

Sexual behaviour and sexually transmitted infections among married couples seeking care at STD clinic of a Government Hospital, Chennai, India

Thilakavathi Subramanian¹, Robert Schilling², P. Kamaraj¹, A.K. Mathai¹, V. Selvaraj¹, V. S. Dorairaj³ and Sanjay Mehendale¹

¹National Institute of Epidemiology, ICMR, Chennai

²School of Public Policy & Social Research, University of California, Los Angeles,

³Institute of Venereology, Government General Hospital, Chennai

Abstract: This study presents sexual behaviour and prevalence of HIV and STIs among married couples seeking STI care at a STD clinic of a major government hospital. Of the 209 eligible married couples who approached the STD clinic, 126 eligible index cases (who were STI symptomatic or had a risk exposure) and their spouses who consented to participate in the study over a period of 18 months were included in the study. This cross sectional study covered data on demographic details, sexual behavior and details of clinical symptoms, from each of the individuals who consented for participation. The mean age of the respondents was 32.5 years. Most of the females (<93%) reported that their first sexual partner was their spouse; whereas in men it was 50% or less. More males had, a history of STI, non-marital partners (in the last week, last 3 months, and in their life time), pre/extra marital contacts and were positive for HIV than the females. More females were syphilis reactive than the males. Multiple regression analysis showed that only factors like male gender for HIV positivity and being an index case for Syphilis positivity were significantly associated in the presence of other variables. Our findings strongly suggest both, a couple-centered and a gender specific approach for case detection, management and prevention of HIV and STIs among married couples.

Keywords: HIV, STIs prevalence, sexual behavior, married couples, STD clinic

I. INTRODUCTION

India had an estimated 2.27 million persons living with human immunodeficiency virus (HIV) in 2009 [1]. HIV transmission in India is predominantly through the hetero-sexual route [2]. Sexually transmitted infections [STIs] are reported to play an important role in facilitating the transmission of HIV infection [3]. Every day nearly one million people acquire a new STI and, more than 340 million new cases of curable STIs occur throughout the world each year [4]. Though young people aged 15–24 years represent only 25% of the sexually experienced population, they acquire nearly half of all new STIs [5]. Men generally acquire HIV through multiple sexual partners including high risk groups, such as female sex workers, while the majority of women acquire HIV from their husbands [3,6].

It is therefore important to control the transmission of HIV among married couples. Estimating the prevalence of STIs and HIV infection among married couples might help to provide clues regarding the need to develop a focused HIV/ STIs preventive intervention strategy among the married couples in India. Hence, a study was

planned with an objective to find out the sexual behaviour and prevalence of HIV and STIs among married couples seeking care for STIs at the Institute of Venereology, Government General Hospital, Chennai.

II. METHODS

Study site and population

This collaborative study between National Institute of Epidemiology (NIE) and University of California, Los Angeles (UCLA) was carried out at the Institute of Venereology (IOV) of the Government General Hospital, Chennai, Tamil Nadu, India. All the STD clinic attendees who were married and living with their spouses, staying in and around Chennai and presenting with any STI symptom or history of risk exposure to STI/ HIV, were eligible for the study. They were required to participate in the study along with their spouses (partners of index cases).

Study participants and tools

Out of the 209 eligible couples who attended the STD clinic during the study period, 126 couples were willing to participate in the study. Written informed consents were obtained from all index cases (the partner first

reporting symptom/s or risk exposure in a married couple), and also their spouses, separately, before proceeding with data collection. Interviews were conducted with adequate privacy in the local language (Tamil). The interview schedule contained questions on basic demographic characteristics such as gender, type of residence, age, religion, education, occupation and monthly income, information about age at first sex, type of first sexual partner, type of first sex act [vaginal or anal], age at marriage, previous STI history, sexual behaviour, condom use, sex with non-marital partners and details of clinical symptoms. For all the STD clinic attendees, as a routine, serum VDRL test was done for syphilis and all the participants of the study were referred for HIV testing. For symptomatic patients, specific laboratory investigations for gonorrhea (by gram stain method), trichomonas vaginalis (by wet mount –normal saline) or vaginal candidiasis (by KOK) were done to aid the case management.

III. DATA ANALYSIS

Statistical analysis was performed using STATA 7.0. College Station, TX: Stata Cop. and SPSS (version 11.0) software. Descriptive analyses were performed; means and medians were calculated. To study the factors associated with HIV and VDRL positivity, multiple regression analysis was performed. By considering couple as a unit (cluster), we used GEE (Generalized Estimating Equation) approach. Intra couple correlation was accounted by assuming exchangeable correlation structure.

Ethical clearance

Ethical clearances were obtained from UCLA- IRB and the Institutional Ethics Committee (IEC) of NIE for the ethical aspects of the study

IV. RESULTS:

Profile of the study participants

Out of the 209 eligible index cases who reported to the study clinic, 126 agreed to enroll along with their spouses; however, 83 could not be recruited, either due to their unwillingness to participate in the study (n=51) or due to other reasons like, time constraint, language problem, too sick to respond, stigma, difficulty to attend for follow-up, etc. (n=32). The study participants were predominantly from urban and semi urban areas (Table 1). Nearly 53% of men and 77% of women were below 35 years of age and women, were more likely to be younger (30% below 25 years of age compared to 8.7% males). Illiteracy among women was twice compared to men (18.2% and 9.5% respectively). More than 50% of men were either drivers (lorry, car or auto-rickshaw) or workers employed to do petty jobs on daily wages and 56% of women were housewives. Men were the income generators in the family. Mean age of the respondents

was 32.5 years (SD=8.1) with median being 32 years (range=16-60 years).

Socio-demographic characteristics of Index cases

Out of the 126 couples recruited with one partner being STI symptomatic or exposed to STI/HIV risk behaviour (index cases) in the study, 64 (51%) were male index cases. As regards to index cases, about one fourth of the males and females were between the age group of 30 - 34 years (Table 1). However, 42% of the female index cases were less than 25 years of age. Nearly half the males and females (48%) had studied up to high school level; but nearly 15% of the females were illiterates. With respect to their occupational status, 41% of the males were daily wage earners, primarily doing building construction work or loading and unloading jobs and 60% of the females were housewives. Nearly 60% women had no income and 45% each, of male index cases reported a monthly income of Rs.1001 (20 US\$) to Rs. 3000 (62US\$) per month or more than Rs. 3000 (>62US\$) per month. (Table 1).

Sexual history and risk behavior

More than half the male index partners (n=33; 51.6%) had sexual debut at the age of 21 years. Characteristically, 46.8% female index cases had sexual initiation at the age of 17 years or less (Table 2.). Most of the females (98.4% index cases; n=63 and 93.5% spouses of male index cases; n=58) reported that their respective spouses were their first sexual partners; whereas in men, around one fourth of index males (26.6%) and 24.2% of spouses of female index cases mentioned their friends or some other known persons as their first sexual partners (Table 2). In all, 12.6% couples had their first sexual contact at the age of ≤ 17 years and 61.7% of the couples reported that their first sexual contact was their spouse (data not shown). Four index cases (3 male and one female) reported first sex to be anal sex.

In the present study, half of the male index partners (n=32; 50%) had their age at marriage between 21 and 25 years while 40.3% female index partners had their marriage at the age of 17 years or less.

More number of males (43.8% index cases, n=28; and 19.4% spouses of female index cases, n=12) reported previous STI history than their corresponding counterpart females (Table 2).

Sexual behaviour with non-marital sexual partner

More men, than women reported of having non-marital sexual partners in the last week. In the last one week, 4 male and 2 female index cases and 5 male spouses reported having sex with non-marital sexual partners (Table 2). And also, 10 male and 2 female index cases in the last 3 months and 12 male and 3 female index cases in the last one year reported of having sex with non-marital partners. None of the female spouses of male index study participants reported of having sex with non-marital partners in the last one year. More males reported

of having non-marital partners in their life time (53 male index partners and 42 spouses of female index cases) than the females (9 female index cases and 2 of the spouses of male index cases). Consistent condom usage was reported by 4 index males and 2 male spouses of female index cases (Table 2).

Twenty nine male index cases and none of their spouses and 6 female index cases and 24 male spouses reported pre-marital sexual contact; and extra marital contacts were reported by 24 male index partners and none of their spouses and 3 female index partners and 18 male spouses. Three index male and 2 male spouse reported bisexual orientation (Data not shown).

Prevalence of HIV and STI

Among the 59 male index partners and 52 of their female spouses tested for HIV, 8 (13.6%) men and one (1.9%) female were found HIV positive, respectively. In comparison, 3/ 53 (5.7%) female index cases, and 4/ 44 (9.1%) of their male spouses were HIV positive (Table 3). In all, 5 (7.8%) male and 7 (11.3%) female index cases were VDRL reactive. Thus more males (Males 11.7%; Female 3.8%) were positive for HIV antibodies and more females (Female 7.4%; Male 5.6%) were reactive for syphilis. Among the 3 male and 18 female index cases and 13 of their female spouses tested for gonorrhoea, 1 male and 2 female index cases and 3 female spouses were positive for Gonorrhoea. Among the tested, one third (33%) of the female index cases and 15% of female spouses of male index cases were positive for *Trichomonas Vaginalis*. The prevalence rates of vaginal candidiasis in the same two populations were 25.5% and 15% respectively.

Out of the 126 couples, 17 couples were positive for at least one STI and in 54 couples, the index cases were positive for at least one STI and their spouses were negative. Similarly, 4 couples were positive for HIV and in another 4 couples, the index cases were positive for HIV and their spouses were negative. In all, 3 couples were positive for at least one STI and HIV antibodies. (Data not shown)

Multiple Regression Analysis

To study the factors associated with HIV/VDRL positivity, multiple regression analysis was performed. By considering couple as a unit (cluster), we used GEE (Generalized Estimating Equation) approach. Intra couple correlation was accounted by assuming exchangeable correlation structure. Since the outcome was dichotomous (HIV/VDRL- yes/no) the link was logit. The possible factors considered were gender, age at first sex, unaware of preventive methods, knowledge on transmission, had more than one partner, being an index case and number of children in the family. Among those variables considered as factors for the positivity of HIV, only male gender was significantly associated with HIV with OR 5.00 (95% C I, 1.048 -24.39). The lowest value of OR could be as low as 1.048. The wider confidence

interval could be attributed to few numbers in the positive group of HIV. As regards to syphilis, none of the factors considered was found associated with positivity of VDRL except the factor "Index case" (index = 1 spouse = 0) with an Odds Ratio 2.931 (95% C I, 1.014 -8.474) (Table 4). Gender association was not found to be significant in this study population.

V. DISCUSSION

The present study is of unique in nature as it is focused on married couples. The males and females presenting with STI symptoms or having a history of high risk behavior, were enrolled along with their spouses in the STD clinic, to study their risk behaviors and consequently their impact as reflected by prevalence of STIs and HIV. There are not many reports from India to relate the findings of the present study. A study [7] done at Baroda, India, among married couples showed, that out of 105 HIV positive females, 64 acquired HIV through sexual route, either through husband (57 husbands were positive) or through infected partners.

In this married partners' study, the observations that majority of female index cases were younger in age and that most of the females (both index cases as well as spouses) had their respective spouses as their first sexual partner, were clearly indicative of the risk of STIs from their married partners. This is one reason why women after getting married at an early age are likely to acquire STI and or HIV from their spouses [3,6,8-10]. Males, more than half of them had their lover, relative, friend or a known person as their first sexual partner and less number of them had their spouses as their first sexual partner and more likely to report previous STI history. Use of condoms by men was minimum and less consistent. Around half the men had non-marital partners in their life time whereas this proportion was minimal in women. Thus the history of high risk behavior was distinctly more common among males than females and this might explain higher HIV prevalence in men. It was shown in a study conducted at Chennai [11], that more men than women reported of having extra-marital relationships most often with a sex worker or a friend.

We observed a high burden of *Trichomonas vaginalis* and candidiasis in our population. In a study [12] conducted among non-pregnant sexually active women from low-income peri-urban and rural neighbourhoods of Mysore city showed that the burden of *T. vaginalis* infection at 8.5% is relatively high among a community sample of young reproductive aged women. Few other studies in India have shown the prevalence of *T. vaginalis* infection ranged from 1.2% to 28.5% across a variety of populations including obstetric and gynaecology clinic attendees [13], STI clinic attendees [14], commercial sex workers [15], and community-based populations [16-18]. A study conducted at Assam [19] hat, Candidiasis (vulvovaginal candidiasis in

women and candidal balanitis/balanoposthitis in men) was the most common finding on clinical examination (21.5%) followed by syphilis (17.2%) and other STIs among the persons involved in high risk behaviour. We observed that more women were positive for syphilis serology. This probably suggests ignorance or lack of awareness with respect to prevention of STI, poor treatment seeking behavior and stigma related to discussing about the genital complaints with the spouse or other family members [20-23].

For prevention of HIV/STIs in men, the focus should be on reducing the number of extra-marital sexual partners and more consistent condom use. However, for prevention of HIV and STD in women, late marriages [24], pre-marital counseling and periodic check up for silent STI²⁴ would be more effective.

Considering the close relationship between STI and prevalent and incident HIV infection [25-27] and the observed risk behavior among the married partners, it is important to create awareness among married couples about the STIs, their silent nature, their relationship with HIV infection and role of timely diagnosis and immediate treatment of STI as a HIV prevention strategy. Such interventions are likely to reduce the transmission of HIV in married couples' settings.

Our findings strongly suggest a couple-centered and gender specific approach for case detection, management and prevention of STIs and HIV transmission among married couples. Couple prevention interventions should begin early in relationships and include mutual knowledge of HIV status, reduction of outside sexual partners [28] and creating awareness on STIs and HIV. Need for appropriate testing among married couples for STIs and HIV and immediate treatment seeking in case of STI related symptoms should also be emphasized.

As regards to the limitations of the study, the study participants typically represent less educated population doing low-level jobs with low family incomes and living in urban and semi-urban areas of the metropolitan city of Chennai in South India. In view of this fact and also that many of them refused to participate in the study the findings cannot be generalized to all married couple seeking STI care in Chennai, especially those belonging to higher socio-economic strata and those seeking care in private hospitals in the city. Additionally, in some of them adequate samples were not available for the estimation of HIV or STIs and hence the actual prevalence might be higher than what we have reported in the paper. More statistical analysis could not be applied due to want of more number of study participants.

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Table 1: Socio-demographic profile of the study participants

Characteristics	Married couples - index case (n=126)		Overall study population (n=252)	
	Male Index case % (n=64)	Female Index case % (n=62)	Male % (n=126)	Female % (n=126)
Gender	50.8	49.2	50.0	50.0
Place of residence				
Urban	57.8	33.9	48.4	38.1
Semi Urban	42.2	66.1	51.6	61.9
Age				
<25	6.2	41.9	8.7	30.0
25 – 29	21.9	19.4	19.0	29.2
30 – 34	25.0	24.2	25.4	18.3
35 – 39	21.9	8.1	25.4	14.2
≥40	25.0	6.5	21.4	8.3
Religion				
Hindu	92.2	83.9	90.4	85.7
Others	7.8	16.1	9.5	14.3
Education				
Illiterate	7.8	14.5	9.5	18.2
Read/Write	6.2	6.5	6.3	4.0
Primary	15.6	29.0	16.7	27.0
High School	48.4	48.4	46.8	42.1
Higher secondary and above	21.9	1.6	20.6	8.7
Occupation				
Drivers	4.7	0.0	13.5	0.0
Daily Wages	40.6	16.1	38.9	3.5
House Maid	0.0	4.8	0.0	10.3
Farmers	7.8	8.1	9.5	6.3
Skilled Workers	18.8	4.8	15.1	5.6
Govt./Private/Business	28.1	6.5	23.0	7.9
House wife	0.0	59.7	0.0	56.3
No. of children in the family				
No Child	25.0	19.4	22.2	23.0
1 – 2	51.6	64.5	56.3	57.9
≥ 3	23.4	16.1	21.4	19.0
Monthly income (Rupees)				
No Regular Income	1.6	59.4	0.8	56.3
≤ 1000	7.8	27.4	7.9	30.2
1001 – 3000	45.3	11.3	51.6	11.9
>3000	45.3	1.6	39.7	1.6

Table 2. Sexual history and risk behavior of the respondents

S.No	Sexual history	Couples with male index partner (n=64)		Couples with female index partner (n=62)	
		Males	Spouse	Females	Spouse
1.	Age at first sex	n=64	n=64	n=62	n=62
	≤ 17	13(20.3)	18(28.1)	29(46.8)	8(12.9)
	18 – 20	18(28.1)	33(51.6)	21(33.9)	25(40.3)
	≥21	33(51.6)	13(20.3)	12(19.4)	29(46.8)
2.	First Sexual Partner				
	Spouse	19(29.7)	63(98.4)	58(93.5)	31(50.0)
	Lover	7(10.9)	0(0)	2(3.2)	1(1.6)
	Relative	13(20.3)	0(0)	1(1.6)	6(9.7)
	Friends/ Known Person	17(26.6)	1(1.6)	1(1.6)	15(24.2)
	Sex Worker	8(12.5)	0(0)	0(0)	9(14.5)
3.	Types of First Sex				
	Vaginal	61(95.3)	64(100.0)	61(98.4)	62(100.0)
	Anal	3(4.7)	0(0)	1 (1.6)	0(0)
4.	Age of Marriage				
	≤ 17	2(3.1)	18(28.1)	25(40.3)	1(1.6)
	18 – 20	6(9.4)	31(48.4)	21(33.9)	8(12.9)
	21 – 25	32(50.0)	13(20.3)	11(17.7)	30(48.4)
	≥26	24(37.5)	2(3.1)	5(8.1)	23(37.1)
5.	Previous STI History (Self Quoted)				
	Yes	28(43.8)	5(7.8)	10(16.1)	12(19.4)
6.	Sexual contact (Including spouse)				
	Only Male	0(0)	63(98.4)	62(100.0)	0(0)
	Only Female	61(95.3)	1(1.6)	0(0)	60(96.8)
	Bisexuals	3(4.7)	0(0)	0(0)	2(3.2)
	Sexual behaviour with non-marital partners (NMP)				
	Had NMP – last week	n=4		n=2	n=5
	Number of NMP: <2	1(25.0)	-	2(100.0)	4(80.0)
	Number of NMP: ≥2	3(75.0)	-	0(0)	1(20.0)
8.	Had NMP – Last 3 months	n=10		n=2	
	Number of NMP: <2	7(70.0)	-	2(100.0)	-
	Number of NMP: ≥2	3(30.0)	-	0(0)	-
9.	Had NMP – Last 1 year	n=12		n=3	n=12
	Number of NMP: <2	5(41.7)	-	2(66.7)	6(50.0)
	Number of NMP: ≥2	7(58.3)	-	1(33.3)	6(50.0)
10.	Had NMP – Life time	n=53	n=2	n=9	n=42
	Number of NMP: <20	50(94.6)	2 (100)	6(66.6)	36(84.2)
	20 – 99	2(3.6)	-	1(11.1)	6(15.8)
	≥ 100	1(1.8)	-	2(22.3)	0(0)
11.	Frequency of condom usage				
		n=55	n=2	n=9	n=38
	Consistently	4(6.2)	-	0(0)	2(3.2)
	Almost all the time	0(0)	-	1(1.6)	-
	Sometimes	9(14.1)	2 (100)	1(1.6)	7(11.3)
	Never	42(65.6)	-	7(1.3)	29(46.8)

Table 3: Prevalence of HIV and STI among study participants

Test done	Couples with male index Partners				Couples with female index partners			
	Male index partners		Spouses of male index partners		Female index partners		Spouses of female index partners	
	n	Positive	n	Positive	n	Positive	N	Positive
HIV	59	8 (13.6)	52	1 (1.9)	53	3 (5.7)	44	4 (9.1)
Syphilis (VDRL)	64	5 (7.8)	59	2 (3.4)	62	7 (11.3)	62	2 (3.2)
GC	3	1 (33.3)	13	3 (23.1)	18	2 (11.1)	-	-
T.V.	1	0 (0.0)	41	6 (14.6)	45	15 (33.3)	1	1 (100.0)
Clue cells	-	-	14	13 (92.9)	20	17 (85.0)	-	-
Candidiasis	2	2 (100.0)	40	6 (15.0)	47	12 (25.5)	-	-

Table 4. Regression analysis: *Factors associated with HIV and Syphilis (yes/no)

HIV	Odds ratio	95% conf. interval	P value
Gender (male)	5.00	1.048 -24.39	0.04
Age at first sex	0.91	0.788 - 1.048	0.19
Unaware of preventive methods	1.38	0.511 - 3.707	0.53
Had more than one partner	0.52	0.107 - 2.479	0.41
Case (Index)	1.87	0.854 - 4.107	0.13
No children in the family	0.43	0.059 - 3.223	0.42
VDRL			
Gender (Male)	1.036	0.189 - 5.618	0.97
Age at first sex	0.941	0.805 - 1.100	0.44
Unaware of preventive methods	0.744	0.210 – 2.632	0.65
Knowledge on transmission (No)	0.867	0.116 – 6.481	0.89
Had more than one partner (yes)	0.698	0.125 – 3.885	0.68
Case(Index)	2.931	1.014 - 8.474	0.047
No of children in the family	0.208	0.018 -2.382	0.21

* GEE with logit link and exchangeable intra-couple correlation structure