

Cardiovascular Risk Factors Research in Bosnia and Herzegovina

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ABSTRACT

This study describes the current situation of cardiovascular risk factors research in the Bosnia and Herzegovina, with special emphasis on the Herzegovina region. The available data for the analysis includes various secondary sources, including project reports, official vital statistics data and other sources. Currently, there is a substantial lack of relevant information, which is available from occasional surveys or isolated studies. One of the main problems in detailed analysis is the lack of detailed and reliable census data, which causes problems in calculation of various rates and disables the creation of representative population samples for the field work and subsequent analysis. Comparison of the available information with neighbouring Croatia indicates interesting mixture of relatively high prevalence of some risk factors and rather low prevalence of others; almost 50% of men reported smoking on a daily basis, while only 16.5% of men were obese, while 40% of them had blood pressure over 140/90 mmHg. The results provide useful but incomplete information for the policy, thus suggesting that broader scope of public health research is needed in the region coupled with the census data, in order to provide better information for health policy and ultimately delivery of the optimal health care to the entire population.

Key words: cardiovascular, public health, war, risk factor, Bosnia and Herzegovina

Introduction

Setting

Up to 1991, Bosnia and Herzegovina was a part of federal Yugoslavia. During the 1992–1995 war the former state was engaged in fierce warfare, resulting in the formation of two territorial units – Federation of Bosnia and Herzegovina and Republika Srpska, the two being separated by the Inter-Entity Boundary Line. The two entities are semi-autonomous, with attempts to re-integrate into the previously defined geographic region. The 1992–1995 war resulted in extensive devastation of the infrastructure, large number of casualties and breakdown of economy¹. During the war, even the most basic vital statistics data was either not collected nor was considered reliable due to extensive population migration patterns induced by the war¹. In such situation, only the wartime public health activities were available, while the regular disease surveillance was not high on the pri-

ority list (except infectious diseases surveillance). Nevertheless, there were no known larger epidemics of alimentary diseases or other infectious diseases, possibly due to the functioning public health emergency services and other actions undertaken in order to reduce the disease burden². After the war has ended, health system faced substantial difficulties, residing in the insufficient infrastructure, lack of information for policy, lack of appropriate staff and equipment, all causing the delivery of suboptimal health care.

Population Characteristics

Bosnia and Herzegovina is a country of large diversity, in both religious and ethnic differences, geograph-

ical and socioeconomic differences, as well as the possibility that some of the risk factors are differently expressed in various parts of the country which encompasses mountainous regions, relatively flat lowlands of the North-West as well as the Mediterranean climate regions in the South. All these premises require that a detailed and a highly structured survey be undertaken before the situation can be defined and described in detail. This is why a comprehensive survey should be performed, taking into account all those premises and enabling the creation of the relevant information for health policy creation. This is where experience from other countries may help, but the local specificities should nevertheless be carefully investigated and taken into account in any intervention model. Similar model is being implemented in Croatia, residing on the public health nurses as the outreach element^{3,4}. The basis of this programme is associated with the Croatian Adult Health Survey (CAHS), which was undertaken in 2003, and subsequently it was turned into the follow-up study with an intervention pilot module aiming to strengthen the role of public health nurses in primary (or secondary) cardiovascular disease prevention³. Public health nurses serve as the field workers which evaluate individual health status and recommend one or more actions to be undertaken in order to reduce the individual's health risks. The survey was based on the household as the investigation unit, and encompassed a total of 9,070 respondents³. The information gained from this survey has been the basis for many studies showing the disease burden or using this information to describe the health status of the population⁴.

Similar approach could be undertaken in Bosnia and Herzegovina region, preferably country-wide, rather than canton or county-based surveys. However, this also presents one of the main problems in such undertaking, since health systems of various territorial and political regions often work as independent units, with some overlap through the federal institutions. This also means that each of the local institutions may assign various priorities to their health planning and organization, which might be extremely difficult to merge into a single programme that would be delivered to the entire country. However, there is also an important advantage in this approach, that each region may undertake research as well as the intervention that is the most suitable for its inhabitants, thus enabling the possibility to deliver even more appropriate (and hypothetically more efficient and possibly even more cost-effective) interventions. Yet, it remains to be said that the Federation is still missing the appropriate census information, as the last census was performed in 1991 and was not performed ever since, despite the large changes imposed by the 1992–1995 war. While the population estimates do exist, they are nevertheless estimates, and proper census of population should be performed in order to provide more reliable estimates and descriptors of the population, which could then be used for calculation of various risk factors prevalence.

Cardiovascular Health Research

The nature of the cardiovascular health and the factors that might affect it are numerous and highly complex. The list of the most commonly described risk factors include diet (composition, fat content, salt intake, vegetables deprivation), lack of physical activity, smoking, high prevalence of known risk factors including hypertension and hyperlipidemias, to name just the few. In order to provide information the initial for policy, Non-communicable risk factors survey of the Bosnia and Herzegovina (NCRFS) was performed in 2002⁵. The project was initiated by the Institute for Public Health of the Federation of Bosnia and Herzegovina, Ministry of Health of the Federation of Bosnia and Herzegovina and National Public Health Institute in Finland. The survey encompassed adults aged 25–64 years, with triple stratification in order to obtain a representative sample of 3020 residents⁵. Overall response rate was 91.5%, leading to the final survey count of 2,750 respondents. Interestingly, the response rate seemed to be the highest in smaller territorial counties, while the lowest response rate (80.9%) was recorded in Sarajevo, a finding that was similar to the Croatian Adult Health Survey, where rural areas had higher response rates than urban ones³. Additionally, the results showed relatively low percent of respondents without completed primary school (7.1%) and rather low percent of those with college or university degree (3.4%). These results were quite different from the CAHS, where as much as 21.6% of the sample were women without completed even primary school, while 16.5% of the sample were men with college or university degree and 12.4% of sample were women with college or university degree^{6,7}.

The entire NCRFS survey was comparable in methodological approach to some international recognizable studies, such as MONICA and European Health Risk Monitoring Project (EHRM). The results of this study showed some expected findings; firstly, there were much more respondents among women than men (40.8% of the sample were men), with most women in the youngest age groups⁵. Interestingly, urban respondents were significantly older than rural ones, what was explained by the higher percent of women in rural areas. The prevalence of the cardiovascular risk factors showed rather unfavourable health situation, marked by the low percent of physically active respondents (19.6% of men and 12.0% of women) and high prevalence of smoking (49.2% of men and 29.7% of women reported smoking on a daily basis). Compared to CAHS results, these figures suggest that smoking is much more prevalent in Bosnia and Herzegovina in both genders than in Croatia⁸, while the comparison with Croatia in terms of physical (in)activity was impossible due to various methodological approaches which resulted in the inability to simply compare the prevalence of the self-reported inactivity⁹. Interestingly, the prevalence of body mass index disorders in men seem to be lower than in Croatia, while in women the prevalence in Bosnia and Herzegovina seemed worse than in Croatia¹⁰; a total of 48.4% of men were overweight and 16.5% of men were

obese, while 35.9% of women were overweight and 25.0% of women were obese. These figures suggest that the current situation is quite favourable in terms of obesity epidemic in men, while the one in women requires careful analysis and public health action. It might be highly useful to perform the analysis which would describe the dynamics of the obesity epidemic in various groups of women (in terms of age, ethnicity, education, occupation and material status), in order to establish whether there is a growing epidemic which would require a wide-spread epidemic. Overall, the available indicators show interesting combination of favourable and unfavourable situation of cardiovascular risk factors prevalence in Bosnia and Herzegovina, but warrant additional studies which would provide updated information with the contemporary data and providing more information of the data in terms of broader individual indicators and dynamics indicators aiming to provide information on the risk factors prevalence dynamics.

Several hospital-based studies were also performed, mainly related to the description of the cerebrovascular insult epidemiology and the risk factors associated with it¹¹. Another study has covered the issues related to the acute coronary syndrome characteristics in the region, confirming the large complexity of this diagnosis and showing interesting patterns during the wartime¹². Yet, the results of some studies are far from expected, as e.g. lower proportion of fatal myocardial infarctions was recorded in women during the wartime¹³. It should however be noted that the presence of warfare might have completely distorted the population structure¹, leading to some spurious results in the population-based disease morbidity and mortality estimates.

In order to improve the current situation, two broad strategies could be implemented, one residing on the representative population sample and the other sampling non-representative consecutive population samples aiming to describe the epidemic dynamic. While the representative sampling is definitely more informative, it may not be feasible to be perform large representative samples on an annual basis, but only less frequently (such as e.g. Croatian Adult Health Survey, which is taking performed every five years). Additional question is who should be the main target for the survey – individuals or households? While the household approach seems to have obvious advantages in terms of providing more reliable sample that is more similar to the population structure⁶, this approach requires that the official statistics data encompass the enumeration of households, which in this situation is not available and may even be difficult to provide in the future. The main advantage of the second approach (non-representative consecutive sampling) is the possibility to provide partial information on an annual basis, which can be used to deduce the dynamics of the selected risk factor prevalence. Such mini-studies can be performed in relatively well defined sub-samples, such as e.g. students, individuals undergoing regular health check-ups, pregnant women, or other situations which include relatively similar respondents every year. The

combination of the two could provide additional info and be used as the base for policy development.

One of the attempts to provide a detailed public health intervention program was initiated in the Mostar region, where general practice physicians were used as the group responsible for the implementation of the intervention program¹⁴. The results of this project indicated similar results to the survey from 2002, with 37% of patients with hypertension, 22% with obesity, 24% of patients who were smokers and 17% who were physically inactive in Ljubuški region; prevalence of hypertension was 41%, obesity 20%, smoking 24% and physical inactivity 13% in Grude region, and similar figures in the remaining Posušje and Široki brijeg regions¹⁴. Two more recent studies were performed among children, but focusing more on the smoking and drugs abuse among them^{15,16}.

Detailed analysis of the cardiovascular research in the neighbouring Croatia in 2007 revealed that despite the large share of the cardiovascular diseases in the overall mortality, the amount of research, human resources and funds that were invested into the cardiovascular risk factors research was largely insufficient¹⁷. The authors of that study raised this issue after comparison of selected indices from Croatia with those from several neighbouring countries, including Slovenia, Hungary, the Czech Republic and Austria. The results suggested that Croatia had the lowest GDP per capita, with standardized death rate from cardiovascular diseases higher than that in Slovenia and Austria, similar to that in the Czech Republic, and lower than that in Hungary¹⁷. At the same time, scientific output related to cardiovascular diseases in Croatia was the lowest among investigated countries¹⁷, which was at least five times lower than the second worst rank recorded for Czech Republic, and up to almost 25 times lower than the first ranked Austria¹⁷. When the same methodology is applied to Bosnia and Herzegovina (PubMed search details: »cardiovascular diseases« [MeSH Terms] AND Bosnia and Herzegovina [Affiliation] AND (»1994/01/01«[PDAT] : »2004/12/31«[PDAT]) only a total of 8 articles are obtained in the results; among them 6 were published in 2004, and one in 2003 and 2002, suggesting rather low production during quite short period of cardiovascular research in Bosnia and Herzegovina. However, for the 2004 under the assumption of 4 million inhabitants in the entire Bosnia and Herzegovina, this leads us to the total of 1.5 studies per million inhabitants, what is well under the Croatian figure of 2.2 articles per million and way below the first ranked Austria with 45.0 articles per million inhabitants¹⁷. Therefore, the overall amount of information on cardiovascular diseases is rather low, suggesting that cardiovascular research is definitely one of the research priorities in the region. The future directions might be related to the recent overall publication of the Croatian Adult Health Survey results, which covered a wide range of different cardiovascular indicators and risk factor prevalence analysis¹⁸, at the same time taking into account the pos-

sible specificities of some local populations which might have a modifying effect on the cardiovascular health.

Furthermore, before any policy and action plan can be deployed to the general population, detailed understanding of the contemporary behaviours is needed, in order to deliver the optimal health intervention which is adjusted to the local population social and cultural patterns, thus ensuring greater participation and easier acceptance in the population. Due to the large change in the post-war period, comparisons to the pre-war sources of information should be performed in a careful way, in order not to provide biased conclusions due to the possibility that some of the parameters might have substantially changed in the post-war period. This is primarily related to

the various behavioural risk factors, including diet and smoking. Additionally, careful research and delivery plan is needed in the situation of the global recession, which is likely to affect both the general population, as well as the entire health systems which will experience reduced resources and most likely require delivery of increasing demands and broadening of the scope of activities. After all these factors have been taken into account and a detailed survey performed, only then will the epidemiologists and public health workers be able to provide a definitive answer to the various risk factors prevalence. However, the public health system will have to function with the limited information it has and wait for the results of the large comprehensive survey for at least a few more years.

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ISTRAŽIVANJE KARDIOVASKULARNIH ČIMBENIKA RIZIKA U BOSNI I HERCEGOVINI

SAŽETAK

Cilj ovog rada bio je prikazati trenutno stanje istraživanja kardiovaskularnih čimbenika rizika u Bosni i Hercegovini, s posebnim naglaskom na područje Hercegovine. Korišteni su dostupni podaci iz raznih sekundarnih izvora, poput projektnih izvješća, podataka vitalne statistike i drugi izvori. Na temelju dostupnih podataka, postoji nedovoljna količina informacija koje su dostupne iz povremenih anketa ili pojedinih istraživanja. Jedan od glavnih problema je nepostojanje pouzdanih podataka iz popis stanovništva, koji onemogućuje izračunavanje stopa i drugih izvedenih mjera za ukupnu populaciju, kao i stvaranje reprezentativnog uzorka kojim bi se takva populacija obuhvatila i istražila. Usporedba dostupnih podataka s Hrvatskom ukazuje na zanimljivu mješavinu više i niže prevalencije nekih čimbenika rizika; prevalencija pušenja među muškarcima iznosila je oko 50%, dok je prevalencija pretilosti iznosila samo 16,5%. Ukupno je 40% populacije imalo krvni tlak veći od 140/90 mmHg. Svi rezultati su korisni ali nepotpuni, što otežava donošenje zaključaka s ciljem izrade javnozdravstvene intervencije, ukazujući na potrebu proširivanja opsega javnozdravstvenih istraživanja, a sve s ciljem pružanja najbolje moguće zdravstvene skrbi ukupnoj populaciji.