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# Knowledge and Perception of Sexual Health Education and Condom Use among STI Patients in India

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## Authors' contributions

*This work was carried out in collaboration between all authors. Author KD had planned and analyzed the study. Author JS had reviewed literature and constructed the manuscript. Author SMW had critically reviewed the study. All the three authors had contributed in writing the manuscript. All authors read and approved the final manuscript.*

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## ABSTRACT

**Aims:** To explore the knowledge of STI, HIV/AIDS and condom use behaviour among men and women who have been medically treated and not treated for STIs in relation to socio-demographic factors. Furthermore, the study will explore the perceptions of adolescent sexual health education at school in the aforementioned group.

**Study Design:** Cross-sectional study.

**Place and Duration of Study:** The study was conducted in all Indian member states during 2005-2006.

**Methodology:** Using nationally representative samples, a cross sectional study of 8924 women and 1644 men (2948 women & 745 men received medical treatment for STIs) were used to examine their knowledge, condom use behaviour and perception of adolescent sexual health education at school. Chi-square analysis was performed.

**Results:** Gher proportions of respondents who were urban residents, higher educated and more affluent received medical treatment for STIs compared to their rural, less educated and poorer peers. More women (43%) who reported condom use during their

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last sexual intercourse received treatment vs. the group not using condoms (32%). Proportionally, more women and men who had heard about STIs and HIV/AIDS answered in favor of girl's and boy's sexual health education, condom use and HIV/AIDS education compared to their peers who did not hear about STIs and HIV/AIDS. Even after receiving treatment respondents reported not having enough information about STIs, or HIV/AIDS. STI patients suggested that sexuality education should be added to school curriculum for a better understanding of the diseases in the general population.

**Conclusion:** Indian policy makers should place emphasis on providing necessary preventive information about STIs through different channels such as treatment centers, school curriculums and awareness campaigns.

*Keywords: Condom use behavior; knowledge; sexuality education; sexually transmitted diseases.*

## 1. INTRODUCTION

Globally, more than 340 million new cases of curable sexually transmitted infections (STIs) are reported every year [1]. Sexually transmitted infections are among the five leading causes of diseases in low-income countries, resulting in a large socioeconomic burden. If left untreated, STIs can result in pelvic inflammatory disease, infertility, adverse pregnancy outcomes, various cancers, as well as death of infants and adults [2,3]. Sexually transmitted infections have been identified as a public health concern not only for stated complications but also as cofactors of Human Immunodeficiency Virus (HIV) transmission. Genital ulcers or a history of such a disease is estimated to increase the risk of transmitting HIV 50-300 folds per episode of unprotected sex [1,4]. Hence, STIs are often discussed alongside-transmission of HIV/AIDS, which, have been identified as the most severe infectious disease challenge of public health concern worldwide due to its devastating effect on mortality and morbidity. Globally more than 33 million people are living with HIV/AIDS [5,6].

In India, the prevalence of STI among the general population in urban communities varies from 5% to 10% [7]. Unequal power relationships, lower level of education, low socio-economic status and financial constraints increase women's risk for STI and HIV infection, sometimes due to risky behaviors adopted by male partners either within or outside marriage [8].

The consistent use of condoms has been recommended as one of the strategies for the prevention of HIV/AIDS and other STIs in India [9]. However, earlier literature pointed out that condoms are mainly identified as a contraceptive for child spacing in India with statistics showing low usage (2% in 1994-1995) despite free availability of condoms in family planning services since the 1960s. Some gender related beliefs and cultural norms about sex and sexual life restricts safe sex in India. Men identified condoms as a barrier because their use restricts the natural flow of semen, while women associated them with prostitution [10]. Women are expected to be passive and have limited knowledge about sex and how to protect themselves from STIs. Even if the authorities try to increase knowledge about safe sex from partners, parents or teachers, women are treated as promiscuous if they are seen purchasing condoms [11].

Evidences exists from both developed and developing countries indicate that increasing education and preventive care services to meet the sexual health needs of adolescents, risky sexual behavior, as well as its consequences, can be reduced [12,13]. Age-appropriate

school-based programs might help protect young people by providing information, promoting a healthy sexual lifestyle and eliminating wrong beliefs, stigmas and myths around STIs, HIV/AIDS [1,14]. Worldwide the most affected group of people with STIs is adolescents and young adults. Up to 60% of the new infections and half of all people living with HIV globally are aged between 15 and 24 [15]. Adolescents are at great risk for STIs due to their unplanned and sporadic sexual relations, lack of proper information, skills and health care support during their sexual development [11,15]. Adolescent girls are more vulnerable than boys due to biological, social and economic reasons [1]. HIV/AIDS is huge threat to India especially for young people and it is now clear that India has diverse concentrated HIV epidemics [16-19].

In India, some nongovernmental organizations (NGOs) have already initiated successful interventions to slow the rate of STIs, including HIV infection, based on information, education and communication (IEC) materials, provision of health services and home-based care for people with HIV/AIDS [20]. Studies estimated that by 2010, approximately 29 million new HIV infections could have been prevented through effective prevention programs [21]. Evidences from other low-income countries show that sexual health education programs have positive effects on changing knowledge, perceptions and behavioral intents associated with sex [22]. However, youth sexuality education at schools in India is a controversial issue. It is met with high opposition from politicians, teachers and parents because of the opposing Indian culture [23]. To evidence the controversial issue in India the third National Family Health Survey (NFHS-3) 2005-2006 included, for the first time, questions regarding the opinions of the general population on adolescent sexual health education at school. Medically treated STI persons should get knowledge of STIs, HIV/AIDS, should know the importance of condom use and should understand the importance of sex education [2,10,15,19,20,22]. However, there is lack of evidence of evaluating their opinion on adolescent sex education at school among people who receive STI medical treatment. There are paucity of literatures exploring knowledge of STIs, HIV/AIDS and safe-sex especially among the unsafe-sex victims at the national level.

The aim of the current study is to explore the knowledge of STIs, HIV/AIDS and condom use among men and women between two groups who have been medically treated and not treated for STIs in relation to socio-demographic factors. This is a comparative study between two groups, unsafe sex victims and non-victims. Furthermore, the study will explore the perceptions of adolescent sexuality education at schools in the aforementioned group.

## **2. MATERIALS AND METHODS**

The current study uses cross-sectional and descriptive data generated by multistage sampling from the National Family Health Surveys (NFHS) of India. The Ministry of Health and Family Welfare, Government of India (GOI) initiated NFHS to provide national representative data on the population and health indicators. It started with NHFS-1 (during 1992-1993), NHFS-2 (during 1998-1999) and NHFS-3 was conducted from 2005-2006.

### **2.1 Survey Sampling**

The fieldwork for NFHS-3 was conducted by eighteen research organizations (including five population Research Centers established by the GOI in various states). Fieldwork for NFHS-3 was conducted in two phases from November 2005 to August 2006 in 29 Indian states.

The Indian 2001 census was used to determine the sample size from each area. NFHS-3 applied a sample design procedure using probability proportional to population size (PPS). The rural and urban sample selections were done in different stages. In rural areas it was conducted in two steps. In the first step villages were selected as primary sampling units (PSUs) using PPS. In the next step households were randomly selected within each PSU. Urban sample selections were conducted in three phases: Municipality wards were selected in the first stage using PPS, and then census enumeration blocks (CEB) were randomly selected from each sample ward. Finally households within the selected CEB were randomly selected. A more detailed description of the sampling procedure is reported in the NFHS-3 final reports 2007 [24,25].

## **2.2 Data Collection Procedure**

Centralized training workshops were carried out to train the personnel who assisted supervision and monitoring of all activities of NFHS-3. Those who were trained in the workshop subsequently trained the staff in each state. These workshops were carried out to ensure the uniformity in data collection. The workshops included training for health coordinators, household listing and mapping, training of trainers, health investigator training and data processing training.

The fieldwork in each state was carried out by a number of interviewers. Male and female interviewers were assigned respondents of the same sex to increase respondents' comfort level in talking about any sensitive topics. The household survey was conducted in a private environment so that participants could express themselves openly.

## **2.3 Study Sample**

In the survey, 124 385 women between the ages 15-49 years and 74,369 men between 15-54 years, were interviewed. In the current study, data from 8,924 women and 1,644 men, who answered for the questions, were utilized for analysis.

## **2.4 Questionnaire**

National Family Health Survey-3 (NFHS-3) was implemented through two questionnaires: a women's questionnaire and men's questionnaire. Each question was administered in the principal language of the state (29 states) as well as in English. The questionnaire captured data on demographics, reproductive behavior and intentions, knowledge and use of contraception, sexual behavior, knowledge of sexual health topics, including HIV/AIDS and STIs. For this study questions for demographics, history of STI treatments, knowledge about HIV/AIDS and condom use, and opinion about girl's and boy's sexuality education were considered.

## **2.5 Ethical Issues**

The NFHS-3 procedure (e.g. organization and sampling methods) and instruments used in the study received ethical approval from the Institutional Review Board of Opinion Research Corporation Macro International Incorporated. Moreover the respondents were offered a guarantee of privacy. Informed consents were obtained from all participants. The authors are using secondary data in this study.

## 2.6 Statistical Analysis

Cross-tabulation was used to study associations between the dependent (boys/girls should be taught about sex, HIV/AIDS in school) and independent variables (condom uses and ever heard of STIs, HIV/AIDS). Significant levels were tested using Chi-square test. Statistical significance was defined as  $P=0.05$ . For all tables  $\chi^2$  value: \*\*\*= $P<0.001$ , \*\*= $P<0.01$ , \*= $P<0.05$ .

## 3. RESULTS AND DISCUSSION

### 3.1 Results

Among the respondents (8924 women and 1644 men who answered questions on sex issues), 2948 (33%) women and 745 (45%) men reported having received treatments for STIs during the past 12 months. More of those living in urban areas had received STIs treatment compared to those living in rural areas (Table 1).

Richest men and women (based on wealth index) had the highest proportion of treatment (men 51%, women 47%) compared to poorest men (39%) and women (24%). More of the women with higher education had received STI treatment compared to those with lower education. Muslim men (53%) had a slightly higher proportion of being treated compared to other religions (Table 1).

Data indicate that proportionally more women who had previously heard of STIs proportionally received more STI treatment (36%) than the women who had not previously heard of STIs (26%). More women who had heard of HIV/AIDS (37%) received treatment than those who had never heard of HIV/AIDS (27%) (Table 2). Women who believed that the risk of getting HIV/AIDS can be reduced by not having sex at all received more treatment (39%) than their peers who did not believe so (32%) or who had no idea of HIV/AIDS (33%). More women who believed that use of condoms could prevent HIV/AIDS received treatment (39%) compared to non-believers (33%) (Table 2).

Proportionally more women who used condoms during their last sexual encounter had received treatment (43%) vs. (32%) those not using condoms. A higher proportion of STI treated men who believed that their wife had the right to ask for condoms, had received treatment (47%) compared to those who did not believe so (33%) (Table 3).

(Table 4) and (Table 5) show STI patients' perceptions regarding school-based sexuality education (separately for boys' and girls' sexuality education) in relation to participants' knowledge of STIs, HIV/AIDS and their use of condoms. Majority of the women who had heard about STIs (54%) and HIV/AIDS (55%) before their treatment, and more than 90% of the men (STI, 93% & HIV/AIDS, 90%) were in favor of boys' sexual health education compared to their peers who did not hear about STIs & HIV/AIDS. More than half of the women (63%) who used condoms in their last sexual encounter and half of the men (50%) who used condoms during paid sexual encounters were in favor of boys' sexuality education compared to their peers who did not use condom. Around 11% of men who used condoms during their first sexual intercourse were in favor of boys' sexuality education (Table 4).

**Table 1. Demographics of the women and men who answered for STI treatment**

Demographics	Women respondents (N <sub>w</sub> ),	Women received STI treatment		Men respondents (N <sub>m</sub> )	Men received STI treatment	
		n	% of N <sub>w</sub>		n	% of N <sub>m</sub>
<b>Age group</b>						
15-19 years	464	103	22	118	49	42
20-24 years	1478	431	30	264	105	40
25- 29 years	1853	653	35	313	140	45
30-34 years	1811	635	35	297	140	47
35-39 years	1557	552	36	253	136	54
40-44 years	1118	389	35	193	85	44
45-49 years	643	188	29	128	56	44
50-54 years	-	-		78	34	44
<b>Residency</b>						
Urban	3083	1251	41	621	308	50
Rural	5841	1700	30	1023	437	43
<b>Education</b>						
No Education	4210	1119	27	312	150	48
Primary	1521	500	33	340	153	45
Secondary	2789	1124	40	841	363	43
Higher	404	208	52	151	79	52
<b>Religion</b>						
Hindu	6399	2154	34	1205	543	45
Muslim	1640	535	33	245	130	53
Others	867	260	30	194	72	37
<b>Wealth index</b>						
Poorest	1681	402	24	254	98	39
Poorer	1769	460	26	336	158	47
Middle	1772	524	27	401	174	43
Richer	1871	702	38	357	163	46
Richest	1831	863	47	296	152	51
<b>Currently working</b>						
Yes	3265	980	30	1515	686	45
No	5645	1976	35	128	58	45
<b>Current marital status</b>						
Unmarried	36	4	11	309	132	43
Married	8451	2816	33	1290	597	46
Widowed	276	89	32	20	9	45
Divorced	46	16	35	12	4	33

Women and men who had heard about STIs (60% of women, 94% of men) and HIV/AIDS (62% of women and 91% of men) were in favor of boys' education on condom use. Around 70% of women who had used condoms during their last sexual encounter were in favor of boys' condom use education. Among men who used condoms during their first sexual intercourse 11% were in favor of boys' education regarding condom use (Table 4).

**Table 2. Knowledge of STI and AIDS, before their treatment, of the women and men who received treatments of STIs**

	Women answered questions	Women received STI treatment		Men answered questions	Men received STI treatment	
	N=8918	N	% of N	N=1644	N	% of N
<b>Ever heard of STI</b>						
Yes	6083	2206	36	1452	659	45
No	2835	743	26	192	86	45
<b>Ever heard of AIDS</b>						
Yes	5256	1968	37	1408	633	45
No	3668	983	27	236	112	48
	N=5254			N=1408		
<b>Reduce risk of getting AIDS by not having sex at all</b>						
Yes	3765	1483	39	1142	509	45
No	672	216	32	163	67	41
Don't know	817	269	33	103	57	55

**Table 3. Condom use behavior of the women and men who received treatments of STIs**

Demographics	Women answered questions	Women received STI treatment		Men answered questions	Men received STI treatment	
		N	% of N		N	% of N
<b>Last intercourse used condom</b>						
No	7686	2489	32	1237	555	45
Yes	590	254	43	183	93	51
<b>Paid sex last 12 months used condom</b>						
No	#			745	8	1
Yes				617	12	2
<b>Condom: 1<sup>st</sup> sexual intercourse</b>						
No	788	486	27	1478	676	46
Yes	78	26	33	161	65	40
<b>Wife's right to ask husband to use condom if he has STI</b>						
No	#			88	35	40
Yes				1417	663	47
Don't know				132	44	33
<b>Married more than once</b>						
Only once	#			1253	569	45
More than once				87	45	52
<b>Condom at last intercourse</b>						
Respondent	#			156	78	50
Partner				14	8	57
Someone else				11	6	55

Around 82% of the women who had heard about STIs and 87% of those who had heard of HIV/AIDS were in favor of boys' education about HIV/AIDS. More than 90% of the men who heard about STIs and AIDS were in favor of HIV/AIDS education for boys (Table 4). Nearly 90% of women who used condoms during their last sexual encounter were in favor of boys' HIV/AIDS education at school (Table 4).

Among those who previously received STI treatment, almost two-thirds of women who had heard about STIs and HIV/AIDS (60% and 61%, respectively) and more than 90% of the men were in favor of girls' sexual health education. Among women who used condoms during their last sexual intercourse 66% answered that girls should be taught about sex at school.

Nearly 60% of women who had heard about STIs and 63% who had heard of HIV/AIDS and more than 90% men who had heard about STIs and HIV/AIDS supported girls' education regarding condom use. Among the men who used condoms during paid sex, 60% answered that boys and girls should be taught about condom use at school (Table 4 and 5). The majority of women who had heard about STIs (82%) and HIV/AIDS (86%), and 94% of men who had heard about STIs and HIV/AIDS (91%) were in favor of girls' HIV/AIDS education. Among the women who used condoms during their last sexual intercourse 72% believed that girls should be taught about sex at school (Table 5).

### **3.2 Discussion**

To the best of the authors' knowledge, the current study, for the first time, assessed the knowledge and perception of STIs and HIV/AIDS, and condom use behavior in a nationally representative sample of Indian citizens treated for STIs. The main finding of the study was that a substantial minority of people in India (46% female and 13% male respondents) who had been treated for STIs had little information of STIs, and HIV/AIDS prior to their treatment. A high proportion of the females in this group responded positively to sexuality education for boys and girls in schools, including education about condom use and education about HIV/AIDS. A high proportion of the males in the same group with limited information about STIs responded positively to sexuality education in schools.

In this study, demographic features of the respondents revealed that more of the urban residents had received STI treatment than residents in rural areas. Health care in India has improved substantially in recent years but mainly in urban areas [25]. The wealth index showed that a higher proportion of those in the wealthiest group had received treatment. A report on health care in India from 2009 supports these findings [20]. The richest groups in India are found in urban areas, thus they have better ability to pay for their treatment compared to rural people. This could explain why treatment in India is still urban based [19,25]. The current study revealed that a larger proportion of people with a higher education are getting treated for STIs, which might be a result of the increased awareness regarding sexual health topics among people of higher education levels. Therefore, policy makers should focus more on rural, poorer and less educated section of people to better treat STI patients.

The current study showed that women with knowledge about STIs, HIV/AIDS, the effectiveness of condom use and those who used condoms during their last sexual encounter, were more likely to receive treatment than those with less information and those who did not use condoms. Such a relationship was not seen for men. In a low-income country like India, men who have financial solvency and are decision makers at home are more likely to receive treatment for their diseases. Perhaps women are more passive because of socioeconomic dependency [8]. Due to stigma, potential patients with STIs might not visit the treatment centers [26]. In a study on 30 STI clinic attendees in Brazil it was shown that STIs patients lagged behind in seeking care, due to existing stigma about STIs [26]. A study among 202 pregnant women in south India showed that seeking care for STIs or HIV was inhibited by cultural barriers and fear of negative reactions from families and



communities [27]. The fact that many people formerly infected with STIs were not using condoms might indicate that even if people seek care there is a lack of information provided by health care providers on transmission effective prevention. Observations of STI consultations in Madras showed that advice on condom use was given during 30% of the consultations [28]. A study on 800 people in Hyderabad city, India found that literate people were better informed about HIV/AIDS transmission than lower educated persons, which supports our findings. It has been suggested that tailor-made education programs regarding HIV transmission at school (may be at secondary level of education) should target people with lower levels of education [19].

**Table 4. Perception on boys' sexuality education among 2948 women and 745 men who received treatments for STIs**

	Boys be taught about sex in school				Boys be taught about condom use in school				Boys be taught about HIV/AIDS in school			
	Women with STI treatment		Men with STI treatment		Women with STI treatment		Men with STI treatment		Women with STI treatment		Men with STI treatment	
	n	% n	n	%n	n	%n	n	% n	n	%n	n	% n
Ever heard of STI	***		***		***		***		***		***	
Yes	2206	54	457	93	2206	60	554	94	2206	82	631	94
No	742	30	287	82	741	26	189	74	742	34	110	59
Ever heard of AIDS	***		***		***		***		***		***	
Yes	1968	55	457	90	1968	62	554	91	1968	87	631	92
No	982	34	287	77	981	30	189	69	982	38	110	50
Condom using women are promiscuous	#		423	25	#		506	26	#		573	25
Yes			246	27			162	26			93	31
No												
Used condom every paid sex in last 12 months	#		4	50	#		5	60	#		5	60
Yes			1	100								
No												
Used condom during last sex	***		**		***		**		***		**	
Yes	254	63	93	73	254	70	93	72	254	87	93	95
No	2488	47	554	59	2487	50	551	84	2488	69	553	84
Used condom at first sexual intercourse	***		**		**		**		***		***	
Yes	26	50	455	11	26	50	550	11	26	73	628	10
No	486	47	285	5	486	50	189	3	486	70	109	4

$\chi^2$  value: \*\*\*= $p < 0.001$ , \*\*= $p < 0.01$ , \*= $p < 0.05$ . Number in each category (n), Proportions within each category (% of n). #-Question was not asked to women participants

**Table 5. Perception of girls' sexuality education among 2948 women and 745 men who received treatments for STIs**

	Girls be taught about sex in school				Girls be taught about condom use in school				Girls be taught about HIV/AIDS in school			
	Women with STI treatment		Men with STI treatment		Women with STI treatment		Men with STI treatment		Women with STI treatment		Men with STI treatment	
	n	%n	n	%n	n	%n	n	%n	n	%n	n	%n
Ever heard of STI	2205	60	456	93	2206	61	521	93	2205	82	613	94
Yes	742	31	288	81	741	27	222	78	742	35	129	64
No												
Ever heard of AIDS	1967	61	456	91	1986	63	521	90	1967	86	613	92
Yes	982	35	288	75	981	31	222	73	982	38	129	55
No												
Condom using women are promiscuous	#		418	25	#		474	26	#		559	25
Yes			251	28			194	25			108	30
No												
Used condom every paid sex in last 12 months	#		4	50	#		5	60	#		5	60
Yes			1	100								
No												
Used condom during last sex	254	66	93	73	254	89	93	69	254	72	92	81
Yes	2487	51	554	59	2487	68	552	82	2487	51	554	94
No												
Used condom at first sexual intercourse	26	50	453	12	26	46	518	11	26	73	610	10
Yes	486	52	287	5	486	51	221	4	486	71	128	3
No												

$\chi^2$  value: \*\*\*= $p < 0.001$ , \*\*= $p < 0.01$ , \*= $p < 0.05$ . Number in each category (n), Proportions within each category (% of n). #-Question was not asked to women participants

In the current study, the majority of the respondents treated for STIs and who had heard about STIs were in favor of adolescent sexuality education at school, including education about sex, condom use and HIV/AIDS. Parents in India have mixed views on sexuality education at school. Some parents think that sexual health education at school reduces their own responsibility, while others think it will encourage their children to have sex [23,29]. Some states in India have banned sexuality education in public schools due to this debate [29]. A study in Goa, India with more than 800 higher secondary students showed that there is a lack of information about sexual and reproductive health. Moreover, children need emotional support from parents regarding health issues [30]. In the present study, men were

more likely than women to support adolescent sexual health education at school. Studies have shown that adolescents are more comfortable discussing sex related issues with their mother than with their father [31,32]. Moreover, in India, mothers generally prefer that children learn about sexual issues at school because mothers feel they themselves know as much as the children [29].

This study has several limitations. First, the sample group compared those who already received treatment for STIs but there might have been a lot of people who have STIs but were undiagnosed or had not sought care. There is a gross negligence in sexual health and related awareness among general people in India [14,18,19,24,25]. Therefore even if the person has been infected by STIs, s/he has no awareness, knowledge and perception of STIs and hence remains untreated. Secondly, both sexual activity and history of receiving treatment were self-reported so there might be several response biases. Reporting on past STI treatment is probably hard taboo for many people, and so they may have chosen not to answer when interviewed. Therefore, bias introduced by embarrassment may be a huge issue in this context. Even if, the respondents were asked about many personal issues including sexual issues and violence [24], the paper could not eliminate such sort of bias. There might also be under-reporting, due to the taboo relating sexual health, STIs, HIV/AIDS etc. in the Indian society. This taboo increases rates of non-disclosure of STIs or other personal disease to others such as an interviewer. Thirdly, few variables such as number of children use of contraception other than condom could be used in further analysis, which the current study has failed to incorporate. Finally, the study has used bivariate analyses using cross-sectional design. Assigning causality is a problem of cross-sectional studies.

The findings in the current study indicate that the information about STIs and HIV/AIDS is not sufficient. A study conducted with 18 private practitioners in Madras, India showed that STI services were not sufficient to improve sexual health among patients [33]. Over a decade ago, experts pointed out the need for counseling in addition to STI treatments [28]. The current study indicates that policy makers have not taken scientific recommendations into consideration. Provision of information about diseases, their transmission and safe sexual behavior should be provided in the treatment package. Medical professionals should adhere to existing guidelines for STI treatment and information [34,35].

#### **4. CONCLUSION**

STI patients in India seem to be in favor of boy's and girl's sexual health education although they probably did not receive that information themselves during their adolescent years. They might think that if the future generation is informed on these topics they might know how to better protect themselves from STIs and HIV/AIDS. Policy makers should take this into account and include sexual health education for adolescents in the curriculum. Future studies are needed to explore the effect of sexual health education at health care centers, knowledge of STI treated patients and the effect sexual health education has on adolescents' sexual behavior.

#### **CONSENT**

In the current study, the authors are using secondary data from National Family Health Surveys (NFHS)-3 of India. Therefore the manuscript does not require such consent form.

## ETHICAL APPROVAL

Data collection procedure (e.g. organization and sampling methods) and instruments used in the study received ethical approval from the Institutional Review Board of Opinion Research Corporation Macro International Incorporated. Moreover the respondents were offered a guarantee of privacy. Informed consents were obtained from all participants. The authors are using secondary data in this study.

## COMPETING INTERESTS

Authors have declared that no competing interests exist.

## REFERENCES

1. Global Strategy for the prevention and control of sexually transmitted infections: 2006–2015: Breaking the chain of transmission. Geneva: World Health Organization; 2007.
2. Sexually Transmitted Infections. Geneva: World Health Organization; 2007.
3. RTI/STI and HIV. New Delhi: National AIDS Control Organization; 2007.
4. Estimation of the incidence and prevalence of Sexually Transmitted Infections. Geneva: World Health Organization; 2002.
5. AIDS epidemic update. New York: United Nations Organization; 2007.
6. Global HIV prevalence has leveled off 2007. Geneva: World Health Organization; 2007.
7. NACO. New Delhi: National AIDS Control Organization; 2007.
8. Gray LA, Devdas RP, Vijaylakshmi O, et al. Knowledge, attitudes, and beliefs about HIV/AIDS among Hindu students from a government women's college of South India. *Int J for the Advancement of Counseling*. 1999;21:207-19.
9. AIDS in Asia: Face the facts. *Monitoring the AIDS Pandemic*; 2004.
10. Bhattacharya G. Sociocultural and behavioral contexts of condom use in heterosexual married couples in India: Challenges to the HIV prevention program. *Health Education & Behavior*. 2004;31(1):101-17.
11. Motzoi C. Combating HIV/AIDS: Promoting Gender Equality among Youth. 2006. Available:[http://www.athgo.org/downloads/position\\_papers/Motzoi\\_Cclairneige.pdf](http://www.athgo.org/downloads/position_papers/Motzoi_Cclairneige.pdf) (Accessed 20 January 2013).
12. Kirby D. Emerging answers: Research findings on programs to reduce teen pregnancy (summary). Washington DC: National Campaign to Prevent Teen Pregnancy. World Health Organization. The content of young people's sexual relations; 2001.
13. Mawar N, Sahay S, Pandit A, et al. The third phase of HIV pandemic: Social consequences of HIV/AIDS stigma & discrimination & future needs. *Indian J Med Research*. 2005;122:471-84.
14. Sudha RT, Vijay DT, Lakshmi V. Awareness, attitudes, and beliefs of the general public towards HIV/Aids in Hyderabad, a capital city from South India. *Indian J Med Sci*. 2005;59(7):307-16.
15. Dehne KL, Riedner G. Sexually transmitted infections among adolescents: The need for adequate health services. 2005. Available: [http://www.who.int/reproductive-health/publications/stis\\_among\\_adolescents/stis\\_among\\_adolescents\\_adequate\\_health\\_services.pdf](http://www.who.int/reproductive-health/publications/stis_among_adolescents/stis_among_adolescents_adequate_health_services.pdf). (Accessed 22 January 2013).

16. Claeson M, Alexaner A. Tackling HIV in India: Evidence-based priority setting and programming. *Health Aff.* 2008;27:1091-101.
17. Chandrasekaran P, Dallabetta G, Loo V, et al. Containing HIV/AIDS in India: the unfinished agenda. *Lancet Infect Disease.* 2006;6:508-21.
18. Moses S, Blanchard JF, Kang H, et al. AIDS in South Asia: Understanding and responding to a heterogeneous epidemic. Washington DC: The World Bank; 2006.
19. Brahme RG, Sahay S, Malhotra-Kohli R, et al. High-risk behaviour in young men attending sexually transmitted disease clinics in Pune, India. *AIDS Care.* 2005;17(3):377-385.
20. Hawkes S, Santhya KG. Diverse realities: Sexually transmitted infections and HIV in India. *Sex Transm Infect.* 2002;78:131-9.
21. Epidemiological Fact Sheet on HIV and AIDS. Geneva: World Health Organization; 2008.
22. Martiniuk ALC, O'Connor KS, King WD. A cluster randomized trial of a sex education programme in Belize, Central America. *International Journal of Epidemiology.* 2003;32:131-6.
23. Pembrey G. HIV, AIDS and School. 2009. Available: <http://www.avert.org/aids-schools.htm>. (Accessed 2 February 2013).
24. National Family Health Survey (NFHS) III (2005-06), India Report. Mumbai: International Institute for Population Sciences; 2007.
25. Dalal K, Dawad S. Non-utilization of public health care facilities: Examining the reasons through a national study of women in India. *Rural and Remote Health.* 2009;9:1178.
26. Malta M, Bastos FI, Strathdee SA, et al. Knowledge, perceived stigma, and care-seeking experiences for sexually transmitted infections: a qualitative study from the perspective of public clinic attendees in Rio de Janeiro, Brazil. *BMC Public Health.* 2007;7:18.
27. Rogers A, Meundi A, Amma A, et al. HIV-Related knowledge, attitudes, perceived benefits, and risk of HIV testing pregnant women in rural Southern India. *AIDS patient care and STDs.* 2006;20(11): 803-11.
28. Mertens T, Kantharaj K, Radhakrishnan K. Observations of sexually transmitted disease consultations in India. *Public Health.* 1998;112:123-8.
29. The great Indian sex debate.  
Available: [http://news.bbc.co.uk/2/hi/south\\_asia/6928326.stm](http://news.bbc.co.uk/2/hi/south_asia/6928326.stm). (Accessed 10 January 2013).
30. Andrew G, Patel V, Ramakrishna J. Sex, studies or strife? What to integrate in adolescent health services. *Reproductive Health Matters.* 2003;11(21):120-9.
31. Zhang L, Li X, Shah I, et al. Parent-adolescent sex communication in China. *The European Journal of Contraception & Reproductive Health Care.* 2007;12(2):138-47.
32. Ogle S, Glasier A, Riley SC. Communication between parents and their children about sexual health. *Contraception.* 2008;77:283-8.
33. Smith GD, Mertens T. What's said and what's done: The reality of sexually transmitted disease consultations. *Public Health.* 2004;118:96-103.

34. Guidelines for the management of sexually transmitted infections. Geneva: World Health Organization; 2003.
35. Bhattacharya G. Sociocultural and behavioral contexts of condom use in heterosexual married couples in India: Challenges to the HIV prevention program. Health Education & Behavior. 2004;31(1):101-17.

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