INTRODUCTION

Tuberculosis is still an important global public health issue, constituting a problematic infectious disease which affects mostly the disadvantaged young adults [1]. Only in 2012, there were reported 8.6 million new tuberculosis cases and 1.3 million tuberculosis deaths [2]. A crucial issue for an effective control of tuberculosis is the detection of this condition followed by a prompt and suitable treatment of the disease [2]. Furthermore, some other key indicators for a successful control of this condition consist of the case notification rates and the treatment success rates which, as a matter of fact, are included in the Millennium Development Goals monitoring framework [2].

The tuberculosis case notification rate in Europe in 2012 was significantly higher than the global average notification rates [3], but this may not hold true for the transitional countries of the Western Balkans including Albania and Kosovo. Compared to Serbia, Albania and Macedonia, Kosovo has the highest incidence rate of tuberculosis [4]. In both Albania and Kosovo, the tuberculosis notification rates are quite similar to the respective incidence rates [4]. Interestingly, Kosovo has a high tuberculosis incidence rate among the Balkan countries coupled with a particularly low prevalence of HIV infection [4,5].

The information about Albania is scant. In early 1990s, Albania underwent significant political and socioeconomic changes from a strict communist regime to a democratic and market-oriented system [6]. Nevertheless, the transition has been associated with massive internal and external migration [7] which poses serious difficulties for reliable population estimates, including also the case-notification rate of tuberculosis. The fast transition from state-enforced collectivism towards a market-oriented system which is associated with poverty, high unemployment rates, financial loss and social mobility, and huge emigration, but at the same time with increased personal and religious freedom in a predominantly Muslim secular society, continue to spot Albania as a unique country in Europe, notwithstanding the fact that it shares many features with other transitional former communist countries [8,9]. However, the health effects of such rapid transition in the unique Albanian context have not been adequately investigated [10]. In particular, the current trends of tuberculosis in Albania have not been scientifically reported yet. In this framework, the aim of this study was to describe the distribution of tuberculosis in Albania, the most isolated former communist country in Southeastern Europe.

METHODS

A cross-sectional study was conducted in Albania in 2012-2013. All pulmonary tuberculosis patients diagnosed in Albania from June 2012 to June 2013 were included in this study (N=197; 69% males and 31% females; overall mean age: 43.8±19 years). The recording and reporting system was performed according to the WHO and EuroTB Surveillance guidelines. Socio-demographic characteristics included age, gender, residence, marital status, employment status, educational attainment and income level. In addition, data on selected risk factors were collected including smoking status, excessive alcohol consumption, presence of a separate kitchen in the house and distance to health care facility.

RESULTS: There were 136 (69%) male and 61 (31%) female cases. About 29% of the cases were 15-24 years old, whereas 19% were ≥65 years old. About 45% of the patients were residing in urban areas. The unemployment rate was particularly high (43%) and only 29% had completed at least nine years of formal schooling. The overall prevalence of smoking was 21%. Only 27% of the patients reported a separate kitchen at their respective homes, whereas 23% had a distance >20 km from their health care facilities.

CONCLUSION: Our study offers useful evidence which could inform health professionals, policymakers and decision-makers about the occurrence and distribution of tuberculosis cases in post-communist Albania, a country in the Western Balkans which is still struggling in its transition towards a market-oriented system.

Keywords: Albania, case detection rate, incidence, pulmonary tuberculosis.
attainment (trichotomized into: no formal schooling, \(\leq 8\) years and \(\geq 9\) years of formal schooling), and income level (trichotomized into: good, average and bad).

In addition, data on selected risk factors were collected including smoking status (dichotomized into: yes vs. no), excessive alcohol consumption (yes vs. no), presence of a separate kitchen in the house (yes vs. no), and distance to health care facility (trichotomized into: <10 km, 10-20 km, \(>20\) km).

Descriptive statistics were used to describe the distribution of demographic and socioeconomic characteristics and selected risk factors among tuberculosis patients. Absolute numbers and their respective percentages were reported. Statistical Package for Social Sciences (SPSS, version 15.0) was used.

**R**esults

Table 1 presents the distribution of demographic and socioeconomic characteristics of tuberculosis patients in Albania during June 2012 – June 2013. Of the 197 cases, there were 136 (69%) males and 61 (31%) females. Overall, about 20% of the cases were 15-24 years old, 23% were 25-34 years old, 9% were 35-44 years old, 14% were 45-54 years old, 15% were 55-64 years old, and 19% were \(\geq 65\) years old. About 45% of the patients were residing in urban areas compared to 55% of the cases who were rural residents. On the whole, about 84% of the patients were currently married, whereas the remaining 16% were single, divorced, or widowed. The unemployment rate was particularly high in this study population (43%). About 8% of the patients had no formal education at all, 63% had attained some primary education (up to 8 years of formal schooling), whereas 29% had completed at least 9 years of formal schooling. About 28% of the patients reported a good income level, 47% an average income, whereas 25% reported a bad income level (Table 1).

Table 2 presents the distribution of selected risk factors among tuberculosis patients in Albania. Overall, only 27% of the patients reported a separate kitchen at their respective homes. About 43% of participants had a distance from their health facilities, 34% had a distance of 10-20 km from their health facilities, whereas the remaining 23% had a distance of \(>20\) km from their health care facilities. The overall prevalence of smoking among tuberculosis patients was 21%, whereas the prevalence of excessive alcohol consumption was about 9% (Table 2).

**D**iscussion

Our analysis informs about the recent magnitude and distribution of tuberculosis cases in Albania. Overall, there were recorded 197 new cases of tuberculosis in Albania from mid-2012 to mid-2013, with a male-to-female ratio of 2.2 (136/61).

Our finding related to a considerably higher case notification rate of tuberculosis among males compared with the females is compatible with reports from most of the other countries in the region and beyond [12,13]. Under-notification of tuberculosis cases is particularly relevant for low-and-middle income countries due to limited resources and also weak surveillance systems [14,15] and this may affect mostly females, which
are more vulnerable. Therefore, notwithstanding the biological explanations, there are strong arguments in favor of a link between female under-notification rates in the context of specific cultural factors which play an important role in developing and transitional societies [16-18]. A similar situation may well apply in transitional Albania.

Interestingly, the age distribution of the tuberculosis cases over the period under investigation was not very different between various age-groups; yet, there were recorded fewer cases among the age-group 35-44 years (about 9%), whereas the highest number of cases was noted in the age-group 25-34 years (23%). The share of patients residing in rural areas was somehow higher (55%) compared with their rural counterparts. The prevalence of unemployment (43%) was considerably higher than the official reports of the overall Albanian population. Similarly, more than 70% of the patients with tuberculosis had 0-8 years of education, a level which is significantly higher than in the overall Albanian population of the same age-group (10). As for the income level, there was a far more balanced distribution, with a comparable proportion of tuberculosis cases who reported a good and a bad income level.

Regarding the putative risk factors, our study indicated that only 27% of the patients with tuberculosis had a separate kitchen at their homes. Furthermore, only 43% of the overall cases had a distance of <10 km to their respective health facilities. As for the classical risk factors, the prevalence of smoking was not very high (21%), whereas the prevalence of excessive alcohol consumption was about 12%. Finally, almost one in ten tuberculosis patients had co-morbid conditions.

Our study may have several limitations. We included in our analysis all new patients with tuberculosis diagnosed during the period June 2012 – June 2013. However, under-recording of tuberculosis cases is possible, a fact which would underestimate the magnitude and the dynamic of this condition in Albania. In any case, there is no plausible reason to assume a differential recording of new cases based on the demographic and socioeconomic profiles of the patients with tuberculosis. Furthermore, our instruments for measurement of socioeconomic characteristics and selected risk factors were based on interview, which could bear – to some degree – the risk of information bias. Future studies in Albania should explore in a more vigorous manner the main determinants of tuberculosis in the general population.

In conclusion, our study offers useful evidence which could inform health professionals, policymakers and decision-makers about the occurrence and distribution of tuberculosis cases in post-communist Albania, a country in the Western Balkans which is still struggling in its transition towards a market-oriented system.

Conflicts of interest: None declared.

References