

ORIGINAL ARTICLE

Burden of reproductive tract infections among married women of South Punjab.

Saba Nadeem¹, Shahnaz Anwar², Aisha Nazeer³, Sadia Tariq⁴, Amna Shahid⁵, Naila Shabbir⁶

ABSTRACT... Objective: To identify the frequency, etiology and risk factors of reproductive tract infections (RTIs) in married women who visit gynecology outpatient department at Bahawal Victoria Hospital, Bahawalpur, South Punjab. **Study Design:** Analytical Cross-sectional. **Setting:** Bahawal Victoria Hospital/Quaid-e-Azam Medical College, Bahawalpur. **Period:** June 2025 to December 2025. **Methods:** This study involved 428 married women aged 18-49. The participants were examined clinically, diagnosed by syndromic diagnosis by the WHO criteria, and laboratory tests were carried out, including wet mount microscopy, Gram staining, culture sensitivity, and rapid plasma reagin test. All the data analysis was done in SPSS version 26.0; chi-square test and multivariate logistic regression were used with the significance level of 0.05. **Results:** The prevalence of overall RTI was 38.6 (95% CI: 34.0-43.3). There were endogenous infections (24.3%), then sexually transmitted infections (8.9%), and finally iatrogenic infections (5.4%). The most prevalent one was bacterial vaginosis (15.7%), then comes vulvovaginal candidiasis (11.2%), trichomoniasis (6.8%), and cervicitis (5.1%). This was significant in low education (AOR=2.84, 95% CI: 1.76-4.58, $p<0.001$), household size >7 members (AOR=2.11, 95% CI: 1.32-3.37, $p=0.002$), husband being migrationed to work (AOR=1.97, 95% CI: 1.24-3.13, $p=0.004$), use of intrauterine. **Conclusion:** RTIs are a significant burden of the population health among the married women of South Punjab. There is need to integrate RTI screening in normal maternal health services and community based health education.

Key words: Bacterial Vaginosis, Pakistan, Reproductive Tract Infections, Risk Factors, South Punjab, Women Health.

Article Citation: Nadeem S, Anwar S, Nazeer A, Tariq S, Shahid A, Shabbir N. Burden of reproductive tract infections among married women of South Punjab. Professional Med J 2026; 33(08):1410-1416. <https://doi.org/10.29309/TPMJ/2026.33.08.10491>

INTRODUCTION

Reproductive tract infections (RTIs) represent a persistent public health challenge globally, disproportionately impacting women residing in low- and middle-income countries (LMICs).¹ Despite their prevalence, RTIs remain under-prioritized in women's health agendas, often obscured by cultural taboos and insufficient surveillance systems. The World Health Organization (WHO) categorizes RTIs into three distinct etiologies: endogenous infections resulting from the disruption of normal vaginal flora, iatrogenic infections arising from medical procedures, and sexually transmitted infections (STIs) acquired through sexual contact.² This classification is critical for clinical management and public health messaging, particularly in conservative societies where the misconception that all genital infections imply sexual infidelity fosters stigma, delays care-seeking, and exacerbates adverse health outcomes.³

The global burden of curable STIs remains substantial, with the WHO estimating over 374 million new cases annually among individuals aged 15 to 49 years.⁴ However, total morbidity attributed to RTIs is significantly higher when endogenous and iatrogenic causes are included. In South Asia, community-based studies indicate RTI prevalence rates ranging from 24% to 55%, reflecting wide geographic and socioeconomic disparities.⁵ Pakistan, home to over 220 million people, exhibits pronounced rural-urban health inequities that complicate RTI prevention and control efforts.⁶ While historical data from Lahore and Karachi highlighted high rates of syphilis and trichomoniasis among high-risk groups, recent evidence suggests a shifting epidemiological profile among the general population.⁷ For instance, contemporary studies in peri-urban Karachi and Rawalpindi have identified bacterial vaginosis (BV) as a leading cause of reproductive morbidity, with prevalence rates exceeding 20% in married women.^{8,9}

1. MBBS, FCPS, Associate Professor Gynecology and Obstetrics, Quaid-e-Azam Medical College/ Bahawal Victoria Hospital, Bahawal.
2. MBBS, FCPS, Associate Professor Gynecology and Obstetrics, Quaid-e-Azam Medical College/ Bahawal Victoria Hospital, Bahawal.
3. MBBS, FCPS, Assistant Professor Gynecology and Obstetrics, Quaid-e-Azam Medical College/ Bahawal Victoria Hospital, Bahawal.
4. MBBS, FCPS, Assistant Professor Gynecology and Obstetrics, Quaid-e-Azam Medical College/ Bahawal Victoria Hospital, Bahawal.
5. MBBS, FCPS, Assistant Professor Gynecology and Obstetrics, Quaid-e-Azam Medical College/ Bahawal Victoria Hospital, Bahawal.
6. MBBS, FCPS, Senior Registrar Gynecology and Obstetrics, Quaid-e-Azam Medical College/ Bahawal Victoria Hospital, Bahawal.

Correspondence Address:

Dr. Saba Nadeem
Department of Gynecology and Obstetrics, Quaid-e-Azam Medical College/ Bahawal Victoria Hospital, Bahawal.
drsadiatariq786@gmail.com

Article received on:

17/03/2026

Date of revision:

28/03/2026

Accepted for publication:

27/05/2026



Despite these insights, significant epidemiological gaps persist, particularly regarding South Punjab. Comprising the divisions of Bahawalpur, Dera Ghazi Khan, and Multan, South Punjab is characterized by agrarian economies, elevated multidimensional poverty (38.8%), and low female literacy rates (32.4%).¹⁰ Health indicators in this region lag considerably behind central and northern Punjab, yet region-specific data on reproductive health remains scarce.¹¹ Socioeconomic determinants profoundly influence RTI risk through multiple pathways. Limited education compromises health literacy regarding genital hygiene and symptom recognition, while poverty restricts access to sanitation and clean water.¹² Furthermore, gender inequality often limits women's autonomy in seeking healthcare or negotiating sexual health practices.¹³

Labor migration, a common feature of South Punjab's economy, introduces complex dynamics; while spousal separation may reduce exposure to some STIs, it can simultaneously disrupt communication regarding sexual health and alter hygiene practices.¹⁴ These overlapping vulnerabilities necessitate localized epidemiological data to guide targeted interventions. Current national strategies often lack the granularity required to address the specific cultural and environmental drivers of infection in this region. Consequently, this study aimed to determine the prevalence, etiological spectrum, and associated risk factors of reproductive tract infections among married women in South Punjab.

METHODS

It was cross-sectional study at Obstetrics and Gynecology outpatient department (OPD) of Bahawal Victoria Hospital (BVH)/Quaid-e-Azam Medical College, Bahawalpur from June 2025 to December 2025 after taking approval from Institutional Ethical Review Committee (Reference No. 1388/DME/QAMC, Bahawalpur Dated 07-06-2025) and informed consent from individual participant. Expected RTI prevalence of 38%5, confidence level 95% and absolute precision required 5% sample size of 416 was calculated.

The sampling method used was non probability consecutive sampling. Married women, who are aged between 18-49 years resident of South Punjab

(Bahawalpur, Rahim Yar Khan or Bahawalnagar districts) for at least months and not pregnant at the time of examination were include in the study by non-probability consecutive sampling. Exclusion criteria was menstruation during the time of examination, history of vaginal medication/ antibiotics during the last 14 days, known immunosuppressive diseases (HIV, uncontrolled diabetes, long-term corticosteroid use) and postpartum period less than 6 weeks. Data was collected by using WHO RTI assessment tools and Pakistan Demographic Health Survey modules.

Data that were collected using questionnaires included: (1) Sociodemographic factors (age, education, occupation, household size, monthly earnings, occupation and migration status of husband); (2) Reproductive history (age at marriage, parity, use of contraceptives, history of abortions/ complications); (3) Hygiene practices (frequency of bathing, use of genital cleansing solutions, use of sanitary naps/reuse of sanitary nap); (4) Symptoms indicative of RTIs (vaginal discharge characteristics, vaginal odor. The discharge quantity/color/ consistency, cervical abnormalities (erosion, discharge, friability) and vaginal wall lesions were evaluated using the speculum examination. Samples were taken in, respectively: (1) High vaginal swab (wet mount microscopy) (saline and 10% KOH preparations) (examined immediately) *Trichomonas vaginalis*, clue cells, yeast hyphae/ pseudohyphae; (2) Gram stain (diagnostic of gonorrhea when intracellular Gram-negative diplococci are identified) (examined immediately) endocervical swab; (3) Vaginal pH, with narrow-range pH Laboratory confirmation was done by standard procedures (1) Bacterial vaginosis characterized by Nugent scoring (score [?]7) on Gram-stained smears; (2) Vulvovaginal candida confirmed by potassium hydroxide (KOH) microscopy revealing yeast/hyphae or culture on Sabouraud dextrose agar; (3) Trichomoniasis confirmed by wet mount motility or culture in Diamond medium; (4) Cervicitis characterized by mucopurulent endocervical discharge and cerv All the laboratory tests were conducted in the accredited microbiology laboratory of BVH by certified technicians who were not informed of clinical results.

The privacy was ensured by the use of private

examination rooms and the use of coded identifiers. All the participants with RTIs; syphilis were transferred to dermatology department to be notified and treated in line with the national guidelines. Data was entered and analyzed by using SPSS version 26.0. The characteristics of the socio-demographic and clinical were summarized using the descriptive statistics. The frequency of RTI including 95% confidence interval was determined both in general and according to the type of infection. Chi-square test was used in the bivariate analysis to test the relationships between independent variables and RTI status. Bivariate analysis variables with p value <0.25 were included in the multivariate logistic regression to determine independent predictors; adjusted odds ratios (AOR) with 95% CI and p -values were calculated. The statistical significance was defined as $p<0.05$.

RESULTS

A total of 416 married women were enrolled in the study, with mean age of 29.4 ± 6.8 years. Laboratory confirmation identified reproductive tract infections in 161 (38.6%, 95% CI: 34.0–43.3) participants. Age stratification did not reveal statistically significant differences in infection rates across reproductive age groups ($p=0.142$), although the highest point prevalence was observed among women aged 25–34 years (42.2%).

Endogenous infections accounted for the majority of confirmed cases 101 (63.4%), followed by sexually transmitted infections 37 (23.0%) and iatrogenic infections 23 (14.0%). Bacterial vaginosis was the most frequently isolated condition (15.6%; 95% CI: 12.3–19.4), followed by vulvovaginal candidiasis (11.3%) and trichomoniasis (6.7%). Less common diagnoses included presumptive cervicitis (5.0%), syphilis (0.7%), and gonorrhea (0.2%). Notably, 28.6% of women with laboratory-confirmed RTIs reported no symptoms at the time of examination; asymptomatic presentations were predominantly associated with bacterial vaginosis (63% of asymptomatic cases) and candidiasis (26%).

Contraceptive method showed highly significant association with infection risk ($p<0.001$). Women using intrauterine devices exhibited the highest frequency (68.4%), followed by those with tubal

ligation (50.0%), compared to users of barrier/oral methods (36.0%) or no contraception (33.2%). Multivariate logistic regression identified five variables independently associated with increased odds of RTI positivity after adjusting for potential confounders (Table-III). Absence of formal education conferred the strongest socioeconomic risk (AOR=2.84; 95% CI: 1.76–4.58; $p<0.001$), with primary education also remaining significant (AOR=1.72; 95% CI: 1.08–2.74; $p=0.023$). Household size exceeding seven members was associated with nearly doubled odds of infection (AOR=2.11; 95% CI: 1.32–3.37; $p=0.002$). Regarding reproductive factors, current IUD use demonstrated the highest adjusted odds ratio among contraceptive methods (AOR=3.42; 95% CI: 1.89–6.18; $p<0.001$), while tubal ligation also remained independently significant (AOR=2.15; 95% CI: 1.12–4.13; $p=0.021$). Spousal labor migration was associated with increased infection risk (AOR=1.97; 95% CI: 1.24–3.13; $p=0.004$). Inadequate genital hygiene practices defined as bathing fewer than three times weekly, non-use of sanitary pads, or engagement in vaginal douching were independently associated with RTI positivity (AOR=2.63; 95% CI: 1.65–4.20; $p<0.001$).

Among women with confirmed infections, abnormal vaginal discharge was the most frequently reported symptom (79.5%), showing strongest association with bacterial vaginosis and trichomoniasis. Genital itching was reported by 58.4% of infected participants and correlated predominantly with candidiasis. Foul odor, was present in less than half of cases (47.2%). Lower abdominal pain, often used in syndromic algorithms to identify upper genital tract involvement, was reported by only 19.3% of women with cervicitis. Women with five or more children exhibited the highest infection rate (47.1%), with candidiasis and cervicitis representing the predominant etiologies in this group. Among women aged 25–34 years frequency reached 42.2%, with bacterial vaginosis and candidiasis occurring with comparable frequency. Women aged 18–24 years showed lower overall prevalence (33.3%), with bacterial vaginosis representing the dominant infection subtype.

TABLE-I

Socio-demographic and reproductive characteristics of study participants by RTI status (n=416)

Character- istic	Total n (%)	RTI Positive n (%)	RTI Negative n (%)	P- Value
Age group (years)				0.142
18–24	138 (33.2)	46 (33.3)	92 (66.7)	
25–34	192 (46.2)	81 (42.2)	111 (57.8)	
35–49	86 (20.7)	34 (39.5)	52 (60.5)	
Contraceptive method				<0.001
None/natural	226 (54.3)	75 (33.2)	151 (66.8)	
Oral pills/ condoms	114 (27.4)	41 (36.0)	73 (64.0)	
IUD	38 (9.1)	26 (68.4)	12 (31.6)	
Tubal ligation	38 (9.1)	19 (50.0)	19 (50.0)	

TABLE-II

Types and frequency of reproductive tract infections (n=416)

Infection Type	Classifica- tion	n (%)	95% CI
Endogenous infections		101 (24.3)	20.3–28.6
Bacterial vaginosis	Endogenous	65 (15.6)	12.3–19.4
Vulvovaginal candidiasis	Endogenous	47 (11.3)	8.5–14.7
Sexually transmitted infections		37 (8.9)	6.4–12.0
Trichomoniasis	STI	28 (6.7)	4.6–9.5
Cervicitis (presumptive)	STI	21 (5.0)	3.2–7.5
Syphilis	STI	3 (0.7)	0.2–2.1
Gonorrhea	STI	1 (0.2)	0.0–1.3
Iatrogenic infections		23 (5.5)	3.6–8.1
Post-IUD insertion infection	Iatrogenic	18 (4.3)	2.7–6.6
Post-procedure infection	Iatrogenic	5 (1.2)	0.4–2.8
Total RTIs		161 (38.6)	34.0–43.3

TABLE-III

Multivariate logistic regression analysis of factors independently associated with RTI positivity

Variable	Adjusted OR	95% CI	P-Value
Education level			
No formal education	2.84	1.76–4.58	<0.001
Primary education	1.72	1.08–2.74	0.023
Household size (reference: ≤7 members)			
>7 members	2.11	1.32–3.37	0.002
Husband's migration status (reference: Non-migrant)			
Migrant laborer	1.97	1.24–3.13	0.004
Contraceptive method			
IUD use	3.42	1.89–6.18	<0.001
Tubal ligation	2.15	1.12–4.13	0.021
Genital hygiene practice			
Inadequate hygiene	2.63	1.65–4.20	<0.001
Good hygiene defined as bathing ≥3x/week, using sanitary pads, no douching			

TABLE-IV

Symptom profile among women with laboratory-confirmed RTIs (n=161)

Symptom	Present n (%)	Absent n (%)	Most Associated Infection
Abnormal vaginal discharge	128 (79.5)	33 (20.5)	BV, Trichomoniasis
Foul odor	76 (47.2)	85 (52.8)	BV
Genital itching	94 (58.4)	67 (41.6)	Candidiasis
Dysuria	58 (36.0)	103 (64.0)	Trichomoniasis
Lower abdominal pain	31 (19.3)	130 (80.7)	Cervicitis
Asymptom- atic	46 (28.6)	115 (71.4)	BV (63%), Candidiasis (26%)

TABLE-V

Distribution of RTIs by age group and parity

Age Group	Total	RTI Prevalence % (95% CI)	Most Common Infection
18–24 years	138	33.3 (25.8–41.7)	BV (18.1%)
25–34 years	192	42.2 (35.3–49.3)	BV (19.8%), Candidiasis (14.6%)
35–49 years	86	39.5 (30.0–50.0)	Candidiasis (16.3%), Cervicitis (9.3%)
Parity	Total	RTI Prevalence % (95% CI)	Most common infection
0–2 children	164	31.7 (24.9–39.3)	BV (15.2%)
3–4 children	148	41.2 (33.6–49.2)	BV (20.3%), Trichomoniasis (9.5%)
≥5 children	104	47.1 (37.7–56.7)	Candidiasis (18.3%), Cervicitis (10.6%)
p for trend across parity groups = 0.008			

DISCUSSION

The study revealed the reproductive tract infection (RTI) frequency of 38.6% among married women attending Bahawal Victoria Hospital, with bacterial vaginosis (BV) identified as the predominant etiology. These findings address a critical paucity of epidemiological data concerning women's reproductive health in South Punjab, a region characterized by socioeconomic deprivation yet frequently omitted from national health surveys. While the aggregate burden of RTIs aligns with estimates from urban centers such as Karachi, the etiological distribution diverges significantly, suggesting that localized environmental and behavioral determinants drive infection patterns in this agrarian belt.¹⁵

The overall RTI rate observed in this study mirrors the 38% prevalence previously documented in peri-urban Karachi, indicating that the burden of reproductive morbidity remains consistently high across disparate geographic zones in Pakistan.¹⁶ However, the subtype analysis reveals notable heterogeneity. Whereas Karachi studies report BV prevalence as high as 22% with candidiasis at 14%,

the current sample from South Punjab demonstrated a lower BV frequency (15.7%) alongside a comparable candidiasis rate (11.2%).¹⁷ This variation may be attributable to climatic influences on the vaginal microbiome; the marine humidity of coastal Karachi potentially favors *Gardnerella vaginalis* proliferation, whereas the arid conditions of South Punjab, receiving less than 150mm of annual rainfall, may alter microbial colonization dynamics.¹⁸ Additionally, hygiene infrastructure plays a mediating role. Chronic water scarcity in South Punjab, where many rural households access water only once daily, compromises genital hygiene practices regardless of cultural emphasis on cleanliness, thereby modulating infection risk.¹⁹

Endogenous infections constituted 63.4% of all RTIs in this study, a proportion consistent with global epidemiological trends where BV affects approximately 29% of reproductive-age women in high-income settings and between 23% to 61% globally.²⁰ This predominance carries significant programmatic implications. Unlike sexually transmitted infections, endogenous conditions such as BV and candidiasis arise from ecological disturbances in vaginal flora due to antibiotic usage, douching, or hormonal fluctuations rather than partner infidelity.²¹ In the conservative socio-cultural context of Pakistan, where women often fear stigma regarding sexual misconduct, distinguishing endogenous from exogenous infections is vital. Public health messaging must explicitly decouple these conditions from sexual behavior to reduce care-seeking delays and mitigate social stigma.²²

Socioeconomic analysis identified low educational attainment as the strongest independent predictor of RTI (AOR=2.84 for no formal education). This aligns with broader South Asian literature establishing a negative correlation between female literacy and reproductive morbidity.²³ Education likely functions through multiple pathways, including enhanced health literacy for symptom recognition, greater autonomy in accessing care, and the ability to critique harmful traditional practices such as vaginal douching, which was significantly associated with RTIs in the bivariate analysis of this study. Given that female literacy in South Punjab (32.4%) lags considerably behind the national average

(45.8%), non-formal education strategies are required. Leveraging Lady Health Workers (LHWs) and mosque-based community committees could deliver culturally acceptable health education to this vulnerable demographic.²⁴

The association between spousal labor migration and RTIs (AOR=1.97) underscores the complex socioeconomic vulnerabilities inherent to South Punjab's agrarian economy. More critically, the strong link between intrauterine device (IUD) usage and infection (AOR=3.42) warrants immediate health system scrutiny. While national family planning initiatives promote IUDs to address the unmet need for contraception, insertion protocols in rural primary care settings often lack consistency. International standards mandate screening for existing infections prior to IUD placement to prevent the inoculation of pathogens into the upper genital tract.²⁵ The absence of routine pre-insertion screening in South Punjab's basic health units may inadvertently elevate the risk of pelvic inflammatory disease. It is recommended that the Punjab Health Initiative Management Company integrate mandatory RTI screening into IUD service delivery protocols and strengthen referral pathways for complex cases.

Regionally, while South Asian nations share common RTI challenges, Pakistan lags in programmatic integration. India's National Rural Health Mission has successfully incorporated RTI screening into auxiliary nurse-midwife services, and Bangladesh's community volunteer networks reduced RTI prevalence by 31% through household-level syndromic management.²⁶ Pakistan's LHW program, which covers a vast population, possesses similar potential but currently lacks standardized RTI training modules and reliable medication supply chains. The evidence presented here supports the integration of RTI management into the existing LHW framework to improve coverage.

Future research should prioritize community-based prevalence studies utilizing point of care BV diagnostics, cost-effectiveness analyses of point of care testing versus syndromic management and intervention trials assessing community health worker-led education on infection incidence. Generating this evidence is essential to empower

South Punjab's health sector in addressing this silent epidemic affecting nearly two-fifths of its reproductive-aged women.

CONCLUSION

The burden of RTI in South Punjab is an intersection of vulnerabilities: poverty, denying access to water to hygienic purposes, female illiteracy, limiting health knowledge, gender inequality and limited healthcare autonomy.

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.

Copyright© 27 May, 2026.

REFERENCES

1. World Health Organization. **WHO guidelines for the management of symptomatic sexually transmitted infections**. Geneva: WHO; 2021.
2. Unemo M, Bradshaw CS, Hocking JS. **Sexually transmitted infections: Challenges ahead**. *Lancet Infect Dis*. 2020; 20(9):e235-e245.
3. Zaidi S, Hashmi I, Shafique M. **Stigma and care-seeking for reproductive health issues among women in conservative societies**. *Cult Health Sex*. 2022; 24(3):345-359.
4. World Health Organization. **Global health sector strategy on sexually transmitted infections 2022–2030**. Geneva: WHO; 2022.
5. Rahman M, Islam A. **Female literacy and reproductive health outcomes in South Asia: A systematic review**. *PLOS ONE*. 2021; 16(7):e0254321.
6. Sadiq S, Shahid F, Mahmood T. **Prevalence and risk factors of reproductive tract infections among women in Punjab, Pakistan: A cross-sectional study**. *BMC Women's Health*. 2021; 21(1):112.
7. Ali TS, Krantz G, Mogren I. **Reproductive tract infections: Perceptions and care-seeking behavior among women in Karachi, Pakistan**. *J Pak Med Assoc*. 2020; 70(3):456-461.
8. Zubair M, Khaliq A, Rahman SU. **Microbiological profile of vaginal infections in peri-urban settings of Pakistan**. *Pak J Med Sci*. 2022; 38(4):987-992.
9. Khan JR, Barua S, Islam MS. **Water scarcity and hygiene practices in rural Pakistan: Implications for women's health**. *Water Int*. 2020; 45(6):589-605.
10. Pakistan Bureau of Statistics. **Pakistan demographic and health survey 2017-18: Key Indicators Report**. Islamabad: PBS; 2020.

11. Hussain S, Ahmed A, Malik A. **Effectiveness of Lady Health Worker program in improving reproductive health knowledge in Pakistan.** Hum Resour Health. 2023; 21(1):15.
12. Rahman A, Chowdhury ME, Ahmed A. **Community-based management of reproductive tract infections in Bangladesh: Impact on prevalence.** Lancet Reg Health SE Asia. 2022; 5:100054.
13. Shaikh BT, Hatcher J. **Community health workers and primary health care in Pakistan: Challenges and opportunities.** J Public Health Res. 2021; 10(2):1890.
14. Ahmed S, Creanga AA, Tsui AO. **Climate variability and reproductive health outcomes in South Asia.** Int J Environ Res Public Health. 2021; 18(9):4532.
15. Sadiq S, Shahid F, Mahmood T. **Prevalence and risk factors of reproductive tract infections among women in Punjab, Pakistan: A cross-sectional study.** BMC Women's Health. 2021; 21(1):112.
16. Ali TS, Krantz G, Mogren I. **Reproductive tract infections: Perceptions and care-seeking behavior among women in Karachi, Pakistan.** J Pak Med Assoc. 2020; 70(3):456-61.
17. Zubair M, Khaliq A, Rahman SU. **Microbiological profile of vaginal infections in peri-urban settings of Pakistan.** Pak J Med Sci. 2022; 38(4):987-92.
18. Ahmed S, Creanga AA, Tsui AO. **Climate variability and reproductive health outcomes in South Asia.** Int J Environ Res Public Health. 2021; 18(9):4532.
19. Khan JR, Barua S, Islam MS. **Water scarcity and hygiene practices in rural Pakistan: Implications for women's health.** Water Int. 2020; 45(6):589-605.
20. World Health Organization. **WHO guidelines for the management of symptomatic sexually transmitted infections.** Geneva: WHO; 2021.
21. Hay P, Tam A. **Bacterial vaginosis: A review of the evidence for non-sexual transmission.** Sex Transm Infect. 2020; 96(5):328-32.
22. Zaidi S, Hashmi I, Shafique M. **Stigma and care-seeking for reproductive health issues among women in conservative societies.** Cult Health Sex. 2022; 24(3):345-59.
23. Rahman M, Islam A. **Female literacy and reproductive health outcomes in South Asia: A systematic review.** PLOS ONE. 2021; 16(7):e0254321.
24. Hussain S, Ahmed A, Malik A. **Effectiveness of lady health worker program in improving reproductive health knowledge in Pakistan.** Hum Resour Health. 2023; 21(1):15.
25. Faculty of Sexual and Reproductive Healthcare. **Intrauterine Contraception Clinical Guidance.** London: FSRH; 2020.
26. Rahman A, Chowdhury ME, Ahmed A. **Community-based management of reproductive tract infections in Bangladesh: Impact on prevalence.** Lancet Reg Health SE Asia. 2022; 5:100054.

AUTHORSHIP AND CONTRIBUTION DECLARATION

1	Saba Nadeem: Conception of idea, study design, drafting.
2	Shahnaz Anwar: Data collection.
3	Aisha Nazeer: Data analysis.
4	Sadia Tariq: Data collection.
5	Amna Shahid: Manuscript writing.
6	Naila Shabbir: Critical revisions.