A Life Course and Cross-Level Approach to the Study of HIV/Aids in Africa

Abstract

The social science approach to HIV/Aids research has been tilted excessively in favour of socio-cultural behavioural issues which can distort and mislead. Reviewing the literature on HIV/Aids in sub-Saharan Africa reveals that much of the problem emanates from the lack of an integrated approach, one that simultaneously takes into account the different levels of social life and the timing of events in individuals' age groups and historical periods. I argue in this paper for an approach that follows a life course perspective. This assumes that the interaction between culture and individual behaviour is mediated by historical location, social relationships, and the life stages of individuals and groups. I therefore propose a research design for the study of HIV/Aids based on this perspective, arguing for a multilevel approach that makes use of available information from demographic and health surveys. I provide some examples of how this approach might work and conclude with suggestions for comparative research studies of HIV/Aids in Africa.

The Current State of HIV/Aids Research in Africa

Aids is growing at an alarming rate in sub-Saharan Africa in all sectors of society. However, we still lack a comprehensive theoretical or methodological perspective that would help us understand the transmission, dis-

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tribution and impact of the disease in relation to social structures and relationships. Most studies of HIV/Aids have been inspired mainly by bio-medical perspectives and have focused on specific high-risk groups. This has made it difficult to generalise and understand the structures and dynamics of the epidemic

on a larger scale. In addition individual-level surveys have predominated, as they are the building blocks of many intervention programs such as safer sex campaigns. Decosas (2002) argues that individual-level reductionist analyses of the causation of HIV/Aids are still dominant in Africa because of the commercial interests of the pharmaceutical and biotechnology sectors. Other studies have tried to draw conclusions from regional-level correlations between different lifestyles and HIV prevalence. However these mostly use aggregate-level information and poorly operationalised concepts, making their conclusions unconvincing from a causal point of view.

At the early stages of the epidemic, the disease was geographically clustered in certain areas with common socio-cultural practices. This led some social scientists to draw causal arguments from the association between these socio-cultural practices and high rates of HIV prevalence. For example Caldwell and others try to explain the high HIV prevalence rates in the capital cities of the "uncircumcising belt" in southeast Africa and in East Africa on the fact that some major ethnic communities in these areas do not practise circumcision (Caldwell *et al.*1989; Caldwell and Caldwell 1993). Inspired by such correlations they made culture central in the causal mechanisms of HIV/Aids. To substantiate this link, they used ethnographic studies and argued that belief systems regarding issues such as sexuality and virginity influence prevalence rates in most African societies. Their central thesis is the importance of understanding sub-Saharan African societies and the role of sexual relations within them. They acknowledge such risk factors as living in an urban environment, having a large number of sexual partners and suffering from genital lesions, but they fall short in linking socio-cultural factors with individual behaviour. Their problem has to do with both their data and their interpretation of it.

One obvious problem is the use of cultural ethnographies written decades ago to explain contemporary phenomena. The treatment of small-level cultural practices as explanatory evidence conceals the dynamics of cultural change. In a continent which has been undergoing massive social changes in terms of urbanisation and cultural diffusion, it is problematic to treat traditional practices as ready-made predictors of the relative risk of HIV/Aids. When we note that the disease is much more prevalent in cities and along transportation routes, the arguments based on traditional cultures become even more suspect. Instead of focusing on traditional cultures, it would be more helpful to look at emerging cultural orientations and worldviews in urban areas for example. In general interest in culture has led to macro-level associations and the use of generalised descriptions of both ideas and behaviour in African societies (Lockwood 1995).

Of course socio-cultural factors influence sexual practices and make some groups more susceptible to HIV infection. Llifestyles play a dominant role in determining individual chances of infection. UNAIDS (1999) holds that socio-cultural factors must be considered because complex behaviours such as sex take place in socio-cultural contexts. Some cultural practices may directly interact with the biomedical mechanism of the disease transmission (e.g., lack of male circumcision), but most affect the individual's chances of infection indirectly; they influence attitudes and predispositions towards safer or more dangerous behaviours. However, the mechanisms that link socio-cultural factors to HIV infection are so complex, and mediated by so many factors at different levels of social structure, that a very careful approach is required.

On the issue of circumcision, for example, the findings of Caldwell and Caldwell (1993) could simply be dismissed as inaccurate, as the disease has progressed far into the northeastern and southwestern parts of the original belt. Moreover their approach uses aggregate-level measures to predict individual behaviour. Nevertheless, in addition to the regional-level associations, the link between lack of male circumcision and HIV prevalence is consistent with clinic based case-control studies (Bongaarts, 1999) and small, comparative, individual level surveys in cities in Kenya and Zambia in the east and in Cameroon and Benin in the west (UNAids 1999b). However the relationship between male circumcision and HIV prevalence is neither constant nor definitive, even though circumcision is physically related to the risk of HIV infection. Research has found that the effect of male circumcision is not constant for all age groups. A study by Kelly *et al.* (1998) in rural Uganda found that a lower prevalence of HIV-1 was associated with pre-pubertal circumcision across all educational, ethnic and religious groups.

However circumcision after age 20 was not significantly protective. The study argues that the man's age at circumcision and the reasons for circumcision need to be considered. This shows that the timing of events is crucial in understanding the effects of any cultural event. If a practice which relates so directly to the physiology of HIV infection can be so variable with relation to age, we can expect even more variability and unpredictability concerning less direct socio-cultural factors.

Moreover the relationship between HIV/Aids and socio-cultural structures is not one-way. The epidemic is changing socio-cultural structures. From an intervention perspective, changing the attitudes and practices that encourage high-risk behaviour is critical. Culture thus plays a central role in safe-sex behaviour, since the use of condoms, for example, is highly correlated with lower rates of infection. A UNAIDS study (1999c) in Uganda found a clear correlation between declining HIV prevalence in urban areas and behavioural data showing a growing adoption of safer sex among youths. On the other hand the use of condoms in sub-Saharan Africa is minimal both in the high and low prevalence HIV areas (Philipson and Posner 1996). Although the role of socio-cultural factors in the persistence of unsafe sex practices is salient, safe sex practices are also related to other factors. Philipson and Posner (1996: 837) argue that the long incubation period of the disease retards recognition of its dangers and how to avoid them. Lack of education results in misconceptions about the disease and lower adult life expectancy reduces the expected cost of Aids. It can also be argued that in environments characterised by conflict and population displacements, the benefits of safe sex appear lower than in a stable population with high life expectancy. Moreover once HIV infection becomes common in a population, and in the absence of widespread testing that would enable individuals to determine their status, the average benefit of safe sex declines. In fact women who perceive themselves to be at high risk of being already infected tend to self-select to prostitution (Philipson and Posner 1996: 842). Therefore it appears that there are a great many factors that undermine the choice to practice safer sex. In short, apart from the knowledge or information about HIV/Aids transmission or protection, an individual's capacity to engage in con-

sistent and effective risk reduction is contingent upon a number of complex, large-scale socio-economic forces (Clatts 1995).

These forces influence the agency of individuals in terms of their risk perception, behaviour and decisions. Nevertheless such macro-structural factors have different impacts based on a person's age, social networks and relationships, the social characteristics of the individual's age group and the history of the society the individual is living in. To sum up, structural and cultural factors affect individuals' perceptions and behaviour, but they do so differently based on various factors. It is the interactions between these different factors at different levels of social life that creates different results in risk behaviour. The challenge is to be able to study these factors at the same time in order to determine their interactions.

Lessons from the Life Course Perspective

The growing field of life course sociology offers an important lesson towards an integrative approach to the study of HIV/Aids in Africa. It does so in two ways. First life course sociology is important in conceptualising the link between socio-cultural factors and HIV risk, as it integrates the historical and cultural location of an individual's life, the linked nature of human lives in social relationships and the human agency of individual lives in relation to the timing of life events. Second the multilevel perspective of the life course approach recognises the location of individuals in a hierarchy of social structures and thus enables the analysis of cross-level causal relations.

The life course approach is creative in integrating different traditions of looking at the relationship between social structure and individual lives. Broadly conceived it has four principles: the principle of historical time and location, the principle of linked lives, the principle of agency and the principle of timing (Giele and Elder 1998). The first principle recognises that lives are embedded in different cultures and at different periods of world and local history. Individual behaviour is shaped by the historical times and places a person experiences over his or her lifetime (Elder 1998). Just as we cannot expect all individuals in a given group to share the same culture, we cannot expect the culture to be cons-

tant in time and space. There is always variation according to time and location. The task therefore is to understand the effects of such variations on individual behaviour. In Africa great variations in cultural patterns exist within countries and regions. This makes it dangerous to generalise about individual behaviour without considering such variations (Zabin and Kiragu 1998). Moreover we need to take into account the historical times and experiences that countries and their citizens are living through and as people born in different birth cohorts experience them. The second principle of the life course approach, the principle of linked lives, looks at the social ties in the life course of an individual. Culture is always mediated by a person's social relationships and networks. For example gender perceptions and expectations, which are critical factors in the HIV/Aids pandemic, are instilled by society as a whole but reinforced – or altered – by peer pressure. Several studies, for example Billy *et al*. (1994), have shown that adolescent sexual behaviour is strongly shaped by the surrounding social contexts.

To return to Caldwell *et al.* (1989), their explanation of the role of sexual networking in HIV transmission stresses that it is not just the number of sexual partners but also the identity of the persons involved that matters. As the movement of people leads to high demands for commercial sex services and dense networks of sexual relationships, infectivity is likely to be highest when relatively few women have contacts with large numbers of men. Orubuloye, Caldwell and Caldwell (1992) call this the "female foci of infection." However, in East Africa sexual networks tend to be focused around professional prostitutes, while in West Africa people tend to have multiple sexual partners in life, so the network is more diffuse. Similarly Van de Walle (1990) argues that when female virginity at marriage is valued and prostitution tolerated, there is a higher risk of STDs, including Aids, than in other societies where women and men are expected to have several partners in their lifetimes. Bongaarts (1996) points out that a self-sustaining epidemic can occur in a population with a given level of infectivity per contact only if a threshold rate of sexual contact with different partners has been exceeded. Lives are lived interdependently, and interactions and networks affect outcomes.

The principle of agency in the life course approach concerns individuals' perceptions, behaviours and decisions. An individual's agency is influenced by the two principles discussed above, but it is distinct in itself. People who are of different ages and belong to different birth cohorts can be expected to experience a cultural practice or an economic crisis differently. However different behavioural outcomes are also found among people of similar social and age groups. In addition to being influenced by historical location and time and by linked lives, agency is also related to individual characteristics such as education, temperament, intelligence and so on. For many young people in Africa agency is created and recreated in trying to break with tradition and the past in search of their future. Eventually, it is changes in the agency state that will determine the course of the epidemic. This principle concerns the timing of life events as a strategic adaptation by individuals. All the other principles come together through the funnel of timing. Whatever a person's social location and cultural heritage, friendship and networks or personal motivations, all are experienced in time through the individual's adaptation to concrete situations and events (Giele and Elder 1998:10). Timing refers to the intersection of the concepts of age, period and cohort. The intersection of location in time (period), agency (age) and linked lives (cohort) produces different trajectories or life patterns among different age groups. It is this integration of history, culture and biography that makes life course a better approach. From a research design viewpoint it is vital to take timing into account. This is the only way to understand the antecedents and consequences of behaviour and behavioural patterns in human lives.

Timetables and temporal expectations indicate where we are in our lives and the social expectations characterising our lives. The timing of events is the common medium for linking human agency, social relationships and geographical and historical locations to account for the shape of the individual life course (Giele 1998). For example age at first sex is a time marker but is also determined by where it happened (in or away from one's home town), how the choice was made (through peer pressure or within marriage) and with whom (with a prostitute or a marriage partner). The timing of events can also

tell us whether individuals follow typical sequences in getting their education, then securing employment and then getting married, for example, or if there is a different sequencing that affects the behavioural patterns individuals will have. Biological timing – the timing of maturation and aging – is another dimension. Differences in biological timing affect individual behaviours and the social expectations that follow. In historical periods the timing of events and their sequencing change through interactions with discrete historical changes or cycles of socio-economic events (Shanahan 2000). This is why the period of transition to adulthood is compressed in the USA (Modell *et al*, 1976), whereas in Africa, as Zabin and Kiragu (1998) argue, evidence has shown that that in some cultures age at first sexual experience has remained the same across cohorts. In the end changes in the timing of events and their sequencing results in different behavioural outcomes. Equally important are normative expectations and age identity (Neugarten and Datan 1996). How old people feel affects how they are going to behave. In Africa the "sugar daddy" phenomenon is often cited to explain why older men have sexual relationships with young girls, but this may reflect as much on how older men look and feel about their age as on social expectations. Such mismatches will always create problems. We need to study this, as the timing of sexual encounters is directly related to the risk of infection. It is estimated that controlling the HIV/Aids epidemic depends on reducing young girls' sexual contacts with older men (Zabin and Kiragu, 1998).

As we have seen, the life course approach takes into account the individual's actions and decisions, relationships and social location, historical and cultural location and the timing of the individual's life both in terms of belonging to a cohort and in terms of the actual age of the individual and how he or she feels about this. The question remains how to incorporate all these different elements and determine the relative significance of each in relation to individual behaviour. This takes us to the second point I made at the start of this section. The advantage of the life course approach is its ability to integrate structural and dynamic approaches in a comprehensive way that takes into account many levels of social structure (Giele and Elder 1998; Riley 1998). The multilevel process linked by aging, structural location and experience in historical time exposes a complex mixture of causal relations and temporal-historical contingencies (O'Rand 1998: 67). For example Elder's seminal work, *Children of the Great Depression* (1974), pioneered a sociological approach linking large-scale social changes to the individual's life course. Elder showed how the economic depression of the 1920s and 1930s affected individuals of different social backgrounds and age groups differently. The life course approach brings different levels of social life together in order to understand human behaviour and its interactions with structural factors. From a different approach, but with much the same analytical objective, Decosas (2002) argues for a social ecology approach that views Aids from multiple levels of analysis.

Bah (2000) categorises two variants of the models that integrate behavioural assumptions into the analysis of HIV infection. One represents behaviour aggregates instead of individuals, while the other uses micro-simulations to represent individual behaviours. As we have seen, most of the studies in Africa so far seem to follow the former pattern, while those that use individual units lack detailed behavioural data that would enable the role of socio-cultural factors to be tested. The same division also seems to be prevalent in life course studies. Riley (1998) observes that life course research tends to either: (1) use groups as research units and characterise individual members by group level properties; (2) use individuals as the research units and characterise individuals by properties of the groups to which they belong as well as by individual level properties, or (3) a combination of these two methods.

The combination of the two, which Riley calls the social system approach, uses both groups and individuals as research units and identifies which individuals belong to which groups. This method combines the advantages of the other two, enabling the researcher to explore both the independent and the interactive effects of both community and individual variables. It provides a way to link individual behaviour with larger social units. For example several studies have demonstrated that sexual behaviour is shaped not just by individual level characteristics, but also by the surrounding social context (Billy *et al.* 1994). A recent study by Bloom *et al.* (2002) found that in rural Tanzania men and women who live in villages with high levels of social and economic activity are at much higher risk of being HIV-positive. Both individual and community level characteristics provide individuals with an opportunity structure and normative environment that affect attitudes and behaviours. With the development of the statistical technique in hierarchical modelling, studying individual and community level effects at the same time is possible

Towards a Synthesis and Research Design

In sub-Saharan Africa at the present time the incubation period of HIV is getting shorter, and people are developing Aids soon after infection. This results from either the modes of transmission or the degree of exposure to other diseases. Polloni (1995) holds that the changes are more closely related to patterns of geographic and social diffusion than to shifts in modes of transmission. He argues that the dynamics of the epidemic depend on its spread within high-risk groups, the degree of contact between high-risk groups and the general population, and the main modes of transmission within the general population. Therefore the study of socio-cultural issues remains important but requires an approach that places them systematically in the life course of individuals. To understand the importance of the various socio-cultural factors in affecting the biomedical mechanisms of HIV transmission and the relative risks across social and cultural groups and periods, we need individuals' life history information. To better capture life events and their timing in the life course paradigm, longitudinal studies on cohorts are needed. A longitudinal research design would enable patterns of change in an individual to be traced so as to understand the true importance of certain explanatory variables that are often taken for granted (Rajulton and Ravanera 2000). It would also reveal the longitudinal timing of events and age-oriented goals and their affects on sexual behaviour. However longitudinal data collection may not be feasible in the study of HIV/Aids. It is time-consuming, but the epidemic needs research to be done soon. We cannot afford to wait for data to accumulate. Thus it is more feasible to start with the analysis of available cross-sectional data.

The most important task right now is to integrate across levels of analysis rather

than follow individuals across time. The demographic and health surveys of many countries in Africa include life history data on individuals. This data could be stacked to create a longitudinal analysis, thus making possible cross national and cross community studies within a nation. Such studies should be capable of linking social structural and individual behaviour. As I argued earlier, the analysis of multilevel data is not only conceptually interesting, it is now possible as a result of advances in analysis techniques. Multilevel or hierarchical linear modeling (HLM) techniques are available for studying how hierarchical structures and interactions among covariates affect outcome variables (Bryk and Raudenbush 1992; Goldstein 1995; Gamoran 1992). For example, if we are interested in individual perceptions of the risk of HIV/Aids, information which is available in most DHS surveys, we can determine if any variation observed in the perception is simply a result of individual differences or depends upon cultural or regional affiliations. We can also predict the differences by group level characteristics. We can also see if perceptions differ across countries by specifying country level variables of interest. For example, using data from fifteen World Fertility Survey (WFS) countries, Entwistle, Mason and Hermalin (1986) studied the contraceptive behaviour of couples as a function of socio-economic origins at the individual level, the gross national product per capita (GNP) and family planning efforts at country level. We can study cross national differences by including national differences in HIV infection rates, services available, national development levels and other important variables as predictors of risky behaviour and safe sex behaviour at the individual and the country level simultaneously. Here the main assumption we are making -- and can test – is that risk perception is a social group quality even though we collect information at the individual level. Decosas (2002) offers an important concept of "community HIV competence" that is a collective attribute as indicated by the mean risk profile of communities. He means that the community's HIV competence is an attribute in itself even though its effects are felt at the level of individuals.

To further elaborate this point, let me briefly discuss the results of an exploratory case study I did from the DHS data. I wanted to know if the variations observed in the risk perception of HIV/Aids were a result of individual differences or cultural and regional differences and, if the latter, whether the variations could be predicted by group level characteristics. I used the Kenya DHS 1998 (women sample) and the HLM model. I tested whether there was significant random variation in risk perception among religious groups, ethnic groups and regions, and found marginal random variations for region and ethnic group but not for religion. I used the 530 clusters treated as sampling units in the survey with the assumption that norms are most likely to be generated within smaller, homogenous settings such as neighborhoods. The results showed that risk perception varied among women within their communities as well as among women of different communities. In other words there was a significant variation in the mean perception of risk among different clusters. The results indicate that there are significant differences between communities and that we need community level measures that account for these differences. As to the variation within communities, individual level variables such as age and education may explain the differences in risk perception. I am not fully reporting the results here because I am only interested in demonstrating what a multilevel approach can accomplish. With well-stated hypotheses and research problems, more advanced causal propositions can be tested.

Another possible area of research would be the prevalence of safer sex practices. Studying the process and correlates of safer sex behaviour is vital for understanding how changes get institutionalised and for designing effective interventions. The task is to determine what correlates with behavioural change in relation to such things as the severity of the epidemic, the information campaigns that have been done and the educational and economic systems of the society. By studying social change and life pattern innovations, life course researchers can clarify which innovations are likely to become the norm and then document the changes in other institutions that will be required (Giele 1998). A normative change in life course pattern is evident when the new pattern becomes institutionalized and then reproduced through socialization processes and cultural expectations. For example the emergence and sustainability of safer sexual behaviour in individuals and communities is influenced by trends in the larger society and mediated by the social experiences of birth cohorts. Studying this requires a research design that compares successive age cohorts in order to identify the start of an innovation and then trace its growth into a trend (Giele 1998). We can use inter-cohort comparisons to contrast life events across age groups and to identify the nature and extent of innovations. Intra-cohort comparisons can then be used to determine why certain individuals in an age group become pioneers of behavioural change while others do not. We can also see if innovators are more likely to come from certain social groups or have certain kinds of relationships. For example are those who use condoms more likely to read newspapers, communicate with the larger communities or come from communities with such characteristics? The same questions can be asked across nations. Cross-national comparisons of similar age groups can illuminate the macroeconomic, societal and cultural conditions that foster or retard a particular innovation (Giele 1998).

On the other hand the prevalence of HIV/Aids is changing societies in many different ways. If we want to know how social-cultural relations are changing in response to the HIV/Aids epidemic, we could for example study birth cohorts and their relationship to specific events and experiences (Elder and Pellerin 1998). In this case the issue would be the risk of exposure to HIV/Aids measured at the individual and community level and the differential effects on various socio-demographic and cultural outcomes. Using similar methods further cross-national research could be on differences among youth of the same age category, particularly with regard to the timing and sequencing of transitions to adulthood in different contexts either as causes or consequences of HIV/Aids-related behaviours. Research also needs to be done into the question of the level of social aggregation at which cultural and other social explanatory factors can be conceptualised, measured and tested. For example are ethnic groups, religious groups or smaller neighborhood communities the levels at which the main behaviours pertaining to HIV/Aids derive? What measures and indicators of the several explanatory factors can be developed? Similarly we need to disaggregate national figures of HIV prevalence to sub-national levels to use as predictors of differences in different life events among social groups at those

levels. Thinking in terms of social aggregate characteristics would clear the way for a more empirical and methodological approach.

Conclusion

In this paper I have approached the study of HIV/Aids in Africa from a social science perspective, arguing that life course methodology, used systematically, will help develop a better understanding of the HIV/Aids epidemic on the continent. Understanding the social patterns of the disease is vital, and therefore an approach that can integrate all the potential factors that affect the spread of HIV/Aids is urgent. The approach I argue for here would enable the most empirically significant factors to be isolated. I have tried to show that starting out by studying a number of research problems based on available data will help us refine the necessary conceptual, analytical and methodological tools.

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