

GENDER DISPARITY IN PREVALENCE OF TUBERCULOSIS IN REGION VARNA IN 2012

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SUMMARY

Aim: To assess the gender differences among suspected pulmonary tuberculosis patients undergoing diagnostic sputum smear microscopy.

Materials and methods: The study covered the patients with TBC diagnosed and treated in the region of Varna during 2012. Data have been gathered by the Laboratory of Microbiology at the Specialized Hospital of Pneumologic and Phthisiatric Diseases of Varna Ltd.

Results: Gender and age are both traditionally known variables in terms of incidence and prevalence of pulmonary tuberculosis. The patients were classified into various groups according to gender and age. In 2012 the number of the men suffering from tuberculosis is repeatedly greater than those concerning the women (42 men to 29 women from 2012). This is probably due to the numerous risk factors among men, but biological mechanisms may actually account for a significant part of this difference between male and female susceptibility to TB.

Key words: Pulmonary tuberculosis; Incidence; Sex Differences;

INTRODUCTION

With approximately 2 billion latent or active infections, and between one and two million annual deaths worldwide, TB is among today's most serious global health concerns. The global TB epidemic is characterized by significant differences in prevalence between men and women. That rates of TB are much higher among men than women in large areas of the world[4] (Figure 1).

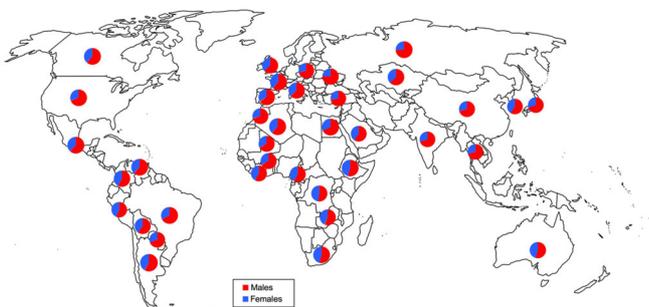


Fig. 1. Sex distribution for new smear-positive TB case notification in 2007 in various countries [3].

According to the Ministry of Health in Bulgaria, in the last five years, the proportion of men and women in all cases of TB is 2:1. In 2011 the number of registered male patients was 1 608, or 67%.

MATERIALS AND METHODS

The study covered the patients with TBC diagnosed and treated in the region of Varna during 2012. Data have been gathered by the Laboratory of Microbiology at the Specialized Hospital of Pneumologic and Phthisiatric Diseases of Varna Ltd.

RESULTS AND ANALYSIS

In 2012, a total of 2252 culture-based examinations have been carried out. Of them 1489 (66,11%) male and 763 (33,88%) female (Figure 2).

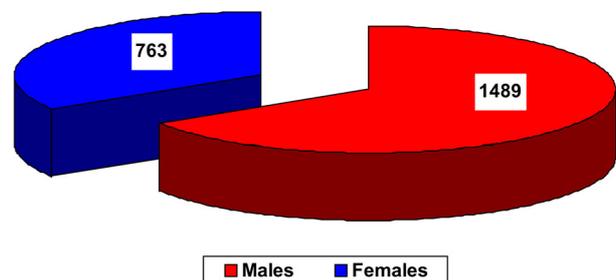


Fig. 2. Gender & TB Suspects (undergoing Sputum Examination) from Jan -Des 2012

Figure 2 shows the total amount of males and females of pulmonary tuberculosis suspects undergoing AFB sputum smear examination. According to the data above females who are suspected of TB were less than males.

In addition, males undergoing AFB sputum smear examination were much more than the females. The AFB smears were found to be positive predominantly among males. 42 males out of 1489 were found positive for AFB in comparison to 29 out of 763 females.

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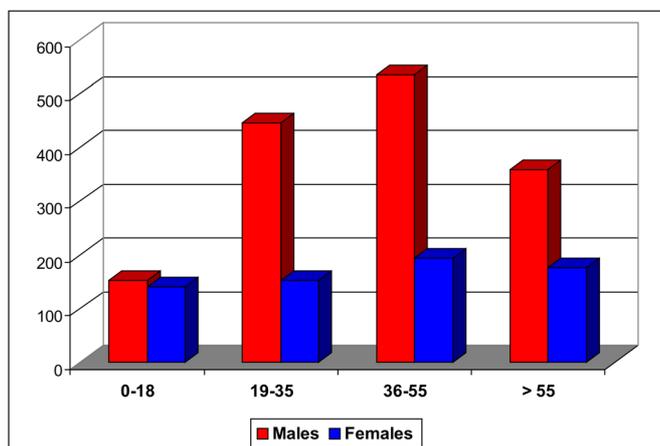


Fig. 3. Age distribution patients with suspicious TB from Jan–Dec 2012

Figure 3 shows the age group distribution of the pulmonary tuberculosis suspects during the study period.

Age distribution of new smear positive cases (total of both sexes) shows that the majority of cases are spread between the ages from 19 to 55 years (Figure 4). This is economically the most productive age group [5].

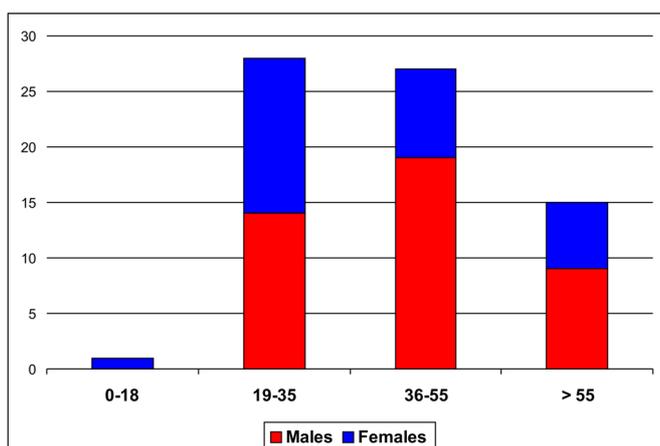


Fig. 4. Gender and age wise distribution patients with positive culture-based examination from Jan–Dec 2012

In 2012 the number of the men suffering from tuberculosis is repeatedly greater than those concerning the women. This is probably due to the numerous risk factors among men: smoking (by 2005, 57% of smokers in Bulgaria are men and 43% are women, and 53 per cent were aged over 39 years), alcoholism, drug abuse, and males being more likely to become infected, and socioeconomic/cultural barriers in access to healthcare [7].

However, biological mechanisms, such as sex hormones may actually account for a significant part of this difference between male and female susceptibility to TB.

The effects of sex steroid hormones on immune response to TB are documented in humans and animals models. Female mice are more resistant to infection with *M. intracellulare* and *M. marinum* [3]. The castration of males or treatment of females improves their resistance to infection, demonstrating that testosterone is partially responsible for the increased susceptibility of mice to *M. marinum* infection [2]. In female mice infected with *M. avium*, the number of bacilli in the lungs of infected mice increased after ovariectomy, suggesting a protective effect of female sex hormones. Estrogens enhance the bacteriostatic activity of IFN- γ against *M. avium* via increased nitrite production by macrophage [6]. These findings show that estrogens enhance the host immune protection against mycobacterial infections, whereas the testosterone suppressed the immune reactivity.

CONCLUSION:

Our study reveals that low AFB sputum smear positivity was observed among females. The results support the hypotheses such as that males are more susceptible to TB infection. The combination of biological and social factors is responsible for these differences and that knowledge, as well as research within this field, is insufficient [1].

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