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According to research conducted under the auspices of the World Health Organization (WHO), Sexually Transmitted Infections (STIs) have been deemed a ñPublic health problem of major signiýcance in most parts of the world". Some of the more important STIs to be concerned about include HIV (Human Immunodeýciency Virus) and Human Papilloma Virus (HPV) (Mascarenhas, Flaxman, Boerma et al., 2012).

HIV is a slowly replicating retrovirus that causes AIDS (Acquired immunodeýciency syndrome), a condition in humans in which continued dysfunction of the immune system makes the body susceptible to attacks by fatal opportunistic infections and cancers. A high relation of the transfer of the disease from person to person has been attributed to sexual intercourse. Globally there are more than 35.3 million people living with HIV, as of 2012 (UNAIDS.org, 2013). There have been reported cases in almost all regions of the world, but the high incidence of the disease has been associated to low- middle income social demographics in low income countries, especially in Sub-Saharan Africa.

As of 2008 there have been more than 2 million AIDs related AI 2 01egions of t67
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include cultural and social taboos surrounding having multiple sexual partners, but as is common for all diseases, without adequate awareness and steps for prevention, spread is highly certain (Dawn, 2009).

Understanding the role of contraceptives in birth control is as important as understanding their role in preventing STIs. Ideally, advantages offered by primary prevention which include abstinence or at least limiting the number of sexual partners preferring long term mutually monogamous relationships are far greater than secondary protection (artiýcial contraception methods) (National Prevention Information Network, 2014). Reality however is that negligence of the former will continue, hence it is necessary to bring about greater awareness of contraceptive devices as a means to curb the STI epidemic.

conýdence intervals were used to estimate the effects of different independent variables on the practices of the sample population. The study has followed a model of School-linked sexual health services for young people (SSHYP) and further modiýed according to the local socio-cultural norms in Pakistan. The data was analyzed through Statistical Package of Social Sciences (SPSS) version 17. Frequency and percentages were calculated for each qualitative variable.

## RESULTS

Overall 890 university students participated in this study with a response rate of 89%. The total numbers of male participants were 515 while 375 females participated in the study. Among the respondents, 720 (413 male and 307 female) were undergraduate students and 170 (102 male and 68 female) students were graduate level students (Table 1).

Regarding sexual practices of the students, 20.9% of the male and 49.6% of the female students asserted that there is a vaccine for Human Papillomavirus (HPV) with Male/Female Odds ratio of 0.42 (C.I: 1.34-28). In response to whether multiple sexual partners (MSPs) should be avoided, 44% and 86.4% of the male and female participants respectively believed that they should abstain from MSPs (M/F Odds 0.50 C.I: 0.68-8.2). Majority of males (51.4%) and females (65.3%) participants were in favor of regular visits to the health consultants to test for STIs. Overall, 22.9% of male and 76.5% of female students (M/F OR: 0.29, C.I: 0.34-0.7) thought that the oral sex is as threatening as vaginal or anal sex. Furthermore, 55.3% and 47.7% of males and female participants respectively were in support of introducing sexual health topics in their curriculum (M/F OR: 1.15, C.I: 0.29-3.4) (Table 2).

The most preferred method of contraceptive by the students was condoms (males 14.7 % and females 8.6%, with M/F OR: 1.70, C.I: 0.29--0.67) followed by oral contraceptive pills (males 6.2 %, females 7.7%, M/F OR: 0.80, C.I: 0.72--24.3). Majority of the students did not mention their preferred method of contraception (male 59.2% and female 73.8%) (Table 3).

## DISCUSSION

Our study demonstrated that non-medical students in Karachi had varying knowledge on different aspects of sexually transmitted disease. Women were found to be more aware regarding healthy sexual practices and STI. At the turn of the twentieth century, WHO released a study on the global prevalence and incidence of selected curable STIs. This study although deýcient in the statistics of more grievous infections/ viruses (like HIV and/or HPV) nonetheless paved the way for further research into not just collecting more data on the diseases but also trying to assess the global spread of awareness concerning these diseases and methods of preventing them (Burchell et al., 2006; World Health Organization & UNAIDS; 2008).

A study done on young individuals in Karachi observed that there was a major knowledge gap with respect to STIs and the use of contraceptives (Farid-ul-Hasnain, Johansson, Gulzar, & Krantz, 2013). Results from our study are similar in nature as almost 75 percent of the females and 60 percent of the males failed to answer that whether the contraceptives have been proved useful in preventing STIs and what was the most effective measure to prevent STI. Such a question hoped to elicit two important conclusions. Firstly, whether the students have enough prior knowledge aiding their answers regarding prophylactic management of STDs? And secondly, assuming they do have knowledge to some extent, whether they can correctly identify the best method.

When it comes to knowledge, we were quickly made aware that the students were indeed lacking in awareness. This speaks fairly when compared with major trends in other developing countries facing similar epidemics. Females in a study conducted in Nigeria were largely aware of the association between sexual activities and STDs, however nearly half that proportion was unaware of the advantages contraceptives can have in preventing these infection (Okpani & Okpani, 2000). An important complementary ýnding of our research was one derived from the question pertaining to the "introduction of Sexual Health Topics in the core Curriculum". Almost 50 percent of both gender populations were averse to this proposal. Many juxtaposed theories can be formulated, regarding this apparent disregard for attainment of health related knowledge in a professionally organized, systematic fashion. Socio-economic concerns, religious ideologies, cultural taboos, and close-knit-family oriented upbringing; are all cited as contributors to such an attitude. Since we are talking about college going students with a much more conservative upbringing than their colleagues from western nations, the only relevant conclusion can be that without experience in the usage and indications of these devices, students cannot make an educated guess towards which one is more effective in preventing STDs.

Now there was a certain percentage of the sample (33.5%) that did answer the questionnaire to the fullest, bringing us to the second postulated question. Majority (12%) of the students voted for condoms as the preferred method of contraception (14.7 percent of males, 8.6 percent of females), followed closely by Oral Contraceptive Pills (6.2 percent of males, 7.7 percent of females), then withdrawal method (4.8 percent of males, 0.8 percent of females) and lastly Other Methods (4 percent of males, 2.1 percent of females). These percentages add up to realize that 75.3 percent of the answering population did believe in some sort of contraception method being responsible for preventing the spread of STD's. This is a positive sign, showing that at least for some individuals, the Word of Mouth, Social Media interactions and Mass Media Propagation of the merits of using contraceptive devices has made an impact in their thinking.

Crosby et al. proposed that condoms could decrease the chances of STD transmission, a proposal that was later validated by The US Centre for Disease and Control (CDC) in 2013 which has advised that "consiy , A

**Table 2**.
Sexual Practices of the Students

| Queries | Male (%) | Females (%) | M/F or (95% C.I) |
|---|---|---|---|
| There is a vaccine for HPV | 108(20.9) | 186(49.6) | 0.42(1.34-28) |
| Multiple sexual partners should be avoided | 227(44.0) | 324(86.4) | 0.50(0.68-8.2) |
| Regular visits to health consultants to STI testing | 265(51.4) | 245(65.3) | 0.78(0.5-2.9) |
| Anal sex is as unsafe as vaginal or anal sex | 118(22.9) | 287(76.5) | 0.29(0.34-0.7) |
| Sexual health topics should be included in the curriculum | 285(55.3) | 179(47.7) | 1.15(0.29-3.4) |

M/F or (95% C.I): Male/ Female Odds Ratio (95% Confdence Interval)
HPV: Human Papillomavirus

**Table 3**.
Preffered Method of Contraception in Students

| Methods | Males (%) | Females (%) | M/F or (95% C.I) |
|---|---|---|---|
| condoms | 76 (14.7) | 31(8.6) | 1.70(0.29--0.67) |
| OCP | 32(6.2) | 29(7.7) | 0.80(0.72--24.3) |
| withdrawal | 25(4.8) | 3(0.8) | 6.0(0.86--7.54) |
| others | 21(4.0) | 8(2.1) | 1.9(0.26--5.30) |
| None during sex | 56(10.8) | 27(7.2) | 1.5(0.22-2.12) |
| Did not answer | 305(59.2) | 277(73.8) | 0.72 |

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

Vaccines are currently available with evident efýcacy in preventing HPV; however one concern we had was that the general student body would not be aware of these, and the results support our hypothesis. Males were disappointingly negligent with only 20.9 percent afýrming to the availability of the vaccine. Females, though higher in proportion at 49.6 percent, were also grossly unaware of the screening and prophylactic protocols surrounding HPV transmission.

This deýciency needs to be addressed in a manner similar to one employed in other developing countries (Cuzick, Arbyn, Sankaranarayanan et al., 2008). The present study may contribute to the existing data and should be used by the concerned authorities (government or non-government organizations) to evaluate and implement interventions that may beneýt sexual health in students.

## CONCLUSION

Research must be undertaken to ýnd the feasibility of making PAP smears and vaccines more widely available to sexually active women of reproductive age group. At the same time the subject of cervical cancers and vaccinations/prophylaxis should be broached in colleges and universities where the maximum intermingling of young adults takes place.

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