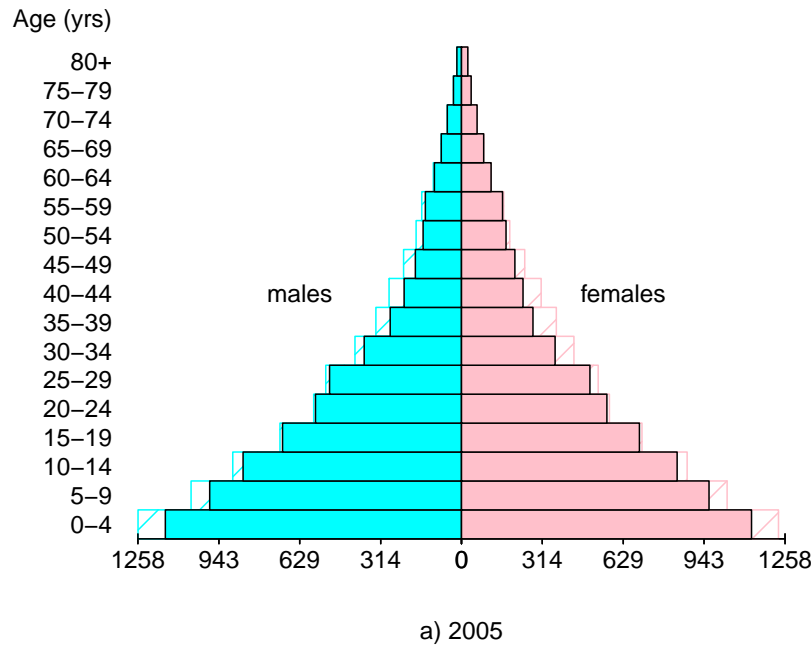


Fig. (7). Population pyramids for 2005, 2010, 2015 and 2020. Mesh areas represent pyramids with no HIV/AIDS scenario.

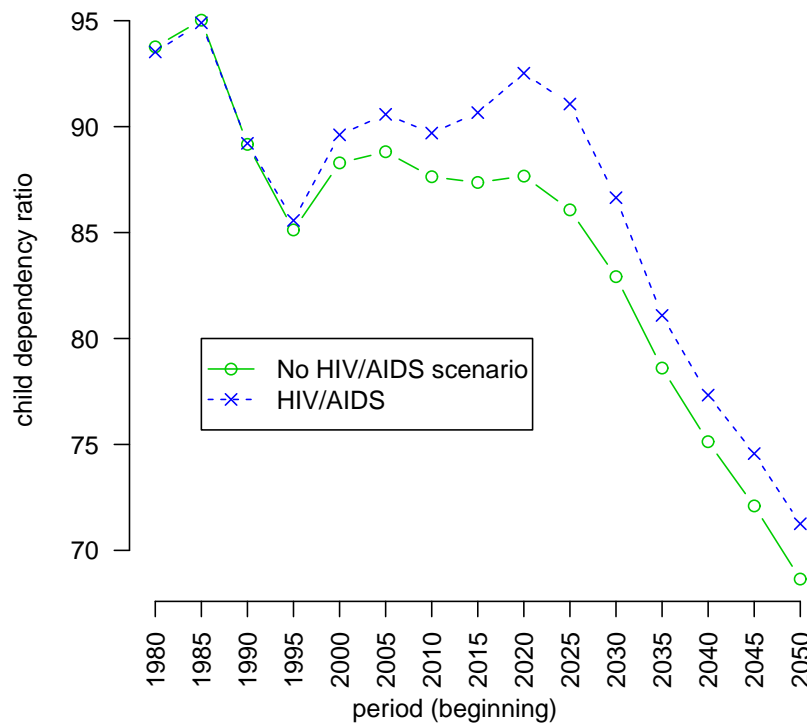


Fig. (8). Child dependency ratios for five-year periods: 1980-2050.

Population Growth

As in other countries with HIV/AIDS epidemics in sub-Saharan Africa, general mortality rates have increased and life expectancy has dropped in the past two decades in Malawi (however it is important to note that child mortality has somehow been decreasing particularly in light of the Millennium Development Goals [56]). But, fertility rates are high and the epidemic has not led to population decline [13]. Fig. (9) shows population growth rates for five-year periods. HIV/AIDS impacts are clear for the period 1995-2015. High population growth (boom) is observed around 1985 (this is

not an error – the population growth matches with population figures not shown here but available in [54]), which was followed by a crash around 1990 (probably caused or exacerbated by socioeconomic problems around this period – famine and poor economy).

DISCUSSION

This paper has analyzed and described socio-demographic implications of HIV/AIDS in Malawi based on United Nations population data models for HIV/AIDS and no HIV/AIDS scenarios. The paper profiles the implications

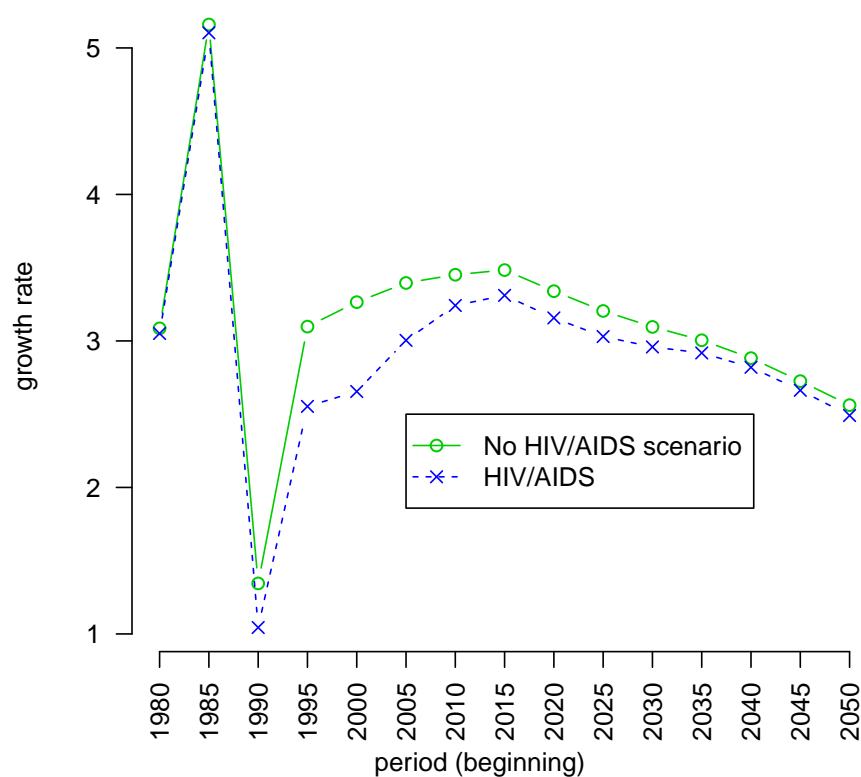


Fig. (9). Population growth rates for five-year periods: 1980-2050.

and their timeframe. The close match between United Nations population projections and the reality on the ground, as validated by the census data strongly support assumptions on demographic parameters used in the United Nations data models in the Malawian context.

The primary effect of HIV/AIDS is an increase in morbidity and mortality. Demographic impacts can easily be assessed or modeled. However, socioeconomic conditions, especially effects on macroeconomic factors, are difficult to project. Certainly, other factors e.g. political and economic policies play very critical roles. For example, despite HIV/AIDS effects, the economy in Malawi registered some growth after some political and economic liberalization in 1994 [8]. There was also considerable economic growth between 2005 and 2009. Furthermore, relationships between HIV/AIDS and economic factors may be bi-directional [2]. That is, economic conditions may also exacerbate the HIV/AIDS epidemic.

Some improvements in the levels or trends of indicators are due to various responses to the effect of HIV/AIDS. Though limited, some improvements include behavioral changes, attitudes towards HIV/AIDS and infected people. There are also on-going changes to traditional practices. Thus behavioral changes and traditional practices are happening simultaneously at different levels (both societal and individual levels).

There have also been mitigating responses to the effects of HIV/AIDS, including increasing number of orphanages [57, 58]. The extended family system has also contributed to mitigating against the dire situation on orphanhood [34, 57]. However the system may have come close to the breaking point, especially that increasingly older people e.g. grandparents have been taking responsibilities to raise orphans [6,

59, 60]. Seemingly with the worst situation over, hopefully the system will hold on and not break down.

Public education and health are some of public sectors that have been heavily impacted by the HIV/AIDS epidemic. Yet, education and health are among the most important tools or outcomes for human and economic development. There have been some achievements in the health management for HIV/AIDS positive patients (through the provision of free anti-viral drugs, facilitated by international organizations). However there have been little tangible achievements in mitigating against public health and education sectors in general. Possible responses by the education sector to the HIV/AIDS crisis in high prevalence countries are well discussed in the literature [28, 42]. Also [15], comments on possible policy changes to mitigate on economic development. However, limited human resource, infrastructure, political leadership and financial capacities are usual challenges in resource-poor settings, which support a vicious circle of poverty, corruption, disease and underdevelopment.

CONCLUSION

Considerable effects of HIV/AIDS on mortality and child dependency ratios have been observed. The point of highest impact seems to be around 1995. Thereafter improved trends are observed in some of the indicators. Deteriorating mortality conditions stabilized after 1995 and started turning for the better after 2000. Because of high fertility rates, child dependency ratios do not improve until 2020. HIV/AIDS impacts persist up to 2050. With the HIV/AIDS scenario, there is about 6-13 years of reduction in life expectancy at birth for the period from 1995 to 2050.

There have been substantial socioeconomic consequences. Particularly, human resource and financial capital

have been severely impacted by the epidemic. Certainly, persisting demographic impacts with the HIV/AIDS scenario will perpetuate socioeconomic impacts in the days ahead.

CONFLICT OF INTEREST

The authors confirm that this article content has no conflicts of interest.

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