Assessment of HIV Infection Among Students in Tehran University of Medical Sciences

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Abstract As part of the mixed methods study to assess HIV risks among Iranian students, a Rapid Diagnostic Test was conducted to ascertain the frequency of HIV among students in Tehran University of Medical Sciences. The Rapid Diagnostic Test involved drawing 40 micro litre of blood from participants and analysis took about 3-5 minutes to record the results. A total of 500 students volunteered anonymously to be tested for HIV infection in May 2010. Of these, 248 were males and 252 were females. Their ages ranged from 17 to 45 (mean age of 21 years old). All of the students were studying at Tehran medical university. Tests results recorded no cases of HIV infection among medical students in Tehran University of Medical Sciences. Because HIV infection can sometimes remain undetected, these results do not necessarily confirm that students are at a low risk of Infection in Iran. Due to the fact that HIV carries a significant burden of disease globally repeated surveys should be carried out regularly to monitor and protect the infection among students. Additionally, increased awareness of HIV risk should be intensified to prevent its emergence and spread among these populations.

Keywords: prevalence, HIV infection, rapid test, student

1. Introduction

The UNAIDS/WHO’s global estimates and projections of HIV prevalence reveal that globally, 33.4 million individuals comprising 31.3 million males, 15.7 million females and 1.2 million children under the age of 15 years lived with HIV/AIDS in 2008. During the same year, 2.7 million people were reported to be newly infected with HIV including 430,000 children under the age of 15 years. Mortality resulting from HIV/AIDS was alarming comprising, 1.7 million adults and 280,000 children under 15 years deaths [1,2]. In the Middle East and the Northern African region, the number of people living with HIV was reported to comprise 310,000 individuals. This was a concern because of the rapid and significant rise in numbers of individuals living with HIV from 200,000 in 2001 to 310,000 in 2008. Additionally, it was reported that the number of newly infected individuals increased from 3800 per year in 2001 to a 4600 people year in 2008. Similar trends for mortality including increased in deaths from 1, 000 in 2001 to 20,000 in 2008 were observed [1].

HIV in Iran

In Iran, the first case of HIV was reported in 1987 (CDC) in a haemophilic child. By 1996, the epidemic was detected among the Injection Drug users (IDU) and drug injection became the most important risk factor for the epidemic. Until 2011, the number of people living with HIV in Iran was reported to be 23,125, including 91.5% males and 8.5% females. Besides 4,311 people were reported to have died of HIV/AIDS. The IDUs are the most important HIV positive patients in Iran (69.8%) followed by a group whose method of transmission is unknown (18.3%). Sexual contact transmission makes a small (10%) majority of cases and also blood transfusion still (1.1%) still features as a method of transmission but to a small extent. Mother to child transmission (0.8%) account for the remaining proportion of mode of transmission of HIV in Iran [4].

The WHO reports low risk sentinel population including: (i) truck drivers, (ii) antenatal clinic mothers, (iii) immigrant workers, and (iv) people who work in the navy [4,5,6,7,8]. However, it has been acknowledged that increasingly, young people in Iran are engaging in high risk behaviours for HIV infection [9] and it is unknown whether they are or they should not be included in the low risk group. Despite the acknowledgement of high risk behaviours, to our knowledge, there have not been studies that investigated the prevalence of HIV among university students in Iran. Universities admit significant number of young people. It is making this population important for targeted public health interventions.

This HIV sero-prevalence study was conducted among Tehran University of Medical Sciences students to ascertain the magnitude of HIV in this population group.
Information obtained will have significant public health implication including providing the knowledge that will inform whether students are at a HIV low or high risk groups.

2. Materials and Methods

This research was part of a mixed method study, “A Triangulation of Methods to Assess HIV risk among Iranian Students” which included rapid qualitative assessment, network scale up survey, and risk behaviour survey, and serological survey through anonymous Rapid Diagnostic Test (RDTs).

2.1. Study Population

The study population comprised 500 Medical Sciences students at Tehran University of Medical Sciences who anonymously volunteered to participate and be tested for HIV infection. Students were drawn from the following schools: medical school, dentistry school, school of pharmacy, health sciences school, nursing school, and paramedical school (Table 1). The sample size was calculated using the WHO protocol sample size estimation in low risk groups in HIV/AIDS, which requires at least 400 people [9]. The purpose of the study was fully explained to participants and their informed consent obtained according to the best practice. Demographic data included collection of gender and age if they agreed. The study was conducted in May 2010.

<table>
<thead>
<tr>
<th>University</th>
<th>Number of students</th>
<th>Sample size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medical school</td>
<td>1900</td>
<td>180</td>
</tr>
<tr>
<td>Dentistry</td>
<td>700</td>
<td>0</td>
</tr>
<tr>
<td>Pharmacy</td>
<td>700</td>
<td>0</td>
</tr>
<tr>
<td>Health school</td>
<td>800</td>
<td>80</td>
</tr>
<tr>
<td>Nursing school</td>
<td>500</td>
<td>50</td>
</tr>
<tr>
<td>Paramedical</td>
<td>500</td>
<td>50</td>
</tr>
<tr>
<td>Total</td>
<td>5000</td>
<td>500</td>
</tr>
</tbody>
</table>

2.2. Blood Sample Collection

A Rapid Diagnostic Test (ACON Laboratories, inc. San Diego, CA 92121, USA) comprising 40 micro litre of blood was collected from participants by a trained sampler. Participants were screened according to manufacturer’s instruction. The procedure is very rapid (3-5 minutes) and easy to use without causing harm to participants. The test has 99.9% relative sensitivity and 99.8% relative specificity and is much better compared to ELISA and/or Western-Blot.

2.3. Ethical Consideration

All University students were informed of the study processes and were provided an equal chance to participate anonymously on a voluntary basis. Students were required to provide an informed consent. The study was approved by institutional review board (IRB) of Tehran University of Medical Sciences (TUMS). Informed consent was solicited and participants were assured of confidentiality. Participation in the study was voluntary.

2.4. Data Analysis

The raw data was entered in a purposefully developed access database. Analysis was performed using Statistical Package for Social Sciences (SPSS) software (version 16) in November, 2010. Descriptive statistics were performed and cross tabulation (Chi Square test) was used to examine relationships between variables.

3. Results

A total of 500 students were recruited for the study. The distribution and number of participants according to schools within the University are illustrated in Table 1. There were about equal proportion of male and female students in the sample (Males, N=248; Females, N=252). Participants mean age was 21(range 17-45) years, with the majority of participants falling between 19-21 age brackets. Of all the participants, none were positive for antibodies to HIV.

4. Discussion

HIV is a significant global public health problem and Iran is not exceptional. Research findings of studies carried out regarding HIV or related issues among Iranian young people have been carried out only on attitude, knowledge and behaviour. For example, a study about Knowledge, Attitude, Practice (KAP) was conducted among high school students in Yazd and Tehran. [10,11,12]. Other studies in university students have also been carried out to determine knowledge related to AIDS in Qazvin, Iran [13]. Additionally, behavioral research studies on similar populations to investigate the prevalence of drug abuse within nursing students in Tehran have been conducted [14,15] but none of these tested blood to ascertain the prevalence of HIV among these populations. To our knowledge, this is the first study to carry out serological survey among Iranian university students.

Although these local and international studies reveal that young people may be one of the at risk groups the current study did not detect HIV positive case among students sampled from the Tehran University of Medical School (TUMS). Although this is significant findings among these populations, there still a need to emphasis intensification of preventative programs that would continue to provide education that will sustain and protect these young people from HIV infection. International literature informs that similar studies in USA have indicated students being at a high risk of HIV infection with prevalence as high as 3.6% [16,17,18] (Table 2).

<table>
<thead>
<tr>
<th>Year</th>
<th>Country/City</th>
<th>Sample size</th>
<th>HIV positives No. (Rate)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1985-1989</td>
<td>Washington D.C</td>
<td>1141164</td>
<td>393 (0.34/1000)</td>
</tr>
<tr>
<td>1987-1990</td>
<td>USA</td>
<td>137209</td>
<td>588 (3.6/1000)</td>
</tr>
<tr>
<td>1990</td>
<td>19 Universities USA</td>
<td>16863</td>
<td>30 (1.8/1000)</td>
</tr>
</tbody>
</table>
5. Limitations

It is important to acknowledge some limitations of the study. Firstly, the sample was derived from students who volunteered to participate. It is plausible to hypothesis that young people in universities are aware of HIV including risk behaviours that could lend them to being infected. Because participation to the study was voluntary, it is possible that students who volunteered were those who are not engaged in high risk behaviours rendering those at high-risk being precluded from being tested. The sample size was calculated using the WHO protocol for sample size estimation in HIV/AIDS low risk groups which requires at least 400 participants. Due to low frequency of HIV in this population, a much large sample size would be required to demonstrate an occurrence of HIV if it existed in the study population.

6. Conclusions

The findings of this study are novel due to the fact that, to our knowledge, it if one of its kind in Iran, and that, there was no detection of HIV among the participants. This indicates that there is a need to continue preventative programs and improve surveillance in order to prevent and monitor student populations from being infected with HIV.

References