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Original Article

Awareness and Knowledge of Sexually Transmitted Infections and Its Associated Factors among Clinically Suspected Cases Attending a Tertiary Care Hospital in Eastern Uttar Pradesh

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ABSTRACT

Introduction: Sexually transmitted infections (STIs) include a range of clinical syndromes that may be acquired/transmitted from one individual to another through sexual activity.
This study aimed to determine the awareness and knowledge of sexually transmitted infections and its associated factors among clinically suspected cases.
Methods: A hospital-based cross-sectional study design was used among 194 STIs patients between aged 15 to 60 years from a tertiary care hospital during August 2022 to March 2023. Data were collected through self-administered structured schedule. A multiple logistic regression analysis was used to identify factors associated with awareness and knowledge of STIs.
Results: The proportion of respondents with good awareness and knowledge about STIs was 62% and 50% respectively. Respondents with poor awareness and poor knowledge of STIs were found to be more likely to engage in informal treatment care (AOR = 7.39, 95% CI [2.14-25.52] P = 0.002),) and (AOR = 1.21, 95% CI [1.34-4.30], P = 0.021). Place of residence, educational status, occupation, type of treatment care was found to be significantly associated with awareness of STIs and type of treatment care, referral status, delay in seeking treatment were found to be significantly associated with knowledge of STIs.
Conclusion: The current findings show that the knowledge level on STIs has slightly increased compared to previous studies, but it was still unsatisfactory. The existing education programs in the country should be enhanced, by conveying more information on STIs.

Introduction

Sexually transmitted infections (STIs) are a group of clinical syndromes that can be contracted or passed from one person to another through sexual activity as well as from a mother to her unborn child during pregnancy, childbirth, and nursing.[1,2] STIs can raise the risk of HIV and have a direct influence on sexual and reproductive health through

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stigmatization, infertility, malignancies, and pregnancy complications. According to 2023 report of the World Health Organization, more than 1 million STIs are acquired every day worldwide, the majority of which are asymptomatic in nature and each year it was estimated 374 million new infections with 1 of 4 curable STIs: Chlamydia, Gonorrhoea, Syphilis and Trichomoniasis.[3] STIs are a major health problem that affects mostly young people in developing as well as developed countries[4] due to sexual experimentation occurring at this age.[5] Young adults, due to their insufficient awareness and understanding of STIs, are more susceptible to infection since they participate in risky sexual behaviors with several partners.[6-8] The main obstacle to effectively preventing infection in young adult populations is inadequate awareness and knowledge about STIs.[9,10] Insufficient awareness about STIs can cause treatment delays, which can exacerbate the infection process.[11,12] Awareness and knowledge about STIs may have a significant impact on a person's health-seeking behavior.[13] The factors that influence knowledge of STIs are diverse and include age, sex, residence, marital status, academic year, occupation, stage at time of treatment and delay treatment-seeking behavior of respondents. This study aimed to assess awareness and knowledge of STIs and its associated factors among clinically suspected cases attending a tertiary care hospital in Eastern Uttar Pradesh

This study aimed to determine the awareness and knowledge of sexually transmitted infections and its associated factors among clinically suspected cases

Material and Method

Study Area

The present study was conducted in a tertiary care hospital, at STI clinic of the Department of Dermatology & Venereology, Sir Sunderlal Hospital, Institute of Medical Sciences, Banaras Hindu University, Varanasi, Uttar Pradesh.

Study Design and Participants

The present study was a hospital-based cross-sectional study, conducted during August 2022 to March 2023 and aimed to determine the awareness, knowledge of STIs and various associated factors. In this current study interview schedule was used as the main tool of data collection. A systematic sampling method was used to select study participants. The following inclusion criteria were used: (i) written consent for participation in the study (ii) clinically suspected cases of STI in age group of 15-60 years, were enrolled. The factor (knowledge related to STIs) consisted of 8 - items, and the factor (awareness related to STIs) consisted of 14 – items. We used a pretested and validated questionnaire of awareness and knowledge related to STIs which was already developed by Swati et al., (2023), (Available Online at www.journalijcar.org Volume 12; Issue 06(A); June 2023; Page No. 2157-2161 DOI: http://dx.doi.org/10.24327/ijcar.2023.2161.1473)

The questionnaire was divided into the following main sections: (i) general demographic characteristics (19 questions); (ii) awareness related to STIs (14 questions); (iii) knowledge related to STIs and effective sources of information (8 questions), (iv) evaluation of sexual behavior-associated risk

as well as their treatment seeking behaviors and barriers to accessing STI services (33 questions).

Sample Size calculation

The minimum sample size was determined by using the formula for single proportion:

$N = Z^2_{1-\alpha/2} P*(1-P)/\varepsilon^2$

based on the estimated awareness level of 14% [14], 95% confidence level (Z-score value: 1.96) and 5% absolute error, the estimated minimum sample size was approximately 185 (Z= 1.96; P = 0.14; Ɛ = 0.05). Adding 5% of the minimum sample size for the expected nonresponsive rate, a final sample size of 194 was obtained.

Study variables

The dependent variable was knowledge of sexually transmitted infections. The independent variables were age, sex, place of residence, marital status, religion, educational status, caste, socio-economic status, referral status, type of treatment care, and status of delay in seeking treatment.

Operational definitions

Good awareness, and knowledge was defined as those who scored the median and above value of knowledge-related questions and poor awareness, and knowledge was defined as those who scored below the median value of awareness, knowledge-related questions.[15, 16]

Data Analysis

Data were entered and analyzed using SPSS software version 28.0 categorical variables were presented as frequencies and percentages.

Ethical Clearance

Before the actual data collection, a permission letter was obtained through the proper channel by the Institutional Ethics Committee of the Institute of Medical Sciences, Banaras Hindu University, Varanasi (Letter no.: Dean/2022/EC/3420 dated: 20/08/2022).

Results

A total 194 clinically suspected cases of STI were enrolled in this study. Table 1 summarizes the key socio-demographic characteristics of the study subjects.

Approximately two third of respondents were male (71.6%), majority were Hindus (87.6%) and heterosexual (85.1%). The mean age (± standard deviation [SD]) of study subjects was found 32.8 (±9) years. Respondents were found higher in proportion (38.7%) in the age group of 25–34 years. More than half (61.3%) of the respondents were from rural area. Most of the respondents (88.1%) were literates, only (11.9%) were illiterates. Three fourth (75.8%) respondents were married. (20%) respondents were migrant laborer, and (9%) were driver (Table 1).

Table No. 2 shows the percentage distribution of the awareness level of STIs among respondents who experienced STIs according to their background characteristics. Findings of the table show that the respondent's current place of residence, educational status, occupation, marital status, and socio-economic

Table 1. Socio-demographic characteristics of the respondents

Categories	Frequency	Percent
Sex		
Male	139	71.6
Female	55	28.4
Age		
15-24	37	19.1
25-34	75	38.7
35-44	58	29.9
≥ 45	24	12.4
Religion		
Hindu	170	87.6
Muslim	24	12.4
Place of residence		
Rural	119	61.3
Urban	75	38.7
Type of family		
Nuclear	94	48.5
Joint	100	51.5
Qualification		
Illiterate	23	11.9
Primary & Middle	27	13.9
High School & Intermediate	72	37.1
Higher Education	72	37.1
Caste		
OBC	106	54.6
General	47	24.2
SC/ST	41	21.1
Students	30	15.5
House maker	43	22.2
Gov / Private Services	59	30.4
Migrant Laborer	40	20.6
Drivers	18	9.3
Farmers	8	4.1
Heterosexual	165	85.1
Bisexual	29	14.9
Married	147	75.8
Unmarried	47	24.2

status, types of sexual intercourse, type of treatment care, stage at the time of treatment, referral status, and delay in treatment-seeking behavior were significantly associated with awareness of STIs ($p<0.05$). Findings also show that respondents in early age group (15-24) were found higher in proportion with good awareness of STIs. More than two third of the urban respondents were found with good awareness of STIs. Respondents who had higher educational status (graduate and above) were found higher in proportion with good awareness of STIs. More than half of the respondents from lower socio-economic status were found higher in proportion with poor awareness of STIs. Respondents with good awareness of STIs were found higher in proportion who engaged in formal treatment care (Table 2).

Table No. 3 shows the percentage distribution of the knowledge of STIs. Findings of the table show that the respondent's current place of residence, educational status, occupation, marital status, and socio-economic status, sexual intercourse, type of treatment care, stage at time of treatment, referral status, and delay in treatment-seeking behavior were significantly associated with awareness of STIs ($p<0.05$). More than half of the rural respondents were found with poor knowledge of STIs. Illiterate respondents were found to have poor knowledge of STIs whereas respondents with higher educational status were higher in proportion with good knowledge of STIs. Respondents from upper socio-economic status were higher in proportion with good knowledge of STI. Those who engaged in informal treatment care were higher in proportion who had poor STIs' knowledge (Table 3).

Binary logistic regression analysis was applied to identify factors associated with poor awareness of respondents who experienced STIs. In univariate logistic regression table,

Table 2. Association of sociodemographic variables with awareness of STIs of respondents.

Variables	Awareness status of STIs		χ^2	p- Value
	Good	Poor		
Age Group	N (%)	N (%)		
15-24	26(70.3)	11(29.7)	2.542	0.280
25-44	82(61.7)	51(38.3)		
45-60	12(50.0)	12(50.0)		
Gender				
Male	85(63.4)	49(36.6)	0.457	0.499
Female	35(58.3)	25(41.7)		
Current Place of Residence				
Rural	61(51.3)	58(48.7)	14.645	<0.001
Urban	59(78.7)	16(21.3)		
Educational Status				
Illiterate	3(13.0)	20(87.0)		
Primary and Middle	7(25.9)	20(74.1)		
High School & Intermediate	42(58.3)	30(41.7)	70.786	<0.001
Graduate and above	68(94.4)	4(5.6)		
Religion				
Hindu	105(61.8)	65(38.2)		
Muslim	15(62.5)	9(37.5)	0.005	0.945
Occupation				
Students	23(76.7)	7(23.3)		
House maker	23(53.5)	20(46.5)		
Government/ Private Services	47(79.7)	12(20.3)	21.295	0.001
Migrant Laborers	15(41.7)	21(58.3)		
Drivers	9(50.0)	9(50.0)		
Farmer	3(37.5)	5(62.5)		
Delay in treatment-seeking behavior				
No (Early)	71(79.8)	18(20.2)	22.379	<0.001
Yes (Delayed)	49(46.7)	56(53.3)		
Marital Status				
Unmarried	35(74.5)	12(25.5)	4.182	0.041
Married	85(57.8)	62(42.2)		
Type of Family				
Nuclear	59(62.8)	35(37.2)	0.064	0.800
joint	61(61.0)	39(39.0)		
Socio-Economic Status				
Upper Class	35(89.7)	4(10.3)		
Upper middle class	22(73.3)	8(26.7)		
Middle class	18(62.1)	11(37.9)	23.667	<0.001
Lower middle class	25(47.2)	28(52.8)		
Lower class	20(46.5)	23(53.5)		
Types of Sexual Intercourse				
Unprotected	57(55.3)	46(44.7)	5.118	0.024
Protected	58(71.6)	23(28.4)		
Type of Treatment Care				
Formal Treatment Care	99(79.2)	26(20.8)	44.809	<0.001
Informal Treatment Care	21(30.4)	48(69.6)		
Stage at time of treatment				
Mild Stage	71(79.8)	18(20.2)		
Moderate Stage	40(48.2)	43(51.8)		
Severe Stage	9(40.9)	13(59.1)	22.771	<0.001
Referral Status				
Direct walk	75(85.2)	13(14.8)	37.286	<0.001
Referred	45(42.5)	61(57.5)		

all independent variables were significantly associated with poor awareness about STIs. Table also shows that rural respondents were 3.51 times more likely to had poor awareness of STIs as compared to their counterparts (OR = 3.51, 95% CI: 1.81-6.78). Respondents in lower socio-economic status were 10.6 times more likely to had poor awareness of STIs as compared to those who had higher educational status i.e. graduate and above (OR = 10.6, 95% CI: 3.04-33.25). However, after adjusting for other factors, the result of the multivariable

Table 3. Association of sociodemographic variables with knowledge of STIs of respondents

Variables	Knowledge status of STIs		χ2	p- Value	Variables	Knowledge status of STIs		χ2	p- Value
	Good	Poor				Good	Poor		
Age Group	N (%)	N (%)			Marital Status				
15-24	23(62.2)	14(37.8)	3.757	0.153	Unmarried	34(72.3)	13(27.7)	12.383	<0.001
25-44	65(48.9)	68(51.1)			Married	63(42.9)	84(57.1)		
45-60	9(37.5)	15(62.5)			Type of Family				
Gender					Nuclear	44(46.8)	50(53.2)	0.743	0.389
Male	71(53.0)	63(47.0)	1.544	0.214	joint	53(53.0)	47(47.0)		
Female	26(43.3)	34(56.7)			Socio-Economic Status				
Current Place of Residence					Upper Class	32(82.1)	7(17.9)	32.654	<0.001
Rural	47(39.5)	72(60.5)	13.585	<0.001	Upper middle class	21(70.0)	9(30.0)		
Urban	50(66.7)	25(33.3)			Middle class	12(41.4)	17(58.6)		
					Lower middle class	19(35.8)	34(64.2)		
Educational Status									
Illiterate	0(0)	23(100.0)	118.648	<0.001	Lower class	13(30.2)	30(69.8)		
Primary and Middle	2(7.4)	25(92.6)			Sexual Intercourse				
High School & Intermediate	24(33.3)	48(66.7)			Unprotected	44(42.7)	59(57.3)	5.731	0.017
Graduate and above	71(98.6)	1(1.4)			protected	49(60.5)	32(39.5)		
Religion					Type of Treatment Care				
Hindu	88(51.8)	82(48.2)	1.712	0.191	Formal Treatment Care	77(61.6)	48(38.4)	18.916	<0.001
Muslim	9(37.5)	15(62.5)			Informal Treatment Care	20(29.0)	49(71.0)		
Occupation					Stage at time of treatment				
Students	26(86.7)	4(13.3)	46.969	<0.001	Mild Stage	61(68.5)	28(31.5)	23.996	<0.001
House maker	16(37.2)	27(62.8)			Moderate Stage	26(31.3)	57(68.7)		
Government/Private Services	41(69.5)	18(30.5)			Severe Stage	10(45.5)	12(54.5)		
Migrant Laborers	9(25.0)	27(75.0)			Referral Status				
Drivers	4(22.2)	14(77.8)			Direct walk	66(75.0)	22(25.0)	40.264	<0.001
Farmers	1(12.5)	7(87.5)			Referred	31(29.2)	75(70.8)		
Delay in treatment-seeking behavior									
No (Early)	61(68.5)	28(31.5)	22.607	<0.001					
Yes (Delayed)	36(34.3)	69(65.7)							

logistic regression shows that awareness about STIs was significantly associated with respondent's current place of residence, educational status, occupation, and type of treatment care taken (Table 4).

Finding of univariate logistic regression table

Table. 4 Logistic regression analysis finding for poor awareness of STIs among respondents

Variables	Crude OR (95%CI)	p value	Adjusted OR (95%CI)	p value
Current Place of Residence				
Urban	1		1	
Rural	3.51 (1.81-6.78)	<0.001	3.79(1.31-11.00)	0.014
Educational Status				
Graduate and above	1		1	
illiterate	113.33(23.39-549.01)	<0.001	351.57(28.69-4306.98)	<0.001
Primary and Middle	48.57(12.90-182.88)	<0.001	79.92(8.52-749.30)	<0.001
High School & Intermediate	12.14(3.99-36.92)	<0.001	20.29(3.19-129.01)	0.001
Occupation				
Students	1		1	
House maker	2.86(1.01-8.06)	0.047	0.02(0.01-0.397)	0.010
Government/Private Services	0.84(0.29-2.41)	0.745	0.01(0.01-0.259)	0.004
Migrant Laborers	4.60(1.57-13.47)	0.005	0.01(0.01-0.297)	0.005
Driver	3.29(0.94-11.50)	0.063	0.01(0.00-0.120)	0.001
Farmer	5.47(1.03-28.87)	0.045	0.03(0.00-0.89)	0.043
Marital Status				
Unmarried	1		1	
Married	2.31(1.02-4.42)	0.043	7.77(0.88-68.54)	0.065
Socio-Economic Status				
Upper Class	1		1	
Upper middle class	3.18(0.85-11.83)	0.084	10.11(1.26-80.70)	0.029
Middle class	5.34(1.49-19.19)	0.01	4.12(0.61-28.07)	0.148
Lower middle class	9.80(3.05-31.46)	<0.001	4.73(0.75-29.74)	0.098
Lower class	10.06(3.04-33.25)	<0.001	1.86(0.29-11.73)	0.506
Sexual Intercourse				
Protected	1		1	
Unprotected	2.04(1.09-3.78)	0.025	1.48(0.54-4.02)	0.443
Type of Treatment Care				
Formal Treatment Care	1		1	
Informal Treatment Care	8.70(4.45-17.01)	<0.001	7.39(2.14-25.52)	0.002
Stage at time of treatment				
Severe Stage	1		1	
Mild Stage	0.17(0.06-0.47)	0.001	0.17(0.01-2.22)	0.176
Moderate Stage	0.74(0.28-1.93)	0.543	0.41(0.08-2.14)	0.288
Referral Status				
Direct walk	1		1	
Referred	7.82(3.87-15.80)	<0.001	1.85(0.53-6.46)	0.338
Delay in treatment-seeking behavior				
No (Early)	1		1	
Yes (Delayed)	4.50(2.36-8.58)	<0.001	0.21(0.03-1.37)	0.103

shows that respondents' current place of residence, occupation, marital status, sexual intercourse, type of treatment care, referral status, and delay in treatment-seeking behavior were significantly associated with knowledge of STIs. Rural respondents were approximately 3 times more likely to had poor knowledge of STIs as compare to urban respondents (OR =

3.06, 95% CI: 1.67-5.60). Respondents who were engaged to unprotected sexual intercourse were approximately 2 times more likely to had with poor knowledge of STIs as compared to their counterparts (OR = 2.05, 95% CI: 1.14-3.71). Respondents who were engaged in informal treatment care were 3.93 times more likely to had poor knowledge of STIs as compared to those who were practicing formal treatment care (OR = 3.93, 95% CI: 2.08-7.40). After adjusting for other factors, the result of the multiple logistic regression shows that knowledge about STIs was significantly associated with type of treatment care taken,

Table 5. Logistic regression analysis finding for poor knowledge of STIs among respondents

Variables	Crude OR (95%CI)	p value	Adjusted OR (95% CI)	p value
Current Place of Residence				
Urban	1		1	
Rural	3.06(1.67-5.60)	<0.001	2.17(0.66-7.07)	0.196
Occupation				
Students	1		1	
House maker	10.96(3.23-37.18)	<0.001	0.54(0.03-7.49)	0.647
Government/Private Services	2.85(0.86-9.37)	0.084	0.74(0.061-9.19)	0.819
Migrant Laborers	19.50(5.34-71.20)	<0.001	0.48(0.4-6.15)	0.577
Driver	22.75(4.92-105.13)	<0.001	0.36(0.2-7.06)	0.506
Farmer	45.50(4.36-474.64)	0.001	1.39(0.05-39.21)	0.846
Marital Status				
Unmarried	1		1	
Married	3.48(1.70-7.14)	0.001	1.40(0.23-8.58)	0.714
Socio-Economic Status				
Upper Class	1		1	
Upper middle class	1.95(0.63-6.07)	0.244	2.21(0.29-16.97)	0.445
Middle class	6.48(2.12-19.49)	0.001	1.4(0.21-10.05)	0.701
Lower middle class	8.18(3.03-22.06)	<0.001	1.29(0.21-7.94)	0.788
Lower class	10.54(3.71-30.00)	<0.001	1.11(0.18-6.74)	0.905
Sexual Intercourse				
Protected	1		1	
Unprotected	2.05(1.14-3.71)	0.017	0.86(0.28-2.62)	0.799
Type of Treatment Care				
Formal Treatment Care	1		1	
Informal Treatment Care	3.93(2.08-7.40)	<0.001	1.2(1.34-4.30)	0.021
Stage at time of treatment				
Severe Stage	1		1	
Mild Stage	0.38(0.15-0.99)	0.048	2.52(0.13-48.08)	0.538
Moderate Stage	1.82(0.70-4.76)	0.218	1.74(0.32-9.37)	0.519
Referral Status				
Direct walk	1		1	
Referred	7.26(3.83-13.74)	<0.001	1.30(1.28-6.06)	0.031
Delay in treatment-seeking behavior				
No (Early)	1		1	
Yes (Delayed)	4.17(2.28-7.63)	<0.001	2.61(0.6-5.57)	0.030

referral status, and delay in treatment-seeking behavior of respondents (Table 5).

Discussion

Several studies have revealed that STIs are the cause of the multiplicity of complications and result in poor sexual and reproductive health due to delays in treatment as a result of a lack of awareness and knowledge about STIs.[17,18] The decision to seek treatment may be heavily influenced by one's awareness and knowledge about STIs.[19] This cross-sectional study aimed to determine the awareness and knowledge of sexually transmitted infections and its associated factors among clinically suspected cases attending tertiary care hospital.

In this study male was associated with good knowledge about STIs, this finding was supported by a study conducted in Southwest Ethiopia.[20] However, a study conducted in Portugal revealed that women had greater knowledge than men.[21] Another study revealed no variation was found between gender and the level of awareness and knowledge about STIs.[22] The proportion of good awareness (61.9%) and knowledge (50.0%) of STIs among the respondents in this study was found higher than various other studies conducted in India as well as worldwide in general population. The finding of good knowledge about STIs in this study was higher than 27% in another Indian study conducted in Udupi Taluk, India,[23] greater than 45.4% in Gondar, Ethiopia.[24] While comparing with several other study across worldwide we also observed that, this finding was lower than 68.3% in the Klang Valley, Malaysia,[25] 70.1% in northern Cape Province, South Africa,[26] 74.7% in urban slums of Jorhat District, India,[27] 79% in Dhaka, Bangladesh,[28] 86.6% in Malaysia.[29] The variation observed compared to other studies could be due to the differences in methodology, sample size, and operational definition used. Besides the sociocultural, socioeconomic, and behavioral characteristics of the study participants may play a vital role in the variation observed. Respondents with increased academic years were associated with having good awareness and knowledge about STIs. This finding was also supported by a study conducted in Nepal.[30,31] This could be because of the higher level of education related to more awareness as well as knowledge about STIs. Finding of present study shows that there was no association between gender and the level of awareness & knowledge about STIs, similar finding was observed in a study conducted in Turkey.[32] Those respondents who were practicing unprotected sexual intercourse were significantly associated with poor knowledge about STIs. The odds of poor awareness and knowledge about STI were more likely among respondents who engaged in informal treatment care and seeking delayed treatment compared to their counterparts. This finding was consistent with the studies conducted in Addis Ababa and southwest Ethiopia.[33,34]

Limitation of the study

This study includes only those patients who experienced STI symptoms and sought treatment at this health facility. Due to cross-sectional nature of the study, it does not allow inferences to be made from its results. Since all responses were provided by the respondents themselves, there may be recall bias, socially acceptable responses given to prevent embarrassment, and possible inaccuracy of self-report. Due to the increased trend of concurrent relationships, respondents

may have multiple sexual partners without disclosing them.

Conclusion

The current findings show that the awareness and knowledge status of respondents on STIs has slightly increased compared to those in previous local studies, but it was still unsatisfactory. In addition, inculcating the sexual and reproductive health course in the educational curriculum plays a paramount importance factor for determinants of awareness and knowledge about STIs. Existing education programs in the country should be enhanced, by conveying more information on other types of STIs rather than focused solely on HIV. Future research also should focus on studying other factors that can contribute to the low level of awareness and knowledge on STIs.

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