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Original Research Article

Sociodemographic and seroprevalence profile of sexually transmitted infections (HIV, Hepatitis B, Hepatitis C and Syphilis) in asymptomatic pregnant females

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ABSTRACT

Background: Globally 499 million new episodes of curable STIs occur in the age group of 15-49 years, 80% in developing countries and 79 million in India alone. There is an increasing trend for viral STIs while bacterial STIs are on decline. Number of pregnant women with STIs is increasing by about 250 million a year in developed world and double that number in developing countries. The objective of the study was to estimate seroprevalence of STIs (Hepatitis C, Hepatitis B, HIV and Syphilis) and to evaluate impact of sociodemographic profile and sexual behaviour on STIs

Methods: This observational study was carried out on 1000 asymptomatic pregnant females attending antenatal clinics, Department of Obstetrics and Gynecology, Government Medical College Patiala, Punjab.

Results: Seroprevalence for STIs in asymptomatic pregnant females was 22.5%. Hepatitis C-9%, Hepatitis B-6.3%, HIV-5.5%, and Syphilis 1.7%. Illiteracy, low socio economic status, homemakers, rural background with multiple sex partners in the 21-30 years age group is associated with increasing trends of STIs in pregnancy.

Conclusions: Screening asymptomatic pregnant women for STIs remains a key programme strategy for quadruple (Hepatitis C, Hepatitis B, HIV and Syphilis) prevention. Mandatory screening for STIs to reduce perinatal transmission is need of the millennium— a step toward ending STI epidemics as a global priority.

Keywords: Hepatitis, HIV, Pregnant, Sexually transmitted infections, Syphilis

INTRODUCTION

Sexually transmitted infections (STIs) are infections transmitted from person to person by sexual contact. Sexually transmitted diseases (STDs) also referred to as STIs and venereal diseases are illness that has significant probability of transmission between humans by means of sexual behavior, vaginal intercourse, anal sex and oral sex, influenced by sociodemographic profile of patients.¹ Globally 499 million new episodes of curable STIs occur in the age group of 15-49 years, 80% in developing

countries and 79 million in India alone.² There is significant decline in bacterial STIs (syphilis, gonorrhea) while viral STIs are showing an increasing trend (Hepatitis B, HIV, herpes, genital warts). STIs and their complication rank in the top five disease categories for which adult seek health care. The prevalence of STIs increase the risk of acquiring and transmitting HIV infection by three to five times.³

Number of pregnant women with STDs is increasing by about 250 million a year in developed world and double

that number in developing countries.⁴ STDs can be transmitted from a pregnant mother to baby during antepartum, intrapartum and postpartum period. Syphilis infects the baby in utero, resulting in early fetal loss, still birth, neonatal death, prematurity, LBW, or syphilis in neonate. Adverse pregnancy outcomes among untreated syphilis ranged as high as 53.4–81.8% compared to 10.2–20.8% in pregnant women without syphilis.⁵ Eight of the more than 30 pathogens have been linked to the greatest incidence of illness. Of these, four (syphilis, gonorrhoea, Chlamydia and trichomoniasis) are curable while other four, viral infections (Hepatitis B, Herpes, HIV, HPV) are incurable but can be mitigated or modulated through treatment.⁶ 35 million women in India in the age group of 15-45 years have STDs. 15% of healthy life days are lost due to STDs including HIV in these women.⁷ Diagnosing STIs in pregnancy can be difficult because most of them are either asymptomatic or too meagre to recognize clinically as pregnancy modifies manifestations. Antenatal attendees are routinely used as a reference point for STD prevalence among general population in women.²

The efficiency of transmission of HIV from an infected mother to infant ranges from 15-25% in developed world and 25-45%, in developing world. Two third of transmission occur late in pregnancy or during labour and delivery. Effective intervention to prevent vertical transmission is need of hour.⁸ In areas with high hepatitis B virus (HBV) endemicity, perinatal route remains principal mode of vertical transmission. Thus it is important to diagnose acute or chronic Hepatitis B virus infection in pregnant women to justify mandatory antepartum HBsAg screening.⁹ Most women becoming pregnant in 20-40 years of age, have an increasing incidence of Hepatitis C.

Aims and objectives

To estimate seroprevalence of STIs (Hepatitis C, Hepatitis B, HIV and Syphilis) in asymptomatic pregnant females. To evaluate sociodemographic profile and sexual behavior of asymptomatic pregnant females seropositive for STIs.

METHODS

It was an observational prospective study involving asymptomatic pregnant females attending antenatal clinics in Department of Obstetrics and Gynecology, Government Medical College and Rajindra Hospital, Patiala. A total of 1000 asymptomatic pregnant females in the reproductive age group of 15-49 years were included in the study after written informed consent. Detailed information regarding socio-demographic profile, personal history, high risk sexual behaviour (multiple sex partners/oral/anal sex) of pregnant females and their spouses/partners was recorded. A thorough

general physical, obstetrical and per speculum examination was done in all cases.

Hemoglobin estimation, ABO/Rh grouping and typing with routine antenatal investigations were done. All pregnant females were referred to ICTC centre for voluntary counselling and testing for HIV, as per NACO guidelines, and syphilis. Pregnant patients found HIV positive were referred to ART (anti-retroviral therapy) centre for further management. RPR (Rapid plasma reagent) test for diagnosis of syphilis was done in all pregnant females. Females found reactive were treated for syphilis. Empirical treatment was given to partners of patients found positive. Blood samples were also collected for screening of Hepatitis B viral infection by Hepatitis B surface antigen (HBsAg) detection by rapid Hepacard test. Screening for HCV infection was done using by rapid HCV tridot kit for detection of anti-HCV antibodies. Partners/spouses of pregnant females found sero-positive for any of these STIs (HIV/HBV/HCV/Syphilis) were also screened. Sero-positive pregnant females were referred to medicine OPD for further management and counselling regarding further measures for the family. Data collected was compiled and analysed statistically.

RESULTS

Out of a total of 1000 asymptomatic pregnant females, 225 (22.5%) were seropositive for one or the other STIs (HIV/HBV/HCV/Syphilis). Majority of pregnant women, i.e., 9% (90 cases) were seropositive for Hepatitis C, 6.3% (63 cases) for Hepatitis B surface antigen (HBsAg), 5.5% (55 cases) for HIV and only 1.7% (17) for syphilis (Table 1).

Table 1: Seroprevalence of STIs in asymptomatic pregnant females (n=1000).

Asymptomatic pregnant females with seropositive profile	STI	No. of seropositive females	%
	HIV	55	5.50
	Hepatitis B	63	6.30
	Hepatitis C	90	9.00
	Syphilis	17	1.70
	Total	225	2.25

With a total 1000 asymptomatic pregnant females in our study 83.80% were in 21-30 years age group with 24% of them being sero-positive for STIs. Only 35 (3.5%) asymptomatic pregnant females were ≤20 years of age with significant number (32%, n=11) being sero-positive for STIs (Table 2). Among sero-positive pregnant females, 86.22% were in the age group of 21-30 years, followed by 8.89% (20 cases) in 31-40 years and 4.89% (11 cases) below 20 years of age (Table 3).

Table 2: Distribution of asymptomatic pregnant females according to age (total number=1000).

Age group (in years)	Asymptomatic pregnant females (number, %)	Sero-positive pregnant females (number, %)
<20	35 (3.5)	11 (32)
21-30	838 (83.8)	194 (24)
31-40	124 (12.4)	20 (17)
41-50	3 (0.03)	0 (0)
Total	1000 (100)	225 (22.5)

Table 3: Age distribution of seropositive pregnant females (total number=225).

Age group (in years)	HIV (%)	Hepatitis B (%)	Hepatitis C (%)	Syphilis RPR (%)	Total (%)	P value significance
<20	2 (0.89)	5 (2.22)	4 (1.78)	0 (0)	11 (4.89)	0.022 (5.24) S
21-30	48 (21.33)	55 (24.44)	79 (35.11)	12 (5.33)	194 (86.22)	0.001 (34.55) HS
31-40	5 (2.22)	3 (1.33)	7 (3.11)	5 (2.22)	20 (8.89)	0.852 (0.03) NS
41-50	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1.000 (0.00) NS
Total	55 (24.44)	63 (28)	90 (40)	17 (7.56)	225 (100)	

Majority (80.89%) seropositive pregnant females were from rural background, while only 19.11% were from

urban set-up. Majority (89.33%) seropositive asymptomatic pregnant females were homemakers and 9.78% were unskilled workers (Table 4).

Table 4: Distribution of seropositive pregnant females in relation to residence and occupation (total number 225=100%).

Residence	HIV (%)	Hepatitis B (%)	Hepatitis C (%)	Syphilis RPR (%)	Total (%)	P value, significance
Rural/ urban						
Rural	45 (20)	48 (21.33)	74 (32.89)	15 (6.67)	182 (80.89)	0.001 (24.28) HS
Urban	10 (4.44)	15 (6.67)	16 (7.11)	2 (0.89)	43 (19.11)	
Total	55 (24.44)	63 (28)	90 (40)	17 (7.56)	225 (100)	
Occupation						
Home maker/unemployed	53 (23.56)	52 (23.11)	80 (35.56)	16 (7.11)	201 (89.33)	0.001 (24.19) HS
Unskilled worker	2 (0.89)	10 (4.44)	9 (4)	1 (0.44)	22 (9.78)	0.006 (11.73) S
Clerical, shop-owner, farmer	0 (0)	1 (0.44)	1 (0.44)	0 (0)	2 (0.89)	0.157 (2.05) NS
Total	55 (24.44)	63 (28)	90 (40)	17 (7.56)	225 (100)	

Table 5: Distribution of seropositive pregnant females in relation to family income and socio economic status (total number 225=100%).

Family income Rs/month	HIV (%)	Heptatitis B (%)	Heptatitis C (%)	Syphilis VDRL (%)	Total (%)	P value significance
1743	26 (11.56)	36 (16)	10 (4.44)	1 (0.44)	73 (32.44)	0.003(8.96) S
1744-5223	18 (8)	16 (7.11)	42 (18.67)	11 (4.89)	87 (38.66)	0.01(6.70) S
5224-8706	11 (4.89)	6 (2.67)	33 (14.67)	5 (2.22)	55 (24.44)	0.058 (3.60) NS
13029-17414	0 (0)	5 (2.22)	5 (2.22)	0 (0%)	10 (4.4)	0.02 (10.00) S
Total	55 (24.44)	63 (28)	90 (40)	17 (7.56)	225 (100)	
Socio economic status						
Upper	0 (0)	1 (0.44)	3 (1.33)	2 (0.89)	6 (2.67)	0.273 (1.20) NS
Middle	21 (9.33)	25 (11.11)	28 (12.44)	10 (4.44)	84 (37.33)	0.009 (6.73) S
Lower	34 (15.11)	37 (16.44)	59 (26.22)	5 (2.22)	135 (60)	0.001 (30.82) HS
Total	55 (24.44)	63 (28)	90 (40)	17 (7.56)	225 (100)	

60% seropositive females were from lower socioeconomic status while 37.33% (84 cases) were from middle class. 70.10% (160 cases) seropositive females had family income less than rupees 5223/month (Table 5). 47.5% seropositive asymptomatic pregnant females were illiterate, 32% educated upto primary and only

15.11% upto middle class (Table 6). High risk sexual behavior was noted in 17.3% (173) partners/spouses in total and 50.86% of their wives were seropositive. Only 5.4% (54) pregnant females were into high risk sexual behavior with 63% of them being seropositive for STIs (Table 7).

Table 6: Distribution of seropositive pregnant females in relation to education (total number 225=100%).

Educational status	HIV (%)	Hepatitis B (%)	Hepatitis C (%)	Syphilis RPR (%)	Total (%)	P value significance
Illiterate	36 (16)	38 (16.89)	29 (12.89)	4 (1.78)	107 (47.56)	0.001 (14.73) HS
Primary school	9 (4)	21 (9.33)	36 (16)	6 (2.67)	72 (32)	0.001 (23.18) HS
Middle school	10 (4.44)	2 (0.89)	17 (7.56)	5 (2.22)	34 (15.11)	0.302 (1.07) NS
High school	0 (0)	1 (0.44)	4 (1.78)	1 (0.44)	6 (2.67)	0.121 (2.40) NS
Intermediate	0 (0)	1 (0.44)	4 (1.78)	1 (0.44)	6 (2.67)	0.121 (2.40) NS
Total	55 (24.44)	63 (28)	90 (40)	17 (7.56)	225 (100)	

Table 7: Distribution of couples in relation to high risk sexual behavior (total number=1000).

High risk sexual behavior	Asymptomatic pregnant females		Seropositive pregnant females	
	No.	%	No.	%
Among partner/spouses				
Absent	827	82.7	137	16.56
Present	173	17.3	88	50.86
Total	1000	100	225	22.50
Among pregnant females				
Absent	946	94.6	191	21
Present	54	5.4	34	63
Total	1000	100	225	22.50

Out of 1000 asymptomatic pregnant females 83.9% were aware of RTI/STI services with 19% of them being seropositive for STIs while 44% were seropositive in

group with no awareness regarding STI services. Among sero-positive pregnant females, 68.49% were aware of available RTI/STI services (Table 8a and 8b).

Table 8a: Distribution in relation to awareness of RTI/STIs services among pregnant females (total number=1000/seropositive=225).

Awareness of RTI/STI services	Asymptomatic pregnant females		Seropositive pregnant females	
	No.	%	No.	%
Aware	839	83.9	154	19
Not aware	161	16.1	71	44
Total	1000	100	225	22.50

Table 8b: Distribution in relation to awareness of RTI/STIs services among seropositive pregnant females (total number=1000/seropositive=225).

Awareness of RTI/STI services	HIV (%)	Hepatitis B (%)	Hepatitis C (%)	Syphilis RPR (%)	Total (%)	P value significance
Aware	30 (13.33)	46 (20.44)	65 (28.89)	13 (5.78)	154 (68.49)	0.001 (31.33) HS
Not aware	25 (11.11)	17 (7.56)	25 (11.11)	4 (1.78)	71 (31.56)	
Total	55	63	90	17	225	

Out of 381 (38.1%) asymptomatic pregnant females not utilizing RTI/STI services, 26% were seropositive.

Furthermore, out of 225 seropositive pregnant females, 57.33% were utilizing available RTI/STI services (Table 9, 10).

Table 9: Distribution in relation to utilization of RTI/STI services among pregnant females (total number=1000/seropositive=225).

Utilization of RTI/STI Services	Asymptomatic pregnant females		Seropositive pregnant females	
	No.	%	No.	%
Utilized	619	61.9	129	21
Not Utilized	381	38.1	96	26
Total	1000	100	225	22.50

Table 10: Distribution in relation to utilization of RTI/STI services among seropositive pregnant females (total number=1000/seropositive=225).

Utilization of RTI/STI services	HIV (%)	Hepatitis B (%)	Hepatitis C (%)	Syphilis RPR (%)	Total (%)	P value significance
Utilized	27 (12)	36 (16)	54 (24)	12 (5.33)	129 (57.33)	0.025 (5.03) S
Not utilized	28 (12.44)	27 (12)	36 (16)	5 (2.22)	96 (42.67)	
Total	55 (24.44)	63 (28)	90 (40)	17 (7.56)	225 (100)	

DISCUSSION

Seroprevalence for STIs in asymptomatic pregnant females in our study was 22.5%. 9% for Hepatitis C, 6.3% for Hepatitis B, 5.5% for HIV and 1.7% for syphilis. Mehta et al 2013 observed seroprevalence of 2.9% for hepatitis B, 0.48% for syphilis, 0.38% for HIV and 0.19% for hepatitis C in antenatal women.⁹ Jindal et al 2009 reported seroprevalence 2.4% for hepatitis B, 0.4% for HIV with none of the pregnant women testing positive for syphilis.¹⁰ Maheshwari et al reported 0.7% seroprevalence for Hepatitis B, 0.25% for Hepatitis C and 0.2% for HIV in asymptomatic pregnant women.¹¹ Ekanem et al 2012 reported 6.8% seroprevalence for HIV, 1.4% for hepatitis B and 1.2% for syphilis in rural communities of Nigeria.⁴ Rajesh and Sudha reported 30.6% asymptomatic pregnant women of lower socioeconomic strata to be seropositive for syphilis, 25.8% for hepatitis B and 4.8% for HIV.¹² Number of pregnant women with STIs is increasing by about 250 million a year in developed world and double this number in developing nations 86.22% seropositive asymptomatic pregnant women were in the age group of 20-29 years similar to as reported by other authors.^{4,9-11} 80.89% seropositive pregnant females were from rural background. Jindal et al and Irshad et al also reported higher seropositive pregnant females from rural area.^{10,13} 60% seropositive females in present study were from lower socioeconomic strata and only 2.67% from upper strata. Jindal et al and Dwivedi et al also showed increasing prevalence of STI in lower socioeconomic strata, 47.56% seropositive females were illiterate and 32% educated upto primary level only in our study.^{10,14} Similar observations were made by Jindal et al,

Maheshwari et al and Aboyeji et al.^{10,11,15} Majority (89.33%) seropositive females were unemployed/home makers as observed by Shah et al 2011 and Rashid et al 2014, 71% females in our study had family income <5223 Rs/month.^{16,17} Shah et al also reported 85.7% seropositive pregnant females with family income less than 5000 Rs/month.¹⁶

17.3% spouses and 5.4% pregnant females in our study were into high risk sexual behavior in form of multiple sex partners, oral sex, alcohol use during sex, drug abuse, IDU. Of these 50.86% and 63% respectively were seropositive for STIs. Rashid et al and Frambo et al also observed multiple sex partners as risk factors for STIs in 39.35% and 98.2% respectively in their studies.^{17,18} 68.44% seropositive females were aware of STI/RTI services and 57.33% had positive attitude for utilizing STI/RTI services in present study. Sandgren et al and Maimaiti et al reported 96% and 87% awareness with 45% and 53% pregnant females having positive attitude towards utilization of STI/RTI services respectively.^{19,20}

CONCLUSION

Seroprevalence for STIs in asymptomatic pregnant females was 22.5%. Hepatitis C- 9%, Hepatitis B- 6.3%, HIV- 5.5% and syphilis- 1.7%. There is increasing trend of STIs in pregnancy with illiteracy, unemployment, home makers, low socioeconomic status with low family income, rural background in 21-30 years of age group. High risk sexual behavior among couples especially multiple sex partners is a significant risk factor for STIs. Mandatory screening asymptomatic pregnant women for STIs along with awareness and positive attitude towards

utilization of STI/RTI services should be a key programme strategy for quadruple prevention (HIV, HBsAg, HCV, Syphilis) thereby reducing perinatal transmission. A step towards ending sexually transmitted infection epidemics as a major public health concern – A global priority.²¹

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