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## Mortality from Tuberculosis as an Indicator of Psychosocial Distress

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Tuberculosis is one of the so-called social diseases; therefore the epidemiological parameters of tuberculosis are often used as an indicator of social well-being in the country [1]. At first glance, the existence of a link between suicide and tuberculosis mortality seems doubtful since suicidal behavior is a psychosocial phenomenon, while tuberculosis is an infectious disease. However, there are at least several possible aspects of such link at the individual level. First, there are arguments in favor of the psychosomatic nature of tuberculosis [2]. Here, the common etiological factor of suicidal behavior and tuberculosis can be psychosocial distress accompanied by a decrease in the immunity, in general, the body's resistance, which increases the risk of tuberculosis [2]. Besides, an important aspect of existence of relationship between the suicidal behavior and tuberculosis is a suicidal behavior of patients with tuberculosis. One of the most common mental disorders in patients with tuberculosis is depression, which increases the risk of suicide [3]. The literature also reports of an increase in the risk of suicidal behavior against the background of anti-tuberculosis drugs [4].

In general, the mortality rate of tuberculosis patients from external causes: injuries, alcohol poisoning, murders and suicides, is 4 times higher than in the common population [5]. A number of previous studies have attempted to identify the relationship between suicide and tuberculosis mortality at the population level. In one of them, it was shown that between 1990 and 1995, in 15 countries of Eastern Europe, the suicide rate was positively correlated with the death rate from tuberculosis, while in 17 of Western Europe countries there is no such a correlation [6]. At the same time, the level of both types of mortality was significantly higher in the countries of Eastern Europe. On the basis of these data, a hypothesis was proposed, according to which the level of mortality from tuberculosis, along with the level of suicide can be an indicator of the socio-economic crisis.

A later study showed a close relationship between the trends in suicide rates and mortality from tuberculosis in the late 1980 s and early 1990 s in Belarus, which confirms the important role of the psychosocial distress caused by the socioeconomic crisis in the etiology of suicide and death from tuberculosis [7,8]. It was also suggested that the level of suicide is a more sensitive indicator of the psychosocial distress than the death rate from tuberculosis due to the latency of tuberculosis [9].

Until recently, Russia was among the countries with the highest mortality rate from tuberculosis and suicide [10,11]. One study showed that unemployment, low incomes, poor living conditions and unbalanced diet are risk factors for tuberculosis death in the Urals, which is one of the most unfavorable regions of Russia [12]. In the Kaluga region, the risk of morbidity and mortality of the population from tuberculosis increases with a decrease in the able-bodied part of the population, an outflow of investments from the region, deterioration in living conditions, and a decrease in the level of employment of the population [13]. The results of recent study suggest a positive aggregate-level association between mortality from tuberculosis and suicide rates in Russia [14]. Collectively, these findings indirectly support the hypothesis that mortality from tuberculosis can be considered as an indicator of psychosocial distress.

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