

ORIGINAL RESEARCH ARTICLE

HIV/AIDS Knowledge, Attitude and Practice among Dilla University Students, Ethiopia

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Abstract

The growing rate of educational institutions and student population at the tertiary level in Ethiopia is remarkable; this may lead to a corresponding increase to exposure to HIV/AIDS. Based on this orientation, this study estimated the level of knowledge, attitude and practice of HIV/AIDS among university students in Ethiopia. Four hundred forty one students were chosen through multi-stage probability sampling technique. Data was collected through five point measurement scale. One sample *t*-test and Structural Equation Modelling based on Confirmatory Factor Analysis (CFA) were employed for data analysis. It was found that the level of HIV/AIDS knowledge, attitude, and practice were 53%, 95%CI = -.03- .06, $p = .55$; 58 %, 95%CI = .01- .10, $p < .05$; and = 92 %, 95%CI = .37- .42, $p < .001$ respectively. Apart from knowledge, the observed value of attitude and practice were higher than their corresponding expected values with the effect size, $d = 0.12$ for attitude and $d = 0.82$ for practice. Implications were discussed to assist students develop comprehensive knowledge and desirable attitude towards self-protective skills against HIV infection. (*Afr J Reprod Health* 2017; 21[3]: 49-61).

Keywords: Knowledge, attitude, practice, HIV/AIDS, Ethiopia, University students

Résumé

Le taux croissant d'établissements d'enseignement et de la population estudiantine au niveau tertiaire en Éthiopie est remarquable; Cela peut conduire à une augmentation correspondante de l'exposition au VIH / sida. Sur la base de cette orientation, cette étude a évalué le niveau de connaissances, d'attitudes et de pratiques du VIH / sida chez les étudiants éthiopiens. Quatre cent quarante-deux étudiants ont été choisis par une technique d'échantillonnage probabiliste à plusieurs étapes. Les données ont été collectées à l'aide d'une échelle de mesure à cinq points. Un test *t* de test et une modélisation de l'équation structurale basée sur l'analyse du facteur de confirmation (AFC) ont été utilisés pour l'analyse des données. On a constaté que le niveau de connaissance, d'attitude et de pratique du VIH / sida était de 53%, IC 95% = -3,0- 0,06, $p = 0,55$; 58%, CI à 95% = 0,01 à 0,10, $p < 0,05$; et = 92%, IC 95% = 0,37- 0,42, $p < 0,001$ respectivement. Outre la connaissance, la valeur observée de l'attitude et de la pratique était plus élevée que leurs valeurs attendues correspondantes avec la taille de l'effet, $d = 0,12$ pour l'attitude et $d = 0,82$ pour la pratique. Des implications ont été discutées pour aider les élèves à développer une connaissance approfondie et une attitude souhaitable à l'égard des compétences d'autoprotection contre l'infection par le VIH. (*Afr J Reprod Health* 2017; 21[3]: 49-61).

Mots clés: Connaissance, attitude, pratique, VIH / SIDA, Ethiopie, étudiants universitaires

Introduction

The nature of university students; their age, ambition, experience of new events¹ and other contextual driving factors, increase their risk of exposure to HIV/AIDS². The students' level of knowledge, attitude and practice against the disease can form a basis for behavioural intervention^{3,4}. There is a need to fight the

pandemic through evidence based approaches that focus on reducing deficiency in knowledge, attitude and response against the infection^{5,6}. Based on these principles, there have been arguments that HIV can be managed through the acquisition of relevant knowledge, realizing attitudinal change, and practicing fundamental preventive mechanisms consistently and properly^{2,4}.

HIV/AIDS knowledge denotes the acquisition of scientific facts and information regarding the symptoms, mode of transmission, adverse consequences and prevention strategies of the disease. One of the basic reasons to analyse HIV/AIDS knowledge is to examine its direct linkage to improve the chances of self-protection (e.g., enhanced knowledge allows for consistent and proper use of condoms)⁷⁻¹¹. Although this may be true, empirical evidences suggest mixed reports regarding the level of HIV/AIDS knowledge among university students. Some studies report that university students have moderate level of knowledge about HIV/AIDS transmission, symptoms and prevention strategies¹²⁻¹⁴. Yet, others argue that university students are knowledgeable only on the mode of transmission and symptoms¹⁵. In addition, studies conducted in Africa (e.g., Ghana and Ethiopia) show that level of knowledge regarding HIV/AIDS among sexually active community members are high¹⁶⁻¹⁸. Conversely, other studies suggest that university students exhibit less knowledge in the entire areas of HIV/AIDS related issues^{19,20}.

HIV/AIDS attitude signifies misconceptions maintained by the students regarding transmission agents^{12,13,18,21}, and preventive strategies¹⁸. Accordingly, there have been scientific articulations on the role of positive attitude towards helpful scientific facts and preventive strategies as vital tools to reduce risk behaviours and thus fight against HIV/AIDS²². Since university students perceive themselves as less vulnerable to HIV (i.e., low level of risk perception)²³ and they are less likely show interest in the use of protective mechanisms^{24,25}. In brief, studies on the attitude of university students are generally reported as erroneous towards helpful scientific facts and preventive measures^{19,24}, and might be due to structurally embedded influence of culture, society and religion^{25,26}.

HIV/AIDS practice represents behavioural skills²⁷ to be exercised from personal repercussions that assist to prevent HIV/AIDS infection. These include condom use, abstinence,

faithfulness, and persistently keeping informed about healthy behaviours. However, existing empirical evidences report that behavioural change in terms of practice still remains frail^{17, 28}. For instance, a study conducted in Ethiopia found the presence of discrepant perception between self-efficacy and abstinence from sexual intercourse²³. Contrary to the above report, another study conducted in Ethiopia disclosed that 84.1% of sexually active students preferred abstinence as primary options to prevent HIV/AIDS¹⁷. With regards to consistent and proper use of condoms, university students experience difficulties. For example, studies in Africa (e.g., Uganda, Ethiopia, and Ghana) report inconsistent use of condom^{14,16,23,29} and lack of interest to use condoms¹⁹. Furthermore, university students in Uganda experience low self-efficacy²⁹ and lack of skills to use condom properly^{30,31}. In addition, many studies report drug abuse as a growing practice in universities^{2,31,32}, which is one of the predisposing factors for risky sexual behaviours^{2,33-38}.

Based on the principles of Information-Motivation-Behavioural (IMB) Skills to fight HIV/AIDS, there has to be a true link between knowledge, attitude and practice against HIV/AIDS. Yet, the results from studies demonstrate paradoxical findings. This necessitates the screening of students' knowledge, attitude, and practice against HIV/AIDS in order to formulate contextually fit strategies for prevention and intervention³⁹. This study was thus designed to assess the extent of knowledge, attitude and practice as a response against HIV/AIDS among the new entrants of Dilla University, Ethiopia. Hence, to realize the stated purpose the following research questions were formulated for investigation.

- Is there significant difference between the expected parameter and the observed extent of knowledge, attitude and practice against HIV/AIDS?
- Do knowledge and attitude significantly impact on practice against HIV/AIDS?

- Is there significant association between the totality of constructs and the dimensions embedded in each of them?

Methods

Population, sample size and sampling technique

There were 4,935 undergraduate first year regular students of Dilla University within twelve schools and thirty two programs. The sample size was computed based on the formula proposed for single population proportion⁴⁰. The value of “*p*” was considered as 52% as for population parameter (μ) based on a previous study conducted on attitude and practice among Addis Ababa University students³². The Z-value of 1.96 was used at 95% Confidence Interval and margin of error is 5% where, *n* = sample size, *p* = proportion, *d* = margin of error). Accordingly, the sample size (*n*) of the study was calculated as follows:

$$n = \frac{Z^2 p (1-p)}{d^2} = \frac{(1.96)^2 \times 0.52 \times (0.48)}{(0.05)^2} = 383$$

Figure 1: Formula to Calculate Sample Size

Non-response rate was adjusted through 15% contingency to generate representative sample size ($n = 58 + 383 = 441$) in the randomized cross-sectional survey. Then, the participants were chosen based on the principles of multistage sampling technique (i.e., stratified-systematic sampling techniques) due to the heterogeneity and disproportionate distributions of the students across various departments. This suggested considering the proportional ratio, n/N ($441/4,935$) = 0.09, from each department to gain the sample size ($n = 441$).

Data gathering tools

Knowledge

A five point knowledge scale, 1 = do not know at all to 5 = know very well, was developed and

administered to participants. Some were, *HIV is a virus which reduces white blood cell; AIDS refers group of diseases that occur due to the reduction of white blood cells*. Indeed, the overall knowledge scale was organized into four sub-scales; namely, knowledge on the symptom of HIV/AIDS, mode of transmission, adverse consequences and prevention strategies.

Attitude

In similar way five point attitude scale, 1 = strongly disagree to 5 = strongly agree, was constructed and administered. For example, some of the items were, *AIDS understood as ‘amenmine’ in the traditional society of Ethiopia and hence, it doesn’t require extraordinary effort to fight against it; Sexual intercourse with condom is like eating banana with the peel*. Based on contextual realities the overall HIV/AIDS related attitude was organized into two sub-categories namely; attitude towards mode of transmission and prevention strategies.

Practice

A five point practice scale, 1= do not practice at all to 5= practice always, were constructed. Items such as, *I use condom consistently and properly; to get sexual stamina I prefer to use psychoactive substances such as alcohol, hashish etc*. In its inherent nature response against HIV/AIDS were expressed in terms of abstinence, faithfulness, and proper and consistent use of condom. Yet, in the current study it was sorted out into four sub-scales including abstinence, faithfulness, practicing related health behaviors and condom use.

Reliability analysis was conducted through pilot test on randomly selected 100 first year students. Based on item to total reliability analysis those items below 0.2 reliability coefficients were removed from each final scale. Finally, reliability analysis for the total scales were conducted and the reliability coefficient for knowledge scale was point nine two, for attitude scale point seven nine and practice scale was point nine.

Methods

Student's *t*-test

Student's *t*-test was conducted to estimate whether the given parameter significantly differed from the observed finding. For this purpose, point estimation with confidence interval was conducted due to uncertainties of measures around the estimate from sample survey. Accordingly, 52% population parameter was considered based on the study conducted on Addis Ababa University students³⁷.

Structural Equation Modelling

Structural Equation Modelling (SEM) was applied to test the effects of knowledge and attitude towards practice against HIV/AIDS through SPSS 20 with add-on AMOS 23^{41,42}. The test was verified by the goodness of fit measures such as χ^2 , Comparative Fit Index (CFI), Incremental Fit Index (IFI), Tucker – Lewis Coefficient (TLI), and Root Mean Square Error of Approximation (RMSEA). Similarly, significant pathways between the variables were demonstrated through path lines.

Procedures

Cautious methodological rigours were applied in the data analysis. In the first place, five point rating scales were transformed into three point rating scales. This was made through drawing the total sum of the raw scores and calculating the average value for each of the construct. Then, the mean as reference cut point represented = 1 signified 'applies sometime', the scores above the mean = 2 represented 'applies always' whereas the scores below the mean = 0 stood for 'do not apply'. In the same way, data dichotomization and z-score transformation was made to make the scores suitable to conduct student's *t*-test, and SEM.

Results

Characteristics of participants

Participants' background characteristics were discussed in terms of age, sex, religion, region,

home area, relationship, and their sexual experiences. Based on these, 391(88.9%) of the students mainly came from the rural parts of the nation with noticeable gender discrepancies where (291, 66.2%) of them were male students. Considering age factor, 331(75%) of the students clinched within late adolescence, (17-20 age range). Again, disposing to their spiritual orientation, the majority (241, 55.8%) of the total had orthodox background. Likewise, in terms of socio-geographic location, a large proportion (193, 43.8%) of the students came from Amhara regional state. Finally, with respect having a sexual partner and having first time sexual experiences, (345, 78.41%) reported did not have a sexual partner at all and (354, 80.45%) had never at all.

Description and correlations between study variables

The mean, the standard deviation and the relationship between study variables were analysed for the variables knowledge, attitude, and practice. Knowledge as latent exogenous variable included four observed variables such as knowledge on symptoms of HIV/AIDS, mode of transmission, consequences and prevention strategies. In similar way, attitude had sets of observable variable on mode of transmission and prevention strategies. On the other hand, practice as latent endogenous variable contained four observed variables including abstinence, faithfulness, and condom use as well as practicing desirable health related behaviours. Further, information regarding each variable and the correlation coefficients are indicated on Table3.

Based on the descriptions on the Table1, total knowledge was significantly correlated with the knowledge of the symptoms, knowledge on mode of transmission, knowledge on adverse consequences, and knowledge on prevention strategies. Moreover, totality of attitude was significantly correlated with attitude towards mode of transmission, and attitude on the prevention strategies. In the same way, totality of practice has significantly correlated with abstinence,

Table 1: Description and Correlation between Study Variables

Variables	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13
Symptoms	1.05	.97	-												
Transmission	1.04	.96	.36**	-											
Consequences	1.07	.98	.38**	.31**	-										
Prevention strategies	1.07	.97	.34**	.30**	.41**	-									
Transmission	1.04	.96	.10*	-.01	.10*	.13**	-								
Prevention strategies	1.10	.97	.16**	.14**	.22**	.27**	.25**	-							
Abstinence	.81	.40	.01	.01	.02	-.03	-.05	.05	-						
Faithfulness	.12	.32	.06	.02	-.04	-.06	-.12**	-.07	.18**	-					
Condom use	.10	.30	.05	.07	.05	.09	.06	.05	-.63**	-.12*	-				
Health behaviours	.90	.30	.00	.04	.02	.06	.01	.05	.67**	.12*	-.40**	-			
Total knowledge	4.23	2.77	.72**	.69**	.74**	.71**	.11*	.27**	.00	-.01	.09	.04	-		
Total attitude	2.13	1.53	.17**	.07	.21**	.25**	.78**	.80**	-.02	-.12*	.07	.03	.24**		
Total practice	.85	.36	.01	.05	.04	.03	-.02	.01	.85**	.15**	-.29**	.79**	.05	-0.01	-

** $p < 0.01$, * $p < 0.05$

Note: N = 440, 1 = K _symptoms, 2 = K_ mode of transmission, 3 = K _adverse consequences, 4 = K _prevention strategies, 5 = A _mode of transmission, 6 = A _prevention strategies, 7 = Abstinence, 8 = Faithfulness, 9 = Condom use, 10 = Health behaviour, 11 = Total knowledge, 12 = Total attitude, 13 = Total practice. Besides, ‘K’ = Knowledge, ‘A’ = Attitude.

Table2: Estimation on Knowledge, Attitude and Practice

Model	N	Observed mean	SD	SEM	Expected Mean = 0.52			Mean difference	95% CI	
					t	df	p		Lower	Upper
Knowledge	440	.53	0.5	.03	.592	439	.55	.014	-.03	.06
Attitude	440	.58	0.5	.02	2.23	439	.03*	.053	.01	.10
Practice	440	.92	0.28	.02	29.89	439	.000***	.396	.37	.42

*** $p < 0.001$, * $p < 0.05$

faithfulness and healthy behaviour. Finally, totality of knowledge was significantly correlated with totality of attitude, but neither totality of knowledge nor totality of attitude positively correlated with totality of practice.

Estimation of HIV/AIDS knowledge, attitude and practice

The parameter (μ) = 0.52 has been a point of reference (i.e., expected mean) to test the current level of students' knowledge, attitude and practice. It was conducted based on 52% parameter (μ) considering the survey result conducted in Addis Ababa University by Regassa and Kedir³². For further illustration; the findings are shown in Table 2.

As to Table2 above, one sample t - test indicated significant difference between the observed and expected value of two variables. These were, the observed value of attitude towards HIV/AIDS were greater than the expected value ($M = 0.53$, $SD = 0.50$), $t(439) = 2.23$, $p = .03$, $d = 0.12$). Similarly, the observed value of practice as a response to fight against HIV infection was greater than the expected value ($M = 0.92$, $SD = 0.28$), $t(439) = 29.89$, $p = .000$, $d = 0.82$).

Direct effect of knowledge and attitude on practice

The impact of HIV/AIDS knowledge, and attitude towards practice against HIV/AIDS was tested through Confirmatory Factor Analysis (CFA) and Structural Equation Modelling (SEM). For this purpose, two unobserved exogenous (i.e., knowledge and attitude), one unobserved endogenous (i.e., practice) and ten observed

endogenous variables were specified. Knowledge as exogenous unobserved variable organised from set of observed variables such as knowledge on symptoms, mode of transmission, consequences, and prevention strategies. Similarly, attitude as exogenous unobserved variable organised from attitude towards mode of transmission and prevention strategies. Finally, practice as endogenous unobserved variable was measured through abstinence, faithfulness, condom use and maintaining other health related behaviours. Taking this into account, both Confirmatory Factor Analysis (CFA) and bias corrected parametric estimates were conducted.

Confirmatory Factor Analysis (CFA) for the hypothesized model

Confirmatory Factor Analysis (CFA) was conducted to verify the factor structure among sets of observed variables, to examine the magnitude of correlation between the exogenous factors and to inspect the specified model fitness with the existing data. With this in mind, confirmatory factors for the hypothesized model were demonstrated (Figure2).

These values demonstrate the magnitude of model fitness; hence, it was found that there was absence of harmony between the model and the observed data.

Parametric estimates

Bias corrected standardised parametric estimates were undertaken. The purpose of this analysis was to observe the direct effects of the two unobserved exogenous variables, knowledge and attitude, on the unobserved endogenous variable, practice (Table3).

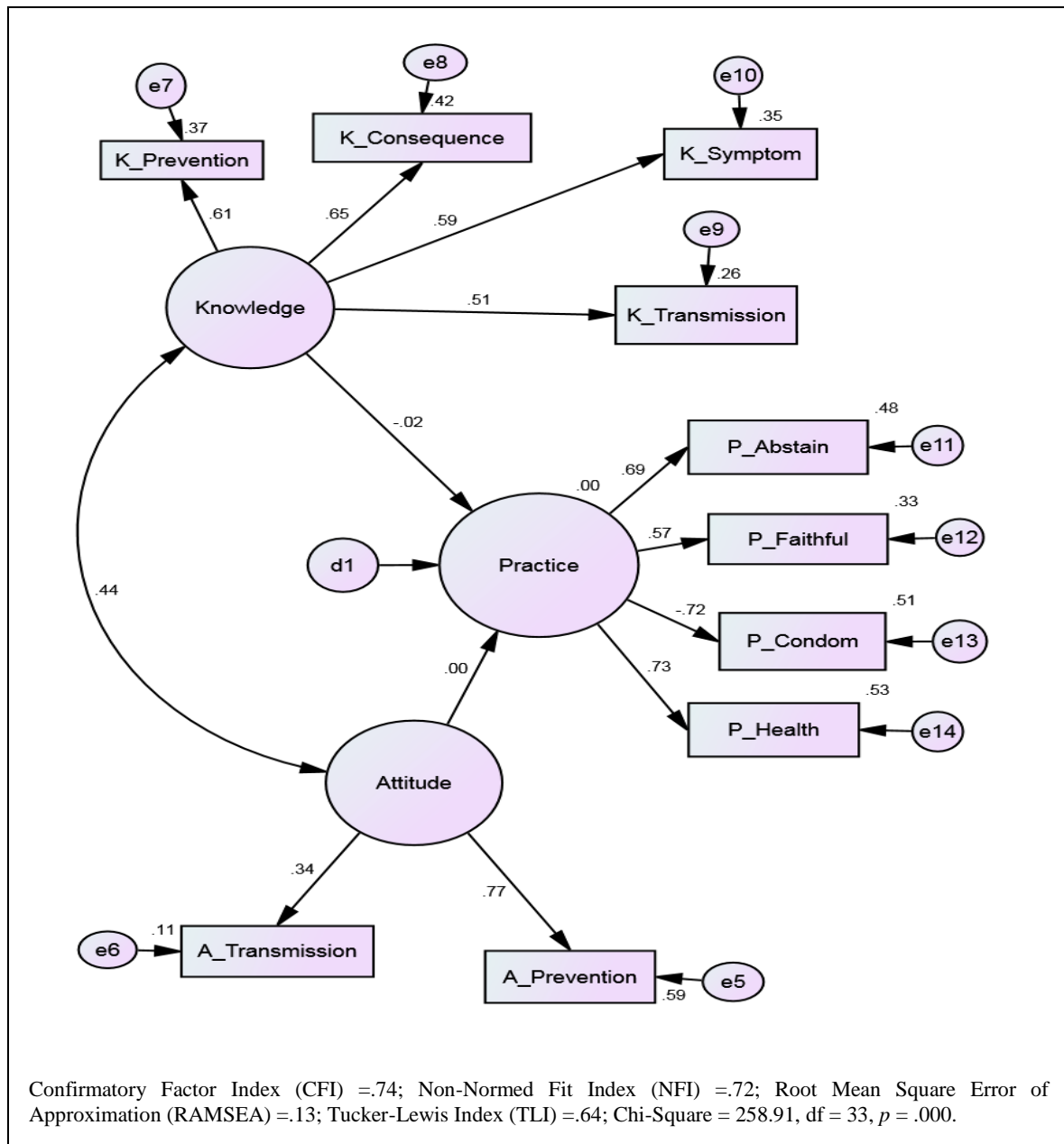


Figure2: Confirmatory Factors and Standardised Estimates in the Hypothesized Model

The findings from the hypothesized model confirmed that HIV/AIDS related knowledge and attitude as exogenous latent variables had no significant direct effect on the endogenous latent variable (i.e., practice). The bias corrected direct

effect of *knowledge* on *practice* was $\beta = -.017$, $p < .74$ (CI95% = $-.16 - .11$) and *attitude* to *practice*, $\beta = -.004$, $p < .72$ (CI95% = $-.16 - .11$). The findings in this section demonstrate three core points. Firstly, the magnitude of probability level (p)

Table3: Direct Effects of Knowledge and Attitude towards Practice for the Hypothesized Model

Model Relationship	Estimate	Two tailed significance(<i>p</i>)	Boundary	
			95%CI Lower	95%CI Upper
Knowledge to Practice	-.017	.74	-.16	.11
Attitude to Practice	-.004	.72	-.16	.11

Table 4: Significant Parametric Estimates for the Hypothesized Model

Model Relationship	Estimate	Two tailed significance(<i>p</i>)	Boundary	
			95%CI Lower	95%CI Upper
Knowledge to K_ Consequences	.65	.002**	.57	.73
Knowledge to K_ Prevention	.61	.002**	.53	.70
Knowledge to K_ Transmission	.51	.002**	.42	.59
Knowledge to K_ Symptoms	.59	.001**	.00	.69
Attitude to A_ Prevention	.77	.001**	.57	1.22
Practice to P_ Health behaviors	.73	.002**	.62	.82
Practice to P_ Condom use	-.72	.004**	-.80	-.61
Practice to P_ Faithfulness	.57	.001**	.54	.60
Practice to P_ Abstinence	.69	.002**	.58	.81

***p*<.01

showed the absence of significant direct effects from knowledge and attitude towards practice. Secondly, the direction of the effect was negative which represent there had been inverse relationship between the exogenous and endogenous variables. Thirdly, the 95% confidence interval demonstrates the probability of the effects of both knowledge and attitude on practice was found on similar confidence interval (i.e.,-.16-.11).

Association between the constructs and the observed variables

The association between unobserved variables and their corresponding observed variables were specified and analysed. Taking this into account, the standardised parametric estimates of direct association with bias corrected percentiles are shown (Table4).

Based on the findings, *knowledge* had significant association with its corresponding observed variables, mode of transmission, $\beta = .51$, $p < .002$ (CI95% = .42 -.59), adverse consequences, $\beta = .65$, $p < .002$ (CI95% = .57 - .73) and prevention strategies, $\beta = .61$, $p < .002$ (CI95% = .53 - .70). In the other model, *attitude* had significant association with attitude towards

prevention strategies, $\beta = .77$, $p < .001$ (CI95% = .57 - 1.22). In the third model, *practice* had significant positive association with abstinence, $\beta = .69$, $p < .002$ (CI95% = .58 - .81), and maintaining health behaviours, $\beta = .73$, $p < .002$ (.62 -.82), faithfulness = .57, $p < .001$ (CI95% = .54 - .60). In contrast, *practice* had only significant negative association with condom use, $\beta = -.62$, $p < .001$ (CI95% = -.71 -.51).

Model modification

Confirmatory Factor Analysis (CFA) from the previous analysis suggested the absence of suitable model fit between the hypothesized model and the existing data. Taking this into account, model modification was made through cleaning /streamlining the path lines based on the modification indices (Figure3).

As in Figure3, good model was constructed using maximum possible alternatives in the model specification. The non-significant chi-square result, $\chi^2 (32) = 37.23$, $p = .24$ assures that the data was substantially congruent with the model. Similarly, other goodness of fit indices, CFI = .99, RMSEA = .02, TLI = .99, and IFI = .96, provided evidences as to the model was very good.

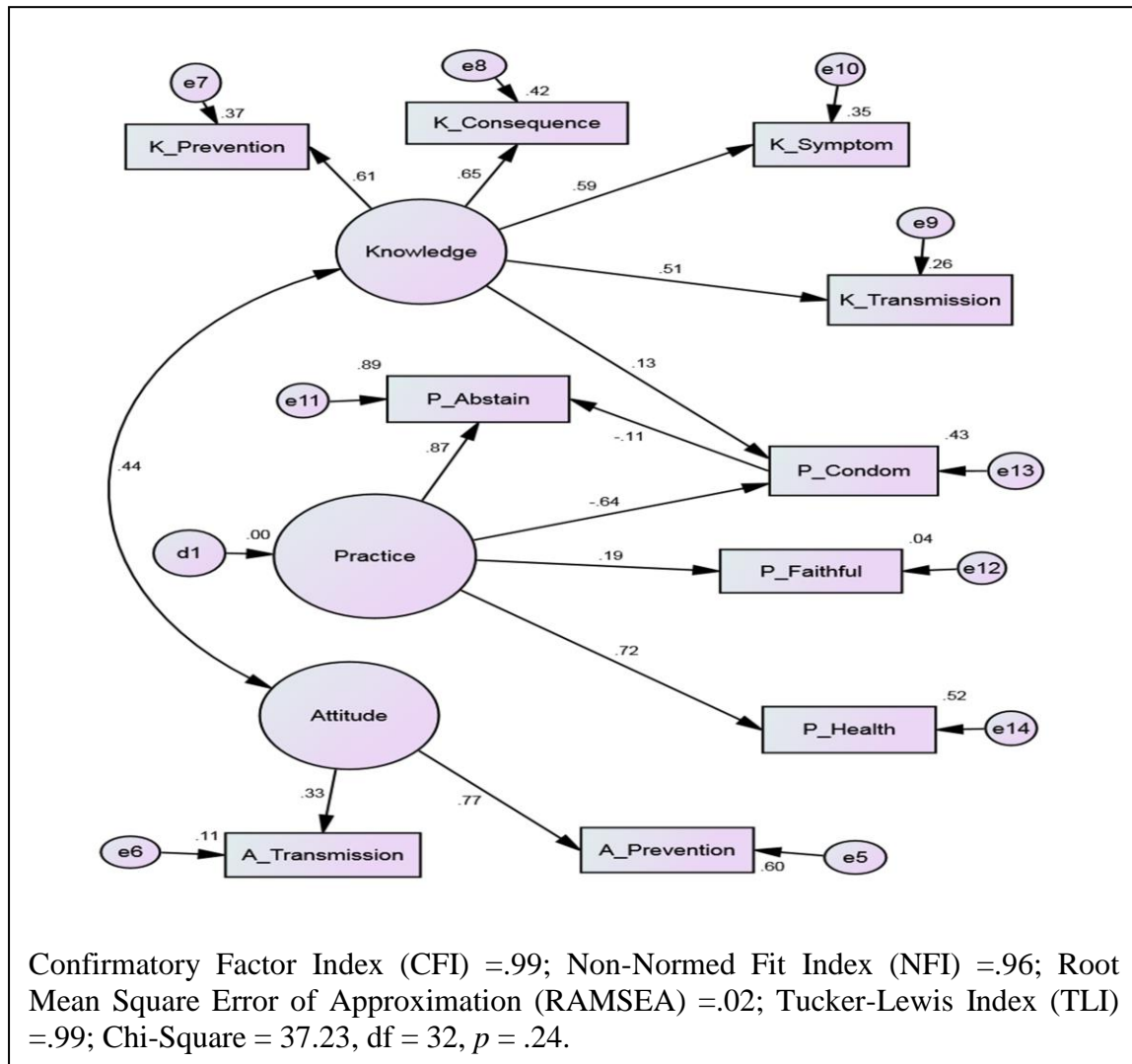


Figure3: Confirmatory Factors and Standardised Estimates for the Modified Model

Parametric estimates

Direct effects among the variables were analysed. The findings were represented by standardised parameter coefficient. With this in mind, the standardised parametric estimates of direct association with bias corrected percentiles are shown (Table 5).

Modifications on the path lines of the hypothesized model were made to generate a model which fit the existing data (Figure 3). With this intention, path lines that originate from

knowledge and attitude to practice were cleaned. Yet, path lines from knowledge to condom use and from condom use to abstinence were constructed. Accordingly, a model that shows a positive significant effect from knowledge to condom use was found, $\beta = .13$, $p = .009$ (CI95% = .05 - .21).

Discussion

The percentage of HIV/AIDS knowledge was 53%, $d = 0.03$. This result was compared to the expected value, 52% and it implied that the

Table 5: Significant Direct Effects among Variables for the Modified Model

Model Relationship	Estimate	Two tailed significance(<i>p</i>)	Boundary	
			95%CI Lower	95%CI Upper
Knowledge to K_ Consequences	.65	.002**	.57	.73
Knowledge to K_ Prevention	.61	.002**	.53	.70
Knowledge to K_ Transmission	.51	.002**	.42	.59
Knowledge to K_ Symptoms	.59	.001**	.00	.69
Knowledge to P_ Condom use	.13	.009**	.05	.21
Attitude to A_ Prevention	.77	.001**	.57	1.22
Attitude to A_ Transmission	.34	.003**	.19	.46
Practice to P_ Health behaviors	.73	.002**	.62	.82
Practice to P_ Condom use	-.72	.004**	-.80	-.61
Practice to P_ Faithfulness	.57	.001**	.54	.60
Practice to P_ Abstinence	.69	.002**	.58	.81

***p*<.01

students exhibited negligible level of knowledge on HIV/AIDS related issues¹⁹. In this regard, the findings of the current study complements previous findings particularly on mode of transmission, symptoms and prevention strategies^{13-16,19,24}. Despite the fact that inconsistencies of findings were also found¹⁶⁻¹⁸. Above all, the study conducted by Abruquah and Bio¹⁶ as well as Andargie *et al*¹⁷ was different from the findings of the current study. The implication of this inconsistency in terms of comprehensive HIV/AIDS knowledge was subject to variations in Information-Motivation-Behavior (IMB) difference across time, place and conditions.

Regarding *attitude*, the study confirmed 58%, *d* = 0.12 of the respondents had positive attitude towards helpful facts and preventive strategies of HIV/AIDS. Furthermore, well defined and functioning attitude towards HIV/AIDS were embedded in the preventive strategies than mode of transmission. Accordingly, the participants in the current study had relatively desirable attitude towards vital scientific knowledge and preventive measures (abstinence and faithfulness) against to HIV/AIDS. However, there have been vast inconsistencies between the current finding and the majority of the studies conducted in the past. The implication of this inconsistency perhaps lies to the majority of the participants in the current study adhered to abstinence and faithfulness as opposed to condom use^{12,13,18-21,23-25}.

Regarding *practice*, 92%, *d* = 0.82, of the respondents exhibited positive practices against HIV/AIDS transmission. Notably, 85.5% of the participants in the current study stated that they abstained from sexual contact before joining the University. Perhaps, this high level abstinence possibly accounted the high percentage of respondents to have better status in practice. Most importantly, the socio-cultural and religious influences such as restriction on premarital sex perhaps contributed to the students' decision to abstain from sexual contacts. Taking this into consideration, the findings on abstinence is consistent with past studies in Ethiopia¹⁷. Similarly, the report from the participants showed that they attempted to foster healthy behaviours as a form of response against HIV/AIDS; nonetheless, condom use was found to be the least option against HIV/AIDS^{14,16,17,19,23,29}. The direct effect of the two latent variables (i.e., knowledge and attitude) on the other latent variable (i.e., practice) was analysed, yet no direct effect of the exogenous variables on the endogenous variable was found. The modified model produced only one latent construct (i.e., knowledge) that had direct effect on condom use. In this regard, there have been previous studies that demonstrate that increase in knowledge is significantly associated with improved use of condom among university students⁸⁻¹¹. In contrast, there have been findings that contradict the findings in the current study; that is, increase in

knowledge did not increase university students' proper use of condom^{14,16,23,29} perhaps due to negative attitude towards preventive mechanisms^{19,24,25,26}.

Conclusion

Globally, HIV/AIDS has been a complex socio-economic problem for the last four decades. Thus the fight against HIV/AIDS goes beyond deductive type conventional approach to self-empowered approach. That is, students should have the experiences to re-evaluate their perception in terms of HIV/AIDS, sexuality and career/life development. Indeed, the appraisal process builds their personal frame of references, meta-cognitions; self-concepts and these assist them to be determined to overcome challenges and adapt long lasting behavioural skills. Moreover, premeditated responses against HIV/AIDS require sorting out high risk behavioural groups and that urges to address information, education, and communication (IEC)²¹. Besides, formal education and training, knowledge and attitudes could be scaled up by educational guidance and counseling for vulnerable groups such as students at schools, colleges, and universities. Thus, these findings call for urgency to launch inclusive packages to care for adolescents at their contexts.

Ethical Approval and Informed Consent

According to the regulation of Dilla University, all ethical standards were maintained. Furthermore, as to the regulation of the general ethical protocol, informed consent and confidentiality were ensured from the research participants through debriefing about the nature, results, and conclusion of the study.

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Declaration of conflicting interests

The authors declare there are no conflicts of interests.

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