Financing dental health care in the Federation of Bosnia and Herzegovina (FBH) over the last 10 years was analyzed with respect to time before the war, during the 1992-1995 war, and after the war. In the first period (until 1991) the system was centralized, well structured, financed through the communities of interest, and burdened with a lack of financial discipline and high inflation. By the end of 1991, all citizens in the territory of BH Federation had the right to dental health insurance and participated in the price of dental service with 10-50%. During the 1992-1995 war, insurance and financial institutions ceased their work until the establishment of civilian governing authorities. The system of dental services was legalized within the health system as its integral part, yet, because of insufficient financial support, the rights of the insured were not fulfilled. Following the Dayton Peace Agreement in 1995, two systems (Croat and Muslim) were in function in FBH, each based on different legal grounds, and dental care stagnated considerably. The 1997 FBH Law on Health Care and Health Insurance and the Law on the Privatization of companies introduced a unique health system, widening the sources of financing and categories of health insurance. The process of health care privatization has been legalized, but not yet implemented. Lack of definitions of ownership diminish foreign investments, and without foreign financial support the improvements will be slower than needs. The process of health care restructuring will thus directly depend on the solving the political crisis in the country.

Key words: Bosnia and Herzegovina; dentists; dentist's practice patterns; economics, dental; education, dental; health services; legislation, dental; policy making; war

Health care system, dental health care included, is very vulnerable to poor delivery of services. To function properly, two of its core elements should be satisfied: organization and function. The first constitutes the rationale for adequate distribution and productive use of resources (active, spatial, technological, and financial), and the second is the foundation for a spectrum of health programs and the quality of the health facilities.

The dental health care segment, along with its resources, plays a very significant part in the health system, particularly in the primary care sector. Before the 1992-1995 war, the chief characteristics of the health system were centralization and financing at the level of the former Socialist Republic of Bosnia and Herzegovina (1). The years before the war were the years of recession (particularly 1991) paralleled by enormous inflation. This resulted in difficulties in delivering resources, goods, and services. Because of financial disobedience, Health Insurance Funds (the so-called Independent Interest Communities in health care), which covered most of the health care expenses, suffered additional shortfalls due to a widespread avoidance of paying contributions for health insurance. The Law on Obligatory Health Care Contribution Payments and Taxes was circumvented by many employers; i.e., they gave their employees coupons instead of legal wages, thus avoiding contribution payments to the Health Insurance Fund (2). Dental services were not an economic category but were provided on the basis of governmentally declared prices (3), which led to many illogical consequences. For example, in the cost and pricing structure of a dental service, material alone amounted to more than the total price of the provided service. Due to the high inflation rate, price corrections for health facilities were frequent, sometimes even 307% in a single change (2). In such setting, especially at the beginning of the war, the insurance and financial institutions completely ceased their work. The period after the 1995 Dayton Agreement (4), which ended the war, is marked with the reorganization of the health system and search for the most suitable health care coverage model.

Health care reform is under way in all countries in transition. However, copying their reforms is risky because the results are not yet known. On the other hand, in most European countries, the stability of the health system is determined by their respective financial system (5):

1. Social insurance is the most important source of health financing in countries like Belgium, Denmark, the Netherlands, Germany, France, and Sweden.
2. Private financing of the is dominant in Finland, Iceland, Norway, and Switzerland (North-European model), and Portugal and Spain (South-European model).

3. State financing of complete health care is the model in Bulgaria, Hungary, and Rumania. It was used also in former Yugoslavia and Czechoslovakia (1990).

4. According to the Dayton Peace Agreement (4), the health system of Bosnia and Herzegovina is under the complete authority of the two entities - Federation of Bosnia and Herzegovina (BH Federation) and Srpska Republic, leaving no segment of health system to the Government of Bosnia and Herzegovina (1,4).

The aims of this report were: 1) analysis of the regulations of the Law on Health Insurance and the rights of the insured person to dental health care before the war (6), during the 1992-1995 war, and after the war (7); 2) analysis of financial sources for dental health care before (6), during (8,9) and after the war (10,11); 3) comparison of dental health care coverage and financing between the Federation of Bosnia and Herzegovina and Western European countries that have, in some of their segments, optimally solved the problem of dental care; and 4) analysis of the future economic development and decentralization, as well as transformation and privatization of the dental health care in BH Federation within the transitory processes in the country (12). Since we had the full access only to data on areas of Bosnia and Herzegovina areas under Croat jurisdiction (BHAUCJ), our analysis will concentrate on dental health care in that part of the country.

Methods

We analyzed pre-war legal documents to understand the philosophy behind the system of health insurance and sources of dental health care financing. We also analyzed legal acts valid currently in the territory of the Federation of Bosnia and Herzegovina (10,13), Law on Health Care during the war (8) and Act on the Amendment of the Law on Health Care (14), the same documents after the war (10,13) and other indicators of financial institutions in our (2,15) and other countries (16,17). For better understanding of legal documents at various periods of the war in Bosnia and Herzegovina, Table 1 presents the chronology and the legal, administrative, and cultural events related to the life of the Croats in Bosnia and Herzegovina.

Other relevant data have been collected: 1) structure of the expenditures of the Health Insurance Fund for the overall health system and the percentage related to the dental health care per capita in 1991 (2,15); 2) structure of the expenditures of the Health Insurance Fund in the territory of the Federation of Bosnia and Herzegovina under the control of the Croatian Defense Council for 1996 (analysis of unpublished data) and the same data for the remaining part of the Federation of BH (10,13); 3) Acts on the Law on Health Care and on the Law on Health Insurance before (6,23), during (6-8) and after the war (16,24); 4) share of health service expenditures in the Gross National Profit for 1996 and 1997, and the percentage related to the dental health care for the Federation of Bosnia and Herzegovina (16,24) and the same data for comparative countries for 1985 and 1995 (5,16); and 5) the Law on the Privatization of the Companies in the Federation of Bosnia and Herzegovina (12).

Table 1. The chronology of the most important events related to the Croat population in Bosnia and Herzegovina (BH) related to the 1992-1995 war

Results

In the last 10 years, health service financing in the Federation of BH, including dental health care, can be divided into three periods.

Financing Health Services in Bosnia and Herzegovina until the End of 1991

Based on the Acts of the Law on Health Care (6), the health system, with dental services as its integral part, was financed from the insurance fund and state budget. A significant contribution came from bilateral conventions for the family members of workers temporarily employed in another country, mostly in Germany and Switzerland. The latter source was abundant but its amount was never reported. Moreover, these means arrived with a delay of up to 2 to 3 years (2), making real planning and allocation of income in health service difficult or impossible.

The health system was centrally based, organized by a socialist self-management system and financed at the level of the former Socialist Republic of Bosnia and Herzegovina (SRBH). The means for financing health care were collected by the Health Care Interest Communities, which were territorially defined, and represented a unique monetary institution, known as the Union of Communities of Interest of SRBH (6).

According to the above Acts of Law (6), settling the accounts of health care contribution payments was based on the gross personal income of the employee, e.g., retirement allowance, personal income, or social care allowance. A special agreement of the Assembly of SRBH and the Union of
Health Care Communities of Interest defined the method of payment and health care insurance rate delivered per rate, which ranged from 7-11% of the gross personal income (2). When they could not meet the costs of financing from regular sources, Health Care Communities had a legal right to levy a special contribution for the health service's needs from their employers (25).

According to this Law (25), all inhabitants of SRBH had the right to health care for dental prosthetic services. The insured paid 10% for removable materials, and 30% of the total price for fixed materials. Vironite prosthetics required 30% participation from the patient, the same as for prosthetics from precious metals, whereas the participation for ceramic work was 50% of the price. The socialist principle of free work exchange inaugurated the so-called socially agreed prices, where the service did not present an economic category, since, in most cases, the material itself was more expensive than the total price of the service (3).

A certain percentage from the total funds for health care was allocated for dental service, but this was less than the actual contribution of the dental service (personnel, space, and technology) in the health system, particularly in the primary health care segment. According to the available reports from some Communities of Interest (26), this contribution of the dental health care was 30-35% for the overall care and up to 50% technologically, because of modern radiological diagnostics and dental-technical laboratories (26). Table 2 shows the structure of expenditures and financial participation of dental health care expressed in German Marks (DM) (2). The dental health care participated in the total expense of the health system of SRBH in 1991 with 4.4% or DM10.4 per insured person (2).

Table 2. The structure of expenditures (DM) in the Health Insurance Fund of Bosnia and Herzegovina in 1991 (2)

Financing of the Health Care in the Federation of Bosnia and Herzegovina during the 1992-1995 War. Due to the lack of discipline in payment contributions, there was a breakdown in the circulation of money, goods, and services, as well as the weakening of the principle of subordination of municipal to the central health authorities. This resulted in the total cessation of the work of monetary institutions that provided health system funding, as well as in the disorganization of hierarchy of health institutions. As a result, the only source of material for the health care were numerous donations which were, nevertheless, insufficient for the health needs of the population. In this period, the dental service was most adversely affected because it received proportionally the least help. Most of the donating countries did not consider materials or medicines for dental services urgent or important (documents in possession of the authors).

Civil government was established in the part of the Federation under the control of the Croatian Defense Council, and the Act on the application of the Law on Health Care (27) was delivered, giving all the citizens the right to health care. The Health Fund (15) was established later as a monetary institution, as well as the Institute for Health Protection, with the task to collect, plan, and distribute these funds. Employees did not pay any contributions under war conditions, so the means of the Fund's financial resources came mainly from donations.

According to the Law on Health Insurance (7,9), the contribution rate amounted to 25% of the gross wages and other income of a small number of employees. Monthly contribution for the retired and members of their families amounted to DM14.7 and to DM7 for the unemployed, although the health expenses for these categories of the insured were much larger than their contribution. According to the Law (28), refugees, socially endangered persons, peasants, people insured abroad, and the unemployed had the right to free health care, although nobody paid any contribution for their health insurance. This rule was an additional burden to the Fund's modest resources.

In the remaining part of the Federation, under the jurisdiction of the Army of Bosnia and Herzegovina, the health care was covered by donations organized by UNHCR and other humanitarian organizations (29), and official financial resources for health care were the part of the budget of the Ministry of Health (1).

The Law on Health Care (8), valid in the territory of the Federation under the jurisdiction of the Croatian Defense Council, announced a new health system with the following sources of financing: (a) funds contracted with the Institute for Health Insurance; (b) funds on the basis of the Contract with the Ministry of Health (Croatian Republic of Herzegovina); (c) funds contracted with voluntary insurance organizations; (d) funds of the founder as defined by the Act on Foundation; (e) funds from municipal budgets; and (f) funds from the participation of health care consumers.

According to this Law (8), the insured had the right to use dental health care except for the dental-prosthetic services, for which the consumer had to participate to a varying degree (9). As the funds of the Institute were insufficient, the advantage was given to the coverage of the worker's pay and material costs of the health institutions. These services were paid in total (data from the Institute of
Health Care Funds).
The Law (8) did not foresee the possibility of medical treatment abroad except in the health institutions of the Republic of Croatia. There is no data on financing dental health care in the territory of the Federation of BH under the control of the BH Army. There was an Institute of Health Insurance but with modest collection of funds from the contribution payers (1).

Financing Health System in the Federation of BH after 1995
After the Dayton Peace Agreement (4) and on the basis of the Constitution, the health care system came under the jurisdiction of the entity, i.e., the Federation of BH. The state of BH does not have jurisdiction over any part of the health care system. However, as there are functions that could be mutually performed, their institutionalization at the level of the state is possible (1). Through the power of the Law on Health Care of the Federation of BH (10), the health service became a fully functioning system. In accordance with the Acts of the Law (10) the sources of financing are: (a) health insurance funds (compulsory, extended, and voluntary); (b) direct payment of services (employees and citizens); (c) state budget (Federation, counties/cantons and municipalities); and (d) other sources (e.g. humanitarian aid).

The collected health care funds are distributed on the basis of the agreement between the county/canton Institutes of Health Insurance and the Federal Institute of Insurance with health institutes of the primary, specialized-consultative, and hospital health care. On the basis of the Article 33 of the Law on Health Insurance (10) insured persons have the right to dental help and dental prosthetic substitutes. However, this right is currently not in effect due to the lack of financial sources in the Health Insurance Fund. Until the end of 1996, there were two parallel health systems in the territory of the Federation of BH, one under the control of the Croatian Defense Council and the rest of the Federation under the control of the BH Army. Therefore, the transfer of authority from former state structures to the governing institutions in the Federation was slow. The structure of the expenses is shown separately (Table 3) for the BH areas under Croat jurisdiction (BHAUCJ) and for both areas of the Federation of BH (Table 4) in 1996.

**Table 3.** Expenditures (DM) on the health care of the Institute for Health Insurance of Bosnia and Herzegovina for the areas under Croat jurisdiction in 1996a,b

**Table 4.** Gross National Product (GNP, US$) funds per total health care per capita, funds for dental health care per capita, and percentage of its participation in the GNP in the territory of BH in 1991 (29) and 1996 (17)

The costs of dental care participated in the overall health system with 8% or DM5 per capita within BHAUCJ 1996 (Table 3). In comparison to 1991, the fraction of dental health expenditures was two-times greater, but the nominal value of costs per capita was half the 1991 amount. Comparative data for 1991 and 1996 for the territory of the whole BH Federation include also the data on the Republic of Croatia which had similar pre-war and war experience and health organization (Table 4).

GNP per capita in the territory of Bosnia and Herzegovina amounted to US$2,211 in 1991, whereas in 1996 it amounted to US$773 in the territory under the control of the BH Army and US$559 in the area of Croatian Defense Council (17). The funds for health care per capita for the whole territory of the Federation of BH and decreased almost five times from 1991 to 1996, both in the territory under the control of Croatian Defense Council and territory under the control of the BH Army (Table 4). Funds for dental care in 1991 amounted to US$5.6 and, in 1996, to US$2.7 per capita in both territories. The participation of dental care in total costs of health services in 1991 in the territory under the control of Croatian Defense Council and in the rest of the Federation under the control of the BH Army increased from 1991 to 1996, but the face amount per capita for dental care was half as much (Table 4).

According to the Law on Health Insurance, Article 41 (13), the insured had the right to a medical treatment in a foreign institution, under conditions established by special regulations, i.e., in case of diseases that could not be treated in the Federation of BH. Most of the medications necessary in dental health care (antibiotics, antihistaminics, analgesics, psychoactive drugs) are not in the official list of medications and a few can be prescribed at the expense of the County Institute for Health Insurance (30,31).

**Discussion**
The question whether health care is a "product" or a "service", would be an unimportant academic
problem if it were not for direct financial consequences. Depending on its aims, health care is both a
production and service, because health services have its use value as well as price (32).
The geographical distribution of BH medical institutions before and during the war was uneven and
their adequate utilization was not possible (33). Therefore, the remaining technology had to be
protected from destruction and decay.
Financing Health Care in the Federation of BH and European Countries
Considering the proportion of GNP per capita allocated to dental care, the present means of financing
in the Federation of BH are very modest. In European countries, this proportion is many times higher
(Table 5), and is not in correlation with the number of inhabitants per dental team (Table 6).

Table 5. Participation of total health care in domestic gross national income (GNP) in US$ (5,16,17)a

Table 6. Number of inhabitants per dental team in European countries (5)a, Republic of Croatia (34),
and two entities of the Federation of BH (35,36)b

The Republic of Croatia, BH areas under Croat jurisdiction, and the rest of the Federation of BH under
the control of the Army belonged to the former Yugoslavia. At that time, GNP per capita in most
European countries (Denmark, Germany, Finland, Switzerland, and Norway) was 3-5 times higher,
and the share of health care expenses in the GNP was two times higher. Ten years later, European
countries doubled their GNP per capita, whereas in the Federation of BH this value decreased
threelfold. In 1985, the funds for dental health care per capita in selected countries were 8 times
higher than in the Republic of Croatia in 1995 and 40 times higher than in the Federation of BH (Table
5). The data show that GNP per capita is a basis for the face amount of the health system service
funds and not the contribution rate or percentage from the total amount of funds. International
monetary institutions announced aid (24,37) for the improvement of the financial status of the health
system in the Federation of BH, but the precondition for the implementation of the aid was a political
solution of the crisis in the region.

GNP per capita does not correlate with the number of inhabitants per dental team, both in the
European countries and the Federation of BH (Table 6). The differences between the Federation of
BH and European countries shown in Tables 4 and 5 do not mean that the organization of dental
service is many times better in these countries. In the Federation of BH, even with the added
participation of the insured in the total price of the service, the established amount for dental health
care per capita was not sufficient at that time for such services as tooth extractions, two level fillings,
or dental prosthetics (5,16,17).

This is a great difference to the European countries, where the share for the dental care is much less,
but the amount per capita for dental care is 30-40 times higher. The discrepancy between these
indices in the case of the Federation of BH directly caused the decrease in material costs and wages
of dental personnel, causing further drain of dentist from the Federation of BH.

Types of Financing Dental Care
The problem of financing dental health care is most successfully solved by some European countries,
e.g., Austria, Denmark, Germany, Switzerland, Finland, Ireland, Norway, and Great Britain, and we
followed their examples in analyzing the dental health care in the Federation of BH.
WHO accepted the classifications of countries according to the system of financing characteristic for
the countries with private services and public dental institutions (5): 1) predominance of private
financing, as in the countries of the so called northern European and southern European type of
financing (Finland, Iceland, Norway, Switzerland, Portugal, and Spain); 2) social insurance, as in
Belgium, Denmark, Germany, France, The Netherlands, and Sweden; and 3) state budget financing,
mostly in the countries of East Europe, such as Bulgaria, Hungary, Romania, and the former states of
Yugoslavia and Czechoslovakia.

The main features of the countries with the northern European type of private financing of dental care
are: (a) private provisions and financing of general services; (b) reimbursement for the work of dental
teams as a payment for each service; (c) comprehensive and extended services for children and the
so-called special groups are financed by public institutions; and (d) education of dental professionals
is subsidized completely or to a great extent.

The main features of the countries with social insurance funds for the dental care are: (a) the great
majority of dentists have private offices; (b) dental care is financed from the total health service funds;
(c) in countries with the patient’s participation in payment, this is waved to priority groups; (d) dentists
are reimbursed for each service; (e) additional dental services exist for special groups; and (f)
education of dental professionals is extensively subsidized by the public.

The main differences among the countries with this system are the sources of public financing, means
of payment, and the patient's participation in the payments.
Main features of the countries with the southern European type of dental care financing are: (a) dentists perform their work privately; (b) dental care is financed privately for the majority of inhabitants; (c) dentists are paid for each service performed; (d) combined (fragmented) schemes of social insurance are available; (e) public dental care for special groups is not well developed; and (f) financing of dentists' education is public, eliminating most of the costs of education.

The group of countries in which dental care is financed from the state budget have the following characteristics: (a) funds for total health care are provided by the state budget; (b) comprehensive dental care without patients' participation in paying services in most countries (except the former Yugoslavia where priority groups were favored); (c) dentists are state employees and receive a pay for their work and the institutions where they work are owned by the state; (d) the costs for education of dental professionals is covered by the state.

In some of the countries from this group, such as Romania, Hungary, and former Yugoslavia (5), there was a possibility of performing private practice in which the patient paid the full price of the service. The countries with private dental practice differed in the principles of performing dental care and in the number of private offices. The authorities of the former Yugoslavia informed WHO (5) that total health and dental services were financed from the state budget. However, we know that in the last decades the insured participated significantly in the price of the service (10% to 50%), whereas in private practice they paid the full price of dental services without exemptions.

Additional burden to the health service funds of the Federation of BH are the categories of the insured with rights to a free health care. During the 1992-1995 war, dental service was free for all inhabitants, whereas after 1995 it is free for those younger than 19 and to students younger than 26. Similar "priority groups" also exist in other European countries (5). Health care funds of the European countries can cover the dental care for these categories more easily because their number is much smaller and the payments per capita are considerably greater than in the Federation of BH.

Privatization of Dental Health Care in the Federation of BH
In the territory of the Federation of BH, the process of transformation and privatization has been defined by the Law (12) but has not started yet. With respect to the experiences of other transition countries, such as neighboring Croatia, where this process has been going on for a while, privatization in the health system should be considered as conditio sine qua non for the reduction of total health costs.

The reason for the present crisis in the health care and dental care as its integral part in the Federation of BH is not just the recent war and its consequences. There is also a great financial disobedience in paying legally established fees to the funds of health insurance. Whereas the standard of total health care and health services of many European countries have risen congruently with GNP (Tables 4 and 5) (38-40), this did not happen in the Federation of BH. In some European countries (Finland, The Netherlands, and Norway), the incidence of tooth cavities decreased considerably from KEP index of 8.6 to below 3 (40) in just 5 years with the increase of dental care share in the GNP (41). Whereas European countries take scientific approach (42) to the health care reform, the old health system in the Federation of BH has not been functioning already for a long time, since before the war, and the promotion of new processes is very slow. All this has been coupled with geopolitical, economic, and transition changes. Western European countries, where process of privatization in dental care has been going on for a long time, support the implementation of preventive programs as cheaper and more useful for total health. In contrast, the experience in our country and abroad (5) shows that dentists, particularly those in private practice, rather choose more expensive (curative) programs because they bring more profit. Poor awakening of privatization in our country could impede the introduction of international standards, calling for discipline in applying legal regulations (43). Health and administrative authorities should also take into consideration the financial backing of the introduction of programs similar to the practices of developed countries (44,45).

Based on the experiences from other countries, the future of dental health service in the Federation of BH is privatization. The exception would be urgent dental aid, which should be organized and under the direct control of the state authorities, as is the case in Finland (46). Urgent cases in the field of orofacial structures (tooth pain, inflammation of supporting teeth structures and other inflammation processes) are disabling but private practitioners are reluctant to organize services for their treatment. We can say with certainty that the future of dental service in the Federation of BH direct financing by funds allotted per capita. In 1996 this amount for total health system was DM45, DM77 in 1998, and is foreseen to be DM150 per capita in 2000 (1). These amounts are not enough for covering even half of the health employers' wages and the process of consolidation from domicile sources is possible only by the end of 2000 (1).

This means that available regular funds for the health care are not sufficient to bring us to
international standards. Therefore, the aid from the international community is a chance that should be used properly (24,37). However, there is less and less help since we are expected to develop as economic subjects and be potential contribution payers.

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