

# Evaluating Effectiveness of Abstinence Message Response for HIV/Aids Prevention and Associated Factors among Hadiya Zone College Students using Extended Parallel Process Model, South Ethiopia

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## Abstract

**Background:** Since its emergence HIV/AIDS killed millions of people and still its epidemics continued to grow. It became a major public health problem in nowadays. Recently, many advances have been made in developing effective and affordable interventions to reduce transmission of HIV, but desired level of turn down has not been attained. This study is aim to evaluate the Effectiveness of Abstinence Message Response for HIV/Aids prevention using EPPM among youths exposed to messages.

**Methods:** A cross sectional study was conducted using mixed methods of data collection on study participants selected using stratified simple random sampling from hosanna public college students. Data were analyzed using SPSS version 16.0. Logistic regression analysis was used to identify factors associated with message response.

**Results:** Two hundred sixty nine (67.8%) of the respondents were found in danger control responses, whereas hundred twenty eight (32.2%) were found in fear control responses. Response efficacy [AOR (95%CI) =4.21(1.11, 11.32)] HIV/AIDS Rural residents [AOR (95%CI) = 3.13 (1.12, 7.32)] were positively associated factors for danger control responses whereas Perceived Self-efficacy [AOR (95% CI) = 0.68(0.61-0.76)], perceived susceptibility to [AOR (95%CI) = 0.22 (0.26, 0.69)] and perceived severity [AOR (95%CI) = 0.43 (0.11, 0.83)] of HIV/AIDS were negatively associated factors for danger control responses. Totally, 71.1% of the variance in the response of abstinence message could be explained by model.

**Conclusion:** Although higher numbers of respondents were in danger control psychological responses, there were gaps between critical values and most of the current behavior. Perceived susceptibility, severity, self-efficacy, response efficacy and previous residence were independent predictors towards ways of improving readiness to use recommended responses. Therefore, due attention should give to fill the gap of perception of risk both susceptibility and severity by inaugurating with self and response efficacies in the context of their residence.

**Keywords:** Messages; Perceived threat; Efficacy; Danger or fear control

## Introduction

Since its emergence Human Immunodeficiency Virus (HIV) Acquired Immunodeficiency Syndrome (AIDS) killed millions of people and still its epidemics continued to grow [1]. HIV/AIDS became a major public health problem in nowadays [2]. Accordingly, recently, many advances have been made in developing effective and affordable interventions to reduce transmission of HIV. To halt the epidemics, the preventive efforts included education about safe sex, HIV surveillance, abstinence and access to treatment [3-5].

In Ethiopia, the transmission of HIV/AIDS is more of heterosexual (99%) so; preventive behaviors are the only choices to protect youths from the epidemic in the absence of effective medical care [6]. 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 [7,8].

According to federal HIV/AIDS prevention and control office the adult HIV prevalence in urban areas is much higher (7.7%) than in rural areas (0.9%) [9].

Knowledge may be necessary but not sufficient to reduce high-risk activities [10]. Youths, who have knowledge of how to protect themselves, still do not consider that they are at risk of getting HIV infection. The perception of own risk is very less than the perception of others as at risk. BSS of Ethiopia 2010 found that significant proportion of the population particularly youth, are at risk of HIV infection despite

the high level of knowledge about HIV/ AIDS [6].

In the era HIV/AIDS, several evidences showed that people want to know more about HIV/AIDS transmission, severity, prevention and treatment from friends, family, mass media and health professionals [11]. But, a study done in Addis Ababa among school youths on the perceived sufficiency of the IEC materials 58% of students thought that the information was insufficient to give them knowledge they need and to help them develop the desired attitudes and behaviors on the HIV/AIDS [12-14]. According to the information, education, and communication (IEC) model, "clear information presented in an appropriate format and language would persuade those at risk to protect them from the virus" [12,13].

Message should consist of actual appeals, words, pictures and sounds

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that people use are mostly liable to be accepted. A message will only be effective if the advice presented is relevant, acceptable, sequentially focus on the threat and the efficacy [14]. A study in school youths in Addis on the evaluation of HIV message in Addis, the respondents feel that currently most messages are positive but no required amount of behavioral changes are achieved. These facts lead us to evaluate our messages and to take corrective actions [15,16].

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 and AIDS infections has not been achieved [4,17]. 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 messages 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 [9,10].

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 [10] which is truly analogous with this research which is aimed to evaluate the effectiveness of abstinence message for HIV prevention that can show the category of respondents. Therefore, this study is important to assess the effect of exposure of abstinence messages among college youths and the response they experience on messages using EPPM. Furthermore, the findings of this study will enable colleges, health educators, message developers, researchers and policy makers used as baseline data to design appropriate and effective messages.

## Methods and Materials

### Study setting and period

This study was conducted in Hosanna town among the three public colleges of Hosanna town: namely Health Science College, Poly Technical College and Teachers Training College for over a period of ten days. In 2012, a total of 7211 students were enrolled in all programs in the three colleges from different areas of the zones of the region for a maximum of three years training residing outside of the colleges' compound.

### Study design and populations

Cross sectional study design was conducted using both quantitative and qualitative data collection methods on students of Hosanna Colleges, Hadiya zone, South Ethiopia. Source populations were all students on three Hosanna colleges. Study populations were all regular program who fulfill exclusion criteria. All sampled regular students of three Hosanna colleges who were present during study period were included.

### Sample size and sampling procedure

The required sample size was determined using single population

proportion formula by considering 50% proportion of danger control response of abstinence message because there is no study conducted in related topic in the study area to the understanding of investigators, 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 10 percent contingency for non-response the total sample size was 421. Nine in-depth interviews were conducted with teachers and four focus group discussions were conducted club member students by employing criterion related sampling method; each group consists of 5-7 participants. Stratified random sampling method was used to select study participants from registration book of each college by the Proportional to size (PS) allocation technique.

### Measurement and variables

**Socio-demographics characteristics:** Such as age, sex, marital status, religion, residence, income and so on was assessed using 10 items. **Perceived susceptibility** to HIV/AIDS is respondent's self-perception of vulnerability to HIV/AIDS and it was measured by five point Likert scale items. Similarly, perceived severity of HIV/AIDS is respondent's belief concerning the effects of a given disease seriousness or condition would have on one's state of health affairs and it also measured on 5-point Likert scale.

**Perceived efficacy:** 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) assessed on five point Likert scale ranging from complete disagreement = 1, 'somewhat disagree' = 2, 'neither disagreement nor agreement' = 3, 'somewhat agree' = 4 and 'to complete agreement' = 5. Not applicable option was included. After reversing for negatively worded items, scores were summed for each respective concept.

**Danger control responses:** When people believe they are at-risk for health threat that is HIV (i.e., high perceived threat), and they believe they are able to effectively avert it from occurring (i.e., high perceived efficacy), they are motivated to control the danger or threat.

**Fear control responses:** When respondents believe they are at-risk for a serious or significant threat (HIV/AIDS) (i.e., high perceived threat), but they believe they are unable to perform the recommended response or they believe the recommended response to be ineffective (i.e., low perceived efficacy), then they focus on controlling their fear about the threat.

**No responses/No threat:** Respondents' with low threat perceptions regarding a health threat are neither engaging in danger nor fear control i.e. weighted efficacy score minus weighted threat score is neither negative nor positive. To determine critical value/discriminative score, the sum of threat score was subtracted from sum of efficacy score.

**Negative scores:** Perception scores that indicate people are controlling their fear about HIV/AIDS.

**Positive scores:** Perception scores that indicate people are controlling their danger about HIV/AIDS. On the other hand, when the critical value is zero, it is considered as **no responses** [11,12].

### Data collection instrument and procedure

Quantitative data were collected using structured self-administered questionnaires through guidance of experienced data collectors. The questionnaire was adapted from literature in English to increase the comparability of the finding. Qualitative data were collected by

principal investigators using FGD and IDI from club member students and teachers respectively. 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 made on 5% of the study subjects on similar population out of study area before the actual data collection. The supervisors and principal investigator performed immediate supervision on a daily basis. Each and every completed questionnaire was checked for completeness. In qualitative study, the recorded voice was transcribed first in Amharic and translated to English and the main responses were analyzed by using Atlas software and reported using narrative and mentioned in direct quotation for triangulation. The collected data were entered in EPI data version 3.1 computer programs. Prior to the analysis, the whole data were cleaned and the double entry verification was done to minimize data entry error. Then, data were exported to Statistical Package for Social Sciences (SPSS) 16.0 version for analysis. For uniform scoring of items of five point Likert scale response format was used; 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 EPPM. Furthermore, bivariate and multivariable logistic regression analyses were used to identify factors that affect message responses using forward variable selection techniques. All explanatory variables that were associated with the outcome variable (response) 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, ethical clearance was obtained from the ethical clearance committee of Jimma University and submitted to each college. All study participants were informed about the purpose of the study and any additional information was given as they need, verbally and 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 without explanation and without penalty or loss of benefit. The autonomy and privacy of each participant will be assured unless they need assistance in filling out the questionnaire.

### Result

#### Socio-economic and demographic characteristics of the respondents

From total 421 three hundred ninety seven respondents were able and willing to participate in the study with overall response rate of 94.2%. Accordingly, more than half 233 (58.7%) of the respondents were females. The mean age of the respondents was 18.9 ± 1.8 years (Table 1).

#### Knowledge about HIV prevention in case abstinence

Concerning the knowledge of HIV/AIDS prevention method, 391(98.5%), of the respondents heard of different HIV/AIDS prevention methods. Three hundred fifteen (79.3%), of the respondent stated abstinence HIV/AIDS prevention methods.

Variables	Categories	Frequency	Percent (%)
College name	HPTC	201	50.6
	HTTC	101	25.4
	HCHS	95	24.0
Class year	First year	202	50.7
	Second year	101	25.4
	Third year	94	23.9
Sex	Female	233	58.7
	Male	164	41.3
Age	15-19	218	54.9
	20-24	173	43.6
	25-29	6	1.5
Previous Residence	Urban	231	58.2
	Rural	166	41.8
Marital status	Single	363	91.4
	Married	29	7.3
	Divorced	5	1.3
Religion of respondent	Protestant	244	61.5
	Catholic	59	14.9
	Orthodox	63	15.9
	Muslim	31	7.8
Ethnicity of respondent	Hadiya	233	58.7
	Guraghe	53	13.4
	Kembata	51	12.8
	Silte	26	6.5
	Wolaita	4	1.0
	Others *	30	7.6
Monthly income	≤ 200 Eth.birr	179	45.1
	201-300 Eth.birr	133	33.5
	≥ 301 Eth.birr	85	21.4
With whom you currently live?	With friends (rent house)	141	35.5
	Alone (rent house)	129	32.5
	With family	111	28.0
	Others **	16	4.0

\*Amara, Oromo, Kafa, Sidama, Gedio, Sidama, Dewuro, Tigre, Alaba, \*\*Uncles, aunts or blood relatives. HPTC- hosanna poly Technical College, HTTC- hosanna teachers training college, HCHS- Hosanna College of health sciences

**Table 1:** Socio- demographic characteristics of the respondents, Hosanna Colleges, Hadiya zone, South, Ethiopia, March 2012 (N= 397).

### Communication factors

**Source of HIV/AIDS information:** Regarding sources of information about HIV/AIDS, 320(80.6%) of the respondents were got from health institutions while 17(4.3%) reported heard from their spouse (Table 2).

**Messages:** Concerning frequently heard messages; specific messages heard and preferred message appeals for HIV/AIDS prevention. Accordingly, 166(41.8%) of the respondents knew about the existence of mini media in their compound. With regard to specific messages heard of, 358(90.2%) of the respondents heard of value your life and let us fight HIV together while live and die reported by 227(57.2%) as a least to be heard. Concerning the interest of the respondents on message appeals, 349 (87.9%) liked factual message appeals through education which mainly focuses on transmission and prevention aspects followed by dramatic/funny message appeals which are full of entertainment and comic jokes which account 331(83.4%). (Table 3).

Sources of information	Yes	%
Health institutions	320	80.6
School/Teacher	270	68.0
Religious institutions	223	56.2
Friends	200	50.4
PLWHA	152	38.3
Parents	142	35.8
spouse	17	4.3
Others*	7	1.8

\* Reporters and youth clubs

**Table 2:** Descriptive frequencies of the respondents' source of information for HIV/AIDS among Hosanna Colleges, South Ethiopia (N=397).

Variables (messages)	Yes	%	No	%	
There is media in our compound	166	41.8	231	58.2	
Frequently heard message	Abstinence	213	53.7	184	46.3
	Being faithful	139	35.0	258	65.0
	Using condom	178	44.8	219	55.2
Specific messages heard of/seen	Value your life	358	90.2	39	9.8
	let us fight HIV/AIDS together	358	90.2	39	9.8
	Care and support for HIVP	332	83.6	65	16.4
	let us take care of each other	332	83.6	65	16.4
	I care, do you?	326	82.1	71	17.9
	Abstain from sex before marriage	289	72.8	108	27.2
	Stop stigma & discrimination	282	71.0	115	29.0
	Live and die	227	57.2	170	42.8
Preferred message appeals	Dramatic/funny	331	83.4	66	16.6
	Factual through education	349	87.9	48	12.1
	Fear arousal messages	138	34.8	259	65.2
	Two sided message	265	66.8	132	33.2
	One sided message	124	31.2	273	68.8
	Positive message	195	49.1	202	50.9
	Negative message	137	34.5	260	65.5

**Table 3:** Frequencies of the frequently heard behaviors, specific messages heard/seen and Preferred message appeal among respondents of Hosanna colleges, South Ethiopia (N= 397).

### Descriptive analysis of EPPM main constructs

Perception towards HIV & effectiveness are assessed by using EPPM model as perceived susceptibility to and severity of HIV/AIDS, and perceived self-efficacy and response efficacy of the recommended responses as well.

Concerning respondent's perceived susceptibility to HIV/AIDS majority, 276 (67.65%) of the respondents were scored less than or equal to 29 from 45 which shows relatively high susceptibility score having an average score of (mean ± standard deviation) (26.01 ± 5.90) (Table 4).

Regarding perceived severity of HIV/AIDS more than half, 257 (62.99%) of the respondents were scored less than or equal to 29 from 40 which shows relatively high severity score having an average score of (mean ± standard deviation) (29.01 ± 3.34).

Regarding respondent's perceived self-efficacy and response efficacy of recommended response to prevent HIV/AIDS, in both cases, majority of respondents, 242 (59.31%) and 220 (53.92%) of the respondents were scored relatively good score since it was approached to mean value having an average score of (mean ± standard deviation) (62.64 ± 12.08) and (41.32 ± 7.21) respectively.

As far as respondent's weighted perceived threat and efficacy were

considered, summed weighted perceived threat from HIV/AIDS was obtained from a sum of perceived susceptibility and severity, and summed weighted perceived efficacy was obtained from perceived self-efficacy and response efficacy since its calculation was obtained from other variables while respondents who were found in efficacy appraisal were slightly lower than those in threat appraisals having an average score of (mean ± standard deviation) (0.65 ± 0.37) and (0.81 ± 0.31) respectively.

Taking presence of cues to HIV and its prevention methods into consideration such as ABC and VCT related information from different sources/conditions in last few months, about 228 (55.79%) of the respondents were scored less than or equal to 5/10 in the composite score (mean ± standard deviation) number of cues to responses per a respondent was (4.65 ± 2.02) (Table 5).

### Socio-demographic variables as a predictor of message responses

Looking for the effect of socio-demographic factors considering as individual differences in EPPM model, adjustment was made to see the effect on message responses in respondents by far the description of each concept considered as variables for prediction of responses in the model. Regarding the socio-demographic variables as covariates, college difference, class year, religion, and ethnicity, monthly income, with whom you currently live and previous residence had significant crude effect on message response. When adjusted with other socio-demographic variables class year, college difference, with whom you currently live and place of residence had statistical significant effect on message response. Meaning, those respondents who previously resided in rural area were 0.40 times less likely had fear control responses for HIV prevention messages as compared to those who came from urban area with adjusted odds ratio [AOR (95% CI) = 0.40(0.24-0.81)]. And also those respondents who were living with their family are 2.33 times more likely to be in danger control responses for HIV prevention messages as compared to those who are living alone in the rent house with adjusted odds ratio [AOR (95% CI) = 2.33(1.66-2.97)]. Similarly,

Components/constructs of EPPM	Scale range	Scale mean	SD
Perceived susceptibility	9-45	26.01	5.90
Perceived severity	8-40	29.01	3.34
Perceived self-efficacy	16-80	62.64	12.08
Perceived response efficacy	10-50	41.32	7.21
Weighted threat	17-85	0.81	0.31
Weighted efficacy	26-130	0.65	0.37
Cues to action	0-7	4.65	2.02

*P-stands for perceived*

**Perception of effectiveness of abstinence message to HIV/AIDS prevention**  
Regarding the response (danger control or fear control) of respondents, 269 (67.8%), of respondents were under the category of danger control response whereas 128 (32.2%) of the respondents were under the category of fear control zone based on critical values (discriminative values), (Table 6).

**Table 4:** Descriptive statistics for constructs of EPPM (perceived susceptibility, severity, & self and response efficacy) by their scale range with their respective weights of the respondents in hosanna colleges, Hadiya Zone, South Ethiopia. (N= 397)

Behaviour	Danger control response(CV*)	Fear control response(CV)
Abstinence message	269 (67.8%)	128 (32.2%)

\*CV\* indicates critical value positive; i.e. Efficacy-Threat= +ve

\*CV\* indicates critical value negative; i.e. Efficacy-Threat= -ve

**Table 5:** Responses variable with their respective frequencies of the sex of respondents in hosanna colleges, Hadiya zone, South Ethiopia, March 2012 (N= 397).

Variable		No	%	COR (95%CI)	AOR(95% CI)
College name	HPTC	201	50.6	1	1
	HCHS	101	25.4	0.68(0.29-1.04)	0.61(0.31-1.15)
	HTTC	95	24.0	0.33(0.21-0.82)*	0.36(0.18-0.68)*
With whom You currently Live?	With friends (rent house)	141	35.5	1	1
	Alone (rent house)	129	32.5	1.01 (0.38-1.97)	1.22(0.41-2.51)
	With family	111	28.0	2.10(1.01-4.43)*	2.33(1.66-2.97)*
	Others **	16	4.0	0.81(0.12-1.00)*	0.44(0.13-1.84)
Ethnicity	Hadiya	233	58.7	1	1
	Kembata	53	13.4	0.39(0.12-0.84)*	0.49(0.28-1.00)*
	Guraghe	51	12.8	0.45(0.27-1.28)	0.72(0.16-2.25)
	Silte	26	6.5	0.23(0.06-1.28)	0.71(0.30-5.26)
	Wolaita	4	1.0	2.81(0.40-20.92)	5.02(0.59-42.55)
	Others **	30	7.6	0.41(0.15-1.32)	0.68(0.30-2.17)
Previous residence	Urban	231	58.2	1	1
	Rural	166	41.8	0.37(0.31-0.57)*	0.40(0.24-0.81)*
Class year	First year	202	50.7	1	1
	Second year	101	25.4	0.66 (0.31-1.05)	0.61(0.31-1.15)
	Third year	94	23.9	2.31 (0.26-0.87)*	2.39(1.21-2.88)*
Monthly income	≤ 200	179	45.1	1	1
	201-300	133	33.5	0.42(0.33-0.79)*	0.55(0.21-1.78)
	≥ 301	85	21.4	0.54(0.34-0.66)*	0.78(0.32-1.88)

\*Statistically significant at  $p$  value < 0.05, 1 is Odds ratio for reference category

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 6:** Regression analysis to see the effect of socio-demographic variables in response categories of the respondents in Hosanna Colleges, South Ethiopia, March 2012.

Components/constructs	Scale mean	SD	COR (95% CI)	AOR(95% CI)
Perceived susceptibility	26.01	5.90	1.17(1.12-1.21)*	1.61(1.40-1.86)*
Perceived severity	29.01	3.34	1.03(1.01-1.05)*	1.41(1.27-1.56)*
Self-efficacy(Total)	62.64	12.08	0.96(0.94-0.98)*	0.68(0.61-0.76)*
Response Efficacy	41.32	7.21	0.33(0.65-0.80)*	0.13(0.14-0.76)*
weighted threat	0.81	0.31	1.09(1.06-1.11)*	1.97(0.94-1.02)
weighted efficacy	0.65	0.37	0.98(0.96-0.99)*	0.67(0.64-1.12)
cues to action	5.3	2.78	1.25(1.69-7.19)*	1.69(2.10-13.94)*

\*statistically significant at  $p$  value < 0.05

NB. Variables indicated in the above table are significant in crude or/and adjusted OR only but those which are not significant in both cases are not indicated in the table.

**Table 7:** Crude and adjusted odds ratio to see the effect of EPPM constructs in message response of the respondents in hosanna colleges, Hadiya zone, south Ethiopia, May, 2013.

those who were from HTTC as compared to HPTC had lowered odd of fear control responses for HIV prevention messages with odds ratio [AOR (95% CI) = 0.36(0.18-0.68)] meaning those respondents who were from HTTC were 0.36 times less likely to be in fear control/unintended response than HPTC. When the class year increases the protective power of the respondents increases with odds ratio [AOR (95% CI) = 2.39(1.21-2.88)] meaning those respondents who were from third year were 2.39 times more likely to be in danger control/intended response than first year students (Table 7).

### EPPM model constructs as a predictor of message responses

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 that being in fear control response results in average increase in susceptibility score by 1.61.

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 that

being in fear control response results in average increase in severity score by 1.41.

Summed perceived self-efficacy of recommended responses for HIV/AIDS prevention had a statistical significant effect on fear control responses with [AOR (95% CI) = 0.68(0.61-0.76)]. From the model, for instance, the coefficient of self-efficacy for abstinence score implies that being in fear control response results in average reduction in self-efficacy score by 0.68 (Table 8).

Variables in the Equation	Sig.	OR	95% CI for AOR	
Perceived Susceptibility	0.04	0.22	0.26	0.69
Perceived Severity	0.03	0.43	0.11	0.83
Perceived Self-efficacy	0.03	3.33	3.32	5.97
Perceived Response Efficacy	0.02	4.21	1.11	11.32
Previous Residence (Rural)	0.02	3.13	1.12	7.32
Constant	12.29	3.22		

**Table 8:** Multivariable logistic regression analysis for final fitted model prediction of message response among respondents of Hosanna colleges, South, Ethiopia, and March, 2012.

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)]. From the model interpreted as, 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 has significant association between message responses with odds ratio [AOR(95% CI)= 1.69(2.10-13.94)] and it is kept for multivariable analysis.

### Final logistic model for prediction of message responses

In final fitting model prediction part, all the variables which were significant in bivariate analysis such as socio-demographic, past risky & risk related behaviors, main constructs of EPPM and distal factors were adjusted to predict message response by forward Likelihood regression method: the main constructs of the EPPM model left over in the final model. Predicted final model (fear control as a variable of interest) = 12.29 + 3.33 (self-efficacy) + 4.21 (response efficacy) + 3.13 (Previous residence (Rural)) - 0.22 (perceived susceptibility) - 0.43 (perceived severity). The model explained about 71.1% of prediction of message response (fear control as a variable of interest) among respondents learning in the three college with goodness of fit of the model ( $X^2/df=6.12/8$ ,  $p$  value =0.32) (Table 6).

### Discussion

This study aimed to assess abstinence message response for HIV/AIDS prevention in terms of the perception of individuals to threat acquiring and evaluating effectiveness using EPPM model. According to EPPM model, individuals' perceived susceptibility to and severity of a disease condition is a baseline to take a next step to avert this condition by far helps to develop self-confidence to stand for tackling this problem which in turn helps individuals to go through the effective method which adds value for his/her health provided that people are already awarded in a particular health threat since the model best works in situation where respondents have high level of awareness than motivational variables [10,13].

According to the findings of the study, perceived susceptibility to HIV/AIDS directly attached with fear control response which in turn reduces the protective effects of the individuals increasing the likelihood of fear control response. Similarly, other several studies also ascertained that although teenagers and college students are knowledgeable about AIDS and its prevention strategies, the majority do not see themselves at risk for HIV/AIDS. For instance, a cross sectional study conducted in Ethiopia on message response of Bahrdar university students were similar findings that a belief of personal perceived susceptibility to HIV risk in relation to abstinence is low [15].

This study, concerning perceived severity of HIV/AIDS showed positive effect on fear control response which in turn reduces the protective effects of the individuals increasing the likelihood of fear control response. In line with this result in qualitative part, one of the female respondents with age of 21 years said that “...when someone is hearing HIV messages of abstinence, he/she rushes not to hear this old message especially young generation considering HIV as any disease like common cold. Therefore, I am in doubt on the effectiveness of this message” However, when it compared this finding with the study conducted in Kenya on university students the results indicated that almost all the students perceived HIV and AIDS to be very serious resulting in lack

of variance in the measure [16]. The potential reason may be peoples are familiarized HIV as not to have immediate consequences rather it lasts long period.

The finding of this study revealed that 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 reducing the likelihood of fear control response which really parallels with the idea of EPPM model in message evaluation since it directly linked with danger control responses. Similar to this study perceived self-efficacy is the variable significantly predicting whether or not university students in Kenya be abstaining to prevent HIV and AIDS infection [16]. This is similar in idea to the studies done in the United States indicate that youth-oriented prevention programs that exclusively promote abstinence do not reduce the risk of HIV infection [17].

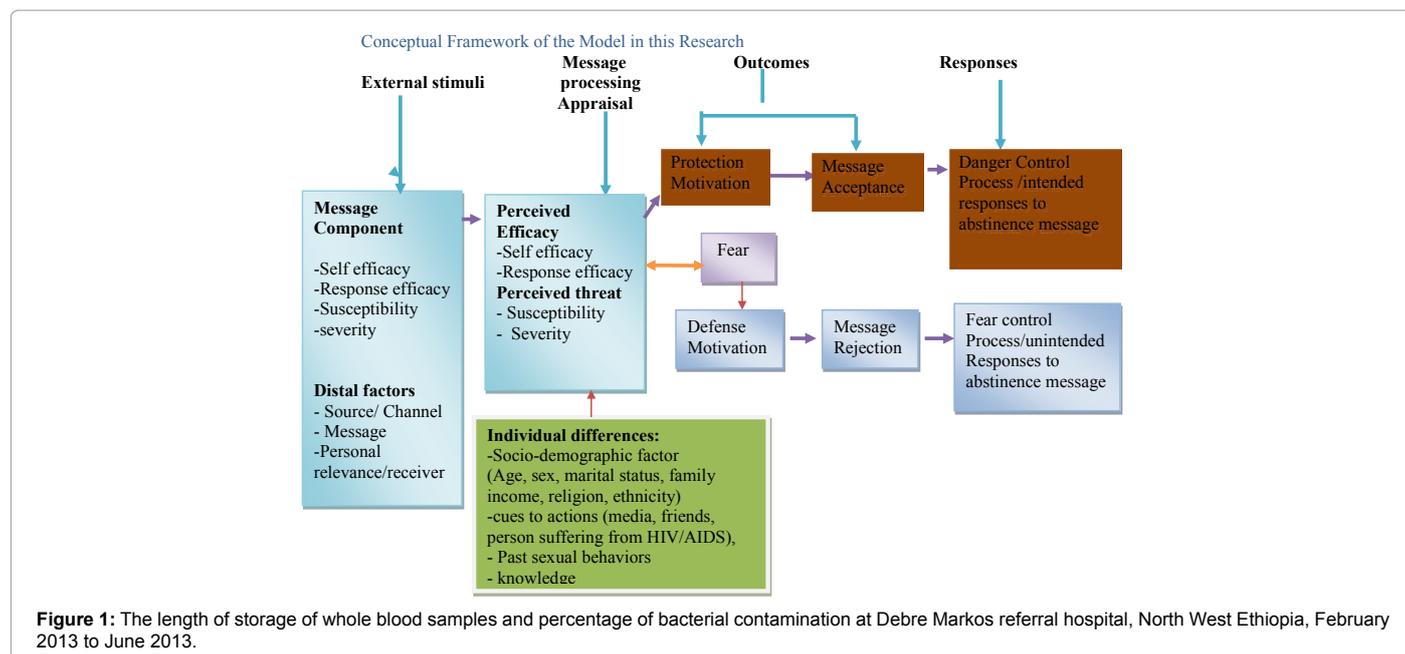
This study indicated that danger ccontrols had statistically significant higher number of cues to HIV information as compared to fear controls. The cross sectional study done using HBM in Ethiopia on Haramaya university students on abstinence had stated similar effect of cues to abstinence revealing those individuals who have open discussion about HIV/AIDS with partners were more likely to be abstained [18].

Finding of this study revealed that colleges' difference had significantly associated fear control responses. Accordingly, Hosanna College of teachers' education had high significant positive association with danger control responses meaning the respondents in HTTC were practicing intended behavior as noted in findings of this study in comparative of the other three colleges involved in the study. Similarly, qualitative part, Hosanna College of teachers' education, unlike to other colleges, showed highly strong HIV mainstreaming programs on account of having motivated staff members and highly committed NGO's like OSSA in contributing their share on prevention activities by providing health learning materials on promotion of abstinence, condoms..., and participating on coffee ceremony which opens door for discussion how to be abstained and other important issues related to HIV.

One of the female informants from the same college whose position was coordination in mainstreaming with age 23 said that “*we have open discussion with students in a class, coffee ceremony and elsewhere when HIV issues are raised with the aim of suppressing its prevalence as well as encouraging students to engage in prevention activities provided that those hidden behaviors were already manifested and clearly discussed...*” Unlike to this saying all the discussants who came from HPTC said that “*we accept abstinence ...HIV/AIDS is the diseases of those individuals who are deviating from GOD's /ALLAHA'S law which is stated in Bible or Quran and for those who are going out of cultural tracks. So whether you teach or not, it is not our business because we are abstaining.*”

In this study, regarding previous residence being rural resident is more significantly positively attached with intended responses as compared to urban residents. Similar to this finding, a cross sectional study done in 2010 in Debre Berhan college female students showed rural dwellers are less likely to be engaged in sexual intercourse and more abstinent groups as compared to urban [18]. The potential reason of higher significant acceptance of messages among rural residents compared to urban residents may be related fear of the threat in rural comers is attached with abstaining until marriage.

Finding of this study showed that respondents who didn't hear/see the message avoid stigma and discrimination in last six months had positive association with fear control responses. That means who heard the message are in danger control responses. But fear arousal appeal



had positive effect in fear control responses which is congruent with the assumption of EPPM model which states fear is central variable which motivates individuals via developing defense motivation of threat. According to Witte, message should use the appropriate appeal to persuade receiver [9,10,13]. In support of this view in qualitative part one informant with age 23 said that “...you know forbidden things are sweetest for human being. If you teach this generation by fear arousal message, they may not accept rather by drama, role play, poem and other funny talks accepted and ours is also that.”

In conclusion, despite high proportion of college students were in danger control psychological responses there is current behavior gap 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, whereas 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. Messages communicated on HIV/AIDS prevention methods encouraged college students response in hierarchical order of abstinence, faithfulness and abstinence. Relative to other methods of prevention of HIV/AIDS college students’ danger control responses towards abstinence is low even though being in danger control encouraged abstinence. The way how to deliver message mostly determine its effectiveness in encouraging the acceptance of message particularly fear arousal appeal of messages produces fear control responses. Generally, the independent predictors of the message response are the main constructs of EPPM model either in acceptance or in rejection of message.

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

- Significantly intolerable numbers are below knowledge level, so, intensified IEC campaigns focusing on misconceptions of HIV transmission and prevention should be undertaken particularly among young peoples.
- Should promote further efficacy oriented messages in relation

to abstinence and mythical beliefs.

- Messages focusing on facts with reasons, comic jocks and entertaining should be promoted for this young people.
- Health personnel, schools/teachers, religious leaders and PLWHA should be involved to be persuasive communication for convincing the students.
- Fear appeal should not be used for the promotion of HIV/AIDS messages
- Should have continuous IEC/BCC intervention programs since low perception of susceptibility and severity was observed.
- Further studies, using the same model, should be conducted on the effect of communication factors on message response of whole behavior helps explicitly tailor the messages (Figure 1).

#### Authors' Contributions

Feleke Doyore and Dube Jara wrote the proposal, participated in data collection, analyzed the data and drafted commented on the analysis and improved the first draft of the paper. All authors revised subsequent drafts of the paper.

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