


## Research



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## Knowledge, attitude and practice towards COVID-19 among people living with HIV/AIDS attending State Specialist Hospital Maiduguri, Borno State, Nigeria

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## Abstract

**Introduction:** in order to control and prevent the spread of COVID-19, people must have adequate knowledge, a positive attitude, and practice basic preventive procedures towards the disease. This study aims to determine the KAP towards COVID-19 among PLHIV undergoing clinical-outpatient follow-up at SSHM. **Methods:** a hospital-based cross-sectional study was conducted to determine knowledge, attitude and practice (KAP) towards COVID-19 among 344 participants, who were selected using a simple random sampling technique from 4<sup>th</sup> January to 25<sup>th</sup> February 2022. A pretested and structured interviewer-administered questionnaire was used for data collection. Results were summarized in frequencies and percentages. The Chi-square test was used to determine factors influencing KAP. **Results:** among the 344 participants that were enrolled in the study, adequate knowledge and positive attitude scores ( $\geq 75$  correct answers) towards COVID-19 were reported in 72.4% and 62.5% of the participants, respectively. Most of the respondents (82%) were not practicing basic preventive procedures against COVID-19. Knowledge and attitude scores were significantly associated ( $p < 0.05$ ) with gender, age, marital status and educational status, while practice score was significantly associated ( $p < 0.05$ ) with gender, marital status, educational status, employment status and time since HIV diagnosis. There was a moderate positive correlation ( $r = 0.60$ ) between knowledge and attitude scores, while there was a low positive correlation ( $r = 0.23$ ) between knowledge and practice scores and attitude and practice scores, respectively. **Conclusion:** people living with HIV have adequate knowledge, a positive attitude and poor practice towards COVID-19. Therefore, in order to mitigate coronavirus infection among People Living with HIV/AIDS (PLHIV), health talks at ART service delivery points should incorporate information on COVID-19 preventative strategies.

## Introduction

HIV infection remains a major global public health concern despite all the progress made in its treatment, and expansion of prevention strategies. As of 2020, around 37.7 million people lived with HIV infection worldwide, with 1.5 million newly diagnosed cases in 2020 [1]. In Nigeria, The Nigerian National HIV/AIDS Indicator and Impact Survey (NAIIS) of 2018 reported the prevalence of HIV at 1.4%, with 1.9 million people living with HIV (PLHIV). Although the prevalence was reported to be lower in the North Eastern Zone of the country (1.1%), Borno state had a prevalence of 1.3%, thus being categorized among states with medium prevalence [2]. While advances have been made to control and end the HIV epidemic, the coronavirus disease 2019 (COVID-19) pandemic has impelled those advances [3]. Coronavirus disease 2019 (COVID-19) is a highly infectious and acute respiratory disease caused by Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2), which is transmitted to humans through direct or indirect contact and/or feeding on infected animals with clinical manifestations similar to viral pneumonia such as fatigue, fever, shortness of breath, cough and other complications [4]. The World Health Organization (WHO) declared the disease a global pandemic on 11<sup>th</sup> March 2020, with 450,229,635 million cases and 6,019,085 deaths globally as of 11<sup>th</sup> March 2022 [5]. In Nigeria, the first case of COVID-19 was detected in Lagos State on 27<sup>th</sup> February 2020 and spread across the country. In Borno State, there were 254,861 confirmed cases and 3,142 deaths as of 11<sup>th</sup> March 2022 [6]. The impact of HIV infection on severity and mortality associated with COVID-19 is limited and conflicting in the literature. However, the World Health Organization report confirmed that HIV infection is a significant independent risk factor for severe/critical COVID-19 at hospital admission and in-hospital mortality [7]. The concern that PLHIV are more at risk for severe COVID-19 assumes that they are more likely to be immunocompromised, especially those with low CD4 cell count, high viral load, advanced disease,

and those not on antiretroviral therapy (ART) [8]. Therefore, it becomes necessary to adopt additional measures to prevent PLHIV from contracting COVID-19.

Currently, there is no universal treatment for COVID-19. However, vaccines are available and offer hope for ending the pandemic, although prevention remains the best option for controlling this pandemic by reducing transmission. Despite the paucity of information regarding the safety of the COVID-19 vaccines in PLHIV, available information indicates that the COVID-19 vaccines recommended by WHO are safe for PLHIV and could benefit from COVID-19 vaccination [9]. The WHO has recommended that all PLHIV, regardless of their immune status, be included in COVID-19 vaccination and that countries should consider them as a priority group according to their epidemiological context [10]. In order to control and prevent the transmission of COVID-19, people need to have adequate knowledge about the disease, a correct attitude and employ good practices against the virus [11]. The information on the KAP of the population is essential in identifying gaps, improving the quality of services, and doing strategic planning for program purposes [12]. Having average knowledge of COVID-19 and a correct attitude towards adherence to government prevention and control measures is key to preventing COVID-19 [13]. To the best of our knowledge, this is the first research about KAP towards COVID-19 among PLHIV in Nigeria. Therefore, this study aims to assess the KAP of PLHIV undergoing clinical-outpatient follow-up at SSHM towards COVID-19. We expected that the outcomes of this study would unveil gaps that are useful for authorities in decision-making and the development of interventions towards bridging the gaps.

## Methods

**Study design:** a hospital-based cross-sectional study was conducted among PLHIV undergoing clinical-outpatient follow-up at United States

President's Emergency Plan For AIDS Relief (PEPFAR) clinic in State Specialist Hospital Maiduguri (SSHM) from 4<sup>th</sup> January to 25<sup>th</sup> February 2022.

**Study setting and population:** State Specialist Hospital Maiduguri is a secondary-level referral hospital within the Maiduguri metropolis, with a total of 17 wards and three outpatient clinics. The hospital currently has a total of, 3309 PLHIV on treatment at the time of this research. The study participants included in this study are solely PLHIV undergoing clinical-outpatient follow-up at SSHM. Participants needed to meet the following inclusion criteria: being aware of their HIV status, being under clinical-out-patient monitoring at SSHM, and being 15 years of age or older.

### Data resource and measurement

**Data collection tool:** a structured interviewer-administered questionnaire prepared in the English language and adapted from the WHO COVID-19 recommendations and relevant published articles [3,13-15].

**Data collection:** data collection was conducted by three research assistants. Socio-demographic characteristics and other variables such as knowledge, attitude and practice towards COVID-19 were collected by the data collection tool. A total of 12 questions were used to assess knowledge, with the answer being "yes" or "no" or "I do not know". A correct answer was given 1 point, and an incorrect answer/do not know was given 0 point. Respondents who scored greater than, or equal to 9, were considered to have "adequate knowledge". The attitude of the participants towards COVID-19 was assessed by eight questions, which were answered as "yes", "no" or "I do not know". Participants who scored greater than or equal to six correct answers (75%) from the eight scored attitude questions were considered to have a "positive attitude" towards COVID-19. Similarly, the participants' practice towards COVID-19 was also assessed by eight questions, answered as "yes" or "no". Participants

who scored greater than or equal to 6 correct answers (75%) from the eight scored practice questions were practicing COVID-19 prevention measures. To ensure the reliability of the questionnaire, a pilot study was conducted among 20 randomly selected PLHIV at SSHM, who were excluded from participating in the main study. The pretested and validated questionnaire was then administered to the research participants.

**Sample size:** the sample size was calculated using Cochran's formula [16] at a 95% confidence level, where Z is taken at 1.96.

$$n_o = \frac{Z^2 pq}{e^2}$$

Prevalence is assumed to be 50% as there was no similar study in the study area and margin of error (e) was taken as 5%. Using the formula, the sample size was obtained as 384. Since the target population in the study is less than 10000, the sample size was further adjusted using Cochran's correction formula.

$$n = \frac{n_o}{1 + \frac{(n_o - 1)}{N}}$$

Where n is the corrected sample size, now is the uncorrected sample size, and N is the population size. Using this correction formula, the final sample size obtained was 344. The study participants were then selected using a simple random sampling technique.

**Data analysis:** data were entered in protected Microsoft Excel, 2016, and after double typing and random manual checks in order to ensure the validity of the data entered, the databank was exported to and analysed using IBM Statistical Package for Social Science (SPSS) (Version 26). Results were summarised in frequencies and percentages. The Chi-square test was used to explore the association between the independent variables of the study and KAP scores, and p-

values were considered significant at values less than or equal to 0.05.

**Ethical consideration:** ethical clearance to conduct this study was obtained from the ethical review and clearance committee of State Specialist Hospital Maiduguri. The study participants were only registered after the aim and objectives of the study were clearly explained to them and their informed consent for the study and its publication was obtained.

## Results

**Socio-demographic analysis:** a total of 344 people living with HIV/AIDS participated in this study. The socio-demographic characteristics of the participants are shown in Table 1. The majority, 242 (70.3%), were females, and most of the participants, 202 (58.7%), were 25 years and above. Of the total respondents, 174 (50.6%) were married, 126 (36.6) were literate and only 70 (20.3) were employed. All the participants were currently receiving ART and the majority of them, 194 (56.4%), were diagnosed with HIV greater than or equal to 5 years ago.

**Knowledge about COVID-19 analysis:** in the current study, 249 (72.4%) and 95 (27.6%) participants had adequate and inadequate knowledge about COVID-19, respectively. Twelve knowledge questions and the corresponding knowledge scores of the participants about COVID-19 are shown in Table 2. Participants (257 (74.7%) knew that the most common clinical symptoms of COVID-19 are fever, dry cough and fatigue. Two hundred and thirty (69.9%) of the respondents believed that only symptomatic individuals have COVID-19 and 133 (38.7%) agreed that HIV-infected individuals on regular effective antiretroviral therapy and following preventive measures do not have a higher risk of contracting the coronavirus. The majority of the participants, 319 (92.7%), agreed that COVID-19 spreads when an infected person exhales virus-containing respiratory droplets and tiny particles. One

hundred and fifty-eight (158 (45.9%) respondents believed that children and young adults must take precautions to avoid becoming infected with COVID-19. Two hundred and seventy-one (271 (78.8%)), knew that isolation and treatment of COVID-19 infected individuals are efficient approaches to reduce the spread of the virus. The majority of the participants, 312 (90.7%), know that COVID-19 vaccines are available and PLHIV could benefit from COVID-19 vaccination.

**Attitude towards COVID-19 analysis:** two hundred and fifteen (215 (62.5%) and 129 (37.5%) of the participants had positive and negative attitudes towards COVID-19, respectively. Eight attitude questions and the corresponding attitude scores of the participants about COVID-19 are shown in Table 3. The majority of the participants, 257 (74.7%), believed that COVID-19 is a curable disease and 180 (52.3%) respondents had confidence that Nigeria could win the battle against COVID-19. Most of the respondents, 251 (73%), believed that they would go to the quarantine centre if they developed signs and symptoms of COVID-19. Participants 269 (78.2%) agreed that they would report suspected cases to health authorities. Participants (144 (41.9%) Participants believed that people infected with HIV and on ART could not be infected with SARS-CoV2. 141 (41%) respondents do not know that the COVID-19 vaccine is safe and effective.

**Practice towards COVID-19 analysis:** the majority of the study participants, 282 (82%), were not practicing basic preventive procedures against COVID-19. Eight practice questions and the corresponding practice scores of the participants about COVID-19 are shown in Table 4. Preventive procedures of avoiding crowds, wearing a face mask when leaving home, washing of hands frequently and use of hand sanitisers in maintaining hand hygiene, keeping regularly touched objects and surfaces clean and disinfected and social distancing were followed by 162 (47.1%), 124 (36%), 90 (26.2%), 142 (41.3%), and 123 (35.8%) respectively. Most of the respondents, 300 (87.2%), cover their nose and

mouth with their elbow or a tissue when coughing or sneezing. Only 88 (25.6%) of the participants have received the COVID-19 vaccine.

**Association between independent variables of the study and KAP scores analysis:** the association test between the study's independent variables and the knowledge, attitude and practice towards COVID-19 among the participants are described in Table 5. There was a statistically significant association ( $p < 0.05$ ) between the knowledge score and the following variables: sex, age, marital status and educational status. Attitude score was significantly associated ( $p < 0.05$ ) with sex, age, marital status, educational status and time since HIV diagnosis. The sex, marital status, educational status, and time since HIV diagnosis of the respondents were also significantly associated ( $p < 0.05$ ) with practice scores.

**Correlation between knowledge, attitude and practice analysis:** there was a moderate positive correlation ( $r = 0.60$ ) between knowledge and attitude scores ( $p = 0.000$ ): attitude scores increase with increasing knowledge scores. There was a low positive correlation ( $r = 0.23$ ) between knowledge and practice scores ( $p = 0.000$ ): practice scores increase with increasing knowledge scores. Similarly, there was also a low positive correlation ( $r = 0.26$ ) between attitude and practice scores ( $p = 0.000$ ), as shown in Table 6.

## Discussion

With the novelty of COVID-19 and its clinical and epidemiological ambiguities, a population-level investigation of KAP becomes crucial for effective public health planning, implementation, and management [17]. To our knowledge, this is the first study to assess the KAP on COVID-19 among PLHIV in Nigeria. Of note, most of the study participants are females aged 25 years and above, illiterates and unemployed. The study revealed that the participants' overall knowledge about COVID-19 was high (72.4%). This result is consistent with Dzinamanra *et al.* [3], which

reported high COVID-19 knowledge scores among PLHIV. The possible reason for this could be that the routine COVID-19 health talk is being provided to the PLHIV at the health facility. Furthermore, the information on COVID-19 is widely circulated on various media platforms both locally and internationally. Interestingly, the knowledge scores reported in this study are less than that of a previous study among PLHIV in Rwanda [3], probably because most participants in this study were illiterate and unemployed and might have limited access to necessary devices and the internet to access information on COVID-19. Therefore, ART clinics should intensify COVID-19 health talks during counseling sessions to close this gap. Factors significantly associated with participants' knowledge in the study were: (I) male participants, which is consistent with a previous report in Nigeria [18], (II) married participants, which is consistent with other studies [12,18-20], 25 years and above, which is consistent with a previous report in Jordan [16] and (IV) literacy, which is also congruent with other studies [12,15]. Notably, most participants (91%) knew that the COVID-19 vaccine was now available. This is important since vaccines proved to play a vital role to end the pandemic, and PLHIV could benefit from the vaccination [9].

In terms of attitude, most of the study participants (62.5%) had a positive attitude towards COVID-19. This result is congruent with Ghatte *et al.* [13], which reported a higher positive attitude towards COVID-19 among PLHIV. However, it is dissimilar to a previous report in Rwanda [3] that reported a poorer attitude towards COVID-19 among people living with HIV. This is probably due to differences in participants' environmental characteristics and the timings during which the studies were conducted. Factors significantly associated with participants' attitudes in the study were female participants, married participants, aged 25 and above and literacy. One of the most pressing COVID-19 information needs of the participants was the safety and effectiveness of COVID-19 vaccines, as only 41% of the respondents believe

that the COVID-19 vaccine is safe and effective. Therefore, health care workers at ART Clinics should enlighten the PLHIV on the importance of the COVID-19 vaccine, including its safety and efficacy. Although most of the study participants had adequate knowledge and a positive attitude towards COVID-19, this did not translate to the adoption of good preventive COVID-19-related practices as most of the participants (82%) were not practicing basic preventive procedures against COVID-19. This finding is not consistent with previous reports about the practice of basic preventive procedures against COVID-19 among PLHIVs in Rwanda [3] and India [13]. It could be due to differences in timings of the study since the two studies were conducted in the earlier stage of the pandemic and also probably due to fewer COVID-19 positive cases reported within Borno state [2], so the residents might believe that they are at a lower risk of contracting the virus as reported in a study among residents of non-Hubei districts in China [21]. Factors associated with practice included: male, unmarried, illiterate, unemployed, and those diagnosed with HIV greater than or equal to 5 years ago. The reasons why these variables are significantly associated with the practice are not very clear and may need to be explored in subsequent studies. It is noteworthy that COVID-19 vaccine uptake among the respondents was very low, as only 25.6% of the participants reported being vaccinated. Considering the recent report from the WHO that confirms that HIV infection is a significant independent risk factor for both severe/critical COVID-19 presentation at hospital admission and in-hospital mortality [7], it is, therefore, crucial for PLHIV to be vaccinated. Future studies should unveil the potential barriers to COVID-19 vaccine uptake among the PLHIVs, in order to enable public health policymakers to make more informed decisions.

Interestingly, our study revealed a significant positive correlation between knowledge, attitude, and practice. This finding is consistent with a previous study among PLHIV in Rwanda [3]. This

implies that promoting COVID-19 preventive practices would require promoting knowledge and attitude among the PLHIV. Therefore, educating the PLHIV about COVID-19 will provide them with adequate knowledge to enhance their attitude and encourage them to adopt good preventive COVID-19-related practices, which will ultimately help protect them from getting infected and reduce the disease spread. There are limitations to this study. The study was a single-centred study and the sample size was small. Therefore, findings from the study cannot be generalized. Moreover, the respondents may have given socially acceptable answers, which may be different from actual reality. A more objective approach to assessment may have helped curtail this. However, despite these limitations, our study has some important strengths. This is the first study that assessed the KAP of PLHIV on COVID-19 in Nigeria. Therefore, findings from this study could lay a solid foundation for future COVID-19 KAP studies among PLHIV in the country. Furthermore, unlike most KAP studies on COVID-19 in Nigeria, this study was conducted when COVID-19 vaccines were available; therefore, information related to the COVID-19 vaccine, including its uptake, was reported. Finally, our research provides valuable information that will help public health officials make COVID-19-related decisions concerning PLHIV.

## Conclusion

The study was conducted to assess the KAP regarding COVID-19 among PLHIV, who are at a higher risk of getting infected with the SARS-CoV-2. Our findings suggest that PLHIV have adequate knowledge, a positive attitude and poor practice towards COVID-19. This study suggests that health education about COVID-19 among PLHIV should be directed more towards less than 25 years females, unmarried people and illiterates. Health talks at ART service delivery points should include information on COVID-19 prevention practices in order to mitigate the infection among PLHIV.

## What is known about this topic

- *The overall knowledge and attitude in PLHIV towards COVID-19 is high.*

## What this study adds

- *There is a significant positive correlation between knowledge, attitude, and practice towards COVID-19 in PLHIV;*
- *PLHIV have poor practice towards COVID-19 in Maiduguri, Borno State, Nigeria.*

## Competing interests

The authors declare no competing interests.

## Authors' contributions

All the authors have read and agreed to the final manuscript.

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## Tables

**Table 1:** socio-demographic characteristics of PLHIVs at SSHM

**Table 2:** knowledge about COVID among PLHIV at SSHM, Borno State, Nigeria, 2022

**Table 3:** attitude towards COVID-19 among PLHIVs at SSHM

**Table 4:** practice towards COVID among PLHIVs at SSHM

**Table 5:** association between independent variables of the study and KAP scores

**Table 6:** correlation between Knowledge, attitude and practice

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**Table 1:** socio-demographic characteristics of PLHIVs at SSHM

Variables	Frequency (N)	Percentage (%)
<b>Sex</b>		
Male	102	29.7
Female	242	70.3
<b>Age (years)</b>		
<25	142	41.3
≥25	202	58.7
<b>Marital status</b>		
Married	174	50.6
Unmarried	170	49.4
<b>Educational status</b>		
Literate	126	36.6
Illiterate	218	63.4
<b>Employment status</b>		
Employed	70	20.3
Unemployed	274	79.7
<b>Time since HIV diagnosis (years)</b>		
<5	150	43.6
≥5	194	56.4

**Table 2:** knowledge about COVID among PLHIV at SSHM, Borno State, Nigeria, 2022

Variables	Frequency (N)	Percentage
<b>The most common clinical symptoms of COVID-19 are fever, dry cough and fatigue</b>		
Yes	257	74.7
No	46	13.4
I don't know	41	11.9
<b>Only symptomatic individuals have COVID-19</b>		
Yes	230	66.9
No	48	14.0
I don't know	66	19.2
<b>There is no specific cure yet for COVID-19. However, early symptomatic and supportive treatment can help most patients recover from the infection</b>		
Yes	233	67.7
No	85	24.7
I don't know	26	7.6
<b>HIV infected individuals on regular effective antiretroviral therapy and following preventive measures do not have a higher risk of contracting the corona virus</b>		
Yes	133	38.7
No	117	34.0
I don't know	94	27.3
<b>The COVID-19 virus is airborne</b>		
Yes	283	82.3
No	35	10.2
I don't know	26	7.6
<b>COVID-19 spreads when an infected person exhales virus-containing respiratory droplets and very small particles</b>		
Yes	319	92.7
No	0	0
I don't know	25	7.3
<b>It is not necessary for children and young adults to take precautions to avoid becoming infected with COVID-19</b>		
Yes	133	38.7
No	158	45.9
I don't know	53	15.4
<b>Individuals should avoid going to crowded places and riding public transportations to avoid becoming infected with COVID-19</b>		
Yes	271	78.8
No	41	11.9
I don't know	32	9.3
<b>Isolation and treatment of COVID-19 infected individuals are efficient approaches to reduce the spread of the virus</b>		
Yes	270	78.5
No	29	8.4
I don't know	45	13.1
<b>People who have contact with someone who has been infected with COVID-19 should be isolated in a proper place for 14 days</b>		
Yes	278	80.8
No	40	11.6
I don't know	26	7.6
<b>To prevent corona virus infection, wash hands frequently with soap and water for at least 20 seconds or use an alcohol-based hand sanitizer</b>		
Yes	326	94.8
No	6	1.7
I don't know	12	3.5
<b>Are you aware that COVID-19 vaccines are now available?</b>		
Yes	312	90.7
No	7	2.0
I don't know	25	7.3

**Table 3:** attitude towards COVID-19 among PLHIVs at SSHM

Variables	Frequency (N)	Percentage
<b>COVID-19 is a curable disease</b>		
Yes	257	74.7
No	49	14.2
I don't know	38	11.0
<b>Do you have confidence that Nigeria can win the battle against COVID-19?</b>		
Yes	180	52.3
No	99	28.8
I don't know	65	18.9
<b>Compliance with the Nigerian MOH preventive and control measures will prevent the spread of the virus</b>		
Yes	229	66.6
No	57	16.5
I don't know	58	16.9
<b>Do you think that you will go to the quarantine centre if you develop the sign and symptom of COVID-19?</b>		
Yes	251	73.0
No	43	12.5
I don't know	50	14.5
<b>It is important to report suspected cases to health authorities</b>		
Yes	269	78.2
No	42	12.2
I don't know	33	9.6
<b>To avoid getting infected with SARS-CoV-2, I must always maintain a safe distance from others</b>		
Yes	311	90.4
No	7	2.0
I don't know	26	7.6
<b>People who are infected with HIV and on ART cannot be infected with SARS-CoV-2</b>		
Yes	144	41.9
No	147	42.7
I don't know	53	15.4
<b>COVID-19 vaccine is safe and effective</b>		
Yes	141	41.0
No	62	18.0
I don't know	141	41.0

**Table 4:** practice towards COVID among PLHIVs at SSHM

Variables	Frequency (N)	Percentage
<b>Do you avoid crowds and crowded places?</b>		
Yes	162	47.1
No	182	52.9
<b>Do you wear face mask when leaving home?</b>		
Yes	124	36.0
No	220	64.0
<b>Do you wash your hands frequently and use hand sanitizers to maintain adequate hand hygiene?</b>		
Yes	90	26.2
No	254	73.8
<b>Do you routinely use unclean hands to touch your eyes, nose, and mouth?</b>		
Yes	148	43.0
No	196	57.0
<b>Do you keep regularly touched objects and surfaces clean and disinfected?</b>		
Yes	142	41.3
No	202	58.7
<b>Do you practice social distancing?</b>		
Yes	123	35.8
No	221	64.2
<b>Do you cover your nose and mouth with your elbow or a tissue when coughing or sneezing, then discard the tissue in the trash?</b>		
Yes	300	87.2
No	44	12.8
<b>Have you received COVID-19 vaccine?</b>		
Yes	88	25.6
No	256	74.4

**Table 5:** association between independent variables of the study and KAP scores

Variables (N=344)	Knowledge score		p-value	Attitude score		p-value	Practice score		p-value
	<75%	≥75%		<75%	≥75%		<75%	≥75%	
<b>Sex</b>									
Male	83 (81.4%)	19(18.6%)	0.015	42(41.2%)	60(68.8%)	0.000	29(28.4%)	73(71.6%)	0.001
Female	166(68.6%)	76(31.4%)		173(71.5%)	69(28.5%)		33(13.6%)	209(86.4%)	
<b>Age (years)</b>									
<25	94 (66.2%)	48(33.8%)	0.031	60(42.3%)	82(57.7%)	0.000	29(20.4%)	113(79.6%)	0.332
≥25	155(76.7%)	47(23.3%)		155(76.7%)	47(23.3%)		33(16.3%)	169(83.7%)	
<b>Marital status</b>									
Married	139(79.9%)	35(20.1%)	0.002	138(79.3%)	36(20.7%)	0.000	24(13.8%)	150(86.2%)	0.039
Unmarried	110(64.7%)	60(35.3%)		77 (45.3%)	93(54.7%)		38(22.4%)	132(77.6%)	
<b>Educational status</b>									
Literate	112(88.9%)	14(11.1%)	0.000	98(77.8%)	28(22.2%)	0.000	6(4.8%)	120(95.2%)	0.000
Illiterate	137(62.8%)	81(37.2%)		117(53.7%)	101(46.3%)		56(25.7%)	162(74.3%)	
<b>Employment status</b>									
Employed	56 (80.0%)	14(20.0%)	0.110	49(70.0%)	21(30.0%)	0.146	4(5.7%)	66(94.3%)	0.003
Unemployed	193(70.4%)	81(29.6%)		166(60.6%)	108(39.4%)		58(21.2%)	216(78.8%)	
<b>Time since HIV diagnosis (years)</b>									
<5	102(68.0%)	48(32.0%)	0.110	75(50.0%)	75(50.0%)	0.000	15(10.0%)	135(90.0%)	0.000
≥5	147(75.8%)	47(24.2%)		140(72.2%)	54(27.8%)		47(24.2%)	147(75.8%)	

**Table 6:** correlation between Knowledge, attitude and practice

	Knowledge_scores	Attitude_scores	Practice_scores
Knowledge scores	1		
Attitude scores	0.598	1	
Practice scores	0.225	0.245	1