

Knowledge, attitude and practices of HIV/AIDS prevention among trainee nurses in north-eastern corridor, Ghana: A cross-sectional survey

Abdul-Manaf Mutaru (✉ abdulmanafmutaru@gmail.com)

College of Health Sciences, Yendi

Aminu Ibrahim

College of Health Sciences, Yendi

Abdul-Nuru Wumpini Osuman

College of Health Sciences, Yendi

Timothy Atanga Agana

College of Health Sciences, Yendi

Ahmad Sukerazu Alhassan

University for Development Studies

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Abstract

Background

HIV/AIDS remains a modern-day global burden, killing almost 39 million people with over 36 million living with the disease, and two million new cases annually. The risk of infection in clinical practice among health workers has been noted to be high, compared to the general population. The study therefore seeks to determine the knowledge, attitude, and practice of HIV/AIDS prevention among nursing students along the north-eastern corridor of Ghana.

Methods

A cross-sectional descriptive design with a quantitative approach was employed. Multistage stratified random sampling technique was used to select 373 trainee nurses. A Pearson's chi-square analysis was performed at 0.20 precision level. Determinants of knowledge, attitude, and practice was established with a multivariate logistic regression at 95% confidence level.

Results

Majority of participants had satisfactory knowledge (88.0%), good attitude (87.9%), and good practices (57.6%) towards HIV/AIDS prevention. Students in their final year of the study were 2.3 times more likely to demonstrate good attitudes towards HIV/AIDS prevention than first years (aOR: 2.28; CI: 1.10–4.72). Those with sufficient knowledge on HIV/AIDS were 3.5 times more likely to have good attitudes towards its prevention than those with insufficient knowledge levels (aOR: 3.46; 1.76–6.77).

Conclusion

There are satisfactory knowledge, attitude, and practices among trainee nurses regarding HIV/AIDS prevention in the study setting. Increase access to knowledge regarding HIV/AIDS can improve attitudes towards its prevention. However, there is a need for appraisal of the clinical placement programs of trainee nurses to ensure improved practice. Further studies are needed to ascertain the role of knowledge and attitudes in enhancing practices on HIV/AIDS prevention.

Introduction

Human Immune Virus (HIV)/Acquired Immune Deficiency Syndrome (AIDS) has continuously remained a modern-day global burden, with approximately 39 million deaths, over 36 million people living with the disease, and two million new cases annually (1). The young adult population has been suggested to constitute nearly half of new cases reported worldwide (2). This is because there are lots of social interactions as part of their social development and it's important for the adolescent or young adult to

promote a healthy approach and protect themselves from people living with the disease (3). Inadequate health information, engagement in risky behaviours, economic exploitation, regional and national conflicts, and poor access to reproductive health services have been highlighted as the underpinnings for the high incidence among young adult (2). Moreover, it has been reported that, these young adults in many instances are unaware of the dynamics of HIV/AIDS, their risk to it, and how best they can protect themselves (4).

Sub-Saharan Africa is the worst affected, with nearly three-quarters of the global HIV burden. South Africa and Ethiopia have been indicated to be the worst and least affected countries respectively (5, 6). Nonetheless, the trend of incidence within the region has shown a reduction for almost a decade, by 33%; from 2.2 to 1.5 million (6). The prevalence of HIV in Togo has been suggested to be 19.6% (7). The situation in Ghana is fairly considerable with about 346, 120 people living with the disease and females being the most (64%) affected (8). That notwithstanding, it is still seen and thoughtfully evaluated as a high risk country for several reasons including high levels of HIV/AIDS in neighbouring countries (9). From the southern coastal seaports to the hinterland and landlocked neighbours in northern Ghana, there is the eastern corridor stretch, approximating 695km. The area shares a close borders with Togo eastwards, which has an estimated HIV prevalence of 19.6% (7). Moreover, travellers who pass the stretch and people from neighbouring countries patronize the health facilities dotted along the stretch, increasing the chance of cross-country infections. The main health training institutions within the northern part of the stretch have their students constantly being on clinical training at various hospitals within the corridor. The risk of infection in clinical practice among health workers has been noted to be high (four times) compared to general population (10, 11). Hence, these students who are inexperienced, still undergoing training and are recognised to have lesser regard to precautionary measures stands even a higher chance (12, 13). That notwithstanding, no available empirical literature was found to have examined the situation in the setting. More so, Mutaru et al. (14) highlighted the need for revitalization of the models and dimensions of the teaching of sexual and reproductive health among students within the setting. The study therefore seeks to determine the knowledge, attitude, and practice of HIV/AIDS prevention among nursing students along the north-eastern corridor of Ghana.

Materials And Methods

Study Design and Setting

This study employed a cross-sectional analytical design with a quantitative approach.

This study was carried out in the eastern corridor area of Ghana, specifically the Northern Territory. The Eastern Corridor is an approximately 695km stretch and one of the three north-south corridors (Eastern, Central, and Western corridors) of Ghana. It links the southern coastal seaports to the hinterland and landlocked neighbours in the north. The northern territory of the Eastern corridor shares the boundary eastward with Togo. The north eastern corridor harbours nine Municipalities/Districts including; Namumba, North and South, Yendi, Gushegu, Karaga, Saboba, Tatali, Kpanda and Zabzugu (15). Almost

all these Municipals/Districts have referral hospitals as well as primary health facilities. The area also has three government-owned nurses' training institutions; College of Health Sciences – Yendi (CoHSY), Gushegu Nurses' and Midwifery Training College (NMTC), and College of Community Health Nursing, Nkanchina (CoCHN), located in Yendi Municipality, Gushegu District and Kpandai District respectively. CoHSY offers three programs; Registered General Nursing (RGN), Registered Mental Nursing (RMN) and Registered Nurse Assistant Clinical (RNAC). Gushegu NMTC offers RNAC, Post-basic Nursing/Midwifery (PNM) and Registered Midwifery (RM), while CoCHN being less than three years offers only Nurse Assistant Preventive (NAP).

Study Population

This study's population comprised all students of CoHSY and Gushegu NMTC. These institutions were purposively sampled based on the programs that are being offered and the study design/sampling technique. CoHSY and Gushegu NMTC have an estimated student population of 682 and 475, respectively.

Sampling and sample size determination

The sample size was estimated using Yamané's formula (16) of sample size estimation;

$$n = \frac{N}{1 + N(e)^2}$$

Where N = estimated population size (475 + 682) = 1,157 students. Using a confidence level of 95%, level of precision (e) = 5% = 0.05, the estimated sample size is 298. Considering the COVID – 19 pandemic hesitance and the need to increase statistical power, a nonresponse rate of 25% was considered. The final sample size was therefore determined to be 373.

Multistage stratified random sampling technique was employed in this survey. The study population was stratified based on the name of the college, programme of study, and year of study. Proportionate sample size was then determined for each stratum, and a sampling frame was designed. Using the manual lottery system and index number-based class registers as the sampling frame, simple random sampling was then used to select each participant until the desired sample size was obtained.

Data collection

The method of data collection was self-reporting questionnaire. After an extensive literature review (10), closed ended questionnaire was adapted and content validity assessed. Data collection was executed from 1st to 30th March, 2022. Respondents were given at least 24 hours to respond and submit their questionnaire. Questionnaires were structured in to four main sections; A to D. Section A was a design to collect socio-demographic features of participants. Section B was a design to examine participants' knowledge regarding HIV/AIDS. This was formulated to encompass awareness, knowledge on transmission, diagnosis, and prevention. Section C; attitude was constructed to include good attitudes,

poor attitudes, and occupational attitudes towards HIV/AIDS prevention. Section D assessed participants' practices towards HIV/AIDS prevention. This included ever screening for HIV and clinical practice.

Data analysis

Responded questionnaires were assessed daily for completeness and clarity. Data was sorted, coded, entered into SPSS version 26, and cleaned. Socio-demographic features, knowledge, attitude, and practice items are presented using frequencies and percentages. Composite scores were generated and overall knowledge, attitude, and practice are presented using pie and bar charts. The minimum and maximum scores for knowledge, attitude, and practice were; 0–21, 0–8, and 0–10. The overall knowledge was categorized into 'satisfactory' and 'unsatisfactory' using a 50% obtainable score. Overall attitude and practice scores are as well categorized into 'Good' and 'Poor' using 50% obtainable scores.

At 0.20 precision level, a Pearson's chi-square analysis was performed to determine the association between socio-demographic features and participants' overall attitude and practice. The statistical association between overall knowledge, attitude, and practice was as well examined. Furthermore, to control for confounders and determine the independent predictive power of variables at $p < 0.20$, a multivariate binary logistic regression analysis was executed at a 95% confidence level and 0.05% precision.

Validity and Reliability

Face and content validity of the questions were done by three different experts in HIV/AIDS. The questionnaire was pretested among 30 students randomly selected from both schools. These students were exempted from the main study. The internal consistency and validity of the various scales were measured. A Cronbach's alphas of **0.725**, **0.741**, and **0.766** were recorded for knowledge, attitude, and practice item scales.

Results

Sociodemographic characteristics of respondents

In this study, 373 respondents were enrolled with a 100% response rate. Of this, the majority (59.0%) were less than 23 years with a mean age and standard deviation of 23.4 ± 2.5 . more than half (66.2%) were females and about 55.2% were Muslims. 52.0% were those from rural communities and about 60.1% students represented CoHSY. The majority (44.2%) were those offering RNAC programs with about half (53.9%) being second years of study. About 37.8% reported that their parents had no formal education. Further details are presented in Table 1.

Table 1
Sociodemographic characteristics

Variable	Category	Frequency	Percent
Age	≤ 23	220	59.0
	24–29	143	38.3
	30+	10	2.7
Mean age (± 2SD)			23.4 ± 2.5
Gender	Male	126	33.8
	Female	247	66.2
Religion	Islam	164	44.0
	Christianity	206	55.2
	Traditionalist	2	0.6
	No Religion	1	0.3
Hometown	Rural	194	52.0
	Urban	179	48.0
College	CoHSY	224	60.1
	Gushegu NMTC	149	39.9
Program	RNAC	165	44.2
	RGN	104	27.9
	RMN	28	07.5
	RM	76	20.4
Level of study	1st Year	92	24.7
	2nd Year	201	53.9
	3rd Year	80	21.4
Parental Education	No formal education	141	37.8
	Primary	20	5.4
	Middle school	67	18.0
	SSS	48	12.9
	Tertiary	97	26.0
SD; Standard Deviation			

Knowledge of respondents on HIV/AIDS prevention

As indicated in Table 2, the awareness level of HIV/AIDS in the current study was overwhelmingly high (96.8%), with about 89.8% being able to differentiate between HIV and AIDS. 97.6% of the students agreed to the fact that HIV is an STI and 96.2% indicated HIV transmission can be through contaminated syringes. Three quarters (74.3%) of the students knew that pregnant mothers can pass the virus to the foetus. The majority (83.6%) affirmed breastfeeding mother-to-child transmission is possible. Most (55.0%) of the participants accepted the possibility of getting infected through sharing belongings. Almost all (96.0%) affirmed that sharing toiletries and haircut kits with people living with HIV (PLHIV) can cause transmission. About 53.9% confirmed mosquitoes are not vectors while overwhelming 98.4% reported sharing needles from the patient – to – patient being a mode of transmission. Most of the participants identified kissing (59.0%) as a possible means of HIV transmission, whereas a majority (60.9%) denied the possibility of identifying PLHIV by appearance. With regard to treatment, about 58.4% reported that treatment reduces the chances of transmission and more than three quarters (86.3%) indicated that early diagnosis increases life expectancy. Blood test was confirmed (79.1%) as a definitive diagnosis for HIV with almost all participants (96.0%) reporting condom use to reduce transmission. About 94.4% indicated that following treatment with a healthy diet makes PLHIV have normal life. More than half (65.7%) denied availability of HIV vaccine while 75.9% indicated multiple sex increase the chances of getting infected. About three quarters confirmed that sexually transmitted infections (STI) increase the chances of transmission and 75.9% agreed that there is no current available cure for HIV.

Table 2
Item analysis for knowledge variables

Variable	Frequency (%)		
	Yes	No	Not sure
Awareness	361 (96.8)	12 (03.2)	00 (00)
Difference between HIV and AIDs	333 (89.3)	33 (08.8)	07 (1.9)
HIV as being an STI	364 (97.6)	8 (02.1)	01 (0.3)
HIV transmission through contaminated syringes	359 (96.2)	13 (03.5)	01 (0.3)
Pregnant mother to foetal transmission	277 (74.3)	80 (21.4)	16 (4.3)
Breastfeeding mother to child transmission	312 (83.6)	37 (09.9)	24 (6.4)
Sharing belongings of PLHIV as a transmission	205 (55.0)	146 (39.1)	22 (5.9)
Sharing haircut kit as a means of transmission	358 (96.0)	11 (02.9)	04 (1.1)
Mosquito as a vector	134 (35.9)	201 (53.9)	38 (10.2)
Sharing needle patient to patient	367 (98.4)	5 (01.3)	01 (0.3)
Possibility of kissing PLHIV causing HIV	220 (59.0)	120 (32.2)	33 (8.8)
Possibility of identifying PLHIV by appearance	101 (27.1)	227 (60.9)	45 (12.1)
Treatment reduces chances of transmission	218 (58.4)	128 (34.3)	27 (7.2)
Early diagnosis increases life expectancy	322 (86.3)	24 (6.4)	27 (7.2)
Blood test as definite diagnosis	295 (79.1)	50 (13.4)	28 (7.5)
Condom use reduces transmission	358 (96.0)	13 (03.5)	02 (0.5)
PLHIV live normal live with healthy diet	352 (94.4)	10 (02.7)	11 (2.9)
Availability of HIV vaccine	79 (21.2)	245 (65.7)	49 (13.1)
Multiple sex-partner increase chance of infection	365 (97.9)	6 (01.6)	02 (0.5)
STI increases chance of infection	283 (75.9)	61 (16.4)	29 (7.8)
Availability of HIV cure	55 (14.7)	283 (75.9)	35 (9.4)

Overall knowledge level of respondents

As indicated in Fig. 1, the overwhelming majority (88.0%) of participants' overall knowledge level on HIV/AIDS in this study was satisfactory.

Respondent's Attitude to HIV/AIDS prevention

As shown in Table 3, almost half (49.6%) of the respondents perceive themselves at risk of HIV/AIDS with a vast majority (85.8%) having to know that occasional contact with blood increases the risk of HIV. 77.2% of the students disagree that wearing of PPE is not necessary in surgical procedures with a little over half (52.5%) of the respondents not subscribing to HIV perceive not potentially serious. 59.8% affirmed that HIV is no longer serious because of antiretrovirals. Meanwhile, 79.6% of the respondents disagree that occasional needle pricks don't require reporting. With regard to the use of condoms not necessary in every sexual activity, about 64.4% participants disagree with that as well as 82.3% of respondents not in support of the item blood/body fluid splash do not require reporting.

Table 3
Item analysis for Attitude variables

Variable	Category	Frequency	Percent (%)
Perceive self at risk	Yes	167	44.8
	No	185	49.6
	Not sure	21	5.6
Occasional contact with blood increase risk of HIV	Yes	320	85.8
	No	33	8.8
	Not sure	20	5.4
Wearing PPEs not necessary in surgical procedures	Yes	82	22.0
	No	288	77.2
	Not sure	3	.8
HIV perceive not potentially serious	Yes	141	37.8
	No	196	52.5
	Not sure	36	9.7
HIV no longer serious because of antiretrovirals	Yes	223	59.8
	No	120	32.2
	Not sure	30	8.0
Occasional needle pricks don't require reporting	Yes	54	14.5
	No	297	79.6
	Not sure	22	5.9
Use of condom not necessary in every sexual activity	Yes	116	31.1
	No	241	64.6
	Not sure	16	4.3
Blood/body fluid splash do not require reporting	Yes	43	11.5
	No	307	82.3
	Not sure	23	6.2

Overall attitude towards HIV/AIDS prevention

As indicated in Fig. 2, more than three-quarters (87.9%) of participants' overall attitude level towards HIV/AIDS in this study was good.

Respondent's practices towards HIV/AIDS prevention

As indicated in Table 4, the number of participants who reported ever screening for HIV was appreciable (67.0%), with about 3.5% reporting positive as their HIV status. Almost all (96.5%) agreed with the fact that it is necessary to screen for HIV by all health workers. More than half (56.3%) of the participants affirmed that every client must be seen as potentially infectious and more than three-quarters (76.1%), indicating that it is always necessary to take post-exposure prophylaxes for HIV after experiencing a needle stick of a suspected patient. An overwhelming majority (93.0%) of the participants accepted that gloves should be changed always during blood collection. Only 17.2% of the participants never recapped needles after use and 64.1% reported of never experiencing needle stick injury to the best of their knowledge. Most (53.1%) of the students have never experienced any splashed blood/body fluids on their bodies and more than half (64.1%) sometimes reported needle stick injury or blood/fluid splash to the authorities.

Table 4
Item analysis for Practice variables

Variable	Category	Frequency	Percent (%)
Ever screen for HIV	Yes	250	67.0
	No	121	32.4
	Not sure	2	0.5
Self – reported HIV status	Negative	237	63.5
	Positive	13	3.5
Necessary to screen for HIV by all health workers	Yes	360	96.5
	No	9	2.4
	Not sure	4	1.1
Every client must be seen as potentially infectious	Always	210	56.3
	Sometimes	137	36.7
	Never	26	7.0
Necessary for post-exposure after needle stick	Always	284	76.1
	Sometimes	78	20.9
	Never	11	2.9
Frequency of gloves change during blood collection	Always	347	93.0
	Sometimes	22	5.9
	Never	4	1.1
Frequency of needles recap	Always	274	73.5
	Sometimes	35	9.4
	Never	64	17.2
Experience of needle stick injury	Always	30	8.0
	Sometimes	104	27.9
	Never	239	64.1
Experience of body splash with blood/fluid	Always	24	6.4
	Sometimes	151	40.5
	Never	198	53.1
Ever reporting needle stick injury/body splash	Always	97	26.0

Variable	Category	Frequency	Percent (%)
	Sometimes	239	64.1
	Never	37	9.9

Overall practices towards HIV/AIDS prevention

As indicated in Fig. 3, about half (57.6%) of the participants' overall practice level towards HIV/AIDS in this study was Good.

Determinants of HIV/AIDS from bivariate (chi-square) and multivariate binary logistic regression analysis

Attitude

A Pearson's chi-square analysis indicated age (Chi-stat = 3.52, $p < 0.20$), gender (Chi-stat = 1.70, $p < 0.20$), hometown (Chi-stat = 1.65, $p < 0.20$), level of study (Chi-stat = 7.33, $p < 0.05$) and knowledge level (Chi-stat = 17.86, $p < 0.001$) to statistically significantly associated with attitude towards HIV/AIDS prevention. After adjusting for confounding variables, a multivariate binary logistic regression analysis showed the level of study and overall knowledge level to be significant predictors of HIV/AIDS prevention. Students in their final year of the study were 2.3 times more likely to demonstrate good attitudes towards HIV/AIDS prevention than the first year (aOR: 2.28; CI: 1.10–4.72). Those with sufficient knowledge on HIV/AIDS were 3.5 times more likely to have good attitudes towards its prevention than those with insufficient knowledge levels (aOR: 3.46; 1.76–6.77). Further details are presented in Table 5.

Practice

A bivariate analysis with Pearson's chi-square analysis showed only hometown (Chi-stat = 2.05, $p < 0.20$) to be statistically significantly associated with practice towards HIV/AIDS prevention, Table 5.

Table 5
Determinants of attitude and practices of HIV/AIDS prevention (N = 373)

Variable	Attitude		Chi-stat	aOR (95%)	Practice		Chi-stat
	Poor	Good			Poor	Good	
Age							
≤ 23 ¹	61 (53.5)	159 (61.4)		-	90 (57.0)	130 (60.5)	
24-29	53 (46.5)	90 (34.7)	3.52*	0.65 (0.40, 1.05)	63 (39.9)	80 (37.2)	0.60
30+	3 (2.6)	7 (2.7)		0.82 (0.20, 3.35)	5 (3.2)	5 (2.3)	
Gender							
Male ¹	44 (38.6)	82 (31.7)		-	58 (36.7)	68 (31.6)	
Female	70 (61.4)	177 (68.3)	1.70*	1.25 (0.77, 2.03)	100 (63.3)	147 (68.4)	1.05
Hometown							
Rural ¹	65 (57.0)	129 (49.8)		-	89 (56.3)	105 (48.8)	
Urban	49 (43.0)	130 (50.2)	1.65*	1.00 (0.63, 1.62)	69 (43.7)	110 (51.2)	2.05*
College							
CoHSY ¹	68 (59.6)	156 (60.2)			95 (60.1)	129 (60.0)	
Gushegu NMTC	46 (40.4)	103 (39.8)	0.01		63 (39.9)	86 (40.0)	0.001
Program							
RNAC ¹	58 (50.9)	107 (41.3)			63 (39.9)	102 (47.4)	
RGN	28 (24.6)	76 (29.3)	3.00		48 (30.4)	56 (26.0)	4.38
RMN	7 (6.1)	21 (8.1)			16 (10.1)	12 (5.6)	
RM	21 (18.4)	55 (21.2)			31 (19.6)	45 (20.9)	

*p < 0.20; **p < 0.05; ***p < 0.001; 1_reference category

Variable	Attitude				Practice		
	Poor	Good	Chi-stat	aOR (95%)	Poor	Good	Chi-stat
Level of study							
1st Year ¹	34 (29.8)	58 (22.4)		-	33 (20.9)	59 (27.4)	
2nd Year	65 (57.0)	136 (52.5)	7.33**	1.12 (0.64, 1.96)	86 (54.4)	115 (53.5)	2.94
3rd year	15 (13.2)	65 (25.1)		2.28 (1.10, 4.72) **	39 (24.7)	41 (19.1)	
Parental Education							
No formal education ¹	39 (34.2)	85 (32.8)			55 (34.8)	69 (32.1)	
Secondary	31 (27.2)	84 (32.4)	1.08		42 (26.6)	73 (34.0)	2.36
Tertiary	44 (38.6)	90 (34.7)			61 (38.6)	73 (34.0)	
Knowledge level							
Insufficient ¹	26 (22.8)	19 (7.3)		-	22 (13.9)	23 (10.7)	
Sufficient	88 (77.2)	240 (92.7)	17.86***	3.46 (1.76, 6.77) ***	136 (86.1)	192 (89.3)	0.89
Attitude							
Poor ¹					48 (30.4)	66 (30.7)	
Good					110 (69.6)	149 (69.3)	0.004
*p < 0.20; **p < 0.05; ***p < 0.001; 1_reference category							

Discussion

The objective of this current study was to determine the knowledge, attitude, and practices of trainee nurses regarding HIV/AIDS prevention in north-eastern corridor of Ghana. This study presents an overall satisfactory knowledge level regarding HIV/AIDS prevention among trainee nurses. This finding correlates with Dzah et al. (5) among senior high students, Boakye and Mavhandu-Mudzusi (17) among practicing nurses, Kenu et al. (18) among adolescents in Ghana and Talwar (19) in Malaysia. The current finding,

however, differs from another cross-sectional survey among senior secondary students in Cameroon (2) and Ethiopia (20), findings of Wongkongdech et al. (21) in Lao People's Democratic Republic and Haroun et al. (22) in Dubai. These differences in findings could be attributed to variations in the study populations. Other studies were conducted among secondary, undergraduate, and vocational students, respectively. Since the current study has been conducted among trainee nurses, it is only obvious that their knowledge levels appear appreciable. Unlike vocational training and secondary school students, trainee nurses have as part of their curriculum, programs that incorporate the learning of sexual and reproductive health. Therefore, the tendency for them to provide intellectual responses to issues of HIV/AIDS is higher. Reasoning along the proposition of Oljira et al. (20), we as well recommend the incorporation of adolescent and reproductive health into the curriculum of secondary schools and vocational training. Moreover, since it was not all trainee nurses who possessed good knowledge, we reiterate, as proposed by Mutaru et al. (14), the need for revitalization of the models and dimensions of the teaching of sexual and reproductive health in colleges of health.

Moreover, the attitudes and practice levels of the participants in this study were found to be good. This was as well reported in Jordan (23), Addis Ababa University (24) and among teacher trainees in north-western Ethiopia (25). The finding is however inconsistent with Haroun et al. (22) in Dubai and Thanavanh et al. (26) in Lao people's Democratic Republic. The variation in findings may be plausibly associated with disparities in study settings, populations, and sample size. The current study setting was mainly health training institutions with student nurses as the study population. Student nurse appreciate the infectiousness and complications of HIV/AIDS. In this regard, they are more likely to exhibit proactive attitudes towards infection prevention and may largely give positive responses. However, unlike Haroun et al. (22), where over 2,000 participants were enrolled, this current study recruited a relatively smaller number of participants, which could have limited the possibility of receiving a larger variety of opinions. Consequently, this makes the generalization of their findings more representative than the current study. Nonetheless, this current finding generally supports Rav-Marathe et al. (27)'s Knowledge, Attitude and Practice Outcome (KAP-O) model.

Inferential analysis from this study established a relationship between trainee nurses' level of study and their attitudes towards HIV/AIDS prevention. As student nurses progress in their level of study, their attitude towards HIV/AIDS prevention becomes good. Higher, students climb in their academic ladder, much is expected from them, hence, it is not surprising that final year students demonstrate good attitudes than the first year. Moreover the final years have had several clinical experiences and might have been a witness to patients who acquire HIV/AIDS, including its complications. Therefore, they are very likely to put up proactive behaviours towards its prevention.

Additionally, this current study established a significant association between participants' knowledge levels on HIV/AIDS and their attitudes towards its prevention. Thus, trainee nurses with sufficient knowledge were more likely to demonstrate a good attitude towards infection prevention. In tandem with our finding is Andrew et al. (28) among undergraduate students in United States. It, however, refutes Pal Singh et al. (11)'s findings among dental students in Malaysia. This variation finding may be due to the

nature of the study design and sampling. The previous study used a relatively lesser sample size compared to the current study. Moreover, as the previous study was directed toward eliciting information regarding participants' attitudes toward HIV patients, the current study examined their attitudes towards infection prevention. In any case, both studies were among health trainees, hence, the current finding was much anticipated, especially in the global fight against the spread of the infection. These students, who are enlightened through the knowledge they acquire, are expected to exhibit improved attitudes and further sensitize people regarding the spread of the infection. Therefore, to ensure positive attitudes towards HIV/AIDS prevention, there is the need to increased access to knowledge on the infection.

Finally, none of the socio-demographic features in addition to participants' knowledge and attitudes were determinants of practices towards HIV/AIDS prevention in this study. This is inconsistent with Rav-Marthe et al.. (27)'s-KAP-O model; proposing a linear relationship of knowledge, attitude, and practice. This could be reasoned from the perspective of possibly weak clinical supervision and inadequate logistics, considering the deplorable nature of the available health facilities within the setting. With a well-equipped clinical environment, trainee nurses are expected to have clinical preceptor who facilitate the translation of their knowledge in to improve practical outcomes. Hence, in circumstances where there are inadequate logistics, human resources, and other facilities that are required to enhance practical learning, there would likely be poor practices, irrespective of the training received. There a need for appraisal of their clinical placement programs and the availability of clinical preceptors required.

Conclusion

There is sufficient knowledge, good attitude, and practices towards HIV/AIDS prevention, with participants' level of study and knowledge level being the predictors of attitudes towards infection prevention. There is a need for principals of health trainee institutions to intensify the clinical monitoring and identify preceptors to ensure translation of knowledge acquired by students are translated in to improved skills. Further research is recommended with varying settings to further evaluate knowledge, attitude, and practice outcome relationships.

Abbreviations

AIDS: Acquired Immune Deficiency Syndrome

CoCHN: College of Community Health Nursing

CoHSY: College of Health Sciences – Yendi

HIV: Human Immune Virus

KAP-O: Knowledge Attitude and Practice Outcome

NAP: Nurse Assistant Preventive

NMTC: Nursing and Midwifery Training College

PLHIV: People Living with HIV

PNM: Post-basic Nursing/Midwifery

RGN: Registered General Nursing

RM: Registered Midwifery

RMN: Registered Mental Nursing

RNAC: Registered Nurse Assistant Clinical

STI: Sexually Transmitted Infections

UNICEF: United Nations Children and Emergency Fund

Declarations

Ethical approval and consent to participate

This study was granted ethical clearance by the Committee on Human Research Publications and Ethics of the Kwame Nkrumah University of Science and Technology (CHRPE/AP/121/22). Permission for use of the study site was granted by both Principals of CoHSY and Gushegu NMTC. Oral and written consents were obtained from all participants after explaining the nature and purpose of the study. Confidentiality and privacy were guaranteed and information sheets provided to each participant.

Consent for publication

Granting of consent including the use of data was a prerequisite to participating in this study. All individuals whose names are mentioned have agreed for their names to be published.

Data availability

All the underlying data used in the generation of the results of this manuscript are available with the corresponding author, upon reasonable request.

Competing interest

The authors declare that there are no conflicts of interest regarding the publication of this article.

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Author Contributions

Conceptualization: Abdul-Manaf Mutaru, Ahmad Sukerazu Alhassan

Data curation: Abdul-Manaf Mutaru, Aminu Ibrahim, Abdul-Nuru Osman Wumpini, Timothy Atanga Agana.

Formal analysis: Abdul-Manaf Mutaru, Timothy Atanga Agana, Aminu Ibrahim, Abdul-Nuru Osman Wumpini.

Investigation: Abdul-Manaf Mutaru, Aminu Ibrahim, Abdul-Nuru Osman Wumpini, Timothy Atanga Agana.

Methodology: Abdul-Manaf Mutaru, Ahmad Sukerazu Alhassan.

Project administration: Abdul-Manaf Mutaru, Aminu Ibrahim, Abdul-Nuru Osman Wumpini, Timothy Atanga Agana.

Resources: Abdul-Manaf Mutaru, Aminu Ibrahim, Abdul-Nuru Osman Wumpini, Timothy Atanga Agana.

Software: Abdul-Manaf Mutaru, Aminu Ibrahim, Ahmad Sukerazu Alhassan.

Supervision: Abdul-Manaf Mutaru, Ahamad Sukerazu Alhassan, Aminu Ibrahim, Abdul-Nuru Osman Wumpini.

Validation: Abdul-Manaf Mutaru, Aminu Ibrahim, Abdul-Nuru Osman Wumpini, Timothy Atanga Agana Ahmad Sukerazu Alhassan.

Visualization: Abdul-Manaf Mutaru, Aminu Ibrahim, Abdul-Nuru Osman Wumpini, Timothy Atanga Agana, Ahmad Sukerazu Alhassan.

Writing – review & editing: Abdul-Manaf Mutaru, Aminu Ibrahim, Abdul-Nuru Osman Wumpini, Timothy Atanga Agana Ahmad Sukerazu Alhassan.

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Figures



Figure 1

Overall knowledge level of respondents

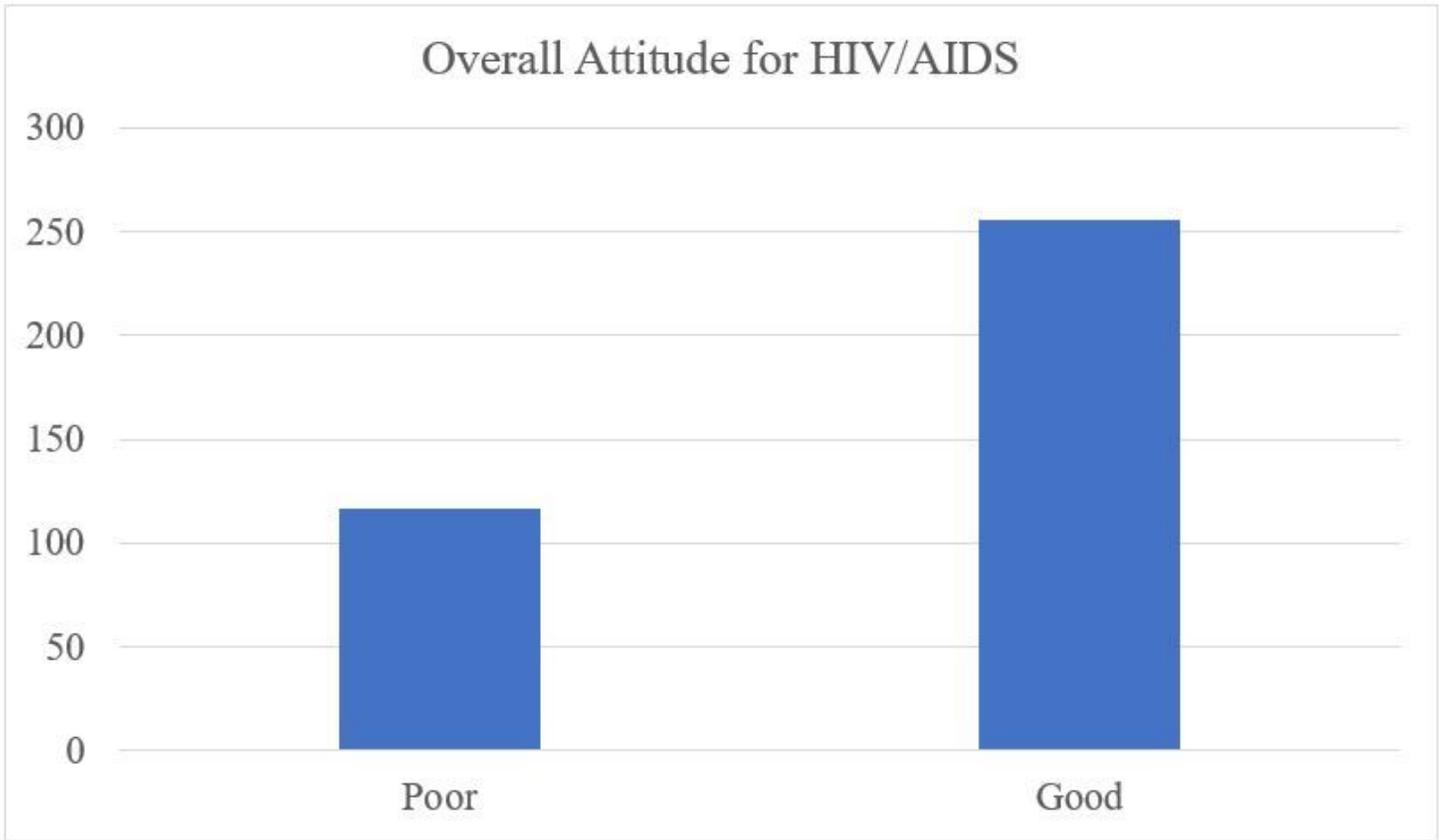


Figure 2

Respondents' overall attitude towards HIV/AIDS prevention

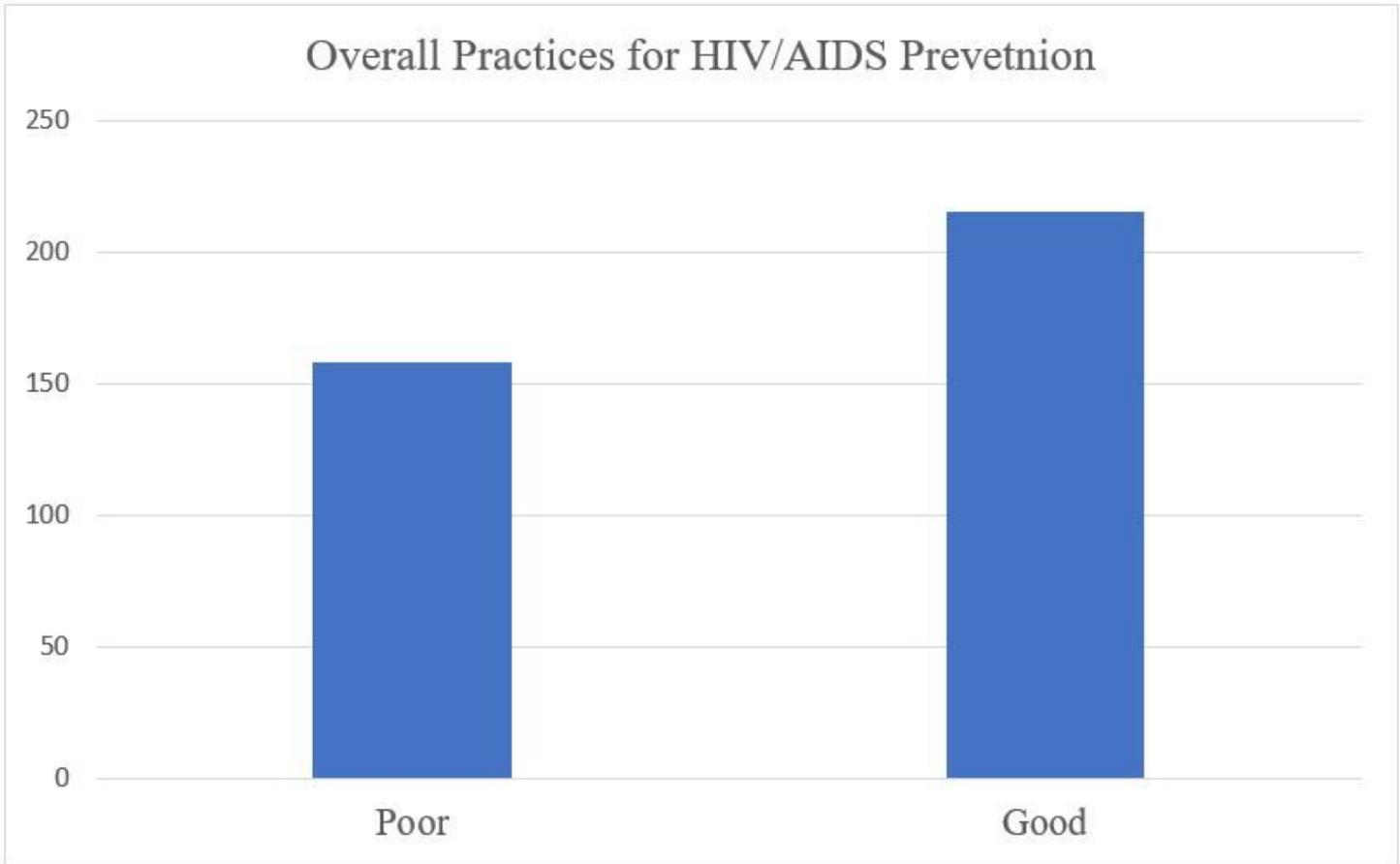


Figure 3

Respondents' practices towards HIV/AIDS prevention