Original article

Determinants of condom use among Agaro High School students using behavioral models

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Abstract

Introduction: HIV/AIDS has been spreading in an alarming rate since the beginning of the pandemic. It is estimated that at least half of the infected ones are between 15-24 years. This has called for a concerted effort to save this segment of the population for many reasons. Since the major mode of transmission is heterosexual contact its interventions are focused mainly on the prevention aspect. Condoms remain the integral part of HIV prevention programmes. The prevalence of condom use is low despite all efforts to improve the use of it.

Objective: The aim of this study was to assess factors affecting condom use among students of Agaro High School using health behavioral models.

Method: A cross sectional study was conducted on 360 students using structured pretested questionnaire in February 2001.

Result: Three hundred sixty students responded from the sampled 363 students making a response rate of 99%. Among these, 90(25%) of them had history of sexual intercourse. The average age of sexual debut was 16.74 years. Among those who had previous sexual exposure, 49(54.4%) used condom at least once. Of these, 23(46.9%) were using condom always. Normative belief was found to be a predictor for males. Self-efficacy was found to be associated with intention to use condom among males.

Discussion: The result of this research show that parts of models, which are relevant to our socio cultural characteristics as predictors of condom use. The findings of this research also serve as baseline for future large-scale studies. The prospect of incorporating these findings in the process of information education and communication has been discussed.

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Introduction

Since the beginning of the pandemic, AIDS has been spreading at an alarming rate worldwide. To date, an estimated total of 42 million people are infected by HIV/AIDS and 95% of them are in developing countries and around 70% in sub-Saharan African countries. It has also resulted in the death of 20 million people globally (14).

The African continent has the highest prevalence of HIV infection in the world today with 29.4 million people being infected (4). The worldwide prevalence rate is 1.07%, while that of Sub-Saharan African Region average is 8.58% (1-4). Across the continent regional difference in HIV/AIDS prevalence is considerable. However, no country in the continent has escaped the virus.

Ethiopia is also among the highly affected countries in the region with the national adult prevalence rate of 6.6% with urban HIV prevalence estimate reaching as high as 13.7% and that of rural as low as 3.7% (5) according to the recent estimate. The total number of people lost to HIV has reached 160,000 in 2001 and current living orphans has reached 990,000 (6). The highest prevalence of HIV is seen in the age group of 15 – 24 years and thus making a major concern affecting youth today (7). Adolescents is also characterized by a period of exploration, experimentation particularly in relation to sexual activity (7) most of them start sexual intercourse at an early stage. Shabbir et al (8) showed that the average age of debut to be 16.6 years (±2.3 SD), so adolescents are vulnerable and deserve attention.

The major mode of transmission of HIV/AIDS world wide is heterosexual contacts particularly in developing countries (9). Other routes of transmission include transfusion of infected blood and blood products, occupational transmission, peri-natal transmission and others. The two most important risk of HIV infection are having sexual contact with many partners and having STD (10). Other risk factors are early commencement of sex (Debut) and non-use of condoms.

Since there is no treatment currently available that cures the disease, the only option is prevention. Interventions are mainly concentrated on breaking the mode of transmission including promoting reduction in the number of sexual partner, encouraging delay in the onset of sexual commencement among adolescents, promoting the use and availability of condoms and strengthening programs for STD control and others (10).

Considering the economic and development impact, the Ethiopian Government has given a particular attention and ratified a National HIV/AIDS policy in 1998 which further outlined the government focus in the strategic framework for national response. These outlines include the more emphasis of prevention such as one to one relations, provision of education on the proper use of condoms and its proper distribution through all possible outlets at an

affordable price on a continuous basis, delayed onset of

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sexual activity, promotion and early treatment of STIs, counseling and support to those who are infected (10,11).

Despite all these efforts, about 91% of infection occurs among adults between 15-49 years (12). This may indirectly indicate the low tendency of practicing conventional preventive method such as condom use. Similarly, the sero-positivity among adolescents remains high. For instance in a study conducted to screen prevalence of HIV among high school and college students attending STD clinic in Addis Ababa showed a 19% seropositivity (12). Shabir et. al (8) found 45.9% of the respondents used condoms and half of them used regularly. Gendion and et at (13) in their study conducted among students in a teachers training college showed that among sexually active study group only 49.2% of them used condoms. Use of condoms among co-habiting partners was 22.3% and 14% in the age group 15 to 19 and 20 to 24 respectively, whereas among men it was 28.3% and 31.8% in same age group (14).

A greater understanding of determinants of risk related and preventive behavior in target population is an important precursor to the development of a successful AIDS preventive programme (15). The basic behavioral factors must be identified in order to develop appropriate intervention. Nevertheless, very limited attempts have been made in Ethiopia to identify risk behavioral components that need to be addressed through interventions.

So far, there are several models and commonly cited theories in HIV/AIDS preventive programs or endeavors. Of these the most advocated ones are, Health Belief model (HBM), theory of Reasoned action (TRA), AIDS Risk Reduction model (ARRM), Social cognitive theory (SCT) and Others (16-21).

Health Belief Model is a psychological model that attempts to explain and predict health behavior by focusing on attitudes and belief of an individual. The key variable of health belief model is perceived susceptibility, perceived threat, perceived severity and perceived barrier (22). The premises of Social Cognitive Theory (SCT) states that new behaviors are learned either by modeling the behavior of others or by direct experience. Central tenets of SCT are self efficacy and outcome expectations. Theory of Reasoned action (TRA) is based on the assumptions that human beings are usually quite rational in making systematic use of the information available to them. The theory of reasoned action is conceptually similar to health belief model, but adds the construct of health behavioral intention as a determinant of health behavior (23).

This study was thus conducted with an intention to determine behavioral factors that affect condom use, the magnitude of risk, sexual behavior related to HIV infection, the relation between sexual behaviors especially condom use and socio demographic characteristics. Health belief Model, Social Cognitive Theory and Theory of Reasoned Action have been used in this study. The out come of this study will be used to design appropriate strategy to promote condom use among the young population in Ethiopia.

Material and methods

The study was conducted in Agaro High School in February 2001. A cross sectional study design was used to conduct the study. The source population were all high school students of Agaro Town enrolled in grades 9-12 for the academic year of 2000/2001. The total number of students enrolled for the academic year were 2235. From those, a sample size of 363 students were selected using a simple random sampling technique using class name lists of all the grades and sections as sampling frame. The sample size was determined using the following assumptions (Level of significance of the population was taken to be 95% $Z\alpha/21.96$). A 5% margin of error (d=0.05) and proportion of 50% of high-risk behaviors among adolescents was preferred. Additional 10% allowance for absenteeism and refusal to participate in the study was considered based on similar previous studies. Taking the total population (N) as 2335 the sample size was found to be 363.

A pre-tested and structured questionnaire was used to collect information. The variables were:

A. Socio-demographic characteristics of the study subjects namely sex, age, school, grade, ethnicity, religion, fathers and mother's literacy status, and their family income.
B. Sexual risk behaviors and AIDS preventive behaviors such as number and assumed risk status of sexual intercourse, history of genital symptoms and others.
C. Sixteen items of health belief model to measure the 4 components of Health Belief Model (HBM) perceived susceptibility, perceived severity, perceived benefits and perceived barriers using a scale of 5 for strongly agree all the way down to 1 "strongly disagrees".
D. Five items related to normative belief associated to condom use and condom use intention in the areas such as (1) people generally (2) sex partner (3) health care provider-using scaling from 1, as Very unlikely to 5, as very likely.
E. Seven items to assess the self-efficacy such as confidence in using condom in the middle of sexual excitement, high confidence in using condom in different situations like after alcohol use were included

All items in each construct were summed up and mean score was tabulated as a single construct and finally it was dichotomized into agree and disagree. This was applied for all constructs.

Statistical Analysis: Data editing, coding and verification was done using statistical package for social sciences (SPSS) software version 11. Proportions were complied for each variable. Binary logistic regression was used to reduce the effect of confounding factors.

Ethical considerations: The response to survey was anonymous. Participants were informed about the study and were informed about their right to participate in the survey. Official letter was written to the education bureau of the woreda and high school.

Results

From 363 selected high school students at Agaro High School, 360 (99%) responded and filled the questionnaire correctly. Majority 215 (59.7%) were males. The average age of the study population was 17.65 years. Two hundred eighty six (79.4%) of them were from urban areas. One hundred seventy five (48.6%) of the respondents were Oromos, 103(28.6%) were Amhara and Gurage constituted 54(15%). Muslims constituted 155(43.1%) of the study population, while 184(51.1%) were Orthodox Christians (Table 1).

From the total study population, 90(25%) of them had history of sexual intercourse prior to the study period. Among males, 70(32.6%) of them had sexual intercourse in the past 12 months. The average age of the first coitus was 16.74 years. The average age of debut for males was 16.45 and for females it was 16.8 years. Majority 50(55.6%) of those with previous sexual exposure had one partner and 32(35.6%) had 2-5 partners and the remaining 8 students had more than 5 partners.

S.no	Variable	Sex		Total
		Male n (%)	Female n(%)	

Table 1: **Distribution of Agaro High School students by their sex and socio-demographic characters Agaro, 2001**

1	Sex	215 (59.7)	145 (40.3)	360 (100)	2	Age	14-20	186 (86.5)	129 (89) 315 (87.8)
	20-26	29 (13.5)	16 (11)	45 (12.2)	3	Grade	9-10	73 (33.9)	52 (35.9) 125 (34.3)
	11-12	142 (64.1)	93 (64.1)	245 (65.2)					
4	Religion	Muslim	103 (47.9)	52 (35.9)	155 (43.1)	Christian (orthodox)	103 (47.9)	81 (55.9)	184 (51.1)
	Others	9 (4.2)	12 (8.3)	21 (5.6)					
5	Ethnicity	Oromo	112 (52.1)	63 (43.4)	175 (48.6)	Amhara	46 (21.4)	57 (39.3)	103 (28.6)
	Gurage	35 (16.3)	19 (13.1)	54 (15.0)	Others	22 (10.2)	6 (4.1)	28 (7.8)	
6	Address	Urban	161 (74.9)	125 (86.2)	286 (79.4)	Rural	54 (25.1)	20 (13.8)	74 (20.6)

Twenty eight males (40%) and five females (7.1%) reported majority 33(47.1%) were males, table 2. to have 2-5 and more than 5 partners respectively. Among 90 students who had previous sexual exposure 49(54.4 %) The relationship between socio-demographic characteristics of them used condom at least once, of those, and theoretical constructs was tabulated with the intention 39(55.7%)were males and 10(50%) were females. Of those to use condom among male and female students. Intention who had used condom at least once, 23(46.9%) of them to use condom was significantly associated with age (preported that they were using condom always, and 0.032), normative belief (p=0.000), perceived benefits 19(38.8%) of them used occasionally. Majority 40(44.4%) (p=0.020) and self-efficacy (p=0.002) among males and reported that they had multiple sexual partners. Of those, only normative belief (p=0.044) in females (table 3).

S.no	Variable		Sex		Total
			Male n (%)	Female n(%)	
Table 2: **Past sexual behavior of the students and intention to use condom at next sexual activity. Agaro, February 2001.**					
1	Sexual intercourse	Yes	70 (32.6)	20 (13.8)	90 (25)
		No	145 (67)	125 (86.2)	270 (75)
2	Number of sexual partners	1	37 (52.9)	13 (65)	50 (55.6)
		2-5	28 (40.0)	4 (20)	32 (35.6)
		>5	5 (7.1)	3 (15)	8 (8.9)
3	Condom use	Yes	39 (55.7)	10 (50)	49 (54.4)
		No	31 (44.4)	10 (50)	41 (45.6)

4	Frequency of condom use	Occasionally	16 (41)	3 (30)	19 (38.8)
		Always	19 (48.7)	4 (40)	23 (46.9)
		Most of the time	4 (10.3)	3 (30)	7 (14.3)
5	STI	Yes	4 (5.7)	-	4 (4.4)
		No	66 (94)	20 (100)	86 (95.6)
6	High risk sexual behavior	Who had MSP Yes	33 (47.1)	7 (35)	40 (44.4)
		Casual Contact Yes	14 (20)	4 (20)	18 (20)
		Who had STD Yes	4 (5.7)	1 (5)	5 (5.6)
		CSW Yes	13 (18.6)	0	(16.8)

Table 3: **The relationship of the theoretical constructs with intention to use condom of male and female students of Agaro high school, Agaro, February 2001**

Sex	Items	Intention of use condom No (%)	No intention to use condom (%)	Total No. (%)	P-value
Male	Age				
	<18 years	98 (66.2)	50 (33.8)	148 (69)	0.032
	≥18 years	54 (80.6)	13 (19.4)	67 (31)	
	Normative belief				
	No	44 (55)	36 (45)	80 (37)	0.000
	Yes	108 (80)	27 (20)	135 (63)	
	Perceived susceptibility				
	No	76 (67.9)	36 (32.5)	112 (52)	0.36
	Yes	75 (73.5)	27 (26.5)	102 (48)	
	Perceived severity				
	No	50 (64.1)	28 (35.9)	78 (36)	0.109
	Yes	102 (77.1)	35 (25.5)	137 (64)	
	Perceived Benefits				
	No	51 (61.4)	32 (38.6)	83 (39)	0.020
	Yes	101 (77.1)	30 (22.9)	131 (61)	
	Perceived barriers				
	No	107 (71.8)	42 (28.2)	149 (69)	0.590
	Yes	45 (62.8)	21 (31.8)	66 (31)	
	Self efficacy				
	No	47 (58)	34 (42.0)	81 (38)	0.002
	Yes	105 (78.4)	29 (21.6)	134 (62)	
Female	Age				
	<18 years	69 (65.1)	37 (34.9)	106 (73)	0.692
	≥18 years	24 (61.5)	15 (38.5)	39 (27)	
	Normative belief				
	No	41 (56.2)	32 (43.8)	73 (50)	0.044
	Yes	52 (72.2)	20 (27.8)	72 (50)	
	Perceived susceptibility				
	No	50 (63.3)	29 (36.7)	79 (55)	0.869
	Yes	42 (64.6)	23 (35.4)	65 (45)	
	Perceived severity				
	No	34 (65.4)	18 (34.6)	52 (36)	0.815
	Yes	59 (63.4)	34 (36.6)	93 (64)	
	Perceived benefits				
	No	33 (55.9)	60 (64.5)	93 (64.1)	0.088
	Yes	26 (50)	26 (50)	52 (35.9)	
	Perceived barriers				
	No	76 (65.5)	40 (34.5)	116 (80)	0.489

Yes	17 (58.6)	12 (41.4)	29 (20)	
Self efficacy				
No	39 (61.9)	24 (38.8)	63 (43)	0.623
Yes	54 (65.9)	28 (34.1)	82 (57)	

Table 4: **Odds ratios from logistic regression models predicting low intention to use condom among male Agaro high school students, Agaro February 2001**

Variable labels	Model (OR)
Age (reference =>18 years)	
<18 years	2.25*
Religion (reference=Muslim)	
Christian	0.389*
Others	1.255
Ethnicity (reference=Oromo)	
Amhara	2.47
Gurage	1.39
Others	1.23
Address (reference=urban)	
Rural	0.79
Perceived susceptibility (reference=yes)	
No	1.054
Perceived severity (reference=yes)	
No	0.76
Perceived barrier (reference=yes)	0.79
No	
Perceived benefits (reference=yes)	1.23
No	
Normative belief (reference=yes)	2.82**
No	
Self efficacy (reference=yes)	1.94
No	

*P=0.05, **P<0.01

Religion, and age from socio demographic characteristics and normative belief were found to be predictors of intention to use condom. Students with age less than 18 years were found to have high likelihood of low intention to use condom than those aged 18 years and above (Odds Ratio =2.25, $p<0.05$), negative response to normative belief was found to have a high likelihood of low intention to use condom in the next sexual intercourse among male students (Odds Ratio = 2.28, $p<0.01$) (table 4). The others were not found as predicators for intention to use condom in the next sexual intercourse. With regard to female students all constructs were not found to be a predictor for intention to use condom in their next sexual encounter (table 5).

Table 5: **Odds Ratios from Logistic Regression Models Predicting low intention to use condom among Female Agaro high school students, Agaro February 2001**

Variable labels	Model (OR)
Age (reference=>18years)	
<18 years	0.74
Religion (reference=Muslim)	
Christian	0.53
Others	1.18
Ethnicity (reference= Oromo)	
Amhara	1.01
Gurage	1.16
Others	3.54
Address (reference =urban)	
Rural	0.42
Perceived susceptibility (reference =yes)	
No	1.03
Perceived severity (reference =yes)	
No	0.48
Perceived barrier (reference =yes)	0.53
No	
Perceived benefits (reference=yes)	1.23
No	
Normative belief (reference=yes)	2.08
No	
Self efficacy (reference=yes)	0.67

No

Discussion

The study investigated different factors such as Sociodemographic characters, socio-economic status and health behavioral models in relation to their direct and indirect effect on the use of condom and Condom use intention.

Among students who participated, one fourth of them had sexual exposure and it was higher among males (32.6% vs 13.8%). Males also start their sexual activity earlier than females. Mean age for sexual debut was (16.74±2.01). Similar finding was observed in other studies (7,8,24). The prevalence of condom use was higher than the study done at Gondar College of Medical Sciences (25) and Agaro High School in 1994 G.C (26), which may be explained by the time difference and the effect of continued information dissemination through different means. Students of Agaro High School had multiple sexual partners (44%) compared to other studies by Kidane and colleagues (25) and Beyene et al (27). This may be attributed to a higher rate of promotion of condom among adolescents when compared to interventions directed towards limiting number of partners. Higher proportion of males use condom which is comparable with the study by Kidane et al (25).

In this study, males intended to use condoms more than their counter parts, despite higher proportion of males involved in other (like contact with commercial sex workers, having multiple sexual partner) high-risk sexual behaviors.

Condom use has been significantly associated with casual sexual contact and those who had been involved in sexual activity like those with a partner who had STD and no association was found to age sex and contact with CSW. This contrasts with the finding by Kidane (25) et al, where significant association has be been found with sex, age and commercial sex workers.

The average age of sexual debut was 16.74 years which put them at higher risk of acquiring HIV infection since those students with age of less than 18 years were with higher likelihood of lower intention to use condom in their next sexual encounter. Normative belief was shown to be associated with intention to use condom by both sex and found to be a predicator of next condom use in males. Peer education and social influences play a major role in changing behavior. The same finding was also shown in northern Thai which revealed males' perception of peer norms were predictor of condom use (28). Self-efficacy showed association with intention to use condom among males but it was not found to be a predicator. The factors of HIV preventive behaviors identified should be considered in the developments of education intervention programmes.

Conclusion

High risk sexual behaviors are still prevalent although some improvement was seen in the past especially condom use, but it is not satisfactory. Intention to use condom was associated with normative belief (Expectation of one's behavior) by both sexes-and normative belief was found to be a predictor among male students. Age was found to be a factor in using condom.

Recommendation

Influential people to adolescents must be part of the education process. Promoting condoms has to be one of the strategies of HIV/AIDS prevention process. With this, emphasis has also to be given towards avoiding other highrisk sexual behaviors. Further investigation concerning the socio-psychological factors must be identified for achieving the intended positive behavioral changes pertaining to HIV/AIDS prevention effort particularly in adolescents. Community based behavioral researches have to be conducted.

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