

Homelessness And Associated Risk Factors For Patients With Tuberculosis

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Abstract

According to the WHO estimations, diseases associated with the poverty account 45% of the morbidity in the poor countries, and tuberculosis, malaria and HIV/AIDS together are responsible for 18% of the total morbidity burden.

Material and methods: A retrospective selective, descriptive study of socioeconomic, epidemiological peculiarities, case-management, diagnosis and microbiological characteristics of 95 homeless patients with tuberculosis registered in Chisinau in 2016 was performed.

Results: The subgroups which were linked with the sociovulnerability in homeless and predisposed development of tuberculosis were: unemployed, patients with low level of the school education, harmful habits, migration and the history of imprisonment. Medical biological conditions which contributed to the development of tuberculosis were: comorbidities, HIV positive state, mental disorders and harmful habits with mental impairment. Disease related characteristics which make therapeutic issues were severe, extended, disseminated and chronic forms of tuberculosis. One third of

the groups was microscopic positive for AFB, of which 17% had MDR-TB requiring the second-line anti-tuberculosis treatment with injectable drugs in the intensive phase.

Conclusions: Ambulatory treatment can be implemented in the management of homeless tuberculosis patients in the actual epidemiological state of the RM, if a complex of patients supporting measures will be performed.

Key words: tuberculosis, treatment, outcome, homeless.

INTRODUCTION

Tuberculosis represents a serious public health problem in the Republic of Moldova (RM) and Ukraine, affecting the mostly active economic age group of the population. It is an infectious disease linked with social determinants of the health⁶. Social determinants represent a set of factors, that contribute to the social definition of the health, disease or illness in which are referred collective terms⁶. It was established that the decline of tuberculosis epidemiological indices is attributed to the improving of social and economic conditions, rather than to the treatment advances^{1,2}. The international review identified that in the majority of the high-income states, the combination of the industrial development with the use of anti-TB drugs, associated with the social and infrastructure improvement contributed to the drop of the epidemiological indices^{1,2}. By the other side, despite the improvement of the diagnostic and treatment options in low-income and middle-income countries, the major unsolved social determinants make their population continuously vulnerable to the infections, especially to poverty-related diseases^{1,2,8,9}. According to the WHO estimations, diseases associated with the poverty account 45% of the morbidity in the poor countries, and tuberculosis, malaria and HIV/AIDS together are responsible for 18% of the total morbidity burden¹. Even if the chronic noncommunicable diseases are rapidly emerging in the economically poorest regions, the infectious diseases still represent a significant proportion of their public health burden.

Multiplés studies identified that poverty, illiteracy, gender inequality and rapid urbanization, which are largely unaddressed and represent the general cause of spreading of tuberculosis¹. The most affected groups by tuberculosis, being assessed as hard-to-reach groups are homelesses, migrants, individuals living with HIV and drug injected users^{10,11,12}. In this paper we evaluated according to the social, demographic and economic characteristics 95 tuberculosis patients registered as homeless, term which included homelessness (lack of home) and the lack of permanent residence. All patients were diagnosed in Chisinau during 2016 year. The objectives were: 1. Assessment of the socioeconomic and epidemiological risk factors of homeless patients which were associated with tuberculosis. 2. Evaluation of the case management, diagnosis, radiological patterns and microbiological characteristics of homeless tuberculosis.

MATERIAL AND METHODS

It was performed a retrospective selective, descriptive study targeting social, demographic, economic and epidemiological peculiarities, case-management, diagnosis, radiological aspects and microbiological characteristics of 95 tuberculosis patients registered as homeless in Chisinau during 2016. The electronic system for monitoring and follow-up of tuberculosis cases (SIME TB) was used for the selection. Data were extracted from the statistic templates F089/1-e „Declaration about the patient’s established diagnosis of new case/relapse of active tuberculosis and restart of the treatment and its outcomes” and F090/e „Declaration and follow up of multidrug-resistant tuberculosis”. The inclusion criteria were tuberculosis diagnosed by the specialist and signed informed consent ⁴. Statistical analysis was carried out using the quantitative and qualitative research methods ⁷.

RESULTS AND DISCUSSION

According to the data obtained from the monitoring and follow-up of the cases during the period of 2016 year were registered 95 tuberculosis cases among homeless residents of Chisinau, which included 72 (76%) men and 23 (24%) women, with a male/female rate 3.1/1. Repartition of patients into age groups, according to the WHO recommendation identified that the largest subgroups were between 45 and 54 years old, as well between 35 and 44 years old, respectively 29 (26%) and 30 (28%) patients. Less numerous were patients from the subgroups 25-34 years old 20 (23%), 55-64 years old 8 (10%), 15-24 years old 6 (7%) and older than 65 years 2 (2%) patients. The total number of young patients who were between 18 and 44 years old constituted 55 (57%), which showed that homelessness and tuberculosis are concentrated in the young subpopulation (fig. 1).

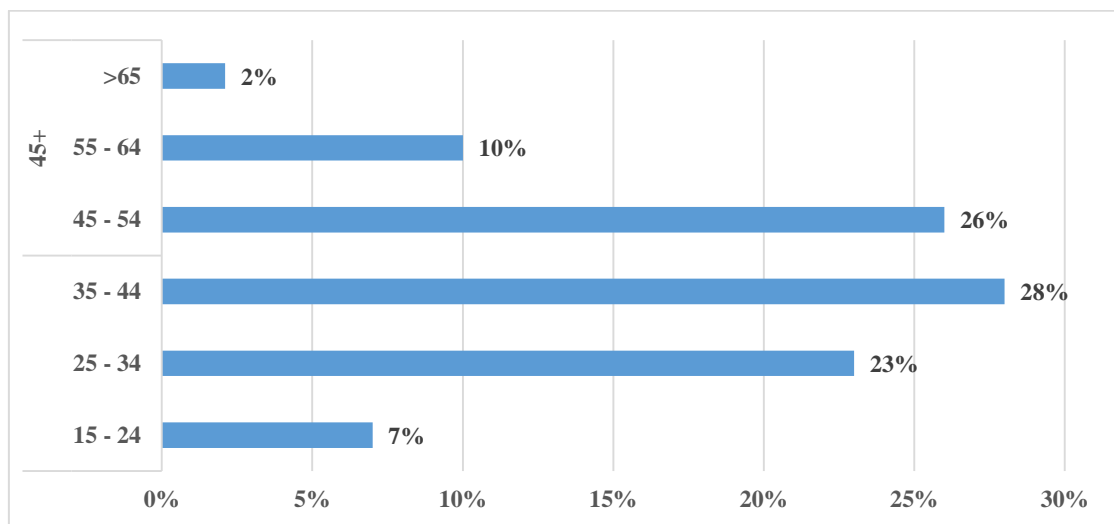


Fig. 1. Distribution of patients by age (%)

When distributing patients, according to the economic status, it was established that employed persons, which were contributing to the health budget by paying taxes were 24 (25%). Retired were 14 (14%) patients. Disabled were 2 (2%) patients. Unemployed patients made up the majority of the

group 55 (57%) cases. Pupils and students were 5 (5%). Assessing the educational level, it was established that the most of the patients had secondary education - 54 (56%) cases. Lack of studies, as well primary and incomplete secondary education were established in 40 (42%) and 4 (4%) had superior education - bachelor studies. Married were 52 (54%), single state had 38 (39%), widows and divorced were 5 (5%). The information is exposed in the figure 2.

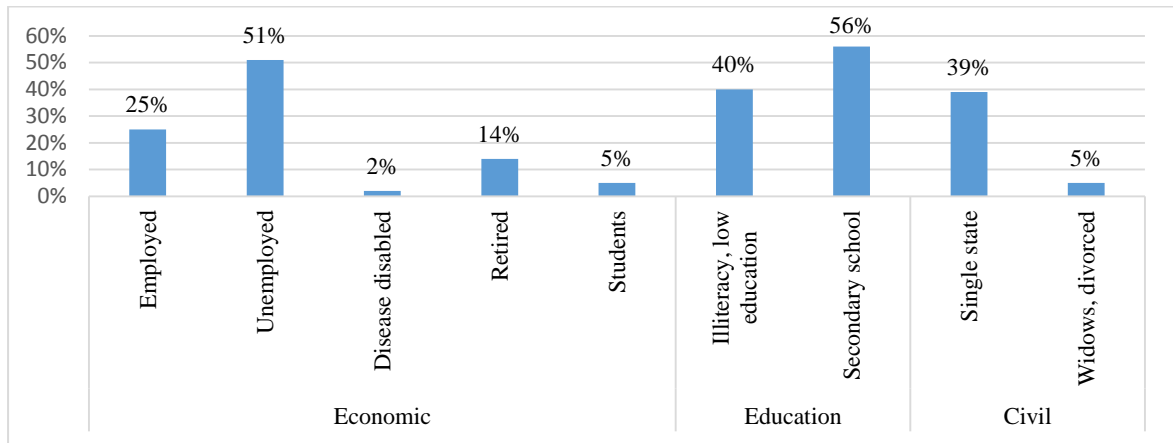


Fig. 2. Distribution of patients by economic, education and civil state (%)

Migrants were defined persons who left the Republic of Moldova for more than 3 months during the year when tuberculosis was diagnosis. The data confirmed that 14 (15%) patients were migrants. History of detention during the last year was identified in 3 (3%) cases. Close infectious contact with a member of a family who was previously diagnosed with tuberculosis was established in 7 (7%) patients. Comorbid patients were 62 (65%). Tobacco smoking was identified in 87 (89%) and chronic alcoholism in 60 (63%). Among comorbidities predominated HIV-infection – 16 (17%). Two drug users were identified 2 (2%) patients. Psychiatric diseases were diagnosed in 4 (5%) patients. The information is exposed in the figure 3.

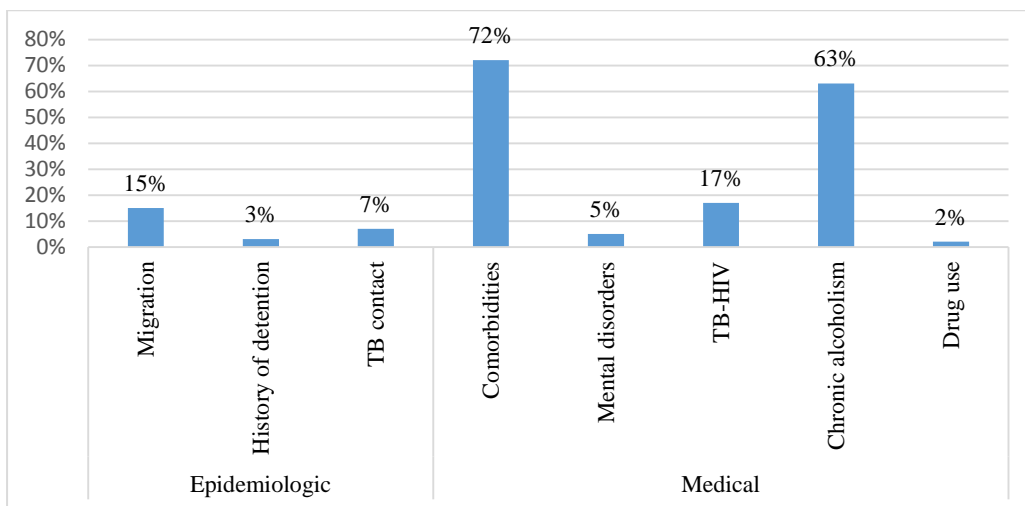


Fig. 3. Distribution according to the risk groups

Studying case-management, it was identified that the general practitioners was involved in the detection of one third of the group – 27 (29%) and the specialists detected 20 (21%) patients. Screening of the patients from high risk groups performed by the general practitioners detected 6 (8%) cases and through the investigation of the symptomatic cases - 14 (15%) cases. Pulmonologists detected 20 (22%) symptomatic patients, among then 6 (6%) from high risk groups. Came directly for hospitalization into a specialized institution or were hospitalized due to the personal requirement 22 (24%) cases. While distributing patients, according to the registered case type, it was identified that the new cases, never treated cases, predominated – 65 (68%) compared with the relapses - 21 (22%) cases. Patients recovered after a previous „loss to follow-up” were 7 (7%) and treatment failure 1 (1%). After death were diagnosed 2 (2%) cases. Extrapulmonary forms of tuberculosis were diagnosed in 6 (6%) patients. Severe with extensive destructions pulmonary infiltrative tuberculosis – caseous pneumonia was diagnosed in 10 (11%) cases. Disseminated tuberculosis and fibro-cavernous tuberculosis were diagnosed in 5 (5%) patients. Extended tuberculosis in both lungs were diagnosed in one third of the group - 25 (26%). Destructions of the pulmonary parenchima and caverna were identified in 26 (25%) cases.

When assessing the laboratory features of the enrolled pulmonary tuberculosis patients, was identified that one third of the entire sample was microscopic positive for acid-fast-bacilli, 26 (27%) patients. A lower proportion of patients were identified to have positive bacteriological results at cultivation on solid Lowenstein-Jensen either liquid MGIT BACTEC media 24 (34%). The molecular genetic assay was performed in all cases, but positive results were obtained in 31 (32%) cases, including rifampicine sensitive were 18 (20%) and resistant 13 (14%) cases. The information is exposed in the figure 4.

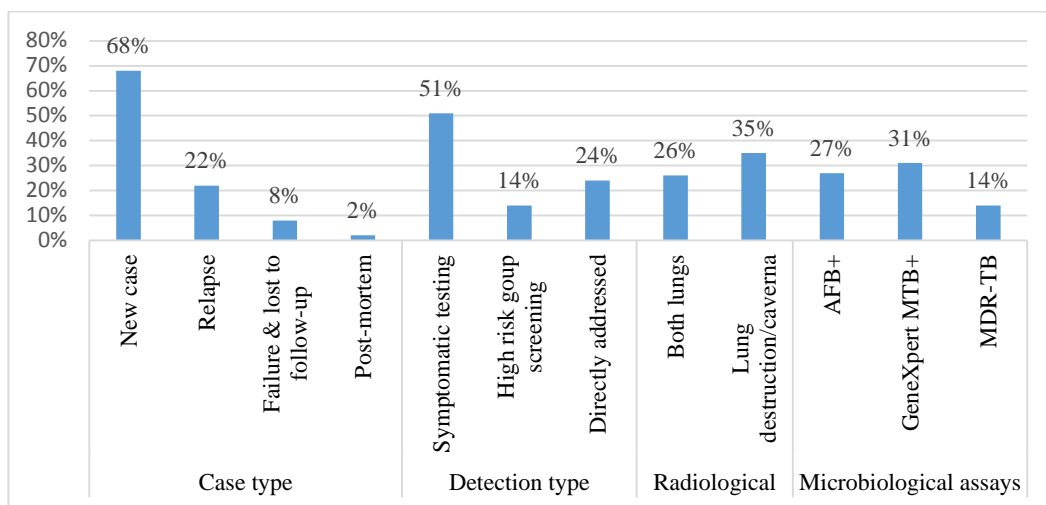


Fig. 4. Distribution according to the case type, medical staff involved in the case detection, radiological characteristics and microbiological features
Note: MBT-Mycobacteria tuberculosis, AFB – acid fast bacilli

The standard treatment for the new drug-susceptible tuberculosis in the Republic of Moldova is used since 2000, lasts 6 months and consists of two phases with four first-line drugs: isoniazid (H), rifampicin (R), ethambutol (E) and pyrazinamide (Z) in the intensive phase and two first-line drugs: isoniazid and rifampicin in the continuation phase. For previously treated cases was used a regimen which lasts 8 months: 2 months with H, R, E, Z, S and 1 month with H, R, E, Z and 5 months with H, R and E. Patients with rifampicin-resistant or MDR-TB were treated with second-line drugs for 18 months or more divided in two phases The regimen composition during the intensive phase lasts 6 months and included kanamycin (Km) or capreomycin (Cm), levofloxacin (Lfx), para-amino salicylic acid (PAS), ethionamide (Eto), cycloserine (Cs) and pyrazinamide (Z) and for continuation phases during 12-18 months of Lfx, PAS, Etho, Cs and Z. All cases were hospitalised during the intensive phase in specialised institutions (Municipal Hospital of Tuberculosis, Institute of Pneumophthysiology). The continuation phase was performed in ambulatory conditions. The standard treatment for drug susceptible tuberculosis with first line anti-tuberculosis drugs for new cases was used for the treatment of 50 (51%) cases with drug susceptible form and with second line anti-TB drugs were treated 15 (17%) cases with MDR-TB, of which 1 (1%) patient was established with extensive drug resistance (XDR-TB). Successfully treated were 43 (45%) cases, failed the treatment 7 (7%), were lost to follow-up 13 (14%) cases and died 11 (12%) patients. Were still continuing the treatment 8 (9%) patients and not data available was established in 13 (13%) cases, which are the candidates for lost to follow up candidates. So, the low therapeutic outcome, which included therapeutic failure, lost to follow-up and patients without outcome available was established in every second case – 50 (52%). Information is exposed in the figure 5.

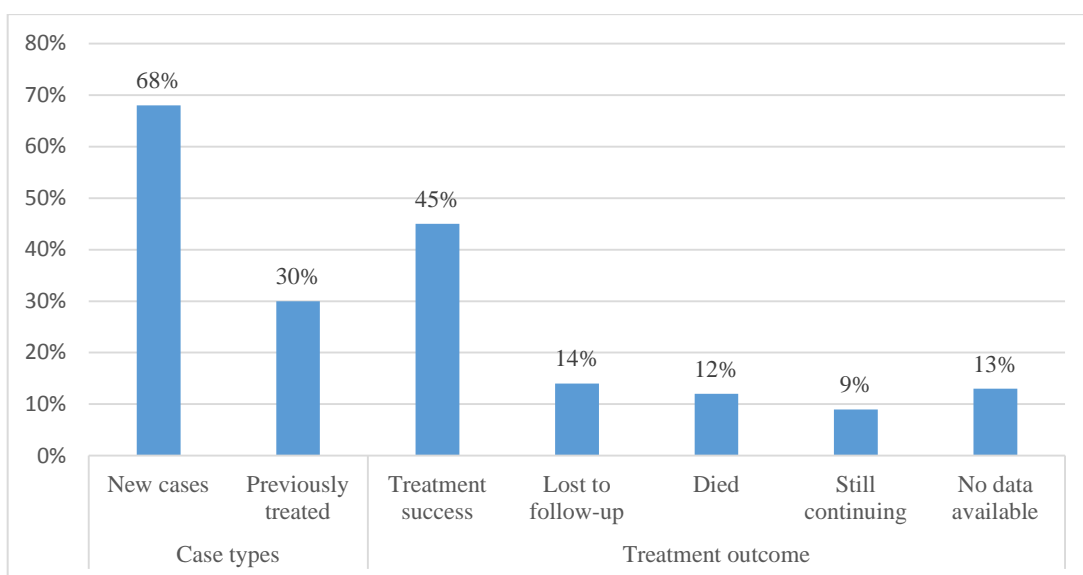


Fig. 5. Treatment outcome of tuberculosis patients

An important research outcome represents the identification of the subgroups of patients in which the priority interventions for reducing the risk of acquiring tuberculosis are the most suitable. The groups which were linked with the sociovulnerability and predisposes development of tuberculosis are: unemployment, low level of the school education, harmful habits, migration and the history of imprisonment. Medical biological conditions which contributed to the development of tuberculosis were: comorbidities, HIV positive state, mental disorders and harmful habits with mental impairment. Disease related characteristics which make therapeutic issues were severe, extended, disseminated and chronic forms of tuberculosis. One third of the groups was microscopic positive for AFB, of which 17% had MDR-TB requiring the second-line anti-tuberculosis treatment with injectable drugs in the intensive phase. Generally, the treatment outcome did not achieved the 85% of success, as recommended by WHO ¹. The final results were diminished by a high proportion of patients (55%), which had a low outcome due to therapeutic incompliance, severe forms of tuberculosis and comorbidities. The relation between tuberculosis indices and hard-to-reach groups was widely studied ^{1,2,3,5}. Globally, the epidemics of tuberculosis is much higher in social vulnerable subpopulations ^{10, 11,12}. It can be explained by the complexity of risk factors, which reflects the barriers for accessing the healthcare services and to achieve the treatment completion ⁵. In the RM the specialised institutions offer a standard approach, which corresponds to the international recommendation and national regulations ⁴. The actual international recommendation imposes the ambulatory treatment of tuberculosis patients ². Our research established that the increased rate of social vulnerable patients among homeless subpopulation (unemployed, migrants, patients with history of imprisonment, with low degree of school education) reduces the treatment effectiveness. Tuberculosis indices are linked with overcrowding, low level of sanitation and infectious clustering, which also endangers the treatment ending, however no studies assessed those conditions. Disease related characteristics, such as extensiveness, severity, duration of the tuberculosis evolution, drug resistance spectrum were not included as conditions with high impact on the treatment outcome in the international papers.

Conclusions

Homelessness is one of the informal excluding criteria from ambulatory treatment due to deep social economic vulnerability. Associated diseases, which can reduce the treatment effectiveness are those which reduce the immune resistance and those associated with psychic impairment (psychiatric disorders, harmful habits such as chronic alcoholism and drug use). Disease related characteristics, such as extensiveness, severity, duration of the tuberculosis evolution, positive microbiological state and multi-drug resistance were conditions which reduced the effectiveness as well. Ambulatory treatment can be implemented in the management of tuberculosis patients with homeless state of lack

of residency in actual epidemiological state of the RM, if a complex of patients supporting measures will be performed.

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