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Gebeyehu Workneh Bogale, Henk Boer, Erwin Ronald Seydel

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**Condom use among low-literate, rural females in Ethiopia:
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Running head: correlates of condom use among low-literate females in Ethiopia

Condom use among low-literate, rural females in Ethiopia: The role of vulnerability to HIV infection, condom attitude, and self-efficacy

Abstract

To date, studies on psychosocial determinants of condom use among adolescents in Africa have mainly focused on more literate urban youth. In this study, we investigated the psychosocial determinants of condom use among low-literate females in rural Ethiopia. Moreover, some controversy exists on the role of perceived vulnerability to HIV infection to promote HIV preventive behaviour in Africa, which we also tried to clarify in this study. In the study participated 200 rural females, aged 13-24, from the Amhara Highland in Ethiopia. Using data collectors, who interviewed the low-literate females with a structured questionnaire, we assessed perceived vulnerability to HIV infection, response efficacy of condom use, self-efficacy, attitude to condom use, and subjective norm to condom use. Moreover, we assessed intended and actual condom use.

Compared to non-users of condoms, users of condoms scored significantly higher on all psychosocial determinants. Regression analysis indicated that, vulnerability, condom attitude and self-efficacy were significantly related to intended condom use. Attitude, vulnerability and response-efficacy were significantly related to actual condom use. Among low-literate females in rural Ethiopia, psychosocial determinants were strongly related to intended and actual condom use, which indicates the usability of psychosocial models of condom use among low-literate females.

Keywords: condom use, psychosocial determinants, low-literate, females, Ethiopia

Introduction

In 2007, the estimated HIV prevalence rate in Ethiopia was 2.1% [1.8-2.2%] (UNAIDS, 2007), with a large difference in HIV prevalence rate between urban and rural areas (Ethiopian Federal Ministry of Health, 2006). However, exact HIV prevalence figures are not known for all rural regions (Kebede et al., 2000) and a wide geographical variation has been found in HIV prevalence rates in rural areas with higher rates of HIV infection in the Amhara region (Abebe et al., 2003; Ethiopian Federal Ministry of Health, 2006). In 2005, an estimated 1.32 million people in Ethiopia were living with HIV/AIDS, about 686.000 in urban areas and 634.000 in rural areas, where 85% of the population lives (Ethiopian Federal Ministry of Health, 2006).

In Ethiopia, the most important route of transmission is unprotected heterosexual intercourse among adolescents. Sexual activities start around the age of fifteen (Adamu et al., 2003) and studies among adolescents aged 17-19 years indicate that about 40% is sexually active (Alene et al., 2004; Taffa et al., 2003). About 50% of the adolescents in urban areas reported not to use condoms or to use condoms inconsistently (Wouhabe, 2007; Adamu et al., 2003; Taffa et al., 2002; Taffa et al., 2003). In Ethiopia, an urban to rural spread of HIV infection has been reported (Shabbir & Larson, 1995) and an important route of infection is through rural males, such as farmers, merchants and students, which have unprotected sexual contacts with urban sex workers (Shabbir & Larson, 1995; Adamu et al., 2003).

Like in many countries in Sub-Saharan Africa, young females in Ethiopia are more vulnerable for HIV infection than males (Gregson et al., 2002; Central Statistics Agency, 2006). Despite this vulnerability, level of condom use among females in rural Ethiopia is reported to be extremely low. One study found that only one percent of rural females, aged 15-24, used a condom during their first sexual intercourse (Central Statistics Agency, 2006), but detailed knowledge about levels of condom use among rural females in Ethiopia is currently lacking.

Also, little is known about the psychosocial determinants of condom use among rural females in Ethiopia, who often are low-literate. By low-literate we mean functional illiteracy, which refers to reading and writing skills that are inadequate to cope with the demands of daily life. Available studies have mainly focused on the determinants of condom use among urban youth, who are more literate (Taffa et al., 2002; Taffa et al., 2003). Efforts to develop effective interventions to promote condom use among low-literate rural females in Ethiopia require an understanding of the current level of condom use and of the main psychosocial determinants of condom use.

To date, some controversy exists on the usefulness of fear-based (or risk-perception-arousing) approaches in promoting condom use in Africa (Green & Witte, 2006; Kirby, 2006; Halparin, 2006). The controversy seems to focus on the role of perceived vulnerability as a main determinant of HIV preventive behaviour among young people in Africa. According to Protection Motivation Theory (Norman et al., 2005) and the Extended Parallel Process Model (Witte et al., 2003), an awareness of perceived vulnerability to HIV infection is important to

promote HIV preventive behaviour. According to these theories, an awareness of perceived vulnerability, in combination with the belief that condom use is effective to avoid infection (response-efficacy), and the belief that one is able to execute the recommended behaviour (self-efficacy) are vital in the adoption of condom use behavior. Some studies have shown, that perceived vulnerability to HIV infection is indeed important to promote HIV preventive behaviour among African adolescents (Witte et al., 2003). Also condom related self-efficacy is an important determinant of intended condom use among adolescents in Africa, especially among females (Boer & Mashamba, 2007; Jemmott et al., 2007; Heeren et al., 2007).

However, this does not exclude that other cognitive determinants may also be important in shaping condom use behavior among African adolescents. According to the Theory of Planned Behaviour, attitude and subjective norm are important determinants of intended condom use (Albarracín et al., 2001). Attitude refers to the association of condom use with negative hedonistic and social consequences (Sutton, McVey & Glanz, 1999). Many studies among African adolescents have shown that attitude toward condom use positively relates to condom use (Jemmott et al., 2007; Boer & Mashamba, 2007; Bryan et al., 2006). Subjective norm refers to the perception of approval or disapproval from significant others with regard to using condoms. Subjective norm has been found to be an important determinant of contraception and condom use among African adolescents (Bryan et al., 2006; Boer & Mashamba, 2005; Giles et al., 2005; Fekadu & Kraft, 2002).

The aim of this study is to investigate which psychosocial determinants are related to condom use behaviour among low-literate females in rural Ethiopia. In Africa, little is known about the psychosocial determinants of condom use among low-literates. Moreover, most studies did not take an integrative approach, but focused on the role of some determinants, either from the risk-perception-arousing perspective or from the Theory of Planned Behavior. This study took a more integrative approach and tested the hypothesis that perceived vulnerability, response efficacy, self-efficacy, condom attitude and subjective norms predict intended and actual condom use among low-literate females from rural Ethiopia. These analyses could clarify the role of specific psychosocial determinants and inform the development and evaluation of targeted HIV prevention interventions.

Methods

Setting and sample

This study was conducted in January 2007 in two rural *Kebeles* (communities), Koncher Sasaberay and Borebor Sencha, 250 km North West of Addis Ababa. The females in the communities are typical for the rural Amhara highland and were located in a remote area, five to ten kilometers away from main roads. There are no roads there and means of transportation are on foot or by horseback. Each *Kebele* has ten *sub-Kebeles*, located at different places in the area. From each *sub-Kebele* ten women aged between 13 and 24 were randomly selected, in cooperation with *Kebele* women coordinator, based on the location of their home.

We included females aged 13-24 years, education level from illiterate to grade 8, and regardless of marital status and religion ($N = 200$). The local HIV/AIDS prevention coordinator asked selected females for participation. Permission for the research was obtained from appropriate officials from the region and central government officials. The research was explained clearly to the females and it was stressed that participation was voluntary. Response rate was 100%.

Procedure

Since most participants in this study were illiterates or low literates, we used female data collectors to read or help the participants reading the structured questionnaires and to write down the responses of the participants. The data collectors received a one day training, which emphasized how to communicate politely with rural females and their family members, like the parents or the husband, which in the Amhara culture had to approve the interview. In the training, the data collectors also received information on the culture, religion, and educational level of the rural females. The data collectors and the participants made appointments on the appropriate time for the interview, since all participants were farmers and were busy with their daily duties on the field. The questionnaires were administered on individual basis. The data collectors went to the house of the participants and approached the participants politely and respectfully and explained them the procedure during the interview. The data collector and the participant sat together alone, in the absence of children or any body else to make the participant feel free to answers questions on sexual matters, which is a taboo

subject in the Amhara region. The data collectors stressed to the participants, that they would keep secret all the information provided by the participants. For their participation, the participants received ten Ethiopian Birr, around one Euro.

Measures

To collect the data, we used a structured questionnaire. The questionnaire was translated from English into Amharic by the first author and four native speakers of Amharic checked the translation for appropriateness of the language to the rural females. Social cognitions were assessed with 5-point Likert-items (1 = completely disagree, 5 = completely agree), derived from Boer & Mashamba (2005, 2007), and for each social cognition mean scores were computed.

Vulnerability to HIV infection was measured with one item: 'If I do not use condoms, I run a high risk of HIV/AIDS'. Response efficacy was measured with a three item scale (Cronbach's $\alpha = .98$). An example of response efficacy item is: 'Using condoms will protect me against being infected with HIV'. Self-efficacy was measured with a six item scale ($\alpha = .98$). Examples of self-efficacy items are: 'I am able to talk about safe sex with my partner' and 'It will be difficult for me to interrupt sex by putting on condom'. If necessary, answers on questions were recoded such that a higher number indicates a higher score on self-efficacy. Mean score were computed. We also assessed attitude to condoms, subjective norm and intended condom use, variables from the Theory of Planned Behavior. Attitude to condoms was measured with five items ($\alpha = .79$), such as 'Using condoms will make sex less enjoyable'. All items were recoded such that a higher number

indicates a more positive attitude to condoms. Subjective norm was assessed by means of normative beliefs of significant others, namely current sexual partner, new sexual partner, friends, parents, and motivation to comply with these normative beliefs. An example of a normative belief item is: 'My friends think that I should use condoms' (- 2 = completely disagree, 2 = completely agree) and an example of a motivation to comply item is: ' I care about the opinion of my friends' (1= completely disagree, 5 = completely agree). Subjective norm was established by computing the mean of the products of normative beliefs and motivation to comply ($\alpha = .79$). Intention to use condom was measured with a four item scale ($\alpha = .93$). An example of an intention item was: 'In the future I will always use condoms'. We assessed actual condom use with a single item on whether they used condoms to prevent themselves from HIV infection (1 = no, 2 = yes). We further assessed marital status (1 = unmarried, 2 = married, 3 = divorced) and current education levels (1 = no school education and cannot read and write, 2 = no school education, but can read and write a little, 3 = 1 or 2 years of school education, 4 = 3 or 4 years of school education, 5 = 5 or 6 years of school education, 6 = 7 or 8 years of school education). Since it is impolite in the Ethiopian culture to directly ask for the age of a person, we used three age categories (1 = 13-16, 2 = 17-20, 3 = 21-24) to assess age.

Statistical analysis

All statistical analysis was performed using SPSS 16. Differences between average scale scores were tested using *F* tests. Relationships between variables were

assessed with Spearman correlation coefficients. Hierarchical multiple regression analysis was used in the regression of psychosocial determinants on intention to use condoms. Logistic regression analysis was used in the regression of psychosocial determinants on actual condom use.

Results

Table 1 shows the demographic characteristics, separately for condom users ($n = 88$, 44%) non-condom users ($n = 112$, 56%) and the total group.

--- Table 1 about here ---

Of the 200 participants, 165 (44%) were aged below 21 years, most were not married or divorced (166, 83%) and level of education was low with 54 illiterate women (27%) en 53 women (27%) with only basic literacy skills. Almost all participants (183; 91.5%) were members of the Ethiopian Orthodox Church. Age was significantly related to condom use ($\chi^2(2, N = 200) = 10.9, p = .004$) with more condom use in the lower age group. Marital status was significantly related to condom use ($\chi^2(2, N = 200) = 30.2, p < .001$) with more condom use among the unmarried and less condom use among the married and divorced. Educational status was significantly related to condom use ($\chi^2(2, N = 200) = 24.9, p < .001$) with less condom use among the low-literate women and more condoms use among women with primary grade. Also religion was significantly related to condom use ($\chi^2(1, N = 200) = 7.8, p = .005$) with more condom use among the Muslim women.

Table 2 shows that there are significant differences on psychosocial determinants between females that use condoms and females that do not use condoms.

--- Table 2 about here ---

In comparison to females that did not use condoms, females that had used condoms perceived a significantly higher vulnerability to HIV infection ($F(1, 198) = 196.00, p < .001$), perceived a significantly higher response efficacy of condoms ($F(1, 198) = 158.30, p < .001$) and had a significantly higher self-efficacy in using condoms ($F(1, 198) = 111.68, p < .001$). Moreover, females that had used condoms had a significantly more positive attitude to condoms ($F(1, 198) = 109.33, p < .001$), perceived a significantly more positive subjective norm to the use of condoms ($F(1, 198) = 23.27, p < .001$) and reported a significantly higher intention to use condoms ($F(1, 198) = 133.53, p < .001$).

Determinants of intended and actual condom use

Table 3 shows the Spearman correlations between the social cognitive variables and intended condom and actual condom use.

--- Table 3 about here ---

Intended condom use was significantly correlated to perceived vulnerability to HIV infection, response efficacy of condom use and condom related self-efficacy.

Moreover, intended condom use was also significantly related to attitude to condoms and subjective norm, variables that were derived from the Theory of Planned Behavior. Actual condom use was significantly correlated with all psychosocial determinants. To identify the relative importance of psychosocial determinants in the explanation of condom use intention, we performed a hierarchical multiple regression analysis (Table 4).

--- Table 4 about here ---

The psychosocial determinants were significantly related to intended condom use ($F(5, 194) = 245.75, p < .001; R^2 = .86$), with significant contributions of self-efficacy ($\beta = .63, p < .001$), vulnerability ($\beta = .14, p = .001$), and attitude ($\beta = -.23, p = .002$).

To identify the relative importance of predictors of actual condom use (1 = no; 2 = yes), we performed logistic regression analyses.

--- Table 5 about here ---

Demographic characteristics, were significantly related to condom use, but the level of explained variance was limited (Nagelkerke's $R^2 = .24$). The psychosocial determinants (Table 5) were significantly related to actual condom use (Nagelkerke's $R^2 = .75$), with significant contributions of attitude to condoms ($B = 2.58, p < .001; OR = 13.1 [3.7 - 47.3]$), vulnerability ($B = 1.41, p < .001; OR = 4.1 [2.3 - 7.4]$) and response efficacy ($B = .70, p = .02; OR = 2.0 [1.1 - 3.5]$) and.

Contrary to expectation, self-efficacy and intended condom use were not significantly related to actual condom use.

Discussion

The aim of this study was to investigate the level of condom use and the psychosocial determinants of condom use among low-literate females from the rural Amhara region in Ethiopia. About half of the respondents reported to use condoms, which is a higher estimate than reported by Wouhabe (2007). It may well be that we overestimated condom use, due to the global nature of our assessment of condom use, which should not be interpreted as an assessment of current end consistent condom use. However, we can conclude that level of condom use among rural females in Ethiopia is low, especially among illiterate women aged 20-24, despite the wide availability of condoms in markets and shops at a very low price (1 Birr, .01 Euro).

There were consistent and clear differences in mean scores on psychosocial determinants between females that used condoms and the females that did not use condoms. In comparison to the females that did not use condoms, females that used condoms had a significantly higher attitude, perceived a significantly higher subjective norm, had a significantly higher level of self-efficacy, felt more vulnerable to HIV infection and perceived condoms to be more effective in preventing infection with HIV. As may be expected, intention to use condoms was also significantly higher among the users of condoms, than among the females that did not use condoms. These clear and consistent differences in psychosocial

determinants underscore the importance of psychosocial determinants in shaping condom use behavior among low-literate, rural females in Ethiopia.

To disentangle the relative importance of psychosocial determinants of intended and actual condom use, regression analyses were calculated. Self-efficacy to use condoms was the primary determinant of intended condom use, with also significant contribution for vulnerability and attitude toward condoms. The finding that among females, self-efficacy is related to intended condom use has also been reported in other studies among African females (Jemmott et al., 2007; Heeren et al., 2007; Boer & Mashamba, 2007). Intended condom use among these females was not related to social norms on condom use, a finding that also has been reported among other females in Africa (Boer & Mashamba, 2005). Since in the Amhara culture it is not appropriate to discuss sexual matters with parents, adolescents may have little idea about the appropriate social norms. With regard to actual condom use, a different picture emerged with a significant contribution to actual condom use of condom attitude and perceived vulnerability to HIV infection. Response efficacy was to a lesser extent related to actual condom use.

In this study, perceived vulnerability to HIV infection was significantly related to intended condom use and to actual condom use. In view of the recent discussion on the use of fear appeals in AIDS prevention education in Africa (Green & Witte, 2006; Kirby, 2006), the results indicate that programs that shape accurate perceptions of vulnerability to HIV may be effective to promote condom use. Especially among these low-literate females, a lack of awareness of the risks of unprotected sex may contribute to HIV risk behaviors. However, this does not

mean that the risk should be exaggerated, since exaggeration may lead to fear and, with low levels of condom related self-efficacy, may promote maladaptive coping behaviours, as predicted by Protection Motivation Theory (Norman et al., 2006) and the Extended Parallel Process Model (Witte et al., 2003). One has to realize that cultural values on the role and position of women in society, such as early marriage practices (Pathfinder International, 2006), and female subservience and unequal gender relations (Boer & Mashamba, 2007; Dunkle & Jewkes, 2007) also have bearing on whether women can protect themselves from HIV infection. Therefore, perceptions of vulnerability to HIV infection should not only be promoted among females, but also among males.

In this study, local data collectors used an interview with structured questionnaires to assess the scores of the low-literate females on psychosocial determinants. The reliabilities of the scales in this study were very high, ranging from $\alpha = .79$ to $\alpha = .98$. It can be concluded that the use of structured questionnaires, in combination with the oral explanation of data collectors, allows for a reliable assessment of psychosocial determinants of low-literates. In this study level of explained variance was very high, both in the prediction of intended condoms use ($R^2 = .86$) and in the prediction of condom use ($R^2 = .75$). This indicates that the studied psychosocial determinants do indeed significantly relate to intended and actual condom use.

There are some limitations to this study. First, the study investigated psychosocial determinants of intended and actual condom use among females in a remote rural area in Ethiopia. The results can not be generalized to females in

Ethiopia in general. Secondly, the study used a cross sectional study design, which limits the making of causal inferences. This study focused on females. Given the male dominance in sexual matters, it is important to also investigate intention to condom use and condom use among males.

We can conclude from this study that among low-literate females in rural Ethiopia condom related self-efficacy is the primary determinant of intended condom use. A positive attitude toward condoms and perceptions of vulnerability are important determinants of actual condom use. This indicates that only using fear to focus on vulnerability as a primary way to reach these vulnerable populations is not justified, as also indicated by O'Grady (2006). Effective HIV prevention education among low-literate rural females should focus on three primary targets. First, it should promote an understanding of HIV/AIDS and of their personal risk of HIV infection. Moreover, it should promote positive attitudes to condoms and improve self-efficacy, since a sufficient level of self-efficacy is a necessary requirement to motivate low-literate females to use condoms.

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Table 1: Mean scores (*SD*) on demographic characteristics for females that use condoms ($n = 112$) and females that do not use condoms ($n = 88$) in Amhara, Ethiopia.

	Condom users	Non-condom users	Total
<i>Age</i>			
13-16	58 (67%)	29 (33%)*	87 (44%)
17-20	42 (54%)	36 (46%)	78 (39%)
21-24	12 (34%)	23 (66%)	35 (18%)
<i>Marital status</i>			
Unmarried	73 (76%)	23 (24%)**	96 (48%)
Married	12 (35%)	22 (65%)	34 (17%)
Divorced	27 (39%)	43 (61%)	70 (35%)
<i>Educational level</i>			
Illiterate	21(39%)	33(61%)**	54 (27%)
Basic (grade 1-4)	26(49%)	27(51%)	53 (27%)
Primary (grade 5-8)	65(70%)	28(30%)	93 (48%)
<i>Religion</i>			
Orthodox Christian	97(53%)	86(47%)*	183 (92%)
Muslim	15(88%)	2(12%)	17 (8%)

* $p < .01$; ** $p < .001$

Table 2: Mean scores (*SD*) on social cognitions for females that use condoms ($n = 112$) and females that do not use condoms ($n = 88$) in Amhara, Ethiopia.

Social cognition	Condom users	Non-condom users
Vulnerability	4.44 (0.80)	2.47 (1.18) *
Response efficacy	3.80 (1.24)	1.89 (0.80) *
Self-efficacy	3.42 (1.42)	1.66 (0.76) *
Attitude	3.65 (0.88)	2.52 (0.55) *
Subjective norm	.25 (5.31)	-2.97 (3.77) *
Intention to use condoms	3.56 (1.17)	1.90 (0.78) *

* $p < .001$

Table 3: Correlations between the social cognition variables and intended and actual use of condoms.

* $p < .001$

	VUL	RES	EFF	ATT	SOC	INT	CON
Vulnerability (VUL)	--						
Response efficacy (RES)	.70*	--					
Self-efficacy (EFF)	.60*	.84*	--				
Attitude (ATT)	.52*	.69*	.83*	--			
Social norms (SOC)	.29*	.50*	.58*	.48*	--		
Intended condom use (INT)	.66*	.81*	.92*	.81*	.55*	--	
Actual condom use (CON)	.71*	.67*	.60*	.60*	.32*	.64*	--

Table 4: Hierarchical multiple regression analysis of psychosocial variables on intended use of condoms of females in Amhara, Ethiopia.

Variables	B	SE B	β
Vulnerability	.14	.04	.15***
Response efficacy	.05	.05	.05
Self-efficacy	.57	.06	.64**
Attitude	.22	.07	.15**
Social norms	.01	.01	.04
R ²			.86

* $p < .01$; ** $p < .001$

Table 5: Logistic regression analysis of psychosocial variables on actual use of condoms among rural females in Amhara, Ethiopia

	B	SE B
Vulnerability	1.41***	.30
Response efficacy	.70*	.29
Self-efficacy	-.63	.53
Attitude	2.58***	.65
Social norms	.03	.08
Intention	-.06	.59
Nagelkerke R ²	.75	

* $p < .05$; ** $p < .01$; *** $p < .001$