Results of a Community Mentoring Programme for Youth Heads of Household in Rwanda: Effects on Youth Sexual Risk Behaviours and Maltreatment

Joseph Ntaganira, MD, PhD[1]*, Lisanne Brown, PhD[2] and Nancy B Mock, PhD[2]

[1]*Department of Epidemiology and Biostatistics, National University of Rwanda, School of Public Health, B.P. 5229 Kicukiro, Kigali, Rwanda*

[2]*Department of International Health and Development, Tulane University School of Public Health and Tropical Medicine, 1440 Canal Street, Suite 2200, New Orleans, LA 70112*

Abstract

Background: While mentorship programmes, which connect orphans with adults to whom they can turn to for help and advice, are proliferating in an attempt to prevent high-risk behaviours in adolescents, there are few data to show that mentorship actually makes a difference among youth heads of households (YHH). The purpose of this study was to: (a) investigate the impact of mentoring relationship on sexual risk behaviours outcomes among YHH, and (b) examine the impact of the mentoring programme on youth maltreatment including sexual abuse. **Methods**: The research used a quasi-experimental design to assess the impact of the adult mentoring programme on sexual risk behaviours and maltreatment of youth living without adult care in four districts of the then Gikongoro province. In the design, which includes a baseline and a follow-up survey, the intervention group (Maraba and Nyamagabe districts) with youth heads of households receiving the home visitation programme were compared to a comparison group (Mudasomwa and Nyaruguru districts). Analyses explored linkages between exposure to the intervention and various outcomes: HIV/AIDS knowledge, perception of HIV risk infection, sexual risk behaviours, and maltreatment. Logistic regression was used to examine whether the mentoring programme predicted outcomes of maltreatment or sexual behaviours when controlling for demographic characteristics and any other variables significant at the bivariate level. **Results:** The overall HIV/AIDS knowledge was higher in the intervention group (16.3% versus 12.5%) and more YHH in this group knew a place where to get a condom (64.5% versus 57.8%). In this group, youth were more likely to report use of condom (20.5 versus 12.4%), to perceive a risk of HIV/AIDS infection at the follow-up survey (44.7% versus 32.8%), and less consumption of alcohol (56.3 versus 41.7%). In the logistic regression, respondents who reported more adult support had a significantly high likelihood of being sexually inexperienced (OR = 1.20, score for adult support=3.67 versus 3.53, p=.05). During the last twelve months, being in school, male gender, and less marginalization were highly associated with being abstinent (AOR=4.68, 2.72, and 1.46, respectively). The level of maltreatment has sensibly diminished in the intervention group (from 1.53 to 1.27) during the last two years. There were more youth who reported physical abuse among the comparison group (24% versus 15.9%) and labour exploitation (29.5% versus 19.6%). YHH exposed to the intervention were less likely to suffer from labour exploitation and physical abuse (AOR = .52 and .63, respectively). **Conclusions:** Results indicate that the utilization of community adult mentors should be supported as a key strategy in working with YHH to decrease sexual risk behaviours and maltreatment from community members. For interventions to be optimally effective, specific strategies to promote community support and decrease marginalization need to be identified.

Key words: Youth heads of household, mentoring, sexual risk behaviours, maltreatment, abuse, Rwanda

Introduction

Sub-Saharan Africa has been severely affected by the HIV/AIDS epidemic with an estimated 1.8 million people newly infected in 2009, accounting for 69.2% of the total new infections in the world. [1] AIDS is also the leading cause of death among individuals age 15-59 years, and as a consequence, an estimated 12 million children ages 0-17 years have lost one or both parents to AIDS. [2] In Rwanda, the combined effects of the 1994 genocide and the spread of AIDS have resulted in alarming numbers of orphans. Recent data show that

***Correspondance:** Ntaganira Joseph; email: jntaganira@yahoo.com

overall 21% of children under age 18 years have lost their father and/or mother. [3] According to UNICEF, recent estimates put the total number of orphans in Rwanda at 820,000 among whom 26% were orphaned by AIDS. [2] As in other Sub Saharan African (SSA) countries, the care of children without one or both parents is traditionally carried out by family members and the responsibility is traditionally secured by the father's side of the family, in line with the patriarchal nature of Rwandan society. However, the drastic increase in the number of orphans and the extended poverty in the country have overstretched the traditional caring mechanisms towards orphans. Currently, many orphans lack adequate caregiving from surviving family members and some of them have chosen to live on their own in youth headed households (YHH) without any adult supervision. The number of children living in YHH is estimated between 200,000 and 300,000 and it is believed that the majority of these households are headed by orphaned girls. [4] Evidences have shown that YHH in Rwanda lack appropriate guidance and comfort, a possible threat to their harmonious development that may result in behavioural problems. [5] Researches have shown that many of them suffer of depression, stigma and marginalization from their community in general, including their extended family. [6 ,7] Lacking adult protection, households headed by youth are extremely vulnerable. YHH face high levels of maltreatment including exploitation, theft and abuse. [4, 8, 9] Several studies have shown that youth living in high poverty settings in SSA are at high risk of adverse development and poor health outcomes and orphans are particularly vulnerable. One major outcome, sexual initiation, has potentially severe consequences since it places youth not only at risk of childbearing but also of STDs including HIV, especially in high prevalence areas. [10, 11, 12]

Given the increased number of orphans in SSA, often in conditions of extreme poverty and neglect, the attention of the international support has focused initially on the dimensions of AIDS on children such as malnutrition, reduced access to education and health care. [13] However, findings from recent research in SSA have raised awareness in highlighting the need for psychosocial support in order to ensure the wellbeing of children affected by AIDS. [14, 15] Obviously, programmes should not only help vulnerable children to meet the basic needs but also expand and improve their intervention by providing psychosocial support. Moreover, since institutions are very expensive to run, community-based care has been identified as the best and most cost-effective way of caring for orphans [16]. In fact, the strength of a community-based approach builds on local resources, culture, realities and perceptions of child development. Therefore, as the extended family can no longer absorb the increasing number of orphans, new strategies to support vulnerable children are proliferating in many parts of Africa and moving beyond material concerns of orphans into psychosocial support. [17] The provision of mentorship to youth may contribute to youth development including the prevention of risk-taking behaviours and their consequences, and the protection against maltreatment from community members. Mentoring programmes for youth are very popular in the US where they have received recently a great attention. It is believed that mentoring relationships may foster positive development and the adoption of positive health behaviours among young people through several mechanisms, including the provision of social support, role modelling, and opportunities to develop new skills. [18] Findings from various researches suggest a broad impact of the mentoring relationships on adolescent health.

A recent meta-analysis found evidence of a significant positive effect of mentoring programmes on the emotional, behavioural, and educational functioning of participating youth. [19] Other investigations suggest positive benefits of natural mentoring relationships on a range of health-related outcomes for youth. Adolescents who have mentors were less likely to participate in risk behaviours including having more than one sexual partner [20], substance use [21], or teen pregnancy. [22] In addition, community home visiting programme has shown evidence not only in improving parent relationship in general and school competencies [23], but also specifically a positive effect in improving adolescent mother's parenting attitude and school continuation. [24] Two home-based models that focus on socially high-risk families have been widely implemented by programmes aimed at preventing child abuse and neglect. Home visiting programmes to prevent child abuse usually aim to achieve this goal by improving family functioning and parenting. While the two models present similarities in their content, the main difference between them is the person providing the intervention. [25] One model uses a trained health professional accustomed to making clinical assessments and giving advice about health issues and development. In contrast,

the other type relies on trained non professionals volunteers recruited from the community. These paraprofessionals are however supervised by a social worker and health personnel. A recent systematic review of the literature concludes that home visiting can be effective in preventing child abuse although it was noticed a wide variation in the effect sizes for outcomes, many of which being quite small. [26] These variations in impact may be due to differences in the target population studied, programme goals, design and implementation, outcomes measured. While the concept of mentoring youth is appealing and seems to have the potential of providing a role model that will influence the behaviours of adolescents, the efficacy of such concept in the prevention and amelioration of such behaviours in the African context needs to be validated. In addition, it is important to investigate whether the provision of an adult will reduce the vulnerability and abuse of youth heads of households in a poor and disrupted society. This study has two major goals. First, we sought to investigate the impact of mentoring relationship on sexual risk behaviours outcomes among YHH. Second, we sought to examine the impact of the mentoring programme on youth maltreatment including sexual abuse. We hypothesize that YHH who have an adult mentor would be less likely to engage in sexual risk behaviours than those without a mentor. In addition, the presence of an adult mentor will reduce maltreatment towards vulnerable YHH.

Methods

Intervention

This intervention built upon an existing World Vision Rwanda (WVR) programme of basic needs support for orphans and vulnerable youth through the addition of psychosocial support initiatives. The aim of the programme was to provide YHH with adult support through frequent home visiting. [27] World Vision Rwanda, an international nongovernmental organization working in Gikongoro, screened and selected adults to serve as volunteer mentors and provided monthly supervision. Mentors were recruited based on recommendations from the YHH and trusted community leaders. The community mentors received training in AIDS information, communication skills with orphans, needs assessment and care of orphans. During an 18 months period, 156 mentors of whom 60% were males served in mentoring 692 YHH, spending between one to two hours per visit providing guidance, supervision, emotional and social support, and transferring life skills. Every month, a supervision meeting was organized by WVR. Records collected during each mentors visit on the wellbeing of households members were discussed and appropriate decisions including referrals to hospitals, were taken according to YHH needs.

Data sources and participants

The research used a quasi-experimental design to assess the effects of a mentoring programme in four districts of the then Gikongoro province. In the design, which includes a baseline and a follow-up survey, the intervention group (Maraba and Nyamagabe districts) with YHH receiving the home visitation programme were compared to a comparison group (Mudasomwa and Nyaruguru districts). The first round of data collection was conducted during the first quarter of 2004, and the same respondents were interviewed during the same period of the year 2006. This report is based on analysis of data from both rounds of data collection and includes interviews with 692 YHH aged 24 and under at baseline, and 593 YHH under 27 years old at follow-up. All YHH were beneficiaries of World Vision's basic needs programme.

Study procedures

Formal review and approval of the instruments was obtained from the Tulane University Health Sciences Institutional Review Board and the Rwandan Ethical Review Board. A team of 20 trained data collectors lead by five assistant lecturers of the Rwanda School of Public Health conducted the fieldwork. Data were collected over a 3-week period during the first quarter of 2004 and 2006, respectively for the baseline survey and the follow-up survey. Fieldworkers visited the homes of the respondents and face-to-face interviews lasting 1–2 hours were conducted in respondents' homes in order to ensure confidentiality and improve disclosure. Before starting any interview, informed consent was sought and each youth head of household respondent was informed of his or her right to withdraw from the study at any time without penalty. Data collectors were prepared to recognize and respond appropriately to the discovery of youth in danger, such as suicidal ideation, a history of current physical or sexual abuse and neglect. Youth were automatically reported to World Vision staff for referral and further intervention. At the end of the interview, a small bag of household items consisting of a candle, matches, soap, rice, and flour, was provided as token of appreciation and in compensation for participant's time.

Variables

Demographic characteristics

Measures to describe the YHH include age, gender, number of years as head of household, household composition, education level, household characteristics (number of meals per day, assets owned, socioeconomic status index), and whereabouts or circumstances of their parent's death.

Knowledge of HIV/AIDS prevention and perception of HIV/AIDS infection risk

Respondents were asked whether there was anything a person can do to avoid HIV infection. Six items were then used to measure HIV/AIDS prevention knowledge. Possible response categories were "yes" or "no" when "abstain for sex", "being faithful to one partner", "condom use", "avoid injections", "avoid sharing razors/blades" or "avoid traditional doctors" was mentioned. Respondents were also asked if they know someone who died of HIV and their relationship to that person, their perception of HIV infection risk, and a place where they can obtain a condom.

Sexual risk behaviours

Respondents were asked about their lifetime sexual experiences. Sexual intercourse was defined as full penile-vaginal penetration. Those who reported a history of sexual intercourse responded to further questions, including condom use at the first sexual encounter, the number of lifetime sexual partners and in the last twelve months. For those who were sexually active in the previous twelve months, information was gathered regarding the number of sexual partners during that period and the use of condoms at the last sexual encounter. Finally, survival or transactional sex was assessed by asking respondents whether they have ever had sex expecting someone to take care of them or their siblings, or given anything, such as money or gifts. Outcome variables to measure the effect of the mentoring programme were abstinence during the last twelve months and condom use at last sex.

Youth maltreatment

Maltreatment was assessed by asking respondents whether during the last two years they have experienced any of the following: having been beaten, having been not paid for work, and having suffered damage to property or experiencing attempts to have land/possessions taken. In addition, they were asked whether they feel safe in their home. In order to assess sexual coercion, respondents were asked whether in the past two years they have been threatened to lose a job or not obtain a job if he/she refuses to have sex with someone or have been forced to have sex. For YHH who reported experiences of being beaten or a history of sexual coercion, further questions were asked to know whether the abuse was currently happening. A 5 items maltreatment index was then constructed by summing the score for each type of maltreatment experienced by the youth including sexual coercion (alpha = .54). Each youth was given a score of 1 if he was victim of a certain abuse. The score ranged from 0 to 5, with higher score indicating more abuses. The scale was recorded into three maltreatment levels according to the score computed for each youth.

Adult support and marginalization

A scale was generated to assess the level of adult support available to the youth. The scale consisted of four items including whether they had an adult in their life that they can always depend on, someone to give them advice and guidance, someone to comfort them when they are sad or sick, and an adult who would go to the authorities with them if they needed help. Each item was scored using a 5 point likert scale from strongly agree to strongly disagree, with don't know scored in the middle (alpha = .77). The score range from 1 to 5, with higher scores indicating greater availability of adult support. A marginalization scale was also developed to assess the felt stigma and isolation of youth from the surrounding community. The scale consisted of six items (alpha = .77) and respondents had to indicate their agreement with the following statements: I feel like no one cares about me, people in the community would rather hurt me than help me, people make fun of my situation, people speak badly about you or your family, the community rejects orphans. Each items was based on a 5 options ranging from strongly disagree to strongly agree, with don't know/uncertain scored in the middle. The scores ranged from 1 to 5, with higher scores indicating more marginalization.

Community connectedness and depression

Social connectedness to the community was measured through three factors: affiliation to a community group, peers relationship, having moved from the area more than twice in the last five years and the perception of social support by the respondent.

The assumption was that youth who do not belong to a community group or who have moved often were less likely to feel socially connected to their community. Peers relationship was measured by asking youth whether "they have at least one close friend of the same sex they can count on" and whether "they feel like they belong to a group of friends their own age". A scale was generated to assess the level of adult support available to the youth. The scale consisted of four items including whether they had an adult in their life that they can always depend on, someone to give them advice and guidance, someone to comfort them when they are sad or sick, and an adult who would go to the authorities with them if they needed help. Each item was scored using a 5 point likert scale from strongly agree to strongly disagree, with don't know scored in the middle (alpha = .77). The score range from 1 to 5, with higher scores indicating greater availability of adult support. Depression was measured by using the 20-item standardized Centre for Epidemiological Studies Depression Scale (CES-D). Each item score was based on 4 options (never, sometimes, often and always) with a total possible score ranging from 0-60, the highest score indicating greater depressive symptomatology (alpha = .86).

Quality of the mentoring programme

Three scales were generated to assess the quality of the mentoring programme: frequency and length of the mentor (time index), help and protection provided by the mentor (results index) and relationship with the mentor (positive index). The time scale consisted of four items (alpha = .79) including whether their mentor visits them enough, whether the mentor seems in rush when he visits, you have enough time to talk about everything you want, your mentor visits only when you have a problem. The results index consisted of three items (alpha = .67): your mentor has helped you establish better relationships with other community members, your mentor helps you access the support you need, and your mentor helps protect you. The scale to assess the relationship with the mentor consisted of eight items (alpha = .89) and respondents had to indicate their agreement with the following statements: your mentor gives you good advice, he understands your feelings, you have learned a lot from your mentor, you feel you have a value when you are with your mentor, he helps you feel more confident, you trust your mentor, all the youth in your household appreciate the mentor and your mentor helps you solve conflicts in your household. Each item of the three scales was scored using a 5 point likert scale from strongly agree to strongly disagree, with don't know scored in the middle.

Data analysis

Data from the youth survey were double-entered into EPI-INFO 2002 (Centre for Disease Control and Prevention, Atlanta, Ga) and analysis was performed using SPSS 15.0 for Windows (SPSS, Inc., Chicago, IL, 2006). Factor Analysis using Principal Components with varimax rotation was done. For this study, using the Eigen value greater than 1.0 test, a minimum of 0.40 for factor loadings and 0.60 for alpha levels was established. Cronbach's alpha was calculated to assess the internal consistency of scale items as reported above. All the socio-demographic variables, HIV knowledge, HIV risk behaviours, and maltreatment measures were stratified by study groups and timing of the survey. Means and standard deviations were computed for continuous variables and proportions for categorical variables. Then, we used the chi-square test and Student's t-test to compare baseline characteristics of the study groups and to test for differences between the home-visited and control groups at baseline and follow-up. We related the dependent variables, that is, never had sex and abstinence during the last twelve months, to HIV knowledge and perception of HIV risk infection, assets owned, as well as social connectedness, depression, and demographic variables. The same bivariate analysis was performed to assess the relationships between maltreatment, home-visiting and the same selected variables. Finally, logistic regression analyses were conducted to examine whether the mentoring programme predicted each outcome of maltreatment when controlling for demographic characteristics (age, gender, number of other children in the household, number of years as head of household, and education achievement) and any other variables significant at the bivariate level. Risk estimates and significance levels are presented.

Results

Socio-demographic characteristics of the sample

The baseline sample included 692 youth heads of household who were between the ages of 12 and 24 years. The follow-up sample included 593 youth heads of household, who were between the ages of 14 and 26. Socio-demographic characteristics of the intervention and comparison groups at baseline are presented in Table 1. In the overall sample, there were

more males in both groups than females (53.6% versus 46.4%). The vast majority (95.9%) of youth heads of household reported that one or both of their parents was dead; 91 percent reported that their mother was dead, 74.8 percent reported that their father was dead, and a total of 69.9 percent reported that both parents were dead. While 0.9% indicated that their parents were alive, 3.2% were uncertain about the whereabouts of both parents. Nearly 54% of youth reported having served as the head of the household for 5 years and more, while 46.3% became heads of household during the last four years preceding the survey. It is important to notice that at the baseline survey, one out of five youth was living alone.

While the overall sample at baseline showed similarities in some demographic characteristics, differences were evident in some key background and outcomes variables between the intervention and the comparison groups. The intervention group was older than the comparison group (21 years versus 20 years, $p<0.001$) and significantly worse off with regard to social connectedness and poor youth behaviours. Youth in the comparison group were more likely to have a close friend (95.9% versus 87.0%), to belong to a group of friends (93.3% versus 89%), and to have moved less during the last five years (23.8% versus 32.3%). In addition, they were reporting more adult support (3.6 versus 3.2) and less marginalization (3.1 versus 3.4). On the contrary, youth in the intervention reported more poor behaviours such as tendency to get in fights, stealing, and they were more likely to have been arrested in years preceding the survey than the comparison group. In addition, they reported more parents killed during the genocide and the war and were more likely to suffer from depression symptoms than their peers in the comparison group. However, although the education level was low in the overall sample, youth in the intervention group were more likely to have achieved the primary school level and beyond (34.5% versus 23.3%). In addition, they seemed significantly better off than they peers in the comparison group with higher assets ownership (3.8 versus 3.3)

Table 1 Socio-demographic characteristics of Intervention and Comparison groups at Baseline

	Group		
	Intervention %	**Comparison %**	**Overall %**
	(n=347)	(n=345)	(n=692)
Age* **			
<=18	21.6	33.6	27.6
>18	78.4	66.4	72.4
Gender			
Male	54.5	52.8	53.6
Female	45.5	47.2	46.4
Orphan Status*			
Double	69.2	70.7	69.9
Maternal	18.7	23.5	21.1
Paternal	5.8	4.1	4.9
Both alive	1.7	0.0	0.9
Uncertain	4.6	1.7	3.2
Number of years as head of household			
<5	45.7	47.0	46.3
≥5	54.3	53.0	53.7
Number of other children & adolescents in household			
Live alone	17.0	22.0	19.5
Live with others	83.0	78.0	80.5
Education achievement* **			
Less than primary	65.5	77.7	71.5
Primary and more	34.5	23.3	28.5
Household characteristics			
Eat one meal per day	45.8	41.2	43.5
Assets index (mean score, range 1-6)***	3.8	3.3	3.6
Social connectedness			
Belong to 1 or more community groups	62.8	62.6	62.7
Peers relationship			
One close friend***	87.0	95.9	91.5
Belong to a group of friends*	89.0	93.3	91.2
Moved >=2 times during last 5 years**	32.3	23.8	28.1
Adult support (mean score, range 1-5)***	3.2	3.6	3.4
Marginalization (mean score, range 1-5)***	3.4	3.1	3.2
Youth behaviours			
Drink alcohol*	45.8	53.0	49.4
Use drugs	0.6	1.7	1.2
Tendency to get in fights	4.9	2.3	3.6
Steal from neighbours	3.2	3.8	3.5
Ever been arrested**	8.9	4.3	6.6
Whereabouts of parents			
Parent killed in genocide	18.4	16.3	17.4
Parent killed after the war	8.6	5.2	6.9
Parent died from poison**	39.8	50.7	45.2
Parent in prison	3.5	4.9	4.2
Depression (mean score, range 1-55)**	25.4	23.2	24.3

*p ≤ .05; **p ≤ .01; ***p ≤ .001

HIV/AIDS knowledge and perception of HIV risk infection and youth behaviours

Table 2 presents knowledge of HIV/AIDS prevention measures and the perception of HIV risk infection by study group and timing of the survey. While almost all youth heads of households are aware of abstinence from sex in both groups, the intervention was more likely to report use of condom at both times of the survey than the comparison group. At the follow-up survey, the proportion of youth reporting use of condom increased from 63.7% at baseline to 69.4% (Figure 1). Similarly, YHH in the intervention group were more likely to perceive a risk of HIV/AIDS infection at the follow-up survey (44.7% versus 32.8%) than the comparison group.

Although not significant, the overall ABC knowledge was higher in the intervention group (16.3% versus 12.5%) and more YHH in this group knew a place where to get a condom (64.5% versus 57.8%) [Figure 1].

With regard to sexual risk behaviours, YHH in the intervention group were significantly more sexually experienced at both surveys and they reported more to have engaged in sex during the last twelve months. At the time of the follow-up survey, half of YHH in the intervention were sexually experienced and 43.5% reported having had sex during the last year. Although very low, the mean number of sex partner was significantly high among youth exposed to the programme (0.5 versus 0.3, $p \leq .05$).

While alcohol consumption was significantly high among youth in the comparison group at baseline (41.8% versus 56.3%, $p \leq .001$), other youth behaviours including tendency to get in fights, steal from neighbours, and ever been arrested were comparable.

Figure 1 Changes in HIV risk perception, condom knowledge and condom use by study group and timing of the survey

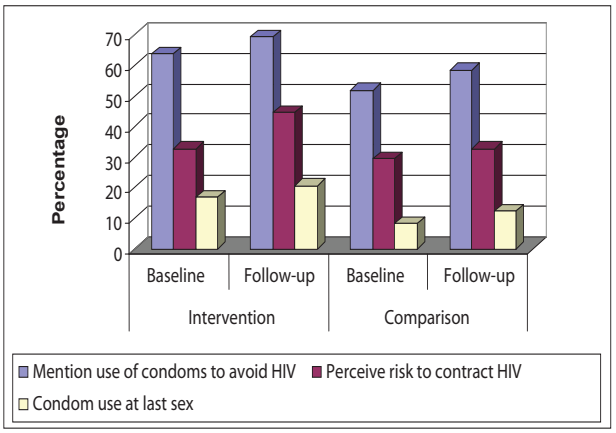

Table 2 Percent distribution of respondents, or mean values, by knowledge, perception of HIV risk infection and behaviour measures, by study groups and timing of the survey.

	Baseline		Follow-up	
	Intervention (n=347)	Comparison (n=345)	Intervention (n=297)	Comparison (n=296)
HIV/AIDS Knowledge and perception of HIV risk				
Abstain from sex	98.6	99.1	99.3	97.6
Use condom	63.7**	52.0	69.4**	58.6
Limit sex to one partner	26.5	20.9	20.9	15.5
Avoid traditional doctors	35.2	34.6	35.6	31.1
ABC knowledge of HIV prevention□	22.2	17.4	16.3	12.5
Perception of existing HIV risk	32.8	29.5	44.7**	32.8
Know a place where one can get condoms	64.7***	49.0	64.5	57.8
Sexual risk behaviours				
Ever had sex	37.8**	28.1	52.2**	41.5
Condom used at first sex	10.7	5.2	12.3	7.4
Ever had sex seeking for care	7.2	4.1	9.8	6.8
Ever received anything for sex	4.9	2.3	6.4	4.1
Ever given money or gifts for sex	4.3	2.0	2.4	2.0
Number sex partners past 12 months				
None (Abstinence)	68.7	64.9	56.5	69.7*
≥1	31.3	35.1	43.5	30.3
Mean No. sex partners past 12 months	0.4	0.5	0.5*	0.3
Condom used at last sex	16.8*	8.2	20.5	12.4
Number sex partners lifetime				
0	-	-	0.6	0.8
1	57.4	60.8	64.5	76.2
2	27.9	16.5	22.6	13.1
≥ 3	14.7	22.7	12.3	9.8
Mean No. of sex partners lifetime	1.7	1.8	1.5	1.4
Other youth behaviours				
Drink alcohol	45.8*	53.0	41.8	56.3***
Use drugs	0.6	1.7	-	-
Tendency to get in fights	4.9	2.3	10.0	9.2
Steal from neighbours	3.2	3.8	4.1	4.1
Ever been arrested	8.9**	4.3	6.4	4.4

*$p \leq .05$; **$p \leq .01$; ***$p \leq .001$

□ Mentioned abstain from sex, use condom and limit sex to one partner

Correlates of abstinence at the follow-up survey

The correlates of "never had sex" and "abstinent" during the last twelve months in terms of socio-demographic characteristics, social behaviours such as exposure to alcohol, social connectedness, HIV prevention knowledge, and the perception of HIV risk infection were analyzed (Table 3). Logistic regression results indicate that YHH under age 18 years had a high likelihood of being sexually inexperienced (AOR = 1.71). YHH who were in school at the time of the survey were also twice more likely to report they had never had sex than their peers who were out of school (AOR = 1.98). On the contrary, female respondents or youth who perceived a certain risk of HIV infection had a significantly high likelihood of being sexually experienced (AOR = .63 and .38, respectively). Although not statistically significant in the logistic regression analysis, other important factors were negatively associated with being sexually inexperienced in bivariate analyses: belonging to a group of friends (OR=.42), knowledge of condom use (OR=.63), and drinking alcohol (OR=.70). On the contrary, respondents who reported more adult support had a significantly high likelihood of being sexually inexperienced (OR = 1.20, score for adult support=3.67 versus 3.53, p=.05). With regard to sexual behaviours during the last twelve months, three factors appeared to be highly associated with our outcome of interest, i.e. being abstinent: being in school, male gender, and less marginalization (AOR=4.68, 2.72, and 1.46, respectively). Youth reporting less marginalization had a higher likelihood of being abstinent (score for marginalization=3.08 versus 3.39, p=.002). In the bivariate analysis, belonging to a community group was also positively associated with being abstinent during the last twelve months (OR=1.67), while low education achievement was negatively associated.

Table 3 Odds Ratios of "never had sex" and "abstinent" during the last twelve months at long-term follow-up for YHH in Gikongoro

	All respondents (n =593)		Sexual experienced respondents (n =266)	
	Never had sex (OR)		Abstinent last 12 months (OR)	
	Unadjusted	Adjusted	Unadjusted	Adjusted
Age (≤18 versus >18)	3.05***	1.71*	.89	.78
Gender (Male versus female)	.64**	.63*	2.72***	2.50**
Number of years as head of household				
<5	1.83***	1.41	.86	.66
≥5	–	–	–	–
Number of other children & adolescents in household				
1-2	–	–	–	–
3-4	1.03	.85	1.13	.78
5 or more	.95	.69	1.92	1.85
Education completed				
Less than primary	1.09	1.13	.52*	.55
Primary and more	–	–	–	–
Currently in school	3.37***	1.98*	5.09**	4.63*
Assets index	.98	N/A	.95	N/A
Social connectedness				
Belong to 1 or more community groups (Yes versus No)	1.25	N/A	1.67*	1.13
One close friend	.87	N/A	.99	N/A
Belong to a group of friends	.42**	.49	.61	N/A
Moved >=2 times during last 5 years (Yes versus No)	.75	N/A	1.12	N/A
Adult support	1.20*	1.11	.97	N/A
Marginalization	1.12	N/A	1.67**	1.46*
Knowledge of condom use	.63**	.82	1.11	N/A
Perception of existing HIV infection risk	.39***	.38*	.79	N/A
Drink alcohol	.70*	.69	.84	N/A
Depression	1.00	N/A	1.01	N/A

*p ≤ .05; **p ≤ .01; ***p ≤ .001

Prevalence of maltreatment experienced by youth heads of households by study groups and timing of the survey

Table 4 presents the distribution of maltreatment experienced by YHH by study group and timing of the survey. Globally, nearly 70% of YHH among the intervention group reported they feel safe at the time of the follow-up survey. Compared to the baseline survey, this proportion has increased from 62% while YHH in the comparison group indicated feeling more insecure (67.5% to 63.8%) at the follow-up survey. The level of maltreatment was significantly higher in the intervention group than the comparison group at the baseline (1.53 versus 1.34). While we notice an increase in maltreatment in the comparison group at the follow-up, the level has sensibly diminished in the comparison group (Figure 2). At the baseline, YHH in the intervention group were worse off than the comparison group with significant high proportions of youth being beaten (14.6% versus 5.8%), losing their possessions (41.2% versus 31.7%). During the last two years, this trend was reversed with significantly more youth who reported physical abuse among the comparison group (24% versus 15.9%) and labour exploitation (29.5% versus 19.6%). In addition, 23.2% of YHH in the comparison group were currently being beaten at the time of the follow-up while none was noticed among the intervention group. However, the proportion of YHH sexually abused and those who had had their property damaged remained almost unchanged in the two groups at the follow-up survey. It is important to notice that nearly half of the sexually abused youth in the comparison group were still in contact with the perpetrator.

Figure 2 Changes in maltreatment by study group and timing of the survey

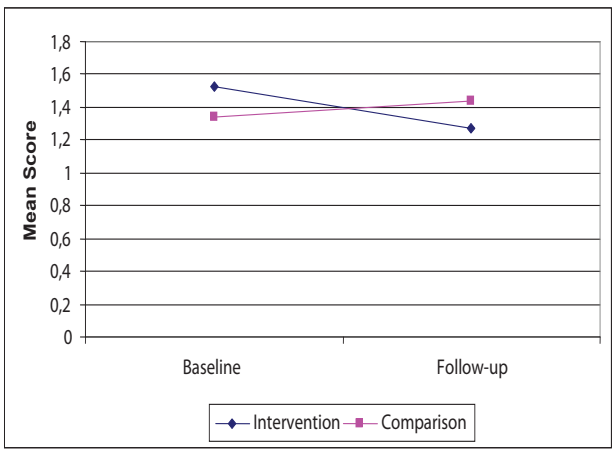

Table 4 Percent distribution of respondents, or mean values, by type of maltreatment, by study groups and timing of the survey

	Baseline		Follow-up	
	Intervention (n=347)	Comparison (n=345)	Intervention (n=297)	Comparison (n=296)
Have been threatened to lose job or not obtain a job if no sex	9.8***	3.2	7.1	5.3
Have been forced to have sex	5.2	3.8	5.7	4.1
Are still in contact with the perpetrator	6.3	8.3	17.6	45.5
Have been beaten	27.7	24.9	15.9	24.0**
Currently being beaten	14.6*	5.8	0.0	23.2***
Feel safe	62.0	67.5	69.5	63.8
Land or home possessions taken	41.2**	31.7	33.9	33.0
Have had property, land, crops or animals destroyed or damaged	53.9	48.5	52.0	53.0
Have been hired for a job or service but not paid	26.0	25.3	19.6	29.5**
Maltreatment level				
None	25.0	32.0*	32.5	30.7
1	27.9	25.5	28.5	25.6
2-3	39.8	39.0	34.6	36.5
4-5	7.3	3.5	4.4	7.2
Maltreatment (mean)	1.53* (S.D=1.23)	1.34(S.D.=1.19)	1.27(S.D=1.17)	1.44 (S.D=1.28)

*p ≤ .05; **p ≤ .01; ***p ≤ .001
S.D.=Standard deviation

Correlates of maltreatment, physical abuse and labour exploitation at the follow-up survey

The correlates of youth physical abuse (have been beaten) and labour exploitation (hired but not paid) by the community in terms of socio-demographic characteristics, exposure to the mentoring programme, social connectedness, youth behaviours and parent's whereabouts were analyzed. The quality of the mentoring programme was analysed through the assessment of the frequency of the mentor's visits, the length of the visits, the help and protection provided by the mentor and the quality of the relationship between the mentor and the youth (Table 5). Around 77.1% of YHH were satisfied with the frequency of their mentor's visits and 74% indicated that they have enough time to discuss about all they want. In addition, 83% recognized the help of their mentor in improving their relationship with other community members and in obtaining protection (70%). Notably, 92.3% of YHH confirmed that they trust their mentor and 89.3% reported receiving good advice. The relationship extends beyond the head of household and the mentor, as 88% of surveyed youth believed all youth in the household appreciate the mentor and 76.9% reported the mentor helps them in solving conflicts in their household. Results in the bivariate analysis assessing the relationship between abuse and factors mentioned above indicate that youth with delinquent behaviours are more likely to experience maltreatment than other YHH (Table 6). Youth who steal from neighbours, have been arrested or get in fights had significantly higher likelihood of being beaten (OR=8.32, 3.88, and 2.86, respectively). Social connectedness was particularly strongly associated with maltreatment: adult support (OR=1.54), marginalization (OR=.37). Youth indication less adult support (3.5 versus 3.8, p=0.000) and higher marginalization (3.3 versus 2.7, p=0.000) were more likely to report maltreatment. While exposure to the programme was not associated to maltreatment, there was a positive relationship between mentor's frequency of visits and maltreatment although the differences were not significant. Moreover, indicators of the quality of the mentor programme were significantly associated with maltreatment. Youth with particularly high scores of time index reported less maltreatment.

Regression results after controlling for demographic characteristics and other variables significant at the bivariate level showed three main factors associated to maltreatment at the follow-up survey: tendency to get in fights (AOR=6.41), adult support (AOR=1.27) and marginalization (AOR=.39).With regard to physical abuse, at the bivariate level poor youth behaviours were at high risk of abuse. Drinking alcohol, tendency to get in fights, steal from neighbours, and ever been arrested was associated with having been beaten (OR=3.95, OR=1.36). Similarly, YHH whose parent was killed in the genocide were nearly two times more likely to be victims of beatings. Factors pertaining to community connectedness were also strongly associated to physical abuse. Youth reporting less adult support or more marginalization were more likely to experience beatings (OR=1.61, OR=.49). The mean score for marginalization was higher among victims of physical abuse (3.5 versus 3.1, p=.000), while YHH less adult support was noticed among the same group (3.3 versus 3.7, p=.000). Other factors showing a positive association include gender male and young age (OR=1.63, OR=1.55). It is remarkable that youth who were exposed to the intervention were less likely to experience physical abuse than their peers who didn't (OR=.59). After controlling for demographic characteristics and other confounders, regression results indicate that six factors were predictors of physical abuse at the time of the follow-up survey: male gender (AOR=1.59), stealing from neighbours (AOR=3.33), parent killed in the genocide (AOR=1.33), adult support (AOR=1.26), marginalization (AOR=.53) and exposure to the programme (AOR=.63). Logistic regression analyses were also conducted to assess which factors were associated with labour exploitation, after controlling for socio-demographic factors and other confounders. As presented in table 5, results indicate that youth behaviours, i.e. stealing from neighbours and ever been arrested, YHH whose parents were in prison, and male gender, had a significantly high likelihood of labour exploitation (AOR=4.12, 2.39, 4.16, 1.69, respectively). On the contrary, younger YHH, those living in small households or exposed to the intervention were less likely to suffer from labour exploitation (AOR = 0.53, .59, .41, .52, respectively).

Table 5 Quality of the mentoring programme (n=288)

	Strongly agree %	Agree %	Uncertain %	Disagree %	Strongly disagree %
Time					
Your mentor visits you enough	30.9	46.2	0.0	16.3	6.6
When your mentor comes, he/she seems in a rush to leave.	5.6	23.8	1.0	57.0	12.6
When your mentor visits, you have enough time to talk about everything that you want to talk about.	26.3	47.7	0.4	21.1	4.6
Your mentor visits only when you have a problem.	1.8	23.2	0.7	59.6	14.7
Results					
Your mentor has helped you establish better relationships with other community members.	19.8	63.2	.3	12.5	4.8
Your mentor helps you access the support you need.	11.5	35.1	.3	44.4	8.7
Your mentor helps protect you.	15.0	55.4	1.0	24.0	4.5
Positive relationship					
Your mentor gives you good advice.	31.3	58.0	0.0	7.3	3.5
Your mentor understands your feelings.	18.1	64.2	1.7	13.5	2.4
You have learned a lot from your mentor.	18.1	57.3	0.3	20.8	3.5
When you're with your mentor, you feel you have value.	24.3	65.3	0.7	8.7	1.0
Your mentor helps you feel more confident.	23.3	63.1	0.3	11.5	1.7
You trust your mentor.	22.9	69.4	0.7	5.2	1.7
All the youth in your household appreciate the mentor.	26.6	61.4	2.9	6.2	2.9
Your mentor helps you solve conflicts in your household.	17.4	59.5	0.8	17.4	5.0

Table 6 Odds Ratios of maltreatment, physical abuse and labour exploitation at long-term follow-up for YHH in Gikongoro

	All respondents (n=593)					
	Maltreatment (OR)		Physical abuse (OR)		Labour exploitation (OR)	
	Unadjusted	Adjusted	Unadjusted	Adjusted	Unadjusted	Adjusted
Age (≤18 versus >18)	.74	.86	1.55*	1.55	.79	.53*
Gender (Male versus female)	1.15	.59	1.63**	1.59*	1.93***	1.69**
Number of years as head of household						
<5	.79	.88	.91	.98	.95	1.25
≥5	–	–	–	–	–	–
Number of other children & adolescents in household						
1-3	1.02	1.35	1.17	.90	.82	.59*
>3	–	–	–	–	–	–
Education completed						
Less than primary	–	–	–	–	–	–
Primary and more	.87	1.00	0.89	1.19	.79	.86
Assets index	.99	N/A	1.16		1.06	
Exposure to the mentoring programme (Intervention)	1.04	N/A	.59**	.63*	.58**	.52**
Frequency of mentor visits						
At least once per week	1.84	N/A	1.39	N/A	1.69	N/A
Once or twice per month	1.51	N/A	1.18	N/A	.91	N/A
Less than once per month	–	–	–	–	–	–
Frequency and length of the mentor visit (Time index)	1.19***	1.11	1.06	N/A	1.10	N/A
Help and protection provided by the mentor (Results index)	1.19*	1.03	1.03	N/A	1.09	N/A
Relationship with the mentor (Positive index)	1.08*	.97	1.02	N/A	1.03	N/A
Social connectedness						
Belong to 1 or more community groups (Yes versus No)	.57	N/A	.76	N/A	1.36	N/A
One close friend	.66	N/A	.60	N/A	1.43	N/A
Belong to a group of friends	.87	N/A	.74	N/A	1.15	N/A
Was YHH at baseline time	1.05	N/A	.90	N/A	0.88	N/A
Moved >=2 times during last 5 years (Yes versus No)	1.20	N/A	1.31	N/A	1.44	N/A
Adult support	1.54***	1.27*	1.61***	1.26*	1.39**	1.29*
Marginalization	.37***	.39***	.49***	0.53***	.63***	.68**
Youth behaviours						
Drink alcohol	.84		1.72**	1.24	1.57**	1.39
Tendency to get in fights	2.86**	6.41*	2.05**	1.39	1.83*	1.27
Steal from neighbours	8.32**	1.10	3.63***	3.33**	3.55**	4.12**
Ever been arrested	3.88**	1.03	2.56**	1.56	3.81***	2.39*
Whereabouts of parents						
Parent killed in genocide	1.05	N/A	1.94**	1.77*	.95	N/A
Parent killed after the war	1.28	N/A	.51	N/A	.72	N/A
Parent died from poison	1.48	N/A	1.19	N/A	1.05	N/A
Parent in prison	1.38	N/A	1.80	N/A	2.47*	4.16**

*p ≤ .05; **p ≤ .01; ***p ≤ .001

Discussion

In this report of a home visiting intervention designed to improve the wellbeing of YHH, we have focused specifically on the degree to which the programme enhanced protection against maltreatment and improved sexual risk behaviours, particularly by maintaining abstinence from sexual intercourse, over the course of eighteen month following intervention. While the follow-up data suggest positive intervention effects on maltreatment, mentoring relationships did not indicate to have beneficial significant effects on all outcomes examined in the current study. Favourable effects of mentoring were evident for 2 outcomes (physical abuse and labour exploitation), but were not apparent for sexual coercion and land grabbing, though there was a decrease in the last. Results from regression analysis showed that factors indicating insufficient social connectedness and youth delinquency were the most salient factors leading to maltreatment towards YHH at the time of the follow-up. These results are consistent with other studies that have indicated marginalization as a serious constraint to enhance community-based programmes for orphans and vulnerable children in the Rwanda post-genocide society. [4, 28] Interviews with YHH have highlighted how the mentoring programme has contributed in reducing their isolation and increased social interactions, as a result of mentor visits.

Overall, 83% of surveyed youth reported that their mentor has helped them to establish better relationships with community members. The programme has facilitated youth integration within the community and broken down barriers between YHH and their neighbours. Advocacy from mentors in support of children living on their own has helped youth not only to reconcile with their neighbours, but also to gain increased acceptance and support from the wider community. Community support appears to be an important factor underlying beneficial mentoring relationships. Community participation may reduce discrimination and encourage supportive actions towards orphan households. It is noteworthy, therefore, that the mentoring programme has succeeded in engaging the community for better relationships with YHH. This positive change in community attitudes towards YHH can also be attributed to an important reduction in youth externalizing behaviours, as a result of mentors' guidance. Results showed a remarkable reduction in delinquency and "wandering behaviours" previously exhibited by programme youth. Previous behaviours include drinking, drug-taking, and tendency to get in fights. Despite the encouraging improvement in youth behaviours, there seem however to be potential barriers to the capacity of mentors to decrease risk for some negative youth behaviours. In the present research, home visiting was only found to be related to the reduction of alcohol drinking. Mentors may not be able likely to provide a high level of monitoring if they have only periodic contact with youth with regards to all youth externalising behaviours. However, the success in reducing alcohol consumption is noteworthy as evidence of benefits for mentoring in this area has been mixed in other research on adolescents. [20]

This study has provided convincing evidence that a home visiting community mentoring intervention for YHH can reduce the rate of maltreatment among YHH. YHH with a mentor were less likely to experience abuse, such as being beaten or labour exploitation. Youth reported feeling more secure and better protected as a result of the programme. Overall, 70.4% of surveyed youth agreed their mentor helps to protect them. Mentors serve as an adult advocate for the best interests of YHH and their presence appears to act as a deterrent to those who would abuse them. With regard to sexual risk behaviours, the success for behavioural interventions for HIV prevention in adolescents is measured by sexual frequency outcomes (delay or abstinence from sexual intercourse), and objectively measured condom use and negotiation skills. The mentoring programme significantly improved YHH knowledge of condom and perception of HIV/AIDS risk infection; however the programme was not effective in reducing the odds of sexual onset and abstinence during the last twelve months. Prior reviews of adolescent health promotion studies that have assessed behavioural outcomes have shown a very small magnitude of the reduction for the most critical risk-reduction outcomes, sexual frequency and condom use. [29] Research in SSA among adolescents exposed to life skills education programmes has shown similar results. [30] Sexual risk reduction in adolescents has proved to be particularly difficult as youth often do not recognize their vulnerability to health threats. However, it should be recognized that risk reduction and behaviour change are nearly always challenging.

The home visiting programme is rather a general service strategy to provide guidance to YHH than a specific intervention to respond to youth sexual behaviours. What determines its effectiveness, therefore, is

what happens during mentors' visits, specific issues that are discussed and the quality of their relationship with youth. Home visiting may then be beneficial in those domains that are most often discussed as suggested by research in the US. [31] What is important is thus the content of the discussions and how advices are delivered to beneficiaries by mentors. Because talking about sex is still taboo in Rwanda and other SSA, mentors may not be able to successfully influence youth sexual behaviours as parents do not discuss such issues with their children. [32] This subject may also have been less frequently covered than other most urgent issues for the wellbeing of YHH such as medical care, access to basic needs or household wealth. In addition, gender difference between YHH and mentors may have limited communication with regard to sexual behaviour.

The impact of the home visiting programme depends upon the creation of a positive relationship between the mentors and youth that is strong enough to persuade youth to change their behaviours based on the advice and information that the mentors provide. In this study 89% of YHH found that mentors gave them good advice and 75.4% recognized that they learned a lot from their mentor. These results suggest that adult guidance and the information transmitted to youth have certainly brought some degree of positive behaviour changes.

Consistent with prior literature, our findings from the youth survey showed that though the level of education has no impact on the likelihood of being sexually experienced, being in school was a protective factor with respect to being sexual experienced and sexually active during the last twelve month. [35, 36] While there is a paucity of studies that have assessed the effects of mentorship on orphans, studies among adolescents in the USA have demonstrated significant improvement in school attendance, discipline, and academic achievement, which are indicators for decreased participation in risk behaviours. [19] Mentors in this programme played an important role in encouraging youth to go back to school and sometimes in helping with taking care of young siblings in households where school going youth needed to attend educational or vocational opportunities.

While most YHH recognize the beneficial support they receive from their mentor, attrition and low frequency of visits may have altered in the long run the quality of the mentor visits by affecting the content and the length of the discussions. Some YHH may receive fewer contacts with their mentors and enjoy less discussions and support, and that makes it less likely that they will change their behaviour. In fact, one out of four YHH complained not only that their mentors visited only when they had a problem but also that they didn't have enough time to talk about everything they wanted to talk about. The present results are encouraging in that mentors through a home visiting programme can assist YHH in their risk-reduction efforts and in improving their protection. The mentors in our programme were adult volunteers selected from the community which makes this approach affordable and replicable. In addition, enhancing community involvement provides opportunities for advocacy in favour of youth living on their own and a stronger relation to develop between mentors and youth.

Limitations

This study has several limitations that need to be acknowledged. First, it was based on a non random sample of YHH beneficiaries of a NGO programme and, as with all cross-sectional studies, we cannot establish causality. In interpreting the results of this study, one should keep in mind that this is a rural youth population with very poor socioeconomic backgrounds. Caution should be taken in applying these results to urban or other rural populations. A second limitation of the study was the lack of ability to track individual YHH outcomes over time or to analyze these outcomes by level of exposure to the intervention because the study relies on two cross-sectional studies with separate samples and questions were not always asked the same way at both time of the survey. Third, the findings are based upon youth self-reports of both exposure to the mentoring programme and behaviours or maltreatment, which are subject to measurement error. Finally, the observation period (18 months) was relatively short. Assessing the longer-term impact of this programmes is essential, as some of the observed changes may be short term or transitory in nature. It is also important to note that the intervention group was older than the control group and included more youth males at baseline. With regard to sexual behaviours, this difference certainly increases the likelihood of sexual initiation and, as a consequence the probability that other sexual outcomes including recent sexual activity, more partners, etc., will also increase between the two survey rounds.

Conclusion

The findings of the current study indicate that the utilization of community adult mentors should be supported as a key strategy in working with YHH to decrease sexual risk behaviours and maltreatment from community members. For interventions to be optimally effective, specific strategies to promote community support and decrease marginalization that have the potential to reinforce the mentoring programme need to be identified. Further research in these directions may expand the range of outcomes for which mentoring relationships are indicated to be beneficial. With respect to sexual behaviours, interventions that supplement accurate risk information and strengthen youth interpersonal skills are most likely to reduce their risk for infection with HIV and other sexually transmitted infections. The mentoring programme could thus improve the quality of the visits and adapt their models to focus more closely on delivering the content that is most likely to improve sexual behaviours outcomes for YHH. While there may not have been enough time to make such a difference as to change behaviours, this study emphasizes that the home visiting programme in former Gikongoro needs to pay more attention in its design and targeting to the context-specific needs (e.g., gender, poverty, education) of their intended beneficiaries in order to be more effective.

Acknowledgements

This work was made possible through the financial support of Horizons/Population Council with funding from the United States Agency for International Development and the President's Emergency Plan for AIDS Relief. World Vision US in Washington, DC, ensured continuous funding for the programme implementation of this project. In particular, we thank Eleazar Nkunda and Eduard Kalisa of World Vision Rwanda for their support and collaboration in this project. Above all, we are grateful to all the orphans who graciously participated in this study and without whom this study would not have been possible.

Competing interests

The authors declare that they have no competing interests.

Authors' contributions

JN conceptualized the study, supervised data collection and participated in the interpretation of data and drafting of manuscript. LB participated in study design and the interpretation of findings and drafting of manuscript. NBM participated in the interpretation of findings and drafting of manuscript. All the authors approved the manuscript.

References

1. Joint United Nations Programme on HIV/AIDS (UNAIDS): Global report: UNAIDS report on the global AIDS epidemic. 2010.
2. United Nations Children's Fund (UNICEF): Africa's Orphaned and Vulnerable Generations: Children affected by AIDS. 2006.
3. Institut National de la Statistique du Rwanda (INSR) and ORC Macro: Rwanda Demographic and Health Survey 2005. *Calverton, Maryland, USA: INSR and ORC Macro* 2006.
4. MINALOC and UNICEF: Struggling to survive: Orphan and community dependent children in Rwanda. *Kigali, Rwanda* 2001.
5. Brown L, Thurman TR, Snider L: Strengthening the psychosocial well-being of youth-headed households in Rwanda: Baseline findings from an intervention trial. *Horizons Research Update Washington DC: Population Council* 2005.
6. Thurman TR, Snider L, Boris N, Kalisa E, Nkunda Mugarira E, Ntaganira J, Brown L: Psychosocial support and marginalization of youth-headed households in Rwanda. *AIDS Care* 2006, 18(3):220-229.
7. Boris N, Thurman T, Snider L, Spencer E, Brown L: Infants in Youth-Headed Households in Rwanda: Implications from emerging data. *Infant Mental Health Journal* 2006, 27(6):584-602.
8. Veale A, Dona G: Street children and political violence: a socio-demographic analysis of street children in Rwanda. *Child Abuse Negl* 2003, 27(3):253-269.
9. Ntaganira J, Brown L, Mock NB: Maltreatment of Youth Heads of Households in Rwanda. *Rwanda Journal of Health Sciences* 2012, 1(1):21-38.
10. O'Donnell BL, O'Donnell CR, Stueve A: Early sexual initiation and subsequent sex-related risks among urban minority youth: the reach for health study. *Fam Plann Perspect* 2001, 33(6):268-275.
11. Pettifor AE, van der Straten A, Dunbar MS, Shiboski SC, Padian NS: Early age of first sex: a risk factor for HIV infection among women in Zimbabwe. *AIDS* 2004, 18(10):1435-1442.

12. Ntaganira J, Hass LJ, Hosner S, Brown L, Mock NB: Sexual risk behaviours among youth heads of household in Gikongoro, south province of Rwanda *BMC Public Health* 2012, 12:225.

13. Foster G: Beyond education and food: psychosocial well-being of orphans in Africa. *Acta Paediatr* 2002, 91(5):502-504.

14. Makame V, Ani C, Grantham-McGregor S: Psychological well-being of orphans in Dar El Salaam, Tanzania. *Acta Paediatr* 2002, 91(4):459-465.

15. Atwine B, Cantor-Graae E, Bajunirwe F: Psychological distress among AIDS orphans in rural Uganda. *Soc Sci Med* 2005, 61(3):555-564.

16. Foster G, Makufa C, Drew R, Kambeu S, Saurombe K: Supporting children in need through a community-based orphan visiting programme. *AIDS Care* 1996, 8(4):389-403.

17. Kidman R, Petrow SE, Heymann SJ: Africa's orphan crisis: two community-based models of care. *AIDS Care* 2007, 19(3):326-329.

18. DuBois DL, Silverthorn N: Natural mentoring relationships and adolescent health: evidence from a national study. *Am J Public Health* 2005, 95(3):518-524.

19. DuBois DL, Holloway BE, Valentine JC, Cooper H: Effectiveness of mentoring programmes for youth: a meta-analytic review. *Am J Community Psychol* 2002, 30(2):157-197.

20. Beier SR, Rosenfeld WD, Spitalny KC, Zansky SM, Bontempo AN: The potential role of an adult mentor in influencing high-risk behaviours in adolescents. *Arch Pediatr Adolesc Med* 2000, 154(4):327-331.

21. Yancey AK, Siegel JM, McDaniel KL: Role models, ethnic identity, and health-risk behaviours in urban adolescents. *Arch Pediatr Adolesc Med* 2002, 156(1):55-61.

22. Black MM, Bentley ME, Papas MA, Oberlander S, Teti LO, McNary S, Le K, O'Connell M: Delaying second births among adolescent mothers: a randomized, controlled trial of a home-based mentoring programme. *Pediatrics* 2006, 118(4):e1087-1099.

23. Rhodes JE, Grossman JB, Resch NL: Agents of change: pathways through which mentoring relationships influence adolescents' academic adjustment. *Child Dev* 2000, 71(6):1662-1671.

24. Barnet B, Liu J, DeVoe M, Alperovitz-Bichell K, Duggan AK: Home visiting for adolescent mothers: effects on parenting, maternal life course, and primary care linkage. *Ann Fam Med* 2007, 5(3):224-232.

25. Leventhal JM: The prevention of child abuse and neglect: successfully out of the blocks. *Child Abuse Negl* 2001, 25(4):431-439.

26. Sweet MA, Appelbaum MI: Is home visiting an effective strategy? A meta-analytic review of home visiting programmes for families with young children. *Child Dev* 2004, 75(5):1435-1456.

27. Brown L, Thurman T, Kalisa E, Rice J, Bizimana J, Boris N, Snider L, Ntaganira J: Supporting volunteer mentors: Insights from a mentorship programme for youth-headed households in Rwanda. *Horizons Research Summary Washington, DC*: Population Council 2007.

28. Thurman TR, Snider LA, Boris NW, Kalisa E, Nyirazinyoye L, Brown L: Barriers to the community support of orphans and vulnerable youth in Rwanda. *Soc Sci Med* 2008, 66(7):1557-1567.

29. Johnson BT, Carey MP, Marsh KL, Levin KD, Scott-Sheldon LA: Interventions to reduce sexual risk for the human immunodeficiency virus in adolescents, 1985-2000: a research synthesis. *Arch Pediatr Adolesc Med* 2003, 157(4):381-388.

30. Magnani R, Macintyre K, Karim AM, Brown L, Hutchinson P, Kaufman C, Rutenburg N, Hallman K, May J, Dallimore A: The impact of life skills education on adolescent sexual risk behaviours in KwaZulu-Natal, South Africa. *J Adolesc Health* 2005, 36(4):289-304.

31. Gomby DS: The promise and limitations of home visiting: implementing effective programmes. *Child Abuse Negl* 2007, 31(8):793-799.

32. Meekers D, Ahmed G: Contemporary patterns of adolescent sexuality in urban Botswana. *J Biosoc Sci* 2000, 32(4):467-485.

33. Gilborn LZ: The effects of HIV infection and AIDS on children in Africa. *West J Med* 2002, 176(1):12-14.

34. Muula AS, Misiri H, Munthali L, Kalengo S, Kachali F, Mbewe M, Msuku S: The living situations of orphans in periurban Blantyre, Malawi. *S Afr Med J* 2003, 93(12):920-921.

35. Karim AM, Magnani RJ, Morgan GT, Bond KC: Reproductive health risk and protective factors among unmarried youth in Ghana. *Int Fam Plan Perspect* 2003, 29(1):14-24.

36. Magnani RJ, Karim AM, Weiss LA, Bond KC, Lemba M, Morgan GT: Reproductive health risk and protective factors among youth in Lusaka, Zambia. *J Adolesc Health* 2002, 30(1):76-86.