Original Article

# A clinico-demographic study of reproductive tract infections at tertiary health care center

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## Abstract

**Introduction:** the maximum cases of Bacterial vaginosis, Trichomonasvaginalis and Candidiasis were in the age group of 20-29 yrs. and least in the age group of ≤ 19 yrs. As parity increases, the no. of cases of each one become less and most of the cases were having parity 1 to 2. **Aims and Objectives:** To Study Clinico -Demographic profile of patients with Reproductive Tract Infections at tertiary Health care center. **Methodology:** Patients attending tertiary health care center with complaint of abnormal vaginal discharge of age group 15 to 40 years were selected for the study. This study was conducted at tertiary health care centre from January 2009 to September 2010. During the study period the total number of gynaec O.P.D attendees were 19,270. Presuming the equal distribution of cases on all days the no. of attendees (symptomatic and asymptomatic) with findings of RTI were 6,423. Data presented in tables and in percentages. **Result:** Vaginal discharge was the commonest complaint among the study group. Prevalence increased with increase in Parity. RTI was more among the Muslims. Prevalence was higher among non-working women. Prevalence of RTI cases was higher in Illiterate. The prevalence of RTI was highest in non-users of Contraceptives (41.26%) as compared to other groups; it was lowest in the women who were dependent on their spouse for the use of condom as a contraceptive. Out of 64 cases of Bacterial vaginosis, 43.75% complained of vaginal discharge, 37.5% complained of pain in abdomen, 15.62% patients complained of backache, 20.31% complained of itching at genital area, 23.43% complained of increased frequency of micturation and 10.93% complained of dyspareunia. Among 40 cases of Trichomonasvaginalis, vaginal discharge was present in 40% cases, pain in abdomen in 20%, backache in 22.5%, Itching in 45%, increased frequency of micturation in 27.5%, dyspareunia in 12.5% of cases. Among 36 cases of Candidiasis vaginal discharge was present in 59.45% cases, backache in 37.83%, pain in abdomen in 40.54%, itching at genital area in 51.35%, increased frequency of micturition in 29.72 % and dyspareunia in 24.32%. **Conclusion:** It can beconcluded from study that Majority of cases with suggestive symptoms of RTI were in the age group of 20-29 years, asymptomatic cases were highest in the parity group > 4. Prevalence of RTI cases was high among Muslims nonworking (housewife), in illiterate and in non-users of contraceptives.In the study population cases were having multiple symptoms of which in overall vaginal discharge was the most common complaint.

**Keywords:** Reproductive Tract Infections, Trichomonasvaginalis, Bacterial vaginosis, Candidiasis.

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## INTRODUCTION

Vaginal discharge is one of the main complaints of the patients attending gynaecology O.P.D. The term 'Leucorrhoea' should be used to denote the normal vaginal secretions that are increased in amount. An increase in the normal vaginal secretions develops physiologically at puberty, during pregnancy and at ovulation. An abnormal vaginal discharge causes much more morbidity in the form of physical discomfort and psychological distress. So it is necessary to diagnose & treat it. The normal vaginal flora is mostly aerobic but also contains anaerobic bacteria. Several factors influence

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the vaginal flora including Age, $P^H$, Sexual activity, Phase of menstrual cycle, Use of antibiotics & Any Invasive Procedure. The most frequent aerobic bacteria are Lactobacillus, Gardnerellavaginalis, Staphylococcus, E. coli. Anaerobes include Peptostreptococci, Peptococci, Prevotella etc. $P^H$ of the normal vagina is 4.5, which is maintained by the production of lactic acid. An alteration in the normal vaginal flora is an important factor predisposing for vaginal infection. Any vaginal discharge that is frankly purulent & contains pus cells should be considered due to specific vaginal infection. Symptoms such as vaginal discharge, itching, irritation are common reasons for consulting the general practitioner. Sexually transmitted infections (STIs) are the infections caused by germs such as bacteria, viruses or protozoa that are passed from one person to another mainly through sexual contact. STIs are a part of a broader group of infections known as reproductive tract infections (RTIs) that includes all the infections of the reproductive tract, including those not caused by sexual contact. The term ''STD'' denotes the full-blown disease but does not represent ''asymptomatic infections''. STI is a better description as it includes all infections, both symptomatic and asymptomatic. Reproductive tract infections (RTIs), including both sexually transmitted infections (STIs) and non-sexually transmitted infections (non-STIs) of the reproductive tract are responsible for major ill-health throughout the world.[1] World Health Organization estimates that each year there are over 340 million new cases of sexually transmitted infections in which 75–85% occur in developing countries. In India alone, 40 million new cases emerge each year.[2] A majorities of women continue to suffer from RTIs leading to complications like pelvic inflammatory disease (PID), infertility, cervical cancer, postabortal, and puerperal sepsis, chronic pelvic pain, and ectopic pregnancy. RTIs in many cases are asymptomatic among women, making their detection and diagnosis difficult.[3] Reproductive tract infections (RTIs) including sexually transmitted infections (STIs) are recognized as public health problem and rank second as the cause of healthy life lost among women of reproductive age after maternal morbidity and mortality in developing countries. Emerging epidemics of Acquired immunodeficiency syndrome (AIDS) and identification of STIs as a co-factor in its acquisition have made the control of these infections, one of the strategies imperative to decrease the transmission of HIV/AIDS. World over 340 million people are affected by STIs, out of which 30 million reside in India[4].

## MATERIALS AND METHODS

Patients attending tertiary health care center with complaint of abnormal vaginal discharge of age group 15 to 40 years were selected for the study. While Patients who are menstruating, on any antibiotics or vaginal medication during period of 7 days, Patients who are having genital malignancy or fibroid uterus were excluded from the study. This study was conducted at tertiary health care centre from January 2009 to September 2010. During the study period the total number of gynaec O.P.D attendees was 19,270.However the number of cases in the study group was examined by only one person and hence the percentage related to symptomatology cannot be treated as accurate. Presuming the equal distribution of cases on all days the no. of attendees (symptomatic & asymptomatic) with findings of RTI were 6,423. A detail history with special reference to dysuria, vaginal discharge, pelvic pain and menstrual irregularities were noted. General, physical and local examination of the genitalia was carried out and clinical diagnosis was kept. Necessary tests, vaginal swabs were sent for routine, microscopic examination and also for the culture & sensitivity testing to the department of microbiology.

## RESULT

**Table 1:** Age wise distribution of cases

| Age group (Yrs) | Bacterial Vaginosis 64 | Trichomonas Vaginalis 40 | Candidiasis 37 |
|---|---|---|---|
| ≤ 19 | 5 (8) | 1 (1) | 2 (5) |
| 20-29 | 46 (72) | 28 (71) | 21 (57) |
| ≥ 30 | 13 (20) | 11 28) | 14 38) |

(Figures in line parenthesis show percentages.)

The present study was done in the age group of 15 to 40 yrs. Above table shows the age wise distribution of clinically diagnosed cases. Total no. of cases of Bacterial vaginosis in the age group ≤ 19 yrs were 5 (8%), in the age group between 20-29 were 46 (72%) and above 30 yrs were 13 (20%). Of Trichomonasvaginalis, in the age group ≤ 19 yrs total cases were 1 (1%), in the age group between 20-29 yrs were 28 (71%) and above 30 yrs were 11 (28%), while that of Candidiasis in the age group ≤ 19 yrs total cases were 2 (5%), in the age group between 20-29 yrs were 21 (57%) and above 30 yrs were 14 (38%). It was observed that the maximum cases of Bacterial vaginosis, Trichomonasvaginalis and Candidiasis were in the age group of 20-29 yrs and least in the age group of ≤ 19 yrs.

**Table 2:** Parity wise distribution of cases

| Parity | Bacterial Vaginosis 64 | Trichomonas Vaginalis 40 | Candidiasis 37 |
|---|---|---|---|
| Nulliparous | 16(25) | 14(35) | 12(32.43) |
| 1-2 | 24(37.5) | 20(50) | 16(43.24) |
| 3-4 | 15(23.43) | 5(12.5) | 5(13.5) |
| > 4 | 9(14) | 1(2.5) | 4(10.81) |

(Figures in line parenthesis show percentages)

Above table shows parity wise distribution of cases of Bacterial vaginosis. Out of 64 cases of Bacterial Vaginosis nulliparous cases were 16 (25%), 24 (37.5%) cases were having parity of 1-2, 15 (23.43%) cases were having parity of 3-4 and 9 (14%) cases were having parity of >4. In case of Trichomonas Vaginalis, the no. of nulliparous cases were 14 (35%), 20 (50%) cases were having with parity of 1-2, 5 (12.5%) cases were having parity of 3-4 and 1 (2.5%) cases were having parity of >4. Out of 37 cases of Candidiasis the no. of nulliparous cases were 12 (32.43%), 16 (43.24%) cases were with parity of 1-2, 5 (13.5%) cases were having parity of 3-4 and 4 (10.81%) cases were with parity of >4. This shows that as parity increases the no. of cases of each one become less and most of the cases were having parity 1 to 2.

**Table 3:** Symptom wise distribution of cases

| Symptom | No. of Cases | Percentages (%) |
|---|---|---|
| Vaginal Discharge | 89 | 44.5 |
| Pain in Abdomen | 67 | 33.5 |
| Backache | 54 | 27 |
| Itching | 76 | 38 |
| Increased Frequency of Micturation | 53 | 26.5 |
| Dyspareunia | 30 | 15 |

Above table shows that out of 200 cases examined 89 (44.5%) patients complained of foul smelling vaginal discharge, 67 (33.5%) complained of pain in abdomen, 54 (27%) of backache, 76 (38%) of itching, 53 (26.5%) of Increased frequency of micturation and 30 (15%) complained of dyspareunia. Therefore it appears that vaginal discharge was the commonest complaint among the study group.

**Table 4:** Distribution of cases according to religion and suggestive findings of RTI

| Religion | Total No. of cases 200 | No. of patients | |
|---|---|---|---|
| | | Symptomatic 141(70.5) | Asymptomatic 59(29.5) |
| Hindu | 125 (62.5) | 92 (74.64) | 33 (26.4) |
| Muslim | 75 (37.5) | 49 60.34) | 26 (34.66) |

(Figures in line parenthesis show percentages.)

Out of 200 cases 125 (62.5%) cases were Hindus; out of which 74.64% cases were symptomatic and 26.4% were asymptomatic, while 75 (60.34%) were Muslims; out of which 60.34% were symptomatic and 34.66% were asymptomatic.

**Table 5:** Distribution of cases according to occupation and suggestive findings of RTI

| Occupation | Total No. of cases 200 | No. of patients | |
|---|---|---|---|
| | | Symptomatic 141 (70.5) | Asymptomatic 59(29.5) |
| Housewives | 139 (69.5) | 91 (65.46) | 48(34.54) |
| Working women | 61 (30.5) | 50 (29.50) | 11(18.03) |

(Figures in line parenthesis show percentages.)

Out of 200 cases 39 (69.5%) were housewives; out of which 65.46% were symptomatic and 34.54%% were asymptomatic, while 61(30.5%) were working women; out of which 50(29.50%) were showing symptoms of RTI and 11(18.03%) were asymptomatic.

**Table 6:** Distribution of cases according to literacy and suggestive symptoms of RTI

| Literacy | Total No. of cases 200 | No. of patients | |
|---|---|---|---|
| | | Symptomatic 141(70.5) | Asymptomatic 59(29.5) |
| illiterate | 96 (48) | 86 (90.90) | 10 (10.4) |
| Literate | 104 (52) | 55 52.88) | 49 (47.2) |

(Figures in line parenthesis show percentages.)

Out of 200 cases 96 (48%) were illiterate; out of which 86 (90.90%) were symptomatic for RTI and 10 (10.4%) were asymptomatic, while 104 (52%) cases were literate; out of which 55 (52.88%) were symptomatic and 49 (37.24%) were asymptomatic.

**Table 7: Distribution of cases according to contraceptive used and suggestive findings of RTI**

| Contraception | Total No. of cases 200 | No. of patients | |
|---|---|---|---|
| | | Symptomatic 141(70.5) | Asymptomatic 59(29.5) |
| IUD | 4 (2) | 0 | 4(100) |
| Hormonal | 12 (6) | 1 (8.33) | 11(91.67) |
| Tubectomy | 88 (44) | 76 (86.36) | 12(13.64) |
| Male condom | 30 (15) | 4 (13.33) | 26(86.67) |
| Non-users | 66 (33) | 60(90.90) | 06(9.1) |

(Figures in line parenthesis show percentages.)

Above table shows the current contraceptive practice in the study group. Out of 200 cases, 4 (2%) were IUD users, 12(6%) were hormonal pill users, 88(44%) had already undergone tubectomy and around 13.33% cases were dependant on their spouse for use of male condom as a contraceptive. None of the IUD users was found to be symptomatic, but among the hormonal pill users > 91% were asymptomatic. Those who resorted to permanent contraception almost 85% were symptomatic. Amongst the non-users the figure of symptomatic presentation was maximum almost 90%, while amongst those cases were dependent on their spouse for use of male condom as a contraceptive; the no. of symptomatic cases was around 14%.

**Table 8:** Symptom wise distribution of cases with respect to clinical diagnosis

| Symptom | Bacterial Vaginosis | TrichomonasVaginalis | Candidiasis |
|---|---|---|---|
| Vaginal Discharge | 28 (43.75) | 16 (40) | 22 (59.75) |
| Pain in Abdomen | 24 (37.5) | 08 (20) | 15 (90.54) |
| Backache | 10 (15.62) | 09 (22.5) | 14 (37.83) |
| Itching | 13 (20.31) | 18 (45) | 19 (51.35) |
| Increased Frequency of Micturation | 15 (23.43) | 11 (27.5) | 11 (29.72) |
| Dyspareunia | 07 (10.93) | 05(12.5) | 09(24.32) |

(Figures in line parenthesis show percentages.)

Above table shows that out of 64 cases of Bacterial vaginosis, 43.75% complained of vaginal discharge, 37.5% complained of pain in abdomen, 15.62% patients complained of backache, 20.31% complained of itching at genital area, 23.43% complained of increased frequency of micturation and 10.93% complained of dyspareunia. Among 40 cases of Trichomonasvaginalis, vaginal discharge was present in 40% cases, pain in abdomen in 20%, backache in 22.5%, Itching in 45%, increased frequency of micturation in 27.5%, dyspareunia in 12.5% of cases. Among 36 cases of Candidiasis vaginal discharge was present in 59.45% cases, backache in 37.83%, pain in abdomen in 40.54%, itching at genital area in 51.35%, increased frequency of micturation in 29.72 % and dyspareunia in 24.32%.

## DISCUSSION

**Prevalence of RTI:** Prevalence of RTI in our study is high than most of the other studies but less than the study of Aggarwal AK *et al*[9].

| Studies | Prevalence (%) |
|---|---|
| K.M. Bansal *et al*[5] | 40.50 |
| SC Panda *et al*[6] | 39.2 |
| Bhawana Pant *et al*[7] | 35 |
| DeokiNandan *et al*[8] | 35.2 |
| Aggarwal AK *et al*[9] | 70 |
| Present study | 63 |

As per the Different pathogens the prevalence was: The prevalence of Bacterial Vaginosis (32%) in our study is comparable to that in study done by Raya Gulati *et al*[11] (31%) and Oladele Teslim Ojuromi *et al*[13] (34%) while it is more than study of Linda French *et al*[12] (21%) and Philippon *et al*[14] (24%) but less than the study done by Danial V Landers *et al*[10] (46%). Prevalence of Trichomonasvaginalis (11%) in the present study is comparable to study of Ray Gulati *et al*[11,] while it is less than most of other studies. Prevalence of candidiasis was comparable to Study by Danial V Landers *et al*[10] and Oladele Teslim Ojuromi *et al*[13], while it was less than most of other studies. This difference among prevalence of infections over the world may be due to difference in geographic and socio-demographic factors. Knowing the approximate prevalence of different infections in their own setting may be helpful for physicians who have no laboratory facility.

| Infection | Danial V Landers *et al*[10] | Linda French *et al*[12] | Ray A Gulati A.K. *et al*[11] | OladeleTeslimOjuromi *et al*[13] | Philippon *et al*[14] | Present Study |
|---|---|---|---|---|---|---|
| Bacterial Vaginosis | 46 % | 21 % | 31 % | 34 % | 24 % | 32 % |
| Trichomona sVaginalis | 29 % | 8 % | 11 % | 30 % | 14 % | 11 % |
| Candidiasis | 12 % | 27 % | 30 % | 11 % | 20 % | 13.5% |

**Age Groups:** Present study shows that the prevalence of RTI in age group ≤ 19 years and > 30 years is comparable to other studies, however the maximum prevalence was found in the age group of 21-29 years (56.44%) as that of other studies showing a relation with period of high fertility as well as it may be attributed to higher proportion of married people in the younger age which is sexually the most active age group.

| Age Group (years) | K.M. Bansal *et al*[5] 200 | DasguptaAprajita *et al*[15] 210 | Bhawana Pant *et al*[7] 600 | Present Study 126 |
|---|---|---|---|---|
| ≤ 19 | 57 (38.2) | 68 (32) | 219 (36.5) | 35 (27.6) |
| 20- 29 | 77 (51.52) | 110 (52.43) | 276 (46.0) | 71 (56.44) |
| ≥ 30 | 45 (30.5) | 32 (15.23) | 105 (17.5) | 20 16.00) |

**Parity:** The prevalence of cases in nulliparous group in the present study is more than the other two studies, while for parity 3 - 4 and parity >4 it was less. These findings are comparable with S C Panda *et al*[6]DeokiNandan *et al*[8]

**Religion:** The prevalence of cases of RTI in Muslims is almost comparable to other studies; however the prevalence of RTI cases in Muslims is higher as compared to Hindus this is comparable with K.M. Bansal[5]who found 200in Hindu 92 (46) Muslim108 (54) and by Dasgupta *et al*[14] [it] was 210; 84 (40) and 126 (60)and in Present Study126; 53 (42)and 73 (58) respectively in Hindu and Muslims.

**Occupation:** Almost > 60% cases of RTI were housewives, which is higher than the working women. The prevalence of RTI cases was observed to be much less among the working women than their nonworking (housewife) counterparts (30% vs.70%). This is because of their contribution to the family income, thereby empowering them to get involved in the decision making process in the family (e.g. use of condom, use of sanitary napkins, use of soap and water etc). This along with their higher literacy, better knowledge regarding menstrual hygiene, better and timely utilization of health care etc. go a long way in the maintenance of a better health status. These findings are comparable with Dasgupta *et al*[14] (210) who found in Housewives134 (64) and Working women76 (36) Kantida *et al*[16](217) 143 (66)and 74 (34)and Present Study **(**126**)** 88 (70)and 38 (30) respectively in Housewives Working women.

**Literacy:** In the present study prevalence of RTI cases was found to be higher in illiterate (63.63%) as compared to literate (36.37%). This is a general phenomenon among the populations of Asia, including India. Substandard hygiene, low socio-economic status, promiscuity and traditional taboos against openness about these diseases are the usual factors responsible for this high prevalence of RTI in illiterates. This is comparable with K.M. Bansal *et al*[5]Dasgupta *et al*[15.]

**Contraceptive Used:** Prevalence of RTI according to the contraceptive practice in the present study population. The prevalence of RTI with contraceptive practice is different in various studies. The prevalence of RTI was highest in non-users (41.26%) as compared to other groups, which is comparable to other studies which also show high prevalence in non-users. It was lowest in the women who were dependent on their spouse for the use of condom as a contraceptive. These results of the study corroborate the universal fact that the use of condom during sexual intercourse prevents RTI.

| Contraception | K.M. Bansal *et al*[5] 200 | Dasgupta *et al*[15] 210 | Present Study 126 |
|---|---|---|---|
| IUD | 30 (15) | 25 (12) | 04 (3.17) |
| Hormonal | 7 (3.5) | 10 (5) | 09 (7.14) |
| Tubectomy | 80 (40) | 39 (17) | 54 (43.65) |
| Male condom | 15 (7.5) | 23 (11) | 6 (4.76) |
| Non-users | 68 (34) | 113 (55) | 52 (41.26) |

**Symptom:** The frequency of the symptoms with which cases presented. Cases presented with multiple complaints. There is variation in the frequency of the presenting symptoms of patients in our study group and other studies; however the most common symptom was vaginal discharge (44.5%) which is comparable to other studies, which also shows that it was the most common complaint. These findings are comparable with the following studies.

| Symptom | Kantida *et al*[16] (%) 217 | DeokiNandan *et al*[8] (%) 600 | Present Study (%) 126 |
|---|---|---|---|
| Vaginal discharge | 79 (36) | 252 (42) | 81 (60) |
| Pain in Abdomen | 53 (24.42) | 120 (20) | 30 (24) |
| Backache | - | 132 (32) | 50 (39) |
| Itching | 42 (19.4) | 90 (15) | 27 (22) |
| Increased frequency of Micturation | - | 120 (20) | 19 (15) |
| Dyspareunia | 33 (15.2) | 60 (10) | 25 (20) |

## CONCLUSION

It can be concluded from study that Majority of cases with suggestive symptoms of RTI were in the age group of 20-29 years & the asymptomatic cases were highest in the parity group > 4. Prevalence of RTI cases was high among Muslims nonworking (housewife), in illiterate and in non-users of contraceptives. In the study population cases were having multiple symptoms of which in overall vaginal discharge was the most common complaint.

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