**CORRELATES OF SEXUALLY TRANSMITTED INFECTIONS**

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**Background**: The idea of the study to seek access to socio demographic determinants that are associated with sexually transmitted infections (STIs) among Pakistani male of reproductive age. **Methods**: Bivariate and binary logistic regression analysis carried out by using the Pakistan demographic and health survey data set 2012-13. **Results**: Every 7 out of 10 ever married men have heard about STIs and every 5 out of 10 believed that the risk of getting HIV/ADS can be reduced by always using condoms during sex. Bivariate analysis revealed that age, palace of residence, education status, media access and wealth index are found to be significant .i.e. (p<0.000) with respect to STIs knowledge. Binary logistic regression model conformed that younger respondents were sufficient lack of knowledge [OR=0.127] compared to upper age group. Urban were more prone to knew about STIs [OR=1.740] compared to their counterpart those lived in rural areas. Illiterate respondents had less knowledge regarding STIs [OR=.037] compared to their counterpart with higher education status. Media exposure was also positively associated with knowledge of STIs. The respondents reading newspaper, listening radio and watching television had more knowledge regarding STIs [OR= 2.082, 1.240 and 1.936] compared to those who had no access to any sort of media modes respectively. **Conclusion**: These statistical outcomes about STIs knowledge and exploration of significant socio demographic factors of ever married men can be an emerging for disease prevention and management.

**Keywords**: Binary logistic regression; Pakistan; socio demographic determinants; STIs

**Introduction:** Pakistan, the second most populous Muslim country after Indonesia in the world, where the society is still not accepted the HIV/AIDS and other STDs due to old age stigma and taboos related to these diseases, particularly in remote areas where these diseases considered as a very shameful and people hide their diseases and not seeking any sort of treatment due to low literacy, poverty and social norms. Pakistan has started experience the threat of HIV/AIDS and other STIs and jumped from low to prevalence to concentrated epidemic category.1 The prevalence rate of STIs amongst the urban men in Pakistan, Karachi (8.5%) followed by Lahore (5.3%), Faisalabad (4.0%) Quetta (4.3%), Rawalpindi (2.5%) and Peshawar (2.0%). 2 Syphilis emerged as the most prevalent STI in Pakistan. 3 National AIDS Control Programme also designed a study in six urban cities of Pakistan found a prevalence of 4.4% for at least one of the five STIs among men from the general population. 4 Higher rates of infections 60% among Hijras and 36% among male sex workers have been found among members of at-risk groups. 5 Low awareness in poor and middle income countries about STDs prevalence rates and the number of incidence are higher that makes these diseases a major public health challenge 6, more than one million people affected every day with STIs and annually more than five hundred million humans become ill with one of four STIs namely chlamydia, gonorrhoea, syphilis and trichomoniasis, whereas nearly five hundred and thirty million people has the virus that causes genital herpes (HSV2). 7 STIs are known to facilitate the sexual transmission of HIV. The most serious transmission modes of HIV in Pakistan are people who inject dreg (PWID), transgender, male and female sex workers with prevalence rate are 27.2%, 5.2%, 1.6% and 0.6% respectively. 1

As sexually transmitted infections (STIs) are spread by means of sexual intercourse as a result both the partners on a risk of get STDs. But female adolescents are likely to have a higher risk of getting STIs compared to male as their partners are generally older and hence more likely to be infected. 8 Nearly 1.3 million women die due to reproductive health problems each year that are largely preventable and one out of twenty adolescents get a STDs, some of which causing all-time disabilities such as infertility, long term disability & death, with severe medical & psychological consequences for millions of men, women & infants. 9 In pregnancy, untreated early syphilis will result in a stillbirth rate of 25% and be responsible for 14% of neonatal deaths an overall perinatal mortality of about 40%, while globally; up to 4000 new-born babies become blind every year because of eye infections attributable to untreated maternal gonococcal and chlamydial infections. 10

The sexual and reproductive health issues of young people are major concern, the issues also have demographic and social dimension. 11-13 Socio-demographic factors influence youth sexual behaviour. So evaluations of these factors are helpful in seeking preventative measures. So this study therefore aimed to investigate the significant socio demographic factors (age, education, Location and geographical area of residence, wealth index, media exposure and respondents occupation) that should be targeted properly and more awareness regarding sexually transmitted diseases that also known to facilitate the sexual transmission of HIV so that the ill health and mortality related STIs can be minimized.

**Methods and Material:**

Data source: So far three demographic health surveys have been conducted as part of the MEASURE DHS international series. The national institute of population studies done these survey with the technical support from ICF International and Pakistan bureau of statistics and the USAID supported the financially. The most recent data sets PDHS 202-13 for ever married men with sample size 3134 used for present study. Bivariate and binary logistic regression analyses [14-15] were performed with the object to determine the socioeconomic characteristics that have potential influence in STIs knowledge of ever married men. Pearson’s chi- square test of independence was performed to evaluate the association between dependent and independent variable. The explanatory variables were age (15-49), place of residence (urban rural), place of residence by province (Punjab, Sindh, KPK, Baluchistan, Gilgit Baltistan and Islamabad), educational level (Illiterate, primary, secondary and higher), media exposure (read newspaper, listen radio and watch TV), wealth index (poor, middle and rich) and respondents occupation (working and not working).

**Results:**

**Ever married men:** The maximum (20.3%) and the minimum (1%) respondent fall in age group 30-34 and 15-19 respectively, while almost same proportion (18%) of respondent lie in 35-39 and upper age groups. The percentage of rural (51.5) respondents are higher compared to urban (48.5). Punjab has a higher proportion of respondents and about quarter (24.2%) of the respondents is from Sindh. Respondents with secondary level of education are in a greater proportion 32% while about more than a quarter (27.1) of the respondents are illiterate. The percentage of wealthy respondents is about 45.3%. Whereas the greater number of respondents has access to television and radio compared to newspaper. 97 Out of 100 ever married men are working; the detail description is illustrated in Table 1.

**Table1: Demographic characteristics of respondents**

|  |  |  |  |
| --- | --- | --- | --- |
| Covariate | Response | Frequency | % |
| Age | 15-19 | 29 | 0.9 |
| 20-24 | 223 | 7.1 |
| 25-29 | 498 | 15.9 |
| 30-34 | 635 | 20.3 |
| 35-39 | 589 | 18.8 |
| 40-44 | 574 | 18.3 |
| 45-49 | 586 | 18.7 |
| Place of residence | Urban | 1521 | 48.5 |
| Rural | 1613 | 51.5 |
| Residence by province | Punjab | 800 | 34.5 |
| Sindh | 758 | 24.2 |
| KPK | 497 | 15.9 |
| Baluchistan | 551 | 17.6 |
| GB | 246 | 7.8 |
| Islamabad  | 282 | 9.0  |
| Education status | No education | 849 | 27.1 |
| Primary | 536 | 17.1 |
| Secondary | 1000 | 31.9 |
| Higher | 749 | 23.9 |
| Wealth index | Poor | 1165 | 37.2 |
| Middle | 548 | 17.5 |
| Rich | 1421 | 45.3 |
| Access to media | No Read newspaper | 1418 | 45.2 |
| Read newspaper | 1716 | 54.8 |
| No Access to radio | 2012 | 64.2 |
| Access to radio | 1122 | 35.8 |
| No access to TV | 577 | 18.4 |
| Access to television | 2557 | 81.6 |
| Occupation | Not Working | 97 | 3.1 |
| Working | 3037 | 96.9 |

The knowledge of reproductive age respondents regarding STIs HIV/AIDS and use of condom during sex to reduce the probability of getting HIV/ADS is illustrated in Table 2. More than two third respondents have heard about STIs and the almost same proportion of respondents heard about HIV/ADS. While on the other hand more than half of the respondents agreed that the risk of getting HIV/ADS can be reduced by always using the condoms during sex.

**Table 2: respondent’s knowledge about STIs**

|  |  |  |  |
| --- | --- | --- | --- |
| Covariate | Response |  Frequency | % |
| Ever heard of a Sexually Transmitted Infection  | No |  862 | 27.5 |
| Yes |  2269 | 72.5 |
| Ever heard of AIDS | No |  928 | 29.6 |
| Yes |  2205 | 70.4 |
| Reduce risk of getting HIV: always use condoms during sex | No |  459 | 20.8 |
| Yes |  1284 | 58.3 |
| Don't know |  459 | 20.8 |

**Bivariate analysis:**

By incorporating the bivariate analysis respondents age and knowledge about STIs were found to be statistically significant (p<0.000), the early age groups of respondents have sufficient lack of knowledge regarding STIs i.e. more than two third of the respondents with age group 15-19 years old never heard about STIs. As age increased the awareness level also increased. Place of residence are associated in our study with STIs knowledge. Urban has more knowledge about STIs. Respondents belong to Islamabad (capital) are more prone to have knowledge about STIs followed by Punjab, KPK, Sindh, Baluchistan and GB. Direct association exist between educational attachments and STIs knowledge in our findings. Respondents with no education have sufficient lack of knowledge as compared to those who with higher educational degree. Media exposure are positively associated .i.e. (p<0.000) for all media mode (newspaper, radio and TV). Knowledge about STIs and respondents socio economic status (SES) are significant .i.e. (p<0.000). Respondents with lower SES have least knowledge regarding STIs. The knowledge of STIs and occupation of ever married men are independent. The detail explanations of bivariate analysis for both respondents are illustrated in Table 3.

**Table 3: Cross tabulation of outcome variable versus explanatory variables**

|  |
| --- |
| Ever heard about STIs |
| Covariate | Response | No | Yes | p-value |
| Age | 15-19 | 69.0% | 31.0% | 0.000 |
| 20-24 | 35.0% | 65.0% |
| 25-29 | 29.8% | 70.2% |
| 30-34 | 26.0% | 74.0% |
| 35-39 | 21.2% | 78.8% |
| 40-44 | 28.8% | 71.2% |
| 45-49 | 27.5% | 72.5% |
| Place of residence by region | Punjab | 22.2% | 77.8% | 0.000 |
| Sindh | 32.2% | 67.8% |
| KPK | 26.6% | 73.4% |
| Baluchistan | 32.5% | 67.5% |
| GB | 41.1% | 58.9% |
| Islamabad (ICT) | 10.3% | 89.7% |  |
| Residence | Urban | 15.0% | 85.0% | 0.000 |
| Rural | 39.4% | 60.6% |
| Educational level | Illiterate | 60.1% | 39.9% | 0.000 |
| Primary | 31.3% | 68.7% |
| Secondary | 16.9% | 83.1% |
| Higher | 2.0% | 98.0% |
| Read newspaper | No | 48.6% | 51.4% | 0.000 |
| Yes | 10.1% | 89.9% |
| Listen radio | No | 30.0% | 70.0% | 0.000 |
| Yes | 23.1% | 76.9% |
| Listen TV | No | 56.4% | 43.6% | 0.000 |
| Yes | 21.0% | 79.0% |
| Wealth quintile | Poor | 51.8% | 48.2% | 0.000 |
| Middle | 24.7% | 75.3% |
| Rich | 8.7% | 91.3% |
| Respondent occupation | No working | 32.0% | 68.0% | 0.321 |
| Working | 27.4% | 72.6% |

**Binary logistic regression analysis:**

Factors along with odds ratio are depicting in Table 4. The model revealed that the early age groups (15-19 and 20-24) have lack of knowledge about STIs [OR=0.127, OR=0.518] as compared to upper age groups of ever married men. Urban has more knowledge about STIs [OR=1.740] compared to their counterpart lived in rural areas. The place of residence by region are found to be significant model revealed that the respondents resident of Punjab know about HIV/AIDS 1.643 times more than their counterparts who lived in Islamabad. Illiterate respondents have sufficient lack of knowledge regarding STIs [OR=.037] compared to their counterpart with higher education status. Media exposure is also positively associated with knowledge of STIs. The respondents reading newspaper, listening radio and watching television have more knowledge regarding STIs [OR= 2.082, 1.240 and 1.936] compared to those who have no access to any sort of media modes respectively.

**Table 4: Binary Logistic Regression analysis about knowledge of STIs**

|  |  |  |
| --- | --- | --- |
| Covariate | Response | Ever married men |
|    Age (ref 45-49)   | 15-19 | .127\*\*\* |
| 20-24 | .518\*\* |
| 25-29 | 0.686 |
| 30-34 | .688\* |
| 35-39 | 0.974 |
| 40-44 | .651\*\* |
| Place of Residence (ref rural) | Urban | 1.740\*\*\* |
|   | No education | .037\*\*\* |
| Education (ref higher) | Primary | .090\*\*\* |
|   | Secondary | .146\*\*\* |
| Read newspaper (ref no) | yes | 2.082\*\*\* |
| Listen radio (ref no) | yes | 1.240\* |
| Watching TV (ref no) | TV yes | 1.936\*\*\* |
| Wealth index (ref rich) | Poor | .363\*\*\* |
| Middle | .558\*\*\* |
|    Place of Residence by province (ref islamabad)  | Punjab | 1.643\* |
| Sindh | 0.821 |
| KPK | 1.44 |
| Balochistan | 1.261 |
| Gilgit Baltistan | 0.401\*\* |

Key: values represent odds ratio; ref implies reference category; \*\*\*p<0.001, \*\*p<0.01, \*p<0.05 and GB= Gilgit Baltistan

**Discussions and conclusion:**

The generally findings revealed that More than two third respondents have heard about STIs and the almost same proportion of respondents heard about HIV/ADS. While on the other hand more than half of the respondents agreed that the risk of getting HIV/ADS can be reduced by always using the condoms during sex. By incorporating the bivariate analysis age, education, place of residence by province (Punjab, Sindh, KPK, Baluchistan, GB) and by urban rural, media access and wealth index are found to be significant with respect to STIs knowledge. The early age groups (15-19) have lack of knowledge about STIs .i.e. The model revealed that the early age groups (15-19 and 20-24) have lack of knowledge about STIs [OR=0.127, OR=0.518] as compared to upper age groups of ever married men. 11-16 It is well established globally the knowledge about diseases varies by area of residence. Pakistan geographically divided in five provinces and capital Islamabad, these provinces varies by health, education gender equality indicators, economic development and physical status. Socio economic statuses in Punjab and Sindh and in capital are better compared to other provinces. In our findings location and geographical area of residents found to be significant about STI knowledge. 3 Urban has more knowledge than rural regarding STI awareness. In Pakistan more than half of the population lived in rural areas. Low awareness and poor health care setting are in these areas. The study reveals that the prevalence of STIs among married men of reproductive age was quite high; with rural men being worse sufferers. 11-13 A community based cross-sectional in Sindh province revealed that rural adolescents had low degree of knowledge and awareness regarding HIV/AIDS and STIs. 17 Ever married men residences of Punjab province have higher proportion of respondents who knew about STIs. The importance of education is acknowledged globally, better educated individuals indeed to have a better health and a lower risk of mortality. 18 In our findings positive association exist between education and STIs. Similar findings were observed. 19 Media can play an important role in changing sexual behaviours, transforming negative beliefs and increasing knowledge. 20-24STIs knowledge and access to media associated in our finding. Socio economic status (SES) as measured by family income educational struts is associated with many measure of health status. 25 Pakistan is a developing country where majority of people spending their life under the poverty line. ­Thirty one per cent of Pakistanis survives on US$1/day, and eighty five per cent earn less than US$2/day. Ever married men with better socio economic status has more prone to aware about STIs in our findings.

Finally it is concluded that respondents with no education, low socio economic status, profound lack of media exposure, those belong to rural areas and early ages are on greater risk to be affected with sexually transmitted diseases or infections. Education is an important indicator in any society particularly from health prospective. Potential struggles are needed where the low literacy rate and insufficient media coverage particularly in remote areas so that morbidity and mortality burden due to STDs in new born babies as well as the reproductive age men and women can be declined. While on the other hand there is good evidence that the control of STIs can helpful in controlling the HIV transmission. 26

**Study limitations:** This study based on secondary data set taken from PDHS, in which a few limited question asked about sexually transmitted infectious to a small proportion of ever married women. The data lacked other important variables like sexually transmitted infectious related several kind of dieses, treatment and prevention which does not allow establishing temporal relationship on the basis of these findings. This study goal was to only pinpoint the socio demographic factors that might be helpful in disease seeking measures and mechanism.

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