

# A Cross-sectional Assessment of Knowledge, Attitudes and Beliefs Concerning HIV/AIDS among Pakistani University Population

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**Salman, *et al.*: Knowledge, Attitudes and Beliefs regarding AIDS**

The under-reporting of human immunodeficiency virus/acquired immune deficiency syndrome, a serious health and development challenge across the globe, is mainly due to societal stigma, inadequate surveillance, voluntary counseling, testing systems, and lack of knowledge among the general population and health practitioners. Therefore, this cross-sectional study aimed to assess the knowledge, attitude and beliefs of Pakistani University population regarding human immunodeficiency virus/acquired immune deficiency syndrome. A total of 1300 questionnaire were administered and 1043 were received, with a response rate of 80.2 %. There was preponderance of males (66.5 %), undergraduates (87.7 %) and 21-25 years age group (60.9 %). The mean human immunodeficiency virus/acquired immune deficiency syndrome knowledge score was  $18.81 \pm 5.34$  and majority (72.1 %) of the participants was found to have adequate knowledge (knowledge score  $>15$ ) of the disease. The mean attitude score was  $3.71 \pm 1.61$  and majority of the participants in this study had positive attitude (attitude score  $\geq 4$ ) towards human immunodeficiency virus/acquired

**immune deficiency syndrome. The positive predictors of adequate human immunodeficiency virus/acquired immune deficiency syndrome knowledge were female gender, medical/pharmacy education and Muslims. The significant predictors of positive attitude towards human immunodeficiency virus/acquired immune deficiency syndrome were found to be female gender and medical/pharmacy education. The results of the present study indicate that Pakistani University population has adequate human immunodeficiency virus/acquired immune deficiency syndrome knowledge as well as positive attitudes. However, some serious misconceptions need to be addressed.**

**Key words: AIDS, Adults, Knowledge, Pakistan**

Human immunodeficiency virus (HIV), causative agent of the acquired immune deficiency syndrome (AIDS), is one of the most serious health and development challenge worldwide as nearly 37 million people are living with the disease and 1.1 million people have died from AIDS-related illnesses by the end of 2015<sup>[1]</sup>. Globally, an approximately 0.8 % of adults aged 15 to 49 y are living with HIV/AIDS, although the burden of the epidemic continues to vary significantly among countries and regions. However, 90 % of the HIV/AIDS sufferers belong to developing nations<sup>[2]</sup>.

Based on the estimates of United Nations Program on HIV/AIDS, 0.1 million people (less than 0.1 % of the total adult Pakistani population) were infected with HIV and deaths related to AIDS-related illnesses were 3600<sup>[3]</sup>. Similar to many countries, under-reporting of HIV/AIDS is mainly due to the societal stigma related to the HIV/AIDS, inadequate surveillance and voluntary counseling and testing systems, as well as the lack of knowledge among the general population and health practitioners<sup>[4]</sup>. Although Pakistan is amongst the low-prevalence countries but there are some alarming factors that put it at risk for a full-blown AIDS epidemic if immediate and strong action is not taken. These risk factors include higher below poverty line population, low literacy rate (adult literacy rate= 56.4 % and female literacy rate= 42.7 %)<sup>[5]</sup>, porous borders, rural to urban and intrastate migration of male populations, trafficking of females into prostitution, high stigma concerning sex and sexuality, structured commercial sex and casual sex with non-regular partners, male resistance to use condom, high prevalence of sexually transmitted diseases and low status of women resulting to an inability to negotiate safe sex<sup>[4]</sup>. It has been reported that there is a common misperception in Pakistani society that being the Muslim, HIV cannot be contracted. Such foresight demands continuous monitoring and preventive intrusions to control the

spread of HIV<sup>[6]</sup>. The literature review indicated that a significant proportion of HIV/AIDS cases were the young people, under the age of 25 y<sup>[7]</sup>. These points warrant assessing the knowledge, attitude and beliefs of university students about the HIV/AIDS. Therefore, the present study aimed to assess the knowledge, attitudes and beliefs of Pakistani university students regarding HIV/AIDS.

This cross-sectional study was conducted at four Pakistani Universities (University of the Punjab, University of Health Sciences, University of Engineering and Technology, and The University of the Lahore) at Lahore, the capital of Punjab province, during a period of 7 mo (December 2015-June 2016). We employed a convenient sampling procedure and university students (undergraduate and postgraduate) and employees (academic and non-academic) were approached by the researchers during the university hours. Researchers explained the purpose of the study and those willing to participate were administered the questionnaires. If needed, assistance was provided by the researchers.

The protocol of the current study was approved by the Human Ethics Committee of the Punjab University College of Pharmacy, University of the Punjab, Lahore, Pakistan. A written informed consent was obtained from every respondent before recruitment in the study.

In the current study, knowledge, attitudes and beliefs of Pakistani University population were assessed by the questionnaire developed by DiClemente *et al.*<sup>[8]</sup>. The questionnaire was modified by the researchers. It

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had 45-items and was comprised of four parts. Part 1 had 5-items to gather demographic information. Part 2 had 30-items to assess the knowledge regarding HIV/AIDS. Knowledge scores were obtained by giving 1 score to every right response and zero to every wrong response or "Don't know". Possible maximum score was 30 and minimum was zero. Respondents with scores >15 were considered to be having adequate knowledge in this study. Part 3 had 7-items to assess the attitudes towards HIV/AIDS. Each positive attitude was given 1 point and zero point was given to each negative attitude. Possible attitude score ranged from 0-7; respondents with attitude score  $\geq 4$  were considered to have positive attitudes towards HIV/AIDS. Part 4 of the questionnaire had 3-items to determine the beliefs about HIV/AIDS.

Cognitive debriefing interviews on the study instrument were conducted on ten university students to assess the clarity, relevance and interpretation of every question and response categories. The answers of these interviews were recorded verbatim. All subjects reported that they understood the questions and response categories completely and all questions were relevant to HIV/AIDS. To ensure reliability, a pilot study was carried out among 30 students. Test-retest reliability was assessed by examining the intra-class correlation coefficient. The study instrument was found to have good reliability (intra-class correlation coefficient = 0.85).

Continuous variables were presented as mean  $\pm$  standard deviation (SD) and categorical variables were presented as number and percentages. Binary logistic regression analysis was performed to determine the factors associated with adequate knowledge of, and positive attitude towards HIV/AIDS. Covariates used for the regression model were age groups, gender, participant categories, education and religion. A p-value of less than 0.05 was considered to be statistically significant. All analysis was performed using SPSS version 22.0.

A total of 1300 questionnaire were distributed and 1043 complete questionnaire were received, with a response rate of 80.2 %. Demographic data of the respondents are presented in Table 1. Majority of the respondents were undergraduate (87.7 %) males (66.5 %) and of 21-25 y of age (60.9 %). The mean HIV/AIDS knowledge score was  $18.81 \pm 5.34$ . A vast majority of study participants had adequate knowledge (knowledge score >15) of HIV/AIDS (72.1 %). The mean attitudes score was  $3.71 \pm 1.61$  and majority of

the participants in this study had positive attitudes towards HIV/AIDS. Regarding the beliefs about HIV/AIDS, 28.8 % believed in that living in a coastal areas increase the chances of getting HIV/AIDS, majority of the participants believed in that either they were not the kind of persons who would get infected with HIV or they were less likely than most people to get HIV/AIDS. Correlation between HIV/AIDS knowledge and attitude were interpreted as per following criterion: 0-0.25 = weak, 0.25-0.5 = fair, 0.5-0.75 = good and more than 0.75 = excellent correlation<sup>[9]</sup>. There was significant positive linear correlation between HIV/AIDS knowledge and attitude. As shown in Table 2, the positive predictors of adequate HIV/AIDS knowledge were female gender, medical/pharmacy education and Muslims. The positive predictors of positive attitudes towards HIV/AIDS were found to be female gender and medical/pharmacy education (Table 3).

The main findings of this study revealed that Pakistani university population had sound HIV/AIDS knowledge and positive attitudes. Beyond that, increasing age, female gender and medical/pharmacy education was significantly associated with higher HIV/AIDS knowledge and attitude scores.

In the current study, university students had adequate levels HIV/AIDS knowledge, which was comparable to findings of earlier studies conducted on United Arab Emirates university students<sup>[10]</sup> and Israeli pre-clinical medical students<sup>[11]</sup>. Bektas and Kulakac reported that the Turkish nursing students had moderate level of HIV/AIDS knowledge<sup>[12]</sup>. Despite of the adequate

**TABLE 1: DEMOGRAPHICS OF THE STUDY PARTICIPANTS**

Characteristics	N (%)
<b>Age groups (years)</b>	
17-20	348 (33.4)
21-25	635 (60.9)
$\geq 26$	60 (5.8)
<b>Gender</b>	
Male	694 (66.5)
Female	349 (33.5)
<b>Education</b>	
Medical/pharmacy	695 (66.6)
Non-medical/non-pharmacy	348 (33.4)
<b>Participants category</b>	
Undergraduate	915 (87.7)
Post graduate	116 (11.1)
Staff	12 (1.2)
<b>Religion</b>	
Muslims	1026 (98.4)
Non-Muslims	17 (1.6)

Total participants (n) were 1043. Majority of the respondents were undergraduate (87.7 %) males (66.5 %) and of 21-25 y of age (60.9 %)

level of overall knowledge score, some participants had some serious misconceptions/stigma regarding HIV/AIDS such as all gay men (37.0 %) and women (49.4 %) have HIV/AIDS, HIV/AIDS can be contracted by food (32.5 %), HIV/AIDS can be contracted by kissing (44.5 %), sharing personal belongings (38.9 %) and touching (30.2 %) the AIDS sufferers, and HIV/AIDS vaccine has been developed (73.9 %). These findings indicate that there is a need to advocate for appropriate HIV/AIDS awareness raising campaigns in

**TABLE 2: PREDICTORS OF ADEQUATE HIV/AIDS KNOWLEDGE**

Factors	Univariate	Multivariate
	Odds ratio (95 % CI)	Odds ratio (95 % CI)
<b>Age</b>		
17-20	1.00 (Reference)	1.00 (Reference)
21-25	1.38 (1.04-1.84)	1.42 (1.06-1.90)
>26	2.17 (1.087-4.33)	2.00 (0.83-4.81)
<b>Gender</b>		
Male	1.00 (Reference)	1.00 (Reference)
Female	1.82 (1.34-2.47)	1.86 (1.36-2.55)
<b>Participants</b>		
Undergraduate	1.00 (Reference)	1.00 (Reference)
Postgraduate	1.73 (1.07-2.82)	1.35 (0.76-2.40)
Staff	0.57 (0.18-1.81)	0.53 (0.14-1.92)
<b>Education</b>		
Non-medical/non-pharmacy	1.00 (Reference)	1.00 (Reference)
Medical/pharmacy	1.49 (1.12-1.97)	1.39 (1.03-1.86)
<b>Religion</b>		
Muslim	1.00 (Reference)	1.00 (Reference)
Non-Muslim	0.33 (0.12-0.93)	0.22 (0.08-0.65)

The positive predictors of adequate HIV/AIDS knowledge were female gender, medical/pharmacy education and Muslims

**TABLE 3: PREDICTORS OF POSITIVE ATTITUDES TOWARDS HIV/AIDS**

Factors	Univariate	Multivariate
	Odds ratio (95 % CI)	Odds ratio (95 % CI)
<b>Age</b>		
17-20	1.00 (Reference)	1.00 (Reference)
21-25	1.26 (0.97-1.63)	1.27 (0.97-1.66)
>26	2.28 (1.26-4.12)	1.48 (0.71-3.08)
<b>Gender</b>		
Male	1.00 (Reference)	1.00 (Reference)
Female	1.49 (1.15-1.94)	1.43 (1.09-1.86)
<b>Participants</b>		
Undergraduate	1.00 (Reference)	1.00 (Reference)
Postgraduate	1.87 (1.24-2.82)	1.52 (0.092-2.49)
Staff	1.75 (0.52-5.85)	1.86 (0.51-6.78)
<b>Education</b>		
Non-medical/non-pharmacy	1.00 (Reference)	1.00 (Reference)
Medical/pharmacy	1.57 (1.21-2.03)	1.51 (1.15-1.97)
<b>Religion</b>		
Muslim	1.00 (Reference)	
Non-Muslim	1.30 (0.43-3.48)	

The positive predictors of positive attitudes towards HIV/AIDS were found to be female gender and medical/pharmacy education

the Pakistani universities to decrease misconceptions/societal stigma related to HIV/AIDS. Contrary to the previous findings<sup>[10]</sup>, majority of our participants had overall positive attitudes towards HIV/AIDS. Not surprisingly, we observed that overall knowledge and attitude scores increased significantly with age as participants with higher age had more years of university education. Baytner-Zamir *et al.*<sup>[11]</sup> also reported an overall improvement in the HIV/AIDS knowledge among students as they progressed through their pre-clinical studies. Contrary to the findings of Haroun *et al.*<sup>[10]</sup>, we found out that females had better HIV/AIDS knowledge and attitudes than males. As expected, medical and pharmacy students in our study had significantly better HIV/AIDS knowledge and attitudes, which was mainly due to the fact that these students had significant portion of syllabi regarding all kinds of infectious diseases.

Though the objectives of current study were achieved but there were few limitations. This study was conducted at the four academic institutes at Lahore, so our findings may not be the representative of overall Pakistani university population. Furthermore, HIV/AIDS preventive practices of university students were not assessed in this study and we did not use a probability sampling technique (e.g. random sampling) so we had disadvantages such as selection bias and non-generalizability.

Although, Pakistani University population had good HIV/AIDS knowledge and positive attitudes, there are still misconceptions/misbeliefs regarding HIV/AIDS. Our findings highlight the need to advocate for appropriate HIV/AIDS awareness raising campaigns in the Pakistani universities to reduce misconceptions/societal stigma related to HIV/AIDS.

### Conflict of interest:

All authors declare no conflict of interest.

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