

ABSTRACT

Introduction: Tuberculosis (TB) is reported more often among males than females. Both biological and social factors contribute to this gender difference observed universally. However, the extent and the relative contribution of the various factors to this phenomenon had not been adequately researched in Sri Lanka.

Objective: To describe gender differences in occurrence of tuberculosis and its management and to identify the factors influencing risk and management of TB in male and female patients in the District of Colombo

Methods: The study comprised of four components.

Component 1: A descriptive follow up study was conducted among 2169 TB patients registered in the Colombo District TB Register in 2015 to describe the difference among males and females in TB notifications, investigations and treatment outcomes. Comparisons were made using Chi square test, Independent sample t test and calculating Relative Risk (RR) with 95% Confidence Intervals (CI).

Component 2: An unmatched case-control study was conducted to identify the risk factors for acquiring TB in males and females using an interviewer administered questionnaire. Cases included 184, bacteriologically confirmed new Pulmonary Tuberculosis (PTB) patients, recruited by consecutive sampling. Community controls comprised of 368 asymptomatic individuals selected from same Grama Niladhari areas using the electoral list. Bivariate analysis followed by logistic regression was performed with and without interaction terms.

Component 3: A cohort of 296 male and 148 female bacteriologically confirmed PTB patients were followed up through clinic records for six months to identify the factors associated with treatment interruption. The baseline data of these patients were collected using an interviewer administered questionnaire to compare health seeking patterns, patient and provider delays. Cox regression was carried out to identify factors associated with treatment interruption. To supplement the findings on interruption, individual interviews were conducted with several selected patients.

Component 4: A qualitative study was conducted to describe stigma, discrimination and their determinants among TB patients and healthy community. The patients were selected from the chest clinics and the community members were reached in the field. The respondents were selected

through purposive maximum variation sampling while individual interviews and focus group discussions were done respectively with patients and healthy community.

Results : Males had a higher notification rate (161.20/100 000) than females (79.34/100 000).

More males than females had a positive ($OR = 1.09$, 95% CI = 1.05 – 1.13) or high grade sputum smear result ($OR = 1.15$, 95% CI = 1.01 – 1.31). Both males and females had similar sputum conversion rates at the end of acute phase (80.4% vs 84.1%). But more males were lost to follow up compared to females (10.7% vs 3.1%, $OR = 3.44$, 95% CI = 2.24 – 5.28).

After adjusting for confounders, the significant risk factors of TB among both males and females were; being unmarried ($AOR = 2.4$, 95% CI = 1.2 – 5.0 in males and $AOR = 9.7$, 95% CI = 3.0 – 31.5 in females), being a non-Sinhalese ($AOR = 3.9$, 95% CI = 2.0 – 7.7 in males and $AOR = 7.6$, 95% CI = 3.2 – 18.0 in females), having an education level of grade 11 or below ($AOR = 2.7$, 95% CI = 1.4 – 5.0 in males and $AOR = 3.2$, 95% CI = 1.4 – 7.3 in females) and having Diabetes Mellitus ($AOR = 7.9$, 95% CI = 3.6 – 17.5 vs $AOR = 23.0$, 95% CI = 7.7 – 69.0). Being an ever smoker ($AOR = 3.3$, 95% CI = 1.8 – 6.4) and history of imprisonment ($AOR = 3.3$, 95% CI = 1.8 – 6.4) were significant predictors of TB in males. The predictors found among only females were; being 35 years or above ($AOR = 0.2$, 95% CI = 0.1 – 0.6), being employed ($AOR = 2.7$, 95% CI = 1.2 – 6.2), having a contact history with a relative with TB ($AOR = 10.3$, 95% CI = 1.9 – 55.9), having asthma ($AOR = 4.5$, 95% CI = 1.2 – 17.2) and use of steroid inhalers ($AOR = 8.3$, 95% CI = 1.0 – 68.5).

General Practitioners were the first choice of provider for symptomatic males and females. Females made more visits to care providers before they were asked to examine sputum ($M = 4.5$, $SD = 2.7$ vs $M = 3.3$, $SD = 2.0$). Both males and females had equal access to the conventional health facilities in terms of distance and travel time though travelling cost was higher for females in visiting a state facility, chest clinic or a DOT centre. More males together with their spouses had decision making power over health expenditure (51.4% vs 11.5%). More males (28.0%) than females (10.1%) had a significant patient delay.

More males interrupted treatment ($AHR = 1.99$, 95% CI = 1.27 – 3.12) and highest education level of grade 9 – 11 or below ($AHR = 1.89$, 95% CI = 1.16 – 2.98) and rarely or never being consulted in important family matters ($AHR = 1.75$, 95% CI = 1.10 – 2.79) were predictors among males though quantitative study failed to identify predictors for females. Narratives with individual male patients identified work related factors and substance abuse as barriers to

treatment and they had stopped treatment when fitness was regained. Females had problems regard to travelling cost and needed someone to accompany them. Both were affected by side effects of drugs and body weaknesses.

Most of the TB patients had concerns over stigma and discrimination though only a third had actually experienced. Majority did not reveal the disease status. Females worried more about children and housework while males worried more about loss of work and earnings. Males experienced rejection, distancing, avoidance in the society while females had problems with marriage. Both felt separation and avoidance at health institutions. Males isolated themselves from society while females isolated themselves from family. Fear of transmission, lack of awareness, link with disreputable behaviours, physical disability and non-adherence to treatment were the determinants of stigma while fear of transmission and discrimination led to self-isolation.

Conclusions and Recommendations: Notification rates of TB higher in males compared to females while females were less likely to diagnosed with a sputum smear examination compared to males. The risk factors for TB and their effect size were different between two groups. Access to healthcare was equal in most of the time except high travelling cost for females and male dominance in decision making power over health expenditure. Patient delay and treatment interruption were significantly higher for males. About a third of the patients had experienced stigma. Interventions are suggested in the areas of increasing suspicion and using more sensitive diagnostics in females, taking measures to prevent TB or improve early diagnosis and treatment for male prisoners, involving General Practitioners effectively in case detection, prioritising patient friendly interventions to improve compliance. Health seeking behaviour among presumptive cases need examination.

Keywords: Tuberculosis, Gender