

Does School Health Education on Voluntary Counseling and Testing Make a Significant change for HIV/AIDS Prevention? A Case of High School Students in Hossana Town, Ethiopia: A Cross Sectional Study

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Abstract

Back ground: Almost three decades after the first clinical cases of acquired immunodeficiency syndrome (AIDS) were reported. Its epidemics killed millions of people and became a major public health problem. To halt the epidemics, HIV counseling and testing is one of the strategies. Though HIV testing is critical for behavior modification in getting support and entry point for engagement on treatment, many people are missing these opportunities. This study was aimed to consider how people are reacting for health communication on voluntary counseling and testing as HIV prevention messages using Extended Parallel Process Model (EPPM).

Method: Cross-sectional study design was conducted using quantitative and qualitative methods of data collection. Structured and pre-tested self administered questionnaires were used to collect data. Simple random sampling method was used to select students from each school. Quantitative data were analyzed using SPSS version 16.0. Qualitative data was analyzed using Atlas software.

Results: 78.68% (321/408) participants were found in fear control psychological responses where as 21.32% (87/408) participants were found in danger control responses. As independent predictors, self efficacy [AOR (95%CI)=4.13 (3.37 to 5.01)], response efficacy [AOR (95%CI)=3.21(6.89 to 9.09)] of HIV/AIDS, participants ever tested [AOR (95%CI)=4.31 (7.01 to 9.08)] and residence [AOR (95%CI)=4.13 (2.43 to 7.32)] were positively associated with danger response responses where as perceived susceptibility to [AOR (95%CI)=0.42 (0.44 to 0.61)] and perceived severity of [AOR (95%CI)=0.33 (0.21 to 0.74)] HIV/AIDS were negatively associated with danger response. The EPPM Model explained 70.09% of variance in this study.

Conclusion: Despite higher number of students in fear control psychological responses, there is considerable gap between discriminative scores and actual behaviors. Therefore, due attention should be given to fill the gap of perception of risk of both threat and efficacy in their residence.

Keywords: School health; VCT; Danger or Fear control; Discriminative scores

Introduction

Almost three decades after the first clinical cases of acquired immunodeficiency syndrome (AIDS) were reported. Its epidemics killed millions of people and became a major public health problem [1,2]. Various preventive strategies have been employed to curb the spread of this infection as there is presently no cure. Abstinence, avoidance of multiple sexual partners, condom use, voluntary counseling and testing (VCT) and treatment of HIV-infected individuals form the cornerstone of HIV prevention [2]. VCT has been introduced in many low-resource settings as it helps to create awareness of an individual's HIV status and offers the opportunity for counseling on risk behavior modification. It also lessens stigma and has become a first step to accessing care [2,3].

As HIV epidemics control strategy, some of the key benefits of learning one's HIV status through HIV counseling and testing (HCT) include: knowledge about HIV, individual or couple-based HIV prevention counseling, education on HIV prevention strategies, linkages to other relevant services may enable them to live a longer and better quality of life with HIV especially if accessed early [4,5].

In Ethiopia, the transmission of HIV/AIDS is more of heterosexual (99%). Thus, preventive behaviors are the only choices to protect youths from the epidemic in the absence of effective medical care [6].

According to federal HIV/AIDS prevention and control office, the adult HIV prevalence in urban areas is much higher (7.7%) than rural areas (0.9%) [7]. considering this devastating effect different stakeholders and ministry of health have conducted different IEC/BCC

interventions. However, behavioral change was not yet attained in a level that reduces transmission and reverses the epidemics [8].

Thus, with efforts to increase the number of individuals who know their HIV status, to decrease the prevalence of undiagnosed HIV infection, and to promote early diagnosis and treatment of HIV infection, the WHO and CDC in 2007 have recommended HCT scale up to provider-initiated HIV Counseling and testing services in health care settings while strongly supported the continued existence of VCT [2].

Since 1998, Voluntary counseling and testing for the larger community started in Ethiopia after the National HIV/AIDS policy was launched in August 1998, and VCT guidelines were developed in 2000 [9]. In January 2005, a programme to provide access to antiretroviral therapy on free of charge was launched with commitment to expanding VCT services [10].

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Regardless of the enormous resources and strengthened interventions, the behavioural change was not yet attained to calm the spread of the epidemic and desired declines in HIV/AIDS infections has not been achieved [8,11]. Theories and models help to explain the process that individuals how people exchange information and as they interpret and react to different messages.

In this study, Extended Parallel Process Model (EPPM) attempts to explain when and why the recommended message work or fail. Since the EPPM restores the concept of fear as a central variable in investigating fear appeal. According to the initial tenets of the EPPM, when an individual is exposed to a fear appeal, two cognitive appraisals of the message will occur: first, the “appraisal of the threat” and second, the “appraisal of the efficacy” of the message’s of recommended response (as a problem (threat) and solution (efficacy information). EPPM assumes that if the perceived threat is perceived to be high (for instance, “AIDS takes life”) and the level of efficacy appraised, individuals will be appraised to follow one of two separate pathways: the danger control process and fear control process [12,13].

The model is primarily designed for campaign message evaluation to see category of individuals whether they are using the recommended response or not by Witte [8,13] which is truly analogous with this research which is aimed to evaluate the effectiveness of VCT message for HIV prevention that can show the category of respondents.

Therefore, this study is important to assess in school youths exposure of voluntary counseling and testing messages and the response they experience on messages using EPPM. Furthermore, the findings of this study will enable policy makers, schools, message developers, health educators, and researchers used as baseline data to design appropriate and effective messages.

Methods and Materials

Study area and period

This study was conducted in high school students in Hossana town. Hosanna is located 230 km south west from the capital city of Ethiopia being the capital city of Hadiya zone. In the town, there are three public and six private high schools each of the students were coming from different districts of the zones. The study period was as of April to May 2013.

Study design and populations

Cross sectional study design combined with qualitative methods of data collection was used to assess the communication factors that influence VCT message responses among Hosanna high school students as HIV/AIDS prevention strategy in Hadiya zone. All sampled students of nine high schools who were present during study period were included. For qualitative, Anti-AIDS club member students and teachers were recruited for in-depth interview and focus group discussion.

Sample size and sampling procedures

The sample size was calculated using single population proportion formula by considering 50% of estimated proportion of danger control response for voluntary counselling and testing message because there is no study conducted in related topic in the study area, margin of error 5%, a 5% level of significance (two sided) i.e. 95% confidence interval of certainty. Based on the above assumptions, with an additional 15 percent contingency for non-response; the total sample size was 425. Six in-depth interviews (IDI) were conducted with teachers and four

focus group discussions (FGD) with club member students. Simple random sampling technique was used to select study participants from student roster of each school. Judgemental sampling was used for in-depth interview and focus group discussion.

Measurement and variables

Outcome (Dependent) variable: Communication influences on VCT message responses as HIV/AIDS prevention message.

Exposure (Independent) variables: Communication factors, Perceived threat from HIV/AIDS, Perceived efficacy of VCT, Socio demographic factors, past risky sexual behaviors and Cues to actions.

Socio-demographics characteristics: such as age, sex, marital status, religion, previous residence, father and mothers occupation and with whom currently living of the respondents consisting of 12 items

Knowledge questions with response format of ‘yes’ or ‘no’. Respondents were asked not to guess, but to mark the “I don’t know” answer possibility if they did not know the correct answer.

Knowledgeable: Those respondents who have answered seventy five percent and above of all the knowledge questions about HIV/AIDS taken as knowledgeable.

Not Knowledgeable: Those respondents who could answer below seventy five percent of all the knowledge questions about HIV/AIDS.

Perceived susceptibility to HIV/AIDS is respondent’s self perception of vulnerability to HIV/AIDS measured by summed score of related belief items on 5-point Likert scale.

Perceived severity of HIV/AIDS is respondent’s hold belief concerning the effects of a given disease seriousness or condition would have on one’s state of health affairs, measured by summed score of related belief items on 5-point Likert scale.

Perceived response efficacy to use recommended response is respondent’s belief about the effectiveness of voluntary counseling and testing as strategy for HIV prevention, measured by summed score of related belief items on 5-point Likert scale.

Self-efficacy to use recommended response is respondent’s self confidence to be tested in elsewhere to prevent HIV transmission measured by summed score of related belief items on 5-point Likert scale.

Perceived threat from HIV/AIDS is respondent’s perception of one’s threat from HIV/AIDS (i.e. the sum of self perception of susceptibility to HIV/AIDS and perception of severity of HIV/AIDS) which is measured by summed perceived susceptibility and severity items of Likert scale.

Perceived efficacy of recommended response is respondent’s perception of one’s harm/threat from HIV/AIDS can be prevented by their ability and belief of effectiveness of the response (i.e. the sum of Perceived self -efficacy and response efficacy to use recommended response) which is measured by perceived self efficacy and response efficacy items of Likert scale with 25 items.

Danger control zone/ responses-when we say danger control the critical value (sum of efficacy score minus sum of threat score) is positive.

Fear control zone/responses- when we say fear control the critical value (sum of efficacy score-sum of threat score) is negative.

No responses- those students' with low threat perceptions regarding a health threat are neither engaging in danger nor fear control response or it is to mean that the critical value is Zero; i.e. the difference of weighted efficacy score and weighted threat score is neither negative nor positive. Discriminative value/critical value- are the sum of the difference between efficacy score and threat score. Responses: when we say response it is either using the recommended preventive strategy or not using the recommended preventive strategy. Score all of which eliciting responses on a five-point Likert scale format, ranging from 'complete disagreement' to 'complete agreement' are included. Each of the responses was scored as: 'complete disagreement'=1, 'disagreement'=2, 'undecided/not sure'=3, 'agreement'=4 and 'complete agreement'=5. After reversing for negatively worded items, scores was summed for each respective concept.

Cues to actions are conditions that may facilitate them to be opened to the elements related to HIV prevention methods in the respondents' surroundings with 10 items with response format of 'yes' or 'no'.

Communication factors are factors that include source, channel, message, and personal relevance in doing so contains eighteen items with response format of 'yes' or 'No' and nominal measurements, Past HIV/AIDS risky sexual behaviors: those students' who don't use at least one recommended response to prevent HIV infection or had at least a single exposure to unprotected sex measured with 11 items with a mix of nominal and scale measurements.

For validation of the instrument, factor analysis was done for confirmation of factor loading score of greater than or equal to 0.4 was accepted for construct validity after using Eigen value of greater than 1 for confirming major constructs of the model. Internal consistency of items was seen separately for each construct on which items were loaded and cronbach's alpha score of greater than or equal to 0.7 was accepted for ordinal scale items and spearman score have seen for dichotomized scale otherwise was removed. Items correlation with total correlation of scores greater than or equal to 0.3 was accepted after items internal consistency is assured otherwise were checked again and removed. For qualitative part, the qualitative data collection method was applied using in-depth interview and focus group discussion in order to supplement the result of the quantitative data.

Data collection instrument and procedure

Quantitative data were collected using structured self administered questionnaires by guidance of experienced data collectors. The questionnaire was adapted from literature in English to increase the comparability of the finding. The guideline which inquiries about the reason why they are testing or not, respondents logical decisions in accepting or not accepting the message, perceived difference of voluntary counselling and testing acceptors and rejecters, and preferred sources, message type, delivering style with some probing questions were prepared for students and teachers separately. Qualitative data were collected by principal investigator using focus group discussion and in-depth interview. Respective responses of informants were recorded by using tape recorder and hand written notes.

Data quality management, processing and analysis

Questionnaires were translated to local language and then back translated to English to maintain its consistency. Training was given for data collectors and pretest was done on 5% of the study subjects on similar population out of study area. Supervisors and principal investigator performed immediate supervision on a daily basis. In qualitative, the recorded voice was transcribed first in local language

and translated to English and analyzed by Atlas software. The collected data were entered in SPSS 16.0 version for analysis. For uniform scoring of items of five point Likert scale response format, negatively worded items were reversed. Descriptive analysis was used to describe the percentages and number of distributions of the respondents by socio-demographic characteristics, communication factors, past sexual behaviors, cues to action and the main constructs of extended parallel process model. Furthermore, bivariate and multivariable logistic regression analyses were used to identify the influencing factors using backward variable selection techniques. All explanatory variables that were associated with outcome variable in bivariate analysis with p-value of 0.25 or less were included in the initial logistic models. The crude and adjusted odds ratios together with their corresponding 95% confidence intervals were computed and interpreted accordingly. A P-value<0.05 was considered to declare a result as statistically significant in this study.

Ethical consideration

Prior to data collection, a formal letter was obtained from the faculty of medicine and health science of Wachemo University and submitted to each school. All study participants were informed about the purpose of the study verbally and in written form. All participants' right to self-determination and autonomy were respected. Participation is voluntary and participants can withdraw from the study at any time.

Result

Socio-demographic characteristics of the participants

Four hundred eight participants were participated in the study giving response rate of 96.0%. Accordingly, more than half, 56.6% (231/408), of the participants were females. The mean age of the participants was 17.2 ± 2.1 years (Table 1).

Knowledge about HIV transmission, prevention and misconceptions

In this study, all the participants have heard of HIV/AIDS. With regard to VCT as HIV prevention strategy, 86.8% (354/408) of the participant stated that VCT help to know one's own HIV status (Table 2).

Source of HIV/AIDS information

Regarding sources of information, 80.1% (327/408) of the participants reported health institutions while a little number can't recognize where they heard from (Table 3).

Source and channels preference for information

Concerning source preference, 66.2% (270/408), of the participants prefer health institution. Regarding the preference of channel, 66.9% (273/408), of the participants preferred radio followed by television 55.6% (227/408) (Table 4).

Messages and message appeals of communication

Table 5 shows frequently heard messages; specific message heard and preferred message appeals for HIV/AIDS prevention. Voluntary counseling and testing message was heard by 46.8% (191/408) of participants following abstinence 52.9% (216/408) of participants.

Perceived probability of infection and cues to actions

Perception towards HIV/AIDS & its prevetion methods were assessed by using EPPM model as perceived threat from HIV/AIDS,

Variables	Categories	Frequency	Percent (%)
High school name	Yekatit 25/67 school	179	43.9
	Wachemo preparatory	99	24.2
	Heto school	63	15.4
	Vision academy	24	5.9
	Fantu and Aberash (FA)	14	3.4
	United vision academy	12	2.9
	Harvard academy	8	2.0
	School of Deaf	4	1.0
Grade level	Akleshia	5	1.2
	Nine	154	37.7
	Ten	140	34.3
	Eleven	56	13.7
Sex of the participant	Twelve	58	14.3
	Female	231	56.6
Age of the participant	Male	177	43.4
	10-14	33	8.1
	15-19	285	69.9
Previous Residence	20-24	90	22.0
	Rural	276	67.6
	Urban	132	32.4
Marital status	Single	393	96.3
	Married	14	3.4
	Divorced	1	0.2
Religion of participant	Protestant	263	64.5
	Catholic	52	12.7
	Orthodox	54	13.2
	Muslim	39	9.6
Ethnicity of participant	Hadiya	245	60.0
	Kembata	54	13.2
	Amhara	51	12.5
	Silte	40	9.8
	Others*	18	4.4
Father's occupation	Farmer	206	50.5
	Employed	120	29.4
	Merchant	82	20.1
Mother's occupation	Housewife	290	71.1
	Employed	71	17.4
	Merchant	47	11.5
With whom you currently live?	With family	149	36.5
	Alone	136	33.3
	With friends	121	29.7
	Others**	2	0.5

*Guraghe, Tigre, Oromo, Wolaita **with uncles and aunts

Table 1: Presents socio- demographic characteristics of the participants, high school, Hadiya zone, South, Ethiopia, May 2013 (N= 408).

and perceived efficacy of the recommended responses as well. (Table 6 and Figure 1).

Concerning participant's perceived susceptibility to HIV/AIDS, 67.7% (276/408) of the participants scored less than or equal to 29 from 45 which shows relatively high susceptibility score having an average score of (mean ± standard deviation) (26.0 ± 5.9).

Regarding perceived severity of HIV/AIDS, 63.0% (257/408) of the participants scored less than or equal to 29 from 40 which shows relatively high severity score having an average score of (mean ± standard deviation) (29.0 ± 3.3).

Regarding participant's both perceived self efficacy and response efficacy of recommended responses (VCT), in both cases, 59.3% (242/408) and 53.9% (220/408), of the participants their score is

relatively good since is approached to mean value having an average score of (mean ± standard deviation) (18.3 ± 3.6) and (12.5 ± 2.3) respectively.

As far as participant's weighted perceived threat from HIV/AIDS and weighted perceived efficacy of VCT message were considered, participants who were found in efficacy appraisal are slightly lower than those in threat appraisals having an average score of (mean ± standard deviation) (0.7±0.4) and (0.8 ± 0.3) respectively.

Taking presence of cues to HIV into consideration, VCT related information from different sources, about 55.8% (228/408) of the participants scored < 5/10 in the composite score (mean ± standard deviation) number of cues to responses as per a participant is (6.1 ± 2.8)

Category of participants to VCT as HIV/AIDS prevention message

As far as category of participants was concerned, 78.7% (321/408), of participants were fear control zone where as 21.3% (87/408) of the participants were danger control zone based on discriminative scores (Table 7).

Past voluntary counseling and testing behavior

Regarding VCT, from the total sample, 69.8% (285/408) reported that they knew their HIV sero status (Table 8).

Regression analysis

Socio-demographic variables as predictor of message response: Regarding the socio-demographic variables as covariates (Table 1), school difference, age, previous residence, and fathers' occupation had significant crude and adjusted effect on message response. Meaning, those participants who were from Fantu and Aregash (FA) school and united vision academy as compared to Yekatit 25/67 had higher odds of fear control responses for HIV prevention messages with odds ratio [AOR (95% CI)=.11 (1.98-33.29)] and [AOR (95% CI)=5.66 (1.60-20.10)] respectively. Meaning, those participants who were from Fantu and Aregash school were 8.11 times more likely to be in fear control/unintended response than Yekatit 25/67 high school and likewise those participants who were from United vision academy were 5.66 times more likely to be in fear control/unintended response than Yekatit 25/67 high school. Similarly, those participants who previously resided

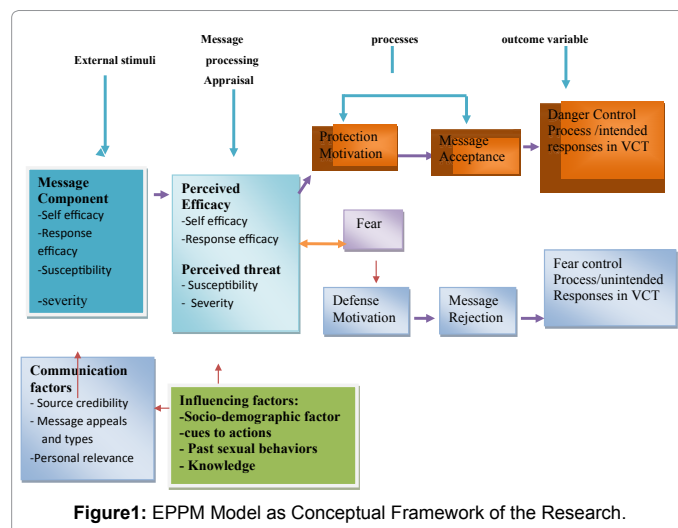


Figure 1: EPPM Model as Conceptual Framework of the Research.

Variables	Yes	%	No	%	IDN	%	
Has heard of HIV/AIDS	408	100.0	0	0.0	0	0.0	
Has heard of HIV/AIDS prevention methods	401	98.3	7	1.7	0	0.0	
Healthy looking person can have the virus	205	50.2	141	34.6	62	15.2	
There is special medication for PMCT*	320	78.4	50	12.3	38	9.3	
There is special medication to persons who have HIV/AIDS	345	84.6	36	8.8	27	6.6	
Means of transmission	Unprotected sex	386	95.0	22	5.0	0	0.0
	Sharing sharp instrument	352	86.3	56	13.7	0	0.0
	Blood transmission without test	344	84.3	64	15.7	0	0.0
	Intravenous drug use	207	50.7	201	49.3	0	0.0
	during pregnancy	275	67.4	104	25.5	29	7.1
	during delivery	331	81.1	55	13.5	22	5.4
	during breast feeding	318	77.9	55	13.5	35	8.6
Misconceptions about transmissions of HIV	Mosquitoes bite	57	14.0	298	73.0	53	13.0
	Sharing foods	35	8.6	358	87.7	15	3.7
	Curse of God	227	55.6	125	30.6	56	13.7
Means of prevention method/prevention strategy	Being faithful to one partner	247	60.5	133	32.6	28	6.9
	Condom use	294	72.1	80	19.6	34	8.3
	Abstinence	322	78.9	59	14.5	27	6.6
	Voluntary counselling and testing	354	86.8	38	9.3	16	3.9
	Limit sex with one partner	371	90.9	37	8.3	0	0.0
	Limit number of sexual partners	304	74.5	104	25.5	0	0.0
	Avoid sex with prostitutes	330	80.9	78	19.1	0	0.0
	Avoid sex with persons who have many sexual partners	340	83.3	68	16.7	0	0.0
	Avoid sex with homosexuals	292	71.6	116	28.4	0	0.0
	Avoid blood transfusion without test	338	82.6	70	17.2	0	0.0
Avoid sharing razors/blades	353	86.5	55	13.5	0	0.0	

*prevention of mother to child transmission of HIV

N.B. Finally, comprehensive knowledge among the participants is 88.3% (361/408)

Table 2: Presents frequency of the participants knowledge about HIV/AIDS transmission, prevention and some misconceptions in hosanna town, Hadiya zone, Southern, Ethiopia, May 2013 (N= 408).

Sources of information	Yes	%
Health institutions	327	80.1
School/Teacher	273	66.9
Religious institutions	231	56.6
Friends	205	50.2
People living with HIV/AIDS	153	37.5
Parents	142	34.8
Others*	30	7.4

*They don't know specific place where they heard from

Table 3: Presents frequencies of the participants' source of information for HIV/AIDS with respective percentages among hosanna high schools, South Ethiopia May 2013 (N= 408).

Variables	Yes	%	No	%	
Preferred sources	Health institutions	270	66.2	138	33.8
	School/Teacher	144	35.3	264	64.7
	Friends	171	41.9	237	58.1
	Religious institutions	144	35.3	264	64.7
	Parents	93	22.8	315	77.2
	People living with HIV/AIDS	85	20.8	323	79.2
	Radio	273	66.9	135	33.1
Preferred channels	Peer discussions	259	63.5	149	36.5
	Television	227	55.6	181	44.4
	Printed materials: posters, leaflets	192	47.1	216	52.9
	Others	12	2.8	396	97.2

Table 4: Presents frequencies of the preferred source of and channels for information about HIV/AIDS with respective percentages among participants of hosanna high schools, Hadiya Zone, South Ethiopia, May 2013 (N= 408).

in rural area as compared to those who came from urban area had lowered odds of fear control responses for HIV prevention messages with odds ratio [AOR (95% CI)=0.34 (0.18-0.63)]. Participants from

merchant family as compared to farmer's family had lower odds of fear control responses for HIV prevention messages with odds ratio [AOR (95% CI)=0.41(0.17-0.96)] Meaning, those participants whose

Variables (messages)		Yes	%	No	%
Frequently heard message/behavior	Abstinence	216	52.9	192	47.1
	Being faithful	145	35.5	263	64.5
	Using condom	180	44.1	228	55.9
	Voluntary counseling and testing	191	46.8	217	53.2
Preferred message appeals	Dramatic/funny	353	86.5	55	13.5
	Factual through education	337	82.6	71	17.4
	Fear arousal messages	138	33.8	270	66.2
	Two sided message	269	65.9	139	34.1
	One sided message	127	31.1	281	68.9
	Negative message	138	33.8	270	66.2
	positive message	195	47.8	213	52.2
Specific messages heard of/seen	Value your life	364	89.2	44	10.8
	let us fight HIV/AIDS together	366	89.7	42	10.3
	Care and support for AIDS Patients	339	83.1	69	16.9
	let us take care of each other	338	82.8	70	17.2
	I care, do you?	333	81.6	75	18.4
	Abstain from sex before marriage	295	72.3	113	27.7
	Stop stigma & discrimination	285	69.9	123	30.1
	Live and die	233	57.1	175	42.9
There is media in our compound	169	41.4	239	58.6	

Table 5: Presents frequencies of the frequently heard behaviors, specific messages heard of/seen and preferred appeals with respective percentages among participants of hosanna high schools, Hadiya zone, South Ethiopia.(N= 408).

Components/constructs	Scale range	Scale mean	SD
perceived susceptibility	9-45	26.0	5.9
perceived severity	8-40	29.0	3.3
Weighted threat	17-85	0.8	0.3
Weighted efficacy	7-35	0.7	0.4
perceived self-efficacy of VCT use	4-20	18.3	3.6
perceived response efficacy VCT use	3-15	12.5	2.3
Cues to action	0-10	6.1	2.8

*Voluntary counseling and testing

Table 6: Presents descriptive statistics for constructs of EPPM by their scale range of the participants in hosanna high schools, Hadiya zone, South Ethiopia. (N= 408).

Variable		Outcome Variables		Total
		Danger Control response	Fear Control response	
Sex	Male	31 (7.6%)	146 (35.8%)	177 (43.4%)
	Female	56 (13.7%)	175 (42.9%)	231 (56.6%)
Total		87 (21.32 %)	321 (78.68%)	408 (100.0%)

Table 7: Showing responses (outcome variable) with their respective frequencies of the sex of participants in hosanna high schools, Hadiya zone, South Ethiopia, May 2013 (N= 408).

Variables		Danger control		Fear control		Total	
		No	%	No	%	No	%
Ever tested after sexual Intercourse (N= 142)	Yes	15	10.6	58	40.8	73	51.4
	No	20	14.1	49	34.5	69	48.6
Ever tested for HIV in their life (N=408)	Yes	47	11.5	239	58.6	285	69.8
	No	40	9.8	82	20.1	123	30.2

Table 8: Presents participants' HIV voluntary counselling and testing experience as prevention strategies by responses (danger control or fear control) among Hosanna high school students Hadiya Zone, South Ethiopia May, 2013. (N= 408).

fathers' occupation is merchant were 0.41 times more likely to be in fear control/unintended response than farmer's family. Participants whose age is 20-24 as compared to 15-19 had lower odds of fear control responses for VCT messages with odds ratio [AOR (95% CI)=0.86 (0.75-0.98)]. Meaning, those participants whose age is 20-24 is 0.86 times more likely to be in fear control/unintended response than 15-19. The above explained variables are candidate for final prediction model (Table 9).

EPPM constructs as a predictor of message responses (perceived probability infection)

Perceived susceptibility to HIV/AIDS had a statistical significant effect on fear control response with [AOR (95% CI)=1.61(1.40-1.86)] .i.e. From the model, the coefficient of susceptibility score implies, those participants whose considers susceptible were 1.61 times more likely to be in fear control/unintended response than those who are not.

Perceived severity to HIV/AIDS had a statistical significant effect on fear control response with [AOR (95% CI)=1.41(1.27-1.56)]. From the model, the coefficient of severity score implies those participants who consider HIV as a severe were 1.41 times more likely to be in fear control/unintended response than those who are not.

Perceived self efficacy of VCT use for HIV/AIDS prevention had a statistical significant effect on fear control responses with [AOR (95% CI)=0.68(0.61-0.76)]. Summed response efficacy of recommended responses for HIV/AIDS prevention had a statistical significant effects on fear control responses with [AOR (95% CI) = 0.13(0.14-0.76)]. Interpreted as, from the model, the coefficient of response efficacy score implies that being in fear control response results in average reduction in response efficacy score by 0.13. Those individuals who had

cues to HIV information either in prevention or its severity had positive relation with fear control and had significant association between message responses with odds ratio [AOR(95% CI)=1.69(2.10-13.94)] and it is kept for final model (Table 10).

Communication factors as predictor of message response

Taking the communication factors as a predictor of message response for prediction of fear control responses (Table 11).

Accordingly, participants who did not heard VCT use message frequently had slightly higher odds of fear control responses with odds ratio [AOR (95% CI)=3.54(1.37-1.92)] than those heard VCT use message frequently. In other words, who heard are more protective

Variables	Categories	No	%	COR (95% CI)	AOR(95% CI)
High School Name	Yekatit 25/67 School	179	43.9	1	1
	Wachemo Preparatory	99	24.3	0.24(0.06-1.28)	0.73(0.10-5.25)
	Heto	63	15.4	2.88(0.40-20.92)	5.00(0.59-42.57)
	Vision academy	24	5.9	0.44(0.15-1.32)	0.65(0.20-2.10)
	Fantu and Aberash	14	3.4	4.22(1.36-13.14)*	8.11 (1.98-33.29)*
	United vision academy	12	2.9	7.88(2.33-26.66)*	5.66 (1.60-20.10)*
	Harvard academy	8	2.0	1.00 (0.48-2.07)	1.49(0.61-3.63)
	School of Deaf	4	1.0	0.77(0.31-1.07)	0.64(0.33-1.18)
Age	Akleshia	5	1.2	0.59(0.27-1.28)	0.76(0.26-2.23)
	10-14	33	8.1	2.86(0.33-1.18)	2.44(0.63-1.28)
	15-19	285	69.9	1	1
Previous Residence	20-24	90	22.0	0.87(0.77-0.98)*	0.86 (0.75-0.98)*
	Rural	276	67.6	1	1
Monthly income of father	Urban	132	32.4	0.40 (0.22-0.72)*	0.34(0.18-0.63)*
	Farmer	206	50.5	1	1
	Employed	120	29.4	0.86(0.51-1.46)	0.53(0.25-1.13)
Merchant	82	20.1	0.32(0.15-0.71)*	0.41(0.17-0.96)*	

*statistically significant at p value < 0.05, 1 is Odds ratio for reference category, COR-crude odds ratio, AOR-adjusted odds ratio, NB. Variables indicated in the above table are significant in crude or/and adjusted OR but those which are not significant in either of/ both cases are not indicated in the table

Table 9: Presents regression analysis to see the effect of socio-demographic variables in response categories of the participants in hosanna high school, Hadiya zone, Ethiopia, May, 2013. (N=408).

Components/constructs	Scale mean	SD	COR (95% CI)	AOR(95% CI)
Perceived Susceptibility	26.0	5.9	1.17(1.12-1.21)*	1.61(1.40-1.86)*
Perceived Severity	29.0	3.3	1.03(1.01-1.05)*	1.41(1.27-1.56)*
Selfefficacy	18.3	3.6	0.96(0.94-0.98)*	0.68(0.61-0.76)*
Response Efficacy	12.5	2.3	0.33(0.65-0.80)*	0.13(0.14-0.76)*
Weighted Threat	0.8	0.3	1.09(1.06-1.11)*	1.97(0.94-1.02)
Weighted Efficacy	0.7	0.4	0.98(0.96-0.99)*	0.67(0.64-1.12)
Cues To Action	5.3	2.8	1.25(1.69-7.19)*	1.69(2.10-13.94)*

*statistically significant at p value <0.05, COR-crude odds ratio, AOR-adjusted odds ratio

Table 10: Regression analysis to see the effect of EPPM constructs in message response categories of the participants in hosanna high school, South Ethiopia, May, 2013. (N= 408).

Variables	No	%	COR(95%CI)	AOR(95%CI)	
Frequently VCT use	Yes	179	44.1	3.47(0.36-0.99)*	3.54(1.37-1.92)*
	No	228	55.9	1	1
Dramatic/Humour appeal	Yes	353	86.5	1	1
	No	55	13.5	1.41(0.23-0.73)*	1.93(1.05-3.57)*
Value your life	Yes	364	90.2	1	1
	No	44	9.8	2.06(1.01-4.21)*	2.46(1.45-3.67)*
Avoid stigma and discrimination	Yes	285	69.9	1	1
	No	123	30.1	2.17(1.92-5.24)*	1.37(1.33-4.24)*

*statistically significant at p value <0.05, 1 is Odds ratio for reference category., COR-crude odds ratio, AOR-adjusted odds ratio

Table 11: Crude and adjusted odds ratio to see the effect of distal factors on message response categories of the participants in hosanna high schools, Hadiya zone, South Ethiopia, May 2013.

(danger control response) than who didn't hear. Those participants who preferred humour appeals as compared to who didn't preferred significantly higher odds of fear control responses for VCT messages with odds ratio [AOR (95% CI)=1.93(1.05-3.57)] and interpreted as, participants who preferred humour appeals messages were 1.93 times more likely to be in fear control response than those participants who didn't prefer humour appeals messages. Those participants who haven't heard the message avoid stigma and discrimination had significantly higher odds of fear control responses for HIV [AOR (95% CI)=1.37(1.91-2.77)]. In parallel speaking, hearing the avoid stigma and discrimination message leads individuals to be danger control response.

Past risky sexual behaviors as a predictor of message response

Risky sexual behaviors taken as variables of predictor of message responses by considering risky behaviors related to HIV, like ever had sex, age at first sex, kind of sex partner, experience of testing after sexual intercourse and ever testing, and decision to have sex now and for future after having test. The crude and adjusted effects of these factors were seen following description of each behavior as follows.

Accordingly, ever tested in their life had statistically significant crude and adjusted effect on fear control responses. For instance, participants who never tested in their life had lowered odds of danger control responses for HIV prevention messages as compared to whoever tested in their life with odds ratio [AOR (95% CI)=0.04(0.00-0.65)] (Table 12).

Final Multivariable logistic model for prediction of message responses

In final model, all the variables which were significant in bivariate analysis are fitted to predict message response by backward Likelihood regression method: the main constructs of the EPPM model, ever tested, and previous residence were left over in the final model. Predicted final model (fear control as a variable of interest)=11.12 + 4.13 (self-efficacy) + 3.21 (response efficacy) + 4.13 (Previous residence (Rural) + 4.31 (Ever tested (yes)) - 0.42 (perceived susceptibility) - 0.33 (perceived severity). The model explained about 70.09% of prediction of message response among participants learning in the schools with goodness of fit of the model ($X^2/df=6.12/8$, p. value=0.32) (Table 13).

Discussion

According to EPPM model, someone perceiving susceptibility to and severity of ill health condition gets the force to engage on healthy behavior but think over the best path to be healthier or to go through the effective strategy which adds value for his/her health provided that people are already aware in a particular health threat since the model best works in situation where participants have high level of awareness than motivational variables [8,13].

In this study, knowledge level was matching with the basic

Variables		No	%	COR (95% CI)	AOR(95% CI)
Ever tested for in their life (N=408)	Yes	278	70.0	1	1
	No	119	30.0	2.28(1.38-3.76)*	0.80(1.16-4.00)*

*Statistically significant, 1 is Odds ratio for reference category; COR-crude odds ratio, AOR-adjusted odds ratio; **NE**. Variables indicated in the above table are significant in crude or/and adjusted OR but those which are not significant in either of/ both cases are not indicated in the table.

Table 12: Regression analysis to see the effect of past sexual behaviour on message response of the participants in hosanna high schools, Hadiya Zone, Southern Ethiopia, May 2013.

Variables in the Equation	Pvalue	OR	95% CI for AOR	
Perceived Susceptibility	0.03	0.42	0.44	0.61
Perceived Severity	0.02	0.33	0.21	0.74
Perceived Self efficacy	0.04	4.13	3.37	5.01
Perceived Response Efficacy	0.03	3.21	6.89	9.09
Previous Residence (Rural)	0.04	4.13	2.43	7.32
Ever tested	0.04	4.31	7.01	9.08
Constant		11.12		

OR- odds ratio, AOR-adjusted odds ratio, CI-Confidence Interval

Table 13: Multivariable logistic regression analysis for final model prediction of message response among participants of hosanna high school, South, Ethiopia May 2013.

assumption of the model but as compared to other findings, the result is inconsistent with or higher than the findings of other studies conducted in Sub Saharan Africa [2] and the, DHSE, 2010 and BSS round two conducted in Ethiopia [12]. In support of this view in qualitative study almost all the informants and discussants said that "existence of HIV/AIDS and how transmitted and prevented is daily food for every individual." The reason may be due to urban health extensions are vigorously working in increasing awareness of HIV/AIDS prevention methods. The other is improvement was also observed with different levels based on the type of intervention increased accessibility to information.

In this study, schools' difference had significantly associated message responses. Accordingly, Fantu Aregash and United Vision Academy schools had highly significant positive association with danger control responses meaning the participants in F.A and united vision academy were practicing intended behavior as noted in findings of this study in comparative of the other schools involved in the study. Unlike that, qualitative part, Yekatit 25/67 high school, showed highly strong HIV/AIDS club programs on account of having linkage with highly committed nongovernmental organizations in which is working in prevention activities by providing health learning materials, VCT campaign..., and participating on different awareness creation meetings which helps them to discuss freely.

Male informants who is working with club members whose age of 33 said that "we use participatory approach for every aspect of discussion i.e. student themselves teach for their peers freely and even they share experiences when they took training with their friends. Sometimes health extension workers involved in coffee ceremony for discussion of HIV issues are which in turn help to hold back its incidence as well as encouraging students to engage in prevention activities....." In contrast to this saying, all the discussants who came from different schools said that "giving option is probably good but promoting VCT is best to have tested partner because the creator of the world create one person for one guy that is why we differ from animals."

In this study, regarding previous residence being rural resident is more significantly positively attached with intended responses as compared to urban residents. Similar concept to this finding, a cross sectional study done in Debre Berhan high school female students showed rural dwellers are less likely to be engaged in sexual intercourse and more abstinent groups as compared to urban. The potential reason of higher significant acceptance of messages among rural residents compared to urban residents may be many exposing films, even talks, also cultural disparities in rural area attached with fear of HIV. The other potential reason of higher significant acceptance of messages among rural residents compared to urban residents may be related to fear of the threat in rural comers is attached with abstaining until marriage which in turn leads to have test.

Father's occupation had significant effect in message responses. This is similar, to the study conducted in Addis Ababa on risk sexual behavior of in school youths that showed significant positive risk protective effect of monthly income [14]. In contrast to this findings, in qualitative part, one of the male informants from Yekatit 25/67 high school with age of 29 years said that *"sometimes parents are the agents for their siblings to push to sex by providing much money and on the other side...those female students who came from poor families have high tendency to be engaged in multiple sexual partners; so, both extremes are not good."*

In this study, perceived susceptibility to HIV/AIDS is directly attached with fear control response which in turn reduces the protective effects of the individuals increasing the likelihood of fear control response. Similarly, a cross sectional study conducted in Ethiopia on message response of Hossana college students were similar findings that a belief of personal perceived susceptibility to HIV risk in relation to condom use is low [15].

This study, concerning perceived severity of HIV/AIDS showed positive effect on fear control response. In line with this result in qualitative part, one of the female participants with age of 18 years said that *"young generation wants to hear the message focus on being faithfulness (having boy /girl friend); on the other hand those messages focused abstinence considered as layman teaching since this day is full of sexual intercourse. Therefore, having VCT to have healthy partner should be a must."* However, as compared to the finding of this study, the study conducted in Kenya at university students the results indicated that almost all the students perceived severity to HIV/AIDS is very serious resulting in lack of variance in the measure. The potential reason may be peoples are familiarized HIV as not to have immediate consequences rather it lasts long period.

In this study, over all perceived self efficacy of HIV/AIDS showed negative effect on fear control response which in turn enhances the protective effects of the individuals decreasing the likelihood of fear control response which really parallels with the idea of EPPM model in message evaluation since directly linked with danger control responses.

This study, concerning perceived response efficacy of HIV/AIDS showed negative effect on message response which in turn enhances the protective effects of the individuals reducing the likelihood of fear control response which exactly parallels with the idea EPPM model in message evaluation since directly linked with danger control responses. In qualitative part, one of the female participants from Wachemo preparatory with age 19 said that *"... I abstain until marriage, I am confident that I can have HIV test every where...I think most of who are abstaining does that....?"*

Concerning communication factors, participants who did not hear abstinence message frequently had slightly higher crude and adjusted odds of fear control than those heard abstinences message frequently. In other words, they are less protective than those who heard VCT frequently. In qualitative part, one of the participants with age of 31 from Yekatit 25/67 high school said that *"...the message focuses on being faithfulness is more accepted than any other three and next to that VCT is expected to be delivered; however we are wasting time on abstinence which are mostly rejected particularly in this age bracket since majority of students wants to engaged in sexual intercourseam not saying ... don't promote abstinence and condom use rather let us start our message from being faithfulness with tested partner which in turn helps to have HIV test."*

The current study used tested model for message evaluation as theoretical framework that outlines how to measure the components explicitly so that they are easily summarized. Qualitative and quantitative data were triangulated. But, in reality, once the individual is exposed to communication messages, it may be difficult to get that individual in zero discriminative value rather may be obtained in calculation and even leads in false conclusion. One limitation of model is it may have the gap between the actual behavior and psychological responses.

In conclusion, participants' acceptance or rejection of message was determined mostly by individual perception on what they have for HIV and its prevention methods. Despite high proportion of students were in fear control psychological responses, there is similarity with current behavior of prevention of HIV/AIDS. As is, the main constructs had significantly associated with message responses particularly susceptibility to and severity of HIV/AIDS were directly attached with fear control responses, where as ever tested, being rural resident, self efficacy and response efficacy to HIV prevention messages are directly linked with danger control response which is congruent with the assumption and general idea of EPPM model. The way how to deliver message mostly determine its effectiveness in encouraging the acceptance of message; particularly, humour appeal messages produces danger control responses. Involvement of health personnel and radio channel is preferable source of information to students. Generally, the independent predictors of the message response are the main constructs of EPPM model, ever tested and previous residence either in acceptance or in rejection of message.

To schools, HIV/AIDS prevention and control offices, message developers, researcher and any organizations working in the area of HIV/AIDS prevention should follow the following recommendations.

Regional Health bureau should focus on practical and technical aspects of the message development that developers will be well equipped in order to fill the gap in message production and acceptance.

Zonal health department should directly go to the grass-root level and should undergo continuous orientation and refreshments for the HIV mainstreaming heads and should also fix time to evaluate the effectiveness of IEC in touching the required behavioral change.

Message developers should have to consider the actual needs of the participants through needs assessment to maximize perception of their risk of susceptibility and severity.

Message developers, even though focus demands needs sacrifices, should tailor message based on participants' residence so that more acceptance in uniform categories is assured.

Schools should have continuous IEC/BCC intervention programs since lack of critical thinking between threat and efficacy was observed.

Schools should further promote both self efficacy and response efficacy of VCT inaugurating with being faithfulness.

Schools should give emphasis to ensure access for young people to sex education, HIV/STIs, including information about some misconceptions.

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