

Available at www.sciencedirect.com

SciVerse ScienceDirect

journal homepage: www.elsevier.com/locate/IJMYCO

Daily contact with a patient and poor housing affordability as determinants of pulmonary tuberculosis in urban Pakistan

Batool A. Haider ^{a,b}, Saeed Akhtar ^{a,c,*}, Juanita Hatcher ^a

^a Department of Community Health Sciences, Faculty of Health Sciences, Aga Khan University, Stadium Road, Karachi 74800, Pakistan

^b Department of Epidemiology, Harvard School of Public Health, Harvard University, 677 Huntington Avenue, Boston, MA 02115, USA

^c Department of Community Medicine and Behavioural Sciences, Faculty of Medicine, Kuwait University, Jabriya 90805, Kuwait

ARTICLE INFO

Article history:

Received 28 November 2012

Accepted 29 December 2012

Available online 1 February 2013

Keywords:

Case-control study

Tuberculosis

Risk factors

Population attributable risk

Pakistan

ABSTRACT

Objective: This study aimed to evaluate the factors associated with pulmonary tuberculosis (TB) among individuals aged 15 years or more in urban Karachi, Pakistan.

Design and setting: A case-control design was implemented in three major tertiary-care hospitals to select cases ($n = 342$) with active pulmonary TB (i.e. two sputum smears positive for *Mycobacterium tuberculosis* with clinical and radiographic evidence of current pulmonary TB and diagnosed between August 2002 and October 2003. Selected controls ($n = 342$) were surgery patients from the same hospitals at time of recruitment of the cases, without clinical and radiographic evidence of pulmonary TB.

Results: Multivariable logistic regression model showed that daily contact with a pulmonary TB patient (adjusted odds ratio [OR_{adj}]) = 5.07; 95% CI: 3.31, 7.78), and poor housing affordability (i.e. rented vs. owned) (OR_{adj} = 1.59; 95% CI: 1.13, 2.26) were significantly associated with pulmonary TB status. The overall adjusted summary population attributable risk (%) for both the risk factors together was 38.7.

Conclusion: Reaching out to underprivileged TB patients for delivery of DOTS and focused education of patients and their contacts about *M. tuberculosis* transmission mode may substantially minimize pulmonary TB risk in this and similar settings.

© 2013 Asian-African Society for Mycobacteriology. All rights reserved.

Background

Globally, tuberculosis (TB) remains the second leading cause of death from an infectious disease with 8.8 million (range, 8.5–9.2 million) incident TB cases, 1.1 million (range, 0.9–1.2 million) deaths from TB among HIV-negative people and an additional 0.35 million (range, 0.32–0.39 million) deaths from human immunodeficiency virus (HIV) - associated TB in 2010 [1–3]. TB affects mostly adults in the economically productive age groups; around two-thirds of cases are estimated to occur among people aged 15–59 years and also more common among men than women [3].

In 2010, based on an annual incidence (231 cases per 100,000 population) and prevalence (364 cases per 100,000 population) of all types of TB, Pakistan ranked 6th among the 22 countries with the highest burden of TB in the world. Furthermore, Pakistan contributes about 44% of TB burden in the Eastern Mediterranean Region [4]. Despite the availability of highly efficacious treatment for decades and the adoption of DOTS by the NTP (Pakistan's National Tuberculosis Control Program) in 1995, these latest statistics showed an alarming increase over previously reported burden of TB in Pakistan [4].

Risk factors for TB identified in other parts of the world include intensive immigration from high prevalence to low

* Corresponding author at: Department of Community Medicine and Behavioural Sciences, Faculty of Medicine, Kuwait University, Jabriya 90805, Kuwait. Tel.: +965 24986542; fax: +965 25338948.

E-mail address: saeed.akhtar@hsc.edu.kw (S. Akhtar).

2212-5531/\$ - see front matter © 2013 Asian-African Society for Mycobacteriology. All rights reserved.

<http://dx.doi.org/10.1016/j.ijmyco.2012.12.003>

prevalence countries, contact with a TB patient, poor socio-demographic factors, tobacco smoking, alcohol abuse, HIV infection and institutionalization [5–12]. The role of these and other locally prevalent risk factors threatening TB control in Pakistan are yet to be fully established. Therefore, this case–control study aimed to evaluate the factors associated with pulmonary TB among individuals aged 15 years or more in urban Pakistan.

Methods

Study design and setting

This case–control study was conducted at three tertiary care hospitals in Karachi – the largest city and economic hub of Pakistan with a metropolitan area of 3530 km² and 17 million ethnically diverse populations. The publicly funded health care system lacks adequate financial and human resources, facilities and equipment, appropriate organizational structure with poor quality of services [13]. Pakistan's private sector makes a major contribution to providing health care, particularly in major cities. For this study, Civil Hospital (CH), Jinnah Postgraduate Medical Center (JPMC) and Liaquat National Hospital (LNH) were selected. Of these hospitals, CH and JPMC are public whereas LNH is a semi-private hospital. These hospitals were selected because they receive patients of almost all socioeconomic strata of Karachi.

Definitions and selection of cases and controls

A case of pulmonary TB was defined as an individual aged 15 years or more with active pulmonary TB, i.e. two positive sputum smears for *Mycobacterium tuberculosis*, clinical and radiographic evidence of current pulmonary TB and had been diagnosed for the first time between August 1, 2002 and October 31, 2003. A control was defined as an individual aged 15 years or more, attending the surgical departments of the above-mentioned hospitals at the time of recruitment of the cases, without clinical and radiographic evidence of pulmonary TB, as recorded in the medical file of the hospital. Cases were selected from the TB clinics of the study hospitals. Since the source population of the cases cannot be easily identified in a hospital-based study, therefore, controls were selected from the surgical departments of the same hospital in order to have a similar referral pattern as the cases. This provided some reassurance that all subjects come from the same source population [14–17]. Controls admitted with complaints or diseases of the respiratory system or with a past history of TB were excluded from the study. Cases and controls were also excluded if they were unable to give an interview due to ill health or unstable state of mind.

Questionnaire and data collection

A structured and pre-tested questionnaire was used for data collection. The questionnaire comprised six components, including questions on socio-demographic characteristics, exposure to smoke from a biomass stove, contact with a pulmonary TB patient, history of institutionalization, tobacco

smoking status and history of chronic diseases. Two trained interviewers collected the data from all the enrolled cases and controls.

Ethical considerations

A written informed consent was sought from all patients/guardians after explaining the purpose of the study and assuring the confidentiality of collected information. The study protocol was approved by the institutional ethics review committee, and permission for data collection was sought from the heads of TB clinics and the surgery departments of the study hospitals.

Sample size

For this study, a sample size of at least 185 cases and 185 controls was estimated based on the 33% prevalence of smoking among potential control subjects [18], an alpha error of 0.05 [19], study power of 80% and an odds ratio (OR) ≥ 2 to relate most of the risk factors with pulmonary TB status.

Statistical analyses

Data were double entered using EPI-INFO version 6.04 (Centers for Disease Control and Prevention, Atlanta, GA, USA) and analyzed with SPSS version 14 (SPSS Inc., Chicago, IL, USA). Descriptive statistics were computed to describe the distribution of various characteristics of cases and controls. Using simple logistic regression, unadjusted OR and their 95% confidence intervals (CI) were calculated to assess the association of each variable with pulmonary TB. All independent variables associated ($P \leq 0.25$) with the pulmonary TB status in univariable analyses were considered for inclusion in the multivariable logistic regression model [20]. These included age, gender, ethnicity, educational level, marital status, housing affordability, overcrowding, past hospitalization, exposure to a relative with TB and daily contact with a TB patient. Adjusted ORs (OR_{adj}) and their 95% CI were used for interpretation of the final model. Additionally, the parameters' estimates from the final model were used to compute the population attributable risk (PAR) percent of TB for each risk factor and summary PAR (%) for all the risk factors together [21].

Results

A total of 342 cases and 342 controls were recruited in the study. Response rate was 99.8%. The mean (SD) age (years) of cases and controls was 33.3 (16.7) and 40.7 (15.7), respectively. The proportions of male cases and controls were 52% and 48%, respectively. Furthermore, 55% of the cases and 73% of the controls were currently married. The proportions of cases and controls with no formal school education were 25% and 30% respectively. Additionally, 77% of the cases and 70% of the controls were living in overcrowded housing (Table 1). Univariable logistic regression analyses showed that age, marital status, house ownership, ethnicity, overcrowding, occupation, a family member who smoked, past

Download English Version:

<https://daneshyari.com/en/article/3405237>

Download Persian Version:

<https://daneshyari.com/article/3405237>

[Daneshyari.com](https://daneshyari.com)