



Research Article

DEVELOPMENT OF AWARENESS AND KNOWLEDGE SCALES RELATED TO SEXUALLY TRANSMITTED INFECTIONS

Swati Singh and Satyendra Kumar Singh*

Department of Dermatology and Venereology, Institute of Medical Sciences,
Banaras Hindu University, Varanasi-221005

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ABSTRACT

Awareness and knowledge of sexually transmitted infections (STIs) may be helpful in prevention of STIs. Aim was to develop and standardize awareness and knowledge scales related to STIs. A set of items measuring awareness and knowledge related to STIs were sampled following literature and expert's ratings, to measure the theoretical constructs. Results revealed substantial item-total coefficients of correlations and reliability coefficients of both the awareness and knowledge scales. The items so retained were pooled and two factor solutions were sought. Observations revealed two factors. The first factor (knowledge related to STIs) consisted of 8 - items; explaining a total of 24.13 % of variance, and the second factor (awareness related to STIs) consisted of 14 - items; explaining a total of 9.29 % of variance. The reliability coefficients of knowledge (SH = 0.90 & α = 0.89) and awareness (SH = 0.74 & α = 0.63) scales emerged to be substantial. The awareness and knowledge factors emerged to be independent; in conformity to the distinct nature of the theoretical constructs of awareness and knowledge domains of the behavioral measures. Conclusion: The 'knowledge and awareness' facets separately may be taken into account for further extended studies.

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INTRODUCTION

Sexually transmitted infections (STIs)/ sexually transmitted diseases (STD) are the major health problem not only in developing countries but also in developed countries. The WHO estimates that 20% persons living with HIV/AIDS are in their 20s and one out of 20 adolescent contracts STI each year (Olasode, 2007). Measuring STD knowledge is important because such knowledge is often identified as a determinant of risk behavior. Individuals acquire STI/STD-related information and evaluate it in terms of its personal relevance to risk reduction. Knowledge subsumes a broader range of factors that includes information about transmission as well as other basic STD knowledge like etiology, natural history, treatment, consequences and prevention.

Researchers and health educators have developed STD knowledge questionnaires to identify knowledge deficits, guide risk reduction programs, and assess treatment response. Many of these questionnaires have focused on a single STD (primarily HIV). Six STDs (i.e. chlamydia, genital herpes, gonorrhoea, hepatitis B, HIV, HPV) were aimed to be highlighted in investigation because they have high prevalence rates among college-aged individuals and can cause significant morbidity (CDC, 2003; Miller *et al.*, 2004). Some STIs are curable like gonorrhea, syphilis, and Chlamydia infection as

well as incurable but modifiable ones like HIV, herpes simplex, human papilloma virus (HPV), and hepatitis B infections (Nsuum *et al.*, 2010; WHO, 2013).

None of the existing STD knowledge questionnaires demonstrate adequate psychometric properties and treatment outcome sensitivity. Moreover, their use for measurement purposes of the theoretical construct in the common population raises a number of theoretical questions. Therefore, there is a great need for a comprehensive STD/STI awareness / knowledge questionnaire that can illuminate individuals' confusion among the STDs/ STIs and minimize respondent burden compared to the use of separate questionnaires for each. Prior to the emergence of HIV, there were a few STD knowledge questionnaires that focused on the salient STDs of the time. As the deadly nature of HIV became apparent, research focused on HIV. Few broadly focused STD knowledge questionnaires were developed even though STD information expanded. New STDs were identified like human papilloma virus (HPV), and STD prevalence rate rose. Earlier STD knowledge questionnaires do not appear feasible to be replicated as such because of the lower education level, different cultural milieu as well as the lower socio-economic status of the patients. Therefore, the goal of the present research was to develop and evaluate an up to date and comprehensive STI awareness / knowledge scales. The

*Corresponding author: Satyendra Kumar Singh

Department of Dermatology and Venereology, Institute of Medical Sciences,
Banaras Hindu University, Varanasi-221005

scientific literatures were reviewed, conducted focus groups with respondents, and garnered information from STD experts' review and evaluation. A number of items related to 'awareness' and 'knowledge' domains related to STIs were aimed for their psychometric adequacy.

The theoretical constructs of 'awareness' and 'knowledge' were aimed to be incorporated in view of the fact that there are distinct differences between them: having an awareness and knowledge of something. Merriam-Webster's comprehensive dictionary (1974) defines 'awareness' as (a) showing heightened perception and ready comprehension and appreciation, and (b) the quality or state of being aware. On the other hand, 'knowledge' is defined as the fact or condition of knowing with a considerable degree of familiarity gained through experience of or contact or association with the individual or things so known. Following the philosophical, theoretical and the methodological principles: the development of 'awareness' and 'knowledge' scales related to STIs were attempted.

A proper detailed scale of awareness and knowledge will be helpful in prevention, planning and management of STIs.

MATERIALS AND METHODS

Preparation of scales items

In an effort for developing awareness and knowledge scales related to STI, the available literatures were reviewed. This way, a total of 33 – items: 25 related to 'awareness' and 8 – items related to 'knowledge' domains of STI were sampled with due considerations of the educational levels of the respondents likely to be encountered in the catch area as well as the relevance of the present study. The response options of the awareness related domain (a total of 25 items) were of (i) 'true – don't know – false'; and (ii) 'yes - don't know – no'. For scoring purposes, each correct answer, score 01 (one) is given, and for each incorrect answer (and even for don't know option), 0 (zero) score is given. This was exercised with a view to control of fake response. The items of the knowledge domain of STIs (8 in all) were of multiple choices, that is, a number of probable correct answers / statements with many fold options were included, and the ratio of the selection of correct option was regarded as the index of the measure. The task of the respondent was to put a tick (✓) mark against the correct source of information they had for their knowledge about the issues related to STIs.

The items were first prepared in English; and thereafter, the items were translated in Hindi, and back translated in English by the native speakers of both the languages in an effort to ensure the parity in both the languages, and content equivalence of the test items. Following this methodological concern, the items were rated by experts working in the fields to ascertain the content validity of the test items of awareness and knowledge scales related to STIs. The experts had their uniform opinion that four items do not appear to measure awareness and two items appear to measure entirely different behaviour domains, and do not fall within the purview and scope of the objective, and therefore, discarded. The average inter-rater reliability emerged of the orders of 0.79 to 0.84; ensuring the agreement of the experts regarding the content validity of the theoretical constructs of awareness and knowledge domains of STIs (as to be incorporated in the study). This way, a total of 19 – items for measuring

'awareness' and 8 – items for measuring 'knowledge' domains related to STIs were retained.

Pilot study

A pilot study was carried out on 100 clinically diagnosed STIs patients (male = 79, and female = 21) to determine the awareness / knowledge level of the community regarding STIs. Respondents' - wise response endorsements on the specific-items of the 'awareness' and 'knowledge' domains of the scales were separately prepared and thoroughly scrutinized. More than 95% respondents answered in the positive direction on one items, that is, 'condom offer adequate protection against STIs'. This means the item is too easy. Furthermore, less than 4% respondents answered in the negative direction on another item, that is, 'people can give STI to someone else only when they have symptoms'. This means the item is too difficult to be included in the scale because, such items, by theory, fail to serve the purpose of discrimination, and therefore, were not included for further analysis. All other items (remaining 17 items) of awareness domain were responded within the optimal limits, that is, not less than 20% and more than 80%. The eight items of knowledge' domain of the scale were responded within the optimal limits (not less than 20% and more than 80%), and following these observations, the items of the awareness / knowledge domains of the scales related to STIs were separately analyzed.

Item-total coefficients of correlation of the 'awareness' (17 - items) revealed that one item indicated negligible relationship ('Do you think all STI are curable?'), and two other items, namely, 'Do you think that education about STIs should be taught in school' as well as 'HIV can be passed from person to person by mosquitoes' failed to meet the psychometric criteria, and therefore, these items were also discarded, and results (based on the remaining 14 items) reanalyzed. Results revealed substantial item - total coefficients of correlation (14 items) and reliability coefficients (SH = 0.51 & α = 0.67) of 'awareness' domain of the scale. Similarly, item-total coefficients of correlation (8 - items) and reliability coefficients (SH = 0.87 & α = 0.88) of 'knowledge' domain emerged to be robust.

Study design was a cross-sectional hospital based study. The study was performed at a tertiary health care centre during July 2016 to April 2018. Patients suffering with STIs were enrolled for the study. Diagnosis of STIs was done on the bases of history, clinical findings and relevant laboratory tests. All the patients were subjected for rapid plasma regain (RPR) test and ELISA for HIV-1 & 2. Inclusion criteria were patients with STIs with age between 15-70 years, and given written consent to participate in the study (for the minor the consent of the parents were taken). Exclusion criteria were patients suffering with any other genital dermatological conditions, mentally ill, venerophobic patients, suffering from any systemic illness, and HIV infected patients.

Sample Size: The sample size was calculated by using the following formula:

$$n = z^2_{1-\alpha/2} p(1-p)/d^2$$

Where, p = prevalence = 0.50

d = absolute precision = 0.05

$z^2_{1-\alpha/2} = 1.96$ (level of confidence of 95% at two-tailed test)

Using the above formula sample size was found as = 384
 Assuming the 6% non-response / incomplete response rate, the effective sample size was = 384 + 26= 410.

Statistical Analysis: Respondent-wise scores on the specific items of the scales items analyzed with the help of statistical package for social sciences (SPSS, 16). Data were presented in number and percentage. Factor analysis, split-half and Cronbach alpha for reliability analysis, One-way analysis of variance for k = 4 with unequal sample size and Scheffe Test for post hoc mean comparisons were used.

RESULTS

A total of 410 patients were included in the study. Majority of patients were males (67.80%) and married (51.50%). The commonest age group was 26-40 years followed by 15-25 years. In respect to educational qualifications most of the patients were graduate and above (63.17%). Our patients mainly belonged to rural background (69%), and were Hindus (91.20%). According to profession, student was the most common category (33.70%). Genital herpes was the predominant STI category (33.90%). Patients’ characteristics are given in Table 1.

Table No 1 Patients’ characteristics (N= 410)

Demographic Variables	Numbers	%
Gender		
Male	278	67.80
Female	132	32.20
Marital Status		
Married	211	51.50
Unmarried	199	48.50
Age Range (in years)		
15 – 25	178	43.40
26 - 40	212	51.70
>40	20	04.90
Educational qualification		
Up to primary school	21	05.12
Middle to intermediate school	130	31.71
Graduate	160	39.02
Post Graduate and above	99	24.15
Residence		
Rural	283	69.00
Urban	127	31.00
Religion		
Hindu	374	91.20
Muslim	36	08.80
Family Structure		
Joint	304	74.10
Nuclear	106	25.90
Category		
General	218	53.20
Other backward class	132	32.20
Schedule caste / Schedule tribes	60	14.60
Profession		
Student	138	33.70
Government/Private service	95	23.20
Home maker	80	19.50
Self employed	55	13.40
Labourer/Taxi Driver	33	08.00
Farmer	09	02.20
STIs Groups		
Genital herpes	139	33.90
Genital warts	104	25.37
Genital discharge: urethral & vaginal	92	22.44
Syphilis	75	18.29

Two - factor solutions (Table – 2) by applying factor analysis: principal component analysis with the loadings equal to or more than 0.300, Eigen values equal to one, and by applying Direct Oblimin method (with Kaiser Normalization Rotation) revealed two factors. The first factor (knowledge related to

STIs) consisted of 8 - items (the items loaded in the ranges of 0.87 to 0.63); explaining a total of 24.13 % of variance, and the second factor (awareness related to STIs) consisted of 14 - items (item loadings ranged between 0.49 to 0.30); explaining a total of 9.29 % of variance.

Table 2 Two factor solutions and their reliability coefficients (split-half and Cronbach alpha) of awareness and knowledge scales related to sexually transmitted infected (STIs)

Test-items	(Loadings)	
	Knowledge (#)	Awareness
Which of the following organisms do you think can cause STIs?	0.87	
What are some of the symptoms of STIs?	0.86	
Which of the following do you think are the complication of STIs?	0.78	
Acts to acquired STIs.	0.75	
What are routes of transmission of STI?	0.73	
Which of the following do you think are the measures to avoid getting STIs?	0.72	
Which of the following sources do you think are effective on providing information on STIs?	0.64	
What STIs have you heard of?	0.63	
Do you think all STIs are curable?		0.49
STI are little bit embarrassing but they don't cause significant long term health problems.		0.48
It is impossible to get STIs from oral sex.		0.47
A person can have STI without any visible signs & symptoms.		0.46
Do you think STIs can lead to infertility?		0.46
It is impossible to get STI when it is your first time having sex.		0.45
Can multiple partners increase your risk of getting STIs?		0.43
Early-stage of STIs without symptoms are not contagious.		0.43
Can STIs be transmitted from mother to baby during pregnancy?		0.43
People can give STI to someone else only when they have symptoms.		0.38
Condoms do not fully protect against the spread of HIV/AIDS.		0.33
Abstinence is the only sure to prevent STIs.		0.31
It is irresponsible to have sex with some unknown without a condom.		0.31
Any STI that causes breaks in the skin (like sores or ulcers) may make it easier for HIV to get into the body.		0.30
% of variance	24.13	9.29
SH	0.90	0.74
α	0.89	0.63

(#). The given options for each item are shown in appendix- A.

The two factors emerged to explain a total of 33.42 % of variance (based on structure matrix). The reliability coefficients of knowledge (SH = 0.90 & α = 0.89) and awareness (SH = 0.74 & α = 0.63) scales emerged to be substantial and that the awareness and knowledge factors emerged to be significantly positively correlated (r₁₂ = 0.26; p < 0.01 level; two tailed hypothesis), however, very low. The two scales almost emerged to be independent; in conformity to the distinct nature of the theoretical constructs of ‘awareness’ and ‘knowledge’ domains of the behavioral measures. The minimum and maximum scores for ‘awareness’ and ‘knowledge’ scales would respectively range between 0 – 14 and 0 –8, and that the low scores indicate lower indices, and high scores indicate higher indices on the measures. The specimen copies of ‘awareness’ and ‘knowledge’ scales related to STI is given in Appendix – I.

Awareness / knowledge scales related to sexually transmitted infections

Section A

Instruction: A few questions related to sexually transmitted infections along with several options are given below. For any option (given for each of the question), If you are aware of it, please put a tick-mark (✓) from amongst the given options:

1.	Can multiple partners increase your risk of getting STIs?	Yes	No	Don't Know
2.	Can STIs be transmitted from mother to baby during pregnancy?	Yes	No	Don't Know
3.	Do you think STIs can lead to infertility?	Yes	No	Don't Know
4.	Do you think all STIs are curable?	Yes	No	Don't Know
5.	Early-Stage of STIs without symptoms is not contagious.	True	False	Don't Know
6.	Condoms do not fully protect against the spread of HIV/AIDS.	True	False	Don't Know
7.	Any STI that causes breaks in the skin (like sores or ulcers) may make it easier for HIV to get into the body.	True	False	Don't Know
8.	It is irresponsible to have sex with some unknown without a condom.	True	False	Don't Know
9.	Abstinence is the only way to prevent STIs.	True	False	Don't Know
10.	STI are little bit embarrassing but they don't cause significant long-term health problems.	True	False	Don't Know
11.	It is impossible to get STI from oral sex.	True	False	Don't Know
12.	It is impossible to get STI when it is your first time having sex.	True	False	Don't Know
13.	People can give STI to someone else only when they have symptoms.	True	False	Don't Know
14.	A person can have STI without any visible signs and symptoms.	True	False	Don't Know

Section B

Instruction: For the given statements how many options you are aware of. You can choose more than one option:

1.	What STIs have you heard of?	(a) AIDS	(e) Chlamydia
		(b) Syphilis	(f) Pelvic Inflammatory disease
		(c) Gonorrhoea	(g) Hepatitis B
		(d) Genital Herpes	(h) Don't Know
2.	What are the symptoms of STIs?	(a) Itching on genital area	(f) Lower abdominal pain.
		(b) Sores on sexual organs	(g) Any kind of fluid filled lesions on sexual organs.
		(c) Burning sensation on genital area	(h) Loss of weight.
		(d) Discharge from genital area (penis/vagina)	(i) Don't know.
		(e) Feeling of weakness.	
3.	Which of the following do you think are the measures to avoid getting STIs?	(a) Avoid sexual contact with prostitutes.	(e) Avoid homosexual contact.
		(b) Use of Condom during sex.	(f) Use of sterilized syringes/needles.
		(c) Avoid sexual intercourse with unknown.	(g) abstinence
		(d) Single sexual partner.	(h) Don't know.
4.	Which of the following do you think are the complications of STIs?	(a) Increased risk of HIV/AIDS.	(e) Still birth.
		(b) Increased risk of other infectious condition.	(f) Miscarriage.
		(c) Fertility problems.	(g) Don't know.
		(d) Some kind of Cancer.	
5.	Acts to acquire STIs.	(a) Sharing food	(d) Kissing
		(b) Sharing clothes/ toilets	(e) Hugging
		(c) Oral Sex	(f) Don't Know
6.	Which of the following organisms do you think can cause STIs?	(a) Virus	(d) All of them
		(b) Bacteria	(e) None of them
		(c) Fungi	(f) Don't Know
7.	Which of the following sources do you think are effective in providing information on STIs?	(a) Newspapers/Magazines	(e) Teachers
		(b) TV/Movies/Radio	(f) Family/Parents
		(c) Friends	(g) Text books
		(d) Internet	(f) No Information

8.	What are routes of transmission of STI?	(e) Mother to child
	(a) Vaginal	(f) Saliva
	(b) Blood Transfusion	(g) Don't know
	(c) Sharing needle	
	(d) Anal	

Following the psychometric properties of the behavioral measures of 'awareness' and 'knowledge' domains of the scales, the predictive validity of the test scales was attempted in the four – groups of STIs patients. The mean ± SD values on 'awareness' and 'knowledge' scales for the whole sample, and for the four – groups are respectively shown in Tables - 3 & 4. At this stage, the test scores were subjected to check the homogeneity of variance in an effort to ascertain one of the basic assumptions for further parametric analysis. Non-significant Levene's ratios emerged; suggesting the test scores to be homogeneously distributed.

Table 3 Mean ± SD and range values for the whole sample (N = 410) on 'awareness' and 'knowledge' scales

Scales	Mean ± SD	Range
Awareness	7.22 ± 2.80	0 – 14
Knowledge	3.46 ± 1.79	0 - 7.61

The 'between groups' difference on 'awareness' and 'knowledge' scales were highlighted by computing One – Way ANOVA (k = 4 with unequal sample size). The results (Table – 5) revealed significant between groups effects on knowledge (F = 4.84, df = 3 / 409; p < 0.01) scale. Scheffe - Test applied to find out the patterns of mean differences in significant 'between groups' effect on knowledge scores revealed that patients suffering from syphilis (M = 4.02) indicated significantly more knowledge as compared to the patients suffering from genital herpes (M = 3.21) and genital warts (M = 3.18). Besides, all other comparisons revealed non-significant patterns of mean differences. On awareness scale, non-significant F – ratio emerged (the four groups emerged to be more or less equal on the awareness measure).

Table 4 Mean ± SD and range values of the 'awareness' and 'knowledge' scales for the 4 - STIs groups

Scales	Syphilis (N = 75)	Genital herpes (N = 139)	Genital warts (N = 104)	Genital discharge (N = 92)
Awareness	Mean ± SD	7.01 ± 2.56	6.87 ± 2.96	7.58 ± 2.83
	Range	1 - 14	0 - 14	0 - 14
Knowledge	Mean ± SD	4.02 ± 1.58	3.21 ± 1.85	3.18 ± 1.81
	Range	0.39 - 6.90	0 - 7.61	0 - 7.61

Table 5 Results of One-Way ANOVA (for k = 4 with unequal sample size) on 'awareness' and 'knowledge' scales

Scales	Sources of variation	Sum of Squares	df	Mean Square	F - ratio	p - value
Awareness	Between Groups	41.81	3	13.94	1.78	0.150
	Within Groups	3174.10	406	7.82		
	Total	3216.80	409			
Knowledge	Between Groups	45.43	3	15.15	4.84	0.003
	Within Groups	1270.98	406	3.13		
	Total	1316.41	409			

DISCUSSION

Awareness and knowledge can play a measure role in prevention of STIs/STDs and their role complications. STDs can be devastating to a women's reproductive health and, indeed, life itself. Mortality that may result from the sequelae of STDs, such as ectopic pregnancy, cervical cancer, and liver disease (Ebrahim *et al.*, 1997; Althaus 1991). Several morbidities like chronic low backache, dispareunia, pelvic

inflammatory disease can be resulted from STIs. In a study conducted on rural married women in Northern India, awareness to STIs was found only in 19.5% (Singh *et al.*, 2015). A standard scale for measurement of awareness and knowledge to STIs/STDs is much needed. Measuring STI knowledge is important because such knowledge is often identified as a determinant of risk behavior in extant theories like., Theory of Reasoned Action (Fishbein and Ajzen, 1975), Health Belief Model (Becker, 1974) and Information-Motivation-Behavior Skills model (Fisher and Fisher, 1992). In most theories, knowledge is not a distinct construct, but is incorporated into perceived vulnerability (susceptibility). Scales regarding awareness and knowledge together have been used with some special age of general population but not in people suffering with STIs. Those scales have mentioned same items for measuring both awareness and knowledge. Awareness and knowledge are somewhat different. Awareness is just perception of knowledge while knowledge is gained by experiences. Studies report STIs related awareness, knowledge and attitudes among health professionals and students, and advocate that educational intervention has the potential to address the gaps in awareness, knowledge and the negative attitudes directed towards infections (Kubde *et al.*, 1995; Kumar *et al.*, 2002; Samkange-Zeeb, 2013; Weaver 2015).

In simple terms, there are different facets of knowledge and awareness: (i) no awareness no knowledge state (ii) only awareness and no knowledge state and (iii) both awareness & knowledge state. Awareness is the perception of knowledge. Knowledge is objective. It may be that respondents have some awareness with little or no knowledge with respect to some aspects of STIs. Further extended studies are desirable to be replicated in support of these findings.

Important salient features of results emerged in the analysis with regards to effects of 4 - STIs groups on measures of awareness and knowledge. Results revealed that patients suffering from syphilis indicated significantly more knowledge as compared to the patients suffering from genital herpes and genital warts. Direct comparisons of these observed major trends are not available to the best of the knowledge to the researcher; attempts are made based on the working experiences in the field. The global burden of STIs remains high. There were an estimated 357 million new cases of the four curable STIs (chlamydia, gonorrhoea, syphilis, and trichomoniasis) acquired by people aged 15-49 (Newman, 2015). This does not include HIV and other viral STIs which continue to adversely affect the lives of individuals and communities worldwide. More knowledge about syphilis as compared to genital herpes and genital warts was observed in the present study. This may be because syphilis is one of the oldest STI affecting many systems of the body. In sum, substantial psychometric properties of the awareness and knowledge scales related to STIs provide empirical bases sufficient enough for extended studies on health and wellbeing of such suffers. This is a hospital based study with limited sample size.

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References

1. Olasode OA. 2007. Sexual behaviour in adolescents and young people attending a sexually transmitted disease clinic, Ile Ife Nigeria. *Indian J Sex Transm Dis.*, 28:83-6.
2. Centers for Disease Control and Prevention. 2003. Summary of notifiable diseases United States. *Morbidity and Mortality Weekly Report.*, 50: 1-136.
3. Miller WC, Ford CA, Morris M, *et al.* 2004. Prevalence of chlamydial and gonococcal infections among young adults in the United States. *JAMA.*, 291: 2229-36.
4. Nsuam MJ, Sanders LS, Taylor SN. 2010. Knowledge of sexually transmitted infections among among high school students. *Am J Health Educ.*, 41: 206-217.
5. World health Organization Media Centre, Sexually Transmitted Infection. 2013. <http://www.who.int/mediacentre/factsheets/fs110/en/>.
6. Awareness and Knowledge. In Merriam-Webster's comprehensive dictionary of the English language deluxe encyclopedic edition. 1974. Trident press international; Chicago: Illinois; 101 & 706.
7. Ebrahim SH, Peterman TA, Zaidi AA, Kamb ML. 1997. Mortality related to sexually transmitted diseases in US women, 1973 through 1992. *Am J Public Health.*, 87: 938-44.
8. Althaus FA. 1991. An ounce of prevention: STDs and women's health. *Fam Plann Perspect.*, 23:173-7.
9. Singh S, Singh SK, Singh TB. 2015. Awareness of sexually transmitted infection (STI)/reproductive tract infections (RTI) and HIV/AIDS in STI/RTI – affected married women of rural areas of Varanasi district, Uttar Pradesh: A cross-sectional study. *Indian j Sex Transm Dis.*, 36: 114-6.
10. Fishbein M, Ajzen, I. (1975). *Belief, attitude, intention, and behavior: An introduction to theory and research.* Reading, MA: Addison-Wesley; Boston.
11. Becker MH. (1974). The health belief model and personal health behavior. *Health Educ Monogr.*, 2: 409-419.
12. Fisher JD, Fisher WA. (1992). Changing AIDS - risk behavior. *Psychol Bull.*, 111: 455-74.
13. Kubde S, Zodpey S, Vasudeo N. (1995). AIDS's awareness among nursing students. *Indian J Public Health.*, 39:109-12.
14. Kumar R, Mohan N, Seenu V, *et al.* (2002). Knowledge, attitude and practices towards HIV among nurses in a tertiary care teaching hospital: two decades after the discovery. *J Commun Dis.*, 34: 245-56.
15. Samkange-Zeeb F. (2013). Assessing knowledge and awareness of sexually transmitted infections among school-going adolescents. Dissertation: University of Bremen, Germany.
16. Weaver RD. (2015). An assessment of sexually transmitted disease knowledge among seventh grade students. Dissertation: Walden University.
17. Newman LM, Rowley J, Vander Hoorn S, Wijesooriya NS, Unemo M, Low N *et al.* (2015). Global estimates of the prevalence and incidence of four curable sexually transmitted infections in 2012 based on systematic review and global reporting. *PLoS One.*, 10(12): e0143304.
