Reviewer's report

Title: Sexual Risk Behaviors among Youth Heads of Household in Gikongoro, South Province of Rwanda

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Reviewer: Masahiro Kihara

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This paper focused on the sexual behaviors of youth heads of households (YHHs) in Rwanda, the country where problems of orphanage is particularly serious because of the combined impacts of AIDS and genocide. Though message of this study is important in view of the scarcity of the research in this area and possible extreme vulnerability of the target population, this paper needs to be substantially improved before consideration for publication.

Major compulsory revisions

1. Internal validity of the study has not been fully justified because of the lack of information on sampling procedures or uncertain appropriateness of key questions of the questionnaire. Strategy of data analysis should also be reconsidered.

1-1. On the sampling procedures.
#What is the population of Gikongoro and the estimated (or registered) number of orphans and/or YHHs?
#Of the whole YHHs in Gikongoro how many male and female YHHs were listed as eligible recipients of the World Vision support program?
#What are the criteria of the eligibility? Though it appears that age, health status, number of persons in the household and food security are included, they need to be specified in more details.
#Are the listed recipients representing the whole YHH population in Gikongoro or they are biased to some specific subgroup of YHHs who are most socially or economically compromised?
#Of the listed YHH in the World Vision support program how the 692 samples were selected, randomly or with some selection criteria? What percentage of the intended samples actually participated in the survey (response rate)?

1-2 On the questionnaire and survey
#Please specify the characteristics (gender, age, YHH status) of 32 participants of 4 focus group interviews and 30 street children recruited for instrument development. Where were they recruited, in Gikongoro or elsewhere?
#Please specify the age and gender of the participants for pretest/pilot surveys.
#We suggest authors to include results of the test-retest reliability, if available.
Were the interviews gender-matched or not? If not, possible impact on the results should be discussed as one of the limitations of the study.

Authors need to clarify if they used selected items from the CES-D or all 20-items. Description seems contradictory between page 8, paragraph 2 and page 11, paragraph 1. According to Table 1, selected items appear to have been used because score range (1-55, mistake of 0-54?) is smaller than the original scale (0-60). Please explain what items were deleted and the reason why. Cronbach’s alpha for the selected scale should be given.

Please show the actual questions used to ask “condom use” and “being faithful to one partner”. According to the worldwide-used questionnaire of the Family Health International, condom use is carefully asked as “Can people protect themselves from HIV by using a condom correctly every time they have sex?” If authors asked differently, or simply “condom use”, “correct answer rate” can be artificially low because participants may have thought condom use is not necessarily protective to HIV infection if not correctly used. The same may apply to the question on “being faithful to one partner” if authors’ question was different from the FHI’s question; “Can people protect themselves from HIV by having one uninfected faithful sex partner?” These can be the reason why correct answer rate of ABC HIV/AIDS knowledge was very low in this study.

1-3 On data analysis

Description on “factor analysis” (page 11, paragraph 2) best be deleted since results were not included.

It is recommended to add analysis by gender because social context of sexual behavior can be different between males and females.

Though only statistically significant (P<0.05) variables were entered in the multivariate model, it is recommended to relax the level of p to <0.1#0.2 in consideration of suppressor effect. Downward stepwise procedure, totally (using all variables) or partially (with some fixed variables), then will be useful to select significant variables maximizing statistical power.

Validity of the discussion has not been fully justified. Though the results are compared with the results of 2005 DHS in Rwanda to show that Gikongoro’s YHHs are sexually more at risk than the young people in general population, comparability between these studies has not been clearly described.

2-1 On the comparison of ABC knowledge

ABC knowledge is not necessarily comparable between the studies if types of ABC-related questions are different between them. Also and importantly, according to the last line of page 16, it appears that only questions on the “use of condom” and “limiting sexual intercourse to one faithful uninfected partner” were included in the Rwandan DHS. If it is the case, ABC knowledge (this study) and BC knowledge (DHS) are not simply comparable.

2-2 On the sexual behavior

Comparative description of sexual behavior between DHS and this study in
Discussion is extremely confusing, making it difficult to understand how different they are. Author quoted 7 data from the DHS. They are all different in terms of age group (10-19, by 20-24, 15-19, 15-24) and time frame (first sex<15, first sex<18, early sexual intercourse, lifetime, in the past 12 months) and compared with the results of this study without paying enough attention to the possible difference in age and time frame of sexual behavior. Authors should provide careful age- and time frame-matched comparison to justify their main conclusion that sexual activity of the participants are higher than the youth of the same age in the general population.

Minor essential revisions

1. Abstract
   #More details should be provided in Methods section. Specify the study period and that it is the household interview survey using a structured questionnaire.
   #Response rates should be given in the Results section.
   #Please start the Result section with the main result that sexual behavior of the study participants are active and risky in terms of early sexual onset, low condom use and the prevalence of transactional sex, next discuss possible socio-psychological correlates with sexual experience men and women separately, and conclude that support programs are necessary to prevent them from HIV infection.
   #Results. Line 5: “…only 31% perceived themselves at risk of HIV infection, and there was very low (13.2%) condom use.” Clarify that it is among the sexually experienced.

2. Introduction
   #Introduction can be concise by moving the detailed reviews of previous studies to Discussion.
   #Since authors discuss their results of HIV/AIDS knowledge in relation to the ABC prevention program, they should include information about this program in the background. If the program was established shortly before the study, this could explain the low knowledge level.
   #Authors should mention the year of the estimated number in the sentence: “Of the estimated 33.3 million people living with HIV/AIDS…” (page 3, paragraph 4)
   #Please specify what “high-risk sexual intercourse” (page 4, paragraph 1, line 8) means.
   #Please show reference to the statement of “YHH, are proved to be the most vulnerable”. (page 4, paragraph 2, line 3)
   #The sentence “The combined effects of AIDS and the genocide have combined to create a crisis of orphans in Rwanda.” (page 7, paragraph 1, line 2-3) needs correction.

Methods
   #Authors state that “Information was also gathered from 30 street children”.


Please specify the method of data collection. Is it quantitative or qualitative, by group interviews or in-depth interviews?

#What does “free listing activity” means? (page 8, paragraph 2, line 6)

#What is the affiliation of the Rwandan Ethical Review Board?

#“enrolment”(page 9, paragraph 3, line 2) should be “enrollment”

#Describe how/why the four factors of connectedness were chosen. Was it took from previous studies?

#Does the sentence “Only non-demographic variables that#####at both p values of 0.05 and 0.001were entered into the model” (page 12, paragraph 1) mean that for non-demographic variables only those statistically significant in bivariate analysis were entered in the model? If so, then, please specify the criteria for demographic variable to be included in the model as it appears that for demographic variables non-significant variables were either included or excluded from the model.

#For the same sentence, the phrase “at both p values of .05 and .001 were entered” does not make sense. Probably the mistake of “at p values less than .05 were entered”

Results

#Meaning of the sentence “…although association between ABC knowledge and gender was…….” (page 13, paragraph 2, line 9-10) is not clear.

#Typographical error in page 14, paragraph 2; 36.7% should be 36.9% according to Table 3.

#The sentence “Female were more…..”(page 14, paragraph 2, line 6) should be “Females were more…”. 

#Should be consistent when reporting the mean age of first partner with two decimals (page 14, paragraph 2)

#Page 14, paragraph 2: “By the age 15-19…” should be “In the age group 15-19…”

#“…respondents indicated more than one partner with 7 males…..” (page 14, paragraph 4) should be corrected to “…respondents indicated more than one partner with 5.1% males …” to make the style of reporting consistent.

#Page 15, paragraph 1: “The mean number of sex partners in the last twelve months was equal among both gender groups (0.4).” It should be reported with two decimals not one, 0.45 (SD 0.76)

#Page 15, paragraph 2 says: “It is notable that 38.1% of those who did not use a condom during the last sexual intercourse declared that they had never seen a condom”. According to Table 3, this percentage corresponds to those who “Don’t know condoms/AIDS or ignorance”. First, the terms “never seen a condom” and “don’t know a condom” have different meaning. Authors need to clarify which one was used in the questionnaire. Second, if this was a double-barreled question the percentage includes those who don’t know AIDS but may know what a condom is. If possible, separate them. Also, authors should explain what they mean as
“ignorance” in Table 3.

Discussion

#Authors should be careful when discussing their results and including too many from DHS, as it makes difficult to understand which result is from which study.

#There is no mention of the depression scores from the CES-D in the discussion.

#The sentence “Moreover, early sexual intercourse was slightly more frequent among OVC (6% of girls, 15% of boys) than among non-OVC (5% of girls, 14% of boys)” (page 17, paragraph 2, line 6-8) should be deleted because difference is only 1% for each gender and unlikely statistically significant.

#“On average, only 8.3% reported the use of condoms compared to 12% for men and 7% for women among youth age 15-24 in the DHS” (page 17, paragraph 3) should probably be “On average, only 8.3% reported the use of condoms at first sex in our study compared to 12% for men and 7% for women among youth age 15-24 in the DHS”

#In the sentence “The results of this study… [37]” (page 19, paragraph 3, line 8, 9), does “this study” mean authors’ study or of someone else?

#Page 20, paragraph 2: Meaning or logic of the whole paragraph is not immediately clear. How the conclusion of this paragraph “HIV prevention program should go beyond abstinence” can be led from the results of this study.

Table 1

#Not only percentages but also numbers should be given in the table, to make the presence of missing data possible to identify.

#Style of the table should be consistent to other tables. Add the columns for chi square and p.

#Please check if the range of depression index (1-55) is correct.

#“Alive”(line 9) should be “alive”

#“&” (line 15) should be “and”

#“Primary” (line 27) should be “More than primary”

#“>=3 rooms” (line 29) should be “3 or more rooms”

#“>=2 times” (line 47) should be “2 or more times”

#Footnote: Please specify the number of participants who drink alcohol, male and female separately.

Table 2

#“HIV/AIDS Knowledge” should be “HIV/AIDS knowledge”

#Why the percentages were calculated using n=370 rather than=371 as a denominator for men?

#Please state in the footnote that percentage of “Relationship to this person” is calculated with the number of participants who know anyone who had died or think has died of AIDS as a denominator.
#Why the percentage of “Know a place where one can get condoms” is calculated with n=368 as a denominator for men and n=320 for women?
#Two decimals will be sufficient for chi square values.

Table 3
#Most of the table is related to those who had experienced sex; therefore it is more appropriate to give as a reference their total numbers on top of the table (n=137 for males, n=91 for females, and n=228 for the total). Data about current romantic relationship then can be described in the results.
#Appropriate expressions should be used in the first column. Authors should correct “Ever received anything for sex” for “Ever received money or gift for sex”; “Number of sex partners past 12 months” for “Number of sex partners in the past 12 months”; and use the word “number” instead of the symbol “#”.
#Use the same decimal notation style. We suggest using periods.
#Please state in the footnote that SD means standard error.
#It is misleading to show t values in the column headed #2 without notation. Please give subscript like ¶ on the t values and describe in the footnote that ¶ stands for t value.
#Two decimals will be sufficient for #2 and t values.

Table 4
#Please be consistent throughout the text and in the tables in reporting figures less than 1 whether to start from 0 (e.g. 0.42) or from period (e.g. .42).
#“>Primary” (line 29) should be “More than primary”
#“>=2 times” (line 40) should be “2 or more times”

General
#Authors should be consistent in using girl/boys or male/female throughout the text.
#Authors should spell out the acronyms on first use (page 4, paragraph 1: RDHS and page 17, paragraph 2: OVC and non-OVC) and only once (CES-D on page 8, paragraph 2 and page 11, paragraph 1). Also, they should be consistent (YHH vs. page 18, paragraph 2: youth headed households) and use the same acronyms (RDHS vs. Rwanda DHS)
#Levels of statistical significance was inconsistently used throughout the text and tables: p values of .05 (page 12, paragraph 1), p<0.05(page 12, paragraph 2), p<=.05 (Table 1 and 4, footnote). Please use p<.05 or p<0.05 consistently. The same apply to other levels of significance. “p” should be italic as in the Table 2 and 3.

Discretionary revisions
None
Level of interest: An article of importance in its field

Quality of written English: Needs some language corrections before being published

Statistical review: Yes, and I have assessed the statistics in my report.

Declaration of competing interests: I declare that I have no competing interests.