https://doi.org/10.29309/TPMJ/2026.33.06.10261 www.theprofesional.com

ORIGINAL ARTICLE

# The frequency and determinants of reproductive tract infections in married women of rural areas of Khyber Agency KPK.

Laila Nazir[1], Spogmay Wali Khan[2], Asma Ali[3], Kiran Jehangir[4], Aiman Syed[5], Fatima Zulfiqar[6]

**ABSTRACT… Objective:** To assess the awareness, causal factors and frequency of occurrence of reproductive tract infections among married women of rural areas. **Study Design:** Quantitative Descriptive study. **Setting:** MTI-HMC/KGMC Hayatabad Peshawar. **Period:** April 2025 to July 2025. **Methods:** Married women of reproductive age (16-45 years) were interviewed for their reproductive tract infections. The women were questioned about their symptoms, frequency and knowledge about RTI's. The questionnaire was filled through Google forms. The study used the World Health Organization's (WHO) syndromic approach guideline to collect information on previous RTI symptoms. SPSS software was used for the analysis. **Results:** In about 130 women in rural areas, 58.5% women had been aware of the term Reproductive tract infection while 41.5% women had never heard of it. When asked about their knowledge of information about transmission of RTI's out of 130 only 32.3% women had knowledge regarding it. The study also collected data of their menstrual hygiene in which 72.3% of the women were using reusable cloth. 63.1% of the women were not using contraceptive methods among the population. The major symptoms of RTI that they were facing were vaginal discharge and vaginal itching followed by dysuria and dyspareunia. The frequency of RTI was found to be 56.9% among married women of Khyber agency in which 43.1% percent of the females had a recurrence. **Conclusion:** The frequency of RTI's was very high among rural women of Khyber Agency and the main reason behind it was the lack of awareness, lack of knowledge of its prevention and transmission, low menstrual hygiene status and limited access to healthcare.

**Key words:** Awareness, Menstrual Hygiene, Reproductive Tract Infections, Sexually Transmitted Infections.

**Article Citation:** Nazir L, Khan SW, Ali A, Jehangir K, Syed A, Zulfiqar F. The frequency and determinants of reproductive tract infections in married women of rural areas of Khyber Agency KPK. Professional Med J 2026; 33(06):1047-1052. https://doi.org/10.29309/TPMJ/2026.33.06.10261

## INTRODUCTION

Reproductive tract infection (RTI) is a general terminology used to describe infections that affect the reproductive tract, which includes the organs involved in the process of reproduction, such as the vagina, cervix, uterus, fallopian tubes, and ovaries.[1] Sexual contact, poor hygiene practices, or other means such as contaminated medical equipment or blood transfusions can all transmit these infections. The majority of infections are asymptomatic, making it challenging to detect and diagnose them. When the asymptomatic nature of RTI's is considered, although the laboratory tests are high priced, complex and out of reach to the women who live in underdeveloped countries with low resources, they are the only precise method to diagnose reproductive tract infections when their asymptomatic nature is considered.[2]

Preferably women who undergo menstruation, pregnancy and childbirth are at a higher risk of contracting RTI's.[3] This can be due to a number of circumstances, including poor sanitation, restricted access to healthcare, and cultural practices that limit women's autonomy and power of decision making over their reproductive health, those married women who are living in rural regions are more likely to contract RTI's. RTIs if not treated on time can cause serious consequences to health such as infertility, pelvic inflammatory disease, cervical cancer, chronic pelvic pain, ectopic pregnancies etc.[4]

According to the World Health Organization (WHO), there have been 340 million cases of STIs reported among which 75% to 85% are found in developing countries. They account for the second biggest public health problem. In various parts of the world, RTIs remains primary cause of morbidity and mortality in women.[5]

1. MBBS, FCPS, CHPE, MRCPI (II), Consultant Gynecologist, Health Net Hospital, Peshawar.
2. MBBS, House Officer, Hayatabad Medical Complex.
3. MBBS, Doctor, Khyber Girls Medical College.
4. MBBS, 4th Year Resident Obs&Gyne, Hayatabad Medical Complex.
5. MBBS, 1st Year Resident Obs&Gyne, Hayatabad Medical Complex.
6. BDS, MPH, Assistant Professor Community Medicine, Khyber Girls Medical College.

**Correspondence Address:**
Dr. Kiran Jehangir
Resident Obs&Gyne, Hayatabad Medical Complex.
kiranaamirkhan1@gmail.com

**Article received on:**
20/12/2025
**Date of revision:**
02/01/2026
**Accepted for publication:**
24/02/2026

RTI's are alarmingly high in number in developing countries compared to developed countries. Married women in developing countries are especially vulnerable to a variety of factors including lack of healthcare facilities, insufficient knowledge and awareness about reproductive health issues, and poverty. This limits their ability to seek care.[6]

A systematic evaluation of 22 studies conducted in Africa, Asia, and South America found the range of frequency of reproductive tract infections in the married women, which was from 0.8% up to 86.7%, with a median prevalence of 26.8%. Overall, the burden of RTIs among married women in developing countries is considerable, emphasizing the need for effective intervention.[7] To address the issue in resource-constrained contexts, the WHO developed the "Syndromic Approach" to diagnose RTIs, this is based on symptoms described by the patient and signs observed by the doctor, known as "syndromes" [WHO (2001)]. All conceivable disorders that might cause the specific condition are considered in the proposed therapy.[8]

By undertaking study on the subject, we may add to the body of knowledge about how to improve reproductive health in rural areas, which may also help influence policy and practice in this area. The purpose of this study is to help guide the development of focused interventions to improve the prevention, diagnosis, and management of RTIs in this group.

## OBJECTIVE

This study aims to assess the awareness, causal factors and frequency of occurrence of reproductive tract infections among married women of rural areas.

## METHODS

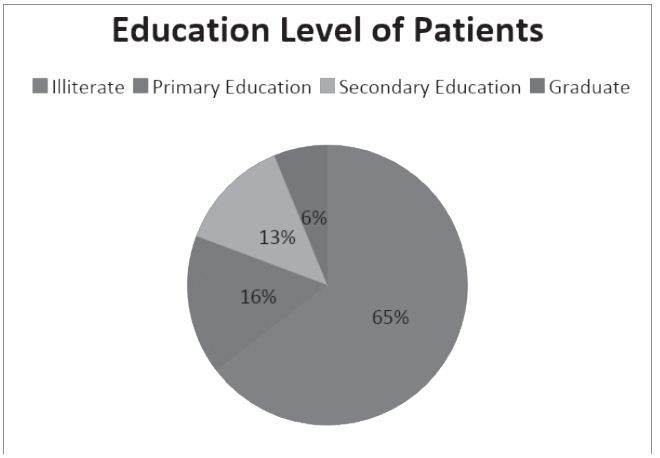
The study is a facility based quantitative descriptive study conducted in a Peshawar, Khyber Pakhtunkhwa Pakistan. The study was conducted for a period of 4 months from April 2025 to July 2025 after approval from ethical committee (No.2550-4) Dated: 20-030-2025. The overall population in the field practice area was 130 sexually active married females of child bearing age. (16-49 years.) Sexually active married women (age 16-49 years) of rural area of Khyber Agency KPK were included. Unmarried women, postmenopausal women and women who were not sexually active were excluded from the study. The Google form online questionnaires were fully explained to sexually active married women (age 18-49 years) of rural area of Khyber Agency KPK and filled out using the interview method. The gathered data were imported into Microsoft Excel, and SPSS software version 2022 was used for statistical analysis.

## RESULTS

Respondent's mean age was 27yrs. Majority of the women had undergone pregnancy more than once in their lifetime. Those who were multipara with more than four children were 35.4% and more than 3 children accounted for 33.1%. However 17.7% had no children at all. The overall literacy status of the subjects was very poor. It is important to highlight that the majority of the population had not attended school at all 84(64.6%) as shown in Figure-1. Furthermore, out of 130 women, only 8 women had attended a minimum of 14 years of schooling.

**FIGURE-1**

**Education level of the patients**




### Frequency and Recurrence

The frequency of reproductive tract infection that was determined using syndromic management approach among the rural women of reproductive age (16-49 yrs) in Khyber Agency was found to be 56.9%. In this, almost half of the population (48.7%) admitted that they had a recurrence of RTI even after taking treatment as mentioned in TABLE-I.

**TABLE-I**

**Frequency of RTI in the last 4 months and their recurrence after treatment.**

| Frequency of RTI's | Frequency (Percentage%) |
|---|---|
| Not once | 56(43.1%) |
| Once in 4 months | 27(20.8%) |
| Twice in 4 months | 10(7.7%) |
| Thrice in 4 months | 11(8.5%) |
| Four times or more in 4 months | 26(20.0%) |

| Recurrence of RTI's after treatment | Percentage (%) |
|---|---|
| Yes | 56(48.7%) |
| No | 59(51.3%) |

Furthermore the patients were asked about their knowledge of transmission and causative factors of RTI, according to Table-II; only 32.3% females had adequate knowledge about it. In this survey, effort was also made to assess the knowledge about the prevention of RTI's, out of them 56.2% believed that regular checkups can be helpful in preventing RTI. 45.4% of the patients also acknowledged that maintaining hygiene of genitalia play an important role in the prevention of RTI.

**TABLE-II**

**Knowledge about prevention of RTI in respondents.**

| Knowledge about factors preventing RTI | Frequency (Percentage %) |
|---|---|
| Maintaining hygiene of genitalia | 59(45.4%) |
| Use of condom during intercourse | 10(7.7%) |
| Regular checkups | 73(56.2%) |
| Getting vaccinated | 8(6.2%) |
| Not enough information about preventing RTI | 36(28.3%) |

### Determinants of RTI

The study also consisted of questions about the status of their menstrual hygiene. Almost all of the patients were using blood absorbent material during their menstrual period. The most common type of material used was ordinary cloth 94(72.3%) followed by sanitary pad 18(13.8%) while 16(12.3%) were using both sanitary and ordinary cloth. We also collected data regarding whether the patients had ever used contraceptives. Large number of patients 63.1% responded that they never used any form of contraceptives. Only a mere 36.9% of the patients acknowledged that they used one or more than one form of contraceptive method to space births. Those who have been on contraception were using condoms in the majority of cases (19.2%). Intrauterine devices were least common among our patients which accounted for only 2.3% of the population. Followed by contraceptive pills (7.7%) and contraceptive injections (10.8%).

### Symptoms Reported and Effects of RTI

Among women who were suffering from RTI, the most common symptoms reported were unusual vaginal discharge (50%) and vaginal itching (50%). Apart from unusual vaginal discharge and vaginal itching, there were also other reproductive morbidities like dysuria with pain in the lower abdomen (44.6%), dyspareunia (14.6%) and genital sores (3.1%). Most of the women reported having more than one symptom. The results of risk factors and complications are displayed in Table-III. We also enquired about their possible trigger of RTI and high number of patients (63.8%) complained that their symptoms of RTIs were most prominent in their pregnancy period followed by when they indulged in sexual intercourse with their partners (31.5%) and poor personal hygiene (17.7%) as mentioned in Table-III.

According to Table-III the most frequent complications due to RTI reported by the patients were physical pain (50.8%) and psychological stress (34.9%). Others reported to have undergone abortions (3.8%), pregnancy complications (15.4%) and stigmatization (2.3%). While 28.5% of the patients had no complications at all.

## DISCUSSION

From our data, the overall percentage of rural married women (aged 16-49 years) who have gotten their RTI at least once in a lifetime was 56.9%. While a study held in India showed that the frequency of RTI among rural women was 49.6 %.[9] in another study by the frequency of RTI was calculated to be 71% in married women of child bearing age.[10] In our study, the higher percentage can be attributed to the factors of low education status, higher sexual activity, low hygiene status, low socioeconomic

status and scarcity of knowledge about RTI's. The frequency of RTI's were found to be higher in high parity women. Regarding their education status, 64.6% of the women were illiterate which is considerably high and the symptoms were more in the illiterate women compared to literate.

**TABLE-III**

**Self-reported Symptoms, Risk Factors and complications of RTI.**

| Self-Reported Symptoms of RTI | Frequency (Percentage %) |
|---|---|
| Unusual vaginal discharge | 65(50%) |
| Vaginal itching | 65(50%) |
| Dyspareunia | 19(14.6%) |
| Dysuria with pain lower abdomen | 58(44.6%) |
| Genital Sores | 4(3.1%) |
| None | 24(18.5%) |

| Risk Factors of RTI | Frequency (Percentage %) |
|---|---|
| Pregnancy | 83(63.8%) |
| Personal hygiene | 23(17.7%) |
| Sexual Intercourse | 41(31.5%) |

| Complications due to RTI | Frequency (Percentage %) |
|---|---|
| Stigmatization | 3(2.3%) |
| Pregnancy Complications | 20(15.4%) |
| Psychological Stress | 45(34.9%) |
| Physical pain/ Stress | 66(50.8%) |
| Abortion/ Miscarriage | 5(3.8%) |
| Not affected | 37(28.5%) |

Through our survey we found out that 58.5% of the respondents were aware of the RTIs. This is considerably higher than the study conducted in Kalapet village in union territory of Puducherry.[11] where only 33% had adequate knowledge regarding RTI's. The results may vary because of the differences in methodology, sample techniques, sample size and plans for data analysis.

In our sample population, the literacy rate was low i.e. 35% which possibly contributes to the lack of awareness regarding symptoms, transmission, prevention and treatment of RTIs.

Our study also demonstrates a correlation between risk factors and reproductive tract infection which includes pregnancy (63.8%), poor personal hygiene (17.7%) and sexual intercourse (31.5%). According to one study among pregnant women in Nghe a province, Vietnam; rate of reproductive tract infection during pregnancy was 36% while other survey among women of Reproductive age in Lagos, Nigeria; toilet (44.6%) was most important risk factor followed by sexual intercourse (44.1%) and poor personal hygiene (24.8%) thereby marking toilet as one of the most important trigger rather than pregnancy, personal hygiene and sexual intercourse intercourse.[11]

Unhygienic menstrual hygiene methods (MHM) may result in unusually wet Vulvo-vaginal conditions, which may encourage reproductive tract infections. Several sanitary napkins or menstrual cups link to a decreased frequency of STIs. Compared to women who use disposable pads, those who use reusable absorbent pads are more likely to have reproductive tract infections.[12] Our data suggest that most of the married women used ordinary cloth 94(72.3%), followed by sanitary pads 18(13.8%), and 16(12.3%) using both. In a study conducted by Rekha Naithaniet, 94% of girls reported using sanitary pads. In another study conducted by Gitanjali Kapoor, this percentage was slightly lower: 59.09% of the girls used sanitary pads, while 27.27% and 13.64% used new cloth and old cloth, respectively.[13]

Almost half of our study sample had experienced recurrence of RTI after treatment, this accounted for 48.7%. The reason being many patients are at a high risk of catching infections such as RTIs when they visit healthcare centers for their normal checkup. This can be due to improperly performed procedures due to negligence or unsterilized medical equipment.[14] According to another research scientifically probiotics when consumed orally, travel through gastrointestinal tract and then excreted through the rectum. It is believed that these probiotics after leaving the rectum may make its way up the vaginal tract leading to the placement of unhealthy vaginal microbiota. As a result the pH

reduces back to normal due to the production of antimicrobial substances like hydrogen peroxide and acids.[15]

In order to tackle increasing spread and recurrence of RTI, there is a need of raising awareness among the women in Pakistan regarding sex education, health and hygiene. Since prevention is better than cure, risk factors can be reduced by introducing proper screening programs. This can help in preventing the progression and severity of the disease.

## CONCLUSION

The frequency of RTI's was very high among rural women of Khyber Agency and the main reason behind it was the lack of awareness, lack of knowledge of its prevention and transmission, low menstrual hygiene status and limited access to healthcare.

## LIMITATIONS

This research study has some limitations that can influence our results to some extent. The study sample only consisted of sexually active married women of reproductive age (16-49 years) from the Khyber Agency. Therefore limiting its generalizability otherwise the frequency of RTIs could potentially be even higher if the calculation included all married women in the region.

## CONFLICT OF INTEREST

The authors declare no conflict of interest.

## SOURCE OF FUNDING

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.



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| AUTHORSHIP AND CONTRIBUTION DECLARATION | |
|---|---|
| 1 | **Laila Nazir:** Data analysis. |
| 2 | **Spogmay Wali Khan:** Manuscript writing. |
| 3 | **Asma Ali:** Data collection. |
| 4 | **Kiran Jehangir:** Literature review. |
| 5 | **Aiman Syed:** Data entry. |
| 6 | **Fatima Zulfiqar:** Data analysis. |