

# **University Students' Knowledge and Attitude toward HIV/AIDS in Qatar**

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# Abstract

## Introduction

HIV/AIDS is one of the most complex health problems of the 21st century and has become a pandemic disease that threatens the world population. Young people are particularly vulnerable to the HIV, worldwide over half of all new infections are among young people. The primary prevention to control the spread of HIV infection through awareness and changing behavior remains at the highest priority for HIV/AIDS control.

## Objectives

The aim of the study was to assess the knowledge and attitude among university students in Qatar towards HIV/AIDS and its preventive measures, and to identify the most preferred source of obtaining HIV related information among university students in Qatar.

## Methodology

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 questionnaire addressed basic knowledge about human immunodeficiency virus (HIV), its modes of transmission, prevention, and attitudes towards HIV/AIDS. SPSS software 17.0 was used for data entry and analysis. Appropriate tests of significance were used and ethical considerations were followed throughout the study.

## Results

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 .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. Statistical significant differences in the students' level of knowledge and attitudes appear in relation with students' gender ,where more males students had knowledge about HIV/AIDS.

## Conclusion and Recommendation

Lack of knowledge regarding HIV/AIDS transmission among university students with most of them was detected having positive attitudes toward HIV/AIDS preventive measures. Consequently establishing well-structured health education programs addressing misconceptions about the routes of transmission of HIV.

## المعارف والمواقف عن فيروس نقص المناعة البشرية / متلازمته نقص المناعة المكتسب (الايدز) ، بين طلاب الجامعات في قطر

### الخلاصة

#### المقدمة

يعتبر فيروس نقص المناعة البشرية \متلازمة نقص المناعة البشرية المكتسب واحدة من المشاكل الأكثر صعوبة في القرن الحادي والعشرين واصبح من الأمراض الوبائية التي تهدد سكان العالم . الشباب أكثر عرضة للأصابة بفيروس نقص المناعة البشرية حيث أن عالميا أكثر من نصف الأصابات الجديدة هي من فئة الشباب . الوقاية الأولية للحد من انتشار الفيروس من خلال التوعية وتغيير السلوك ما زالت في أولويات طرق الوقاية من فيروس نقص المناعة البشرية \متلازمة نقص المناعة البشرية المكتسب .

#### الأهداف

الهدف من الدراسة هو تقييم المعرفة والمواقف بين طلاب الجامعات في قطر تجاه فيروس نقص المناعة البشرية \متلازمة نقص المناعة البشرية المكتسب والتدابير الوقائية . وتحديد المصدر المفضل للحصول على المعلومات المتعلقة بفيروس نقص المناعة البشرية بين طلاب الجامعات في قطر .

#### المنهجية

تم اجراء دراسة مقطعية مبنية على تعبئة استمارة استبيان تستكمل ذاتيا لا يذكر فيها الاسم , أجريت في الجامعات الحكومية وغير الحكومية في قطر خلال السنة الدراسية 2008 – 2009 على 781 طالبا تم اختيارهم عشوائيا. شملت أسئلة الاستبيان على معلومات أساسية لفيروس نقص المناعة البشرية وطرق انتقاله وسبل الوقاية , المواقف تجاه التدابير الوقائية للفيروس . لتحليل البيانات تم استخدام برنامج الحزمة الاحصائية للعلوم الاجتماعية (الأصدار 17) كما استخدمت الأختبارات الاحصائية المناسبة , وقد اتبعت الاعتبارات الأخلاقية في الدراسة.

#### النتائج

نسبة الأستجابة للأستبيان كانت 84% . كان معظم الطلاب (97.6%) على وعي بأن فيروس نقص المناعة البشرية مرض خطير . بالرغم من أن غالبية الطلاب تعرفوا بشكل صحيح على الطرق الرئيسية لانتقال فيروس نقص المناعة البشرية على سبيل المثال (95.8%) عن طريق الأتصال الجنسي , (94.9%) المشاركة في استخدام الأبر والمحاقن والأدوات الجراحية مع الشخص المصاب . الا أن تبين أن هناك بعض المفاهيم الخاطئة حول طرق انتقال مرض الإيدز والعدوى بفيروسه، مثل انتقاله عن طريق لدغات الحشرات (62.1%) , المراحيض العامة وحمامات السباحة (53%) , وتقاسم أواني الطعام للشخص المصاب (50.1%) بشكل غير صحيح كطرق في انتقال الفيروس . أكثر من 86% من الطلبة موقفهم أن يكون فحص فيروس نقص المناعة البشرية إلزامي قبل الزواج من خلال الفحص قبل الزواج ودعم حملات التوعية تجاه منع انتشار فيروس نقص المناعة البشرية , المصدر الرئيسي للمعلومات عن العدوى للطلاب عن طريق الأعلام لاسيما التلفزيون . وأشارت النتائج إلى أن مساهمة المدارس ، والعاملين في مجال الصحة والأقارب في تزويد طلاب الجامعة المعرفة حول فيروس نقص المناعة البشرية / متلازمة نقص المناعة البشرية المكتسب كان ضئيلا , ووجد اختلافا احصائيا حيث أن أكثر الذكور لديهم معرفة بفيروس نقص المناعة البشرية \متلازمة نقص المناعة البشرية المكتسب .

#### الأستنتاج والتوصيات

أظهرت النتائج أن هناك نقصا في المعرفة بشأن طرق انتقال فيروس نقص المناعة البشرية , ومعظم الطلاب لديهم مواقف إيجابية تجاه التدابير الوقائية لفيروس نقص المناعة البشرية \متلازمة نقص المناعة البشرية المكتسب , لذلك تم التوصية بإنشاء برامج التثقيف الصحي كوسيلة لتصحيح المفاهيم الخاطئة حول طرق انتقال فيروس نقص المناعة البشرية .

## **Introduction**

Human Immunodeficiency virus/Acquired Immunodeficiency Syndrome (HIV/AIDS) is one the most complex health problems of the 21<sup>st</sup> century <sup>(1)</sup> there is 33.2 million people were living with HIV, of which 2.5 million people were newly infected with HIV by the end of 2007. <sup>(2)</sup> Most of them younger age <sup>(3)</sup> It is caused increased morbidity and mortality and led to a negative effect on national economies. <sup>(4)</sup> 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 . <sup>(5)</sup> University students are mainly vulnerable to HIV, as over half of all new infections worldwide are among young people. <sup>(6)</sup> there are factors put university students at risk for HIV infection such as peer pressure, lack of maturity, alcohol and drug use. <sup>(7)</sup> more likely to engage in high-risk behaviors, such as unprotected sex <sup>(8)</sup> If these individuals lack adequate information regarding HIV knowledge and behavior, they might be at risk to HIV. Therefore, it is essential to assess the knowledge, attitudes and practices of students regarding HIV and AIDS before planning appropriate preventive measures.

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. <sup>(9)</sup> 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. <sup>(1,10,11)</sup>

In Qatar , the recent national openness to rapid development has led to influx of expatriates of many nationalities, races, cultures, and religions mainly from Asia and Africa, together with promotion of state of Qatar as an educational center in the region lead to large influx of youths from different cultures to study in Qatar so the Government has committed to HIV/AIDS prevention among population living in the country, the Committee needs to assess the national situation including filling the gaps in knowledge, attitude and practices among young people. <sup>(12)</sup> and there is no studies of HIV/AIDS related knowledge and attitudes conducted among the university students living in Qatar.

The purpose of the study was to assess the knowledge and attitudes among university students in Qatar towards HIV/AIDS and its prevention measures, and to identify the most preferred source to obtain HIV related information among university students in Qatar.

## **Methodology**

A cross sectional study based on self-administered anonymous questionnaire conducted 924 students (477 students in governmental university (Qatar University) and 447 students in non-governmental universities (Qatar Foundation Universities and College for North Atlantic Qatar) were randomly selected of 11,177 students registered for the academic year 2008-2009 .

The questionnaire used in this survey, based on the WHO AIDS program knowledge, attitudes, beliefs and practices (KABP) survey in 1988,<sup>(13)</sup> as well as literature.<sup>(14,15)</sup> was modified to suit Qatari culture and norms

The questionnaire was divided into six sections. Section I included questions on demographic characteristics. Section II consisted of questions on general knowledge about HIV/AIDS. Section III consisted of questions about HIV/AIDS mode of transmission. Section IV, consisted of knowledge about preventive measures for HIV/AIDS.

There were three possible response options of “Yes,” “No,” and “I don’t know” for each item. Each correct statements answered Yes be correct answer and “No,” and “I don’t know” be incorrect answer, and the wrong statements answered Yes be incorrect answer and “No,” and “I don’t know” be correct answer. Section 5, consisted of statements regarding students’ attitude towards HIV/AIDS. There were three possible response options of “Agree “, “Neutral”, and “Disagree”. Finally, section IV, respondents were asked about their source of information about the disease with family, friends, mass media, teachers, religious centre and health staff.

Frequency distributions for proportions and means for Continuous variables were generated using SPSS, version 17. Chi-Square and Exact Fischer Tests were performed to compare categorical variables. and Student’s t tests were performed for continuous variables. Potential differences between facilities were explored. Relations of  $P$  value  $<0.05$  was considered significant.

The following ethical consideration has been taken: Approval to carry out the research was obtained from research committee in Hamad Medical Corporation (HMC). Ethical permission for the study was obtained prior to collect data from the universities :( Qatar University, Qatar Foundation and College for North Atlantic Qatar). Participants were assured of the confidentiality of their responses and provided informed verbal consent. After we emphasized that participation in the study was voluntary, that they could stop participating at any time and that data would be presented so that identification at an individual level would not be possible. The aim of the study was explained to the participants and prior to the interview students were informed that participation was voluntary and that they had a right to withdraw from the study at any time.

## **Results**

The overall response rate for this survey was 84% (781/924 students), with high response rate in non-governmental universities compared to 88% (396/447) and 80% (385/477) in governmental universities. Table-1 shows that among the 781 students participating in the study, 530 (67.9%) were females while the rest were males. The students were aged 15–24 years (mean  $\pm$  SD= 20.7 $\pm$ 1.8), and 357 (45.7%) were Qatari, while 90.9% were single in term of the marital status..

Table-2 shows that most of the students (97.6%) could correctly identified AIDS is a serious disease, AIDS can be transmitted from person to person (92.1%), and that AIDS is caused by HIV virus. On the other hand, in term of the knowledge related to mode of transmission of AIDS. The majority of the respondents knew that HIV is transmitted by sexual intercourse (95.8%) followed by sharing injecting needles or surgical operation devices with an infected person (94.9%), while the most myths about modes of transmission identified were mosquito's bite (38.9%), sharing public toilets or swimming pools with an infected person (47%), and sharing utensils of an infected person are not modes of transmission of HIV/AIDS (49.9%).

Regarding the knowledge in the area of prevention most of the students knew that avoiding contact with any used needles, syringes and razor blades (85.1%) and screening blood before transfusion (80.9%) were preventive measures for HIV/AIDS, while (30.7%) of the students stated that isolating people living with HIV or AIDS is an ineffective measure to prevent HIV from spreading.

As shown in table-3, the students' attitudes towards HIV/AIDS, findings revealed that most of the students (around 86 %) agreed to support the awareness campaign toward preventing spread of HIV inside or outside college and that HIV testing should be conducted compulsory before marriage. However, only 61.3% of the students agreed that HIV/AIDS preventive measures such as use of condoms could be discussed publicly in schools and university.

Students' sources for HIV/AIDS information, most of students reported that mass media (television, radio 74.1%, internet 73.6, newspapers & magazines 61.6%) were the major sources of their information about HIV/AIDS. In contrast, parents and relatives, health care workers and religious centre constituted the least sources of AIDS-related information, (31.1%, 28.6% and 24.2 respectively) as shown in figure-1.

According to figure-2, more than 75.9% of the students had discussed about HIV/AIDS by internet followed with physician (49.3%) in other hand, television represent the least source of discussion (11.0%).

Regarding to gender differences, our findings suggested that gender was related with the number of correctly answered HIV general knowledge for four questions (table 6). Males have correctly identified that AIDS is caused by HIV virus ( $\chi^2=3.711$ ,  $p = 0.032$ ), AIDS is disease that can be transmitted from person to person ( $\chi^2=3.853$ ,  $p = 0.031$ ) and there is not an available vaccine for AIDS ( $\chi^2=3.477$ ,  $p = 0.037$ ) more than did their peers from females. However, females could correctly identify that AIDS is not a genetic disease than did males ( $\chi^2=7.989$ ,  $p = 0.003$ ).

Table-7 shows the relation between gender and knowledge of students about mode of transmission. Males and females responded similarly except for four questions. Males responded more correctly than did females that HIV could not be transmitted through: sharing public toilets and swimming pools with an infected person ( $\chi^2=13.635$ ,  $p= 0.000$ ), using an infected person's belonging such as clothes, comb, underwear and towel ( $\chi^2=4.003$ ,  $p =0.027$ ) and exposure to an infected person who coughs or spits ( $\chi^2=5.098$ ,  $p =0.015$ ). Regarding students prevention knowledge according to gender - as shown in table 8, females were more likely to respond correctly to the statement that HIV can be prevented through avoiding extra marital relations ( $\chi^2=3.258$ ,  $p = 0.043$ ) and screening blood before

transfusions ( $\chi^2 = 12.666, p = 0.000$ ). On the other hand, males were more likely to respond correctly to the effect of proper condom use as a preventive measure. ( $\chi^2 = 7.575, p = 0.004$ ).

Gender differences existed in attitudes towards HIV/AIDS with female expressing greater acceptance to disease prevention than male do. Females are more likely to accept that HIV/AIDS preventive measures -such as use of condom- could be discussed through media e.g. TV, Radio and Newspaper ( $\chi^2 = 7.680, p = 0.021$ .) and they would support the awareness campaign to prevent HIV among colleagues inside or outside college more than did males ( $\chi^2 = 8.273, p = 0.016$ )

as illustrated in figure ,female students identify TV/Radio as main source of information (76.6%), while 75.1% of males identified Internet as a main source of information . generally there is no statistically differences in HIV source of information except the female students got their information from TV/Radio and from teachers more than males students did ( $\chi^2 = 5.239, p = 0.014$ ) and ( $\chi^2 = 3.441, p = 0.038$ ) respectively . while the male got information from friends/peers( $\chi^2 = 25.592, p = 0.000$ ) more than females students did. In other hands the internet represents the major of discussion preferred in both female (77.4%) and male (72.9%). While females preferred parents \relatives ( $\chi^2 = 4.843, p = 0.016$ ) and TV\Radio ( $\chi^2 = 5.412, p = 0.012$ ) more than males. In contrast the male preferred to discussed with friends\ peers ( $\chi^2 = 8.715, p = 0.002$ ) than females.

## **Discussion**

AIDS is an important public health problem and the only way to eradicate the disease is by prevention and the best single way to prevent the disease is through education. <sup>(16)</sup> Even in countries where HIV infection has a low rate like Qatar, early actions are essential to avoid serious impacts on economic activities.

The response rate in this study was 84% in general, reaching to 88% in the non-governmental universities. Females represent 68% of sample; the mean age is 20.7 and the most of them in freshmen and sophomores grade. The high percentage of females' students is representing a known fact that females are more than males in Qatar's university because the males tend to join certain type of colleges such as Police and military academies and have more options to study abroad.

According to the general knowledge about HIV/AIDS, this study revealed that most of the surveyed students had perceived HIV/AIDS as the most serious disease, similar to what has been reported among Saudi Arabia paramedical students<sup>(9)</sup> and undergraduate students studying at the University of Jordan.<sup>(17)</sup>

On the other hand, the present study revealed that two thirds of students knew that HIV/AIDS cannot be completely cured, these results are consistent with studies among Saudi<sup>(18)</sup> and Malaysian youth (69%)<sup>(19)</sup> but it is inconsistent with studies among emirates<sup>(20)</sup>, Iranian<sup>(21)</sup> and Turkish students.<sup>(16)</sup> Where only one third of students believed that AIDS can be cured. Regarding the presence of HIV vaccine, in our study there is only half of students who knew there is no available vaccine yet, this finding is similar to the studies conducted in UAE<sup>(20)</sup>, Iran<sup>(21)</sup> and China<sup>(22)</sup> the misconception about the presence of treatment or vaccine for HIV was explained by Agrwal et al<sup>(23)</sup>, and can be attributed to the many false claims published in media and other modes of advertisement, and such misinformation concerning a "cure" for AIDS is one of the risk factors for contracting the disease.<sup>(15)</sup>

Regarding the knowledge about mode of transmission, the majority of students (95.8%) in the current study knew that HIV can be transmitted by sexual intercourse, these findings are consistent with previous studies among Jordanian,<sup>(17)</sup> Afghani<sup>(24)</sup> and Japanese<sup>(25)</sup> university students. Also about 95% and 91% of the students in Qatar have identified contaminated instruments and blood transfusion respectively as routes for HIV transmission, which is consistent with Jordanian<sup>(17)</sup> Afghani<sup>(24)</sup> Malaysian<sup>(19)</sup> and Chinese<sup>(22)</sup> university students, while about 83% of participated students know that HIV can be transmitted from mother to her newborn baby. These findings are consistent with Jordan<sup>(17)</sup>, Afghanistan<sup>(24)</sup>, Malaysia<sup>(19)</sup>, Japan<sup>(25)</sup>, and razor blade with an infected person (72%) similar with high school students in Saudi Arabia.<sup>(18)</sup> However, there is a misconception about the infectivity of breast milk as only (45%) of students identify this mode of transmission, similar low finding has been reported among Malaysian (54%),<sup>(19)</sup> and Nigerian youth (13%).<sup>(26)</sup> These findings about mode of transmission can be attributed to the type of information that is usually communicated in any health education campaign as these campaigns concentrate on three modes: sexual, blood transfusion, and injections. While these educational campaigns are not concentrated on the breast milk route. On the other hand the present study showed the presence of some misconceptions regarding the modes that cannot transmit HIV among the students. For example half of the students identify that HIV can be transmitted by sharing food utensils, these findings are similar to findings among Emirate<sup>(20)</sup> and Chinese<sup>(22)</sup> university students. Also 61% of the students believe that HIV can be transmitted by mosquito bites, which is similar to the finding in the Turkish study.<sup>(27)</sup> Moreover on

agreement with Jordanian <sup>(17)</sup> and Chinese <sup>(22)</sup> studies, about 53% of students believe that they can get HIV through using public toilets and swimming pools.. Also 46% believe that they HIV can be transmitted through sharing belonging of HIV positive person, while 50% believe that the HIV can be transmitted by cough. However, most of students knew cannot get by hugging and shaking hands (82%) which is similar to the finding reported among Sudanese <sup>(28)</sup> and Chinese <sup>(22)</sup> university students. Overall the level of misconception among student participated in this study about these routes that cannot transmitted HIV is within the same reported level in the previous studies in Emirates,<sup>(20)</sup> Jordan <sup>(17)</sup> and China <sup>(22)</sup> , but an Omani study among medical students in Oman has showed better level of knowledge.<sup>(1)</sup> And this can be referred to the influence of being medical students. the explanation of presence of such level of misconception about certain mode of transmission can be attributed to the fact that most of health education program focusing on sexual intercourse, using injections and blood transfusion as the top of means of the disease transmission in other hand there is neglected to the routine and daily activity can or cannot transmitting the disease. Furthermore, more than three quarter of the students in current study believed that HIV could be prevented and most of students believe that avoiding HIV\AIDS transmitted through blood transmission such as blood testing and avoiding contaminated tool is more effective than avoiding extramarital relations and proper condom use in HIV prevention. These finding consistent with the previous studies did in Saudi Arabia, <sup>(9)</sup> Turkey <sup>(16)</sup> and Nigeria. <sup>(26)</sup> This may reflect the effect of the conservative culture on the students' attitude in discussing the importance of avoiding risky behavior such as extra-marital relations or usage of condoms as preventive measures.

However, the current study revealed that almost one third of students have misconception about isolated people living with HIV\AIDS as one of the effective measures to prevention, these finding agreed with the previous studies among Turkish <sup>(27)</sup> and Chinese university students' <sup>(6)</sup> These misconceptions may increase the stigmatization of HIV positive people, as was shown in a study in San Francisco, California where students with misconceptions about transmission of HIV through casual contact were more likely to answer that students with AIDS should not be allowed to attend school. <sup>(29)</sup>

In term of attitude toward HIV/ AIDS, in the present study found that the majority of the students have positive attitudes towards preventing measures for HIV/AIDS. For example about two thirds of students accepted to be tested for HIV. Similar result was reported in study among students in Oman,<sup>(1)</sup> and among Nigerian adult <sup>(26)</sup> There were some positive opinions such as HIV testing should be conducted compulsory before marriage through premarital counseling, testing for HIV. This can influence positively

the utilization of the premarital testing program that will be implemented in Qatar in 2010 like neighbor countries <sup>(20)</sup>, which will include a part of genetic diseases HIV as well as other STD that consider as risk factor to contract HIV like syphilis, and hepatitis B.

Most of the students in our study (86%) believe that would support the awareness campaign towards preventing measures for HIV through either university based or community based campaigns. These finding is consistent with other findings in other community such as china. <sup>(22)</sup> most of students support public health promotion to prevent HIV among students. Such positive attitude can give great support for any HIV prevention program in Qatar by involving youth to participate actively in such program, which gives more effectiveness and sustainability

Furthermore, since the discussion in STD including HIV\AIDS, their transmission routs and ways of prevention is one of the sensitive matters in our region. In the present study, we found that attitude of students prefer to discuss the preventive measures such as use of condom in the media more than in a field of study.

Students had obtained information and preferred discussed on HIV/AIDS from various sources, the present study revealed that the mass media (TV\Radio 74%, Internet 73%, News paper\Magazine 61.6%) was identified as the major source of information, While school based health education campaign was the least source (31.8%). this can be attributed to lack of lectures, workshops and school campaigns for HIV\AIDS as there is no sustainability for this program as it started on 2002 for one year and then stopped therefore the majority of the students are taking the information from the mass media channels, namely internet.

Using mass media as the main source of information for HIV\AIDS has been reported in several previous studies, for example 90% of emirates university students use internet & TV<sup>(20)</sup> while in Jordan half of students use TV and third of them uses Newspaper<sup>(17)</sup> Similar to Jordanian study, there are Iranian<sup>(21)</sup> Indian <sup>(30)</sup> Malaysian<sup>(31)</sup> Chinese<sup>(22)</sup>, Turkish <sup>(27)</sup> studies have reported the same finding.

In agreement with previous studies among emirates students<sup>(20)</sup> and Afghanistan students<sup>(24)</sup>, the present study found the majority of students prefer the internet websites as a means to discuss their enquires about HIV\AIDS (76%), followed by discussion with their physician (49.3%), then friends\peers, teachers, parents\relatives (32%,29%, 28%) respectively. However there is other studies reported that other

preferred sources to for discussion other than media such as friends among Saudi <sup>(18)</sup> Kazakhstani students<sup>(29)</sup>, or physician among Chinese students<sup>(22)</sup>

The current study showed significant difference between males and females in their knowledge, in agreement with previous studies in UAE <sup>(20)</sup> Jordan <sup>(17)</sup> and China <sup>(22)</sup>. To our results found that males are more knowledgeable than females. Agrawal et al found that boys had better knowledge than girls and their explanation for this finding was that boys feel freer than girls to talk about matters relating to sex and HIV/AIDS <sup>(23)</sup>. However such finding is not consistent with some previous studies Malaysia and Afghanistan <sup>(19,24)</sup> that found that female more knowledgeable than males or other studies (Malawi & Iran)<sup>(32,21)</sup> with no significant differences.

In the present study, males were more likely to respond correctly to such questions as HIV cannot be transmitted by the use of a toilet seat, swimming in the same water, wearing the clothes of someone with AIDS or through the cough of someone who is infected with HIV virus, and can prevented through condom use while female more responded correctly to can prevented through blood screening before transfusion. This documented shown that young males are more willing to take risks, as they engage in significantly more risky behaviors' than women, a fact which may be explained by the theory of gender roles.<sup>(33)</sup>

It is well documented that females often have less access to education, training and productive resources.<sup>(34)</sup> There are several practices increase women's difficult to access information on HIV risks such as marriage patterns and age differences between spouses, cultural expectations of women's.<sup>(35)</sup> Nevertheless, was found the female expressing greater acceptance in attitudes towards HIV\AIDS preventive measures than males for example female believed discussed preventive measures for HIV\AIDS through media and support the awareness campaign towards preventive spread of HIV more than male (72% versus 68%) and (88% versus 81%) respectively. Such findings have been reported by previous studies in Emirates <sup>(20)</sup> and China. <sup>(6)</sup>

There were significant differences in the responses provided on the source of information about AIDS with regard to students' gender; the current study found internet ranked first among males while TV\Radio ranked first among females. Also female students more often reported TV\Radio and teachers as a source of information than male, while male students reported the friends\peers as source of information more than female.

However, for the source of information among Saudi students friends ranked first among males while booklets ranked first among females<sup>(9)</sup>. Among Afghanistan students there is no statistically significant difference was found between genders. The majority mentioned health workers as a main source (41.7%) and television as a main channel of information (52.3%)<sup>(24)</sup>, and among Chinese students more males received AIDS information from newspapers, while more females received it from public displays such as shop windows and bill posters<sup>(22)</sup>. As for the discussion in HIV\AIDS, the current study was found significant difference which female students preferred discussed with parents\relatives and TV\Radio more than male. While the male students preferred friends\peers more than female students. These finding similar with Chinese university students which that the female discussed with their parents \relatives more than male (28% versus14%)<sup>(22)</sup>.

### **Conclusion and recommendation**

In conclusion, the present study has found that the universities students in Qatar have deficiencies with respect to their knowledge and amount of information received on HIV and AIDS related topics. With most of misconception were noted in routes of transmission were observed however most of the students have been reported to have positive attitudes toward HIV\AIDS preventive measures and mass media was regarded as the main source of information and most of the students preferred internet to discuss HIV\AIDS.

It is recommending that health authorities to establish a well-structured health education programs in a way to address misconceptions about the routes of transmission of HIV. Such program can be initiated from schools and extended beyond formal education to reach parents and other adults in the community, in collaboration between the Universities, Ministries of Education and Health, and youth organizations to implement comprehensive preventive programs that based on youth friendly concept module to encourage students to discuss HIV\AIDS with their teachers and health care providers, and establish health education messages for HIV\AIDS through the preferred channels like internet education program and sponsored by Health Education Authorities, . Also integration of health education for HIV\AIDS in curriculum of all colleges through subjects like science, sociology, behavioral science, or life skills courses.

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Table 1 The distribution of Socio-demographic Variables of students (N = 781)

Variable	Number	Percentage (%)
Age		
16-18	154	19.7
19-21	423	54.2
22-24	204	26.1
Sex		
Male	251	32.1
Female	530	67.9
National		
Qatari	357	45.7
Non Qatari	424	54.3
Social status		
Single	710	90.9
Married	71	9.1
University		
Governmental	385	49.3
Non Governmental	396	50.7
Grade		
1	297	38.1
2	201	25.7
3	169	21.6
4	104	13.3
5	10	1.3

Table -2 Frequency distribution of correct responses about HIV/AIDS knowledge among university students in Qatar (N = 781)

<b>Statements regards general knowledge</b>	Correct No. (%)
AIDS is a serious disease	762 (97.6)
AIDS is a disease existing in Qatar	457 (58.5)
AIDS is caused by HIV virus	649 (83.1)
AIDS is disease that can be transmitted from person to person	719 (92.1)
AIDS is not a genetic disease	506 (64.8)
AIDS can be prevented	612 (78.4)
AIDS cannot be completely cured	501 (64.1)
An infected person with HIV might not have symptoms and signs of the disease	511(65.4)
<b>Statement regards HIV/AIDS transmitted by</b>	
Sexual intercourse	748(95.8)
Drug injecting through drug abuse	649(83.1)
Sharing injection needle or surgical operation devices of an infected person	741(94.9)
Donating organs, tissues and blood of an infected person	709(90.8)
An infected pregnant woman to her newborn baby throughout pregnancy or labor	649(83.1)
Breast milk of an infected mother	354(45.3)
Using razor blade together with an infected person	564 (72.2)
<b>Statement regards HIV/AIDS is not transmitted by</b>	
Sharing food utensils of an infected person	390( 49.9)
A bite of a mosquito (insect)	304( 38.9)
Sharing public toilets and swimming pools with an infected person	367 (47.0)
Using an infected person's belonging such as clothes, comb, underwear and towel	420 (53.8)
Exposure to an infected person who coughs or spits	396 (50.7)
Touching an infected person such as hugging, holding and shaking hands	639 (81.8)
<b>Statements regards preventive measures</b>	
Avoiding extra marital relations	541(69.3)
Proper condom use	461(59.0)
Isolating people living with HIV or AIDS is not an effective measures to prevent HIV from spreading	240(30.7)
Screening blood before transfusions	632(80.9)
Avoiding contact with any used needles, syringes and razor blades	665(85.1)
Premarital testing	600(76.8)

Table-3 University students' in Qatar Attitudes towards HIV/AIDS (N = 781)

Statements regards HIV/AIDS Attitudes	Agree	Neutral	Disagree
	No. (%)	No. (%)	No. (%)
Do you accept to be tested for AIDS if the test provided confidentiality?	605 (77.5)	100(12.8)	76 (9.7)
Do you think that HIV/AIDS preventive measures such as use of condom could be discussed through media e.g. TV, Radio and Newspaper?	556 (71.2)	127(16.3)	98 (12.5)
Do you think that HIV/AIDS preventive measures such as use of condom could be discussed publicly in schools and University?	479 (61.3)	143(18.3)	159 (20.4)
Do you think that HIV testing should be conducted compulsory before marriage through premarital counseling?	673 (86.2)	66(8.5)	42 (5.4)
Would you support the awareness campaign toward preventing spread of HIV among your colleges inside or outside college?	674 (86.3)	79(10.1)	28 (3.6)

Figure (1): Qatar university students' responses on Source of Information about HIV/AIDS (N = 781)

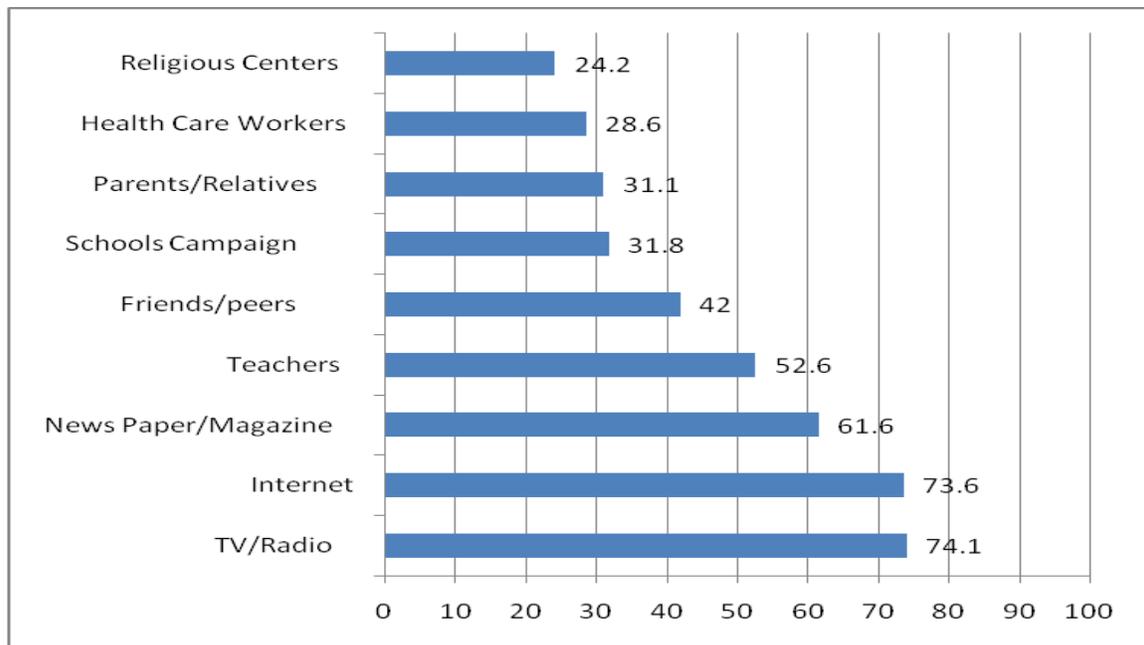


Figure (2): Qatar university students responses on source of discussion about HIV/AIDS (N=781)

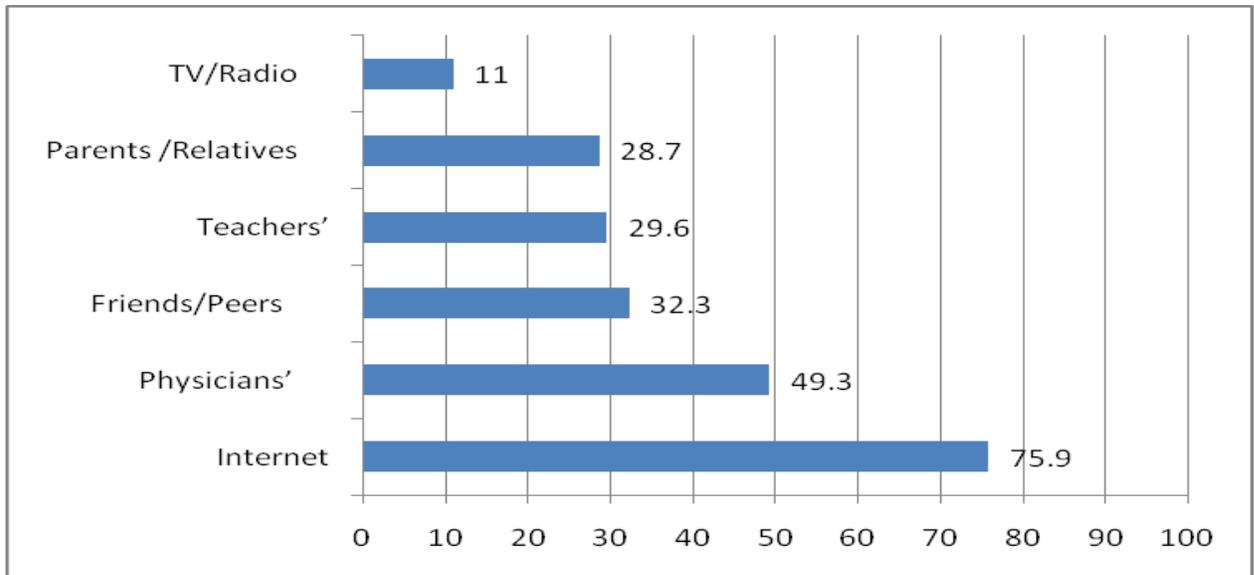


Table (4): Distribution of the university students' in Qatar knowledge about HIV&AIDS according to gender differences (N = 781).

	Female n = 530	Male n = 251	P-value
<b>Statements regards HIV\AIDS general knowledge</b>	Correct	Correct	
	No. (%)	No. (%)	
AIDS is a serious disease	520(98.1)	242(96.4)	0.118
AIDS is a disease existing in Qatar	312(58.9)	145(57.8)	0.415
AIDS is caused by HIV virus	431(81.3)	218(86.9)	0.032
AIDS is disease that can be transmitted from person to person	481(90.8)	238(94.8)	0.031
AIDS is not a genetic disease	361(68.1)	145(57.8)	0.003
AIDS can be prevented	416(78.5)	196(78.1)	0.484
AIDS cannot be completely cured	346(65.3)	155(61.8)	0.189
An infected person with HIV might not have symptoms and signs of the disease	347(65.5)	164(65.4)	0.516
<b>Statement regards HIV\AIDS transmitted by</b>			
Sexual intercourse	512(96.6)	236(94.0)	0.072
Drug injecting through drug abuse	441(83.2)	208(82.9)	0.490
Sharing injection needle or surgical operation devices of an infected person	505(95.3)	236(94.0)	0.280
Donating organs, tissues and blood of an infected person	485(91.5)	224(89.2)	0.186
An infected pregnant woman to her newborn baby throughout pregnancy or labor	444(83.8)	205(81.7)	0.263
Breast milk of an infected mother	235(44.3)	119(47.4)	0.233
Using razor blade together with an infected person	379(71.5)	185(73.7)	0.291
<b>Statement regards HIV\AIDS is not transmitted by</b>			
Sharing food utensils of an infected person	267(50.4)	123(49.0)	0.389
A bite of a mosquito (insect)	202(38.1)	102(40.6)	0.275
Sharing public toilets and swimming pools with an infected person	225(42.5)	142(56.6)	0.000
Using an infected person's belonging such as clothes, comb, underwear and towel	272(51.3)	148(59.0)	0.027
Exposure to an infected person who coughs or spits	254(47.9)	142(56.6)	0.015
Touching an infected person such as hugging, holding and shaking hands	437(82.4)	202(80.5)	0.283
<b>Statements regard preventive measures</b>			
Avoiding extra marital relations	378(71.3)	163(64.9)	0.043
Proper condom use	290(54.7)	171(68.1)	0,000
Isolating people living with HIV or AIDS is no an effective measures to prevent HIV from spreading	160(30.2)	80(31.9)	0.346
Screening blood before transfusions	443(83.6)	189(75.3)	0.004
Avoiding contact with any used needles, syringes and razor blades	455(85.9)	210(83.7)	0.243
Premarital testing	412(77.7)	188(74.9)	0.215

Table (5): Distribution of attitudes of the university students in Qatar towards HIV&AIDS preventive according to gender differences (N= 781)

	Female n=530	Male n=251	
<b>Statements regards HIV\AIDS Attitudes</b>	Agree No. (%)	Agree No. (%)	P-value
Do you accept to be tested for AIDS if the test provided confidentiality?	413(77.9)	192(76.5)	0.646
Do you think that HIV\AIDS preventive measures such as use of condom could be discussed through media e.g. TV, Radio and Newspaper?	383(72.3)	173(68.9)	0.021
Do you think that HIV\AIDS preventive measures such as use of condom could be discussed publicly in schools and University?	324(61.1)	155(61.8)	0.685
Do you think that HIV testing should be conducted compulsory before marriage through premarital counseling	466(87.9)	207(82.5)	0.107
Would you support the awareness campaign toward preventing spread of HIV among your colleges inside or outside college?	470(88.7)	204(81.3)	0.016

Figure (3) Distribution of source of information of HIV/AIDS according to gender differences (N=781)

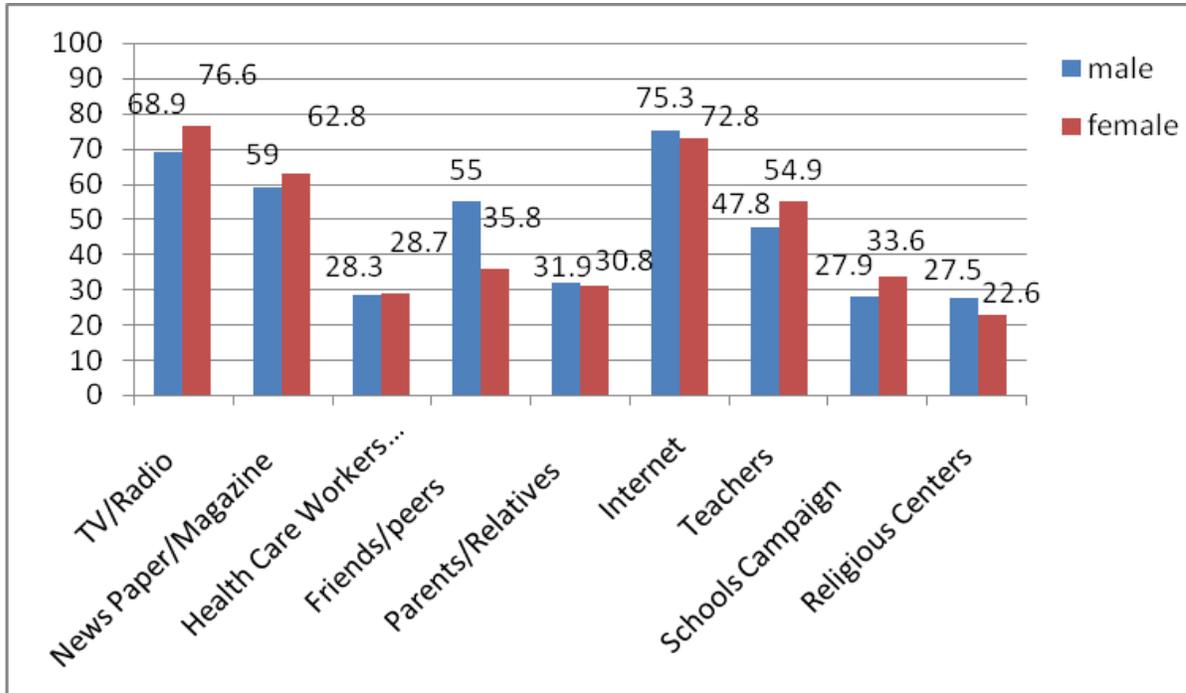


Figure (4): Distribution of source of discussion about HIV/AIDS according to gender differences (N=781)

