

## **Changes in HIV/AIDS/STI knowledge, attitudes, and behaviours among the youth in Port Loko, Sierra Leone**

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### **Abstract**

Sierra Leone suffered from 11 years of civil war (1991–2002) resulting in tens of thousands of deaths and mutilations and massive population displacement. In 2001, ARC International, Sierra Leone, conducted a baseline survey of 244 female youth and 293 male youth on knowledge, attitudes, and behaviours around HIV/AIDS and STIs in Port Loko. In 2003, following 2 years of HIV prevention activities, a comparable post-intervention survey of 250 female and 299 male youth was performed. Comparison of baseline and post-intervention results showed that HIV/AIDS knowledge increased dramatically among both groups, with those able to name three effective means of avoiding AIDS increasing from 4% to 36% among female youth, and 4% to 45% among male youth. Reported condom use at last sex increased among female youth from 16% to 46% and among male youth from 16% to 37%. These results demonstrate that, despite the challenges inherent in a post-conflict country, good quality AIDS prevention programmes can be successful.

**Keywords:** *HIV/AIDS, STI, youth, Sierra Leone, post-conflict*

### **Introduction**

In December 2000, the American Refugee Committee (ARC) International launched a prevention of HIV/AIDS and sexually transmitted infections (STI) programme in Port Loko, Sierra Leone, comprised of intensive outreach

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education by peers, including a focus on improving negotiation skills, and free condom distribution. Given the rapidly increasing HIV infection rate among young people in Africa (UNICEF 2000), ARC identified youth in addition to commercial sex workers and military forces as the primary target populations. In order to guide improvement of the project's intensive community outreach and education activities, the ARC Health Team<sup>1</sup> conducted baseline and post-intervention surveys of the target populations' knowledge, attitudes, and behaviours regarding HIV/AIDS and STIs in March 2001 and June 2003, respectively. The baseline survey was used to help design, clarify, and prioritize ARC's programme components, and the post-intervention survey was conducted to assess changes since baseline in the target populations. This article focuses on analysing the results regarding youth; findings on commercial sex workers and military have been reported elsewhere (Larsen et al. 2004).

## **Background**

The conflict in Sierra Leone, most intense from 1991–2000, took an enormous toll on the population: 50,000 or more people were killed; an estimated 100,000 civilians, including children, were mutilated; and overwhelming numbers of women and girls were raped, abused, and abducted (USCR 2001). The Revolutionary United Front (RUF), the main anti-government military force, routinely abducted adolescents and children from their homes and forcibly recruited them into its army as soldiers, porters, and servants; many of the girls were routinely raped (HRW 1998, USCR 1998). More than one in three of the 4.5 million inhabitants of Sierra Leone fled their homes one or more times in fear for their lives (CIA World Factbook 2004). Access to basic health care was disrupted for the majority of citizens, as health facilities and other infrastructure were destroyed (United Nations 1999) and medical professionals, often specifically targeted by the RUF rebels, fled their posts. The implications of these events for HIV/AIDS transmission have only begun to be recognized and addressed in research and programmes.

Much fighting occurred in and around Port Loko, in the Northern Province of Sierra Leone, as the government prioritized its holding of the strategically important town and placed a large number of Sierra Leone Armed Forces there. UN peacekeepers were also stationed in Port Loko (Global IDP Project 2003). Despite the July 1999 signing of the Lomé peace agreement, violence by the RUF increased, causing further internal displacement as Sierra Leoneans fled to government-held 'safe' areas like Port Loko (Global IDP Project 2003). By the end of 2000, an internally displaced persons (IDP) camp on the outskirts of Port Loko housed approximately 20,000 Sierra Leoneans, while 60,000 additional IDPs found shelter with local residents in and around Port Loko town (USCR 2001). Additionally, as part of the peace process, Port Loko hosted thousands of ex-combatants in a Disarmament, Demobilization and Reintegration camp, where RUF and Civil Defence Force<sup>2</sup> soldiers disarmed and attempted to reintegrate into civilian life.

## **HIV/AIDS in Sierra Leone**

Until recently, no good quality data were available on HIV prevalence in Sierra Leone. Much of the health infrastructure, including its information systems, was destroyed in the war. However, in April 2002, the US Centers for Disease Control and Prevention conducted a seroprevalence survey in Sierra Leone, covering accessible areas of the country (some areas were inaccessible due to insecurity). The survey revealed a national HIV prevalence rate of 0.9% among people aged 12–49 years in surveyed areas of Sierra Leone, ranging from 2.1% in Freetown to 0.7% outside the capital (Kaiser et al. 2002). However, evidence indicates that poverty, gender inequalities, and population mobility contribute to an increased risk for HIV (Parker et al. 2000) and conditions in Sierra Leone may be ideal for a potentially dramatic increase in HIV prevalence (Khaw et al. 2000). Sierra Leone's risk factors include massive population displacement (USCR 2003); destruction of the health infrastructure (Global IDP Project 2003); high prevalence of war-related sexual violence, including rape as a terror tactic and abduction of women for repeated rape (Amowitz et al. 2002; Save the Children 2002); peacekeeping troops from countries with high HIV prevalence (US GAO 2001, WHO 2000); increased commercial sexual activity (Global IDP Project 2003, WHO 2000); and widespread poverty and illiteracy (UNICEF 2003).

## **Youth reproductive health in conflict settings**

Evidence indicates that young people are especially vulnerable to AIDS. More than half of all new HIV infections occur among young people between 15 and 24 years old (UNAIDS 2004) and an estimated ten million youth aged 15–24 years old are living with HIV worldwide (UNAIDS 2005). Surveys conducted in 17 developing countries indicate that young people do not have the knowledge they need to protect themselves (UNICEF 2000). Only 24% of young people in Sierra Leone could identify three methods of AIDS prevention (UNAIDS 2005). In eight of 21 countries in sub-Saharan Africa assessed, at least 50% of girls aged 15–24 years old did not know that a person with HIV/AIDS might look healthy (UNICEF 2000).

Research suggests that young people have less access than do adults to reproductive health information and services (Rivers and Aggleton 1999, Tadiesse et al. 2003). Cultural norms often stipulate that adolescents should not engage in sexual activity, and taboos against discussing reproductive health with young people deny them the information and services they need to avoid HIV, other STIs, and unplanned pregnancies. In conflict settings, the situation is even more acute, and these youth have been described as the 'underserved of the underserved' (Women's Commission for Refugee Women and Children 2000).

The conditions that affect young people's overall health, and social and economic development, in conflict settings have particular relevance to their risk for HIV. The breakdown of family and social structures in war-affected communities and idleness due to the lack of educational and employment

opportunities for adolescents may lead to risky sexual experimentation at an early age (Women's Commission for Refugee Women and Children 2001). In a Freetown, Sierra Leone, study, adolescent women mentioned economic factors (food, money, and goods) as a primary motivation to engage in sexual activity; this behaviour is reportedly deemed necessary for the survival of their families (Partridge, n.d.). Sierra Leonean adolescents in another study reported that the exchange of sex for money or goods was common; an overwhelming majority of the more than 600 adolescents interviewed stated they could identify peers, including themselves, involved in transactional sex, with poverty cited as the main reason for doing so (Women's Commission for Refugee Women and Children 2002).

Both studies suggested that condom use is low among this population as is their perceived risk of HIV infection. Nearly one in three peacekeepers stationed in Sierra Leone originated from countries with HIV prevalence rates of over 5%, including Nigeria, Kenya, and Zambia (US GAO 2001, Kaiser et al. 2002), making transactional sex especially dangerous given that peacekeepers have been identified as the primary clients for transactional sex (Bazergan 2002). With few alternatives, young women who exchange sex for money or goods as a survival strategy have very little power in negotiating the use of a condom, placing them at increased risk of HIV/STI infection.

Additionally, in war-affected settings, adolescents are particularly vulnerable to sexual violence and exploitation by fellow refugees, peacekeepers, and camp employees, which are also risk factors for HIV/AIDS (UNHCR 2003). According to an assessment on sexual violence and exploitation conducted in West African refugee camps, young people in the camps suffered 'high levels of risk and vulnerability' with the most vulnerable being those living in female or youth-headed households (Save the Children and UNHCR 2002). As mentioned earlier, rape and sexual violence were widely practiced against the civilian population during the conflict (Amowitz et al. 2002) and a desire for virgins meant that young women were especially targeted (HRW 1999).

Thus, taboos against adolescent sexual activity and ineffective targeting of youth mean that young people are the 'least likely of all displaced persons to access health care services' (Women's Commission for Refugee Women and Children 2000). This lack of information and access to services, a breakdown in social structures and increased violence and exploitation contribute to young people's increased risk for HIV in forced migration settings.

## **Methodology**

### *Survey sample*

Identical purposive quota sampling techniques were used to select youth respondents for the baseline and post-intervention surveys. This was done because a focus on the specific study sub-groups made a community-based random sample impractical, and because a reliable sampling frame from which to

select a random sample of the sub-groups of interest was impossible to obtain. Respondents for both surveys were selected in as similar a manner as possible. However, no attempt was made to re-contact respondents from the baseline survey, as the survey was anonymous. It is important to be aware that this technique estimates group-level changes, and not specific changes at the individual level.

ARC targeted a quota of 300 male and 250 female youth aged 15–24 in the following sub-groups: students, ex-combatants, and non-students/non ex-combatants. For the female youth, quotas of 100 students, 50 ex-combatants,<sup>3</sup> and 100 non-students/non ex-combatants were used. For the male youth, quotas of 100 male students, 100 male ex-combatants, and 100 male non-students/non ex-combatants were used (see Table I for actual numbers interviewed). Military personnel and commercial sex workers were also surveyed at baseline and post-intervention; these results are discussed elsewhere (Larsen et al. 2004).

To select respondents, the interviewer approached individuals who appeared to fit a particular quota category (e.g. a young person who appeared to be between 15 and 24 years old), asked if they would participate in a short interview about health and, if they agreed, asked their age and status to determine if they indeed fit one of the quota categories. In the schools, teachers selected students to be interviewed based on the age criterion.

It should be noted that, because of the sampling technique used, the respondents do not make up a representative sample of the youth population of Port Loko. However, the sampling plan ensured that respondents were selected from all geographic sectors of the town (divided into 30 clusters for this purpose), all ex-combatant camps, and all secondary and trade schools.

### Questionnaire

The ARC Health Team developed, pre-tested, and revised a survey instrument with 19 multi-part questions.<sup>4</sup> The instrument was written in English and included the following constructs: socio-demographic characteristics, knowledge of HIV/AIDS and STIs, attitudes towards HIV/AIDS and STIs, condom use behaviour, and health seeking behaviour. The post-intervention survey instru-

Table I. Sampling frame. ARC Sierra Leone baseline (2001) and post-intervention (2003) surveys.

Quota category	Desired sample size		Actual number interviewed (baseline)		Actual number interviewed (post-intervention)	
	Men	Women	Men	Women	Men	Women
Youth (15–24 years old)						
Students	100	100	101	94	98	100
Ex-combatants	100	50	100	48	90	55
Non-students/non ex-combatants	100	100	92	102	111	95
Total	300	250	293	244	299	250

ment included two additional multi-part questions regarding awareness of ARC educational materials and participation in ARC project activities.

### *Training of interviewers*

For both surveys, interviewers with appropriate ages and backgrounds were selected in order to facilitate their acceptance by the respondent groups. The baseline survey interviewers (seven men and seven women) participated in a 2-day training workshop, and the post-intervention survey interviewers (eight men and eight women, four of whom also served as interviewers in the baseline study) participated in a similar 3-day training workshop. As an important component of the training, the interviewers discussed and agreed on the precise wording to use when administering the questionnaire in the local languages, Temne and Krio. Because these languages are not commonly written, it was impractical to prepare written questionnaires in these languages.

### *Field procedures and data analysis*

Following the initial approach and informed consent for participation, the interviewers informed the respondents that all discussion and responses would remain confidential. Each interview took an average of 20 minutes to complete. Interviews during the baseline survey were carried out 1–15 March 2001 and the post-intervention survey fieldwork took place 9–19 June 2003. Supervisors collected completed questionnaires in the field for immediate coding.

As the questionnaires came in from the field, the baseline and post-intervention data were entered and cleaned using Epi Info 2000 for Windows (baseline) and Epi Info 2002 for Windows (post-intervention). A combined database was created and the data analysed using Epi Info 2002. Chi-square analyses were performed using a  $p < 0.01$  significance level to ascertain differences between baseline and post-intervention results.

## **Results**

### *Female youth*

The mean age of the female youth was approximately 20 years in both surveys. Education levels were low: a mean 5.5 years of education at baseline and 6.5 years at post-intervention (see Table II). The vast majority of baseline respondents (81.5%) had been in Port Loko for more than a year; this majority increased somewhat at post-intervention to 88.4%. Two in three (64.6%) female youth interviewed were unmarried at baseline; this proportion increased slightly to 71.2% at post-intervention. Finally, over half (58.5%) of the female youth respondents at baseline described themselves as Muslim and 41.5% as Christian while, at post-intervention, 64.6% described themselves as Muslim and 35.4% as Christian.

Table II. Socio-demographic profile of respondents. ARC Sierra Leone baseline (2001) and post-intervention (2003) surveys.

	Female youth (15–24 years old)		Male youth (15–24 years old)	
	Baseline%	Post-intervention %	Baseline %	Post-intervention %
Education	<i>n</i> = 243	<i>n</i> = 249	<i>n</i> = 292	<i>n</i> = 299
None	28.4	17.7*	32.2	22.4*
1–7 years	36.6	37.8*	34.9	42.5*
>7 years	35.0	44.6*	32.9	35.1*
Mean	5.5	6.5	5.1	5.6
Duration in Port Loko	<i>n</i> = 243	<i>n</i> = 250	<i>n</i> = 287	<i>n</i> = 299
1 year or less	18.5	11.6*	26.8	9.0*
>1 year	81.5	88.4*	73.2	91.0*
Religion	<i>n</i> = 236	<i>n</i> = 229	<i>n</i> = 290	<i>n</i> = 296
Muslim	58.5	64.6	77.6	68.9*
Christian	41.5	35.4	22.4	31.1*
Marital status	<i>n</i> = 243	<i>n</i> = 250	<i>n</i> = 293	<i>n</i> = 299
Married	35.4	28.8	34.4	10.4*
Not married	64.6	71.2	65.5	89.6*

\* Statistically significant difference between baseline and post-intervention ( $p < 0.01$ , chi-square analysis).

Levels of knowledge of HIV/AIDS increased dramatically among female youth respondents from baseline levels (see Table III). Knowledge of at least three routes of transmission and three means of prevention was used to examine in-depth HIV/AIDS knowledge, since knowledge of sex as a means of transmission and use of condoms as a means of prevention were already high. More than one in three (36.0%) respondents could spontaneously cite three or more routes of HIV transmission, an increase of 30 percentage points from the baseline level of 5.7%. At baseline, fewer than one in 20 (4.5%) respondents could spontaneously name three or more ways of avoiding AIDS; this proportion increased to more than one in three (35.6%) at post-intervention. The proportion of female youth respondents who could identify three or more sources of condoms increased as well, from 10.7% at baseline to 40.0% at post-intervention.

Knowledge about STIs likewise increased among female youth respondents (see Table III). Only one in three (33.6%) respondents knew two or more signs of STIs at baseline; this proportion more than doubled to 74.8% at post-intervention. The proportion of female youth respondents who could identify at least two sources of adequate STI care increased from 15.6% at baseline to 25.6% at post-intervention.

At baseline, more than half of the respondents (51.5%) reported being 'not worried' about HIV/AIDS, while 13.1% reported they worried 'a little', and only 35.4% of female youth respondents reported that they worried 'a lot' about HIV/AIDS (see Table III). This concern about becoming infected changed somewhat

Table III. Survey results. ARC Sierra Leone baseline (2001) and post-intervention (2003) surveys.

	Female youth		Male youth	
	Baseline ( <i>n</i> = 244) %	Post- intervention ( <i>n</i> = 250) %	Baseline ( <i>n</i> = 293) %	Post- intervention ( <i>n</i> = 299) %
Selected knowledge items ( <i>unprompted</i> )				
Know route of AIDS transmission:				
Sex	73.4	76.8	72.4	93.3*
Blood transfusion	18.0	39.2*	14.0	26.8*
Sharing sharp instruments	13.5	64.8*	19.5	78.9*
Mother to baby	8.2	18.0*	5.5	12.7*
Know $\geq 3$ correct routes of transmission	5.7	36.0*	6.5	32.4*
Do not know any correct routes of transmission	25.0	15.6*	26.6	6.0*
Know means of avoiding AIDS:				
Use condoms during sex	58.2	72.8*	50.2	84.3*
Avoid sex entirely	23.4	37.6*	23.9	45.2*
Stay with one partner	15.6	46.4*	12.6	44.1*
Don't share razors or needles	4.9	43.2*	8.2	64.5*
Know $\geq 3$ effective means of avoiding AIDS	4.5	35.6*	3.8	45.2*
Do not know any effective means of avoiding AIDS	28.7	16.0*	36.9	5.4*
Know $\geq 3$ sources of condoms				
Do not know any sources of condoms	25.8	15.6*	25.9	4.0*
Know $\geq 2$ signs of STIs (burning, itching, discharge, pain, or sores)				
Do not know any signs of STIs	33.2	16.8*	32.8	11.7*
Know $\geq 2$ sources of <i>adequate</i> STI treatment (government hospital, NGO, or military facility)				
Do not know any sources of <i>adequate</i> STI Treatment	8.6	14.8*	9.2	5.7*
Selected attitude items ( <i>unprompted</i> )				
Concern about becoming infected with AIDS:				
Worried a lot	35.4	22.0*	41.8	33.9*
Worried a little	13.1	39.2*	21.1	28.1*
Not worried	51.5	38.8*	37.2	38.0

\* Statistically significant difference between baseline and post-intervention ( $p < 0.01$ , chi-square analysis).

\*\* Respondents were able to select more than one attitude, so total percentages may exceed 100%.

at post-intervention among female youth respondents: 38.8% of female youth reported being 'not worried' about HIV/AIDS, while 39.2% worried 'a little', and 22.0% reported they worried 'a lot'.

Condom use among female youth was consistent with their low levels of knowledge and concern, although use increased considerably (see Figure 1). At baseline, fewer than one in five (15.6%) female youth reported condom use the last time they had sex, while nearly half (46.2%) reported this at post-intervention. Similarly, only one in four (24.8%) reported having ever used a condom at baseline as compared to nearly two in three (63.6%) at post-



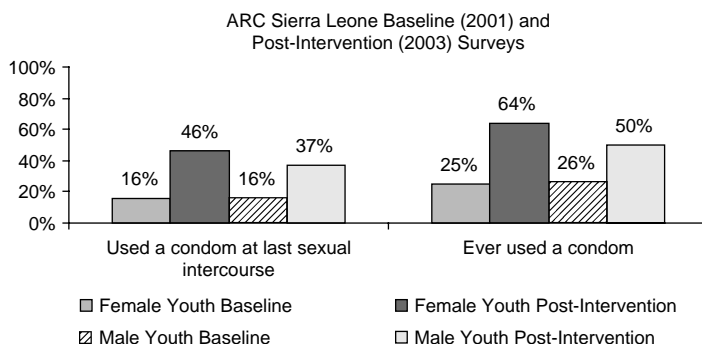


Figure 1. Condom Use among Respondents.

intervention. Partners or friends were the most important sources of condoms at post-intervention, accounting for 47.2% of users, up from only 12.7% at baseline.

To gain information on partner communication, respondents were asked if they had discussed condoms with their partner in the last 6 months. At baseline, more than one in three (35.2%) female youth reported that they wanted to use a condom in the last 6 months and raised the question with their partners. Of these, two in three (65.8%) reported that their partners agreed to use condoms once they raised the topic, while only one in three (34.2%) reported refusal. At post-intervention, the proportion of female youth who wanted to use a condom in the last 6 months and who raised the question with their partners increased to 60.4% at post-intervention, and the proportion of partners asked who agreed to use a condom increased slightly to 72.3%.

### *Male youth*

The male youth respondents had a mean age of 19.0 years at baseline and 20.6 years at post-intervention. Education levels were low: a mean 5.1 years of education at baseline and 5.6 years at post-intervention (see Table II). The majority of baseline respondents (73.2%) reported being in Port Loko for more than a year; this majority increased at post-intervention to 91.0%. Two in three (65.5%) male youth interviewed were unmarried at baseline; this proportion increased to 89.6% at post-intervention. Finally at baseline, more than three in four (77.6%) of the male youth described themselves as Muslim and one in five (22.4%) as Christian; these proportions changed at post-intervention, 68.9% described themselves as Muslim and 31.1% as Christian (see Table II).

Like the female youth, male youth demonstrated significant improvements in knowledge of HIV/AIDS (see Table III). The proportion of male youth able to spontaneously cite three or more routes of HIV transmission increased from 6.5% to 32.5%. At baseline, fewer than one in 25 (3.8%) respondents could spontaneously name three or more ways of avoiding AIDS; this proportion increased to nearly one in two (45.2%) at post-intervention. The proportion of

male youth respondents who could identify three or more sources of condoms increased as well, from 8.5% at baseline to 42.5% at post-intervention.

Similarly, knowledge about STIs also improved among male youth (see Table III). Fewer than half (39.9%) of male youth respondents could identify at least two signs of STIs at baseline, while three in four (75.6%) respondents could do so at post-intervention. The proportion of male youth able to name at least two qualified sources of STI treatment decreased from 17.7% at baseline to 12.0% at post-intervention. This decrease is likely explained by the increase in respondents identifying 'getting medicine from a pharmacy' and 'traditional remedies' as sources of STI treatment; these were not considered by the researchers to be a qualified source of STI treatment.

While male youth expressed greater concern about their own HIV risk than the female youth, many still showed little concern (see Table III). The proportion of male youth who reported they were not worried at all about HIV/AIDS showed no change at post-intervention (38%). The proportion of those who reported worrying 'a little' about HIV/AIDS increased from 21.1% to 28.1% and those who reported worrying 'a lot' decreased from 41.8% to 33.9% at post-intervention.

Condom use in this population more than doubled from baseline levels (see Figure 1). The proportion of male youth reporting having used a condom the last time they had sexual intercourse increased from 15.6% at baseline to 37.1%. While one in four (26.4%) respondents reported having ever used a condom at baseline, one in two (50.2%) reported having ever used a condom at post-intervention. Sources of condoms for male youth changed, with significant increases in the proportions obtaining condoms from an NGO (14.7% at baseline, 43.1% at post-intervention) or bars (1.0% at baseline, 6.0% at post-intervention); the proportion of male youth who obtained condoms from their partner or a friend decreased by half from 10.2% to 5.4% at post-intervention. Little change was noted among other reported sources.

As with the female youth, male respondents were asked if they had discussed condoms with their partner in the last 6 months. At baseline, more male youth who had such discussions were met with refusal than agreement: of the 26.2% of male youth who wanted to use a condom in the last 6 months and who raised the question with their partners, 47.2% reported that their partners agreed to use condoms once they raised the topic, while more than half (52.8%) reported refusal. This improved dramatically at post-intervention. More than half of male youth (51.6%) reported wanting to use a condom and discussing it with their partners, and the response they received improved with 68.9% partners agreeing and 31.1% of partners refusing to use a condom.

### **Study limitations**

The limitations of this survey must be considered to prevent misinterpretation of the results. Although attempts were made to reach a broad group of youth, the sample was not a random sample. Bias may have been introduced based on the

selection of young people to be interviewed. For example, teachers selected the students from their classrooms to be interviewed; it is unclear how this selection may have biased the results. It is possible that individuals with particular characteristics were systematically underrepresented, notably those who spend most of their time at home, perhaps due to ill health. Additionally, although we believe the survey to be indicative of the knowledge, attitudes, and behaviours of young people in Port Loko town, the results cannot be applied to the general population or to youth in other areas of Sierra Leone

Although respondents were selected in as similar a manner as possible at baseline and post-intervention, some significant differences exist in the socio-demographic profiles of each baseline and post-intervention group. Both male and female youth respondents showed significant differences in duration in Port Loko and education level between the baseline and post-intervention periods, and male youth also showed significant differences in marital status and religion. While change in the duration in Port Loko might be expected with peacetime resettlement and the increase in unmarried male youth may be explained in part by the return of displaced or demilitarized youth, reasons for differences in education levels and religion are less clear. It is unclear to what degree these differences may have affected survey answers provided by baseline and post-intervention respondents. Given the nature of the sampling methodology, analysis was limited to descriptive statistics.

It was the perception of the interviewers that respondents were largely forthcoming during the interviews, providing open and honest answers to the questions posed. Very few individuals approached for an interview refused to participate, further limiting potential bias. Nevertheless, as in all surveys, respondents may have modified their answers according to social norms or to their perceptions of interviewer expectations.

Finally, without a control group, a direct causal link cannot be drawn between the survey results and ARC's intervention efforts alone. This is important to note as HIV/AIDS education and awareness has grown with the establishment of the Sierra Leone National HIV/AIDS Secretariat and the launch of the Sierra Leone HIV/AIDS Response Project (SHARP) in December 2002. However, it is also important to note ARC's high level of involvement in the HIV/AIDS education activities of the Government, youth groups, schools, and community organizations, as well as its extensive outreach in the Port Loko community.

## **Discussion**

Although knowledge of HIV transmission, prevention, and sources of service increased dramatically from baseline levels among both male and female youth, post-intervention levels remain low. However, it is important to note that spontaneous knowledge of specific modes of HIV transmission were higher than others. For example, 93.3% of male youth and 76.8% of female youth identified sex as a route of HIV transmission at post-intervention, while 78.9% of male and 64.8% of female youth identified 'sharing sharp instruments' as a

transmission route. As the majority of HIV infections in Africa results from sexual transmission, the proportions identifying sex as a mode of transmission are heartening. However, 16.0% of female youth were still unable to name any effective means of avoiding AIDS at post-intervention. The generally low levels of knowledge about HIV/AIDS and STIs are unsettling for the future of the country.

The low knowledge levels are reflected in the lack of concern youth have about their personal risk for HIV, particularly among the female youth. It is interesting to note that, despite a threefold increase from baseline, fewer female youth expressed that they worry 'a lot' about AIDS than male youth. These findings are consistent with those of other studies. For example, 34.1% of women aged 15–24 years in Guinea, 53.6% in Ghana, and 65.5% in Nigeria saw themselves at 'no risk at all' of getting AIDS (ORC Macro 2004). This is particularly alarming in light of the fact that HIV infection rates are rising most rapidly among young African women (UNAIDS 2002). Although the proportion of female youth 'not worried at all' decreased nearly 13 percentage points, the proportion of male youth 'not worried at all' did not change which means further effort to reach this population is needed. Given the rising rates of HIV infection among young people throughout Africa, the failure of the youth to recognize the importance of AIDS as a major public health concern (and to recognize their own vulnerability) should be perceived as particularly disturbing.

Despite the low levels of concern about personal risk, reported condom use is higher among female youth than male youth at both baseline and post-intervention. This study did not examine condom use with different types of sexual partners, thus hindering interpretation of this finding; however, it is interesting to note that the primary source of condoms for female youth is their sexual partner. This suggests that female youth, while willing to use condoms, are not taking the initiative to ensure they have a means of protection (not surprising given their low concern for personal risk), and instead leave themselves vulnerable by deferring to their sexual partners. While the vast majority of female and male youth (79.5% and 80.7%, respectively) believed that condoms prevent AIDS, significant proportions of female and male youth (17.7% and 18.1%, respectively) said they are 'not sure if condoms prevent AIDS'. Changing these attitudes towards condoms is necessary if more young people are to begin protecting themselves from sexual transmission of HIV.

Increased proportions of both male and female youth reported discussing condom use with a partner in the last 6 months and, at post-intervention, both received agreement more often than refusal. This is in contrast to baseline findings when male youth who raised the topic were more likely to meet with refusal. This is an encouraging sign, and one that should reassure individuals that their partners are more likely than not to agree to condom use. It is important to note nevertheless that nearly one in three male and female youth (31.1% and 27.7%, respectively) who raised the subject met with refusal, indicating that further effort must be focused on improving negotiating skills and emphasizing

the importance and acceptability of condom use, especially within the context of power imbalanced sexual relationships, as noted earlier.

## **Conclusion**

Results from ARC's baseline and post-intervention knowledge, attitude, and behaviour surveys indicate that levels of knowledge of HIV/AIDS, STIs, and condom use increased substantially in the male and female youth population of Port Loko, Sierra Leone. These results suggest that intensive information, education, and communication activities combined with the distribution of free condoms may be effective in promoting change in this population. However, as seen from the post-intervention data, much work remains. Outreach activities must focus on emphasizing safer sex practices and improved health seeking behaviour for STIs in addition to increasing knowledge of transmission and prevention. Increasing such knowledge is necessary but not sufficient, as is shown by the still low levels of safer sex behaviours; future activities must emphasize improving attitudes and behaviours towards condom use and personal risk.

Condom use and acceptability should be promoted by teaching youth how to use condoms as well as increasing their confidence in and reducing embarrassment regarding condoms. Negotiation about condom use represents an essential skill that must be taught and reinforced. As transactional sex appears to be common, particularly among female youth (Women's Commission for Refugee Women and Children 2002, Partridge n.d.), improving young women's confidence and teaching them how to negotiate condom use with potential partners are crucial steps, even in the face of poverty and breakdown of social structures. In addition to increasing demand for condoms, easy access to condoms should be ensured through supplying bar owners and other non-traditional suppliers with free condoms; it is also necessary to ensure that the population is aware of this supply.

ARC used these results to refocus their intervention on youth to improve safer sexual behaviours, as youth represent the future of their country. Particular effort was expended to increase personal risk awareness and improve negotiation skills for condom use. As knowledge of adequate sources of STI care and treatment was low, ARC increased emphasis on supporting the health facilities that were providing good quality STI services and referring youth to these facilities. Despite the challenges inherent in a country emerging from a devastating conflict, these results suggest that good quality AIDS prevention programmes can be effective in improving knowledge, attitudes, and behaviour and should be implemented.

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## Notes

- <sup>1</sup> The ARC Health Team consisted of one Team Manager, four AIDS Prevention Officers, and one STI Prevention Officer, all possessing advanced degrees in health care.
- <sup>2</sup> Civil Defense Forces were local military groups who supported the government against the RUF.
- <sup>3</sup> A smaller number of female ex-combatants were selected due to the lower numbers of female combatants as compared to their male counterparts.
- <sup>4</sup> For a copy of the survey instrument, please contact the corresponding author.

## References

- Amowitz, L.L., Reis, C., Lyons, K.H., Vann, B., Mansaray, B., Akinsulure-Smith, A.M., Taylor, L. and Iacopino, V. (2002) Prevalence of War-related Sexual Violence and other Human Rights Abuses among Internally Displaced Persons in Sierra Leone. *Journal of the American Medical Association*, 287, 513–521
- Bazergan, R. (2002) *HIV/AIDS and Peacekeeping: A field study of the policies of the United Nations Mission in Sierra Leone*. International Policy Institute King's.
- CIA World Factbook (2004) Sierra Leone 2004. Available at <http://www.cia.gov/cia/publications/factbook/geos/sl.html>
- Global IDP Project (2003) Profile of Internal Displacement: Sierra Leone. Accessed 20/10/05, available at [http://www.db.idpproject.org/Sites/idpSurvey.nsf/wCountries/Sierra%20Leone/\\$File/Sierra%20Leone%20-October%202003.pdf?OpenElement](http://www.db.idpproject.org/Sites/idpSurvey.nsf/wCountries/Sierra%20Leone/$File/Sierra%20Leone%20-October%202003.pdf?OpenElement)
- HRW (1998) Sowing Terror: Atrocities against Civilians in Sierra Leone. Accessed 20/10/05, available at <http://www.hrw.org/reports98/sierra/>
- HRW (1999) Getting Away with Murder, Mutilation and Rape: New Testimony from Sierra Leone. July. Accessed 20/10/05, available at <http://www.hrw.org/reports/1999/sierra/>
- Kaiser, R., Spiegel, P., Salama, P., Brady, W., Bell, E., Bond, K. and Downer, M. (2002) HIV/AIDS Seroprevalence and Behavioral Risk Factor Survey in Sierra Leone, April 2002. Centers for Disease Control and Prevention, Atlanta.
- Khaw, A.J., Salama, P., Burkholder, B. and Dondero, T.J. (2000) HIV Risk and Prevention in Emergency-affected Populations: A Review. *Disasters*, 24, 181–197.
- Larsen, M.M., Casey, S., Sartie, M., Tommy, J., Musa, T. and Saldinger, M. (2004) Changes in HIV/AIDS/STI Knowledge, Attitudes and Practices among Commercial Sex Workers and Military Forces in Port Loko, Sierra Leone. *Disasters*, 28, 239–254.
- ORC Macro (2004) MEASURE DHS STATCompiler. Ghana 1998, Guinea 1999, Nigeria 1999. Accessed 17/08/04, available at <http://www.measuredhs.com>
- Parker, R., Easton, D. and Klein, C. (2000) Structural Barriers and Facilitators in HIV Prevention: A Review of International Literature. *AIDS*, 14, S22–32.
- Partridge, R. (n.d.) Young People's Sexual and Reproductive Health in the IDP Camps of Freetown, Sierra Leone: A Final Report. Marie Stopes International and Safe Passages to Adulthood.
- Rivers, K. and Aggleton, P. (1999) Adolescent Sexuality, Gender and the HIV epidemic. UNDP HIV and Development Programme.
- Save the Children (2002) *HIV and Conflict: A Double Emergency* (London: Save the Children UK).
- Save the Children and UNHCR (2002) Note for implementing and operational partners on sexual violence & exploitation: The experience of refugee children in Guinea, Liberia and Sierra Leone based on initial findings and recommendations from assessment mission 22 October–30 November 2001. February 2002. Accessed 20/10/05, available at <http://www.unhcr.ch/cgi-bin/texis/vtx/home/opedoc.pdf?id=PARTNERS&id=3c7cf89a4>
- Tadiesse, E., Orago, A., Karega, R. and Vivarie, R. (2003) Socio-cultural determinants of pregnancy and the spread of sexually transmitted infections among adolescent residents of Kakuma Refugee Camp, Northern Kenya. Presented at RHRC Conference 7 Oct 2003: Reproductive Health from Disaster to Development. Brussels, Belgium.
- United Nations (1999) Consolidated Inter-Agency appeal for Sierra Leone: January–December 2000. Accessed 15/03/02, available at <http://www.reliefweb.int/library/appeals/sle00.pdf>
- UNAIDS (2002) Gender and AIDS Fact Sheet: HIV/AIDS and Young People.
- UNAIDS (2004) 2004 Report on the Global AIDS Epidemic. Geneva.

- UNAIDS (2005) *At the Crossroads: Accelerating Youth Access to HIV/AIDS Interventions*.
- UNHCR (2003) *Sexual and gender-based violence against refugees, returnees and internally displaced persons: Guidelines for prevention and response*. Geneva.
- UNICEF (2000) *The progress of nations 2000* (New York: UNICEF).
- UNICEF (2003) *State of the World's Children 2004*.
- US GAO (2001) *UN Peacekeeping: United Nations Faces Challenges in Responding to the Impact of HIV/AIDS on Peacekeeping Operations* (Washington, DC: US GAO).
- USCR (1998) Country report: Sierra Leone. Accessed 20/10/05, available at [http://www.refugees.org/countryreports.aspx?\\_\\_VIEWSTATE=dDwxMTA1OTA4MTYwOztsPENvdW50cnIERDpHb0JldHRvbjs%2BPrImhOOqDI29eBMz8b04PTi8xjW2&cid=997&subm=&ssm=&map=&\\_ctl0%3ASearchInput=+KEYWORD+SEARCH&CountryDD%3ALocationList=](http://www.refugees.org/countryreports.aspx?__VIEWSTATE=dDwxMTA1OTA4MTYwOztsPENvdW50cnIERDpHb0JldHRvbjs%2BPrImhOOqDI29eBMz8b04PTi8xjW2&cid=997&subm=&ssm=&map=&_ctl0%3ASearchInput=+KEYWORD+SEARCH&CountryDD%3ALocationList=)
- USCR (2001) Mid-year country report: Sierra Leone. Accessed 10/08/04, available at [http://www.refugees.org/world/countryrpt/africa/Mid\\_countryrpt01/sierra\\_leone.htm](http://www.refugees.org/world/countryrpt/africa/Mid_countryrpt01/sierra_leone.htm)
- USCR (2003) World Refugee Survey 2003 Country Report: Sierra Leone. Accessed 10/08/04, available at [http://www.refugees.org/world/countryrpt/africa/2003/sierra\\_leone.cfm](http://www.refugees.org/world/countryrpt/africa/2003/sierra_leone.cfm)
- WHO (2000) *HIV/AIDS in Sierra Leone: The Future at Stake. The Strategic and Organisational Context and Recommendations for Action* (Freetown: WHO).
- Women's Commission for Refugee Women and Children (2000) *Untapped potential: Adolescents affected by armed conflict* (New York: Women's Commission for Refugee Women and Children).
- Women's Commission for Refugee Women and Children (2001) *Against All Odds: Surviving the War on Adolescents* (New York: Women's Commission for Refugee Women and Children).
- Women's Commission for Refugee Women and Children (2002) *Precious Resources: Adolescents in the reconstruction of Sierra Leone* (New York: Women's Commission for Refugee Women and Children).