

To assess the level of awareness of pre-marital sexually transmitted diseases (STDs) screening between medical and non-medical students in Karachi, Pakistan

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Abstract

Background: Sexually transmitted diseases (STDs) can be transmitted by blood, sexual intercourse and body fluids. Marrying a carrier of these illnesses places the spouse and their baby at risk of acquiring infection. The risk of HIV spread has increased ten times in the existence of untreated STDs. Premarital blood screening is vital concern against STDs for students.

Objective: To assess the level of awareness of pre-marital sexually transmitted diseases screening between medical and non-medical students in Karachi, Pakistan.

Material and Methods: This was a cross-sectional study conducted by questionnaire method in 500 students (250 medical, 250 non-medicals) of aged between 18 – 25 years from different institutes of Karachi. Purposive sampling technique was conducted. Sample size calculation was done using the W.H.O. software where $\alpha=5\%$, $1-\beta=90$, $P_o=0.56$, $P_a=0.49$, n (sample size)=434. The researcher recruited 500 subjects to avoid the chances of type ii error. Questionnaire comprised of close ended questions, which enquired about the definition of STDs, content, nature and awareness of STDs, perception of the application of pre-marital STDs screening in Karachi, knowledge of STDs and the remaining questions were related to screening issues. The study design was cross sectional and sampling technique was purposive sampling. Continuous variable was presented as mean \pm standard deviation and categorical variables were presented as

proportions (%). All analyses were performed using statistical package for social sciences version 20 (SPSS, Inc., Chicago, IL, USA).

Results: Regarding STDs 74% medical & 61.6% non-medical university students were able to define it. Majority 96% medical and 94% non-medical students consider HIV as STD and about Hepatitis B/C it is 84% and 57.6% respectively. Half of the students 50.2 % agreed for STD screening implementation in Pakistan.

Conclusion: Pre-marital screening could be extended to include a broader spectrum of health/genetic disorders and will be useful for early identification and possible intervention as well as the prevention of complications.

Key words: STDs, HIV, Hepatitis B/C, pre-marital screening, students.

Introduction

It has been reported in the data that sexually transmitted disease (STD) is a term used to describe more than twenty different infections that are transmitted through exchange of semen, blood, and other body fluids; or by direct contact with the affected body areas of people. Sexually transmitted diseases are also called venereal diseases.¹ More than thirty sexually transmissible viral, bacterial and parasitic pathogens have been identified. Sexual intercourse is the main mode of transmission for STDs, other routes of spread being via blood products or tissue transfer, from mother to child during childbirth and pregnancy and infrequently through other non-sexual means. Approximately every year 340 million cases of treatable STDs occur worldwide in males and females between 15-49 years of age.²⁻⁴ The risk of HIV spread has increased by a factor of ten in the existence of untreated STDs. In the general population STD treatment is a valuable tool for HIV prevention. STDs are often asymptomatic for long periods and their complications are rated amongst the top five conditions for which adults seek health care in the developing countries. Pakistan's first reported case of HIV occurred in 1987. Until the late 1990s, most subsequent cases occurred in men who became infected while living or working abroad. In Pakistan intravenous drug users, sex workers and prisoners are at a high risk of STDs. Despite a low adult HIV prevalence (0.1%), social and economic conditions in Pakistan including poverty, low levels of education, and high levels of risk behavior among drug users and sex workers are likely to facilitate the spread of HIV in coming years.⁵⁻⁷ HIV prevalence among intravenous drug abusers has significantly increased from 10.8% in 2005 to 21% in 2008. The transgender and sex workers are also disproportionately affected by HIV in Pakistan. HIV prevalence among this group is 6.1 %. In a study conducted in 1998 in Karachi, the prevalence of syphilis in male transvestites was 37%.⁸⁻¹⁰ As reported previously one of the preventive measures is pre-marital blood screening. A healthy looking person may have undetected health problems, or be a silent carrier of infectious diseases. Pre-marital blood screening helps couples to identify potential health problems and risks for themselves and their offspring.¹¹⁻¹⁵ As reported previously, the data HIV and Hepatitis B and C viruses are life threatening diseases that can be transmitted by blood, sexual contact and body fluids.¹⁶ The viruses may remain dormant for months or even years in

carriers without showing any symptoms. Marrying a carrier of these illness places the spouse and their offspring at risk of acquiring infection.¹⁷⁻¹⁹ This study aims to investigate the perception of pre-marital sexually transmitted diseases (STDs) screening between medical and non-medical students in Karachi, Pakistan.

Material and Methods

Study design and Study cases

This study was conducted from January till August 2011 at the department of gynecology and obstetrics, Jinnah Postgraduate Medical Center in Karachi, Pakistan. Sample size software used for this study was W.H.O. where $\alpha=5\%$, $1-\beta=90$, $P_o=0.56$, $P_a=0.49$, n (sample size)=434. The researcher recruited 500 subjects to avoid the chances of type ii error. This was a cross-sectional study and purposive sampling technique was used. The questionnaire was developed by the principal investigator after an extensive literature review. The questionnaire included twenty two questions among which seven were regarding knowledge of STDs and the remaining were related to screening issues. The close ended questionnaire included data on the demographic profile of the subject age, gender, and enquiries about the content, nature and awareness of the premarital screening. It also included questions on the perception of application of pre-marital STDs screening, definition of STDs, causing factors, mode of transmission, treatment and its outcome, their attitude and ethical values and factors creating hindrances in STDs screening implementation in Pakistan. Participants included in this study were students aged b/w 18 – 25 years, from medical and non medical institutes of Karachi. Medical institutes surveyed were Sindh Medical College, Dow Medical College, Jinnah Medical and Dental College, and Liaquat National Medical College and among non-medical institutes data was collected from Karachi University and Jinnah University for women. Students were acknowledged about the research topic and were asked to fill the questionnaire after taking their consent, and were assured regarding confidentiality.

Statistical Analysis

Mean and standard deviation were calculated for preeclamptic and control groups. Descriptive statistics were calculated continuous variable were presented as mean \pm standard deviation and categorical variables were presented as proportions (%). Chi square was used to compare the variable of gender with the parameter of most common cause of STDs, STDs screening before and after marriage and mandatory screening of STDs in Pakistan. Factor analysis was used to discover patterns of relationships among the constructs of the questionnaire. Multiple response analysis was used as the questionnaire had more than one responses. All analyses were performed using statistical package for social sciences version 20 (SPSS, Inc., Chicago, IL, USA).

Results

Descriptive Statistics

Mean age of students were 22 years \pm 1.5 SD. In response to the question STDs are diseases transmitted through body fluids 67% students answered yes. Regarding diseases which are considered STDs 95% favored for HIV, 70% for hepatitis B and C, 55% for syphilis, 86% for carcinoma of cervix and 60% for genital herpes. Concerning treatment of STDs (especially HIV and Hepatitis C) 40% favored drugs. Regarding STDs screening before marriage 35% refused to screen. With reference to complications of STDs (especially HIV, Hepatitis C) 90% responded increased risk for cancers. Pertaining to STDs screening can't be implemented in Pakistan 42% favored due to cultural and social norms. In regards to STDs as a causative factor approximately 50% favored that STDs are diseases that are transmitted by sex. Majority of students 99% believed that HIV is an STD this indicates good knowledge of medical and specifically non medical students in our community. In response to the question of STDs (especially HIV, Hepatitis C) is caused by 51.3% of medical students responded via blood transfusion and 83.3% of non medical students replied via sharing tattoo needle. Mandatory STDs screening was a vital concern in the questionnaire. Regarding this question 57.7% of medical students and 42.3% of non medical students favored mandatory screening of partner prior marriage. This shows the positive attitude of medical as well as non medical students for its compulsion in society due to its paramount importance. The question of screening of STDs can't be implemented in Pakistan was favored by 60.1% of medical students due to social culture and 55.3% by non medical students due to lack of infrastructure of health and reporting system. Chi square test was used to compare gender with etiology of STDs (especially HIV, Hepatitis C), after marriage if partner acquires STDs (especially HIV & Hepatitis C) and mandatory STDs screening in Pakistan which showed statistically significant results (p -value <0.05) table 1.

Factor Analysis

Correlation Matrix of STDs screening before marriage showed 24% correlation with the question of are STDs treatable (especially HIV and Hepatitis C), 30% correlation with have you ever heard about STDs screening, 37% correlation with if your partner asked for screening and 35% correlation with STDs screening should be mandatory in our country. The variable of asking partner for screening showed 37% correlation with STDs screening before marriage is necessary and 35% correlation with STDs screening should be mandatory in our country. Complications of STDs (especially HIV & Hepatitis C) showed 33% correlation with STDs can be transmitted by orally and through genitals, 32% correlation with STDs (especially HIV, Hepatitis C) can be avoided and 31% correlation with diseases should be screened prior to marriage. STDs (especially HIV, Hepatitis C) can be avoided showed 32% correlation with complications of STDs (especially HIV & Hepatitis C) table 2.

Kaiser-Meyer-Olkin measure of sampling adequacy was 0.65 indicating that patterns or correlations are relatively compact. In this research the value of Bartlett's test of Sphericity is highly significant ($p < 0.0001$) table 3.

Factor analysis communalities showed the variable of before marriage if your partner has any STDs (especially HIV, Hepatitis C) accounted for 72% of variance followed by STD screening before marriage 70% and screening can't be implemented in Pakistan 67%, table 4.

In the factor analysis model, principal component analysis, method varimax was used. Eigen values are shown associated with each linear component (factor) before and after extraction. Analysis shows twenty one linear components within the data set. The eigen values associated with each factor represent the variance explained in percentage by that particular linear component. Factor 1 with eigen value 2.8 has been extracted, which explains large amount of variance 13.74% where as subsequent factors explain only small amounts of variance. The eigen value associated with this factor is again displayed along with percentage of variance explained in the column labeled *Extraction Sums of Squared Loadings*. The eigen value in this portion of the table is the same as the value before extraction except that the values for the discarded factors are ignored, table 5. Scree plot is the graphical presentation of eigen values against all the factors. This graph is useful for determining how many factors to retain. The point of interest is where the curve starts to flatten. It can be seen that the curve begins to flatten after factor 8. Factors 9 till 21 have eigen value less than 1, so only factors 1 to 8 have been retained, graph 1.

Multiple Response Analysis

Multiple response frequencies procedure was used to display overall frequency of students who favored the dichotomous variable of yes for diseases which are considered as STDs. Among the students 405.6% supported HIV, hepatitis B and C, vaginitis, scabies, candidiasis, syphilis, giardiasis, gonorrhea, carcinoma of cervix, genital herpes and prostate cancer as STDs, table 6.

Ethical Considerations

The study protocol was approved by ethical review committee. Written informed consent was taken from the participants and no financial incentives were provided to any study participant.

Discussion

According to the national system of STD surveillance, from 1990–1998, the incidence of STDs increased 3.7 times²⁰, and in 2004 gonorrhea and syphilis incidence ranked 4th and 5th among 27 notifiable infectious diseases, respectively.²¹ A Joint Assessment by the Ministry of Health and the United Nations Theme Group on HIV/AIDS in China estimated that as of the end of 2003, 840,000 people were living with HIV/AIDS, with an estimated 0.07% prevalence of HIV infection among the general population.²² This study focuses the awareness of pre-marital STDs screening in medical and non-medical university students. This research demonstrated majority of the students (medical & non-medical) were familiar with HIV, Hepatitis B and C as STDs. However knowledge regarding syphilis, gonorrhea, herpes and remaining STDs were poor. Most

of the students considered blood transfusion as the key mode of disease transmission. Half of the study population considered pre-marital STDs screening necessary while remaining did not and majority agreed towards its implementation. As reported previously in the data STDs are chief setback of our society and are detrimental for overall health. Due to low literacy rate, inadequate health budget and shyness in our country, people do not understand the nature of the disease its etiology, risk factors and consequences. These factors are major reasons for rise in prevalence of STDs. According to UNICEF, estimated adult (aged 15-49) HIV prevalence in Pakistan is 0.1% (2009).²³ As mentioned previously in the data regarding awareness of screening can really change the behavior and attitude towards screening of STDs. Most STDs are life threatening diseases that can be transmitted by blood, sexual intercourse and body fluids. Most of the patients do not show symptoms as they are the carriers of the disease because viruses may remain dormant for months or even years. Marrying a carrier of these illnesses places spouse and their child at risk of acquiring infection. One of the preventive measures is pre-marital blood screening for people planning for marriage. Pre-marital blood screening helps couples to identify potential health problems and risks for themselves and also their offspring, so it is essential for them to be screened in order to help them take necessary precautions or treatments.²⁴ A previous study revealed that through health education, population screening and genetic counseling of carriers, as well as the prevention of marriages between carriers, it was possible to reduce homozygous affected births from 53 per 8594 births in 1974 to 0 per 10752 in 1988 and 2 per 10830 in 1990.²⁵ Premarital screening was included in the curriculum of special education, which was a progressive and encouraging approach. The Health Impact Assessment as defined by the World Health Organization (WHO) calls for the identification of the relevant stakeholders at the initial stage of assessment. During this process a framework should be designed for meaningful consultations, with various responsible authorities and the promotion of ideas.²⁶⁻²⁷ For limiting spread of STDs people should be aware of the nature and consequences of STDs. People should know about mode of transmission, prevention, treatment and its complications as whole family of the affected person could be victimized. Awareness programs regarding STDs and their screening should be conducted at government and private sectors including institutes, hospitals, offices and schools.

Conclusion

Medical students have better approach and attitude towards STDs screening and its implementation as compared to non-medical students. Mostly students opted for the pre-marital screening and agreed for its implementation in Pakistan. This study heralded the narrow mindedness of our society considering screening as a taboo.

Conflict of Interest: The authors declare that they have no competing interests.

Recommendations

1. Pre-marital STDs screening should be mandatory in Pakistan. Awareness should be promoted among youth.
 2. Media should be involved to make people aware of pre-marital STDs screening and its importance.
 3. STDs screening test should be of low cost to general population.
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Table 1: Chi square test / Gender versus STDs (especially HIV, Hepatitis C), acquiring STDs & mandatory screening in Pakistan

Variables	Etiology of STDs (especially HIV, Hepatitis C)				
	Blood transfusion	Sharing Tattoo needle	Needle stick injury	Child birth	p-value
Male	12.1%	29.2%	17.7%	0%	0.002
Female	87.9%	70.8%	82.3%	100%	

Acquiring STDs (especially HIV & Hepatitis C) in partner after marriage					
Gender	Blame him or her	Support him or her	It depends	Advice for treatment	p-value
Male	29.4%	21.4%	10.9%	11.2	0.010
Female	70.6%	78.6%	89.1%	88.8	

Mandatory STDs screening in Pakistan					
Gender	Yes	Not necessary	May be	No idea	p-value
Male	12.5%	22.2%	19.3%	8.0%	0.035
Female	87.5%	77.8%	80.7%	92%	

Table 2: Factor Analysis-Correlation matrix

	Variables	Correlations
STDs screening before marriage	Are STDs treatable (especially HIV and Hepatitis C)	24%
	Have you ever heard about STDs screening	30%
	If your partner asked for screening	37%
	STDs screening should be mandatory in our country	35%
Asking partner for screening	STDs screening before marriage is necessary	37%
	STDs screening should be mandatory in our country	35%
Complications of STDs (especially HIV & Hepatitis C)	STD can be transmitted by orally and through genitals	33%
	STDs (especially HIV, Hepatitis C) can be avoided	32%
	Diseases should be screened prior to marriage	31%
STDs (especially HIV, Hepatitis C) can be avoided	Complications of STDs (especially HIV & Hepatitis C)	32%

Table 3: Factor Analysis-Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy	0.659
Bartlett's Test of Sphericity Sig.	0.0001

Table 4: Factor Analysis-Communalities

Variables	Extraction
Are STDs (especially HIV, Hepatitis C) treatable	.616
Treatment of STDs (especially HIV, Hepatitis C)	.639
Will you go for STD screening before marriage	.701
Will you ask your partner for screening	.612
If your partner asked you for screening	.624
Before marriage if you have any STD (especially HIV, Hepatitis C)	.608
Before marriage if your partner has any STD (especially HIV, Hepatitis C) then	.721
Complications of STDs (especially HIV, Hepatitis C)	.662
Screening can't be implemented in Pakistan	.678

Table 5: Factor Analysis-Total Variance Explained & Eigen Values

Component	Initial Eigen Values			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.886	13.744	13.744	2.886	13.744	13.744
2	1.849	8.806	22.549	1.849	8.806	22.549
3	1.500	7.143	29.692	1.500	7.143	29.692
4	1.350	6.428	36.120	1.350	6.428	36.120
5	1.289	6.138	42.259	1.289	6.138	42.259
6	1.153	5.491	47.750	1.153	5.491	47.750
7	1.112	5.294	53.044	1.112	5.294	53.044
8	1.087	5.176	58.220	1.087	5.176	58.220
9	.922	4.390	62.610			
10	.890	4.237	66.847			
11	.855	4.071	70.918			
12	.808	3.846	74.764			
13	.754	3.592	78.356			
14	.717	3.413	81.769			
15	.695	3.312	85.080			
16	.608	2.895	87.976			
17	.549	2.615	90.590			
18	.541	2.576	93.167			
19	.523	2.491	95.658			
20	.475	2.260	97.918			
21	.437	2.082	100.000			

**Graph 1: Eigen values versus Component number of questions
Scree Plot**

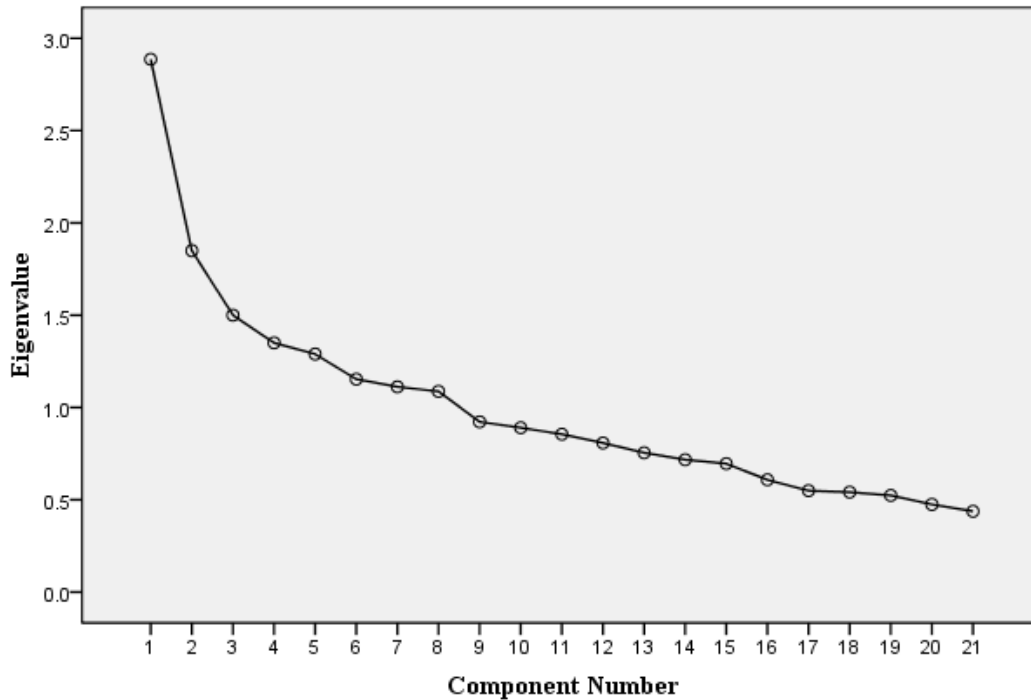


Table 6: Multiple Response Frequencies

STDs	Responses		Percent Cases
	N	Percent	
HIV	476	23.5%	95.2%
Hepatitis B and C	354	17.5%	70.8%
Vaginitis	120	5.9%	24.0%
Scabies	29	1.4%	5.8%
Candidiasis	70	3.5%	14.0%
Syphilis	279	13.8%	55.8%
Giardiasis	37	1.8%	7.4%
Gonorrhea	276	13.6%	55.2%
Carcinoma of Cervix	68	3.4%	13.6%
Genital herpes	300	14.8%	60.0%
Prostate cancer	19	.9%	3.8%
Total	2028	100.0%	405.6%

Dichotomy group tabulated at value 1 for STD yes.