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**Material and methods:** This cross sectional study was conducted in four universities of Karachi, Pakistan, where inclusion criteria were university students, male or female of any age group. Ethical approval was taken prior to data collection.

**Results:** Overall 890 participants participated in the study with a response rate of 89%. Total 515 male and 375 female students were included in the study. 41.1 % males and 27.2 % of the female participants identified the sexually transmitted infections correctly from the list of given infections, while 0.9 % recognized the clinical signs of HIV/AIDS. 64.8% of the male and 60.2% of the female participants had apprehension regarding the risk factors of STI with M/F Odds of 1.07.

**Keywords:** *sexually transmitted diseases, HIV/AIDS, knowledge, students.*

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# Knowledge Regarding Sexually Transmitted Disease Amongst University Students in Pakistan

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**Conclusion:** Students were inadequately knowledgeable regarding STIs. Control of STDs is the major factor governing the policies made by health care providers worldwide who strive to eliminate the prevalence of this disease. To reduce health disparities, health providers who have identified the male to female ratio in regards to their knowledge regarding STDs will be able to target the age groups at greatest risk.

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## I. INTRODUCTION

Sexually transmitted infections (STIs) have been conventionally recognized as a major public and social health problem for a number of years now.<sup>1</sup> Largely because of the HIV epidemic, interest in STIs

has increased over the past two decades.<sup>2</sup> It is the varying sociocultural and economic contexts in developing countries which largely influence the epidemiology of STIs and help to highlight the important public health priorities.

STIs are caused by more than 30 different bacteria, viruses and parasites and spread predominantly by sexual contact, including vaginal, anal and oral sex, however, organisms causing STIs can also be spread through non-sexual means such as blood products and tissue transfer. Many STIs—including chlamydia, gonorrhoea, hepatitis B, HIV, Human papilloma virus, Herpes simplex virus and syphilis can be vertically transmitted from mother to child. An infected person can be asymptomatic; therefore, the term “sexually transmitted infection” is a broader term than “sexually transmitted disease” (STD). Common symptoms of STDs include vaginal discharge, urethral discharge in men, genital ulcers, and abdominal pain.<sup>3</sup>

Eight of the more than 30 pathogens known to be transmitted through sexual contact have been linked to the greatest incidence of illness, of these eight infections, four are currently curable: syphilis, gonorrhoea, chlamydia and trichomoniasis. The other four are viral infections and known to be incurable, however can be mitigated or modulated through treatment: hepatitis B, herpes, HIV, and HPV.<sup>3</sup>

According to the World Health Report, STIs excluding HIV accounted for 1.2% disability adjusted life years (DALYs) during 1998; 0.8% among males and 1.7% among females.<sup>4</sup> The World Bank has estimated that STIs altogether rank second in importance among diseases for which intervention is possible<sup>4</sup>

And that four curable STIs; gonorrhoea, chlamydial infection, syphilis and chancroid rank among the top 25 causes of healthy days of life lost in sub-Saharan Africa. Epidemiological studies from sub-Saharan Africa, Europe and North America indicate that there is approximately four times greater risk of becoming HIV-infected in the presence of a genital ulcer such as caused by herpes and other sexually transmitted diseases; and a significantly, increased risk in the presence of STIs such as gonorrhoea, chlamydial infection and trichomoniasis, which cause local accumulations of lymphocytes and macrophages.<sup>5</sup>

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The importance regarding awareness of STIs amongst the students in Pakistan varies within the age group of 20-29 themselves on religious, ethnic and social grounds. School education, peer groups and mass media remain the main stream ways by which students learn about STDs. However, parents play a crucial role in the education of female students about sexual matters.<sup>6, 7</sup>

STIs have had a serious global impact. In recent years untreated maternal syphilis accounts for highest STI-related mortality regardless of age. Globally, 2.1 million pregnant women are infected with syphilis annually and an estimated 6.2% of neonatal deaths and 9.7% of stillbirths are caused by untreated maternal syphilis.<sup>8</sup>

The aim of this study was to highlight the knowledge of university students regarding STIs and to study contribute to the scant data available on this issue in Pakistan.

## II. METHODS

This cross sectional study was conducted at four universities in the city of Karachi, Pakistan.

Convenient cluster sampling was done. Oral and written consent was obtained from all students before participating in the study. The knowledge regarding sexually transmitted diseases of the students was evaluated by self-administered questionnaire. Inclusion criteria included all university students, no gender or age restriction was applied to be inclusive in the study. Ethical approval was obtained from the board of ethics of all four universities.

Students were asked various questions with a special focus on risk factors, transmission, prevention and source of information regarding sexually transmitted diseases.

Data entry and analysis was done in Statistical Package for Social Sciences (SPSS) version 17.

## III. RESULTS

This study initially recruited 1000 participants however 890 participants stayed in the study with a response rate of 89%. Total 515 male and 375 female students participated in the study. There were 677 students in the age range between 20-24 years and 213 in 25-29 years. (Table 1)

Table 1: Demographics Of The Participants

Age group	Male	Female	Total
20-24	376	301	677
25-29	139	74	213
	515	375	890

Overall 41.1 % males and 27.2 % of the female participants identified the sexually transmitted infections from the list of infections with a M/F Odds ratio of 1.5(C.I: 0.03--1.77). Regarding sign and symptoms of HIV/AIDS, 24.5% and 26.4% of males and female student respectively M/F Odds: 0.9(C.I:0.02--1.71) recognized the clinical signs of HIV/AIDS. 64.8% of the male and 60.2% of the female participants were well aware of the risk factors of STI with M/F Odds of 1.07. More male (62.3%) than female (54.1%) knew the route of transmission of STIs while 75.5 % of males and 85.3% of the females had the understanding of preventive methods for STI with an Odds M/F: 0.88(C.I: 0.25-1.59). (Table 2)

Table 2 : Knowledge Regarding Sti In Students

questions	Male (%)	Female (%)	M/F OR (95% C.I)
Examples of STI	212(41.1)	102(27.2)	1.5 (0.03--1.77)
Signs and Symptoms of HIV/AIDS	126(24.5)	99(26.4)	0.9(0.02--1.71)
Risk factors for STD	334(64.8)	226(60.2)	1.07(0.51—0.9)
Route of STIs	321(62.3)	203(54.1)	1.15(0.28-3.10)
Prevention of STDs	389(75.5)	320(85.3)	0.88(0.25-1.59)

M/F OR (95% C.I): Male/ Female Odds Ratio (95% Confidence Interval)

The main source of information regarding STI for students was internet where 49% of male and 25.8 % of the female participants access it for the required information. The second most frequent source was 'television' for males (14.2%) while for female participants it was 'parents and family' (24.8%). (Table 3)

Table 3: Most Common Source Of Information

SOURCES	MALE (%)	FEMALE (%)	M/F OR (95% C.I)
TELEVISION	73(14.2)	63(16.8)	0.84(0.79--8.71)
INTERNET	252(49)	97(25.8)	1.89(1.47--111.1)
RADIO	6(1.1)	2(0.5)	2.2 (1.1—14.2)
PRINT MEDIA	55(10.6)	53(14.1)	0.75(0.13-1.28)
PARENTS/FAMILY	42(8.1)	93(24.8)	0.32(1.43--8.62)
FRIENDS	61(11.8)	57(15.2)	0.77(0.08--0.47)
OTHERS	20(3.9)	10(2.6)	1.5(0.56—3.8)

#### IV. DISCUSSION

Several Comprehensive studies have highlighted the growing prevalence of STIs in Pakistan in the recent years. In a study conducted to measure the prevalence of STIs amongst the urban men in Pakistan, concluded that, city-wise, the highest prevalence of STIs was in Karachi (8.5%) followed by Lahore (5.3%), Faisalabad (4.0%) Quetta (4.3%), Rawalpindi (2.5%) and Peshawar (2.0%).<sup>9</sup> In another study, conducted in Faisalabad, Syphilis emerged as the most prevalent STI in Pakistan.<sup>10</sup> The findings of this study indicated that knowledge regarding STIs was inadequate among adolescent girls. Out of 375 girls, more male (62.3%) than female (54.1%) knew about the route of transmission of STIs. This is of particular concern in developing countries like India, as STIs such as Chlamydia, Trichomoniasis, Syphilis and Gonorrhoea are second only to maternal morbidity and mortality as the cause of death, illness and 'years of healthy life lost' among women in their child bearing years.<sup>11</sup>

Comparison of findings, between the two studies is difficult as there is limited studies conducted in India and Pakistan investigating the STI knowledge (other than HIV/AIDs) of adolescent girls. More than one third of students in the study conducted in India had scares understanding about the signs and symptoms of STIs. A study with was conducted by Lal et. al., in Kerala showed that college students had 34% awareness of the symptoms of STIs.<sup>12</sup>

Attitudes, norms and motivational factors are of paramount importance in the decision making process of adolescents regarding engaging in risky behaviors.<sup>13</sup>

Electronic and social media remains an influential mean of knowledge transfer throughout the globe. Online information is widely accessible to students and provides an effective medium to approach the target population. This study showed that the most common source of information for students regarding STI was internet followed by television and parents/family. Results of a study by standfortetal demonstrated that the students were extensively aware of a STI through television advertisements however they preferred to achieve knowledge regarding sexual health from a physician. The high impact and importance of

timely education through media and online material is undisputable and should be highly considered in populations with scant knowledge regarding STI.<sup>14</sup>

In order to intensify the focus on STI prevention among young people, the Government of Pakistan should announce the underway National Education Program whose main focus is to raise sexual reproductive health issues, gender and life skills.

Educating adults and children is not only essential under these non-regulated conditions but also vital in order to brief them regarding potentially critical health issues they might face.

#### V. CONCLUSION

The study achieved to draw an insight of STIs knowledge in university students. The overall knowledge of the students was found to be deficient on some aspects of STI. There were different influential factors which helped enhance this knowledge. This was a key study which could help health providers identify the role of media in imparting sexual education amongst the youth of this country and could later be targeted to improve the health care practices in our country.

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