

IMPORTANCE OF TUBERCULOSIS RISK FACTORS - A COMPARATIVE ANALYSIS BETWEEN RURAL AND URBAN ENVIRONMENT

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Abstract: The purpose of this article consists in the classification of the TB risk factors depending on the TB prevalence, attributable risk and odds ratio, followed by a comparison between the urban and rural environment.

Material and method: this study took into consideration two groups of subjects from the urban and rural environment, by using an epidemiological inquiry, between 2000 and 2006.

Conclusions: Tuberculosis contact was on the first place, both in the urban and rural environment, followed by the other factors, but with different classifications regarding the two environments.

Keywords: risk factor, prevalence, urban and rural environment.

Rezumat: Context: acest articol este necesar în vederea susținerii tezei de doctorat. Scop: constă în clasificarea factorilor de risc în funcție de prevalența tbc, risc atribuibil și odds ratio, urmate de compararea rezultatelor obținute din mediul urban cu cele din rural.

Material și metodă: acest studiu a fost efectuat pe baza unei anchete epidemiologice între anii 2000-2006, pe două loturi, unul provenit din mediul urban iar celălalt din mediul rural. **Concluzie:** pe primul loc s-a situat contactul tbc în ambele medii, urmat la distanță de ceilalți factori, dar cu clasificări diferite în cele două medii.

Cuvinte cheie: factori de risc, prevalență, tbc, mediu urban, mediu rural.

Living conditions: in crowded areas, insalubrious, low exposure to the Sun, deficient house hygienization or its complete lack, moving in centres of contagion.

Smoking, by the compounds existing in the cigarette smoke, it may produce a continuous irritation of the respiratory mucosa and the inhibition of the evacuation mechanisms from the bronchi level.

Lacking food and chronic alcoholism, due to vitamins and proteins long term deficiency obviously influence the TBC resistance (1).

Social, locative conditions and the education level influence the TBC infection differently, according to the urban or rural environment the infected person is living in. There was a larger TBC incidence in the urban environment because of over-agglomeration, pollution, industrialization, that supposed a massive migration of the rural population in towns (6), then, due to the increased living standard and the improvement of the working, living and health conditions, an important decrease of tuberculosis was registered. The rural environment remained with a larger incidence of tuberculosis, as against the city, due to many factors: sanitary assistance services are less qualified and less required by the less educated and informed population, precarious hygienic and sanitary conditions (5)(4).

Endogenous factors (7) represent the totality of the influences of the internal environment that contribute directly to the organism's susceptibility or resistance to tuberculosis. In this respect, we mention: *sex and age*.

INTRODUCTION

Due to the fact that tuberculosis still remains a major public health issue, both at international and national level, the study of the population's risk factors plays an important part in preventing and fighting against tuberculosis.

Tuberculosis risk factors are of two types: exogenous and endogenous.

Exogenous factors (7):

Climatic factors (temperature, humidity, atmospheric pressure, air movements, pollution) may affect the organism's capacity of reaction. (2).

Social conditions. The poor countries have an increased incidence of tuberculosis, registering a larger morbidity and mortality than the developed countries. (1).

PURPOSE OF THE RESEARCH

This study aims at classifying the risk factors according to tuberculosis prevalence, attributable risk, odds ratio and at comparing the results gathered from the rural and urban environment.

MATERIAL AND METHOD

We used two batches of subjects for this paper: one from the urban environment, made up of 1826 subjects registered with the medical offices in Oradea and the other, comprising 869 subjects registered with the primary care office of the village of Sîrbi, placed at about 40 km. from Oradea, in the county of Bihor.

PUBLIC HEALTH AND SANITARY MANAGEMENT

The study was based on the epidemiological inquiry and was developed over a period of 6 years (2000-2006). We used the medical records of the patients from the primary care offices, as well as the evidence sheets belonging to the tuberculosis health centre of Oradea. Based on the epidemiologic inquiry, we obtained the prevalence of the different risk factors, then we assessed the attributable risk (how large is the risk of the disease in those exposed to the risk factor, in comparison with those unexposed), the relative risk (how many times is the disease risk larger in those exposed to the risk factor, as against those unexposed). We estimated the risk for being affected by this disease through the Odds-ratio (OR) method, considering it a good method for the relative risk, taking into account the relative few cases of tuberculosis included in our research (3).

RESULTS AND DISCUSSIONS

Tuberculosis prevalence according to the risk factors in the urban environment. Tuberculosis prevalence obtained on the entire batch of the urban environment was of 1,92%. Then, we estimated the urban prevalence per each risk factor, which we evidenced in graphic no. 1.

By analysing the risk factors, we noticed that the most increased tuberculosis prevalence was encountered in tuberculosis contact (6,01%), followed by the poor social conditions (3,70%) and toxics consumption (3,33% for alcohol consumption and 3,09% for smoking).

Picture no. 1. Tuberculosis prevalence according to the risk factors – urban environment

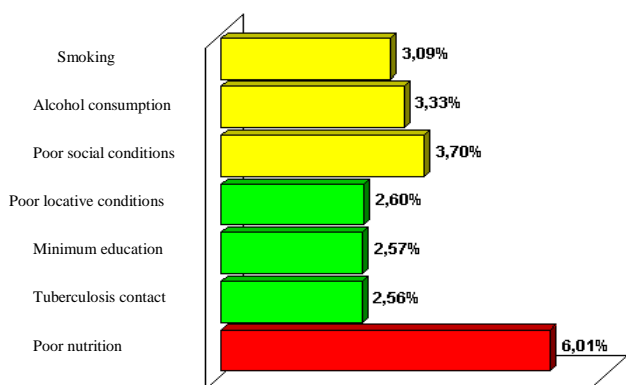


Table 1 emphasizes the risk factors and the relative risk (column 1 under the form of OR) and the attributable risk (column 2).

After tuberculosis contact, whose relative risk is of 6,01, the highest relative risk is registered in the case of the poor social conditions (RR=3,94), followed by alcohol consumption (RR=2,97) and smoking (RR=2,58). At the opposite pole, the lowest risk belongs to the age group under 20 (1,14), to the average locative conditions (1,26), to overweight people (1,27) and to the average social conditions (1,88).

Tuberculosis prevalence according to the risk factors in the rural environment. Tuberculosis prevalence in the patients from the rural environment is of 2,66.

The highest tuberculosis prevalence was encountered in the tuberculosis infected people (7,05%), followed by toxics consumption (4,46% in smokers and 4,17% in alcohol consumers). Tuberculosis prevalence in the subjects with poor locative and social conditions was also high (3,73%, respectively 3,37%).

Table 1. Relative risk and attributable risk regarding the main risk factors – urban environment

	OR	RA (%)
Masculin gender	2,41	58,5
Age		
≤ 20 years old	1,14	12,3
≥ 60 years old	1,75	42,9
Smoking	2,58	67,6
Alcohol consumption	2,97	69,9
Social conditions		
Poor	3,94	74,6
Average	1,99	49,8
Locative conditions		
Poor	2,60	61,5
Average	1,35	25,9
Minimum education	1,86	46,2
Nutrition condition		
Underweight	2,56	60,9
Overweight	1,27	21,3
Obese	1,48	32,4
Tuberculosis contact	6,01	83,4

Picture no. 2. Tuberculosis prevalence according to the risk factors– rural environment

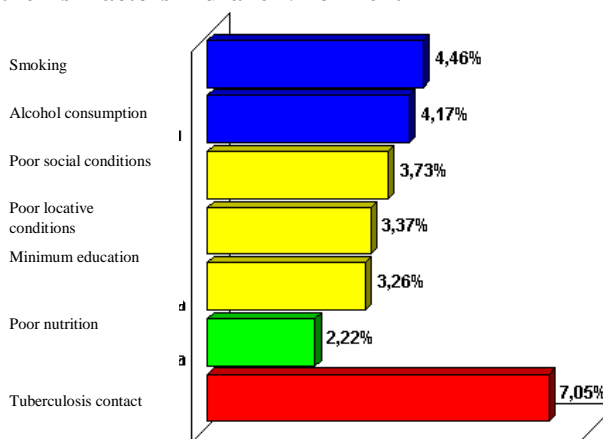


Table 2 will present the main risk factors for which we assessed the relative risk, on column 1 and the attributable risk on column 2.

With the exception of tuberculosis contact, (RR=6,41), the highest risk in the rural environment is represented by the poor locative conditions (RR=3,37), followed by alcohol consumption (RR=3,18).

The lowest tuberculosis risks in the rural environment are represented by the overweight people (1,11%), the age group above 60 and the average social conditions.

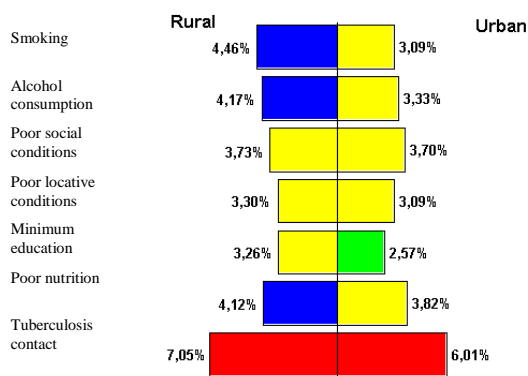
Tuberculosis prevalence according to the risk factors in both environments: Distribution of the risk factors prevalence in the urban and rural environment is presented in picture 4.

Irrespective of the risk factor, tuberculosis prevalence is larger in the rural environment than in the urban one. Regarding the rural environment, tuberculosis prevalence of more than 4% is encountered in the case of three risk factors, while in the urban environment, tuberculosis prevalence, with the exception of TBC contact, does not exceed 3,82%.

Table 2. Relative risk (under the form of odds ratio, OR) and the attributable risk for the main risk factors – rural environment

	OR	RA (%)
Masculine gender	2, 87	65, 2
Age		
≤ 20 years old	1, 74	42, 5
≥ 60 years old	1, 43	30, 1
Smoking	2, 13	77, 6
Alcohol consumption	3, 18	76, 0
Social conditions		
Poor	2, 85	64, 9
Average	1, 58	36, 7
Locative conditions		
Poor	3, 37	70, 3
Average	2, 41	58, 5
Minimum education	2, 74	63, 5
Nutrition condition		
Underweight	2, 22	55, 0
Overweight	1, 11	9, 9
Obese	1, 79	44, 1
Tuberculosis contact	6, 41	84, 4

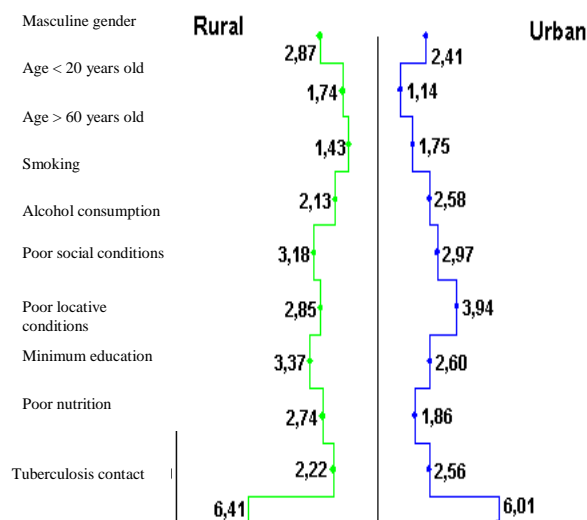
Picture no. 3. Tuberculosis prevalence according to environment and risk factors.



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In the case of extreme ages, the third age has a larger risk in the urban environment (1, 75) than in the rural one (1, 43), while in the case of those under the age of 20, the situation is inverse. The larger risk occurs in the villages, for ethylism, education, locative conditions, while in the city, the reduced living conditions induce a higher risk.

Picture no. 4. Tuberculosis risk according to the environment and risk factors



CONCLUSIONS

From the point of view of tuberculosis prevalence, related to the risk factors, **the tuberculosis contact** could be found on the first place, at a large distance from the other factors. It is followed by the nutrition condition (3,95%), social conditions (3, 72%), alcohol (3,65%), smoking (3,31%), locative conditions (3, 19%) and education level (2,87%). This classification is maintained in the urban environment, while in the rural environment, it presents differences. Thus, all values are larger and although, tuberculosis contact is on the first place, the order is the following: smoking, alcohol and social conditions, with more than 4%, while regarding the urban environment, no risk factor exceeds 4%, with the exception of the tuberculosis contact. As a result of the assessment of the relative and attributable risk, the highest risk is encountered in the people affected by tuberculosis, followed by the social conditions, alcohol consumption, age under 20, locative conditions and the underweight. This pattern is maintained in the urban environment. The rural environment presents larger risks than in the urban environment, with the exception of the social conditions, smoking, malnutrition and age above 60.

Following these observations, it may be said that the largest risk is encountered in the persons with tuberculosis contact. A considerable risk is also encountered in those with reduced social and locative level, with vices such as smoking, alcohol consumption and last but not least, those belonging to the extreme categories, especially children under the age of 9. Many of these risks are higher for those living in the rural environment (tuberculosis contact - 6,41, locative conditions - 3,37, alcohol consumption - 3,18, masculine gender - 2,87, education - 2,74, age under 20 - 1,74), due to the large differences existing between the village and town, even in the Romania of the XXIst century.

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