# Knowledge and Attitude of Nursing Collage Students/ Baghdad University toward HIV/AIDS Patients/2024

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**Abstract**

**Background:** Human Immunodeficiency Virus remains a significant global health challenge, particularly affecting vulnerable populations. Nursing students play a crucial role in Human Immunodeficiency Virus prevention and care, making it essential to assess their knowledge and attitudes towards Human Immunodeficiency Virus / Acquired Immunodeficiency Syndrome.

**Patients and methods:** A cross-sectional study was conducted at Baghdad University, College of Nursing, from the 1st of March 2024 to the 31st of May 2024, involving 444 undergraduate nursing students. Data were collected using a structured questionnaire addressing sociodemographic characteristics, knowledge, and attitudes towards people living with Human Immunodeficiency Virus/ Acquired Immunodeficiency Syndrome. Analysis was used to determine the association between knowledge, attitudes levels and sociodemographic variables.

**Results:** Participants' ages ranged from 18 to 22years, with a predominance of females (73.9%). Knowledge levels were categorized as good (48.4%), fair (30%), and poor (21.6%). Significant associations were found between knowledge and academic grade. Attitudes were classified as positive (50.9%) and fair (49.1%), with Significant associations were found between attitudes levels and academic grade and age.

**Conclusion:** The gap in knowledge and attitudes levels highlights a need for enhanced educational programs targeting Human Immunodeficiency Virus/ Acquired Immunodeficiency Syndrome among nursing students. Addressing misconceptions and stigma within nursing curricula is vital to improve care for people living with Human Immunodeficiency Virus/ Acquired Immunodeficiency Syndrome and contribute to broader public health efforts against HIV/ AIDS.

Key words; HIV/ AIDS, knowledge and attitudes, Nursing students.

## INTRODUCTION

Human Immunodeficiency Virus (HIV) is a virus that attacks the immune system, specifically targeting cluster of differentiation 4 (CD4+) T cells, leading to progressive immune deterioration. Without treatment, it can progress to Acquired Immunodeficiency Syndrome (AIDS). [1] There are two main types of HIV: HIV-1, which is more prevalent globally, and HIV-2, which is less common and mainly found in West Africa. [2]

HIV/AIDS came to international attention in the 1980s when clusters of rare diseases, such as Kaposi's sarcoma and Pneumocystis pneumonia, were observed in young gay men in the United States. [3] HIV remains one of the most pressing global health challenges, affecting millions of individuals worldwide. Since the first reports of AIDS cases in the United States in 1981, 88 million people have become infected with HIV, and more than 42 million people have died of AIDS or related illnesses. By 2023, an estimated 39 million people globally were living with HIV. [4] The total estimated number of people living with HIV in Iraq in 2023 is 3,400, but there has been a steady rise in new HIV cases over the past decade. [5] Between 2010 and 2019, 539 new cases were reported, with 486 individuals still alive and the remainder deceased. [6] Despite being classified as a country with a low HIV/AIDS epidemic, the increasing number of cases highlights a concerning trend that calls for enhanced prevention and awareness efforts. [7]

**Modes of transmission of HIV**

1. Sexual Contact: Unprotected Sexual Intercourse, the most common mode of HIV transmission globally.
2. Injecting Drug Use: Sharing needles, syringes, or other injecting equipment with someone who is HIV-positive is a highly efficient way of transmitting the virus. [8]
3. Blood Transfusions: Receiving blood transfusions, blood products, or organ transplants from an HIV-positive donor can transmit the virus. [9]
4. Mother-to-Child Transmission (MTCT): An HIV-positive mother can transmit the virus to her baby during pregnancy, childbirth, or through breastfeeding. [10]
5. Occupational exposure: An occupational exposure that may place healthcare workers at risk of HIV infection is defined as a percutaneous injury (e.g. a needle stick or cut with a sharp object), contact of mucous membrane or contact of skin with blood, tissues or other potentially infectious body fluids. [11]
6. Other Modes:

-Medical Iatrogenic transmission: Surgery, hemodialysis, dental work, colonoscopy, and so on.

-Non-medical mode: Tattoos, body piercing, scarifications, genital mutilation, and so on. [12]

**Prevention of HIV/AIDS**

Preventing the spread of HIV involves multiple strategies:

1. Education and Awareness: Informing the public about HIV transmission and prevention. [13]
2. Safe Practices: Encouraging safe sex practices, including the use of condoms, and reducing needle sharing among drug users. [14]

3.Routine screening for HIV infection for everyone aged 15 to 65 years, and younger than age 15 and older than 65 also should be screened if they are at increased risk for HIV infection and All pregnant women should be screened for HIV infection. [15]

4.Pre exposure prophylaxes (PrEP) is a daily ART preventive medication for high-risk

individuals, while post exposure prophylaxes (PEP) is an emergency treatment taken immediately—ideally within 2 hours and no later than 72 hours post-exposure. [16, 17]

5. Currently, there is no approved HIV vaccine. Despite extensive research and promising trials, developing a vaccine remains challenging. [18]

**The role of nursing professionals in caring for HIV patients**

The evolution of HIV infection into a chronic disease implicates that people with the condition will require ongoing medical attention, so, nurses become play a vital roles in curing of HIV/AIDS patients including; HIV counseling and testing, clinical assessment, initiation and monitoring of antiretroviral therapy in addition to adherence and psychosocial assessment and support along the continuum of care, Nurses are also involved in primary data collection, record keeping and reporting which makes monitoring and evaluation of services feasible, guide decision making and ensure the provision of quality services. [19, 20]

However, inadequate knowledge about the HIV infection epidemiology among nurses gives rise to fear and misconceptions about transmission, nature, prevention of the infection, these Fear and misconceptions alter attitudes and enhance the development of stigma and discrimination towards PLWHA. Some of the major consequences of this are delays in seeking healthcare, less timely diagnosis, an unwillingness to disclose the HIV status in the community and a delay in or non- compliance to the ART. Not disclosing an HIV status puts society at higher risk of infection trans-mission, contributes to increased morbidity and mortality of PLWHA, increases healthcare costs and places a burden on the healthcare sector overall. Therefore, in addition to the diagnosis and treatment, provision of discrimination- free and stigma-free healthcare is a prerequisite for achieving the sustainable development target designed to end the epidemic. [21]

To improve patient outcomes and raise the standard of nursing care, it is essential to assess and enhance the knowledge and attitudes of nursing students when caring for HIV patients. [22]

So, the current study aimed at assessing the knowledge and attitude regarding HIV/AIDS among nursing students.

**Objectives of the study**

1. To assess the knowledge level of nursing students towards HIV patients.
2. To assess the attitudes of nursing students towards HIV patients.
3. To find the association between knowledge and attitudes of nursing students towards HIV patients and a sociodemographic factor.

## SUBJECTS AND METHODS

A cross-sectional study was conducted. This study was carried out at Baghdad University, College of Nursing, from the 1st of March 2024 to the 31st of May 2024. The target population consisted of students from the College of Nursing, Baghdad University. Students from all grades (first, second, third, and fourth) were eligible to participate in the study.

A convenient sampling method was employed.The sample size of this study was 75% of the total students. The total number of students was 592, so 75% of the total number was equal to:

0.75*5920 = 444 so the total sample size was 444.

**Inclusion criteria:** Undergraduate students from Baghdad University, College of

Nursing, who consented to participate in the study.

**Exclusion criteria:** Students who declined to participate in the study.

Data collection was conducted through direct interviews by the researcher using a comprehensive structured questionnaire. The questionnaire was developed based on previously validated instruments [23]. Data were collected over three consecutive months, two days per week, and for five hours per day.

The questionnaire consisted of the following sections:

1. **Students' personal data:** Includes sex, age, grade level, marital status, and source of information on AIDS.
2. **AIDS-related knowledge:** This section comprised 47 close-ended questions (Yes, No, I don't know) addressing five categories:

-Cause of AIDS (4 statements)
-Nature (10 statements)
-Source of Infection (6 statements)
-Mode of Transmission (15 statements)
-Treatment/Control (4 statements)
-Groups at High Risk (8 statements)

3. **Attitudes of Nursing Students Toward AIDS:** This section included 16 statements on a

3-point Likert-type scale (Agree, Neutral, Disagree), addressing three categories:

-Attitudes toward People Living with AIDS (PLWA) (7 statements)
-Attitudes toward Care (4 statements)
-Attitudes toward Precautionary Measures (5 statements)

**Scoring**

- **Knowledge:**

-Correct answer: 1 point
-Incorrect/don't know: 0 points
-Maximum possible score: 47 points

Knowledge levels were categorized as:

- Poor Knowledge: <50%
- Fair Knowledge: 50%-75%
- Good Knowledge: >75%

- **Attitudes:**
  - Positive Attitude:
    - Agree: 3 points
    - Neutral: 2 points
    - Disagree: 1 point
  - Negative Attitude:
    - Disagree: 3 points
    - Neutral: 2 points
    - Agree: 1 point

Attitude scores ranged from 16 to 48 and were categorized as:

- Negative Attitude: <50%
- Fair Attitude: 50%-75%
- Positive Attitude: >75%

**Data Analysis**; Microsoft Excel 2016 and Statistical Package for the Social Sciences SPSS (version 26) were utilized for data entry, management, and analysis. Descriptive statistics, including frequencies and percentages, were used for categorical data. The chi-square test was applied to assess the significance of associations in qualitative data. A p-value ≤0.05 was considered statistically significant.

**Ethical Considerations**

- Approval was obtained from the Scientific Committee of the Iraqi Board for Medical Specializations.
- Approval was granted by the Scientific Committee at Al-Nahrain College of Medicine.
- Approval was also secured from Baghdad University.
- Verbal consent was obtained from participants after explaining the study objectives and ensuring confidentiality.

## RESULTS

A total of 444 participants were included in the study, with age groups 18-21 years 242 (54.5%) and ≥22 years 202 (45.5%). Males were 116 (26.1%) of the total participants while females were 328 (73.9%). Grades of participants were first 126 (28.4%), second 89 (20.0%), third 109 (24.5%), and fourth 120 (27.0%). Most common marital status among participants was single 390 (87.8%), as shown in (**Table 1**).

The most common source of information among participants was doctors and nurses 191 (43.02%), then school and university 170 (38.29%), as shown in **Figure 1.**

**Table (1): Sociodemographic data of participants**

| Sociodemographic data | | No. | % | Total |
|---|---|---|---|---|
| **Age/ years** | 18-21 | 242 | 54.5% | 444 (100%) |
| | ≥22 | 202 | 45.5% | |
| **Sex** | Male | 116 | 26.1% | 444 (100%) |
| | Female | 328 | 73.9% | |
| **Grade** | First | 126 | 28.4% | 444 (100%) |
| | Second | 89 | 20.0% | |
| | Third | 109 | 24.5% | |
| | Fourth | 120 | 27.0% | |
| **Marital Status** | Single | 390 | 87.8% | 444 (100%) |
| | Married | 54 | 12.2% | |

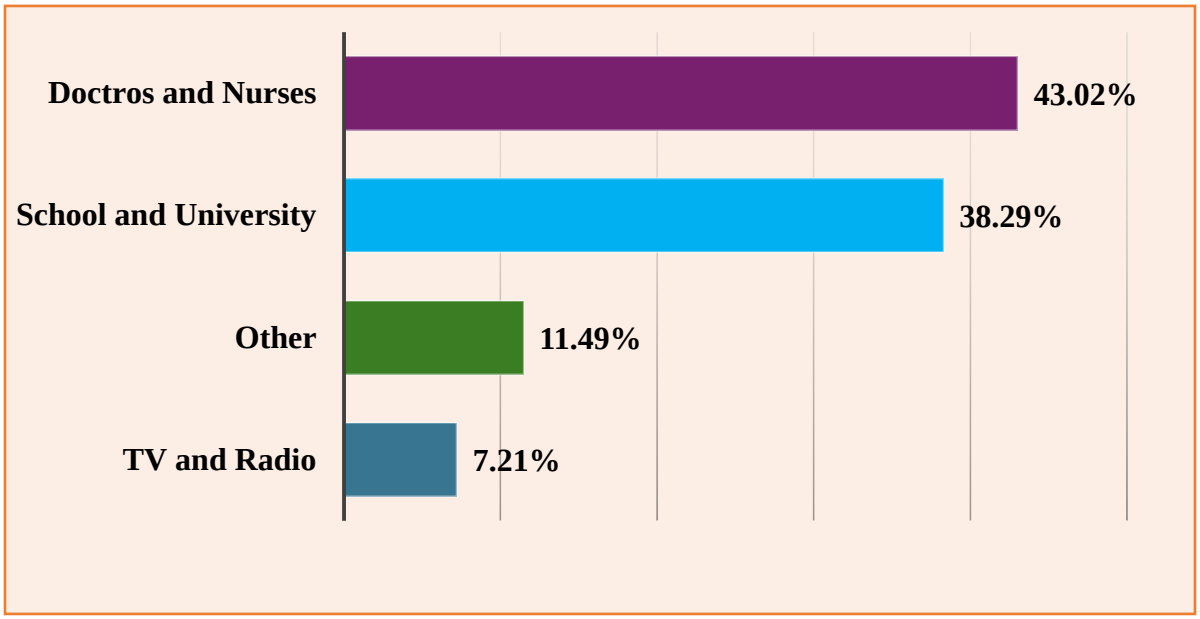


**Figure (1): Source of information among participants.**

Correct answers of participants regarding causes of AIDS are shown in Table 2. The most common correct answer was for question (stress causes AIDS 422 [95.0%], AIDS is a condition you are born with 419 [94.4%], and AIDS is caused by a virus, 413 [93.0%]).

**Table (2): Responses of participants regarding their knowledge about causes of AIDS**

| Causes of AIDS: about question | Wrong answer | | Correct answer | |
|---|---|---|---|---|
| | No. | % | No. | % |
| **AIDS is caused by a virus** | 31 | 7.0% | 413 | 93.0% |
| **AIDS is a condition you are born with.*** | 25 | 5.6 | 419 | 94.4 |
| **Stress causes AIDS.*** | 22 | 5.0% | 422 | 95.0% |
| **AIDS is caused by the same virus that causes (VD) / (STD).*** | 244 | 55.0% | 200 | 45.0% |

***Reversed question (correct answer is NO)***

The correct answers of participants regarding the nature of AIDS are shown in Table 3. The most common correct answers were for questions: AIDS is not serious; it is like having a cold 415 (93.5%), married people do not get infected with the AIDS virus 402 (90.7%).

Correct answers of participants regarding the mode of transmission of AIDS are shown in Table 4. . The most common correct answers were for questions: If you touch someone with AIDS, you will get the disease 405 (91.3%), what you eat can give you AIDS 404 (90.9%), receiving a blood transfusion with infected blood can give a person AIDS 362 (81.5%), having sex with someone who has AIDS is a way of getting it 348 (78.4%), you can get AIDS by sharing a needle with a drug user who has a disease 345 (77.7%), and if a pregnant woman has AIDS, there is a chance it may harm her unborn baby 331 (74.5%).

**Table (3): Responses of participants regarding their knowledge about nature of AIDS**

| Nature of AIDS: | Wrong answer | | Correct answer | |
|---|---|---|---|---|
| | No. | % | No. | % |
| AIDS is a medical condition in which your body cannot fight off disease. | 138 | 31.1% | 306 | 68.9% |
| Homosexul men are more likely to have AIDS. | 103 | 23.2% | 341 | 76.8% |
| Some persons are immune to AIDS.* | 293 | 66.0% | 151 | 34.0% |
| Women are more likely to have HIV during their period.* | 57 | 12.7% | 387 | 87.3% |
| AIDS is not serious; it is like having a cold.* | 29 | 6.5% | 415 | 93.5% |
| Most people who get AIDS usually die from the disease. | 126 | 28.4% | 318 | 71.6% |
| AIDS is a life-threatening disease. | 65 | 14.6% | 379 | 85.4% |
| People with AIDS usually have a lot of other diseases as a result of AIDS. | 103 | 23.2% | 341 | 76.8% |
| People with AIDS dose not usually show any symptoms of the disease. * | 197 | 44.4% | 247 | 55.6% |
| Married people do not get infected with the HIVvirus.* | 42 | 9.3% | 402 | 90.7% |

***Reversed question (correct answer is NO)***

**Table (4): Responses of participants regarding their knowledge about mode of transmission of AIDS**

| Mode of Transmission of AIDS: | Wrong answer | | Correct answer | |
|---|---|---|---|---|
| | No. | % | No. | % |
| If you kiss someone with AIDS, you will get the disease.* | 259 | 58.3% | 185 | 41.7% |
| If you touch someone with AIDS you will get the disease.* | 39 | 8.7% | 405 | 91.3% |
| What you eat can give you AIDS.* | 40 | 9.1% | 404 | 90.9% |
| AIDS can be spread by using someone's personal belongings like a comb or hair brush, clothes, plates, and cups.* | 268 | 60.4% | 176 | 39.6% |
| Just being around someone with AIDS can give you the disease.* | 286 | 64.4% | 158 | 35.6% |
| Having sex with someone who has AIDS is a way of getting it. | 96 | 21.6% | 348 | 78.4% |
| If a pregnant woman has AIDS, there is a chance it may harm her unborn baby. | 113 | 25.5% | 331 | 74.5% |
| You can get AIDS by shaking hands with someone who has it.* | 253 | 57.0% | 191 | 43.0% |
| Receiving a blood transfusion with infected blood can give a person AIDS. | 82 | 18.5% | 362 | 81.5% |
| You can get AIDS by sharing a needle with a drug user who has a disease. | 99 | 22.3% | 345 | 77.7% |
| If you donated blood, you can get AIDS.* | 261 | 58.8% | 183 | 41.2% |
| If you swim in the same place where an infected person swims you can get AIDS.* | 254 | 57.2% | 190 | 42.8% |
| Being exposed to an infected person who coughs or spits can give you the disease.* | 222 | 50.0% | 222 | 50.0% |
| The bite of a mosquito can cause AIDS.* | 288 | 64.9% | 156 | 35.1% |
| If you work with an infected person with AIDS, you can get the disease.* | 293 | 66.0% | 151 | 34.0% |

***Reversed question (correct answer is NO)***

Correct answers of participants regarding the treatment/control of AIDS are shown in Table 5. The most common correct answers were for questions: You can avoid getting AIDS by following universal precautions 372 (83.8%), there is no cure for AIDS 209 (47.1%), and you can avoid getting AIDS by exercising regularly 206 (46.4%).

**Table (5): Responses of participants regarding their knowledge about Treatment/Control of AIDS**

| Treatment/Control of AIDS: | Wrong answer | | Correct answer | |
|---|---|---|---|---|
| | No. | % | No. | % |
| **There is no cure for AIDS.** | 235 | 52.9% | 209 | 47.1% |
| **You can avoid getting AIDS by exercising regularly.*** | 238 | 53.6% | 206 | 46.4% |
| **A new vaccine has recently been developed for the treatment of AIDS.*** | 140 | 31.5% | 304 | 68.5% |
| **You can avoid getting AIDS by following universal precautions.** | 72 | 16.2% | 372 | 83.8% |

***Reversed question (correct answer is NO)***

Participants' knowledge about patients with AIDS was poor among 96 (21.6%) participants, fair among 133 (30%), and good among 215 (48.4%) participants [Figure 2].

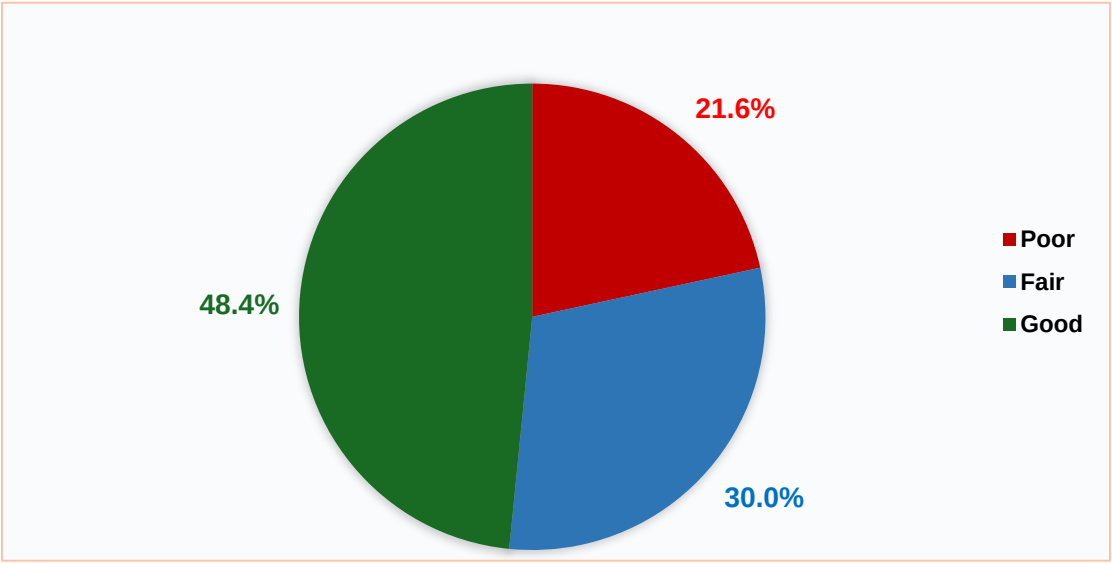


**Figure (2): Participants' knowledge about patients with AIDS.**

Responses of participants regarding their attitude toward patients with HIV are shown in Table 6. The most common correct answers were for questions: we should wear gloves when touching a patient with HIV 323 (72.7%); as a safety measure, we should avoid contact with HIV sufferers and carriers 315 (70.9%), fetuses infected with the HIV virus should be aborted 236 (53.2%), and PLWAs are responsible for their illness 229 (51.6%).

Participants' attitudes toward patients with AIDS were fair among 218 (49.1%) and positive among 226 (50.9%) participants, as shown in Figure 3.

The distribution of sociodemographic data regarding participants' knowledge about patients with AIDS is shown in Table 7. Good knowledge was significantly observed among participants in the fourth grade, $P = 0.008$.

The distribution of sociodemographic data regarding participants' attitudes toward patients with AIDS is shown in Table 8. Positive attitude was significantly observed among participants aged 22 years or more ($P = 0.036$) and among participants in fourth grade ($P = 0.033$).

**Table (6): Responses of participants regarding their attitude towards patients with HIV**

| Attitudes | Disagree | | Neutral | | Agree | |
|---|---|---|---|---|---|---|
| | No. | % | No. | % | No. | % |
| ***Attitudes Towards Patients with HIV:*** | | | | | | |
| **HIV is a threat to health workers.** | 38 | 8.6% | 45 | 10.1% | 361 | 81.3% |
| **PLWAs are responsible for their illness.*** | 229 | 51.6% | 94 | 21.2% | 121 | 27.3% |
| **PLWAs deserve what has happened to them.*** | 161 | 36.3% | 118 | 26.6% | 165 | 37.2% |
| **Fetuses infected with the HIV virus should be aborted.*** | 236 | 53.2% | 110 | 24.8% | 98 | 22.1% |
| **HIV virus carriers have the right for their diagnosis to be kept as medical secret.** | 233 | 52.5% | 55 | 12.4% | 156 | 35.1% |
| **Being a carrier of the HIV virus should not be an obstacle to receiving education and employment** | 271 | 61.0% | 76 | 17.1% | 97 | 21.8% |
| **Being an HIV virus carrier should not get in the way of being able to rear children.** | 270 | 60.8% | 69 | 15.5% | 105 | 23.6% |
| ***Attitudes of Respondents towards Care of PLWAs:*** | | | | | | |
| **Health workers are duty-bound to treat all patients irrespective of their HIV status.** | 335 | 75.5% | 44 | 9.9% | 65 | 14.6% |
| **I would not be happy to work with a colleague who was a carrier of the HIV virus.*** | 170 | 38.3% | 100 | 22.5% | 174 | 39.2% |
| **Patients with HIV don't have the same right to receive care as other diseases.*** | 71 | 16.0% | 46 | 10.4% | 327 | 73.6% |
| **Treating PLWAs puts health workers at high risk.** | 90 | 20.3% | 68 | 15.3% | 286 | 64.4% |
| ***Attitudes towards Precautionary Measures toward PLWAs:*** | | | | | | |
| **HIV patients should be isolated from other patients.** | 341 | 76.8% | 38 | 8.6% | 65 | 14.6% |
| **Special hospitals should be created for HIV carriers and infected.** | 43 | 9.7% | 39 | 8.8% | 362 | 81.5% |
| **In a hospital, HIV virus carriers should not share a room with non-infected patients.** | 65 | 14.6% | 46 | 10.4% | 333 | 75.0% |
| **As a safety measure, we should avoid contact with HIV sufferers and carriers.*** | 315 | 70.9% | 62 | 14.0% | 67 | 15.1% |
| **We should wear gloves when touching a patient with HIV.*** | 323 | 72.7% | 47 | 10.6% | 74 | 16.7% |

***Reversed question (correct answer is disagree)***

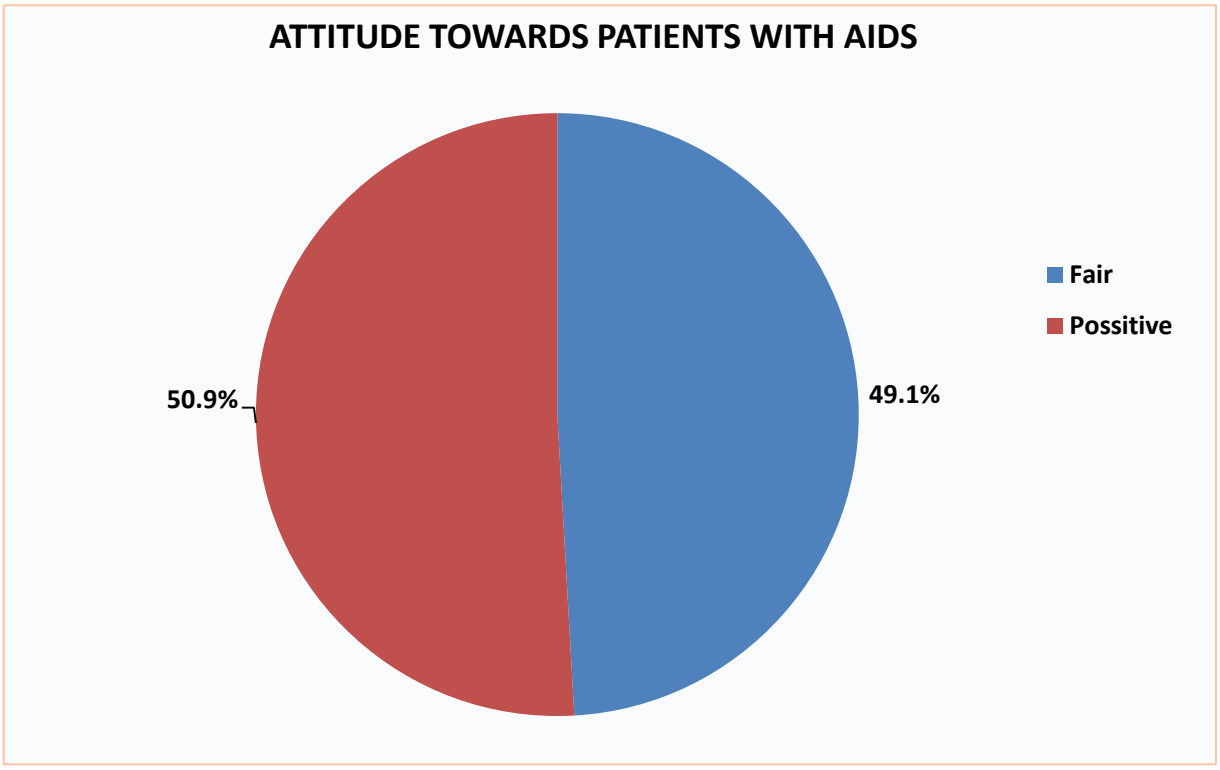


**Figure (3): Participants' attitude towards patients with AIDS.**

**Table (7): Distribution of sociodemographic data regarding participants' knowledge about patients with AIDS**

| Sociodemographic data | | Knowledge | | | | | | P* value |
|---|---|---|---|---|---|---|---|---|
| | | Poor | | Fair | | Good | | |
| | | No. | % | No. | % | No. | % | |
| **Age/ years** | 18-21 | 51 | 21.1% | 79 | 32.6% | 112 | 46.3% | 0.39 |
| | ≥22 | 45 | 22.3% | 54 | 26.7% | 103 | 51.0% | |
| **Sex** | Male | 24 | 20.7% | 37 | 31.9% | 55 | 47.4% | 0.87 |
| | Female | 72 | 22.0% | 96 | 29.3% | 160 | 48.8% | |
| **Grade** | First | 22 | 17.5% | 42 | 33.3% | 62 | 49.2% | 0.008 |
| | Second | 23 | 25.8% | 34 | 38.2% | 32 | 36.0% | |
| | Third | 35 | 29.2% | 27 | 22.5% | 58 | 48.3% | |
| | Fourth | 16 | 14.7% | 30 | 27.5% | 63 | 57.8% | |
| **Marital Status** | Single | 83 | 21.3% | 119 | 30.5% | 188 | 48.2% | 0.75 |
| | Married | 13 | 24.1% | 14 | 25.9% | 27 | 50.0% | |
| **Source of Information** | TV and Radio | 9 | 28.13% | 10 | 31.25% | 13 | 40.63% | 0.49 |
| | School and University | 40 | 23.53% | 47 | 27.65% | 83 | 48.82% | |
| | Doctors and Nurses | 38 | 19.90% | 55 | 28.80% | 98 | 51.31% | |
| | Other | 9 | 17.65% | 21 | 41.18% | 21 | 41.18% | |

***Chi-Square Test.***

**Table (8): Distribution of sociodemographic data regarding participants' attitude towards patients with AIDS**

| Sociodemographic data | | Attitude | | | | P* value |
|---|---|---|---|---|---|---|
| | | Fair | | Positive | | |
| | | No. | % | No. | % | |
| **Age/ years** | 18-21 | 130 | 53.7% | 112 | 46.3% | 0.036 |
| | ≥22 | 88 | 43.6% | 114 | 56.4% | |
| **Sex** | Male | 55 | 47.4% | 61 | 52.6% | 0.74 |
| | Female | 163 | 49.7% | 165 | 50.3% | |
| **Grade** | First | 73 | 57.9% | 53 | 42.1% | 0.033 |
| | Second | 45 | 50.6% | 44 | 49.4% | |
| | Third | 53 | 48.6% | 56 | 51.4% | |
| | Fourth | 47 | 39.2% | 73 | 60.8% | |
| **Marital Status** | Single | 196 | 50.3% | 194 | 49.7% | 0.19 |
| | Married | 22 | 40.7% | 32 | 59.3% | |
| **Source of Information** | TV and Radio | 16 | 50.0% | 16 | 50.0% | 0.21 |
| | School and University | 73 | 42.9% | 97 | 57.1% | |
| | Doctors and Nurses | 103 | 53.9% | 88 | 46.1% | |
| | Other | 26 | 51.0% | 25 | 49.0% | |

***Chi-Square Test .***

## DISCUSSION

### Distribution of Participants According to Their Knowledge Level

Regarding participants' knowledge about patients with AIDS, it was noticed that less than one-half had a good level of knowledge, fair knowledge was found among less than one-third and the remaining had poor knowledge. That finding contradicted the result that was found by, Qadir Erbil 2022 [23] who demonstrated that 54.8% had a medium level of knowledge, 33.6% with low level, and 11.5% had a high level of knowledge, Ali Sohag, Egypt 2020 [24] who noted that 78.4% of the surveyed individuals had a good understanding of HIV/AIDS, Mokhtari et al., 2020 Iran [25] discovered that 25.7% of respondents had inadequate knowledge, 68.3% had intermediate knowledge, and 6% had outstanding knowledge. The variance among studies might justified by the fact that different items were used to assess the level of knowledge.

### Distribution of Participants According to Their Attitude Level

As for the participants' attitudes toward patients with AIDS, a positive attitude was noticed among more than one-half, and the rest had a fair level of attitude, while Chinnasamy and Muthukrishnan 2020 India [26] reported a 53% were with a negative attitude, 29% had a moderately positive attitude, and 18% held a positive attitude toward caring for HIV-infected persons. The dissimilarity of attitude levels among studies might be because the Iranian and Indian studies included healthcare providers in their study and not only nurses which might affect the results.

### Distribution of Sociodemographic Data Regarding Participants' Knowledge about Patients With AIDS

There was a significant relation between knowledge level and grade of students, good knowledge was dominant among participants in the fourth grade. Those results were comparable to results found in other studies, the first one was by Gulsah Kok et al., Turkey 2018 [27] where there was a significant difference in HIV/AIDS knowledge scores among first, second, third, and fourth-year students, the HIV/AIDS knowledge score grows as the school year continues.Since in this study, the main sources of knowledge were health care providers, and university so the increase in knowledge in association with higher grades would be reasonable. It was observed that age, sex, and marital status were not significantly associated with knowledge level.

### Distribution of Sociodemographic Data Regarding Participants' Attitudes towards Patients with AIDS

This study showed that being aged 22 years or more, and being in the fourth grade were significantly associated with positive attitude. This went in the same direction as Dharmalingam et al., India 2015 [28] who revealed that older participants exhibited more positive sentiments toward HIV/AIDS patients. Similarly, attitudes about patients living with HIV and AIDS differed significantly between students in their third and fourth years of nursing and those in their second year. However, those findings were dissimilar to other studies, Qadir Erbil 2022 [23] did not note a significant statistical link between participants' age groups and stages and their overall attitudes about HIV/AIDS.

**Conclusions and recommendations**

**Conclusions**

1-The finding of this study have revealed less than half of participant have good knowledge and more than half of them have good attitude level.

2-There was significant association between level of knowledge and academic grade of student.

3-There was significant association between level of attitude and age and academic grade of students.

**Recommendations**

1-Curriculum Improvement: Integrate comprehensive HIV/AIDS education into nursing programs to enhance knowledge and reduce stigma.

2-Workshops and Training: Conduct regular workshops for nursing students and healthcare professionals to address misconceptions and promote understanding.

3-Community Engagement: Encourage students to participate in outreach initiatives that raise awareness about HIV/AIDS and promote safe practices.

4-Supportive Healthcare Environment: Establish an environment that fosters open discussions about HIV/AIDS among healthcare workers to alleviate fears and misconceptions.

5-Further Research: Conduct broader studies with larger sample sizes to explore the knowledge and attitudes of healthcare workers towards HIV/AIDS, focusing on practical implications for patient care.

**REFERENCES:**

1.Obeagu EI, Scott GY, Amekpor F, Obeagu GU. Implications of CD4/CD8 ratios in Human Immunodeficiency Virus infections. Int. J. Curr. Res. Med. Sci. 2023;9(2):6-13.

2.Masenga, S.K.; Mweene, B.C.; Luwaya, E.; Muchaili, L.; Chona, M.; Kirabo, A. HIV–Host Cell Interactions. Cells 2023, 12, 1351. https://doi.org/10.3390/cells12101351.

3. Abed *Baqir K, Abdul-Rahim Y, Fathalla MM. Knowledge, Beliefs and Attitudes towards AIDS among Intermediate and Secondary School Teachers; Baghdad. Al-Kindy Col. Med. J [Internet]. 2008 Dec. 30 [cited 2025 Feb. 17];4(2):25-9.

4.Global HIV & AIDS statistics — Fact sheet 2023. ReliefWeb. Available from:https://reliefweb.int/report/world/global-hiv-aids-statistics-fact-sheet-2023?gad_source=1&gclid=Cj0KCQjwtsy1BhD7ARIsAHOi4xZs-OkAHGRcM0tF1N7TizyTy96VJBQTMHEX6_6IdMZ_ZZtB8u-lJlYaAu_KEALw_wc5

5.UNAIDS. Iraq [Internet]. Geneva: UNAIDS; [cited 2024 Sep 11]. Available from: https://www.unaids.org/en/regionscountries/countries/iraq

6.Al-Koubaisy HN, Saleh JI, Khalil MA, Kadhim N, Naeem H, Khalil NS. Status of HIV/AIDS Over Ten Years in Iraq (2010-2019). Prof.(Dr) RK Sharma. 2020 Oct;20(4):4740.

7.Saleh J, Numan H, Khalil N. HIV/AIDS status in Baghdad/Iraq over ten years (2010-2019). Indian J Forensic Med Toxicol. 2021.

8.Zeziulin O, Kornilova M, Deac A. Modes of HIV transmission among young women

and their sexual partners in Ukraine. PLoS One. 2024 Jun 26;19(6):e0305072. doi: 10.1371/journal.pone.0305072. PMID: 38923979; PMCID: PMC11207155.

9.Yooda AP, Soubeiga ST, Nebie KY, Diarra B, Sawadogo S, Ouattara AK, Obiri-Yeboah D, Yonli AT, Tao I, Sorgho PA, Dahourou H, Simpore J. Impact of Multiplex PCR in Reducing the Risk of Residual Transfusion-Transmitted Human Immunodeficiency and Hepatitis B and C Viruses in Burkina Faso. Mediterr J Hematol Infect Dis. 2018 Jul 1;10(1):e2018041. doi: 10.4084/MJHID.2018.041. PMID: 30002797; PMCID: PMC6039083.

10.Njom Nlend, A. E. (2022). Mother-to-Child Transmission of HIV Through Breastfeeding Improving Awareness and Education: A Short Narrative Review. International Journal of Women's Health, 14, 697–703. https://doi.org/10.2147/IJWH.S330715.

11.Tsega D, Gintamo B, Mekuria ZN, Demissie NG, Gizaw Z. Occupational exposure to HIV and utilization of post-exposure prophylaxis among healthcare workers at St. Peter's specialized hospital in Addis Ababa, Ethiopia. Sci Rep. 2023 Apr 29;13(1):7021. doi: 10.1038/s41598-023-34250-4. PMID: 37120700; PMCID: PMC10148887.

12. , M. A. A., , N. A. N. Prevalence of Viral Hepatitis B, C, and Human Immunodeficiency Virus among End Stage Renal Disease Patients on Hemodialysis. Iraqi Postgraduate Medical Journal, 2019; 18(2): 76-86.

13.Alkhazrajy LA. Knowledge and Attitudes Regarding Health Education among Sample of Iraqi Patients Attending Primary Health Care Centers. Al-Kindy Col. Med. J [Internet]. 2019 Jun. 10 [cited 2025 Feb. 17];14(2):49-53.

14.Ezelote CJ, Osuoji NJ, Mbachu AJ. Effect of peer health education intervention on HIV/AIDS knowledge amongst in-school adolescents in secondary schools in Imo State, Nigeria. BMC Public Health. 2024 Apr 12; 24(1):1029. doi: 10.1186/s12889-024-18536-4. PMID: 38609960; PMCID: PMC11015591.

15.U.S. Preventive Services Task Force. Recommendation for HIV screening [Internet]. Texas Department of State Health Services; 2019 [cited 2025 Jan 10]. Available from: https://www.dshs.texas.gov/sites/default/files/hivstd/contractor/routine/USPSTFRecommendationforHIVScreening.pdf

16.Rosas Cancio-Suárez M, Díaz-Álvarez J, Ron R, Martínez-Sanz J, Serrano-Villar S, Moreno S, Sánchez-Conde M. From Innovation to Implementation: The Evolution of HIV Pre-Exposure Prophylaxis and Future Implications. Pathogens. 2023 Jul 9;12(7):924. doi: 10.3390/pathogens12070924. PMID: 37513771; PMCID: PMC10384104.

17.DeHaan E, McGowan JP, Fine SM, Vail R, Merrick ST, Radix A, Hoffmann CJ, Gonzalez CJ. PEP to Prevent HIV Infection [Internet]. Baltimore (MD): Johns Hopkins University; 2022 Aug 11. PMID: 33026756.

18.Kim J, Vasan S, Kim JH, Ake JA. Current approaches to HIV vaccine development: a narrative review. Journal of the International AIDS Society. 2021 Nov; 24:e25793. DOI:10.1002/jia2.25793.

19.Boakye DS, Mavhandu-Mudzusi AH. Nurses knowledge, attitudes and practices towards patients with HIV and AIDS in Kumasi, Ghana. International Journal of Africa Nursing Sciences. 2019 Jan 1; 11:100147.

20.Iwoi DM, Nde P, Yuh E, Kwenti ET, Tshimwanga EK, Achiri DT, et al. Assessment of the level of knowledge, attitude, and practice with regard to care of people living with HIV/AIDS among nursing and midwifery students in Fako, Cameroon. World Journal of AIDS. 2017 Jan 16;7(01):1-

21.Machowska A, Bamboria B, Bercan C, Sharma M. Impact of 'HIV-related stigma-reduction workshops' on knowledge and attitude of healthcare providers and students in Central India: a pre-test and post-test intervention study. BMJ Open. 2020;10.

22.Blake D, Roberson S, Haskins T. Promoting stigma self-awareness in nursing students through brief unconventional clinical experiences. Teach Learn Nurs. 2020;15:268–271.

23. Qadir HK. Nursing Students` Knowledge and Attitude Regarding HIV/AIDS. Journal of pharmaceutical negative results. 2022;13(4).

24. Ali RA. Knowledge and attitude of nursing students about HIV/AIDS in Sohag, Egypt. J high inst public health. Journal of High Institute of Public Health 2020;50(2):80-86.

25. Mokhtari F, Akhavanamjadi M, Goli M, Pourmohsen M. Knowledge, Attitudes, and practices toward HIV/AIDS among senior midwifery students in Iran, in 2020. Caspian Journal of Health Research. 2020 Dec 10;5(4):83-9.

26. Chinnasamy L, Muthukrishnan A. Attitude of healthcare students towards HIV/AIDS and people living with HIV in selected dental and nursing colleges at Chennai, India. HIV & AIDS Review. International Journal of HIV-Related Problems. 2020 Jan 1;19(1):43-8.

27. Gulsah Kok RN, Gulten Guvenc RN, Kaplan Z. Nursing students' knowledge, attitudes, and willingness to care toward people with HIV/AIDS. International Journal of Caring Sciences. 2018 Sep 1; 11(3): 1697-706.

28.Dharmalingam M, Poreddi V, Gandhi S, Chandra R. Under graduate nursing students′ knowledge and attitude toward people living with human immunodeficiency virus/acquired immunodeficiency syndrome. International Journal of Advanced Medical and Health Research. 2015 Jan 1; 2(1): 22-7.