

Social factors contributing to differences in HIV infection between South Africa and Bangladesh

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Abstract

The objective is to draw attention to the importance of social, cultural, economic and political factors as causes of the HIV/AIDS epidemic in South Africa by comparing the current situation in this country with Bangladesh where there is no HIV/AIDS epidemic. We also pay special attention to the interrelatedness of the various factors and for this reason these are classified into three groups: proximate, intermediate and distal or underlying factors. Evidence is provided showing substantial differences, at the level of proximate factors, in high-risk sexual and other behaviour between South Africa and Bangladesh. This difference in high-risk behaviour between the two countries is – at the intermediate level - partly due to the characteristics and functioning of the formal (marriage) and informal sexual union systems (premarital and extramarital sex). These differences are, at the underlying or distal level, influenced by economic and political developments in the past two centuries in both countries. We draw conclusions on the implications of the findings for development of HIV/AIDS strategies and policies in both countries at the end.

Introduction

It is well known that social and economic factors are important determinants of the HIV/AIDS epidemic in South Africa (e.g., Barnett & Whiteside, 2002). These factors express themselves differently in different settings and one way to find out more about the specific factors operating in South Africa is to make a comparison with another country where there is no HIV/AIDS epidemic (or at least not yet). The country we will use for purposes of comparison is Bangladesh.

We also want to focus on the interrelatedness of the various social factors and we propose to do this by making use of a model describing the various causes and their inter-relationships. The model we will work with has similarities with the one designed by Barnett and Whiteside (2002), but we have made several modifications. It focuses on heterosexual transmission and has the following independent groups of factors: proximate, intermediate and distal or underlying. Each of these groups will be discussed in turn. The dependent variable of the model is HIV infection.

The model contains two groups of proximate variables. One is called Biological: e.g., virus subtype, sex/gender, age, male circumcision, presence

of other Sexually Transmitted Infections (STIs). The other is Sexual Behaviour: e.g., age at sexual debut, sex in formal (marriage) and informal unions, type of informal unions (premarital and extramarital), type of sex, frequency of sexual relations, number of partners (serial, concurrent), commercial and non-commercial sex, use of condoms.

There are also two groups of groups of intermediate factors: One is called the Formal Sexual or Family System and refers to characteristics of and processes taking place in the family: e.g., type of partnership (marriage, cohabitation and polygyny), marital status, type of family (nuclear vs. extended family), level of education of partners, household income. The other is the Informal Sexual Union System and deals with aspects of the functioning of informal sexual unions: e.g., premarital and extramarital sexual relations, sex related to workplace (transactional or commercial sex in vicinity of compounds for miners and truck stops), other types of commercial sex and non-commercial sex. The influence of intermediate factors can be either direct or can work through the proximate factors.

The distal variables are called Economic and Political Systems (national level): e.g., per capita income, economic equality/inequality, type of economy, labour migration, type of government (democracy, one-party system, etc.), participation of population in decision-making, apartheid and colonialism. The impact of the distal factors can be direct or can work through the intermediate factors.

Data and methods

Our aim is to determine the impact of key variables at each of the three levels of the model on HIV infection in both South Africa and Bangladesh. As much as possible quantitative comparisons are made.

The quantitative data come from censuses and national registration systems (e.g., marital status), national surveys dealing with topics such as sexual and related behaviour (Demographic and Health Surveys) (e.g., use of condoms) and national and local surveys dealing with epidemiologic aspects (e.g., STIs).

We also focus on several factors on which results exist obtained from sciences using qualitative methods in particular history and anthropology. Qualitative information is important, because it complements quantitative information. The qualitative information we will provide is especially relevant for describing the impact of factors at the intermediate and distal levels on HIV infection.

Background information on South Africa and Bangladesh is provided in Table 1. Both South Africa and Bangladesh have several population groups. These groups differ (especially in South Africa) in HIV infection rates and HIV related behaviour. However, due to lack of data it is not possible to go into these differences and, therefore, we will for the most part deal with both countries as a whole.

(Table 1 here)

Results.

Proximate factors.

Figures are provided on South Africa and Bangladesh on three proximate variables with a known impact on prevalence of HIV.

The first is prevalence of informal sexual unions (Table 2). The percentage of unmarried men 15-49 years old who had premarital sex was much higher in South Africa (53.9) than in Bangladesh (21.9). The percentage of married men in the same age group with extramarital sex in Bangladesh was 11.9. It was not possible to find suitable data on this topic in South Africa. A rough indication on the level of this activity in this country is that 14.4 % of men 25-49 years old reported to have had two or more partners in 2005 in the past 12 months (Shisana et al., 2005).

Table 2 (bottom panel) shows that the percentage of men in age group 15-49 years using condoms during last premarital or extramarital sexual intercourse is higher in South Africa (60.3) than in Bangladesh (40.3). Data for condom use in the whole population (unmarried and married) 15-49 years old are only available in South Africa. Of the males 15 – 49 years old, 47.3 % used condoms during the last sexual intercourse (in 2005) while 37.2 % of women used a condom (Shisana et al., 2005).

(Table 2 here)

Table 3 provides two comparisons on prevalence of other STIs. Prevalence is higher in South Africa than in Bangladesh for both women (top panel) and men (bottom panel). Differences are larger between women than men, but this could be due to features of data collection procedures used. Laboratory tests were the data collection method for women in both countries and the data were not nationally representative. The data for men were on perceptions of STIs collected in nationally representative cross-sectional sample surveys.

(Table 3 here)

The data presented above show substantial differences in high-risk behaviour between South Africa and Bangladesh. These data are supplemented by a series of qualitative judgments with respect to five proximate variables in both countries (Table 4). For nearly all indicators susceptibility towards HIV is higher in South Africa than in Bangladesh. The exception is use of condoms. We would have liked to include more variables that are important in the transmission of HIV infection in particular occurrence of concurrent partnerships and rate of partnership change, but this was not possible due to lack of data.

(Table 4 here)

Intermediate factors.

The first of four factors considered is marital status. Table 5 shows that the percentage of persons 15-49 years old who had not married was much higher in South Africa (e.g., 48.3 % for women) than in Bangladesh (16.6 %). The married state was also less common in South Africa than in Bangladesh. About 10 percent of South Africans lived together without formally being married, an arrangement that hardly exists in Bangladesh. Even when the married and cohabiting states are added together, they occur in South Africa less frequently than in Bangladesh.

(Table 5 here)

Data on median age at sexual debut and at marriage are provided in Table 6. For women in South Africa there is a difference of about 7 years between average age at first sexual intercourse and marriage. It is likely that this is also the case for South African men. This is in sharp contrast with Bangladesh where there is for men a difference of about 2 years between sexual debut and marriage. Also noticeable in Bangladesh is the difference between men and women: men became sexually active much later and married much later than women.

(Table 6 here)

A third difference between the two countries deals with household headship (Table 7). In South Africa 58 % of households was headed by men (usually with a spouse present) and 42 % by women (usually without a husband). This is in sharp contrast with Bangladesh where the percentages were 90 and 10 respectively. Differences are even larger between rural areas in both countries. The differences between the two countries are exaggerated, because they come from DHS type surveys that in South Africa have a tendency, due to the phrasing of the questions and other procedures, to arrive at a too high percentage of female-headed households (Hosegood & Timaeus, 2005).

(Table 7 here)

A fourth difference in family structure between the two countries deals with the amount of time that partners stay physically together in the course of their married life and during stable partnerships. The percentage of the time living together is less in South Africa than in Bangladesh. An indication of such difference is that in Agincourt, a rural area of South Africa, 47 % of the male household members 15-49 years old were living outside this area more than 6 months per year (in 2003) (Kahn, 2006) (own calculations). In Matlab, a rural area of Bangladesh, the corresponding figure was 26 % (in 1996) (Razzaque et al., 1998) (own calculations).

The data presented above reveal substantial differences in features and functioning of formal and informal sexual union systems in both countries. Next, we elaborate on these two systems in more detail using qualitative data.

Relations between husband and wife are in the African population of South Africa and Bangladesh largely regulated by the patriarchy system. Patriarchy means an asymmetric relationship whereby the husband has power over his wife in various domains of life and whereby it is the duty of the wife to obey (Therborn, 2004). Moreover, rules of behaviour with respect to, for instance, premarital and extramarital sex are different for men and women with more permissiveness and tolerance of deviant behaviour of men than of women. Control of the husband over his wife is more absolute in Bangladesh than in South Africa. In Bangladesh it is reinforced by the system of *purdah*, a set of rules designed to minimize interaction between people of the opposite sex and severely limiting women's mobility.

In Bangladesh there is more control over the behaviour of couples by the extended family than in South Africa. This expresses itself, for example, in the system of arranged marriages that is in Bangladesh nearly universal. It exists, because the extended family attaches a high value to obtaining the most suitable marriage partner. In South Africa, the extended family also has influence over the couple, including cohabiting partners, but the control is less pervasive than in Bangladesh.

Distal factors.

Economic and political developments (at the national level) that took place in both countries in the past two centuries had a profound influence on the formal (family) and informal sexual union systems. This is illustrated with data obtained using the historical perspective.

Before we embark on this, it has to be recognized that features of family systems already existing prior to widespread contact with Western countries also had an impact on current family and informal union systems. Before, say, 1800 an extended family system existed in the African population in South Africa whereby the interests of the lineage, kin and tribe had priority to the interests of the spouses. There was also limited tolerance towards premarital and, to a lesser extent, extramarital sex. The extended family system was equally important in Bangladesh (at that time part of Bengal, India), but premarital and extramarital sex were strongly condemned and not tolerated (Caldwell et al., 1989).

In the past two centuries, a number of economic and political events and processes took place in South Africa that led to severe disruption of the existing African family system. Reasons were extensive male labour migration to mines and factories (without their families); the apartheid system including adoption of laws that led to forced relocation of substantial segments of the African population; wars and conflicts between the white and the indigenous populations; and conflicts among African tribes. All these developments led to impoverishment of a large section of the African population (Sparks, 2003).

In the past two centuries, the Bangladeshi family system has been under stress, but remained intact, because it was the primary production unit in agriculture. Bangladeshi peasant families lived on rich and fertile land and their most important task was to produce as much food as possible for the country. The prevailing extended family system was the most suitable arrangement to meet the demand for maximum agricultural production. Colonial rule led to even more demands for expansion of production and, although this was accompanied by even more severe exploitation of the peasants, the family system remained indispensable for survival (Novak, 1994).

One of the consequences of the severe disruption of African society and family system in South Africa in the past two centuries was the decline and even collapse of the fabric of marriage arrangements and family life and, at the same time, expansion of the system of informal sexual unions (premarital and extramarital sex) (Barnett and Whiteside, 2002; Therborn, 2004). This did not happen in Bangladesh or at least to a lesser extent and one of its consequences was continuation of nearly universal marriage together with very limited tolerance for informal sexual unions (Aziz & Maloney, 1985).

Economic and political events, decisions and processes that occurred in both countries in the past continue to influence family systems and informal sexual behaviour today. These events and actions also contributed to other serious social and economic problems such as unemployment, poverty, inadequate housing and lack of education. One of the many consequences was that it required women, especially in South Africa and to a lesser extent in Bangladesh, to gain income through transactional and paid sex further stabilizing the family system.

Economic and political factors do not only influence HIV infection through proximate and intermediate factors, but also have a direct impact on the epidemic. An example of a political factor (or series of political factors) with a direct impact on the course of the HIV epidemic in South Africa consists of the attitudes to and actions taken by subsequent governments in response to the HIV threat when it emerged in that country in the second half of the 1980s.

Discussion

It was difficult to find comparable quantitative data in both South Africa and Bangladesh on proximate and intermediate determinants of HIV infection. Sometimes the data came from different data sources; sometimes measures used in surveys and registration systems were not comparable; or the data were not available. We recommend further analysis of existing data sets, because this will lead to more refined comparisons. It is also necessary to make comparisons on more factors, mentioned in the model of determinants of HIV infection, than we were able to take into account.

We showed that the various social and economic factors, exercising their influence at each of the three levels of our model, partly explain why the

HIV/AIDS epidemic became so severe in South Africa and did not take place in Bangladesh (at least not yet). At the level of proximate factors, we found considerable differences in high-risk behaviour and susceptibility towards HIV/AIDS between South Africa and Bangladesh. This means that in South Africa public health programmes aiming to change high-risk sexual behaviour and to increase the use of condoms are indispensable. Such programmes are also necessary for Bangladesh in order to prevent an HIV epidemic from taking off.

Much of this difference is in South Africa – at the level of intermediate factors - the consequence of existence of a mixture of two systems of formal and informal sexual unions. There is also a considerable group of adults with no permanent relationship and a substantial number of incomplete families headed by women. Moreover, there is relatively low cohesion in the husband-wife relationship due to considerable periods of physical separation of spouses. This is in sharp contrast with Bangladesh where we found nearly universal marriage and with more husbands at home most of the time.

We showed by means of a comparison with Bangladesh, that this high-risk behaviour was influenced by the existing family and informal sexual systems and this means that it is also necessary to implement measures and programmes that strengthen the existing family system. In order to reverse the epidemic, efforts have also be made, therefore, to increase the number of stable families and partnerships with strong cohesion among the partners, with equality between them and with both of them physically present (most of the time).

With respect to Bangladesh, we have seen that it has a family system characterized by nearly universal marriage and a pervasive influence on the married couple by the extended family. As long as this system keeps functioning the way it functions now, it is unlikely that an HIV/AIDS epidemic (based on heterosexual transmission) will take off. The informal union system (extramarital sex) is gaining ground, however, and this, in combination with low use of condoms, increases the possibility that an HIV/AIDS epidemic will occur. The median age of first sexual intercourse of men (22 to 23 years) is high in comparison with many other societies and may decline in the future. At the same time, the level of premarital and extramarital sex is still low compared to South Africa and other countries, but this may also change (Carael et al., 1994; Wellings et al., 2006; Chowdhury et al., 2006).

We showed that – at the distal level - economic and political events and decisions that occurred in the past in both countries had a considerable influence on the functioning of formal and informal union systems today. These events and actions also created new problems within families or aggravated existing problems. We saw that these economic and political developments had a larger and more disruptive impact on South Africa than in Bangladesh. These policies also contributed in both countries to other social and economic problems such as unemployment, poverty, lack of education and these also undermine the stability of the family. This means that measures and programmes aiming to create employment, provide education

and other services do not only have a positive impact on family systems, but also contribute indirectly to containment of the HIV/AIDS epidemic.

References

Aziz, K. & Maloney, C. (1985). *Life stages, gender and fertility in Bangladesh*. Dhaka: ICDDR,B: Centre for Health and Population Research.

Barnett, T. & Whiteside, A. (2002). *AIDS in the twenty-first century: disease and globalization*. Basingstoke: Palgrave Macmillan.

Bogaerts J. et al., (2001). Sexually transmitted infections among married women in Dhaka. Bangladesh: unexpected high prevalence of herpes simplex type 2 infection. *Sexually Transmitted Infections* 77, 114-119.

Caldwell, J., Caldwell, P. & Quiggin, P. (1989). The social context of AIDS in sub-Saharan Africa. *Population and Development Review* 15, 185-234.

Carael, M., Cleland, J. & Ingham, R. (1994). Extramarital sex: implications of survey results for STD/HIV transmission. *Health Transition Review* 4 (Supplement), 153-172.

Chowdhury, M.E. et al. (2006). *Assessment of sexual behavior of men in Bangladesh: a methodological experiment*. Dhaka: ICDDR,B: Centre for Health and Population Research.

Department of Health, Republic of South Africa (2002). *South Africa demographic and health survey 1998*. Pretoria: Department of Health.

Hawkes, S. et al. (1999). Reproductive-tract infections in women in low-prevalence situations: assessment of syndromic management in Matlab, Bangladesh. *The Lancet* 354, 1176-1781.

Hosegood, V. & Timaeus, I. (2005). Household composition and dynamics in KwaZulu Africa: mirroring social reality in longitudinal data collection. In E. van de Walle (Ed), *African households: an exploration of African census data*. (pp. 58-77). New York: M.E. Sharpe.

Johnson, L., Coetzee, D. & Dorrington, R. (2005). Sentinel surveillance of sexually transmitted infections in South Africa: a review. *Sexually Transmitted Infections* 81,287-293.

Kahn, K. (2006). *Dying to make a fresh start: mortality and health transition in a new South Africa*. Umea: Epidemiology and Health Sciences, Umea University.

National Institute of Population Research and Training (NIPORT) (2005). *Bangladesh demographic and health survey 2004*. Dhaka: National Institute of Population Research and Training.

- Novak, J. (1994). *Bangladesh: reflections on the water*. Dhaka: University Press Limited.
- Razzaque, A. et al., (1998). *Demographic Surveillance System – Matlab, Volume 29, 1996 socio-economic census*. Dhaka: Scientific Report No. 83, ICDDR,B: Centre for Health and Population Research.
- Shisana, O. et al. (2005). *South Africa national HIV prevalence, HIV incidence, behaviour and communication survey, 2005*. Pretoria: HSRC Press.
- Sparks, A. (2003). *The mind of South Africa: the story of the rise and fall of apartheid*. Johannesburg: Jonathan Publishers.
- Statistics South Africa (2004). *Census 2001: Primary tables South Africa (Census 1996 and 2001 compared)*. Pretoria: Statistics South Africa.
- Therborn, G. (2004). *Between sex and power: family in the world, 1900-2000*. London: Routledge.
- United Nations Development Programme (UNDP) (2006). *Human Development Report 2006*. New York: United Nations.
- Wellings, K. et al. (2006). Sexual behaviour in context: a global perspective. *The Lancet* 368, 1706-1728.

Table 1 Population and health indicators, 2004		
	South Africa	Bangladesh
Population (millions)	47.2	139.2
Population groups		
African (%)	81.7	
Coloured (%)	9.2	
White (%)	7.0	
Asian (%)	2.1	
Moslim (%)		88.4
Hindu (%)		11.1
Buddh, Chris. (%)		0.5
Percent urban (%)	59	25
Total fertility rate (children per w.)	2.0	3.1
Mortality under 5 (1,000 births)	67	77
Life expectancy at birth (years)	49.0	62.6
HIV prevalence 15-49 (%)	18.8 (16.8-20.7)	< 0.1
Sources: UNDP, 2006; NIPORT, 2005; Stat SA, 2004.		

Table 2 Premarital and extramarital sexual intercourse and condom use				
	South Africa		Bangladesh	
	Men	Women	Men	Women
% with premarital and extramarital sex. interc. in past 12 months, SA:15-49, B'desh,18-49, 2005				
Premarital sex. interc. (%)*	53.9	62.3	21.9	n.a.
Extramarital sex. interc. (%)**	n.a.	n.a.	11.9	***
% using condoms during last premarital and extra-marital sex. interc.,SA:15-49,B'desh:18-49, 2005				
Premarital sex. interc. (%)	64.2	60.6	40.3	n.a.
Extramarital sex.interc. (%)**	61.2	59.8	29.5	n.a.
Notes: n.a.= not available, * SA: extrapolated from data on population 15-24 years old ** estimated from data on ever-married population *** assumed to be very low				
Sources: Calculated from: Shisana et al., 2005; Chowdhury et al., 2006				

Table 3 Prevalence of other STIs		
	South Africa	Bangladesh
Prev. based on lab. tests, women, 15-49, SA and B'desh: 1995-2003		
Syphilis (%)	11.0	1.9
Gonorrhoea (%)	6.4	0.4
Chlamydia (%)	9.5	1.3
Trichomoniasis (%)	33.0	2.0
Prev. of self-reported symptoms, men, 15-54, SA: 1998; B'desh: 2004		
Painful urination and discharge (%)	10.4	6.6
Genital sores (%)	5.5	2.3
Either (%)	12.2	6.0
Notes: Top panel: women visiting basic health services, mean of several studies Bottom panel: survey of men, nationally representative, prev. in last 3 months Sources: Top panel: Calculated from Johnson et al., 2005; Hawkes et al., 1999; Bogaerts et al., 2001. Bottom panel: Calculated from DOH, 2002; NIPORT, 2005.		

Table 4: Susceptibility to HIV infection (proximate determinants)		
Scores ranging from: Very low risk to Very high risk	South Africa	Bangladesh
Premarital sex. rel.	High	Low
Extramarital sex. rel.	Very high	Low
Use of condoms	High	Very high
Other STIs	Very high	Low
Male circumcision	High	Low
Total	> High	> Low

Table 5 Current marital status				
	South Africa		Bangladesh	
	Men	Women	Men	Women
Current marital status, 15-49 (SA: 1998; B'desh: 2004)				
Never married (%)	49.0	48.3	34.3	16.6
Married (%)	34.6	33.7	64.7	77.1
Living together (%)	9.7	9.5	*	*
Widowed (%)	1.6	2.4	0.2	3.6
Divorced, separated (%)	5.1	6.1	0.7	2.6
Total	100.0	100.0	100.0	100.0
Notes: n.a. = not available * = assumed to be very low				
Sources: Calculated from: DOH, 2002; Stat SA, 2004; NIPORT, 2005				

Table 6 Age at first sexual intercourse and at marriage				
	South Africa		Bangladesh	
	Men	Women	Men	Women
Age first sex. interc. and at marriage, men: 15-54; women: 15-49 (SA: 1998, 2005, B'desh: 2004)				
Median age at first sex. interc.*	17.0	17.0	22.0-23.0	14.5-16.5
Median age at first marriage	n.a.	24.2	24.5	14.8
Notes: n.a. = not available; * B'desh women's data estimated from age at first birth				
Sources: Calculated from Shisana et al., 2005; NIPORT, 2005, Wellings et al., 2006				

Table 7 Male/female headed households and household size						
	South Africa			Bangladesh		
	Men	Women	Total	Men	Women	Total
Head of household, 15 years and older						
Urban (%)	63.8	36.2	100.0	90.6	9.4	100.0
Rural (%)	50.0	50.0	100.0	89.7	10.3	100.0
Total (%)	58.1	41.9	100.0	89.9	10.1	100.0
Mean household size	3.9	4.7	4.2	4.9	5.0	5.0
Notes: SA: 1998; B'desh: 2004						
Sources: DOH, 2002; NIPORT, 2005						