Original Article

Reproductive Tract Infections Among Married Women and its Association with Obstetric Factors

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Abstract

Background: Reproductive tract infection (RTI) is a broad term that encompasses STIs (sexually transmitted infections) as well as other infections of the reproductive tract that are not transmitted through sexual intercourse. Women remain at a high risk for various reproductive health problems especially RTIs. The study was conducted to estimate the proportion of RTI among women of Aligarh and its association with obstetric history of the women.

Material and Methods: A cross-sectional study was conducted among 330 married women of the study area of a tertiary hospital of North India, selected by simple random sampling. A predesigned, semi-structured and pre-tested questionnaire was utilized to take the interview of eligible women.

Results: More symptomatic women were those who got married at 18 years or less than those of more than 18 years, 26.7% and 14.1% respectively. Majority of the symptomatic women (31.9%) were lying in the group where they had been married for 5-10 years as compared to another group. The proportion of RTIs was significantly higher in grand multi para (26.3%). The proportion of RTI was higher in women who had the history of abortion (20.8%) as compared to those who had no history of abortion (17.7%). Ageat the time of marriage, duration of marriage, parity was found to be significant determinants of reproductive tract infections.

Conclusions: From the study, it was concluded that proportion of women having Reproductive Tract Infection was 19.1% and it was also influenced by obstetric history of the women.

Keywords: reproductive tract infection (RTI); married; obstetric history

Introduction

Reproductive tract infection (RTI) is a broad term that encompasses STIs (sexually transmitted infections) as well as other infections of the reproductive tract that are not transmitted through sexual intercourse. Among women, Reproductive tract infections include infections of the vagina, outer genitals, cervix, uterus, fallopian tubes, or ovaries. Reproductive tract infections (RTIs) include three

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types of infections [1]

1. Sexually transmitted diseases (STDs)
2. Endogenous infections: caused by the overgrowth of certain organisms which are normally present in the genital tract of healthy women.
3. Iatrogenic infections: could be transferred via improperly performed medical procedures.

Recent WHO data shows that more than 1 million STIs are acquired daily worldwide, most of which are asymptomatic.[2]Different natural events in the life of women such as menstruation, pregnancy, and childbirth make them vulnerable to Reproductive Tract Infections (RTI)[3]Many studies from India have reported the prevalence of RTI ranging from 9%-56% among reproductive-age females.[4,5,6,7]

The aim of this study is to estimate the prevalence of Reproductive Tract Infections (RTIs) in married women of reproductive age group (18-49 years) and to determine the socio-demographic and obstetric factors influencing the occurrence of RTIs among these women.

Material and Methods

It was a community- based, cross-sectional study performed in the field practice area of Rural Health Training Centre (RHTC) and Urban Health Training Centre (UHTC), Jawaharlal Nehru Medical College, Aligarh. The study period was one year (from July 2021 to August 2022)

The sample size was calculated based on a similar study conducted previously in Kanpur, Uttar Pradesh[8]which reported, the prevalence of RTI as **26.56**%. With an allowable error of 5%, sample size was calculated to be 300. Adding 10% of non-response rate, and then rounding off, final sample size (N) was 330.

Registered household in the field practice areaswas the sampling frame andmarried reproductive age female (18-49years) were the sampling unit. Currently married females were included and pregnant women were excluded.

Simple random sampling with Probability Proportionate to Size (PPS) was used to draw the sample size from registered households.

Selected households were visited and interviewed. Nature of the study was explained and informed consent was taken. A predesigned, semi-structured and pre-tested questionnaire was used. Socio-economic status (SES) was calculated using Modified BG Prasad Classification 2022.[9]Diagnosis of RTI was made on the basis of Syndromic Approach using signs and symptoms.

The statistical package for social sciences (IBM SPSS Inc. An IBM Company, Chicago IL, USA) version 26.0 was used to enter and analysis the data. Chi-Square was applied to study association of qualitative variables with RTI.

Results and Discussion

The current study was conducted in the rural and semi urban field practice areas of Department of Community Medicine Aligarh and included a total of 330 subjects.

Table 1: Distribution of study population according to Socio demographic factors (N=330)

Characteristics	Value	TOTAL [n(%)]
Age	25 years or less	86 (26.0)
	26-30	74 (22.5)
	31-35	56 (17.0)
	36-40	71 (21.5)
	41 or more	43 (13.0)
Religion	Hindu	184 (55.7)
	Muslim	146 (44.3)
Type of family	Nuclear	231 (70.0)
	Joint	99 (30.0)
Social class (By Modified B G Prasad classification)	I	12 (3.7)
	II	35 (10.7)
	III	72 (21.8)
	IV	124 (37.5)
	V	87 (26.3)

Table 2: Distribution of study population according to obstetric factors

		TOTAL [n(%)]
Age at the time of marriage	20 or less	269 (81.5)
	21-25	54 (16.4)
	26-30	07 (2.1)
Duration of marriage (years)	<5	67 (20.3)
	5-10	69 (21.0)
	11-15	63 (19.0)
	>15	131 (39.7)
Parity	0	21 (06)
	1-2	121 (36.6)
	3-4	150 (45.4)
	>5	38 (12)
H/O abortion	1. Yes	149 (45.1)
	2. No	181 (54.9)
Place of delivery	1.Institutional	263 (79.7)
	2.Home	46 (14.0)
	3. NA*	21 (6.3)
Mode of delivery	1.Normal	267 (81.0)
	2. Caesarian	42 (12.7)
	3. NA*	21 (6.3)

*Participants who were not pregnant at the time of study and never delivered before

Table 3: Association of RTI with socio-demographic factors

Characteristic	RTI		Total	
	Present (n(%))	Absent (n(%))	(n(%))	
Age				
25 or less	13 (15.1)	73 (84.9)	86 (100)	*$\chi 2$=9.347* ***p= 0.025***
26-35	35 (26.9)	95 (73.1)	130 (100)	
36-45	12 (12.0)	88 (88.0)	97 (100)	
46 or more	3 (21.4)	11 (78.6)	14 (100)	
Total	63 (19.1)	267 (80.9)	330 (100)	
Religion				
Hindu	42 (22.8)	142 (77.2)	184 (100)	*$\chi 2$= .756;; p= 0.053*
Muslim	21 (14.4)	125 (85.6)	146 (100)	
Total	63 (19.1)	267 (80.9)	330 (100)	
Type of family				*$\chi 2$= 7.736;* ***p= 0.005***
Nuclear	35 (15.2)	196 (84.8)	231 (100)	
Joint	28 (28.3)	71 (71.7)	99 (100)	
Total	63 (19.1)	267 (80.9)	330 (100)	

Continue.....

Social class				
I	0(0.0)	12 (3.6)	12 (100)	
II	06 (17.1)	29 (82.9)	35 (100)	*χ2= 7.264;*
III	19 (26.4)	53 (73.6)	72 (100)	*p= 0.123*
IV	26 (21.0)	98 (79.0)	124 (100)	
V	12 (13.8)	75 (86.2)	87 (100)	
Total	63 (19.1)	267 (80.9)	330 (100)	

Table 4. Association of RTI with place and mode of delivery

Place of delivery (N=309)				
Institutional	53 (20.2)	210 (79.8)	263 (100)	*χ2= 2.213; p= 0.137*
Home	05 (10.9)	41 (89.1)	46 (100)	
TOTAL	58 (18.8)	251 (81.2)	309 (100)	
Mode of delivery (N=309)				
Normal	52 (19.5)	215 (80.5)	267 (100)	*χ2= 0.641; p= 0.423*
Caesarean	06 (14.3)	36 (85.7)	42 (100)	
TOTAL	58 (18.8)	251 (85.7)	309 (100)	

Table 5. Association of RTI with history of abortion

History of Abortion	**RTI Present [n (%)]**	**RTI Absent [n (%)]**	**Total [n (%)]**	
Yes	31 (20.8)	118 (79.2)	149 (100)	*χ2=.517; p= 0.478*
No	32 (17.7)	149 (82.3)	181 (100)	
TOTAL	63 (19.1)	267 (80.9)	330 (100)	

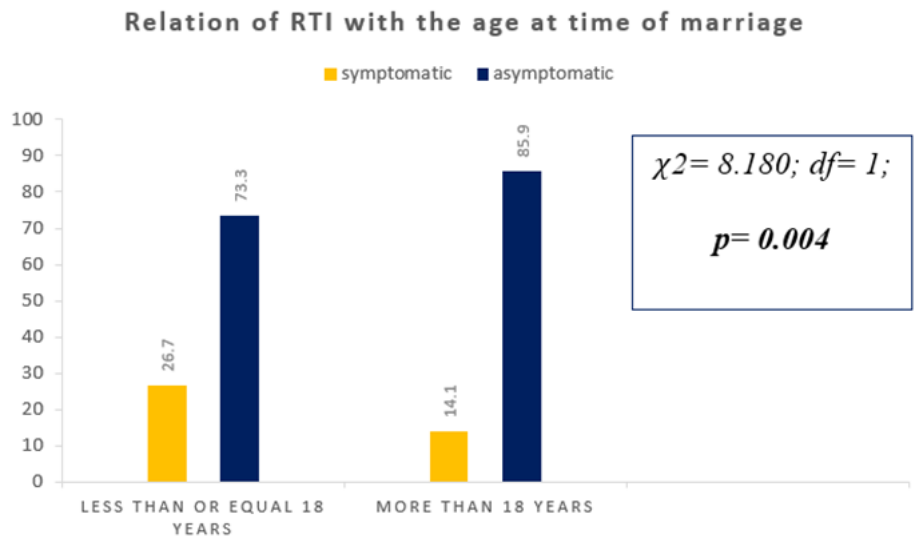

Figure 1. Association of RTI with age at the time of marriage

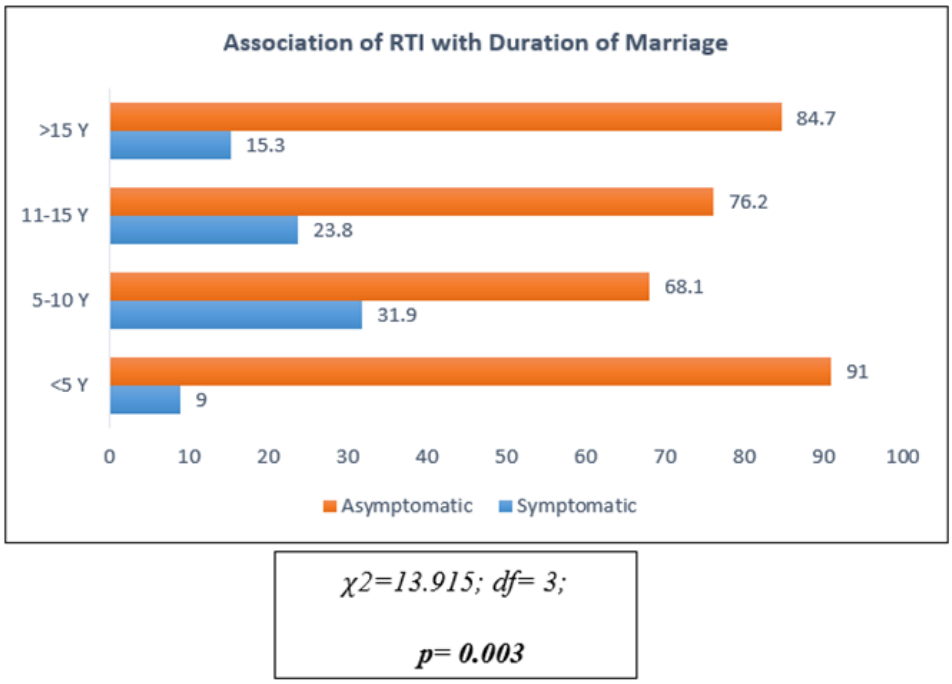

Figure 2. Association of RTI with duration of marriage

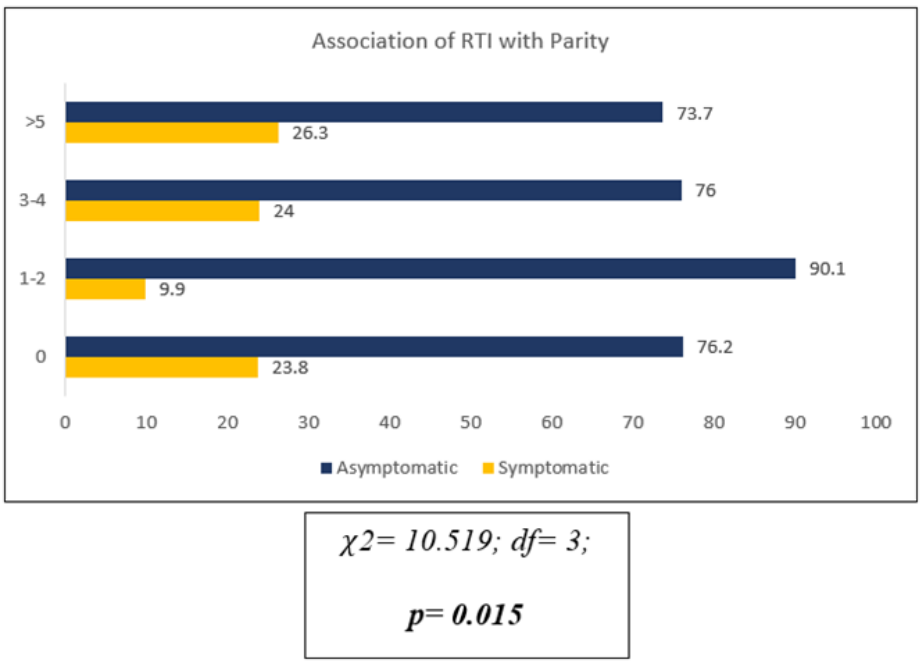

Figure 3. Association of RTI with parity

The mean age of the study participants was 32.14 ± 7.56 years (range 18-49 years). Majority (26.0%) of the participants belonged to 25 years or less, followed by respondents in the 26-30 years age group (22.5%) and 36–40year age group (21.5%). 17.0% of the participants were in 31-35 age group followed by above 41 years of age (13.0 %). (Table-1)

About one-fourth (19.1%) of the study participants were symptomatic for RTI and 80.9% of the respondents were not suffering at the time of study.

Similar prevalence was reported by different studies from India and its adjacent countries.[10,11,12,13]

Some studies have shown a higher prevalence[4,14] whereas few showed low prevalence of RTI.[6,15]

These variations may be attributed to various factors such as educational status, health services available in respective study areas, awareness and healthseeking behaviour of the study population.

Women who were married at or before 18 years of age reported symptoms of RTI more (26.7%, 35 out of 131) than women who married at the age more than 18 years (14.1%, 28 out of 199), (p=0.004). This may be due to girls who marry at a young age often have limited access to education and healthcare, which can lead to a lack of awareness about sexual and reproductive health. This lack of knowledge can lead to unsafe sexual practices, which increase the risk of STIs.

80.3% women who got married at less than 18years of age reported symptoms of RTI, as compared to 19.6% of women who got married later (p<0.05).[16]

27.3% women who were married less than 19 years of age reported symptoms of RTI as compared to 20.0% in higher categories, (p<0.127).[17]

Around one-third (31.9%,22 out of 69) of the symptomatic women were lying in the group where they had been married for 5-10 years as compared to those who are married for less than 5 years (9.0%, 06 out of 67), (p=0.003). The reason may be due to the child bearing age period where people are more likely to engage in sexual behaviour to increase their family without using any barrier contraceptive which can predispose to RTI.

In our study, the prevalence of RTIs was significantly higher in grand multi para (26.3%, 10 out of 38) followed by women who were having parity of 3-4 (24.0%, 36 out of 150) as compared to those who were nulliparous (23.8%, 05 out of 21) (p=0.015). This might be due to women who have given birth are more likely to have changes in their reproductive tract that make them more susceptible to infections. More the number of births, more the exposure to pathogens.

Similar observation was reported in a study conducted in China[18].Another study shows direct association with parity. (p=0.48).[12]In contrast to our study, nulliparous women had higher proportion as compared to those who had more than 3 parity. (p=0.523).[13]

In our study it was found that women who gave birth in any healthcare facility was found to be more symptomatic (20.2%) as compared to those women who gave birth athome (10.9%) (p=0.137). This may be due to poor infection control practices, inadequate sterilization of equipment, or exposure to other infected patients.

Higher prevalence of RTI was reported in home deliveries as compared to institutional delivery. (p=0.155).[19]

As in table 4, it is shown that higher percentage of women who went under normal deliveries (20.2%) had symptoms of RTI as compared to women had caesarean (14.3%) (p=0.423). This might be due to the fact that women who undergo vaginal delivery are exposed to multiple interventions such as P/S, P/V and instrumentation for prolonged time through active labour, are at higher risk of developing infections such as bacterial vaginosis, candidiasis, compared to women who have a caesarean delivery.

In our study, the prevalence of RTI was higher in women who had the history of abortion (20.8%) as compared to those who had no history of abortion (17.7%). (p=0.478) (table 5). It might be due to the instrumentations/examinations and due to these, there are more chances of disruption of mechanical barrier present at cervix, which makes it prone to infection.

Higher proportion of women who had the history abortion had RTI (66.7%) as compared those who did not have history of infection (p=0.565).[3]

Women who had the history abortion had high proportion (35.0%) RTI as compared those who did not have history of abortion (21.2%) (p=0.023).[17]

Conclusions

- This study concludes that almost two out of ten females are affected by RTI.
- The proportion of symptomatic RTI were significantly higher in the age group 26-35 years and those who had been married for 5-10 years, were living in joint family

and belonged to socio-economic class III. A significant association was found between education of female and education of husband, with an inverse relationship i.e., as the educational status improves, the proportion of RTI decreases.

- The proportion of symptomatic RTI was higher in those with lesser age at the time of marriage, grand multi para, women who had history of abortion and vaginal deliveries.

Recommendations

- Female should be told the importance of taking timely treatment for early diagnosis and prevention of further occurrence of RTI.

Educational status of both female and partner is of paramount importance in control of RTI in community.

Limitations of the Study

- Patients were diagnosed using Syndromic approach; therefore, we might have missed asymptomatic patient.

Ethical clearance: Taken from Institutional Ethics Committee, JN Medical College, Aligarh . Ref number: IECJNMC/511.

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Conflict of interest: None

References

1. Wasserheit, J.N.; Holmes, K.K. Reproductive Tract Infections: Global Impact and Priorities for Women's Reproductive Health; Plenum Press: New York, NY, USA, 1992
2. Sexually transmitted infections (STIs), WHO, 2022. Available from: https://www.who.int/news-room/fact-sheets/detail/sexually-transmitted-infections-(stis) [Accessed on 12 Dec 2022]
3. Kafle P, Bhattarai SS. Prevalence and factors associated with reproductive tract infections in gongolia village, Rupandehi district, Nepal. Advances in Public Health. 2016 Jan 1;2016.
4. Balakrishnan S, Carolin A, Balasubramanian S, Shivasakthimani R, Sudharsan B. The Prevalence of Reproductive Tract Infections Based on the Syndromic Management Appro¶ach Among Ever-Married Rural Women in Kancheepuram District, Tamil Nadu: A Community-Based Cross-Sectional Study. Cureus Journal of Medical Science. 2022 Mar 19;14(3).
5. Kumari S, Mehnaz S, Ansari MA, Abedi AJ. Determinants of Reproductive Tract Infection among married women in rural and periurban areas of Aligarh: A cross sectional Study. Indian Journal of Community Health. 2022 Sep 1;34(3).
6. Kinkor MA, Padhi BK, Panigrahi P, Baker KK. Frequency and determinants of health care utilization for symptomatic reproductive tract infections in rural Indian women: A cross-sectional study. Plos one. 2019 Dec 5;14(12):e0225687.
7. Thekdi Komal P, Mehta Prakash I, ThekdiPukur I, Kartha Girija P. Fertility Profile, Anxiety, Depression of Married Women and Its Association with Reproductive Tract Infections in the Rural Area of Surendranagar District. Sch. J. App. Med. Sci., 2014; 2(1A):104-108
8. Kumar A, Nigam S, Sharma R, Martoliya D. A Study On Prevalence Of Reproductive Tract Infection Sexually Transmitted Infections And Its Determinants In Adult Population Of Kanpur Nagar.IJMPS.2018;8(3):1-8.
9. Pentapati SS, Debnath DJ. Updated BG Prasad's classification for the year 2022. Journal of Family Medicine and Primary Care. 2023 Jan 1;12(1):189-90.
10. Shakya S, Thingulstad S, Syversen U, Nordbø SA, Madhup S, Vaidya K, Karmacharya BM, Åsvold BO, Afset JE. Prevalence of sexually transmitted infections among married women in rural Nepal. Infectious diseases in obstetrics and gynecology. 2018 Aug 26;2018.
11. Durai V, Varadharajan S, Muthuthandavan AR. Reproductive tract infections in rural India–A population-based study. Journal of family medicine and primary care. 2019 Nov;8(11):3578.
12. Sharma D, Goel NK, Thakare MM. Prevalence of reproductive tract infection symptoms and treatment-seeking behavior among women: A community-based study. Indian J Sex Transm Dis AIDS. 2018 Jul-Dec;39(2):79-83. doi: 10.4103/ijstd.IJSTD_97_16. PMID: 30623176; PMCID: PMC6298149.
13. Ratnaprabha GK, Thimmaiah S, Johnson AR, Ramesh N. Prevalence and awareness of reproductive tract infections among women in select under privileged areas of Bangalore city. Int J Med Sci Public Health. 2015 Dec 1;4(12):1691-96.

14. Rani V, Dixit AM, Kumar S, Singh NP, Jain PK, Peeyush K. Reproductive morbidity profile among ever married women (15-44) years of rural Etawah District, Uttar Pradesh: A cross-sectional study. National Journal of Community Medicine. 2016 Jan 31;7(01):35-40.

15. Bhasin S, Shukla A, Desai S. Services for women's sexual and reproductive health in India: an analysis of treatment-seeking for symptoms of reproductive tract infections in a nationally representative survey. BMC Women's Health. 2020 Dec;20(1):1-1.

16. Edward S. A Study on Prevalence of Reproductive Tract Infections among Married Women in a Rural Area of Kanchipuram Tamilnadu. National Journal of Community Medicine. 2021 Sep 30;12(09):296-301.

17. Sahana P, Annie IK, John WFA. Prevalence of reproductive tract infections among ever married women of age 18 to 49 years in a rural area of Cuddalore district, Tamil Nadu. Int J Reprod Contracept ObstetGynecol2022;11:3012-7.

18. Liu J, Zeng M, Yang L, Mao Y, He Y, Li M, Chen Q, Zhou W, Chen L, Zhu Q. Prevalence of reproductive tract infections among women preparing to conceive in Chongqing, China: trends and risk factors. Reprod Health. 2022 Oct 3;19(1):197. doi: 10.1186/s12978-022-01502-x. PMID: 36192676; PMCID: PMC9531418.

19. Philip PS, Benjamin Al, Sengupta P. Prevalence of symptoms suggestive of reproductive tract infections/ sexually transmitted infections in women in an urban area of Ludhiana. Indian Journal of Sexually Transmitted Diseases and AIDS 2013;34(2):83.