



TUBERCULOSIS AS A SOCIALLY SIGNIFICANT DISEASE - EPIDEMIOLOGICAL ANALYSIS FOR GABROVO DISTRICT

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ABSTRACT

Tuberculosis is now a disease that is spreading at threatening pace worldwide. This trend is generally noticeable in Bulgaria as well, but in recent years a gradual decrease in the number of cases of the disease has been recorded. This is the result of the consistent policy of prevention, early detection and treatment of active forms of tuberculosis and it is in relation to the National Programme for Prevention and Control of Tuberculosis 2007-2011. On this basis a Regional Programme for Gabrovo District has been developed. In connection with the implementation of its strategic objective of reducing the morbidity of the population, diverse and beneficial activities are being carried out. Expression of the results of these activities are indicators of declining incidence of the disease in recent years and they are commensurate with the national average rate. The credit goes to a team of highly qualified and experienced professionals from the specialized Pulmonary Hospital and greater activity in search of ill and contact individuals in the district.

Key words: contamination, risk groups, contact persons, morbidity, prophylactics, comparative analysis.

TOPICALITY OF THE PROBLEM

Tuberculosis is a disease that people with reduced immunity are susceptible to. Besides, there are vulnerable groups including people who smoke and indulge in alcohol and drugs; who live in poor housing and hygienic conditions, or are under permanent stress. In terms of worldwide spread, tuberculosis is now a disease that outnumbers even AIDS. Disease development in different age groups takes place at different rate, depending on the social, economical, cultural and housing conditions. According to World Health Organization the disease is spreading at threatening pace with a new person being infected every second. It kills more people - young and adult - than any other infectious disease, ranking as the leading cause of death among women. Every year from 8 to 10 million people get infected with tuberculosis and 2 million die from it with 100 thousand of them being children. This makes the disease not only a problem of today but

also a problem of tomorrow. A great part of the infected people today carries dormant tuberculosis bacteria and lives under the threat of developing the disease. On the other hand, people who are not infected are constantly subjected to the risk of getting infected. There are, therefore, two approaches to fighting tuberculosis:

1. To continuously reduce the infectious reservoir.
2. To make the uninfected part of the population more resistant to possible infections.

It is not by chance that March 24th was declared World Day for Fighting Against Tuberculosis. On that date the German microbiologist Robert Koch discovered the cause of tuberculosis.

The lungs are affected in 90% of all cases of tuberculosis. The source of infection comes from people and animals that have developed the disease. In 85 % of all cases the infection takes place through the air. When people suffering from active pulmonary TB cough, sneeze, speak, or spit, they expel infectious aerosol droplets. The people in the immediate

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area can get infected by inhaling those droplets. The tuberculosis bacteria in the dust is capable of living under nearly all usual conditions for a long time and it can be easily inhaled through the dust in rooms and in the street. Another method of infection is through food and drink – drinking of raw milk from infected animals.

Tuberculosis mycobacterium dies very quickly if directly exposed to the Sun's rays but in dark and humid places it is capable of living for a very long time. That is why it is essential to live in good hygienic conditions and in airy rooms.

It has been found that only around 22% of all people who have been in prolonged contact with the tuberculosis bacterium get infected. And from those only a small part – around 10%, develop the disease at some point of their life. Whether a person will develop the disease or not depends to a great extent on their natural powers of resistance. Most people remain only carriers of tuberculosis bacterium. Their immune system manages to cope with the tuberculosis bacterium which remains in a latent form, the so called latent tuberculosis infection. Such people cannot transmit the infection to other people. However, they can develop the disease later in their life because of impaired immune system. [4]

Since tuberculosis is a socially significant disease its prophylactics is the major method of fighting it. Prophylactics include activities preventing healthy people from developing the disease, proper treatment and monitoring of sick patients, tracing of patients' contacts, registration and dispensarization.

It is essential for healthy people and those at risk for tuberculosis to fight bad habits like smoking, alcohol and drug abuse, to maintain a healthy diet and a hygienic lifestyle, to strengthen their body's defensive mechanisms with exercise and fresh air, to avoid stress, exhaustion and contact with infected individuals. The Bacillus Calmette Guerin (BCG) Vaccine is used as a primary prevention of tuberculosis in many countries. In Bulgaria it was introduced in 1958 and has ever since been compulsory for newborn babies, the purpose being to develop a specific immunity against tuberculosis bacteria at the very beginning of their life. Since the immunity created by BCG Vaccine lasts only

for a period of 1, 5 to 3 years children have to be revaccinated. BCG vaccinations along with variola vaccinations are the most popular worldwide prevention activities.

In Bulgaria there are a variety of reasons for the increased spread of tuberculosis. Lifestyle, low social status, poor hygienic habits, and the resistance of tuberculosis to certain medications are among the reasons. But another factor is the difficulty of isolating carriers of the disease due to the legal rights of individuals.

A major factor in getting infected and developing active tuberculosis is the spread of HIV infection as it is known to cause a serious weakening of the immune system. Global migration processes can also be viewed as a factor since the level of TB morbidity among immigrants and refugees is relatively high. Considering individual's behavior, the factors that could give rise to developing the disease are smoking, alcoholism and narcotic addiction. Also not to be underestimated are diabetes, malignant tumors and organ transplant. Their treatment often requires long term immune suppression which is considered a major risk factor.

Poverty, stress and malnutrition lead to weakening of the body's defensive mechanisms, which makes them risk factors.

Another reason for the spread of tuberculosis in the last few years is the lack of organization. Dispanserization of patients was not well organized. The existing dispensarization and medical prophylactic offices were closed. Essential issues related to tuberculosis disease were transferred from phthisiologists to general practitioners. Motivation of medical staff continues to be low and the number of experienced specialists in the area of phthisiatry has dropped in the last several years.

As for the patients, they should be encouraged to cooperate during the ambulatory phase of their treatment. Much could be done in this direction in Bulgaria. In fact that practice has been long established in other countries giving very desirable results. During the second phase of their treatment at home patients can take medications only two or three times per week. If the patients are motivated to visit the medical offices for prevention of and fight against tuberculosis and to take their

medication regularly, the success of their therapy will be much greater. Because the patient receives the same benefit from a smaller amount of medicine, intermittent therapy may also reduce drug side effects. That approach is known as “direct observation”. It could be of great help in monitoring “difficult” patients and giving them medical assistance. Such patients could be further encouraged to complete their treatment by providing them with food rations, medication, clothing and other basic living necessities. The countries applying “Directly Observed Therapy” (DOT) are known to have achieved a significant success in TB treatment. When TB patients receive all medications as prescribed under a program of DOT, both patients and community benefit. In those countries, the state does not assume sole responsibility for DOT programs; non-governmental organizations, such as charities, and faith-based initiatives also play a role.

It is also a concern of state and other organizations working under DOT programs to isolate TB bacteria carriers.

It is essential that all contact children under the age of five should be found and taken care of as they are at the greatest risk of TB infection. This also holds true for all adults with risk factors for TB – they should be informed about the symptoms of the disease so that they could recognize them and be able to seek the right sort of medical help in time. [6]

A tendency towards increase of TB morbidity has been witnessed over the past 10 -15 years in Bulgaria. Fifteen years ago there were a maximum of 18 new cases per 100 000 population. Now there are 40-70 and more than 70 new cases per 100 000 population in different regions of the country. [4]

Over the past few years a tendency towards a steady decline in the number of new cases has been registered, which is the result of the improved organization in fighting tuberculosis. TB infection control has been greatly improved. It includes identifying people with TB symptoms and supporting them to go through all aspects of diagnosis and treatment. Thus from 2001 till now the number of people with TB is gradually decreasing, the rate of the decline being most marked in the last one or two years. According to the National Center of Health Informatics new registered cases in 2004 were 42.4 per 100 000 population, in

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2005 – 40.1, in 2006 – 39.1, in 2007 – 37.1 and in 2008 – 38.5. In 2007 the total number of registered people with tuberculosis was 3052, with 67% of them being male patients. 90% of all cases are new cases, 8% of all cases are TB relapses, 2 % of all cases are patients who have failed to complete their treatment. Patients’ age ranges from 0 to 92 years. The most affected age group ranges from 35 to 54 years (33%), followed by people more than 65 years old (8%). In the group of over 25 year olds the number of male patients is greater while in the group of children and adolescents under 15 years the ratio is approximately 1:1. The number of new cases of tuberculosis registered in Bulgaria in 2008 amounts to 3151.

The regions having the highest TB incidence rate in Bulgaria are Vidin, Vratsa, Gabrovo, Kyustendil, Montana and Pernik. For example, in the district of Vratca the incidence rate is higher than the average rate for the country – 59 per 100 000 population, in the district of Pernik it is 55 per 100 000 population and in the district of Dobrich – 40-50 per 100 000 population. For Gabrovo District for the year 2009 this number is 44, 4 per 100 000 population. [4]

The “National Program for Prevention and Control of Tuberculosis in the Republic of Bulgaria for the Period 2007-2011” is a result of the united efforts of the government and health care professionals to find a rational approach for fighting the disease. The program was established under an agreement for ensuring gratuitous help under the program “Improvement of Tuberculosis Control in Bulgaria” signed in September 2007 between the “Global Fund for Fighting AIDS, Tuberculosis and Malaria” and the Ministry of Health. The goal of the program is reducing the spread of tuberculosis in Bulgaria. The main concern of the program is improving the quality of health services offered to Roma community, prisoners, drug addicts, alcoholics, etc. The key to reducing the spread of tuberculosis is recognizing it in time, diagnosing it correctly and providing the best treatment. The program objectives are to regularly reduce tuberculosis morbidity to under 27 per 100 000 population by the year 2014. [2] At the moment morbidity rate in Europe is 19/100 000 but in some countries, for example in ex Soviet republics it is much greater. In Romania it is 117 per 100 000 population. Carrying out the program does not lead to

immediate decrease in morbidity rate. On the contrary, in the beginning and particularly in the first year a lot more new cases are uncovered as a result of the increased activity. Decrease in morbidity rate as a result of all measures taken under the program is not to be expected until after a year.

EPIDEMIOLOGICAL ANALYSIS FOR GABROVO DISTRICT

The trend after the year 2000 is towards decrease in tuberculosis incidence and Gabrovo district is not an exception. **Table 1** presents information about the registered cases of tuberculosis by years for a period long enough to outline the direction of trends. The

peak of both total morbidity and new cases is registered at the beginning of the observed period – 1995 and around 2000. Temporary decrease in morbidity is observed in 1985. After the year 2000 that tendency of decline remains stable, especially in the last three years. (**Fig.1.**)[1] This is the result of the consistent policy of prevention, early detection and treatment of active forms of tuberculosis and it is in relation to the National Programme for Prevention and Control of Tuberculosis 2007-2011. On this basis a Regional Programme for Gabrovo District has been developed.

Table 1. Registered cases of active tuberculosis (per 100 000 population) – for Gabrovo district

Years	Total		Incl. new cases		Tuberculosis of respiratory system		Incl. new cases		Non respiratory tuberculosis		Incl. new cases	
	number	per 100 thousand	number	per 100 thousand	number	per 100 thousand	number	per 100 thousand	number	per 100 thousand	number	per 100 thousand
1975	340	193,3	76	43,2	291	165,4	62	35,2	49	27,9	14	8,0
1985	229	125,9	49	26,9	163	89,6	41	22,5	66	36,3	8	4,4
1995	240	151,9	96	60,7	173	109,5	81	51,3	67	42,4	15	9,5
2000	310	203,5	100	65,7	265	174,0	92	60,4	45	29,5	8	5,3
2005	240	178,1	96	70,7	100	73,6	91	67,0	6	4,4	5	3,7
2007	164	123,2	75	56,3	156	117,2	69	51,8	8	6,0	6	4,5
2008	156	118,1	68	51,5	144	109,0	63	47,7	11	8,3	4	3,0
2009	140	107,2	58	44,4	124	95,0	50	38,3	16	12,3	8	6,1

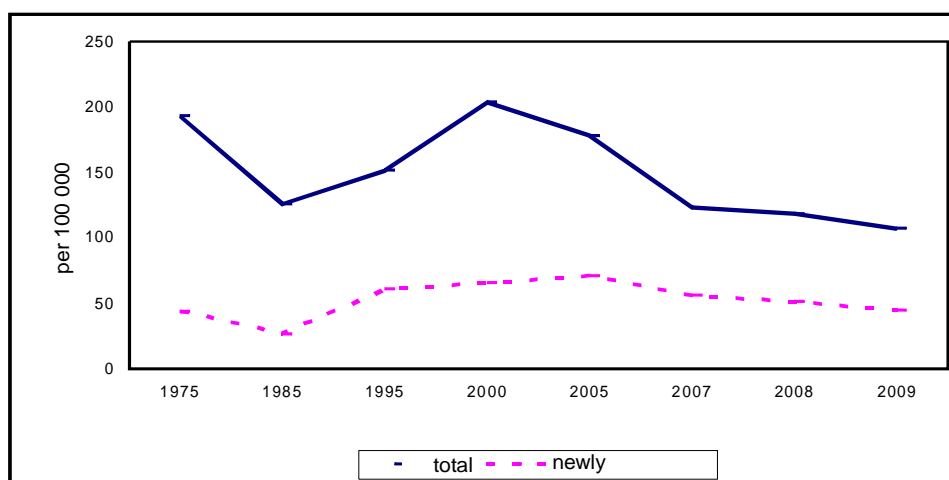


Fig. 1. Dynamics of the total active tuberculosis morbidity for Gabrovo District during the period comprising the years from 1975 to 2009

A variety of beneficial activities aimed not only at reducing tuberculosis incidence but also at maintaining a steady decline have been carried out. [3]

A network of microbiological laboratories for carrying out microbiological analysis has been established in Gabrovo District. In 2009 alone, there were 88 results from microbiological analyses provided by microbiological

laboratories. Personal, medical records have been introduced for all new cases registered from 01.01.2009 onwards containing all the necessary medical data needed to provide the best treatment.

Tracing patients' contacts has become a regular practice. Every new patient with tuberculosis is registered and information about place of residence, occupation, contacts, etc is entered in his/her medical record. In 2009 alone, 511 contact persons were traced with 8.24 contact persons per patient with tuberculosis.

Contact persons are registered in hospitals for examination, treatment and dispensation. They are made medical records for diagnostic and treatment purposes. A Mantoux test is carried out, sputum and urine analysis, x ray examination of lungs.

Every change in address of residence of patients is registered and contact with hospitals in other regions is maintained so that patients can successfully complete their treatment. In connection with the implementation of the tasks and goals set in the Program a cooperation with other institutions has been established, such as RIPCPh - Gabrovo (Regional Inspection for Prevention and Control of Public Health) where the addresses of the new patients are sent for chemical treatment of their homes; RIPCPh responsibility is to prepare a risk-assessment questionnaire; RCHS (Regional Center for Healthcare Services) – Gabrovo; Gabrovo Municipality; Offices for Social Services, Media, Multiprofile Hospital for Active Treatment of Gabrovo; Prosecutor's Office; Ministry of Home Affairs; Social Care Facilities; "Mother and infant" section".

Health educational materials – methodological instructions, brochures, posters, etc. are

constantly developed and distributed. Educational discussions are held with students, employees, new patients, contacts and hospital patients. Articles on the occasion of the World day for fighting tuberculosis - March 24th are

published in local newspapers, as well as the analysis of the test results obtained during the "Week of open doors". The purpose is to create awareness and to draw the attention of the public towards the disease because it is not a problem only of people with tuberculosis but of the whole society as well.

Meetings with police officers, local government officials, employees of Municipality and social workers are held in connection with servicing people with tuberculosis and screening of addicts in the region of Gabrovo. Meetings are also held with mayors and regional police officers of villages in the vicinity for seeking assistance in tracing contacts. Prophylactic check-ups and examinations of people at risk, such as people who are residing or temporarily placed in social welfare institutes are generally organized with the help of the chairman of the "Regional Council for Narcotic Substances", the director of the "Regional Center for Social Assistance" and the director of "Mother and infant" section.

Meetings are periodically held with patients to discuss their problems, needs, food, conditions of life, restrictive regime, etc. They are also informed about the risks and dangers imposed by the disease both for them and those around, about new medicines and therapies, length of treatment, side effects, etc.

The implementation of the activities under the program for prevention and control of tuberculosis requires the overcoming of certain difficulties. Sometimes, people who have come in for the TB skin test don't come back for the result from, so they don't find out whether they have tuberculosis or not. When health care professionals try to trace them using the address they provided, they frequently find out that they gave a false address. The lack of a non-governmental organization in the region for cooperation in tracking down contact persons from minority groups makes the work under the program more complicated.[3]

Table 2. Registered cases of active tuberculosis (per 100 000 population) – for the whole country

Forms of disease	1980	1990	1995	2000	2005	2006	2007	2008
total	178,2	106,0	154,9	173,4	127,7	121,5	120,0	119,7
Incl. new cases	37,0	25,9	40,5	41,0	40,1	39,1	37,1	38,5
Tuberculosis of the respiratory system	115,1	80,5	123,4	144,8	106,5	101,1	100,2	99,9
Incl. new cases	25,6	19,9	33,9	35,6	35,4	35,2	33,0	34,4
Non respiratory tuberculosis	63,1	25,5	31,5	28,6	21,2	20,5	19,8	19,8
Incl. new cases	11,4	6,0	6,6	5,4	4,7	3,9	4,1	4,1

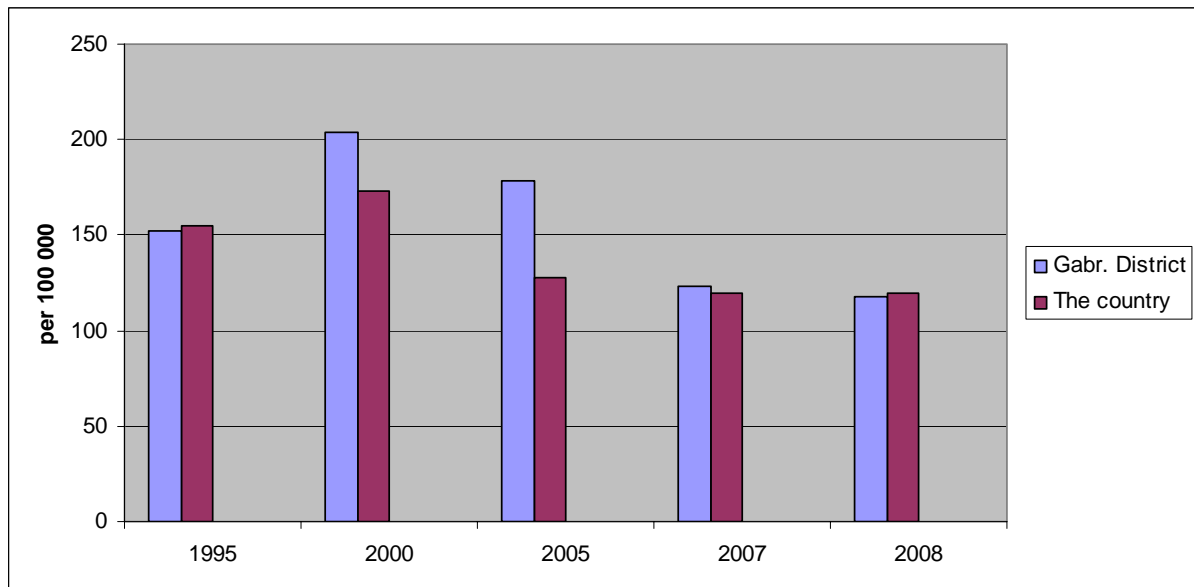


Fig. 2. Comparative presentation of total tuberculosis morbidity for Gabrovo District and the country.

The comparative analysis of total tuberculosis morbidity for Gabrovo District and the country as a whole shows equal trends of morbidity development for the period 1995-2008. (**Table 2. Fig. 2**) Higher morbidity rate in Gabrovo District is recorded in the years 2000 and 2005. The data for the rest of the years are commensurable, with insignificant deviation. It has to be pointed out that on the territory of Gabrovo District there is a specialized pulmonary hospital with a team of highly qualified and experienced professionals, which accounts for the greater effectiveness of tuberculosis contact tracing and for the lower level of tuberculosis morbidity in the region. [1][5]

CONCLUSION

Tuberculosis is now a disease that is spreading at threatening pace worldwide, which poses a real problem not only of today but also of tomorrow. This trend is generally noticeable in Bulgaria as well, but in recent years a gradual decrease in the number of cases of the disease has been recorded. This is the result of the consistent policy of prevention, early detection and treatment of active forms of tuberculosis. Much stricter control has been established over treatment and tracing of ill and contact persons. Expression of this policy is the National Programme for Prevention and

Control of Tuberculosis 2007-2011. On this basis a Regional Programme for prophylactics, early diagnosing and treatment of tuberculosis has been developed. In connection with the implementation of its strategic objective of reducing the morbidity of the population, diverse and beneficial activities are being carried out. Expression of the results of these activities are indicators of declining incidence of the disease in Gabrovo District in recent years and they are commensurate with the national average rate. The credit goes to a team of highly qualified and experienced professionals from the specialized Pulmonary Hospital and greater activity in search of ill and contact individuals in the district.

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