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Original Research Article

Determinants of Reproductive Tract Infection and cervical cytology among married women in Delhi

Nazish Rasheed[1], ZeebaJairajpuri[2], Rambha Pathak[3], Sujata Jetley[4], Shrawan Kumar Trivedi[5]

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Abstract

Background – Reproductive tract infection (RTI) represents a major public health problem in developing countries.The consequences of RTI's are several and may be severe in some cases. **Objectives** –To find out the prevalence of symptoms of RTI among the married women of 21-65 years, To identify clinical and cytological abnormalities among the symptomatic women, To find out association between socio-demographic profile and risk factors with RTI symptomatic and cytology positive patients. **Methods**: A total of 310 married women in age group 21-65yrs residing in Madanpur Khadar area of New Delhi, India, were screened for symptom suggestive of RTI; symptomatic women went through gynecological examination and cancer cervix screening by Pap smear.
Results –Overall, 34.5% of the study population had symptoms suggestive of RTI. Most of the symptomatic women (88%) had abnormal vaginal discharge. Among the symptomatic women, cytology proved that 64.6% were suffering from acute cervicitis, 3.9% from A Squamous Cell of Undetermined Significance (ASCUS) and 1.9%from Low Grade Intra epithelial Lesion (LSIL) Squamous. **Conclusion** – Prevalence of symptoms of RTI among women was found to be quite high(34.5%), and among them 1.9% had cervical dysplasia.

Key words: Reproductive tract infections, Risk factors, Cytology

Authors:
1.Assistant Professor, Department of Community Medicine, 2. Associate Professor, Department of Pathology, 3. Professor, Department of Community Medicine, & 4.Professor, Department of Pathology , Hamdard Institute of Medical Sciences and Research, New Delhi, 5. Assistant Professor, School of Management,BMLMunjal University

Corresponding Author:
Dr. Nazish Rasheed,
Assistant Professor,
Department of Community Medicine, Hamdard Institute of Medical Sciences and Research,
New Delhi-110025.
email:nazish258rasheed@gmail.com

Introduction

Reproductive tract infection (RTI) represents a major public health problem in developing countries.[1]Some of the RTIs act as precursors for cancer cervix as reported in different studies, and thus may require prompt treatment.[2]

Cancer of the uterine cervix is the second most common cancer among women world-wide. In India this is the commonest cancer among women and this country has the largest burden of cervical cancer patients in the world. One out of every five women in the world suffering from this disease belongs to India. More than three-fourths of these patients are diagnosed at advanced stages leading to poor prospects of long-term survival and cure. Cervical Cancer can be prevented by screening women systematically through organized population based programmes. Regular population based screening using Pap smear cytology is the internationally

accepted screening method for cervical cancer. Pap smear based cervical screening has reduced Cervical Cancer incidence and mortality in different parts of the world.[3]

With the above-mentioned background, the present study was undertaken with the objectives to find out the prevalence of suggestive symptoms of RTI among the married women of 21-65 years, to identify clinical and cytological abnormalities among the symptomatic women, and to find out association between socio-demographic profile and risk factors with RTI symptomatic and cytology positive patients.

Materials and Methods

The present study was an observational, analytical epidemiological study with cross-sectional, community based design. It was conducted at Rural health training center, Madanpur Khadar, New Delhi India, which is the rural field practice area of Department of Community Medicine, Hamdard Institute of Medical Sciences and Research. The inclusion criteria consisted of ever-married women residing permanently in the study area in the age group 21-65years. The exclusion criteria were pregnant women, women within 6 weeks following delivery or abortion, women with already detected cancer cervix revealed from history or records, and women refusing consent. Study period was from January-June 2015.The Sample size was calculated based on a study about the prevalence of reproductive tract infections, which showed that the prevalence of symptoms for RTI was 36.8% among ever-married women of reproductive age group.[4]Applying formula $n = 4pq/L^2$, final sample size came out to be 310.

Study tools used were predesigned, pretested proforma, Cusco or Sim's speculum, Ayre's spatula, Koplik's jar, glass slides, ethyl alcohol, and gloves. Pap stain microscopy was performed by Department of Pathology, Hamdard Institute of Medical Sciences and Research, New Delhi. The study techniques were interview, clinical examination, gynecological examination, taking of Pap smear from the symptomatic women, and laboratory examination of the smear. Ethical clearance was sought from institutional ethical committee. Non-governmental organizations working in the area and associated with Rural health Training centre of Department of Community Medicine along with community level health workers were involved. With their help, IEC activities regarding RTI, cancer cervix were conducted in the study area to generate awareness regarding cancer cervix and importance of screening. Systematic random sampling method was adopted to choose the study subjects. Based on the survey data of the study area sampling interval was calculated for various blocks. The blocks were selected by random selection. In the selected block, first house was selected randomly and then the next woman was included according to the sampling interval.

The study population was interviewed with predesigned and pretested proforma to assess their socio-demographic characteristics and for presence of symptoms of RTI, operational definition of RTI used was presence of excessive white discharge; foul smelling itchy discharge; chronic lower abdominal pain; any ulcer, swelling, irritation around vaginal area; any other gynecological abnormality, etc. socio-economic status was assessed using the Revised Modified BG Prasad's Socio-economic classification scale, January 2014 based on Revised income categories for Delhi (IW) 2014.[5]

Symptomatic patients were requested to attend Rural health training centre, MadanpurKhadar on a pre-fixed date and time. A total of 107 symptomatic women were called for examination. Among them 102 came for clinical examination. Written consent was obtained from women, general and speculum examination was performed, and then Pap smear was obtained by aseptic technique from the squamo-columnar junction using an Ayre spatula. Smears were fixed in 1:1 ethyl alcohol and were given to the pathologist for staining by Papanicolaou technique and reporting. The screening results were shared with the participants with complete explanation of positive and negative results. Those requiring further investigation or management were referred to higher centres. The data was tabulated in SPSS version 16.0 (Chicago, SPSS Inc) and analyzed for simple proportions; Test of significance and logistic regression were performed.

Results

Of the total 310 women studied, 107(34.5%) women were symptomatic for RTI. Majority of them, that is, 94(88%) had history of abnormal vaginal discharge and 13(12%) women had history of chronic lower abdominal pain. Of the 107 symptomatic women, 102 had come for examination in the rural hospital with a response rate of (95.3%).Among the 310 study participants, majority, that is, 238(76.7%) belonged to the age group of 21–39 years; 259(83.5%) were literate; 229(73.8%) belonged to nuclear families; 158(50.9%) had three or more children;263 (84.8%) were homemakers; 269(86.7%) belonged to lower socio-economic classes, that is, classes III,IV and V of Revised modified BG Prasad' socio-economic classification scale, January 2014,and 243 (78.4%) were Hindus.

Women of 21–39 year age group, illiterate, belonging to joint family, having <3 children, homemakers, higher socio-economic status, and belonging to Muslim religion were proportionately more symptomatic. Association with education of woman was found to be statistically significant at p value of 0.05.Within the study sample 281(90.6%) women were married below 18 years of age**;**274 (88.4%) had teenage pregnancy and 250(80.6%) had improper menstrual hygiene, that is, used old washed cloth.

Regarding contraceptive use for past 1 year, 34 (10.9%) used barrier method as contraceptive; 18 (5.8%) had copper T inserted; 40(12.9%) had history of oral contraceptive pills (OCP) usage. Among the sample 62 women (20%) reported undergoing an abortion in the past and 8(2.6%) told contact history of husband with partner/s other than wife. Women with higher age at marriage, age of conception >19yrs, poor menstrual hygiene, and non-usage of barrier or OCP, in situ intra uterine device (IUD), history of abortion and positive contact history were proportionately more symptomatic. Menstrual hygiene, history of IUD insertion and history of abortion were found to be significantly associated with being symptomatic for RTI at a p value of 0.05

Table 1: Distribution of Socio-demographic variables, risk factors for RTI in the study population (n=310)

Agegroup in yrs	Symptomatic Frequency(%)	Asymptomatic Frequency(%)	Statistical tests
21-39	98(41.2)	140(58.8)	OR=0.204(0.097-0.430)
40-65	9(12.5)	63(87.5)	P<0.05
Education of woman			
Literate	83 (32.0)	176 (68.0)	OR=1.885(1.026-3.464)
Illiterate	24 (47.1)	27 (52.9)	P=0.05
Type of family			
Nuclear	77(33.6)	152(66.4)	1.16(0.685-1.968)
Joint	30(37.0)	51(63.0)	P>0.05
Number of children			
<3	61(40.1)	91(59.9)	0.613(0.382-0.983)
>3	46(29.1)	112(70.9)	P<0.05
Socio-economic status			
1(1,2)	21(51.2)	20(48.8)	OR=0.448(0.230-0.869)
2(3,4,5)	86(32)	183(68)	P<0.05
Religion			
Hindu	80(32.9)	163(67.1)	1.375(0.788-2.4)
Muslim	27(40.3)	40(59.7)	P>0.05
Age of conception			
<19yrs	94(34.3)	180(65.7)	OR=1.082(0.525-2.23)
>19yrs	13(36.1)	23(63.9)	P>0.05
Age at marriage			
<18yrs	95(33.8)	186(66.2)	OR=1.38(0.63-3.01)
>18yrs	12(41.4)	17(58.6)	P>0.05
Menstrual hygiene			
Not using cloth	14(23.3)	46(76.7)	OR=1.946(1.015-3.732)
Using cloth	93(37.2)	157(62.8)	P<0.05
Use of barrier method			
No	103(37.3)	173(62.7)	OR=0.22(0.07-0.65)
Yes	4(11.8)	30(88.2)	P<0.05
h/o IUD insertion			
No	95(32.5)	197(67.5)	OR=4.14(1.51-11.38)
Yes	12(66.7)	6(33.3)	P<0.05
OCP use			
No	91(33.7)	179(66.3)	OR=1.311(0.664-2.591)
Yes	16(40)	24(60)	p>0.05
h/o Abortion			
Not done	78(31.5)	170(68.5)	OR=1.9(1.08-3.3)
Done	29(46.8)	33(53.2)	P<0.05
Contact h/o husband			
No	102(33.8)	200(66.2)	OR=3.268(0.766-13.94)
Yes	5(62.5)	3(37.5)	P=0.13

Table 2 shows that on speculum examination, cervical discharge was seen in 78(76.5%), and erosion in 3(2.9%), whereas Pap smear examination revealed dysplasia in 6(5.8%) and acute cervicitis in 66(64.6%) of the respondents. Of the total slides examined, 11(10.8%) slides were found unsatisfactory for evaluation. On multivariate logistic regression analysis among the attributes which were found to be significantly associated on univariate analysis in table 1 shows that history of

IUD insertion and history of abortion were found to be statistically significant at a p value<0.05.

Table 2: Distribution of RTI symptomatic women according to their clinical and cytological findings (*n* = 102)

Type of examination/classification	Number	%
Speculum examination		
Normal	18	17.6
White discharge	78	76.5
Erosion	3	2.9
Prolapse	1	0.9
Cervicitis	2	1.9
Pap Smear findings		
Unsatisfactory for evaluation	11	10.8
Bethesda system		
ASCUS	4	3.9
LSIL	2	1.9
Benign inflammatory lesion		
NILM	19	18.6
NILM-mild	24	23.5
NILM-moderate	26	25.4
NILM-severe	16	15.7

Table 3: Logistic regression analysis of the attributes found significantly associated with being symptomatic in univariate analysis

Attribute	B	SE	Df	Sig.	Exp (B)
Education	-0.494	0.325	1	0.128	0.61
Menstrual hygiene	-0.461	0.344	1	0.18	0.631
IUD	-1.409	0.526	1	0.007	0.244
Abortion	0.689	0.296	1	0.02	1.991
Constant	1.022	0.571	1	0.074	2.779

2 log likelihood ratio=380.250; Cox & Snell R square=0.060

symptomatic women tested for cytology and reporting cytology positive i.e showing acute cervicitis or cervical dysplasia including LSIL and ASCUS of Bethesda classification were more in the age group 40-65 years, those having three or more children, not using of barrier method ,not using cloth during menstruation, having no history of abortion and non-users of OCP. From the logistic regression (Table 3), it is clear that IUD and abortion have significant relationship with being symptomatic. Although, other factors was not identified significant relative to being symptomatic but the constant value suggest that id education and hygiene factor will increase being symptomatic will decrease strongly.

Table 4: Distribution of the symptomatic according to socio-demographic and risk factors with cytology results (*n* = 91)

Variables	Cytology negative	Cytology positive	Statistical tests
Age			
21-39	18(21.7)	65(78.3)	p>0.05
40-65	1(12.5)	7(87.5)	OR=1.938(0.224-16.79)
Number of children			
<3	11(21.6)	40(78.4)	p>0.05
>3	8(20)	32(80)	OR=1.1(0.396-3.058)
Use of barrier method			
No	18(20.7)	69(79.3)	p>0.05
Yes	1(25.0)	3(75.0)	OR=0.783(0.077-
Contact h/o husband			
No	19(21.1)	71(78.9)	p>0.05
Yes	0(0)	1(100)	OR=0.789(0.709-0.878)
IUD			
No	19(22.9)	64(77.1)	p>0.05
Yes	0(0)	8(100)	OR=0.771(0.686-
Menstrual hygiene			
Not using cloth	2(16.7)	10(83.3)	p>0.05
Using cloth	17(21.5)	62(78.5)	OR=0.729(0.146-0.365)
Abortion			
Not done	12(17.1)	58(82.9)	p>0.05
Done	7(33.3)	14(66.7)	OR=0.414(0.138-1.243)
OCP use			
No	13(17.3)	62(82.7)	p>0.05
Yes	6(37.5)	10(62.5)	OR=0.349(0.108-

Discussion

According to the present study the prevalence of symptoms suggestive of RTI was 34.5%, however in other studies it was observed to be 36.8%[4,]43.9%[6] and 59.8%[7].In this study, the prevalence of symptoms suggestive RTIs/STIs was found higher in comparison to other studies from India such as lowest prevalence was reported in Ludhiana at 17.3%[8] while in Karnataka a higher prevalence was found i.e. 40.4% and also 43.3% in Kolkata[10].The variability can be attributed to differing sample size, age group studied and the approach followed for diagnosis of RTI.

In the present study, most common symptom was abnormal white vaginal discharge, which corroborated with the findings of several studies[10, 11, 7, 12]In the present research, poor menstrual hygiene, history of intra uterine device insertion and a previous history of abortion were found to be significantly associated with symptoms of reproductive tract infection. These variables were also found linked with RTI in study done in a rural community of West Bengal[12]in Delhi[6]and Meerut [13].

In our research among all the samples studied for cytology (102), higher number had white discharge(76.5%) as compared to study done at Kolkata[12].According to Bethesda system of classification ,the prevalence of ASCUS was 3.9% which was lower [12] than observed in other studies and LSIL was 1.9% which was again lower than observed by other studies[12].The prevalence of benign inflammatory lesion was reported to be much higher (64.6%) in the present study as compared to others[7,12].Benign inflammatory changes are the most common cytological changes seen in the presence of RTI as observed in other studies also.

Cytology positive women were seen to be higher among women belonging to older age group, having>3 children, having a history of IUD insertion and practicing poor menstrual hygiene. This was also found among studies[7,12] from other areas.

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