

## **Knowledge, Attitude and Practice of Human Immune Deficiency Virus among Non-Medical Students of Khartoum Universities in 2017 - 2018**

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### **Abstract**

**Introduction:** HIV/AIDS is the major health problem worldwide, since there is no treatment and a vaccine for prevention, So awareness and behavioral change is best way for prevention and control from HIV, in addition to young people are more vulnerable to infection than older people, although people at their extremes of age can be affected.

**Methodology:** The study was cross sectional descriptive institutional study, conducted in Khartoum university 2017 - 2018 with sample size of 150 student and the students are selected through systematic random selection, data collected through self-administrative questionnaire, the questionnaire consist of three parts of question, concern with knowledge about the ways of transmission and prevention of HIV, other with attitude and the last with practice.

**Result:** The level of knowledge are considered good in knowledge questions regarding the way of transmissions except in HIV transmitted during process of labor only (22%) answer correctly, HIV transmitted through breast feeding only (23.5) answer it correctly, HIV transmitted via brush teeth (38.3%) answer correctly. Beside they have misconception about HIV transmitted through hand shaking, HIV transmitted via sharing eating or drinking with the disease person, HIV transmitted through mosquito bite. TV is the main source of knowledge among students.

They have poor knowledge about HIV prevention ways, except HIV can prevented by blood testing before using 60% correct. They have positive attitude toward their families and friend, a minor percent they practice sex and take alcohol.

**Conclusion:** The level of knowledge among university students is good in more than two half of knowledge about the ways of transmission of HIV questions and poor knowledge in knowledge of prevention beside they have positive attitude toward HIV patients. TV is the main source of information, less than quarter they practice sex and take alcohol.

**Keywords:** *Human Immunodeficiency Virus; Acquired Immunodeficiency Syndrome*

### **Abbreviations**

HIV: Human Immunodeficiency Virus; AIDS: Acquired Immunodeficiency Syndrome

### **Background**

HIV/AIDS is one of the most complex problem of health in 21th Century the total number of people living with HIV is estimated at approximately 7,03 million in 2016. Most of them are young, therefore, the economics status affected [3].

University students are mostly affected, because of peer pressure, lack of maturity, alcohol and drug use, beside they are more likely to engage in risk behavior such as unprotected sex. Since there are no cure or effective vaccine regarding HIV infection, therefore, it is very important to assess awareness and changing behavior become at priority to control HIV/AIDS [1].

For people living with HIV, the associated stigmatization and discrimination are major deterrents that discourages them from seeking timely testing and treatment. Many HIV/aids infected individual are unable to work due to related infection require expensive medications repercussions on their families and indirectly affect the nation and whole community [3].

HIV belongs to the lent virus group of the retrovirus family. There are at least two types, HIV-1 and HIV-2. The latter is almost entirely confined to West Africa although there is evidence of some spread to the Indian subcontinent. It is associated with an AIDS-type illness. At present, described HIV isolates are classified into three different groups: a "major" group (or group M), which represents the majority of globally prevalent HIV strains; an "outlier" group (or group O); and a "non-M/non-O" group (or group N) [2].

The distribution of groups N and O is largely limited to certain countries in West Africa where HIV levels are relatively low. In contrast, the M-group HIV-1 strains cause the majority of HIV-1 infections globally [2].

Based on the genetic sequence analyses of the envelope gene of the virus, The known genetic subtypes and CRF of HIV-1 are unevenly distributed around the world. For instance, subtype B is found mostly in the Americas, Japan, Australia, the Caribbean and Europe. Subtypes A and D predominate in Central and West Africa, subtype C in southern Africa, the horn of Africa and India, and subtype E in South East Asia [2].

Subtypes F are also present in some parts of the world but at very low prevalence (Russia and Central Africa) [2]. In many of the developing countries there is lack of evidence-based HIV infection prevention and treatment, which increases the risk that the disease will spread even more [2].

In some countries police harassment, incarceration, human rights violence and social stigma occur against people with HIV, which causes people to not seek medical care and uncontrolled spread of the disease continues [2].

Certain behaviors can also put individuals at greater risk of being infected with HIV and inconsistent condom use is one of the major risk factors for acquiring the virus. Having unprotected vaginal or anal sex, suffering from other sexually transmitted infections, having sharing injection equipment and not having enough prevention knowledge and education about the virus are other risk factors. Receiving blood transfusions, unsafe injections and medical operations that involve unsterile cutting also put people at risk [1].

Insufficient knowledge about the disease is as well also a major risk factor for contracting HIV. The group M HIV-1 strains are further classified into at least nine different pure genetic subtypes of HIV-1, designated from A-D, F-H, J and K. An additional level of complexity is added by the phenomenon of genetic recombination between different genetic subtypes, which results in the emergence of mosaic, recombinant viruses. Certain recombinant strains of HIV have been reported to have caused substantial outbreaks and regional epidemics. These are referred to as circulating recombinant forms or CRF [1].

The causes of HIV infection include unprotected sexual contact, injection drug use, contaminated blood transfusion, mother-to-child transmission (prenatal and while breastfeeding) and occupational exposure among health care workers [2].

### **Clinical pictures**

The clinical pictures vary. Asymptomatic periods due to compensation via CD8. Begin 2 - 4 weeks from infections and resolved in 2 weeks. Characterized by fever, lethargy, macular rash on trunk, arms and legs and there is generalized lymphadenopathy. In lab findings their clinical pictures are divided into three stages:

- Acute stage are viremia and leucopenia
- Middle stage
- Late stage

Here is AIDS and low number of CD4 and pneumocystic pneumonia and Kaposi sarcoma beside dementia and neuropathy.

At the end stage patient become expose to any infectious disease and any system can be affected, beside malignancy.

### **Diagnosis**

Mainly by serology to detect antibodies against p24 protein of HIV using ELISA as screening or western blots as definite.

### **Treatment**

Does not cure the patients but decrease the mortality and prevent infections due to increase number of immune cells and they named antiretroviral like Lamivudine zidovudine and lopinavir.

Regarding the prevention since an accessible, affordable and complete cure for HIV/AIDS or an effective vaccine to prevent HIV infection may not be available in the near future, primary prevention to control the spread of HIV infection through awareness and changing behavior remains at the highest priority for HIV/AIDS control program [1].

Health education is still the best method to prevent infection through change level of knowledge and attitude of young people toward HIV/AIDS that leads to establish protective health-behavior patterns in young people [1].

### **Problem statements**

The estimated overall HIV prevalence rate is approximately 12,7% of the total South African population. The total number of people living with HIV is estimated at approximately 7,03 million in 2016. For adults aged 15 - 49 years, an estimated 18,9% of the population is HIV positive [3].

Total number of people living with HIV from 2002 to 2016. The total number of persons living with HIV in South Africa increased from an estimated 4,72 million in 2002 to 7,03 million by 2016. For 2015, an estimated 12,7% of the total population is HIV positive, growth rate increased from approximately 1,22% between 2002 and 2003 to 1,62% for the period 2015 to 2016 [3].

### **Rationale and justification**

In 2011 youth accounted for 40% of new cases of HIV infection globally and there are five million of them living with HIV and 2400 youth newly infected, 3.6 of them in sub Saharan Africa, there are increase in mortality number in young people with AIDS and decrease level of awareness regarding HIV infections [8].

The author wants to enhance level of knowledge in people especially youth because they are more prone to get the disease than other due to their life styles beside I want to decrease mortality number and also decrease the chance of getting infection with HIV.

### **Objectives of the Study**

#### **General objective**

To know knowledge, attitude and practice about HIV among non medical students of Khartoum university in 2017 - 2018.

1. To assess the knowledge about the ways of transmission and preventions among non medical students of Khartoum university.
2. To determine the attitude about HIV among non medical students of Khartoum university.
3. To measure the practice among non medical students of Khartoum university.

#### **Literature review**

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A 2003 report from global HIV prevention working group revealed that less than one in five persons is at risk of HIV and had access to basic HIV prevention services globally. Also revealed that only one in ten people living with HIV has even been tested for the virus [3].

Globally people between the ages 15 - 24 years represent 45% of all people living with HIV. Young people in this age group make up nearly half of all new infection every year. The ministry of health report that 31% of new cases in young adult aged 20 - 29 years, indicating that majority of new reported cases belonged to individual in their twenties [3].

Malaysia is currently classified as having concentrated HIV epidemics with more than one third of total 87,710 reported infections registered in the country to be those detected in younger people between the ages of 13 to 29 years [3].

HIV/AIDS is globally pandemic in 2016 there are approximately 367 million people are living with HIV globally and the death rate is One million in comparing with 2015 which is 12 million [3].

South Africa has the largest population of people with HIV about 59 million while in Nigeria the least number of people who are affected by HIV estimated as 2.9% there are 26800 individual living with HIV in Australia in 2013 and in united kingdom estimated as 16% who are HIV [3].

HIV infection in western Africa is lowest in Senegal and highest in Nigeria, central Africa has rate of HIV from moderate to high. In south Sudan there is study conducted estimated as 31% of people who lives with HIV but before that time is poorly documented but in whole Sudan the prevalence rate is 2% and number of affected people is 56000 and annual death is 3000 in 2016 [3].

Study conducted in universities of Sudan states writing that "AIDS epidemics claimed more than 3 million lives in 2004, an estimated 4.9 million people acquired the human immunodeficiency virus in 2004, bringing to 39.4 million the number of people globally living with virus" [1].

This study also report that younger and middle age groups were mostly affected with 88.5% of reported cases As, male to female ratio as 2:1 [1].

Of June 30, 2006, the number of confirmed HIV/AIDS cases in Xinjiang had reach 16,035. However according to the official estimates, there are some 60,000 HIV-positive persons living in Xinjiang, making it the fourth most-affected province in terms of total cases [4].

The devastating effect of HIV/AIDS in Ethiopia has become more and more visible with time, and the life expectancy is estimated to have fallen from 50 years to 42 years. Today 42% of the hospital beds in the country are estimated to be occupied by AIDS patients, draining the scarce resources allocated to the health sector [5].

According to EDHS 2005, 14% of adults (15 - 49 years) were reported infected with HIV in 2005 through its prevalence among adult men had been only 0.9%. Further, infection levels are found to be higher in urban areas (5.5% among adults) compared to rural areas (0.7%) [3].

HIV infection in Nepal is characterized concentrated epidemic with the as prevalence of 0.30 percent among adult aged 15 - 49 years in 2011 [6].

According to the results of the Uganda HIV/AIDS Sero Behavioural Survey (UHSBS) of 2004/5, the national prevalence of HIV is estimated at 6.4%. HIV/AIDS therefore, continues to represent a significant public health problem [7].

## **Introduction**

University students are mainly vulnerable to HIV, as over half of all new infections worldwide are among young people. There are factors put university students at risk for HIV infection such as peer pressure, lack of maturity, alcohol and drug use. More likely to engage in high-risk behaviors, such as unprotected sex [8]. If these individuals lack adequate information regarding HIV knowledge and behavior,

they might be at risk to HIV [2].

The causes of HIV infection include unprotected sexual contact, injection drug use, contaminated blood transfusion, mother-to-child transmission (prenatal and while breastfeeding) and occupational exposure among health care workers [2].

The late stage of HIV infection is AIDS, manifested by decline in CD4 cells to below 200/ul and increase in opportunistic infections, the most common two are pneumocystis pneumonia and Kaposi's sarcoma, many HIV patients have severe neurological manifestation like dementia and neuropathy.

Social changes are having a direct impact on their attitudes and behavior, especially in the area of sexual behavior and drug use. The age of sexual debut is declining rapidly among youth, as well as initiation of drug use. The situation of high unemployment, especially among youth, has resulted in labor migration towards Western European countries. Unemployed young people mainly go abroad alone and without their partners, which increases their vulnerability to HIV infection. Limited knowledge and awareness of HIV and other STIs is a major risk factor [8].

### **Previous studies**

Knowledge, attitudes and beliefs towards HIV/AIDS among students at health institutes in Sana'a city, Yemen. With descriptive cross-sectional questionnaire survey was conducted on 600 students selected by cluster sampling. Students had a moderate level of HIV/AIDS knowledge (an average of 67.6% were correct on all items). Nevertheless, 82.3% knew that HIV could be transmitted by sexual intercourse without condom, 87.5% from syringes, 71.8% from infected blood and 80.7% from mother to child. Misconceptions about how HIV is transmitted (e.g. hugging and kissing or sharing food, swimming pools and classrooms) were found among 41.5% of the students. Attitudes towards people living with HIV/AIDS showed that 59.8% of students were accepting and positive [9].

Cross-sectional study was conducted in the University Clinical Centre of Montenegro in Podgorica. Out of 526 HCWs, 422 were include An insufficient level of knowledge on HIV transmission and the risk after exposure was observed generally, although the knowledge was better in physicians compared to other HCWs categories. Rather high proportion of HCWs showed inappropriate attitude regarding the need of HIV testing of all hospitalized patients (64.7%) and obligation of HIV+ patient to report his/her HIV status (88.9%) in order to practice universal precaution. Additionally, 6.2% HCWs would refuse to treat an HIV+ patient. More than a half (55.7%) of study participants were educated in HIV/AIDS and 15.9% of them were HIV tested [10].

Study that aims to collect information on Knowledge, Attitudes, Practices and Behavior (KAPB) of Kosovo Young People in regard to HIV/AIDS and related issues Using quantitative (opinion poll) and qualitative (focus groups) methods, the result show Percentage of young woman and men aged 15 - 24 who both correctly identify ways of preventing the sexual transmission of HIV and who reject major misconceptions about HIV transmission reflects a low level of knowledge - only 18% of males and 17% of females; 16% of youth aged from 15 to 19 years; and 20% of those aged 20 to 24 years correctly answered all five questions for the indicator of knowledge of HIV prevention [8].

Young Kosovo males were more likely than females to know the two main ways of preventing the sexual transmission of HIV: having sexual intercourse with only one faithful uninfected partner, and by using a condom every time they have sex. On the other hand, females were more likely to know that healthy looking persons can have HIV, and they reject major misconceptions about HIV transmission: that a person can get HIV from mosquito bites or by sharing food with a person living with HIV/AIDS [8].

The study was a cross-sectional study based on a self-answered anonymous questionnaire conducted in governmental and non-governmental universities in Qatar during the calendar year 2008 - 2009 among 781 students selected randomly, the result show the response rate was 84%. Most of the students (97.6%) were aware that HIV is a serious disease, despite the majority of university students correctly identifying the main modes of HIV/AIDS transmission such as sexual intercourse (95.8%), sharing injection needle or surgical operation

devices of an infected person (94.9%), but some prominent known information such as mosquito bites (62.1%), public toilets and swimming pools (53%) and sharing food utensils of an infected person (50.1) were incorrectly identified as routes of transmission [1].

More than 86% of the students had the attitude that HIV testing should be conducted compulsory before marriage through premarital counseling, support the awareness campaign toward preventing spread of HIV among your colleges inside or outside college. Their main source of information about the infection was the media, particularly TV. The results indicated that the contribution of schools, health staff and relatives in providing university students with knowledge about HIV/AIDS was minimal [2].

## **Materials and Methods**

### **Study design**

Cross sectional descriptive institutional study to asses knowledge, attitude and practice among non medical students in Khartoum university in 2017 - 2018.

### **Study area**

Faculties of Khartoum university, Khartoum university located in university street, consist of 18 faculties with a total number of 16.876 student (Faculty of administrative science, faculty of science, faculty of math science, faculty of agriculture, faculty of law, faculty of civil engineering, faculty of metallurgy engineering, faculty of chemical engineering, faculty of Electrical engineering, faculty of mechanic engineering, faculty of literature, faculty of economics, faculty of animal products, faculty of education, faculty of architecture).

### **Study population**

Students in six faculties (civil engineering, chemical engineering, metallurgy engineering, economic, administrative science, literature).

### **Inclusion criteria:**

- University student
- Non-medical
- Khartoum university
- Randomly selected

### **Exclusion criteria:**

- Medical students
- Not randomly selected

### **Sample size**

Sample size calculation

$$n = z^2 \times (p) \times (1 - p) \div d^2 \times def$$

Prevalence =

$$z = 1.96$$

$$d = 0.05$$

$$def = 1.5$$

$$n =$$

The prevalence: 7%

So, the sample size = 150.

### Sample selection

Six faculties of Khartoum university are selected out of 18 faculties with simple random selection and from each faculty 25 student are selected and five students from each level with equity allocation. Those students were selected with Systematic random selection.

### Data collection tool

Data was collected through self administer questionnaire in Arabic form and the questionnaire consist of three parts, first part concerned with knowledge about the ways of transmission and prevention, second concerned with attitude and the last one is practice questions.

Study variable are dependent variable, which are age, sex, level and faculty. Others independent variable which are variables in knowledge, attitude and practice questions.

Data are analyzed by computerized SPSS version 21 using statistical tests (mean, standard deviation, frequency table, histogram, pie chart and chi square).

### Ethical clearance

Data collected after permission had taken from department of community medicine as written consent, also the researcher takes written consent of Khartoum university dean and verbal consent from the students.

### Results

25 students from each faculty except in administrative science some students were not available. The study was conducted in about 150 students, 54% are males and 46% are females', their ages range between 16 -25 with mean age of 20 year and standard deviation of 1.945. They were selected from different levels from first up to fifth level and they have equal chance in participation, five students from each level. Also, they were selected from six faculties equally.

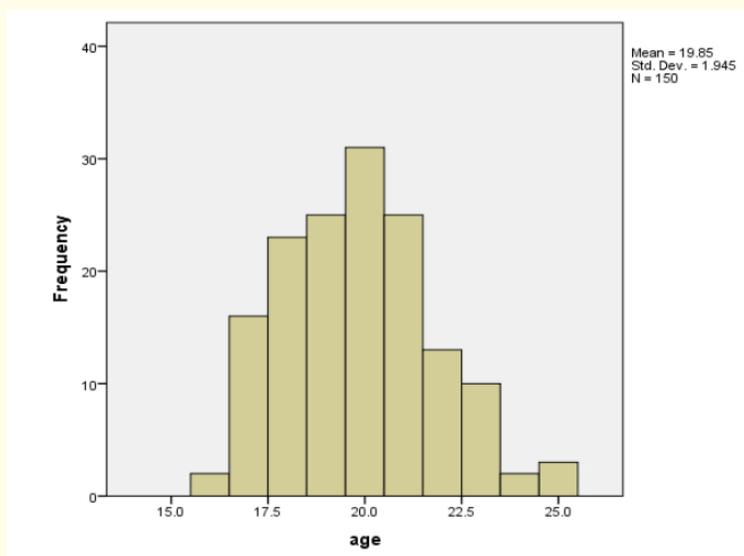


Figure 1: Shows the ages with mean and standard deviation.

Percentage of knowledge regarding the ways of transmission of HIV are explained in table 1.

Questions	Yes	No	Don't know
Q1. HIV transmits through sexual contact	70%	20%	10%
Q2. HIV transmits from mother to child during pregnancy	52.3%	27.5%	20.1%
Q3. HIV transmits during labour	22%	34%	44%
Q4. HIV transmits through breast feeding	23.5%	43.6%	32.9%
Q5. HIV transmits with sharing needles and syringe	68.5%	28.2%	3.4%
Q6. HIV transmits by hand shaking	22%	70%	8%
Q7. HIV transmits through contaminated blood	66.7%	25.3%	8%
Q8. HIV transmits through tooth brush	38.3%	44.3%	17.4%
Q9. HIV transmits via sharing food and drink with victim	26.7%	58%	15.3%
Q10. HIV transmits via mosquito	29.5%	53%	16.8%

**Table 1:** Show Knowledge questions regarding the ways of transmission of HIV.

Percentage of knowledge questions regard explained the preventive ways of HIV are explained in table 2.

Questions	Yes	No
Q1. HIV can be prevented using condom	46.7%	53.3%
Q2. HIV can be prevented with faith to your partner	41.3%	58.7%
Q3. HIV can be prevented by blood testing before using	60.7%	39.3%
Q4. HIV can be prevented through others	39.3%	60.7%

**Table 2:** Show Knowledge questions regard explained the preventive ways of HIV.

Percentage attitude questions are explained in table 3.

Questions	Agree	Disagree	Don't know
Q1. You will continue with your affected friend.	49.3%	33.8%	16.9%
Q2. You will eat from affected food handlers.	29.9%	66%	4.1%
Q3. You will care about your affected family member.	62.4%	31.5%	6%

**Table 3:** Explain attitude questions.

Percentages regarding practice questions are shown in table 4.

Questions	Yes	No
Q1. Sex practice.	25.3%	74.7%
Q2. Alcohol intake.	22.7%	77.3%
Q3. Expose to injury with contaminated needle before.	16.1%	83.9%

**Table 4:** Show Percentages regarding practice questions.

The relationship between knowledge of the ways of HIV transmission and prevention and age are shown in table 5 and there is significant association with P value of .003, however, there is no association between knowledge and sex. As explained in table 6.

Age group	Summation of Knowledge		Total
	Poor	Good	
(16 - 20)	76	18	97
(21 - 25)	34	18	49
Total	110	36	146

Table 5: Explain association between knowledge and age.

		Poor	Good	Total
Sex	Male	58	22	80
	Female	52	14	66
Total		110	36	146

Table 6: Summation of knowledge gender explain there is no associations.

Knowledge score	Frequency	Valid Percent
Good	99	66.9
Poor	49	33.1
Total	148	100.0

Table 7: Show knowledge score.

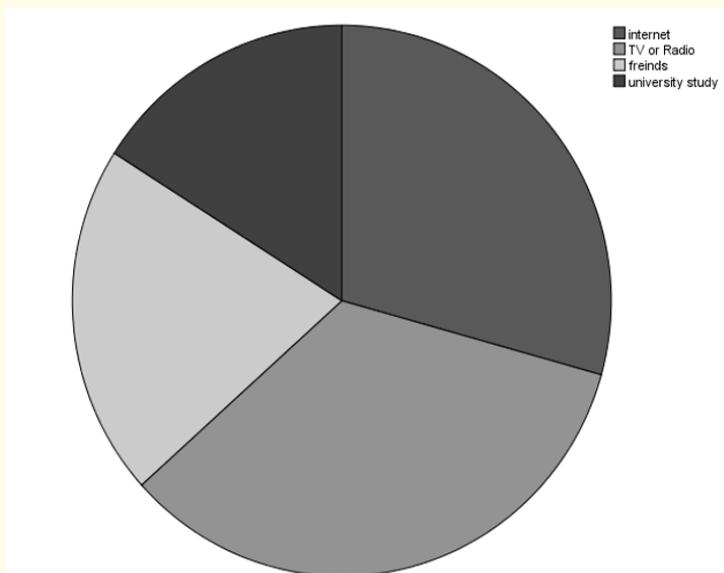


Figure 2: Shows TV the major source of the information.

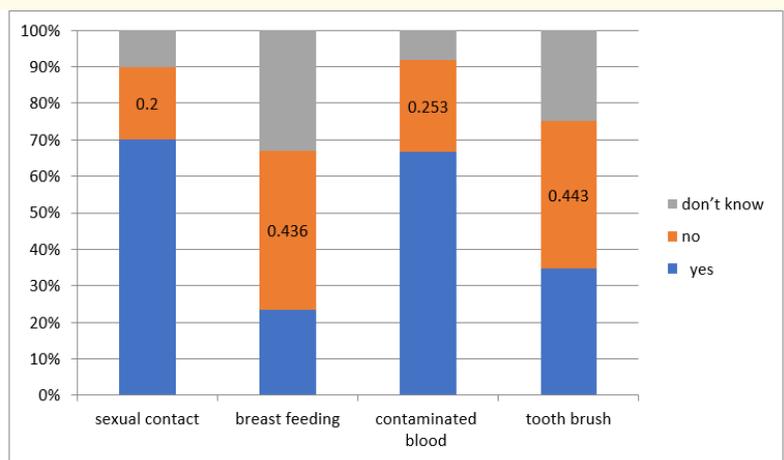


Figure 3: Shows the percentages of the answered of the modes of transmission HIV.

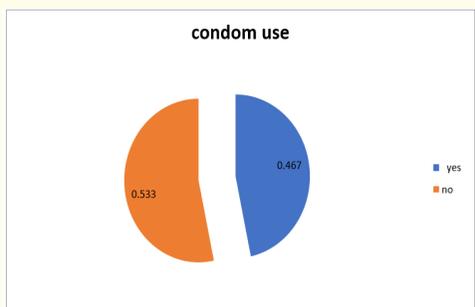


Figure 4: Shows the percentages of answered regarding condom use.

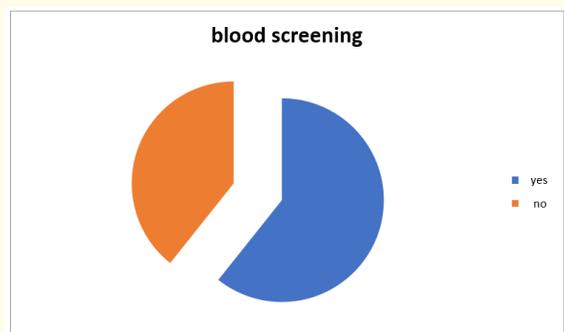


Figure 5: Shows the percentages of the answers of blood screening which is one of the preventive procedures.

## Discussion

This is a descriptive cross-sectional institutional study aiming at assessing knowledge, attitudes and behavior of HIV/AIDS among non-medical students center of Khartoum university.

The level of knowledge about the ways of transmission of HIV are considered relatively good comparable to study conducted in Qatar [1] and Nepal [6] with higher percent, considered low and this due to fact that the student who participate in Nepal study are nurses while in this study the students have no relation with medical field.

They have misconception in HIV transmitted through hand shaking, sharing eating with victim as many studies conducted in Thailand, Qatar, Nepal and Sudan. However, the percentage of misconception in later studies regarded minor when they compared to this study, because the population in this study are students whom has no relation with medical field, while in a Qatar study students are medical as in Nepal and in Sudan study they are mixed and from different states.

Most of the students report media and especially TV is the main source of information as many studies said that in (Qatar, Nepal, Sudan 2004, Xingjian, Ghana). HIV can be prevented using condom (46.7%) answer correctly compare to (65 - 75%) in Xingjian [4] study answer it correctly due to students were from different universities and part of them are medical, HIV can be prevented with faith to your partner (41.3%) answer with right regard high percent as compared to (26.9%) to Sudan study 2004 [2]. HIV can prevented by blood testing before using (60%) answer correctly.

Generally males who answer the questions of knowledge about the way of transmission and preventions of HIV correctly are (22%) and females are (14%), however, there is no association between sex and knowledge because P value is not significant, but there is significant association between knowledge questions and age with p value of .003.

They have apposite attitude toward families and friends, with (62.4%) agree to care with infected family member, as in Nepal also they have positive attitude with a relatively high percentage and this due to participants are medical, while in this are non medical.

(25.3%) they practice sex in this study, study conducted in Xingjian (3.3%) reported having sex with sex workers, and (4.5%) reported having sex under the influence of alcohol [4].

(22.7%) take alcohol, these practices are multi factorial, the students are away from our Islamic religions, adolescence year may be cause if no control from a family, bad peer, stresses from studying if he is student or no work if postgraduate, beside some are practice these behavior for enjoyment (83.9%) they not exposed to injured with contaminated syringe because they are students and have no relation with medical field.

## Conclusion

The level of knowledge among students are considered good, although the knowledge in some questions are bad, less than half of student are known HIV transmitted through brush teeth, HIV transmitted through breast feeding. Beside quarter of students answer HIV transmitted through hand shaking, HIV transmitted via sharing eating or drinking with the disease person, HIV transmitted through mosquito bite, which is wrong answer due to their poor knowledge. The majority of student answer TV is the main source of information and this mean there is deficient from heath system to hold lectures for students concern with awareness with disease that can be associated with bad life style.

The majority of students don't know the prevention measurements of HIV, males have higher percent than female in their knowledge, beside P (value) is not significant, may be due to large number of male compare to female in this study, while there is strong association between the knowledge and age with P value of about .003. Their attitude are positive despite their a little knowledge, less than quarter of them they practice sex and use alcohol.

## **Recommendations**

The author invite to establishing well-structured health education programs addressing misconceptions about the routes of transmission and the preventive measure of HIV in universities, youths clubs and secondary school.

## **Dedication**

To my nice mother and father, to those people who support me spiritually, and special dedication to spirit of deceased Atif Alfadel Bakheet and lastly to my family, whom indeed support me in medicine journey

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