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# Factors Associated with Knowledge and Attitudes of HIV Patients towards Hiv-Based Services at Kibagabaga District Hospital

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# Abstract

**Background:** HIV is still a significant global public health issue. World health organization (WHO) recommends that people infected with HIV should initiate HIV-based services as early as possible. The aim of this study is to assess the knowledge and attitude levels of HIV patients towards HIV-based services and associated factors.

**Methods:** A cross-sectional study was conducted on 274 HIV patients obtaining HIV-based services at Kibagabaga hospital. Descriptive analysis, bivariate and logistic regression analysis were employed using SPSS21. The significance level of below 0.05 at 95%CI was considered.

**Results:** The majority of respondents were female 158 (57.7%) and 88.5% were aged 30 years old.86.1% had good knowledge on HIV-based services and 81% exhibited positive attitudes. Respondents aged 40-49 years (AOR: 11.59; 95% CI: 1.560 - 86.063), aged 50 years (AOR: 16.44; 95% CI: 2.150 - 125.653), Urban(AOR: 7.05; 95% CI: 1.999 - 24.88) and engaged for more than 5 years (AOR: 13.29; 95% CI: 1.694 - 104.182)were more likely to exhibit good knowledge towards HIV-based services.

**Conclusion:** The study revealed favorable knowledge and attitudes towards HIV-based services, however, improved awareness is needed for HIV services uptake and provision to HIV infected people in communities.

Keywords: Knowledge, Attitudes, HIV Based Services, Human Health, Population of HIV

# **1. Introduction**

The human immune deficiency virus, also known as HIV, is a chronic illness that impairs the immune system and can cause acquired immune deficiency syndromes (AIDS) in those who have it. HIV develops become a global health problem that affects everyone. According to World Health Organization, 79.3 million people have acquired the HIV virus since the epidemic's start, and 36.3 million have died from it. At the end of 2020, there were 37.7 million persons living with HIV worldwide. Despite the fact that the impact of the epidemic continues to differ greatly between different nations and areas, an estimated 0.7% of adults in the world between the ages of 15 and 49 are HIV positive [1,2].

In Africa, 25.7 million people are living with HIV and around 1.1 million people are infected by every year UNAIDS 2020. Rwanda has 370,000 HIV positive population equivalent to 3% of the general population, the prevalence, however, is higher in urban areas compared to rural areas, the city of Kigali has a 6% HIV prevalence compared to a 2% prevalence

in rural regions of the country [3].

The studies have shown variations among HIV patients. While overall knowledge levels are relatively high, specific areas of knowledge gaps have been identified. These include knowing the name of antiretroviral therapy (ART), understanding the importance of timing and food intake when taking ART, and awareness of HIV prevention methods. Attitudes towards HIV-based services have generally been positive, but there are also negative perceptions and misconceptions. Some patients believe that other treatment options are more effective than ART, and there is a perception of shame associated with using ART. These attitudes may stem from social stigma surrounding HIV and its treatment. Various factors are associated with knowledge and attitudes among HIV patients. Socio-demographic characteristics, such as education, occupation, and distance to health facilities, influence knowledge levels. Attitudes, including beliefs about the importance of HIV-based services, perception of side effects, conviction to continue using the services, and Volume - 3 Issue - 2

feelings of shame, also play a significant role [4-6].

Different research conducted about HIV in Rwanda shows that moral acceptance HIV-based services as part of their daily life and this is mainly because of different efforts conducted by the government of Rwanda in collaboration with other stakeholders to provide necessary services such as HIV-based services to different communities that are affected in various regions of the country. Therefore, assessing the knowledge and attitude of HIV patients towards HIV-based services would show a gap that is still available in order to develop new strategies in the provision of HIV-based services [7].

## 2. Methods and Materials

## 2.1 Study Design and Sampling Method

This was a cross-sectional study which refers to the type of study design during which a researcher investigates both exposures and outcome at the same period, By using a cross-sectional approach, researcher can assess the knowledge levels and attitudes of HIV patients towards HIVbased services at one particular moment (July and August 2023) without requiring longitudinal follow-up or tracking participants over time. The target population for the study can be referred to as the set of elements from which a sample is actually drawn. The target population for this study were 866 HIV patients receiving HIV-based services at Kibagabaga hospital. Yamane, Taro formula was used to calculate the sample size required for this study. Yamane formula is better for sample size calculation when the Population is known. The sample size is equal to 274 HIV patients that were randomly selected to participate in the study [8,9].

## 2.2. Data Collection Instrument and Procedures

Data were collected using a structured questionnaire,the interviewer-administered questionnaire was adapted from a previously validated KAP questionnaire in related reviewed questionnaires.

The study questionnaire was developed from relevant literatures, it consisted of three main sections. The first section comprised of demographic characteristics of respondents. The second section contained questions with responses being "Yes" and" No", which were covering questions related to knowledge on HIV-based services. The third section contained Likert scale questions with responses being "strongly agree", disagree", "agree", "strongly disagree" consisted of questions on attitudes of respondents regarding the HIV-based services [10].

## 2.3 Data Analysis

The raw data were entered, cleaned and analyzed using Statistical Package for Social Science (SPSS, version 21). The descriptive analysis was employed to understand the sociodemographic characteristics of respondents, knowledge level and attitudes towards HIV-based services. The knowledge level was assessed by adding cumulative scores 1=" Yes" and 0=" No", a respondent was expected to correctly answer more than a half of questions, mean and Standard deviations were computed, a participant who was able to answer at least 50%

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of the statements correctly was classified as having good knowledge. The Likert scale measurement was used to assess the attitudes of HIV patients regarding HIV-based services (1: Strongly disagree, 2: Disagree, 3: Neutral, 4: Agree and 5: Strongly Agree), the mean and standard deviations were calculated from scores to assess attitudes level. To identify the factors associated with knowledge towards HIV-based services among HIV patients, bivariate analysis was used using chi-square tests depending on the distribution of data and assumptions. Variables with significant association were tested for confounders using multiple logistic regression, adjusted odds Ratio and 95% confidence intervals were generated with p-value<0.05. The findings were presented using graphics and tables.

## 2.4. Ethical Consideration

Mount Kenya University through School of public health issued an ethical approval and approval letter was obtained from Kibagabaga district hospital. Informed consents were signed by respondents before conducting the research, socio-demographic characteristics of respondents were kept confidentially. There were no risks and direct benefits to respond.

## 3. Results

**3.1 Socio-Demographic Characteristics of Hiv Patients** The study was conducted on 274 HIV patients. The age distribution revealed a diverse representation, with the majority falling in the 40-49 age group (34.3%) and 50 and above age group (39.1%). Notably, a smaller proportion of respondents are aged less than 20 (2.6%), 20-29 (9.1%), and 30-39 (15%). Regarding gender, the sample is relatively balanced, comprising 57.7% females and 42.3% males. In terms of education level, a significant majority of respondents have no formal education (65%), while 28.8% have completed primary education, and 6.2% have attained a secondary education level.

The UBUDEHE category distribution indicates that the majority fall into categories II (50.4%) and III (36.1%), with a smaller representation in categories I (13.1%) and IV (0.4%). In the occupational context, a notable portion of respondents are unemployed (44.5%), followed by self-employed individuals (43.8%), students (6.6%), and a minor presence of both public servants (1.8%) and private servants (3.3%). Examining the household characteristics, a higher proportion of households are headed by males (59.1%), with the majority of respondents having a relationship with the household head as husbands (83.9%). The religious composition reveals a predominantly Protestant affiliation (55.1%), followed by Catholics (41.6%), Muslims (2.2%), and a small percentage with no religious affiliation (1.1%).

In terms of residence, the majority of respondents reside in urban areas (92.3%), while a smaller proportion resides in rural areas (7.7%). Marital status is diverse, with a substantial number of respondents being married (44.2%), followed by those who have never been in union (31.4%), widowed (15.3%), living with a partner (3.6%), divorced (3.3%), and separated (2.2%). The overwhelming majority

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of respondents have health insurance coverage (89.4%). Regarding the duration of engagement with HIV-based services, a significant portion of respondents have been utilizing these services for more than 10 years (39.8%), followed by 5 years - 10 years (23.4%), 1 year - 3 years (16.1%), 3 years - 5 years (13.1%), 6 months - 1 year (4.4%),

and less than 6 months (3.3%). Finally, the distance from home to the health facility varies, with the highest percentage of respondents residing at a medium distance (2-3 kilometers, 38.3%), followed by near (0-1 kilometers, 27.7%), very far (>5 kilometers, 21.2%), and far (4-5 kilometers, 12.8%).

| Characteristics           | Frequency (N=274) | Percent (%) |
|---------------------------|-------------------|-------------|
| Age (Years)               |                   |             |
| Less than 30              | 32                | 11.7        |
| 30-39                     | 41                | 15          |
| 40-49                     | 94                | 34.3        |
| 50 and above              | 107               | 39.1        |
| Gender                    |                   |             |
| Male                      | 116               | 42.3        |
| Female                    | 158               | 57.7        |
| Education level           |                   |             |
| No Education              | 178               | 65          |
| Primary                   | 79                | 28.8        |
| Secondary                 | 17                | 6.2         |
| UBUDEHE Category          |                   |             |
| Category 1                | 36                | 13.1        |
| Category 2                | 138               | 50.4        |
| Category 3                | 100               | 36.5        |
| Occupation                |                   |             |
| Unemployed                | 44.5              | 44.5        |
| Student                   | 18                | 6.6         |
| Self-employed             | 120               | 43.8        |
| Servant                   | 14                | 5.1         |
| Gender of Household Head  |                   |             |
| Male                      | 162               | 59.1        |
| Female                    | 112               | 40.9        |
| Relationship with Househo | ld head           |             |
| Spouse                    | 230               | 83.9        |
| Brother/Sister            | 19                | 6.9         |
| Grand-parent & cousins    | 25                | 9.1         |
| Religion                  |                   |             |
| No religion               | 3                 | 1.1         |
| Protestants               | 55.1              | 55.1        |
| Catholic                  | 114               | 41.6        |
| Muslim                    | 6                 | 2.2         |
| Residence                 |                   |             |
| Rural                     | 21                | 7.7         |
| Urban                     | 253               | 92.3        |
| Marital Status            |                   |             |
| Never in onion            | 86                | 31.4        |
| Married                   | 131               | 47.8        |
| Ever married              | 57                | 20.8        |
| Have health insurance     |                   |             |

| Yes                                    | 245                                   | 89.4 |  |  |  |  |
|--|---------------------------------------|------|--|--|--|--|
| No                                     | 29                                    | 10.6 |  |  |  |  |
| Duration on HIV-based services (years) |                                       |      |  |  |  |  |
| Less than 1 year                       | 21                                    | 7.6  |  |  |  |  |
| Less than 3 year                       | 44                                    | 16.1 |  |  |  |  |
| 3years - 5 years                       | 36                                    | 13.1 |  |  |  |  |
| More than 5 years                      | 173                                   | 63.1 |  |  |  |  |
| Distance from Home to He               | Distance from Home to Health facility |      |  |  |  |  |
| 0-1 Kilometer                          | 76                                    | 27.7 |  |  |  |  |
| 2-3 Kilometers                         | 105                                   | 38.3 |  |  |  |  |
| 4kms and more                          | 93                                    | 34   |  |  |  |  |
| Source: Primary data, 2023             |                                       |      |  |  |  |  |

# **Table 1: Socio-Demographic Characteristics of HIV Patients**

The table provides a comprehensive overview of participants' knowledge regarding HIV-based services, with each statement evaluated for the proportion of respondents who answered "Yes" or "No." Through this analysis, we aim to uncover the depth of understanding and awareness among participants regarding key aspects of HIV-based services. The results revealed that approximately 40.1% of respondents correctly identified antiretroviral drugs as antivirals, while 59.9% did not. This suggests a moderate level of awareness, indicates some variations in responses. A substantial majority (94.2%) correctly acknowledged the presence of triple types of drugs in ARV combinations, while only 5.8% responded otherwise.

Regarding the understanding of HIV-based services as lifelong treatment, participants demonstrated a wellestablished consensus, with 98.2% correctly recognizing this fact, and only 1.8% holding a contrary view. For the awareness of potential side-effects of taking ARV drugs, the table reveals that only 12% correctly identified these side-effects, while 88% did not. Concerning the importance of consulting physicians to manage ARV drug side-effects, participants displayed a strong consensus, with 97.4% correctly acknowledging the need for medical consultation, and only 2.6% disagreed. The mean knowledge score is 1.03, and the SD of 0.158 indicates minimal variations. Lastly, in defining treatment adherence, participants demonstrated near-universal consensus, with 99.6% correctly defining treatment adherence, and only 0.4% holding a different view.

| Statement about knowledge regarding exclusive   | Yes           |             | No            |             |
|---|---------------|-------------|---------------|-------------|
| breastfeeding   | Frequency (N) | Percent (%) | Frequency (N) | Percent (%) |
| Antiretroviral drugs are Antivirals   | 110           | (40.1)      | 164           | (59.9)      |
| There are triple types of drugs in the ARV combinations   | 258           | (94.2)      | 16            | (5.8)       |
| HIV-based services are lifelong treatment.  | 269           | (98.2)      | 5             | (1.8)       |
| Taking ARV drugs has side-effects such as Rash,<br>headache/dizziness, nausea/vomiting, diarrhea,<br>stomachache, anemia, hepato-renal toxicity, etc. | 33            | (12)        | 241           | (88.0)      |
| To manage the side-effects of taking ARVs need consultation with physicians.  | 267           | (97.4)      | 7             | (2.6)       |
| Treatment adherence is taking the right medicine,<br>right dose, at the right time, in the right way, and re-<br>examine on time                      | 273           | (99.6)      | 1             | (0.4)       |
| Source: Primary data, 2023  |               |             |               |             |

# Table 2: The Knowledge Level of HIV Patients Towards HIV Based Services

The overall knowledge level was determined by assigning a value of 1 for "Yes" responses and 2 for "No" responses to each question. The cutoff was 50%, Being able to answer correctly 50% and more indicated good knowledge, while scores below 50% were considered below cutoff and thus Poor knowledge. The results on overall knowledge

levels among participants regarding HIV-based services reveals a predominantly positive picture, with a substantial 86.1% displaying good knowledge. This high percentage underscores a robust understanding of key aspects related to HIV care within the majority of respondents.



Figure 1: Overall Knowledge Level of HIV Patients Towards HIV Based Services

# Source: Primary data, 2023

The researcher examined participants' attitudes towards crucial aspects of HIV-based services, using a Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). A mean score above 3 signifies a positive attitude towards a statement. The analysis provides valuable insights into participants' perspectives on various facets of HIV care, including beliefs about treatment methods, confidence in antiretroviral therapy (ART), medication adherence, stigmarelated issues, and preventive measures. The results showed that the majority of participants (57.3%) strongly disagreed (mean attitude score = 1.83), indicating a prevailing negative attitude towards this notion. The standard deviation (SD) of 1.276 suggests some variability in responses but still leans towards a negative stance.Participants displayed a high level of confidence in the effectiveness of ART, with 82.5% expressing strong agreement (mean attitude score = 4.71), indicating a strong consensus in favor of ART's effectiveness. The SD of 0.752 suggests relatively consistent positive attitudes towards this aspect. Similarly, a significant proportion (82.5%) strongly disagreed with the idea that ART does more harm than good (mean attitude score = 4.15), reflecting a robust affirmation of the benefits of this treatment approach. The SD of 1.349 indicates some variability but still leans towards a negative attitude towards this statement. The commitment to continue ART was remarkably high, with 93.4% strongly agreeing (mean attitude score = 4.93), demonstrating an overwhelmingly positive attitude towards medication adherence. The minimal SD of 0.248 reflects a strong consensus and a consistent positive stance.

Regarding immediate medication initiation upon testing positive for HIV, a majority (86.9%) expressed strong agreement (mean attitude score = 4.84), indicating broad support for this approach. The SD of 0.446 suggests a relatively consistent positive attitude towards this statement. On the topic of feeling ashamed to take ART, the majority (66.1%) strongly disagreed (mean attitude score = 1.53. The SD of 0.988 indicates some variability.Concerning the timing of medication intake, most participants (59.1%) strongly disagreed with the idea that HIV patients should only take antiretroviral medication when feeling ill (mean attitude score = 1.64), suggesting a generally negative attitude towards this statement. The SD of 1.037 reflects variability but still leans towards a negative stance. In terms of HIV prevention, a substantial majority (86.9%) strongly agreed that HIV patients should use condoms during sexual intercourse with uninfected individuals (mean attitude score = 4.82), demonstrating broad support for this preventive measure. The SD of 0.566 indicates relatively consistent positive attitudes.

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Lastly, participants displayed strong agreement (88.2%) regarding the benefits of knowledge provided during HIVbased services at health facilities (mean attitude score = 4.8), emphasizing a positive attitude towards the perceived advantages of such services. The SD of 0.695 suggests relatively consistent positive attitudes. The overall attitude level among participants regarding key aspects of HIV-based services can be summarized as predominantly positive, with a significant majority (81%) expressing favorable attitudes.

| Statement about attitudes towards<br>HIV-based services                     | Strongly<br>agree<br>N(%) | Agree<br>N(%) | Neutral<br>N(%) | Disagree<br>N(%) | Strongly<br>disagree<br>N(%) | Mean | SD    |
|---|---------------------------|---------------|-----------------|------------------|------------------------------|------|-------|
| I believe that there are other more effective methods to treat HIV than ART | 28 (10.2)                 | 8 (2.9)       | 11 (4.0)        | 70 (25.5)        | 157 (57.3)                   | 1.83 | 1.276 |
| Are you convinced of the effectiveness of ART?                              | 226 (82.5)                | 31 (11.3)     | 7 (2.6)         | 6 (2.2)          | 4 (1.5)                      | 4.71 | 0.752 |
| Do you think that taking ART does more harm than good?                      | 226 (82.5)                | 31 (11.3)     | 7 (2.6)         | 6 (2.2)          | 4 (1.5)                      | 4.15 | 1.349 |
| Are you convinced that you should continue your ART?                        | 256 (93.4)                | 18 (6.6)      | 0 (0.0)         | 0 (0.0)          | 0 (0.0)                      | 4.93 | 0.248 |

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|---|------------|-----------|---------|-----------|---------------------------|-------------|-------|
| People should start medication<br>immediately when they test positive for<br>HIV  | 238 (86.9) | 31 (11.3) | 3 (1.1) | 2 (0.7)   | 0 (0.0)                   | 4.84        | 0.446 |
| Do you feel ashamed to take your ART?   | 15 (5.5)   | 2 (0.7)   | 3 (1.1) | 73 (26.6) | 181 (66.1)                | 1.53        | 0.988 |
| HIV patients should take their<br>antiretroviral medication when they feel<br>ill only                                    | 15 (5.5)   | 8 (2.9)   | 1 (0.4) | 88 (32.1) | 162 (59.1)                | 1.64        | 1.037 |
| HIV patients should be using condoms<br>during sexual intercourse with<br>uninfected person                               | 238 (86.9) | 32 (11.7) | 0 (0.0) | 0 (0.0)   | 4 (1.5)                   | 4.82        | 0.566 |
| HIV patients benefit from the knowledge<br>that is provided to them when given<br>HIV-based services at health facilities | 242 (88.2) | 23 (8.4)  | 2 (0.7) | 0 (0.0)   | 7 (2.6)                   | 4.8         | 0.695 |
| Source: Primary data, 2023  |            |           |         |           |                           |             |       |

Table 3: The Attitudes of HIV Patients Towards HIV Based Services

The bivariate analysis was firstly employed using chi-square test of independence to assess the association between each independent variable and dependent variable, a p-value of less than 0.05 indicated a significance association. The results revealed that individuals in the age groups 20-29 (9.1%), 30-39 (15%), and 40-49 (34.3%) demonstrated higher proportions of good knowledge. This trend continued with individuals aged 50 and above, showcasing a substantial 43.2% with good knowledge. In contrast, gender did not yield a significant association with knowledge levels (p = 0.975). Both male and female respondents exhibited similar proportions of good knowledge, with 42.4% of males and 57.6% of females possessing adequate knowledge.

While the overall association between education level and knowledge levels did not reach conventional statistical significance (p = 0.151), it is noteworthy that respondents with no formal education demonstrated a higher proportion of poor knowledge (57.9%). Exploring the UBUDEHE categories, the lack of a significant association with knowledge levels (p = 0.193) is notable. Despite this, categories II (50.4%) and III (36.1%) exhibited substantial proportions of good knowledge, emphasizing that socioeconomic factors may not be the sole determinants of knowledge levels among HIV patients.No significant association was found between occupation and knowledge levels (p = 0.343). The proportions of good and poor knowledge among unemployed, students, and self-employed individuals demonstrated comparable patterns. While not statistically significant, there was a notable trend in the association between the gender of the household head and knowledge levels (p = 0.107). Households with female heads exhibited a higher proportion of good knowledge (42.8%) compared to those with male heads (57.2%). A statistically significant association was observed between the relationship with the household head and knowledge levels

(p = 0.028). Respondents who identified their relationship as husbands demonstrated a higher proportion of good knowledge (85.2%) compared to other relationships.

No significant association was found between religion and knowledge levels (p = 0.154). However, there were variations in knowledge levels across different religious affiliations, with Protestants exhibiting the highest proportion of good knowledge (56.8%). A highly significant association was identified between residence and knowledge levels (p < 0.001). Urban residents showed a substantially higher proportion of good knowledge (96.6%) compared to rural residents (3.4%). This stark contrast emphasizes the potential influence of residence on the knowledge levels of HIV patients, with urban dwellers exhibiting a significantly higher awareness of HIV-based services.

No significant association was found between marital status and knowledge levels (p = 0.582). The proportions of good and poor knowledge were comparable across different marital statuses, indicating that marital status may not be a determining factor influencing the knowledge levels of HIV patients towards HIV-based services at Kibagabaga District Hospital. The possession of health insurance did not show a significant association with knowledge levels (p = 1.000). Both individuals with health insurance (89.4%) and those without (10.6%) demonstrated similar proportions of good and poor knowledge. Regarding the duration of engagement with HIV-based services, a highly significant association was identified (p < 0.001). Notably, individuals with less than 6 months of engagement demonstrated a higher proportion of poor knowledge (15.8%), whereas those with more than 10 years of engagement exhibited a higher proportion of good knowledge (43.6%). The distance from home to the health facility did not show a significant association with knowledge levels (p = 1.000).

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| Characteristics                         | Knowledge towards HIV-based services |                         |                         |            |         |  |
|---|--------------------------------------|-------------------------|-------------------------|------------|---------|--|
|   | Total<br>(N=274)                     | Good Knowledge<br>N (%) | Poor Knowledge<br>N (%) | Chi-square | P-Value |  |
| Age (Years)                             |                                      |                         |                         | 42.8       | <0.001  |  |
| Less than 30                            | 32 (11.7)                            | 18 (7.6)                | 14 (36.8)               |            |         |  |
| 30-39                                   | 41 (15)                              | 29 (12.3)               | 12 (31.6)               |            |         |  |
| 40-49                                   | 94 (34.3)                            | 7 (18.4)                | 7 (18.4)                |            |         |  |
| 50 and above                            | 107 (39.1)                           | 102 (43.2)              | 5 (13.2)                |            |         |  |
| Gender                                  |                                      |                         |                         | 0.001      | 1.00    |  |
| Male                                    | 116 (42.3)                           | 100 (42.4)              | 16 (42.1)               |            |         |  |
| Female                                  | 158 (57.7)                           | 136 (57.6)              | 22 (57.9)               |            |         |  |
| Education level                         | 0 (0.0)                              |                         |                         | 3.778      | 0.151   |  |
| No Education                            | 178 (65)                             | 156 (66.1)              | 22 (57.9)               |            |         |  |
| Primary                                 | 79 (28.8)                            | 68 (28.8)               | 11 (28.9)               |            |         |  |
| Secondary                               | 17 (6.2)                             | 12 (5.1)                | 5 (13.2)                |            |         |  |
| UBUDEHE Category                        |                                      |                         |                         | 4.87       | 0.182   |  |
| Category 1                              | 36 (13.1)                            | 34 (14.4)               | 2 (5.3)                 |            |         |  |
| Category 2                              | 138 (50.4)                           | 121 (51.3)              | 17 (44.7)               |            |         |  |
| Category 3                              | 100 (36.5)                           | 80 (34.3)               | 19 (50)                 |            |         |  |
| Occupation                              |                                      |                         |                         | 3.164      | 0.367   |  |
| Unemployed                              | 122 (44.5)                           | 106 (44.9)              | 16 (42.1)               |            |         |  |
| Student                                 | 18 (6.6)                             | 13 (5.5)                | 5 (13.2)                |            |         |  |
| Self-employed                           | 120 (43.8)                           | 105 (44.5)              | 15 (39.5)               |            |         |  |
| Servant                                 | 14 (5 1)                             | 12 (5 1)                | 2 (5 3)                 |            |         |  |
| Gender of Household Head                |                                      | 12 (0.1)                |                         | 2 598      | 0.074   |  |
| Male                                    | 162 (59 1)                           | 135 (57 2)              | 27 (71 1)               | 1.0 7 0    |         |  |
| Female                                  | 112 (40.9)                           | 101 (42.8)              | 11 (28.9)               |            |         |  |
| Relationship with Household head        |                                      |                         |                         | 5 368      | 0.068   |  |
| Spouse                                  | 230 (83 9)                           | 201 (85 2)              | 29 (76 3)               | 0.000      | 0.000   |  |
| Brother/Sister                          | 19 (6 9)                             | 13 (5 5)                | 6 (15.8)                |            |         |  |
| Grand-parent&cousing                    | 25 (9.1)                             | 22 (9.3)                | 3 (7 9)                 |            |         |  |
| Poligion                                | 23 (9.1)                             | 22 (9.3)                | 3 (7.9)                 | 4.068      | 0.254   |  |
| Ne religion                             | 2 (1 1)                              | 2 (0, 9)                | 1 (2.6)                 | 4.000      | 0.2.34  |  |
| Drotostant (ADEDD EMI D EAD EDD atc)    | 151 (55 1)                           | 124 (56.9)              | 1(2.0)                  |            |         |  |
| Catholia                                | 111 (41.6)                           | 154 (50.8)              | 17 (44.7)               |            |         |  |
| Muslim                                  | 114 (41.0)                           | 96 (40.7)               | 2 (5 2)                 |            |         |  |
| Musiiiii<br>Desidenee                   | 0 (2.2)                              | 4(1.7)                  | 2 (5.5)                 | 42.02      | -0.001  |  |
| Residence                               | 21 (7 7)                             | 0(24)                   | 12 (24 2)               | 43.93      | <0.001  |  |
| Kurai                                   | 21 (7.7)                             | 8 (3.4)                 | 13 (34.2)               | 43.93      | <0.001  |  |
| Urban                                   | 253 (92.3)                           | 228 (96.6)              | 25 (65.8)               | 2.042      | 0.22    |  |
| Marital Status                          | 0((21.4)                             | 70 (20 7)               | 1((12.1)                | 2.942      | 0.23    |  |
| Never in onion                          | 86 (31.4)                            | 70 (29.7)               | 16 (42.1)               |            |         |  |
| Married                                 | 131 (47.8)                           | 105 (44.5)              | 16 (42.1)               |            |         |  |
| Ever married                            | 57 (20.8)                            | 52 (22.03)              | 5 (13.2)                |            | ļ       |  |
| Have health insurance                   |                                      |                         |                         |            |         |  |
| Yes                                     | 245 (89.4)                           | 211 (89.4)              | 34 (89.5)               | 1.036      | 1.00    |  |
| No                                      | 29 (10.6)                            | 25 (10.6)               | 4 (10.5)                |            |         |  |
| Duration on HIV-based services (months) |                                      |                         |                         | 42.92      | <0.001  |  |
| less than 1 year                        | 21 (7.6)                             | 9 (3.8)                 | 12 (31.6)               |            |         |  |

Citation: Karamage, P.A., Nsanzabera, C., Andegiorgis, K., Kubahoniyes, T. (2025). Factors Associated with Knowledge and Attitudes of HIV Patients Page 1 of 10 towards Hiv-Based Services at Kibagabaga District Hospital. J Epidemiol Public Health, 3(2), 1-10.

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| 1 year - 3 years                      | 44 (16.1)  | 35 (14.8)  | 9 (23.7)  |       |       |
|---------------------------------------|------------|------------|-----------|-------|-------|
| 3years - 5 years                      | 36 (13.1)  | 30 (12.7)  | 6 (15.8)  |       |       |
| More than 5 years                     | 173 (63.1) | 162 (68.6) | 11 (28.9) |       |       |
| Distance from Home to Health facility |            |            |           | 0.048 | 0.999 |
| 0-1 Kilometers                        | 76 (27.7)  | 66 (28)    | 10 (26.3) |       |       |
| 2-3 Kilometers                        | 105 (38.3) | 90 (38.1)  | 15 (39.5) |       |       |
| 4km and more                          | 93 (34.0)  | 80 (33.9)  | 13 (34.3) |       |       |

# Table 4: Bivariate Analysis of Factors Associated with Knowledge Level of HIV Patients Towards HIV Based Services

The logistic regression analysis revealed significant associations between certain demographic factors and the odds of having good knowledge levels among HIV patients towards HIV-based services. Individuals aged 40-50 demonstrated a substantial increase in the odds of possessing good knowledge compared to those below 30 (AOR:11.59, 95% CI: 1.560- 86.063, p = 0.017). Similarly, individuals above 50 exhibited an even higher odds ratio (AOR: 16.44, 95% CI: 2.150- 125.653, p = 0.007), signifying a significant increase in the odds of having good knowledge. In terms of residence, urban residents displayed a notable increase in the odds of possessing good knowledge compared to their

rural counterparts, with an odds ratio of (AOR: 7.05, 95% CI: 1.999-24.88, p = 0.002). This association was statistically significant, indicating that the urban environment is a significant predictor of increased knowledge levels among HIV patients.

Moreover, the duration of engagement with HIV-based services emerged as a significant factor influencing knowledge levels. Individuals engaged for more than 5 years exhibited a significant increase in the odds of having good knowledge, with an odds ratio of (AOR:13.29, 95% CI: 1.694, 104.182, p = 0.014).

| Characteristics                                     | cteristics AOR 95% CI (AOR) |       |         | P-Value |  |  |
|---|-----------------------------|-------|---------|---------|--|--|
|   |                             | Lower | Upper   |         |  |  |
| Age (Years)   |                             |       |         |         |  |  |
| Less than 30  | 1*                          |       |         |         |  |  |
| 30-40   | 7.66                        | 0.912 | 64.407  | 0.061   |  |  |
| 40-50   | 11.59                       | 1.560 | 86.063  | 0.017   |  |  |
| Above 50  | 16.44                       | 2.150 | 125.653 | 0.007   |  |  |
| Relationship with Househ                            | old head                    |       |         |         |  |  |
| Husband   | 1*                          |       |         |         |  |  |
| Brother/Sister                                      | 4.17                        | 0.260 | 66.924  | 0.313   |  |  |
| Grand-parent&cousin                                 | 1.09                        | 0.029 | 41.564  | 0.963   |  |  |
| Residence   |                             |       |         |         |  |  |
| Rural   | 1*                          |       |         | 0.963   |  |  |
| Urban   | 7.05                        | 1.999 | 41.564  |         |  |  |
| Duration on HIV-based ser                           | vices (months)              |       |         |         |  |  |
| less than 1 year                                    | 1*                          |       |         |         |  |  |
| 1 year - 3 years                                    | 5.60                        | 0.984 | 51.075  | 0.052   |  |  |
| 3years - 5 years                                    | 5.60                        | 0.761 | 41.145  | 0.091   |  |  |
| More than 5 years                                   | 13.29                       | 1.694 | 104.182 | 0.014   |  |  |
| 1* Reference category<br>Source: Primary data, 2023 |                             |       |         |         |  |  |

# Table 5: Multivariable Analysis of Factors Associated with Knowledge Level Towards HIV Based Services

# 4. Discussion

This study sought to assess the knowledge attitudes of 274 HIV patients as well as the associated factors towards HIV-based services. In this study, a substantial 86.1% of participants displayed good knowledge regarding HIV-based services, signifying a higher level of awareness in this specific domain. In contrast, reported that 61.6% of their participants had good knowledge about HIV/AIDS. This

discrepancy may be attributed to the different focus areas of the two studies, with our research specifically targeting knowledge related to HIV-based services.

Our study found that 86.1% of HIV patients exhibited good knowledge, whileidentified deficits in understanding specific aspects of HIV transmission and prevention among medical students. Despite these knowledge gaps, both studies Volume - 3 Issue - 2

indicate a predominantly positive attitude towards HIV/ AIDS. In our study, 81% of HIV patients displayed a positive attitude, while above paper reported that approximately two-thirds of medical students exhibited a positive attitude towards people living with HIV/AIDS (PLWHA) [11,12].

In comparison with the study conducted in an emergency department in South Africa, our research andshare a common focus on the impact of attitudes and knowledge on healthcare-related decisions, specifically HIV testing acceptance. While our study concentrates on HIV patients' knowledge and attitudes towards HIV-based services, the other one investigates the influence of attitudes, stigma, and confidentiality beliefs on HIV testing acceptance among emergency department patients. Notably, both studies highlight the significance of attitudes in shaping healthcarerelated behavior. In our research, 86.1% of participants displayed good knowledge about HIV-based services [13].

Additionally, residence location is another factor consistently associated with knowledge. Urban residents in our study exhibited significantly higher odds of having good knowledge (AOR: 7.052, 95% CI: 1.999 – 24.88, p < 0.001), which is in line with research in Jordan where medical students from established urban medical schools demonstrated better knowledge and attitudes toward HIV/AIDS. This suggests that urban areas tend to have better access to information and resources related to HIV care[12].

Age also emerges as an influential factor. In our study, individuals aged 40-50 years had significantly higher odds of having good knowledge (AOR: 11.59, 95% CI: 1.560 -86.063, p = 0.017), and those aged above 50 years showed a trend toward better knowledge (AOR: 16.44, 95% CI: 2.150 - 125.65, p = 0.007). This is consistent with research in South Africa [13], which found that older individuals were more likely to accept HIV testing, possibly indicating greater knowledge and awareness among older populations. The results indicated significant implications for the population living with HIV. A notable aging trend was observed, with 38% of respondents aged 40-50 and 33.6% above 50, suggesting a growing elderly HIV population. The study shows a slight female majority (57.7%) and a significant educational gap, with 62.8% having no formal education. These findings underscore the need for tailored healthcare approaches to address the diverse demographics and circumstances of the HIV-positive population, particularly focusing on elderly care, gender-specific needs, service utilization duration, economic support, and geographic disparities in healthcare access.

# 4.1 Study Limitation

The study had certain limitations, primarily due to the fact that the sample in the research was chosen from just one district and in Kibagabaga district hospital, which makes it difficult to generalize the findings to all HIV positive people receiving HIV-based services in different district health centers in Rwanda. The wider the confidence intervals in the findings indicate that the sample size was slightly small for the study.

### **5.** Conclusion

In conclusion, this study underscores the persistent global challenge of HIV, with 79.3 million infections and 36.3 million deaths. Encouragingly, among 274 HIV patients at Kibagabaga hospital, 86.1% demonstrated good knowledge and 81% exhibited positive attitudes towards HIV-based services. Age, urban residence, and duration of engagement were significant predictors of knowledge levels. While the findings are promising, targeted awareness campaigns, especially in rural areas and among younger populations, are essential. The study emphasizes the need for sustained efforts to enhance awareness, service uptake, and early initiation of HIV-based services to mitigate the ongoing impact of the virus.

## **Conflict. Of. Interest Declaration**

The study's authors state that they had no relationships or affiliations that would have created a conflict of interest. They came to an agreement to submit the study to the current journal, accepting full accountability for all elements of the work, and giving their final go-ahead for the report to be published.

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