Violent Conflict and Sexual Behavior in Rwanda -A possible pathway of HIV transmission

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Introduction

This study focuses on the relationship between violent conflict and the timing of young women's first sexual intercourse before marriage in Rwanda during 1990-2000. The effect of violent conflict on sexual behavior can be understood as a critical juncture for the exposure opportunity of transmission of sexually transmitted infections (STIs) such as HIV. A critical juncture can be defined as "a point in time at which a change occurs, and at the same time places this change within a larger temporal framework" (Andersson & Neyer 2008). It is believed that violent conflict can affect the epidemiology of HIV/AIDS (Elbe 2002; Hankins et al. 2002; Mock et al. 2004; United States Institute of Peace 2001). The epidemiology of HIV may be exacerbated or inhibited, as conflict shatters individual lives and communities, depending on the characteristics of the conflict and the regional ecology of HIV. Rwanda was one of the African countries most affected by HIV and also experienced civil war leading to the genocide in 1994. The study makes use of unique data on violent conflict at regional level in Rwanda that are linked to data providing sexual histories of individual women. I find that there is an increased risk of first sexual intercourse during years of conflict. The choice for women and men to engage in sexual activity is influenced by both individual-characteristics and social environmental factors. This study will focus on contextual effects on sexual behavior, which could be both voluntary sexual intercourse or forced sexual intercourse. Lack of parental and community control and rape being used as weapon of war are major theoretical pathways through which conflict could produce increased risk of experiencing first sex and increase the exposure opportunity and risk for STIs and HIV. Other plausible mechanisms through which violent conflict could operate are social-psychological reactions to the effect of war at an individual level. The stress and uncertainty of knowing if there will be a tomorrow may loosen social and institutional constraints on the first sexual experience. The lack of parental and community control may further provide the opportunity for social-psychological mechanisms to become active. To the best of my knowledge, the social-psychological mechanisms have not been explored in the literature on sexual behavior during war that is not related to sexual violence and rape. These three mechanisms are not argued to be mutually exclusive and the data do not provide the opportunity to distinguish between the three.

Young women and men who experience voluntarily early first sexual intercourse in Rwanda are exposed to an increased risk of having multiple sexual partner and lower utilization of condoms than those who have a later sexual debut (Babolola 2004; Sieving et al. 2006). Consequences of unprotected sexual intercourse are the increased risk of STIs such as HIV and pregnancy. In the AIDS epidemic of this time period in Rwanda young women's and men's sexual activity has implications for the exposure risk of sexually transmitted diseases (Browning et al. 2005), making early sexual intercourse a potential serious health hazard (Small & Luster 1994). In Rwanda early sexual debuts is not as common as in other East African countries, the median age at first sex among female youth 20-24 years is 18.1 years (UNAIDS, 2002b). Nevertheless, the Rwanda Demographic Health Survey (RDHS 1992, 2000, and 2005) and the Rwanda Behavioral Surveillance Survey (BSS 2000) support the conclusion that many Rwandan youth who are sexual active do not use condoms (Babalola 2004).

Vulnerability, exposure opportunity and risk of HIV/AIDS

HIV/AIDS has a profound impact on society and is seen as one of the greatest challenges of our time, as it affects every level of society. The HIV epidemic should be understood as a "consequence of place" (Webb 1997). Meaning that although HIV/AIDS is a medical condition, restricted to only a few modes of transmission, the regional ecology of HIV together with the social structure, political and economic setting in society can create an environment that increases vulnerability and potential exposure opportunity and risk for HIV infection. The concept of vulnerability implies that an individual or group is more likely to experience adverse effects, risk, when exposed to a hazard. "Vulnerability encapsulated a growing recognition that the extent to which people suffer from calamities of any kind depends on both their likelihood of being exposed to hazards or shocks and their capacity to withstand them, which is related to their socio-economic circumstances" (Dilley et al. 2000). Hazard or shocks refer to unpredicted events that

affect communities, such as violent conflict. The concept of risk must be seen in relation to how vulnerable people are in their everyday life. Disasters such as a war or genocide hinder economic and human development both at a household level, through the loss of family member, livestock, crops, homes etc. and at a national level through the destruction of the health sector, infrastructure, human capital etc. (Mock et al. 2004). There is also a time dimension built into the definition of vulnerability as it can be seen in the terms of damage done at the time of the hazard as well as repercussions for the future. It is important to note that conflict enters people's lives at different points, and people are therefore more or less vulnerable to the effects of conflict.

Rwanda: Conflict and HIV/AIDS

Rwanda is a small but densely populated country with 9.7 million inhabitants in 2009. The civil war started the 1st of October 1990 when the Rwandan Patriotic Front (RPF), consisting for the larger part Tutsi exiles, invaded the northern part of Rwanda from Uganda. The PRF made a claim to their right to re-enter Rwanda and demanded a dual political leadership. The war seemingly ended on 4th of August 1993 with the signing of the 'Arusha Accords' to create a power-sharing government. However, the assassination of Habyarimana, the Hutu president in Rwanda, in April 1994 proved to be the catalyzer of the genocide. The Hutu extremist realized a three month state-organized assassination that left an estimate of 800 000 Tutsi and moderate Hutu people dead. The genocide altered the composition of the population structure as hundreds of thousands died and 3,000,000 were internally or externally displaced (World Bank 2004). The genocide in Rwanda is considered both a 'state genocide´ and a 'societal genocide' (Palmer 1998), state genocide refers to the state as the organizers of the genocide whereas societal genocide refers to the state allowing the genocide to take place without intervention but it is local authorities or civilians that take action against an opposing ethnic group. In the case of Rwanda it was the leading Hutu extremists who planed and realized the genocide through an extreme well organized rally of the Hutu population against the Tutsi minority. From the day of the onset of the genocide, it spread like wild fire across the whole country engaging the civilian population to kill Tutsi together with the Interahamwe and the militia. Neighbors were killing neighbors, friends their former friends, teachers their students, students their teachers etc. Although the genocide affected the whole of Rwanda it unfolded unevenly across the country. Several areas such as Gitarama and Butare resisted the calls to genocide, in these regions Hutu and Tutsi fought together against the leaders of the genocide but without success as these regions had high number civilian casualties during the genocide (Buss 2009).

Violent conflict is believed to have an indirect effect on the spreading of HIV/AIDS at an individual level through increased interaction among civilians and military/combatants personnel, known for having a high risk behavior (Mock et al. 2004). But also through mass migration across national border or internal mobility can give rise to epidemics as these mobile groups act as "vectors for diseases" (Iqbal 2006). Women's subordinate position to men when it comes to reproductive choices and sexual behavior make women more vulnerable to cultures of violence that promote sexual violence and predation, which is intensified during war (Hankins et al. 2002; Mock et al. 2004).

Violent conflict is also believed to have an indirect effect on the spreading of HIV/AIDS at a community level in through the destruction of social and physical infrastructure that increases the risk of untreated sexually transmitted infections, poor health and malnutrition (Iqbal 2006). Also through the "destruction of public health education mechanism (e.g. mass media, health facilities, and formal education), which has a negative effect on public health-related knowledge, attitudes and practices" (Mock et al. 2004). The health sector might suffer extensive damage during violent conflict through loss of health infrastructure, both in terms of personnel and physical infrastructure. It has been estimated that Rwanda lost more than 80% of its health personnel during the genocide through death or population mobility (USAID 1996). Elementary dimensions in conflict analysis are the point of conflict onset, duration, and the geographical scale of the conflict, which generally lead to greater cumulative effects of conflict on social infrastructure (Mock et al. 2004).

Data and models

For this study I use two different sources of data, the Rwandan Demographic Health Survey (RDHS) from 1992, 2000, and 2005 and conflict data from Uppsala Conflict Data Program -Georeferenced Event Dataset (UCDP GED). The RDHS provides information on women's reproductive and sexual histories and the UCDP GED data gives information on the intensity, location and timing of the conflict. The UCDP GED is merged onto the RDHS to identify the intensity and the regional location of the violent conflict with information from the RDHS on the regional residence of the women since age 12. I used the combined data to estimate proportional-hazards models of the risk of first sexual intercourse before marriage. The data sample size is 11291 women who have always or since age 12 lived in place of residence at interview. The women were observed between ages 12-49 and censored at marriage or at time of interview. The basic time variable in the model is age and calendar year.

Preliminary results

There are different ways to try and capture the conflict effect on the risk of first sex for women before marriage, who have always or since age 12 lived in current place of residence. The main effect hazard regression models in table 1 display different combinations of age with calendar year, region, place of residence, number of conflict events and number of deaths.

Table 1. Piece-wise constant baseline intensity model of age at first sexual intercourse since turning age 12 for women who have always or since age 12 lived in current region (sex before marriage)

		Model 1	Model 2	Model 3	Model 4	Model 5
Age	12-14	1	1	1	1	1
	15-17	3,48 ***	3,60 ***	3,06 ***	3,07 ***	3,62 ***
	18-20	6,38 ***	6,62 ***	4,81 ***	4,85 ***	6,71 ***
	21-23	4,85 ***	5,00 ***	4,08 ***	4,06 ***	5,08 ***
	24-49	4,10 ***	4,28 ***	2,59 ***	2,57 ***	4,37 ***
Nr of conflict events	No conflict events	0,98				
	Low nr of conflict events	1				
	High nr of conflict events	1,27 *				
Calendar year	1990		1,41 **			1,54 **
	1991		1,18			1,26
	1992		1,34 *			1,48 *
	1993		1,81 ***			1,94 ***
	1994		1,72 ***			2,03 ***
	1995		1,69 ***			1,73 ***
	1996		1,27			1,38 **
	1997		1,15			1,30
	1998		1,14			1,24
	1999		1			1
	2000		0,87			0,86
Calendar period	1990-1994			1,31 ***	1,33 ***	
	1995-2000			1	1	
Region	City of Kigali			1,38 **	1,18 **	1,32 **
	Kigali ngali			0,98	1,05	1,05
	Gitarama			1,19	1,24	1,32 **
	Butare			1,13	1,17	1,16
	Gikongoro			1,21	1,24	1,33 **
	Cyangugu			1,31	1,43	1,32 **
	Kibuye			1	1	1
	Gisenyi			1,03	1,23	1,51 **
	Ruhengeri			2,17 ***	1,44	1,50 **
	Byumba			1,36	1,47	1,43 **
	Umutara			1,11	1,12	1,18
	Kibungo			1,28	1,36	1,40 **
Place of residence	Urban				2,26 ***	1,91 ***
	Rural				1	1
Nr of deaths	No deaths					1
	Low nr of deaths					0,84 **
	High nr of deaths					0,81

Table 1 indicates that calendar year strongly picks up the conflict effect and that there is an increased risk of first sex during conflict period. Place of residence indicates that there is an increased risk of first sex in urban areas compared to rural areas. Number of conflict events indicates and increased risk of first sex for periods of high number of conflict events compared to low number of conflict events. To investigate conflict effect at regional level I divided the calendar years 1990-2000 into a high conflict period 1990-1995 and lower conflict 1996-2000, based on number of events and number of deaths from the UCDP GED.

Fig.1 Interaction between calendar years and regions in Rwanda, period 1990-2000.

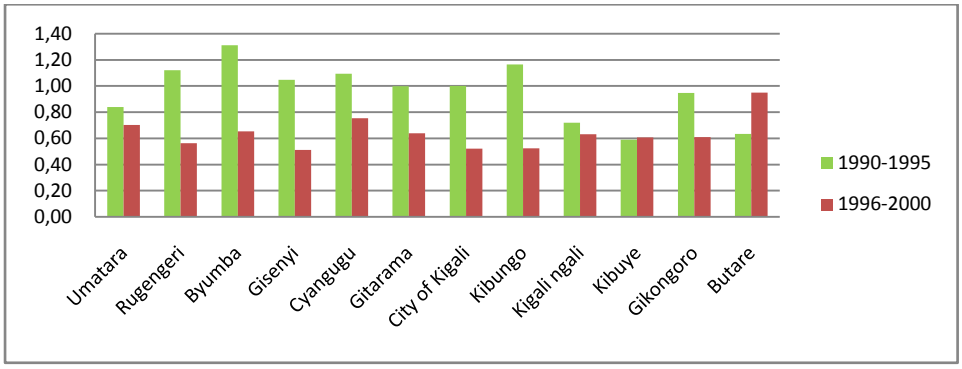

Figure 1 shows the outcome of an interaction between this division of calendar years and regions. The regions are organized from left to right in accordance to estimated number of deaths in the regions during the genocide in 1994, Umatara having the lowest number of deaths and Butare the highest number of deaths. The graph clearly indicates a higher risk of first sexual intercourse during the conflict years compared to the years of less conflict in all regions except for Kibuye and Butare. For regions with high number of events and high number of deaths the risk of first sex decreases when controlled for the conflict variables events and deaths. Indicating that conflict has an effect on the risk of first sexual intercourse during this period. The increased risk of first sex during the conflict years also increases young women exposure opportunity and risk of HIV transmission.

An important question to be addressed is how migration could influence the results above which are bases on women who have always or since age 12 lived in current place of residence. The conflict period in Rwanda was marked with massive migration across borders to neighboring countries but also within the country (IDP). The RDHS has no information on ethnicity, which would be valuable information as the genocide is considered an “ethnic conflict”. Women who stay in the same region of residence have perhaps other sets characteristics than those women who moved, that are not observed. In addition mortality maybe a factor in the selection; how many women have lived in current place of residence during the conflict period and survived to tell the story? This could perhaps explain the case of Butare, a region highly affected by the genocide where women had a lower risk of first sex compared to the other regions. There are regional differences but it becomes evident that there is much more going on at regional level that is not picked up by the data. Additional analyses will investigate population movement across regions and population sizes in the regions during the conflict period, to better understand the effect of conflict events and deaths.

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