

The Assessment of Knowledge, Attitude, and Practices (KAP) towards HIV/AIDS among the University Students of Twin Metropolitan Cities of Pakistan

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Abstract

Today more tools are available as ever to control the spread of HIV. However, adequate knowledge, reasonable aptitudes, and effective practices among communities, especially among the learned, are essential for the effective implementation of preventative strategies. This study aims to elucidate the extent of knowledge regarding factors that obstruct the full-scale enforcement of HIV /AIDS advocacy and awareness campaigns. This cross-sectional study was conducted from April to June 2016 in the twin cities of Islamabad and Rawalpindi. Data was collected using a questionnaire, and 1303 students (486 males; 817 females) were included in this study. The poll sought to examine students' comprehension of the source of transmission, key high-risk populations, and methods of awareness. According to the study's findings, just 1% of people thought blood transfusions may be a cause of HIV infection/transmission. The majority of respondents identified

commercial sex workers, homosexuals, truck drivers, and IDUs as important high-risk categories. Only 5% of those polled were aware of HIV/AIDS via social media or the National AIDS Control Program. This indicates a serious lack of understanding regarding the transmission channels and risk groups, primarily because of the social stigmas and taboos that revolves around the disease. Social media and academia proved to be the untapped awareness- raising tools for the large-scale dissemination of information. Consequently, the research outlines the essential factors to be considered when developing a strategy framework for future HIV/AIDS advocacy and awareness initiatives.

Keywords: HIV; AIDS; vulnerable population groups; awareness; stigmatization.

Introduction

As of 2021, around 38.4 million individuals were estimated to be HIV-positive, and an astounding 40.1 million people had perished from AIDS-related diseases since the outbreak began ¹. Although mounting trends in the prevalence of HIV have been recorded in all areas of the world, more than two-thirds of reported infections originate from impoverished or emerging countries in Asia and the Pacific region. ². The striking rise is attributed to socio-economic factors including poverty, starvation, sickness, a lack of medical facilities, and most crucially, a lack of knowledge. ³.

Pakistan has been experiencing an increase in the epidemic over time. It is registering the highest rate of increase among all countries in the region despite the availability of life-saving ART ⁴. According to the recent geographical trends, Pakistan has faced a shift from the status of "low prevalence, high risk" category to "concentrated epidemic". The high-risk groups have extended to include the general population, and geographical limits have shifted from major cities and provincial capitals to smaller towns and rural areas. ⁵. In the past two decades, up to eight outbreaks of HIV have been reported in Pakistan, with more than half in a single district Larkana ⁶. The prevalence rate among adults aged from 15 to 49 is 0.2, with 210,000 individuals are living with HIV ⁷. The primary group affected by the recent HIV outbreak in the city is children ⁸.

Various factors including poverty, low levels of literacy, circulation of internal and external migrants, a flourishing sex industry with little or no knowledge of sexually transmitted disease risks, and unsafe blood transfusions have made Pakistan vulnerable to increased risk of the HIV epidemic ^{9 10}.

Unfortunately, Pakistan is also a part of the golden crescent for the opium trade resulting in increased drug addiction among the general population ¹¹. Widespread needle sharing among IDUs combined with a lack of awareness about HIV/AIDS transmission has resulted in the penetration of this havoc in the educated, young university students, which is quite alarming ¹². These young, sexually active individuals are serving as the gateway for the epidemic to the general population. Therefore, assessment of knowledge of this young population regarding the HIV/AIDS epidemic is critically important to devise future preventive strategies by the government and its global partners.

Previously many strategic plans have been made and tried to be implemented in the country. These plans mainly focused on HIV testing, as well as care-and-treatment programs. However, little efforts have been made to spread adequate awareness about the nature of the infection, causes, risk factors, testing, and prevention among the general population. Accessing and raising awareness regarding HIV and AIDS is thus quite important, owing to the lack of prophylactic as well as therapeutic vaccines in general and limited access to antiretroviral drugs to infected individuals in resource-limited settings¹³. Consequently, this study serves as a preliminary step to evaluating the awareness and knowledge of university students about HIV/AIDS in the twin cities of Pakistan.

Materials and Methods

Study Area and Design

A cross-sectional survey study was conducted from April to June 2016. The target group of the current study consisted of students (undergraduates and postgraduates) from several institutes across Rawalpindi and Islamabad (twin cities) in Pakistan (**Figure 1.**). The twin cities represent the third most populous metropolitan area in Pakistan, situated in the Potiphar region of northern Punjab, with a population of around five million.¹⁴

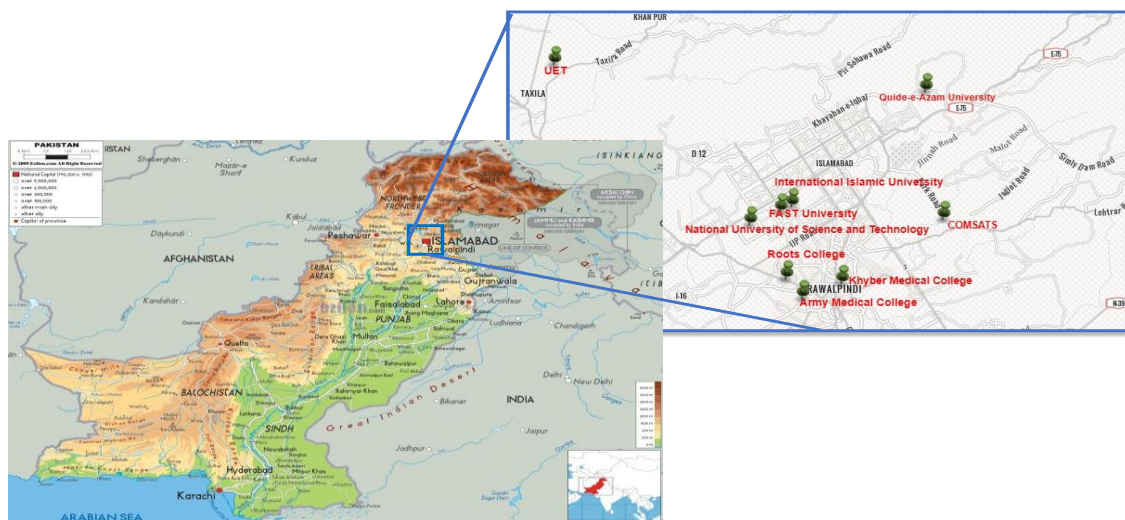


Figure 1: Universities of Twin Metropolitan Cities of Pakistan. The respondents' universities and colleges included the National University of Sciences and Technology (NUST), Quaid-e-Azam University (QAU), National University of Computer and Emerging Sciences (FAST), International Islamic University (IIU), COMSATS Institute of Information Technology, University of Engineering and Technology (UET), Army Medical College (AMC), Khyber Medical College and Roots College.

Around 1,500 respondents of all age groups were asked to participate in the study. Ethical consent was taken from all participants as the first step of the procedure. The research protocols and procedures were reviewed thoroughly before initiating the procedure.

Sample size determination

The sample size of 1,303 students was calculated by using Rao soft online sample size calculator based on the total estimated population and response rate. The sample size was selected by the non-probability sampling method.

Data collection method

The questionnaire was developed with 31 questions categorized into two main categories. The first category included seven personal questions related to socio-demographic details including education, economic situation, use of the internet and familial information, etc. The second scale involved 24 questions about four important tiers including signs/symptoms of the disease, risk factors, risk groups, diagnosis options, and treatment methods of HIV/AIDS. The survey included both closed and open-ended questions.

Statistical Analysis

The replies were given special codes, entered, refined, and then examined using SPSS 20 software. The graphs were made using Microsoft Excel.

Results

Demographic characteristics of the respondents

Details of the demographic characteristics of the respondents are presented in **Table 1**.

More than half (64.4%) of the respondents were female, and the rest were male (35.6%). The demographic data overall indicated that the respondents belonged to well-educated parents that were financially stable. These young university students had very well access to the latest information through social media, electronic media, and the internet. Thus, it can be considered that the respondents' represented the population fraction of the country that is expected to have maximum possible knowledge of the disease and virus.

Table 1: Sociodemographic characteristics of the study participants (n=1303), highlighting the socio-economic status, educational background, and access to the internet.

Demographic Characteristics	Frequency	Prevalence (%)
Gender		
Female	839	64.39
Male	464	35.61
Marital Status		
Single	1199	92.02
Married	104	7.98
Education		

Graduate	941	72.22
Master	158	12.13
M.Phil. and PhD	54	4.14
Father Profession		
Farmer	2	0.15
Govt. Job	1001	76.82
Private Job	73	5.6
Businessman	227	17.42
Mother Profession		
Housewife	656	50.35
Govt. Job	59	4.53
Private Job	588	45.13
Socio-economic status		
Upper class	475	36.45
Poor	348	26.71
Middle class	480	36.84
Internet Usage		
Daily	1250	95.93
Weekly	37	2.84
Monthly	11	0.84
Yearly	5	0.38

Accessing general knowledge about HIV/AIDS

All respondents (100%) maintained that they had heard about HIV/AIDS through a variety of sources. These results provided essential information regarding the potential platforms that could be targeted to spread awareness regarding HIV/AIDS among the young population group (**Figure 2A**).

It can be concluded that these respondents were not appropriately able to discriminate between the causative agent and the disease (**Figure. 2B**).

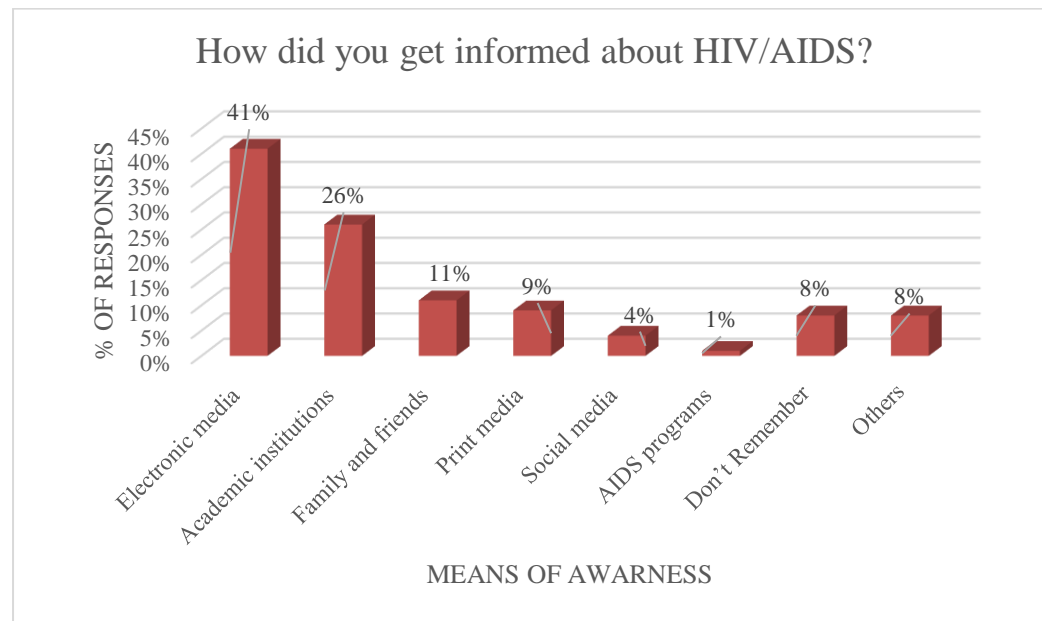


Figure 2A: Means of awareness regarding HIV/AIDS. Major sources of information were electronic media (41%), academic institutions (26%), family and friends (11%), print media (9%), social media (4%), and AIDS programs (1%).

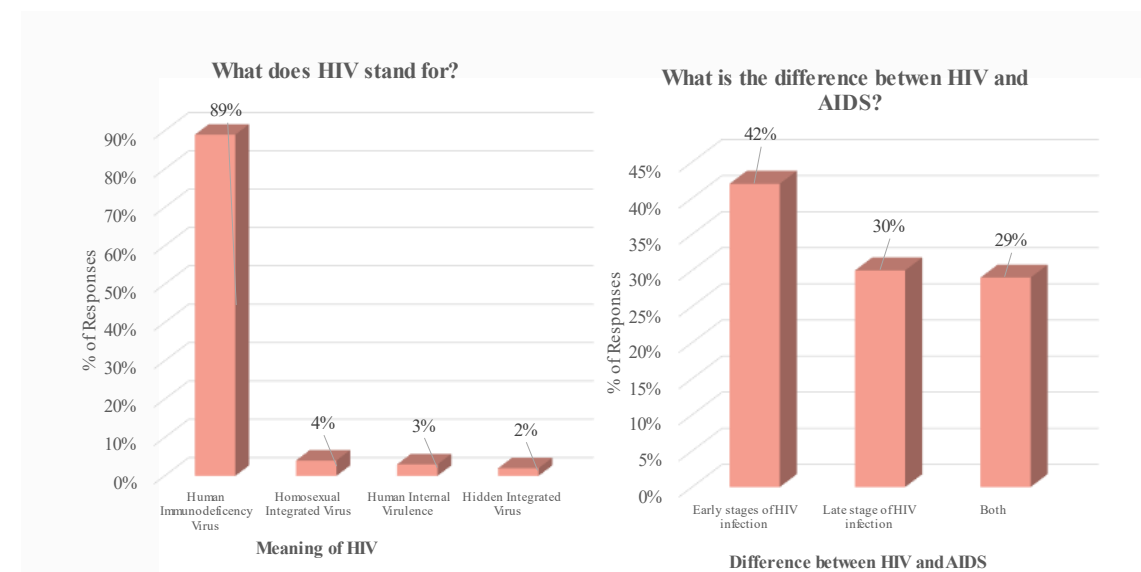


Figure 2B: Basic knowledge Information regarding HIV/AIDS: 89% of participants knew about the acronym HIV and that it meant Human Immunodeficiency Virus, while 42.1% knew that AIDS is a disease immediately contracted after HIV infection.

Accessing knowledge about modes of transmission

To reduce the transmission of HIV and its spread, awareness among people about all possible modes of transmission of the virus is very important. In the survey, several options were provided regarding the modes of transmission (Figure. 3).

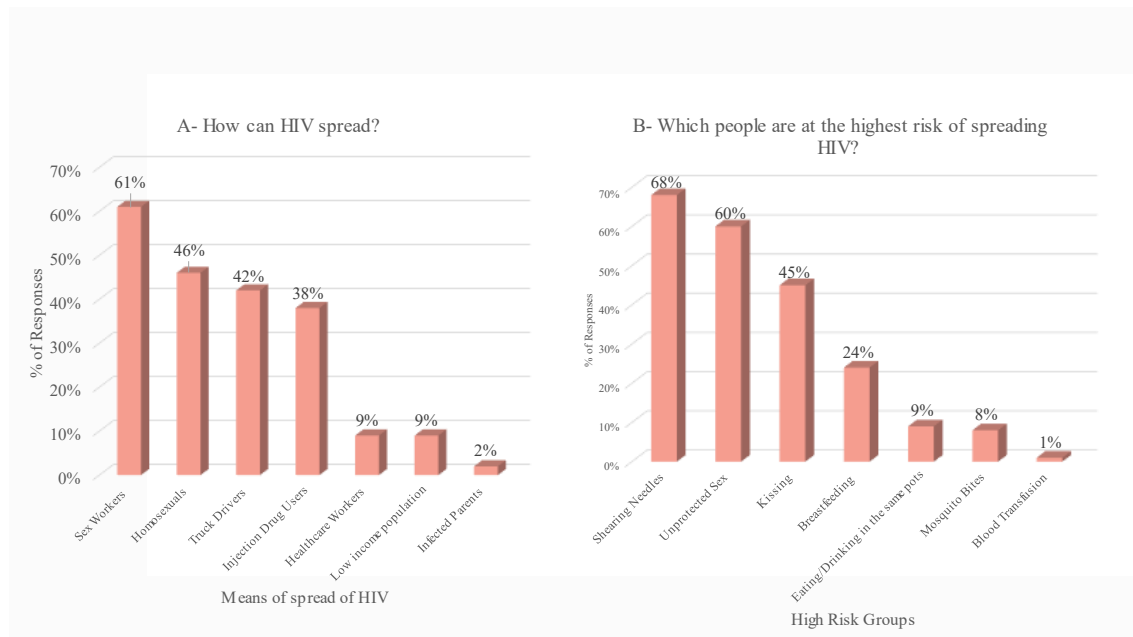


Figure 3: Knowledge about modes of transmission: Unprotected sex (sexual intercourse without a condom) was identified as one of the major causes of HIV transmission by 60% of the respondents; others identified sharing needles (68%) and breastfeeding from infected mothers (24%) as major transmission sources. However, some incorrect sources were also identified such as 45% identified kissing, mosquito bites (8.7%), and eating/ drinking within the same pots (9%) as the source of HIV infection. It is important to note that only 1% of respondents considered blood transfusion as a potential source of HIV infection (Fig. 3A). Maximum respondents (61%) identified commercial sex workers as high-risk groups, followed by homosexuals (46%), truck drivers (42%), injection drug users (38%), healthcare workers (9%), and low-income population (9%). Only 2% considered that children with infected parents are at higher risk of infection (Fig. 3B).

Knowledge regarding symptoms and diagnosis of HIV/AIDS

Early detection is critical for the proper management of infection, and detection, it is important that the general population should have proper knowledge about the signs and symptoms of AIDS. Having the knowledge concerning symptoms and diagnosis of HIV/AIDS or any infection is a must, and the respondents were assessed in this regard (**Figure. 4**). These results overall indicate that majority of the respondents know about the correct diagnostic methods and are willing to get themselves diagnosed if the appropriate and safe diagnostic campaigns/methods are offered.

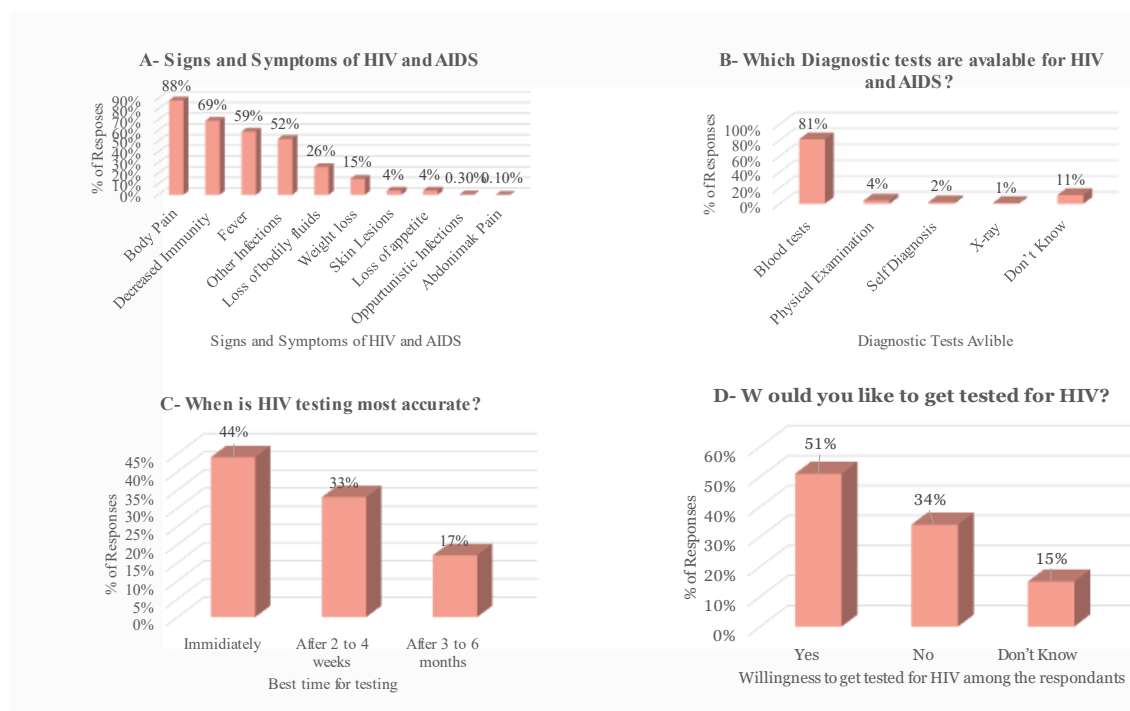


Figure 4: Knowledge regarding symptoms and diagnosis of HIV/AIDS: 88% of respondents chose them to be body pain followed by decreased immunity (69%), fever (59%), chest infection (52%), loss of body fluids (26%), weight loss (15%), skin lesions (4%), loss of appetite (4%), all sorts of infections (0.3%) and 0.1% claimed the symptoms to be abdominal pain only. The respondents seemed fairly aware of the initial symptoms of HIV/AIDS infection. Regarding the best method for diagnosis of HIV/AIDS, respondents selected blood tests (65%), physical examination (3.3%), self-diagnosis (2%), and x-ray (1%). 9% of respondents were not aware of any HIV diagnostic method (Figure. 4B). Similarly, 44% of respondents stated that diagnosis must be made immediately after one think one may have contracted the virus (Figure. 4C). Surprisingly, only half of the respondents (52%) were willing to undergo HIV/AIDS diagnostic testing (Figure. 4D).

Knowledge about prevention and treatment of HIV/AIDS

The participants were asked two basic questions: If HIV could be cured, they could answer yes, no, or not aware, the other question was if medications or treatments were available and effective for treating HIV (Figure. 5).

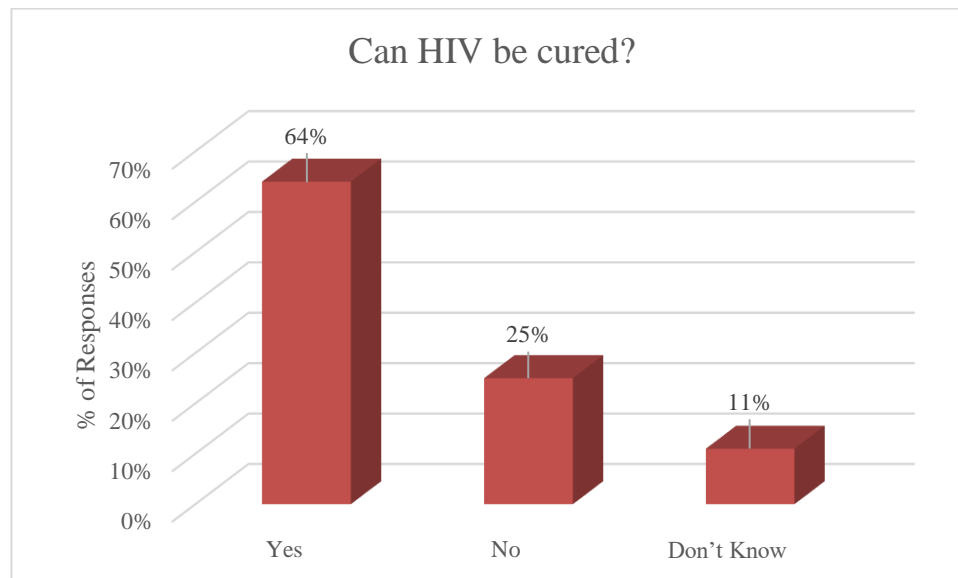


Figure 5: Knowledge about prevention and treatment of HIV/AIDS: Among the total respondents, 47.3% think that HIV/AIDS is not curable, 30.3% stated otherwise while 22.4% were not sure of either. 68% responded that HIV/AIDS patients can survive with proper medication, however, they had poor knowledge of the type of medication or treatment currently available as 30% of them thought that vaccines are available for HIV/AIDS.

Respondents' proposal for awareness of HIV/AIDS

The final objective of the study was to take suggestions from the respondents themselves that what could be the preeminent way to control the spread of HIV and what factors could help in increasing awareness of HIV (Figure 6.).

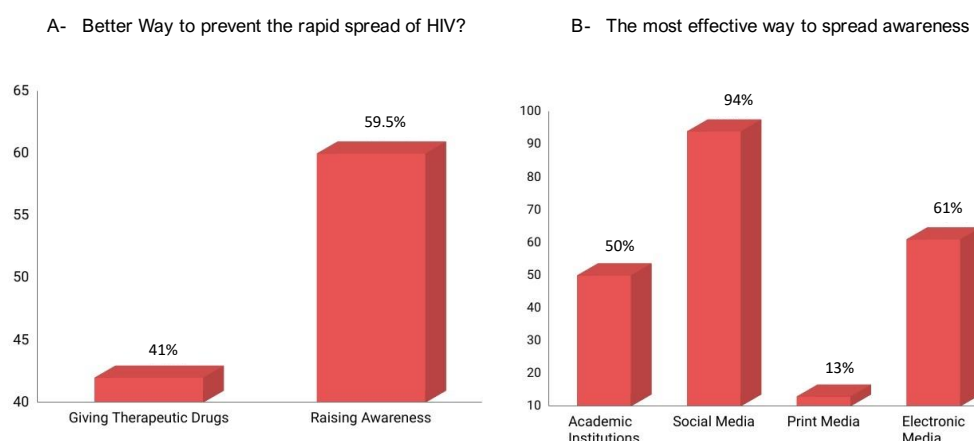


Figure 6: Respondents' proposal for awareness of HIV/AIDS: When inquired about their knowledge of effective ways to control HIV infection, 59.7% responded that antiretroviral drugs were effective, 22% considered vaccines, and 16% considered safe sex to be effective modes of control. Respondents proposed the most effective ways to provide people with information about

HIV/AIDS as follows; 59.5% of respondents claimed that it was important to raise awareness about the transmission of HIV/AIDS by social media (94%), electronic media (61%), and academic institutions (50%) and by print media (13%).

A cumulative recap of all essential questions asked is provided in **Table 2**

Table 2: Percentage of participant responses

Questions	Response Percentage
Means of awareness regarding HIV/AIDS	
Electronic media	41%
Academic institutions	26%
Family and friends	11%
Print media	9%
Social media	4%
AIDS programs	1%
What does HIV stand for?	
Human immunodeficiency virus	89%
Homosexual integrated virus	4%
Human internal virulence	3%
Hidden integrated virus	2%
What is the difference between HIV and AIDS?	
Early stages of HIV infection	42%
Late stage of HIV infection	30%
Both	29%
How can HIV spread?	
Sex workers	61%
Homosexuals	46%
Truck drivers	42%
Injection drug users	38%
Healthcare workers	9%
Low-income population	9%
Infected patients	2%
Which people are at a highest risk of spreading HIV?	
Sharing needles	68%
Unprotected sex	60%
Kissing	45%
Breast feeding	24%

Sharing pots	9%
Mosquito bites	8%
Blood transfusion	1%
Signs and symptoms of HIV and AIDS	
Body pain	88%
Decreased Immunity	69%
Fever	59%
Other infection	52%
Loss of body fluids	26%
Weight loss	15%
Skin lesions	4%
Loss of appetite	4%
Opportunistic infections	0.30%
Abdominal pain	0.10%
Which diagnostic tests are alible?	
Blood test	81%
Physical Examination	4%
Self diagnosis	2%
X-ray	1%
Don't know	11%
When HIV testing is most accurate?	
Immediately	44%
After 2 to 4 weeks	33%
After 3 to 6 months	17%
Would you like to be tested for HIV?	
Yes	51%
No	34%
Don't know	15%
Can HIV be cured?	
Yes	64%
No	25%
Don't know	11%

Discussion

Although the number of deaths from HIV/AIDS has dropped 51% globally during the last 20

years¹⁵, it remains a significant global health concern for underdeveloped countries including Pakistan¹⁶. The number of new cases has increased in Pakistan gradually over the past decades and the disease is spreading from localized areas to the general population both in urban and rural areas of the country as suggested by recent reports^{17 18 19}. People are largely uninformed about the disease and its routes of spread. This was evident in a report compiled by the United Nations Office on Drugs and Crime in 2013 in which only half of the surveyed Pakistani population had heard of HIV²⁰. A more recent analysis further confirmed that more than 96% of HIV-positive patients were unaware of the modes of transmission of HIV and the consequences of this life-threatening virus²¹.

The current study was designed to assess the level of awareness about HIV/AIDS among the young university students of the country's largest metropolitan area who also happen to be a vulnerable population. The students at the surveyed universities are considered the most educated and well-informed population in terms of their access to the internet. The level of awareness shown by this group can therefore be considered as the upper limit of knowledge among the young population in Pakistan.

The respondents were asked about various **modes of HIV transmission**, signs and symptoms of the disease, risk factors, diagnosis, and treatment to assess overall awareness of HIV/AIDS and misconceptions associated with the disease.

Most of the respondents had already heard about HIV/AIDS mainly through electronic media and academic institutions. However, 11% became aware of it through family and friends. These results highlight the fact that talking about the disease among family and friends is still considered taboo like many other sexually transmitted diseases, and thus demands some serious efforts to educate the youth about STDs in general and HIV²². 4% of the youngsters came to know about the disease through social media while only 1% learned about it through AIDS programs, indicating that serious efforts should be put in to raise awareness among the population regarding HIV/AIDS through these two important platforms.

Although participants demonstrated some knowledge regarding the major modes of HIV transmission, the misconceptions about contracting the disease by mosquito bites or eating/drinking from the same pots continue to exist. Knowledge about the modes through which HIV is not transmitted is also important to deliver to prevent stigmatization and isolation of HIV-infected individuals. Moreover, considering mother-to-child transmission and blood transfusion as not a potential risk of the disease is also indicative of a serious lack of awareness. This invariably provides essential information and assistance not only create targeted messages for the general population, but also in formulating discrete educational material addressing common knowledge regarding HIV/ AIDS in the country.

When respondents were asked to choose among various risk groups, as expected, the majority of the respondents considered commercial sex workers, homosexuals, and truck drivers to be the major high-risk groups, although the major risk group in the country are IDUs²³. The

epidemic is following an Asian trend: after reaching a plateau in people who inject drugs, it shifts to the general population through sexual networks and bridging populations ⁴. The IDUs were ranked fourth among the risk groups as the disease is wrongly associated to be “only” due to unsafe sex and extra-marital affairs. These results indicate that efforts should be put to make the young people aware of the fact that drug abuse especially in the young lot, besides its financial and social setbacks, is also associated with major health concerns. The health-related setbacks are unfortunately neglected in most the anti-narcotics campaigns. Thus, there is a great need for addressing drug abuse in the context of health issues for combating both menaces.

Social stigmatization has grown to be a huge hurdle in proceeding with prevention and treatment strategies among the general population. HIV testing is a major prevention intervention and remains a gateway to early treatment, care, and support ²⁴. The fear of stigma dissuades citizens from getting tested for HIV/ AIDS. This was evident from the fact that 35% of the participants disapproved of getting themselves tested for HIV/AIDS, while 13% of the participants were not sure if they wanted to get themselves tested. This signifies the taboo built around HIV/AIDS in the general population of Pakistan and highlights the need for combined efforts to convince this 48% to say “yes” to testing.

The majority of the respondents were aware of the signs and symptoms of the disease, however, only 60% of the respondents were aware of the right testing methods. Others were either not aware of the type of testing available or they indicated it wrong, like in the case of X-Ray and self-diagnosis. Only 34% were able to indicate the right time for diagnosis.

Knowledge about treatment methods was also very poor as only one-third could indicate that there is no vaccine available for HIV ²⁵. Only 20% knew that medicines are available for the treatment, but they were not aware of the kinds of medicines available. In the last two questions asked about the respondents’ thoughts on how the rapid spread of HIV/AIDS can be prevented, more than 50% thought spreading awareness is more effective, and among various platforms, social media and academic institutions should be high priority targets for spreading awareness of the disease. This is important because the least percentage of the respondents got to know about the disease through social media. While most of them got aware of the disease through academic institutions, the overall study indicates that awareness campaigns targeting academic institutions will be more effective. Social media has emerged as the most effective yet unexplored way of spreading awareness among the youth ²⁶. In Pakistan, media has consistently proved itself to be an essential platform to address critical issues in the country.

Communication strategies against this social stigma need special attention. An effective strategy in this regard would be training peer mentors who will be able to successfully communicate authentic information to people because of the general perceived reliability among peers. Moreover, electronic and social media platforms can be effectively utilized to spread awareness regarding HIV/AIDS. Effective use of social media has proven to produce a significant impact among the youth in past years ²⁷. Hence efforts at the national level should be made to involve the

media in HIV advocacy and awareness and to develop an agenda for the reduction of stigma and discrimination ⁴.

The rise in HIV infections indicates a dire need for a more forceful effort directed toward fighting this deadly virus. At the heart of this effort lies the task of spreading awareness among the general population, especially with regard to how the virus can be contracted. Educating citizens and especially youth with the proper knowledge will ultimately lead to decreased incidence of infection and prevention of HIV-related epidemics.

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Disclosure Statement

Consent for Publication

Informed consent was obtained from all individual participants included in the study.

Competing interest

The authors declare that there are no competing interests.

Author contribution

Aneela Javed designed the study. Taskeen Aman carried out the survey and collected the data. Aneela Javed performed data analysis and interpretation. Uzma Malik, Ali Zalan, and Momina Ejaz compiled the results and wrote the manuscript. Uzma Malik and Momina Ejaz prepared the figures. Uzma Malik and Aneela Javed critically proofread the manuscript and finalized it for submission.

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