Original Research Paper

Volume-7 | Issue-9 | September-2017 | ISSN - 2249-555X | IF : 4.894 | IC Value : 79.96

Community Medicine

RISK FACTORS FOR SEXUALLY TRANSMITTED DISEASES - A HOSPITAL BASED CASE-CONTROL STUDY

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ABSTRACT

Background: Sexually transmitted diseases (STD) continue to present as a major health, social and economic problem in the developed and developing world with an annual estimated 340 million new cases of curable STD. The presence of an untreated STD can increase the risk of both acquisition and transmission of HIV by a factor of upto 10. The Prevalence rate of HIV in STD Clinics in the erstwhile Andhra Pradesh in India is 22.8, out of which Hyderabad and Secunderabad have the highest in the state. Hence, this study was carried out to find out the possible risk factors responsible for the development of STDs.

Methodology: Case-control study was conducted during August - December, 2007 with the cases being the laboratory/clinically confirmed cases of STD clinic Out Patient Department (OPD) of Gandhi Hospital, Secunderabad, Telangana State and the controls being patients attending Dermatology OPD of the same hospital. Analysis was done using Epi-info software and by applying appropriate tests of significance.

Results: The risk factors for STD among cases were found to be previous sex with non-regular partners; having sex under the influence of alcohol; current sexual partner having STD; Having more than 3 partners; Non-usage of condoms every time and paid sex.

Conclusion: Efforts should be made to decrease the specific risk factors which are responsible for contracting STDs by imparting Behaviour change Communication for safe sex

KEYWORDS : STD, Risk factors, Behaviour Change Communication

INTRODUCTION

Globally, Sexually Transmitted Diseases (STD) have ranked among the top five categories for which adults in developing countries seek health-care services . Each year, there are an estimated 340 million new cases of curable STD including some 5 million new HIV infections [1]. In developing countries both the prevalence and incidence of STD are still very high, with STD making up the second cause of healthy life lost in women of 15 to 45 years of age after maternal morbidity and mortality [2]. Apart from being serious diseases in their own right, STD enhance the sexual transmission of HIV infection[3]. Socially, STD consequences such as infertility can lead to abusive behaviour, divorce and commercial sex [4]. The Prevalence rate of HIV in STD Clinics in the erstwhile Andhra Pradesh in India is 22.8, out of which Hyderabad and Secunderabad have the highest in the state [5]. Hence, this study was carried out to find out the possible risk factors responsible for the development of STDs.

OBJECTIVES

1. To identify the risk factors associated with Sexually Transmitted Diseases among attendees of STD Clinic at Gandhi Hospital, Secunderabad.
2. To estimate the strength of association between specific risk factors and development of STD among attendees of STD Clinic at Gandhi Hospital, Secunderabad.

METHODOLOGY

Study Design: Case-control study

Definition of Cases: Cases were defined as patients of age 17 years and/or above who were attending Sexually transmitted diseases (STD) Clinic Out Patient Department (OPD) and who have been confirmed as positive for Sexually transmitted disease based on laboratory reports and/or clinical diagnosis by the concerned physician and/or patients who were on treatment for STD and come for review during the period of data collection.

Definition of Controls

Controls were defined as a patient of age 17 years and/or above without the diagnosis of STD and who were sexually active during the same period of data collection from dermatology OPD.

Matching Criteria

Controls were frequency matched for gender and 5-year age groups and who were sexually active.

Study Set Up: STD clinic OPD and Dermatology OPD at Gandhi Hospital, Secunderabad.

Study Population

All the patients attending STD OPD and Dermatology OPD at Gandhi Hospital during the period of data collection who met the criteria for cases or controls and who gave their informed consent to voluntarily participate in the study.

Sample Size :

The sample size has been calculated with the help of Right Size Software by taking prevalence of 15%, an alpha error of 1% and 80% power, the number of cases required was estimated as 85 and controls as 85, a total of 170. Assuming 10% non-response, the final sample size was increased accordingly to 188 (94 cases & 94 controls).

Sampling Strategy

After obtaining the Institutional Ethical Committee Approval, all the patients coming to STD clinic OPD and Dermatology OPD and who met the criteria for cases or controls and willing to participate by giving their informed consent were included till the target sample size was achieved during the study period. About 4-5 patients were interviewed daily over 12 weeks. Adequate time was given to each patient to make him comfortable and the daily number of interviews was kept low to ensure better quality and to obtain more information.

Time Planning for the Study

Planning	2 Weeks
Data collection	12 Weeks
Data compilation & analysis	4 Weeks
Report preparation	2 Weeks
Total	20 Weeks

Study Period : August 2007 to December 2007

The Questionnaire contained information on Socio-demographic particulars in the first part and on Risky Sexual behaviours in the second part.

Analysis was done using EPI info software and by applying appropriate tests of significance.

RESULTS

Table 1: Demographic profile

Determinant	Case N (%)	Control N (%)	Chi-square	P - Value
OCCUPATION				
1 Unemployed	6 (6.4%)	5 (5.3%)	28.4	0.000
2 Service	18 (19.1%)	14 (14.9%)		
3 Daily Labor	43 (45.7%)	39 (41.5%)		
4 Agriculture	3 (3.2%)	13 (13.8%)		
5 Others	24(25.5%)	23 (24.5%)		
RELIGION				
1 Hindu	85 (90.4%)	63 (67.0%)	27.1	0.000
2 Islam	3 (3.2%)	17 (18.0%)		
3 Christian	6 (6.4%)	2 (2.1%)		
4 Sikh	0 (0.0%)	2 (2.1%)		
5 Buddhism	0 (0.0%)	10 (10.6%)		
EDUCATION				
1 None	13 (13.8%)	19 (20.2%)	18.2	0.001
2 Primary	37 (39.4%)	34 (36.2%)		
3 Secondary	22 (23.4%)	19 (20.2%)		
4 High School	5 (5.3%)	8 (8.5%)		
5 College	17 (18.0%)	14 (14.9%)		
MARITAL STATUS				
1 Single	24 (25.5%)	27 (28.7%)	2.42	0.66
2 Married	59 (62.7%)	58 (61.7%)		
3 Divorcee	5 (5.3%)	6 (6.4%)		
4 Widowed	4 (4.3%)	3 (3.2%)		
5 Others	2 (2.1%)	0 (0.0%)		
MONTHLY INCOME:				
1 < Rs 2,000	20 (21.3%)	27 (28.7%)	4.57	0.33
2 Rs 2,000 - 5,000	60 (64.0%)	51 (54.3%)		
3 Rs 5,000 –10,000	12 (12.7%)	12 (12.7%)		
4 Rs10,000 –15,000	1 (1.1%)	4 (4.3%)		
5 > Rs 15,000	1 (1.1%)	0 (0.0%)		
AREA OFRESIDENCE				
1 Rural	25 (26.5%)	29 (30.8%)	40.61	0.000
2 Semi Urban	17 (18.0%)	17 (18.0%)		
3 Urban	52 (55.3%)	48 (51.1%)		
AGE GROUP (in Yrs)				
< 21	6 (6.4%)	6 (6.4%)	6.73	0.24
21-25	15 (16.0%)	16 (17.0%)		
26-30	30 (31.9%)	29 (30.8%)		
31-35	26 (27.6%)	25 (26.6%)		
36-40	10 (10.6%)	10 (10.6%)		
41+	7 (7.4%)	8 (8.5%)		

Demographic profile (Table 1)

The mean age (with Standard Deviation) for cases was 30.9 $\pm$ 7.3 and for controls was 31.1 $\pm$ 7.5 (Table 2). Majority of the cases 71(76%) and controls 70 (74%) were in the age group of 21-35 years .Males and females were 74(79%) and 20(21%) respectively in both the cases and controls. Majority of the cases 52(55%) and controls 48(51%) were from urban area. Cases were having primary 37(39%) and Secondary 22(23%) education. Controls were also having primary 34 (36%) and Secondary 19(20%) education.

In the occupation status of cases, majority belong to daily labor 43(46%) and it is also the same in controls which is 39 (42%). Among the cases, majority 59(63%) were married and in the controls also, the married persons were more 58(62%). Amongst the cases, majority (64%) had monthly income between Rs 2,000-5,000 followed by those with monthly income less than Rs 2,000 (21%). In the control group, majority (54%) had monthly income between Rs 2,000-5,000 followed by those with monthly income less than Rs 2,000 (29%). Only 14.7% of the cases and 17% of the controls had monthly income $\geq$ Rs 5,000 .Most of the cases 85 (90%) and controls 63 (67%) belong to Hindu religion.

Table 2: Prevalence of risk factors among the cases and controls studied (with Chi-square and P-values)

RISK FACTOR	CASES N (%)	CONTROLS N (%)	Chi-square	P- Values
LIVING TOGETHER WITH PARTNER				
Yes	58 (61.7%)	64 (68.1%)	0.84	0.36
No	36 (38.3%)	30 (31.9%)		
RELATIONSHIP WITH LAST PARTNER				
Husband / Wife	54 (57.4%)	76 (80.8%)	29.4	0.000
Fiancee / Lover	1 (1.1%)	5 (5.3%)		
Friend	5 (5.3%)	8 (8.4%)		
Occasional Partner	9 (9.6%)	1 (1.1%)		
Just met / stranger	1 (1.1%)	1 (1.1%)		
Commercial sex Worker	13 (13.8%)	1 (1.1%)		
Family member / relative	6 (6.4%)	1 (1.1%)		
Other	5 (4.3%)	1 (1.1%)		

ALCOHOL USE IN LAST SEX				
Yes	56 (59.6%)	13 (13.8%)	42.1	0.000
No	38 (40.4%)	81 (86.2%)		
NUMBER OF SEXUAL PARTNERS (LIFETIME)				
>3	57 (60.6%)	18 (19.1%)	33.6	0.000
<3	37 (39.4%)	76 (80.9%)		
CURRENT SEXUAL PARTNER STI				
Yes	36 (38.3%)	1 (1.1%)	66.5	0.000
No	31 (33.0%)	84 (89.3%)		
Don't Know	27 (28.7%)	9 (9.6%)		
GIVE/RECEIVE MONEY FOR SEX				
Yes	35 (37.2%)	1 (1.1%)	39.51	0.000
No	59 (62.8%)	93 (98.9%)		
FORCED TO HAVE SEX (FOR FEMALES)				
Yes	1 (5.0%)	3 (15.0%)	0.23	0.89
No	19 (95.0%)	17 (85.0%)		
MEN HAVINGSEX WITH MEN (MSM)				
Yes	6 (8.1%%)	2 (2.7%)	2.1	0.14
No	68 (91.9%)	72 (97.3%)		
INTRAVENOUS DRUG USERS (IDU)				
Yes	0	0	----	----
No	94	94		
CONDOM USE (LAST TIME SEX)				
Yes	36 (38.3%)	37 (39.4%)	0.02	0.88
No	58 (61.7%)	57 (60.6%)		
CONDOM USE (EVERY TIME SEX)				
Yes	16 (17.0%)	29 (30.9%)	7.41	0.025
No	77 (81.9%)	61 (64.9%)		
Don't Remember	1 (1.1%)	4 (4.2%)		
H/O STD IN LAST 3 MONTHS				
Yes	50 (53.2%)	3 (3.2%)	57.7	0.000
No	44 (46.8%)	91 (96.8%)		

Table 3 : Prevalence of risk factors among the cases and controls studied (with Odds Ratio And 95% C.I-Values)

	Frequency of exposure				OddsRatio (P-value)	95% Confidence Interval
	Cases (n=94)		Controls (n=94)			
	N	%	N	%		
LIVING TOGETHER WITH PARTNER	58	61.7	64	68.1	0.75 (0.36)	0.4-1.3
RELATIONSHIP WITH LAST PARTNER	54	57.4	76	80.8	0.32 (0.000)	0.16-0.62
ALCOHOL USE IN LAST SEX	56	59.6	13	13.8	9.2 (0.000)	4.5-18.8
NUMBER OF SEXUAL PARTNERS (LIFETIME)	37	39.4	18	29.3	6.5 (0.000)	3.2-13.3
CURRENT SEXUAL PARTNER STI	36	38.3	1	1.1	57.72 (0.000)	7.70-432.5
GIVE/RECEIVE MONEY FOR SEX	35	37.2	1	1.1	55.16 (0.000)	7.3-413.5
FORCED TO HAVE SEX (FOR FEMALES)	1	1.1	3	3.2	0.33 (0.31)	0.03-3.19
MEN HAVINGSEX WITH MEN (MSM)	6	6.4	2	2.1	3.14 (0.149)	0.62-15.96
CONDOM USE (LAST TIME SEX)	58	61.7	57	60.6	1.1 (0.88)	0.58-1.88
CONDOM USE (EVERY TIME SEX)	78	83.0	65	69.1	2.17 (0.02)	1.08-4.35
H/O STD IN LAST 3 MONTHS	50	53.2	3	28.2	34.4 (0.000)	10.18-116

By applying appropriate tests of significance, it was found that the risk factors for STDs among cases were previous sex with non-regular partners; having sex under the influence of alcohol; current sexual partner having STD; having more than 3 partners; non-usage of condoms every time and paid sex. (Tables 2 &3)

DISCUSSION

Partners' living together is a very important aspect with regard to STD, as this will decrease the chance of acquiring STD. In the present study, we found that there was no significant difference in risk of infection among those who were living together with their partner and those who were not living together with their partner. This finding was similar to the findings of another study which was conducted in STD clinic in north eastern state in India in which living away from partner was a significant risk factor for STD (Kar P K, et al, 1999) [6]. Living away from partner was also a significant risk factor in another case control study, which was conducted, in rural Uganda (Quigley MA, et al, 2000) [7].

Relationship to the last person they had sex with also has a vital role in the present study as this shows with whom the cases and controls had indulged in sex. In the present study, there was decreased risk of getting STD among those who had sex with their spouse as compared to those who had sex with other people like Commercial Sex Workers (CSW) or occasional partner, etc., This result was similar to the results of other studies in which there was significant risk of getting STD due to relationship with high risk groups like CSW (Pedhambkar, RB, et al, 2001 [8]; Malone JD, et al, 1993 [9]; and Gibney L, et al, 2003 [10]).

Indulging in sex under the influence of alcohol is a significant risk factor for STD because there are findings, which suggest that expectancies and drinking before sex represent proximal mechanisms through which dispositional factors influence sexual risk outcomes. In the present study, alcohol consumption before sex was found to be a significant risk factor for STD, which was in accordance with the results of other studies (Gibney L, et al, 2003 [10] and Hendershot CS, et al, 2007 [11]).

Presence of STDs in current sexual partner is a significant risk factor for contracting STD to other partners. In the present study, current sexual partner having STD had found to be a significant risk factor for contracting STD than those study subjects whose current sexual partner did not had STD which was similar to the findings of other studies (Malamba SS, et al, 1997 [12] and Mmbaga EJ, et al, 2007 [13]).

Number of sexual partners in lifetime is a marker of risky sexual behaviour. The more the number of sexual partners in lifetime, the more is the risk of getting STD. In the present study, it was found that there was significant risk of infection among those who had more than 3 sexual partners in lifetime. This was a significant risk factor for the

development of STD and was in accordance with the findings of other studies (Thakor HG, et al, 2004 [14] and Kar PK, et al, 1999 [6]).

In the present study, a significantly higher risk of acquiring infection was found among those practicing paid sex or transactional sex than among those who did not pay money for sex. This risk factor was also reported in other studies (Kral AH, et al, 2005 [15] & Adedimeji AA, et al, 2007 [16]).

Forced to have sex may also be a risk factor for STD. However, in the present study, it was found to be a non-significant risk factor for infection unlike in other studies in which it was a significant risk factor for STD (Quigley MA, et al, 2000 [7]).

In the present study, in those male study participants who had sex with other Men (MSM), there was less risk of getting STDs unlike in the surveillance data of Bangladesh, which showed that this type of behaviour could increase the prevalence of STD like HIV (Chan PA, et al, 2007) [17].

Non-usage of condoms during sex is a significant risk factor for STD. In the present study, there is an increased risk of getting infection due to non usage of condoms by the sexual partners in the last time they had sex .Similarly, non-usage of condoms was found to be a significant risk factor in numerous studies (Rodrigues JJ, et al, 1995) [18], (GO VF, et al, 2007) [19].

Past history of STD is an important risk factor for contracting STD. In the present study, there was significantly higher risk of infection among those who had a history of STI in the past 3 months than those who did not had and this type of finding is in accordance with the findings of other studies (Kar P K, et al, 1999) [6], (Pedhambkar, RB, et al, 2001) [8] & (Kaur R, et al, 2006) [20].

CONCLUSION

The study findings showed that there was a significant risk of acquiring STD among the participants who has had previous sex with non-regular partners as compared to those who has had sex with their spouses. The association between living apart from spouse and having STD was poor in the study. Two of the established risk factors for contracting STD namely, having sex under the influence of alcohol and paid sexes were found strongly associated. Having more than 3 partners increased the risk of acquiring STD by 6.5 fold in this study. Forced sex and non-usage of condom in the last sex did not show association with risk of acquiring STD. Lifetime numbers of sexual partners were considerably more for cases than controls. Current partner having STD was significantly associated with risk of acquiring STD.

RECOMMENDATIONS

High-risk groups should be targeted for interventions e.g. behavioral intervention messages with the aim to be faithful to their life partners. Counsel attendees of the STD clinics for safe sex through Behaviour Change Communication (BCC).

Promote condom usage among STD Clinic attendees.Identify and treat the individuals having STD along with their partners at the earliest and at the same time.

LIMITATIONS

1. As they are patients attending a tertiary care hospital, the STD clinic attendees may represent the more severe forms of the clinical spectrum of the disease. The controls are not from healthy population but are also suffering from skin disorders.
2. As data are based on STD clinic attendees selected from a Government hospital, which caters to people from different districts, these may not be representative of the STD situation prevailing in the community in Secunderabad. These selection factors limit the generalisability of the estimates of prevalence rates of risk factors.
3. As the researcher is not involved in the treatment, it may be possible that some patients may not be providing accurate information to questions related to sexual behaviour. This may have biased the present estimates, as non-differential misclassification is more likely.

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