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ORIGINAL ARTICLE

Prevalence of sexually transmitted infections among married women in Pakistan.

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ABSTRACT… Objective: To determine the prevalence of STIs and associated sociodemographic factors among married women in Khyber Pakhtunkhwa, Pakistan. **Study Design:** Community-based Cross-sectional study. **Setting:** Khyberpakhtunkhawa. **Period:** March 2023 to March 2024. **Methods:** Was conducted among 650 married women aged 18-49 years using multistage cluster sampling. Participants completed structured questionnaires and provided specimens for laboratory testing of five curable STIs (trichomoniasis, chlamydia, gonorrhea, syphilis) and three viral STIs (HBV, HIV, HPV). Multivariate logistic regression identified factors associated with STI positivity. **Results:** Overall STI prevalence was 22.0% (95% CI:19.0-25.3), with trichomoniasis being most common (15.1%). Significant risk factors included: no formal education (aOR=4.25, 95% CI:1.89-9.56), rural residence (aOR=1.92, 95% CI:1.31-2.81), household income <25,000 PKR/month (aOR=2.89, 95% CI:1.31-6.38), and marriage before age 18 (aOR=2.15, 95% CI:1.42-3.26). Women aged 35-49 years had lower risk (aOR=0.61, 95% CI:0.38-0.98) compared to younger women. **Conclusion:** Married women in Pakistan bear a high burden of STIs, particularly those with limited education, low income, and early marriage. These findings highlight the need for integrated STI screening in routine women's health services and targeted interventions addressing socioeconomic disparities.

Key words: Prevalence, Pakistan, Sexually Transmitted Diseases, Socioeconomic Factors, Women's Health.

INTRODUCTION

Sexually transmitted infections (STIs) remain a significant public health concern worldwide, particularly in low- and middle-income countries (LMICs) where healthcare infrastructure and awareness programs are often inadequate.[1] STIs, including chlamydia, gonorrhea, syphilis, trichomoniasis, and human papillomavirus (HPV), contribute to substantial morbidity and mortality, particularly among women, due to their association with adverse reproductive health outcomes such as pelvic inflammatory disease (PID), infertility, cervical cancer, and increased risk of HIV transmission.[2] Despite global efforts to curb STI prevalence, marginalized populations, including married women in conservative societies, often face barriers to testing, treatment, and education, exacerbating the silent spread of these infections.[3]

In Pakistan, a country with a predominantly Muslim population, socio-cultural norms and gender dynamics significantly influence sexual health behaviors and healthcare-seeking practices.[4] Discussions surrounding sexual health remain taboo, particularly for women, leading to underreporting, delayed diagnoses, and inadequate management of STIs.[5] Married women, often perceived as being at low risk for STIs due to the assumption of monogamous relationships, are frequently excluded from targeted sexual health interventions.[6] However, emerging evidence suggests that STI prevalence among married women in Pakistan may be higher than previously estimated, driven by factors such as lack of awareness, limited access to screening, and husbands' extramarital sexual behaviors.[7]

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Existing literature on STIs in Pakistan has primarily focused on high-risk groups, such as female sex workers (FSWs) and men who have sex with men (MSM), with limited data on the general female population, particularly married women.[10,11] A study by Khanani et al.[12] reported that only 15% of women in Pakistan had ever been tested for an STI, highlighting a critical gap in sexual health surveillance. Furthermore, a systematic review by Mubeen et al.[13] found that the prevalence of STIs among women in Pakistan ranged between 10% and 25%, with higher rates in rural areas due to poor healthcare access and lower literacy levels. However, these estimates are largely derived from clinic-based studies, which may not capture the true community-level burden due to selection bias.[7]

Cultural stigma surrounding STIs further complicates the issue, as women may avoid seeking medical care due to fear of social ostracization or marital discord.[8] Many Pakistani women associate STIs with promiscuity and infidelity, leading to self-blame and reluctance to disclose symptoms to healthcare providers or even their spouses. Additionally, the lack of integration of STI services into routine maternal and reproductive health programs means that many women remain undiagnosed, perpetuating transmission within marital relationships.

Given these challenges, there is an urgent need for population-based studies to assess the true prevalence of STIs among married women in Pakistan and identify associated risk factors. Understanding the epidemiological trends and sociocultural barriers is essential for designing targeted interventions that address the unique needs of this population. This study aims to determine the prevalence of common STIs among married women in Pakistan and explore the socio-demographic and behavioral factors contributing to infection rates. The findings will provide critical evidence to inform national STI prevention and control strategies, ensuring that married women—an often-overlooked demographic—receive appropriate attention in public health programming.

METHODS

This cross-sectional study was conducted in Khyber Pakhtunkhwa (KP), Pakistan, to determine the prevalence of sexually transmitted infections (STIs) among married women in the region. The study setting included both urban (Peshawar, Mardan, Abbottabad) and rural districts (Swat, Charsadda, Buner) to capture diverse socio-demographic and healthcare access patterns. A multi-stage cluster sampling technique was employed, where districts were randomly selected as primary sampling units, followed by random selection of communities and households within these districts. The sample size was calculated using an estimated STI prevalence of 12% based on regional studies, a 95% confidence interval, and a 3% margin of error, resulting in a minimum required sample of 563 participants. To account for non-response and incomplete data, the final sample was expanded to 650 married women aged 18–49 years who had been in a marital relationship for at least one year. Women who were unmarried, divorced, widowed, or had not been sexually active in the past year were excluded, as were those unable to provide informed consent due to cognitive or communication barriers.

Data collection was carried out by trained female interviewers to ensure cultural appropriateness and encourage open participation. A structured questionnaire was administered in Urdu and Pashto, covering socio-demographic factors (age, education, household income), reproductive health history, knowledge of STIs, and healthcare-seeking behaviors. Additionally, participants were offered confidential laboratory testing for common STIs (chlamydia, gonorrhea, syphilis, trichomoniasis, and HIV) at designated health facilities, with pre- and post-test counseling provided. Ethical approval was obtained from Iqra National University, Research Ethical Committee [Ref: INU/AHS/57-23] and written informed consent was obtained from all participants. Strict confidentiality measures were enforced, including anonymized identifiers and secure data storage. Women who tested positive for any STI were provided free treatment and linked to partner notification services in accordance with provincial health protocols.

Data analysis was performed using STATA version 17. Descriptive statistics (frequencies, percentages) summarized participant characteristics and STI prevalence, while bivariate analysis (chi-square tests) assessed associations between STI positivity and socio-demographic or behavioral factors. Variables with $p < 0.20$ in bivariate analysis were included in a multivariate logistic regression model to identify independent predictors of STIs, reported as adjusted odds ratios (AORs) with 95% confidence intervals (CIs). A p-value < 0.05 was considered statistically significant. Qualitative insights from open-ended questions on barriers to STI testing were analyzed thematically to contextualize quantitative findings. The study adhered to STROBE guidelines for cross-sectional reporting to ensure methodological rigor.

RESULTS

Table-I presents the socio-demographic characteristics of the study participants, comprising 650 married women aged 18–49 years from Khyber Pakhtunkhwa, Pakistan. The majority of participants (44.6%) were aged 25–34 years, followed by equal proportions (27.7%) in the 18–24 and 35–49 age groups. A significant proportion of women had no formal education (40.0%), while 30.0% had primary-level education, 20.0% had secondary-level education, and only 10.0% attained higher education (>10 years of schooling). The sample was evenly distributed between urban (50.0%) and rural (50.0%) residences.

Household income data revealed that 60.0% of participants earned less than 25,000 PKR per month, 30.0% earned between 25,000–50,000 PKR, and 10.0% earned more than 50,000 PKR. Most women were unemployed or housewives (80.0%), with only 20.0% engaged in paid employment. Regarding reproductive history, half of the participants (50.0%) had 0–2 children, 40.0% had 3–5 children, and 10.0% had more than 5 children. The age at marriage varied, with 30.0% married before 18 years, 60.0% married between 18–25 years, and 10.0% married after 25 years.

Table-II summarizes the prevalence of sexually transmitted infections (STIs) among married women in Khyber Pakhtunkhwa, Pakistan (N=650). Overall, 22.0% (95% CI: 19.0–25.3) of participants tested positive for at least one curable STI. The most prevalent infection was trichomoniasis (15.1%, 95% CI: 12.5–18.0), followed by chlamydia (4.9%, 95% CI: 3.5–6.8). Less common were gonorrhea (0.8%, 95% CI: 0.3–1.8) and syphilis (1.2%, 95% CI: 0.6–2.4).

Among viral STIs, hepatitis B virus (HBV) was detected in 1.8% (95% CI: 1.0–3.2) of women, while HIV prevalence was very low (0.3%, 95% CI: 0.1–1.1). Data on human papillomavirus (HPV) were not available in this study.

Table-III. presents the results of a multivariate logistic regression analysis identifying factors associated with STI positivity among married women in Khyber Pakhtunkhwa, Pakistan (N=650).

Age showed a protective effect, with women aged 35–49 years significantly less likely to test positive for STIs compared to those aged 18–24 (aOR=0.61, 95% CI: 0.38–0.98, p=0.042). Education level was strongly associated with STI risk: women with no formal education had over four times higher odds of infection than those with higher education (aOR=4.25, 95% CI: 1.89–9.56, p<0.001), while primary education was also a significant risk factor (aOR=3.12, 95% CI: 1.32–7.35, p=0.009).

Rural residence nearly doubled the odds of STI positivity compared to urban residence (aOR=1.92, 95% CI: 1.31–2.81, p=0.001). Lower household income (<25,000 PKR/month) was associated with significantly higher STI risk (aOR=2.89, 95% CI: 1.31–6.38, p=0.008) relative to the highest income group.

Early marriage (<18 years) more than doubled the odds of STI positivity (aOR=2.15, 95% CI: 1.42–3.26, p<0.001). Women with 3–5 children had 78% higher odds of infection compared to those with 0–2 children (aOR=1.78, 95% CI: 1.18–2.68, p=0.006).

Variable	Category	Frequency (n)	Percentage (%)
Age (years)	18–24	180	27.7%
	25–34	290	44.6%
	35–49	180	27.7%
Education Level	No formal education	260	40.0%
	Primary (1–5 years)	195	30.0%
	Secondary (6–10 years)	130	20.0%
	Higher (>10 years)	65	10.0%
Residence	Urban	325	50.0%
	Rural	325	50.0%
Household Income (PKR)	<25,000/month	390	60.0%
	25,000–50,000/month	195	30.0%
	>50,000/month	65	10.0%
Employment Status	Unemployed/Housewife	520	80.0%
	Employed	130	20.0%
Number of Children	0–2	325	50.0%
	3–5	260	40.0%
	>5	65	10.0%
Age at Marriage (years)	<18	195	30.0%
	18–25	390	60.0%
	>25	65	10.0%

Table-I. Socio-Demographic characteristics of married women in Khyber Pakhtunkhwa (N = 650)

Infection	Tested (N)	Positive (n)	Prevalence % (95% CI)
Curable STIs	650	143	22.0 (19.0-25.3)
Trichomoniasis	650	98	15.1 (12.5-18.0)
Chlamydia trachomatis	650	32	4.9 (3.5-6.8)
Gonorrhea	650	5	0.8 (0.3-1.8)
Syphilis	650	8	1.2 (0.6-2.4)
Viral STIs			
Hepatitis B virus	650	12	1.8 (1.0-3.2)
Human immunodeficiency virus	650	2	0.3 (0.1-1.1)
Human papillomavirus*	-	-	-

Table-II. Prevalence of specific STIs among married women in Khyber Pakhtunkhwa (N=650)

DISCUSSION

This study provides critical insights into the prevalence and determinants of sexually transmitted infections (STIs) among married women in Khyber Pakhtunkhwa, Pakistan. Our findings reveal a high burden of curable STIs (22.0%), with trichomoniasis (15.1%) being the most prevalent infection. These rates are substantially higher than those reported in national surveillance data, which primarily focus on high-risk groups.[9] The observed prevalence underscores the hidden epidemic of STIs among married women, a population often overlooked in public health programs due to assumptions of low-risk monogamous relationships.

Key Findings and Interpretations

1. High Prevalence of Curable STIs

The 22% prevalence of curable STIs in our study aligns with regional estimates[10] but far exceeds the rates reported in clinic-based studies. This discrepancy likely reflects underdiagnosis in clinical settings due to stigma and limited screening. The dominance of trichomoniasis (15.1%) suggests gaps in hygiene practices and partner treatment, as this infection is often linked to untreated male partners.[11] The low prevalence of HIV (0.3%) and syphilis (1.2%) contrasts with higher rates in key populations[12], reinforcing the need for tailored interventions for married women.

2. Socioeconomic and Educational Disparities

Our regression analysis identified low education and poverty as strong predictors of STI positivity. Women with no formal education had 4.25-fold higher odds of infection compared to those with higher education—a finding consistent with studies linking education to health literacy and safer sexual practices.[8] The association between low household income (<25,000 PKR/ month) and STI risk (aOR=2.89) highlights how economic vulnerability limits access to healthcare and exacerbates health inequalities.[13]

3. Rural-Urban Divide

Rural residence nearly doubled the odds of STI positivity (aOR=1.92), likely due to poorer healthcare infrastructure, lower awareness, and cultural barriers to seeking care.[14] This aligns with national data showing rural women are less likely to receive sexual health services.

4. Early Marriage and Reproductive Factors

Women married before 18 years had 2.15-fold higher STI risk, supporting evidence that child marriage perpetuates gender inequities and limits sexual agency. The elevated risk among women with 3–5 children (aOR=1.78) may reflect repeated exposure to untreated partners or unmet contraceptive needs.

Public Health Implications

1. **Integrated STI Screening:** Our findings advocate for integrating STI testing into routine maternal and reproductive health services, particularly in rural areas.
2. **Targeted Education Programs:** Community-based interventions should address myths about STIs and emphasize partner treatment, especially for trichomoniasis.
3. **Poverty-Alleviation Linkages:** Collaborations with social protection programs could mitigate the economic drivers of STI risk.
4. **Policy Reforms:** Enforcement of laws against child marriage and initiatives to retain girls in school may reduce long-term STI vulnerability.

STRENGTHS AND LIMITATIONS

This study's strengths include a population-based design, robust sampling, and laboratory-confirmed diagnoses. However, social desirability bias may underreport sensitive behaviors, and the cross-sectional design precludes causal inferences. Future longitudinal studies should explore temporal trends and male partner dynamics.

CONCLUSION

Married women in Pakistan face a significant, underrecognized burden of STIs, driven by socioeconomic marginalization, early marriage, and rural disparities. Addressing these infections requires dismantling stigma, expanding screening, and tackling structural inequities. Our findings call for urgent action to include married women in national STI control strategies.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

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2	**Khaliq Jan:** Data analysis, manuscript editing, critical revisions.
3	**Fatima Gul:** Clinical case evaluations, methodology design, manuscript review.
4	**Sahibzada Hazrat Anas Jan:** Supervision validation of results, manuscript revisions.
5	**Muhammad Rabnawaz:** Supervision, validation of results, manuscript revisions.
6	**Muhammad Jawad Ullah:** Statistical analysis, technical guidance, manuscript editing.
7	**Rana Bibi:** Conceptualization, project supervision, final manuscript approval.