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AKADEMIJA NAUKA I UMJETNOSTI BOSNE I HERCEGOVINE
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Senka Mesihović-Dinarević

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INTRODUCTION

Health Management with Special Attention to Cardiovascular Diseases

The Committee for Cardiovascular Pathology of the Department of Medical Sciences of the Academy of Sciences and Arts of Bosnia and Herzegovina over the past years organized following symposiums which resulted with publications of the Academy of Sciences and Arts of Bosnia and Herzegovina (ANUBiH):

1. Symposium: "I work with heart", ANUBiH, 2010.
2. International Symposium "Pulmonary Artery Hypertension", ANUBiH, 2011, Book no: CXXXIX/39.
3. Symposium: "The Risk Factors for Development of Cardiovascular Diseases", ANUBiH, 2011, Book no: CXLI/40.
4. Symposium: "Congenital Heart Defects", ANUBiH, 2012, Book no: CL/42.
5. International Symposium: "Perspectives in Paediatric Cardiology" (Dubrovnik), ANUBiH, 2012, Book no: CLI/43.
6. Symposium: "Rhythm disturbances in children and adults", ANUBiH, 2013.
7. International Symposium: "Acquired Heart Disease", ANUBiH, 2014, Book no: CLVIII/45.
8. International Scientific Symposium: "Fetal medicine: from Leonardo da Vinci up Today", ANUBiH, 2015, Book no: CLIX/46.
9. International Symposium: "Mitral Valve Diseases in Children and Adults", ANUBiH, 2017, Book no: CLXVIII/49.

As part of the traditional celebration of the World Heart Day, the Committee for Cardiovascular Pathology of the Department of Medical Sciences of the Academy of Sciences and Arts of Bosnia and Herzegovina in 2018 organized

10th Scientific Symposium: "Health Management with Special Attention to Cardiovascular Diseases".

Lectures ex cathedra were given by eminent Professors including lectures from the Institute for Public Health of the Federation of Bosnia and Herzegovina, Faculty of Health Studies of the University of Sarajevo, Medical Faculty of the University of Mostar, School of Economics and Business of the University of Sarajevo. All articles have been reviewed by two independent domestic and foreign reviewers, who added to the value of this publication.

The organization of health care is a mirror of a country development.

The objective of this Scientific Symposium is to consider:

- improving health care in accordance with EU guidelines,
- emphasize the need for more efficient management, surveillance and prevention of cardiovascular disease,
- vocational promotion of systemic interventions,
- contemplate the critical review of the economic effects of proposed changes in the organization and health care financing.

The Scientific Symposium is intended for:

- relevant segments of the society, from ministries of health, public institutes for health promotion, educational institutions, economic institutions,
- doctors, family doctors, cardiologists,
- paediatricians, internists, cardiac surgeons, specialists in social medicine,
- public health specialists, students,
- postgraduate students, PhD students of medical and economic sciences faculties, students of the faculties of health studies,
- pupils from secondary medical and economic schools,
- as well as all those interested in this area.

World Heart Day is celebrated on 29th September of every year. It is aimed at drawing people's attention to heart illness and the range of associated health issues.

- The day is commemorated to promote different preventative steps and changes in lifestyle to avoid any cardiovascular diseases, like heart attack, stroke, heart failure and any other condition related to the same.
- On average, more than 17 million people die from heart-related illnesses every year.
- This is a more than that of people who die from HIV, malaria, and cancer.

History of World Heart Day

- It was launched in 2000 by the World Heart Federation as an annual event that was planned to be taking place every last Sunday of September. However, they decided to fix it on every 27th day of September and it has been celebrated on that day ever since.

Customs and Celebrations

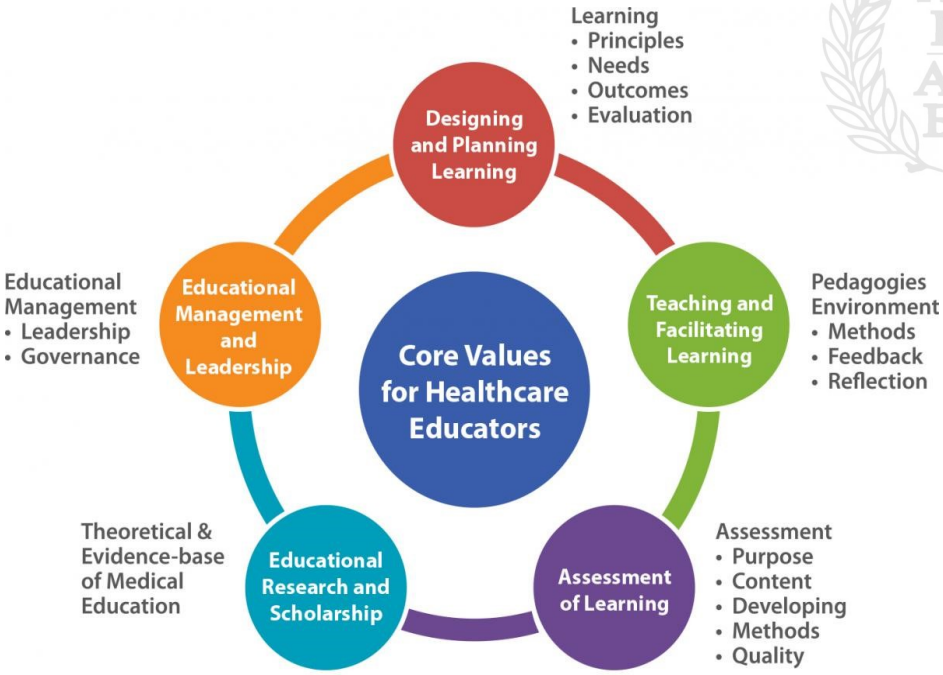
- Both governmental and non-governmental organisations celebrate this day from all over the globe. They do this by organising activities like marathons, walks, public talks, fitness sessions, exhibitions and science fairs. Some landmarks, monuments, and famous buildings choose to go red on this day as a show of cardiovascular disease awareness.

World Heart Day is an annual global observance organized by World Heart Federation. It used to be held on the last Sunday in September, but in 2011 the observance got a fixed date, September 29. World Heart Day aims at raising awareness of cardiovascular disease (CVD).According to statistics, about 80% of premature deaths caused by cardiovascular disease occur in the developing world. Most of them could be avoided by controlling the main risk factors, such as *smoking, alcohol consumption, unhealthy diet, and physical inactivity*.

World Heart Organization is an international NGO based in Switzerland. It is dedicated to leading the global fight against heart disease and stroke, focusing on developing countries. World Heart Organization established Word Heart Day in 2000 to educate people about cardiovascular disease and main methods of its prevention.

Word Heart Day activities and events are organized by World Heart Federation in collaboration with international and local non-profits. They include (but are not limited to) *screenings, lectures, public talks, sporting events, concerts* etc. Each year, a new theme for the day is selected, and participants are encouraged to link their events to the current year's theme.





This framework was adapted from Academy of Medical Educators. Professional Standards (3rd edn, 2014). Cardiff: Academy of Medical Educators; 2014.





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Professional article

HEALTH MANAGEMENT WITH A SPECIAL FOCUS ON CARDIOVASCULAR DISEASE – STUDY OF INSTITUTION AT THE TERTIARY LEVEL

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Abstract

The aim of this study was to evaluate the health system in Europe, including a vision of health care in the 21st century, human resource management in health care, doctrinal approaches, the basic tasks of public health, and the main health problems in Europe. The review of the state of health care in our country has been provided. The special emphasis was on the issue of human resource management ie. principles, techniques and problems of management of human resources in health. The activities and processes of importance to business management in the health sector were emphasized as well. The paper points to the openness towards European integration in the areas of health and education, the need for financial, organizational and strategic reconstruction of the health system and education, a stronger connection between educational sector and the health sector and the labor market, with the condition that patient is always in the focus of the health care policy. The second part presents a model for the organization and management of the health system of most vulnerable population: paediatric, age from birth to 18 years, in Bosnia and Herzegovina, during period from 2003 to 2016, which has resulted in health brand, competitive in the Balkan countries as well as on the European market labor, a brand that respects the principles of good medical practice and evidence-based medicine. When institutions invest wisely in human resources: eduction, training its staff, the result is a satisfied and motivated staff, which provides high-quality health services in the country and the region. This institution fully fulfills its mission, contribute to society, providing an excellent healthcare services to population, institution which is recognized and acknowledged in this region by the medical experts.

Keywords: management**,** health

One of the **ten** global goals of the policy of WHO "Health for 21st century" is "Improvement of comprehensive, high quality health care".

What is quality in general and what is quality in health care, how to quantify it?

Quality of health care can be defined as "the level of excellence achieved and documented in the process of diagnostics and therapy based on the best knowledge whilst achieving result with the least possible mortality and morbidity values" or "the level at which the health system increases the possibility of desired effects". (1)

According to ISO (International Organization for Quality) (3) the quality of health care is defined as:

- "the level where a group of more characteristic products or services satisfy specific or expected requirements", while some define quality as
- "That systematic, critical analysis of health care quality also includes procedures used in diagnostics and therapy, then resources and results of effects, patient's quality of life (2)".

On the other hand, standards of health care quality should be at a level where health care is available, suitable, continual and documented as well as a level where adequate therapy is based on precise diagnosis, not on symptomatology.

There are other numerous definitions of quality and therefore one American physician said that "quality is difficult to define, impossible to measure but easy to recognize" (5). In general, those without enough experience in the clinical field require easy, precise and complete directives. The truth is that some elements of quality are easy to define and measure while others require more complex procedures. Quality represents a level of excellence, it is recommended that quality development shouldn't represent administrative control of previously defined quality levels but rather a dynamic process.

Health services should be organized in a way so that medical results are main in:

- input identification,
- process definition and
- evaluation of results (output).

Dimensions, characteristics and quality elements

Maxwell defines six basic dimensions of quality in health care (6):

1. Equality - offering the same level of health care to people with the same needs, regardless of their participation in certain social or other groups;
2. Relevance - represents the requirements of a community for health care, i.e. solving priority health problems;
3. Accessibility - health care should be available in the geographical, temporal and functional sense;

4. Acceptability - health care should be suitable for population;
5. Effectiveness - to do correct things in acorrect fashion that yields results, and
6. Efficiency - to undertake endeavours in health care correctly, i.e. to use available resources rationally.

The main characteristics of a modern system of quality in health care are: that it is focused on the user; that the process of quality improvement is managed by the highest instances of management; that each employee of a health care institution has certain responsibility for quality; that it is directed to prevent errors, not to detect them; and lastly, that Quality has to be accepted as the given lifestyle in a health care institution.

The key elements of health care quality are:

- Customer
- Commitment
- Expectations and
- Continuity

These elements together represent *the quality diamond* (2). The customer is in the centre of the health care system. Each patient has to be examined individually, not as an anonymous person classified in a certain group (diseased etc.). One must keep in mind that no two patients are the same, each of them has their own specific problems, needs and expectations. Commitment starts from the physician, towards both the patient and quality because without commitment the full meaning of quality is not going to be achieved. Patients' expectations have to be recognized as well, they have to be met and if it is possible surmounted, and namely health care requires continuity. Continuity enables permanent, consistent concentration towards quality, to be permanently improved and never to be finished. Quality has to be incorporated into all activities, so that gradually it becomes a habit.

The most precious parts in the quality diamond are:

- Patients' satisfaction
- Motivation of the staff
- Professional work, and
- Successful practice.

Reasons for establishing a system of quality?

The answer to the question why to establish a system of quality in health care is of high significance, aiming also to find justification and purpose for these activities. **Professional motivation** is of vital importance in order to

motivate medical staff to be more active in enabling and improving the quality of health care. **The participation and engagement** of medical professionals in establishing and using the system of quality is also a professional challenge for all employees and their additional motivation for work, it is an important mechanism for the identification and analyses of differences in results in health care that is the basis for further activities in the improvement of quality. **Socio-economic motivation** is also important for activities in the field of quality improvement. Quality in health care is the measure for efficiency that indicates not only the importance of achieving particular results but also the efficient and rational allocation of available resources. In order to obtain desired results, finances spent on health care have to be justified. **Patients' satisfaction** is an important parameter of health care quality that also includes their expectations and their assumptions of health care services and also represents the result of provided care and treatment. Finally, it represents an essential contribution in further treatment since it inspires patients to continue cooperation with physicians in order to solve their own health problems.

Together with other relevant motives, it should lead to the **Improvement of population health** as the general and main goal of all activities in health care (7, 8).

After II World War, two new concepts of quality were developed:

- TQM (Total Quality Management) and
- CQI (Continuous Quality Improvement).

Both concepts are managing strategies described as "permanent efforts of all members in a particular organization focused on the needs and expectations of customers". They represent managing strategies main steps of which are managing consciousness, strategic planning, management implementation and training of employees. The main principles are:

- that the patients' needs, opinions and experience represent important information forthe permanent improvement of quality,
- that it has to be an integrated part of everyday work,
- that all employees in the system of health care have professional responsibility towards permanent improvement of quality and particularly managers have a responsibility for quality at all levels in a health care institution,
- that a permanent improvement of quality means a positive approach to work and that all activities should be based on data and information not on assumptions.

A significant parameter of quality is also a patients' satisfaction, which is defined by WHO as "the level when the health care system has met the patients' expectations". One of the approaches in management and the explicit measuring of quality is **accreditation** and its purpose is the improvement of quality, gaining of information and responsibility. For example, a hospital (or some other health institution) wishing to provide medical services of a high quality, according to patients' requirements, should have the following elements:

1. Delivered services have to be:
   - Acceptable;
   - Effective;
   - Available, and
   - Appropriate,

concerning the patient and other interested subjects.

2. Health care services have to be organized in the sense of:
   - Clear managerial devotion, leadership and capability;
   - Optimal teamwork and the recognition of value among employees;
   - Implementation of quality techniques (existing standards, clinical control, communication with patients etc.);
   - Monitoring and identification of performance.

3. The Quality of health care services have to be analysed at the following levels:
   - Hospital level (level of the health institution);
   - Managerial level;
   - Specialist level;
   - The level of individual members of staff.

An important part in the process of quality management is the enablement of all processes to be controlled, confirmation that they are complete, documented and also the enablement of corresponding persons to be included (12-15).

EFFECTIVENESS, EFFICIENCY AND EQUITY

Health is perceived as our most precious gift and people feel its vulnerability. Societies have been trying to absorb, ameliorate or compensate consequences and health risks with varying emphasis and varying success. Due to the uniqueness of good health to a persons' ability to live the life he or she wants, health care and the performance of health care systems are under

critical observation. Sometimes they are used as arguments to challenge economic considerations by proclaiming "the freedom of therapeutic choices", and pointing out the humanitarian aspect of an individual's health and the danger of withholding intervention options or rationing. It is not surprising to see that many health care professionals and patients see a certain incompatibility between financing, operational aspects of health care such as allocation of resources, and ethical expectations. WHO policy "Health for all" defines ten global goals and one of them is related to health care quality: "Improvement of comprehensive high quality health care". There are numerous definitions of health care and WHO defines it as "the level where delivered health care achieves the best results establishing the balance between the risk and benefit within specified economic conditions". The basic dimensions of quality are: equality, relevance, accessibility, acceptability, effectiveness and efficiency. The motives for establishing a system of quality in health care are: professional, socio-economic, patients' satisfaction, and the final, and at the same time the most important motive, the improvement of the health of the population.

Patients' satisfaction

A significant element in health care quality is patients' satisfaction concerning provided health care because users of the health care system provide a great contribution in identification of quality and standards used in measuring these aspects. Their opinion and estimation, i.e. their satisfaction, is a very important indicator of health care quality. The easiest way to define it is satisfying their expectations, desires and needs. WHO defines patients' satisfaction as the result of estimation of an individual, in regard to the expected and received health care or simply "the level of patients' expectations that are satisfied by a health care system". Certainly, a patient will be more satisfied if he/she is not made to wait too long for health care to be provided to him/her, when there is an existing continuity of health care, when a patient can rely on the same physician every moment, and when he/she is in the situation to present his/her problems without rush and get clear explanations for the recommended treatment, including the risks of various procedures (15, 16).

Accreditation in a health care system

By establishing a system of quality in health care, the question of accreditation of health care institutions arises. Accreditation is defined as "a system of

external estimation of coherence with a certain set of standards". The term accreditation is used for a wide range of measures or inspections in health care, including certification, license acquirement etc. All the procedures entailed in the process of accreditation have to be documented.

This documentation should include:

- The field of activity: **what** has been done;
- Applied procedures: **how** it has been done;
- Quality standards: **how well** it has been done;
- Procedure verification: **how much we know how good** it has been done.

The **accreditation system** is best recognized through the following five characteristics:

- The estimation of performance of a health care institution;
- The external involvement in estimation that is usually coordinated or managed by a professional agency;
- Standards which define performance attributes that are to be estimated;
- The measuring of performance regarding standards and identification of parts with identified deviations where changes are necessary, and
- The report on results of the process of inspection which can include one explicit judgment on the level of performances and whether an acceptable level was achieved, while the conclusion can also include certain recommendations (18).

The basic objectives, i.e. purposes of accreditation are:

- **Quality improvement** – using the accreditation process in order to achieve changes in practice that are going to improve health care quality;
- **Gaining information** in order to make decisions – presenting data on health care quality, health care insurance fund, politicians, managers, medical professionals, the public and others who can use this data as a basis for various decision makings, and
- **Responsibility** because in this way, a health institution, that is usually responsible in regard to various subjects, the government, the health care insurance fund etc., is able to regulate and coordinate its behaviour in order to protect the interests of patients and other users.

Accreditation has a long history in the so called public services, particularly in health care. The first real accreditation system was developed in the USA and established by the American Surgeons Association just after World War II. Nowadays, accreditation is very widely applied as an approach in managing

and improving health care quality. In many countries various accreditation programs are established with high degrees of variation, regarding the way of implementation, the person who is going to manage the program, the standards which should be used etc., that have many advantages because they offer the possibility to obtain new knowledge from different experiences and approaches that go towards the improvement of health care quality and also the improvement of life quality of the population.

HEALTH SYSTEM

Over the past decade, the imperative of building strong national health care systems has gained greater global attention. The unprecedented resources made available for global health, particularly for combating major pandemics, have enabled countries to significantly expand the reach of life-saving health care interventions. Yet, in many countries, efforts to scale up these programs have been impeded by weak health care systems.

The six building blocks of a health care system as defined by the World Health Organization in *Everybody's Business* offer countries a broad perspective on health care system components. Six building blocks constitute the overarching WHO health care systems framework. They are:

1. service delivery
2. health workforce
3. information
4. medical products, vaccines, and technologies
5. financing
6. leadership and governance (stewardship)

If all the six components function effectively and deliver their intended results, the assumption is that the entire health care system, which includes health care organizations or programs, is strong. Together, these building blocks are the foundation for health care systems that support access to high-quality health care services, leading to positive health care outcomes for clients and communities - especially those who are most vulnerable and underserved.

One of the biggest challenges facing health care managers and health care service providers is how to turn a demoralized or overworked and stressed staff into a proactive, motivated team that delivers high-quality health services every day.

Weakly managed systems are major contributors to frustration and the sense of futility that countless professionals feel when they are not able to

make sustainable contributions to improved health care outcomes. But any attempt to improve management systems without addressing the needs of the people who do the actual work is bound to end in disappointment, more stress, and even lower morale, reinforcing a vicious circle of ineffectiveness and inefficiency. Addressing this challenge requires attention at every level for both systems and people. Medical knowledge exists to reduce illness and death caused by preventable diseases. Applying knowledge and scaling up evidence-based practices requires strong health care systems with skilled and motivated leaders/managers who can manage, support and motivate the health care workforce.

The People at the Centre of Health care Systems

Health care managers and administrators who have the knowledge, skills, responsibility, and authority to build and maintain management systems needed to deliver health services; Personnel at all levels, including health care providers and administrators, who use management systems to address challenges and achieve results; Communities and families that are educated and empowered to promote their own health and demand quality of service; Clients who have adequate information on how to use health care services appropriately and are not impeded by poor quality, high fees, gender disparity or other forms of discrimination.

Health care managers and providers in facilities, ministries, and nongovernmental and civil society organizations have to operate and sustain management systems and provide health care services after the technical experts leave. Cultural or organizational factors, if not addressed, can jeopardize the ability for people to fully use a health care system successfully. For example, the design of a nationwide training curriculum for community health care workers might require a literacy level that is higher than the one existing in many rural areas. If the curriculum developers fail to "scan" the environment and gather information on potential trainees, a much-needed human resource improvement could fail. With better information, the developers would create a parallel curriculum for workers with limited abilities to read and write.

Proven practices

People should always be put first when designing, modifying, or improving a health care management system whilst recognizing that no system can operate without skilled and motivated staff. The recognition, support, and reward

of staff members who take on managerial and leadership roles that make a health care system work every day and at every level is a proven positive practice. Rather than depending on outside experts to "fix" things, it should be arranged that managers and health care providers work side-by-side as partners with technical experts. This would give the ability and confidence to the people who will operate and sustain management systems and provide health care services when the experts are gone. Keep management systems as practical as possible: overly complicated management systems usually cannot be sustained when external support is withdrawn. The use of Frameworks for People-Centred Health care Systems strengthen and help the staff to understand how each management system strengthens and supports others and how all the systems work together to allow an organization to fulfil its mission. Leadership and management skills are needed at all levels of a health care system.

Health care system

A health care system is an entirety of political, economic and cultural, technical and organizational factors, relations, processes and elements, in which individuals, groups and communities interrelate, with the goal of satisfying their needs in regard to health. Health and health care can be adequately understood only in the broadest context of human life that includes social, economic and political issues besides the understanding of biological facts. It also requires the understanding of environmental, historical and cultural circumstances. These various aspects can be observed differently according to given situations and purposes of study. The depth of understanding will be influenced by our own experience, knowledge and ideology. Because of that, an active effort will be needed to observe, listen and compare, sometimes with patience and prudent tolerance. Without active involvement, honesty and openness, the reward will be minor, or meaningless.

Levels of a health care system

All models of health care systems are imperfect and there is no a model which is the best and broadly accepted and recommended. There are big differences among countries influenced by history, tradition, socio-cultural, economic, political and other factors. However, regardless of all present differences, there are some common characteristics typical for the organized health care system. One of the common characteristics of a health care organization is

the level of organization. Health care systems are usually organized on three levels: primary, secondary and tertiary.

Primary community (home) level with 2-100 or more members. The examples of this type of community are families, some neighbourhoods, small villages, workers in smaller workers' units, members of some societies, etc. **Local community level** (2000-3000+ members). Local communities are groups usually living in the same setting or otherwise sharing facilities or other resources or interests. A midwife, nurse, health technician or a general practitioner can be a typical health care worker. **Intermediate (municipal) level** (population of 10.000-50.000+people). A municipality (commune) or other similar social structure usually needs to function also as a basic administrative unit. On the **secondary level**, the district (or region in some countries) with a population of about 50.000-150.000 or more people is a larger administrative centre, also often being a centre of trades, manufacture and more developed cultural and social institutions. The **tertiary level** is a regional or a national level (a population of more than half a million). It is usually a regional or national administrative centre with regional or national authorities and legislation.

Clinical hospitals or clinical centres on this level have a referral function for health care services of lower levels, educational and research functions. These health care institutions are usually responsible for the development of national guidelines and standards. National institutes of public health are responsible for monitoring of national health, international communications and highly specialized public health care services (laboratories, blood supply, etc.).

Public health services - present organisation and the challenges of tomorrow

Public health: the main focus is health and disease prevention

This is reached through the following activities: it prevents epidemics and the spreading of disease, protects against environmental hazards, prevents injuries, promotes and encourages healthy behaviours, responds to natural and societal disasters and assists communities in recovery, and assures the quality and accessibility of health care services. The role of public health is of major importance for the health of the population, since many diseases are preventable through simple, non-medical methods. Public health plays its role in prevention efforts through local health systems or through international non-governmental organizations. There are several definitions of “public

health care services", one of them also being the definition of Organisation for Economic Co-operation and Development (OECD).

According to OECD, prevention and public health care services comprise services designed to enhance the health status of the population which should be distinct from curative services which repair health dysfunction. Typical prevention and health care services are: vaccination campaigns and programmes.

Essential tasks of public health care services are: to monitor health status in order to identify community health problems; to diagnose and investigate health problems and health hazards in the community; to inform, educate, and empower people about health issues; to mobilize community partnerships to identify and solve health problems; to develop policies and plans that support individual and community health efforts; to enforce laws and regulations that protect health and ensure safety; to connect people that need personal health care services and assure the provision of health care when otherwise unavailable; to assure a competent public health care and personal health care workforce; to evaluate effectiveness, accessibility, and quality of personal and population based health services; and to research for new insights and innovative solutions to health problems.

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Level of functioning of public health services

The population, covered by a single public health care service, can be as small as a group of people (a family or local community for instance) or as large as all the inhabitants of several continents (for instance, in the case of a pandemic).

Thus the level of functioning of a public health care service can be: local, regional, national, international, or global.

Major Public Health care Problems in Europe

The main causes of death in the region in most age groups are diseases of the cardiovascular system, cancers, and accidents. Suicides are also important and so is mortality from traffic accidents. The main causes of chronic disability are accidents, strokes and other vascular diseases, chronic lung disease, mental disease and disorders, senile dementia, arthritis, and physical disabilities of extreme old age. The main determinants of health lie outside the traditional health sector. Health policy cannot remain a matter for health centres, hospitals, or other health-care services alone. Yet there are still

serious problems in mobilizing the expertise of health care professionals and applying their findings and recommendations through health care policy areas outside their traditional framework of employment. Meanwhile, the roles of national governments are chiefly restricted to controlling costs, guaranteeing equity in the distribution of resources and developing local services. There is little evidence of engagement with true health care objectives.

MANAGING HUMAN RESOURCES

Contemporary public health issues in Europe that challenge public health care services

Very important changes in society have occurred in Europe in recent decades. A falling birth-rate has resulted in small families where both parents work, and many children are cared for outside their home for most of the day. The divorce-rate is higher, urbanization is increasing, and more and more people live in satellite towns with long travel times to and from work. Further problems stem from an increasing proportion of older people in the population. The changing diseases and health care demand patterns, with increasing emphasis on the care of chronic disease, that are reflected both in morbidity and mortality statistics. The balance between primary health care and hospital care is under review everywhere, with increasing stress on the importance of long term care and a well-developed primary health care system. Reliable research and statistical information is important for monitoring these changes as the need for planning and priority-making in public health. The financial implications of the operations of health organizations are enormous: painstaking planning, prior evaluation, and detailed subsequent research are increasingly necessary. All recent experiences show how difficult it is to achieve a satisfactory balance between completing priorities in health care, between the demands of effectiveness and equity, and between attitudes of different health care professions.

Effective human resource management (HRM) is important in any public - or private - sector organization and essential when public health crises collide with workforce shortages. The three pillars that together form the HRM capacity of an organization are: policies, systems, management and leadership practices. Human resource management is a critical management area that is responsible for any organization's most important asset: its people. HRM typically accounts for 70 to 80 percent of an organization's budget.

THE HEALTH CARE SYSTEM IN BOSNIA AND HERZEGOVINA - today

Legalisation in health care in B&H: Health care and education area

In accordance with the Constitution of the Federation of Bosnia and Herzegovina

Responsibilities in the field of health care are divided between the Federation and Cantons; the field of education is in the competence of Cantons.

The fragmentation of the education system and the health care system, the division between the state entities and in the Federation of Bosnia and Herzegovina itself between the Federation and the Cantons, the World Bank assesses Bosnia and Herzegovina as a country with premature decentralization in which the administrative capacity of lower levels of government have not yet qualified for their assigned functions.

The BH legal system in the field of Health care

- Law on Health Care
- Law on Health Insurance
- Laws on professional self-regulation (law on medical activities, the Law on Dentistry, Law on pharmaceutical activities, the Law on nursing and midwifery)

The basis for the adherence of regulations

- legal acquisition of European Union;
- the Stabilization and Association Agreement EU (mandatory harmonization of Bosnia and Herzegovina legislation with the EU acquisition);
- Strategy for the Development of Health FB&H for mid-term period 2008th-2018th year-on of health regulations

The Education sector vs. Department of Health

Curriculum in undergraduate and postgraduate education are subject to the approval of the Federal Ministry of Health, a legal obligation which is not respected in practice; as well as revised programs of specialization and sub-specialization of health care workers, with the support and help of professionals.

The involvement of medical colleges of a health care orientation and other health care institutions in the creation of specialized programs are in: implementation of specialized programs; the nomination of candidates for the heads of specialist programs, the main mentors and mentor, as well as a list of examiners for specialist examinations; the nomination of candidates for commissions for professional examinations of health care workers of different profiles.

Health management system has been established, with the involvement of medical institutions and faculties of health, economic and other directions. The objectives of Centre for Health Management are: improving management skills of health workers in the health sector (strategic management, financial planning, etc.; continuation of family medicine education, transfusion medicine, early growth and development, with a focus on early detection and intervention and inclusive education, education for nurses in the field of patronage; involvement in projects that are supported by the World Bank, UNICEF, EU and other international organizations; University Hospital - teaching college of medicine.

Rules on the conditions to be met by hospitals for Assigned Names University Hospitals requirements: excellent professional work in the tertiary health care; conduction of scientific research; highly professional staff in the scientific and educational titles and others.

АНУ БиН АНУ БиХ

Clinical guidelines and clinical pathways

It is necessary to draw attention of the legal community on the growing importance of evidence-based medicine (EBM), clinical guidelines (CG) and clinical pathways (CP) in determining the appropriate standard of care; initiate codification of medical law in the field of EBM, CG and CP in our circumstances and determine their medico-legal status in litigations.

Agency for Accreditation and Quality in Health Federation of Bosnia and Herzegovina

Involvement of profession in: creating safety standards in the field of health care and optimal accreditation Standards; evaluating the quality and safety of health care services; raising the internal quality system in health care institutions: clinical audit, quality indicators, clinical guidelines, systems appeal, reporting incidents, questionnaires about the experience and patient

satisfaction, written strategies, policies and procedures, risk management in Health institutions.

Doctrinal approaches

The involvement of the medical profession is necessary in creating doctrinal approaches to disease treatment and therapeutic guides. There is a significance of the introduction of new medical technology to the health care system. Certification of health care professionals for the management of new health care technologies is obligatory, as well as creating a list of medicines according to new doctrinal approaches. Clinical trials of drugs and medical devices should be conducted with the involvement of highly qualified staff.

Chamber of the field of health care: professional associations of health care professionals at the level of Cantons and Federation of Bosnia and Herzegovina; public authorities granting chambers: work licenses, official opinions of Health care institutions or private health care practices, involvement in drafting regulations, certification of the Association members for management of new health care technologies; monitoring of the work of the chamber by the Federal Ministry of Health and Cantonal Ministry of Health.

Conclusion: openness to European integration in the areas of health and education; political consensus for the centralization of functions in the field of health and education; regulations harmonized with EU acquisition; financial, organizational and strategic restructuring of health care and education; stronger binding of the education sector and the health care sector and the labour market; strengthening LLL; the patient should be the focus of the health care system. Investment in health and education should not be seen as a cost but as a benefit to future generations which will contribute to greater economic development of the country and GDP growth. Gross domestic product /GDP/ is a macroeconomic indicator that shows the value of final goods and services produced in the country during that year, expressed in monetary units.

Study: tertiary level institutions: quality of health care

Successful study health management in Bosnia and Herzegovina today

Period of the study: 2003-2016

Clinic History

The Paediatric Clinic of the University Clinical Centre of Sarajevo is a respectable institution, which was established in 1947 at location "Jezero" as the first specialized stationary institution for the treatment of children in Bosnia and Herzegovina and Sarajevo with a capacity of 60 beds.

The collective of the Paediatric Clinic UKC Sarajevo in 1972 was awarded the Order of Merit with Silver Rays.

As the need for a larger bed capacity grew, the Clinic gradually expanded so that in 1991 there were 250 beds for patients and accompanying mothers at its disposal.

At the beginning of the aggression on Bosnia and Herzegovina and Sarajevo in May 1992 after intense shelling, the Clinic was relocated to the site of „Koševo"- Central block.

From January 1996, the Clinic was relocated to the building of the Clinic for dialysis, nuclear medicine department and the First Internal Clinic, at „Koševo".

2003.

The Paediatric Clinic in 2003 had 60 beds + 9 beds for intensive care. The first respirators were purchased in 1998 for the Intensive care by the Lions Club + Child Advocacy.

In 2003, the Clinic worked in extremely cramped and inadequate space - the ground floor of the building and two floors, without the hospital part of physical therapy, waiting room, playroom, mixed paediatric pathologies - which made the functioning of this highly specialized tertiary care centre difficult. The Staff was consisted of 24 paediatricians (one professor and 2 doctors with PhDs and 4 with Master), 5 residents in paediatrics, 3 general physicians, 1 clinical psychologist, 9 senior nurses, 67 secondary nurses and 22 employees of ancillary services, a total of: 131 employees.

A Development Strategy for the Clinic was made, it regarded adequate space, staff training, procurement of equipment, planning of new staff, the development of subspecialist services, new departments and sections with the help of friends from CCU Ljubljana, AKH Vienna, Sweden, America, Italy, Germany, with the aim of improving the provision of service to paediatric patients aged 1 day to 18 years.

In 2003, the training of staff: doctors and nurses / technicians completed at the Clinical Centre of Ljubljana - Slovenia, as well as previously in 1998 in Belgium.

Organization

The Paediatric clinic was organized into nine departments: Gastroenterology, Nephrology, Cardio rheumatology, Neonatology with an Intensive care unit, Pulmoallergology, Neuropaediatric, Endocrinology, Physiatrist department

and Haemato-oncology. The Outpatients department with an Emergency department was located in the clinics building, with 4 Outpts clinics in the Central block of CCU. The Paediatric Clinic of CCU Sarajevo was launched and in 1998 it established the Paediatric summer school, as well as the Asthma school for patients and parents in 2001. The Clinic has also participated in the founding of the Association of Parents of children with cardiac diseases, neuropaediatric, haemato-oncological and asthmatic diseases.

Admissions: 2002/2003:2685/2895.

BO Days 2002/2003: 31.291/31.146 Average BO: 9.2 days

Total number of pts at Outpts Clinics: 2002/2003:23.559/25.921

2004.

In accordance with the initiative of the Paediatric Clinic, the relevant authority, CCU Sarajevo as well as the wider community in 2004, after the reconstruction of the Clinic until March 2009, the capacity of beds at the Paediatric Clinic KCU Sarajevo was increased to 90 + 9 intensive care beds.

2009.

March 15th 2009 - After 17 years, the Paediatric Clinic was successfully relocated from the site "Koševo" to site "Jezero", with the assistance of the Government of the Republic of Turkey, the Ministry of Health of the Canton Sarajevo, the Ministry of Health of Federation of Bosnia and Herzegovina, Health Insurance fund of Canton Sarajevo, CCU Sarajevo and Friends of Paediatric Clinic.

The reorganization of the Clinic has continued spatially, educationally, personnelwise and also in terms of equipment with the goal of working and providing health care services more efficiently. New departments were formed in accordance with the modern, up-to-date approaches to the organization of paediatric services around the globe, namely: the Centre of Urgent Paediatrics with Day Hospital, Cardiology, Allergo-immuno-haematology, Neonatology, Neonatal Intensive care and therapy, Paediatric intensive care and treatment, hospital part of the Department of physiotherapy and rehabilitation, Playrooms, Day hospitals, and if necessary, a service of Day hospital was provided for the Department of gastroenterohepatology with a Day hospital within the department of Haemato-oncology, Outpts clinic for: rhythm disorders /24h Holter ECG/ and functional non-invasive cardiac diagnostics /24h Holter BP, Tilt Table test, ergometry/, Preventive cardiology and Sport clinic, Living rooms for diabetic children, Room for nursing mothers, an Internet connection for educational programs and cartoons, enriched and

designed space for patients of Haemato-oncology with accommodation for accompany mothers and apartment donated by the City of Sarajevo for accompanying mothers of children with haemato-oncological disease.

The intention is in accordance with the requirements of health care in several fields of paediatrics, the same plan to fill junior staff who have a propensity for paediatrics, with obligatory knowledge of a foreign language, computer skills and interest in scientific research.

2016.

In 2016, this highly specialized tertiary institution (one of the largest organizational units of CCU Sarajevo) worked with a capacity of 130 beds + 30 beds of intensive care, in the following years continuously with 130-140% capacity utilization.

Strategy: Every child and young adolescent who requires medical treatment should be able to receive it with the highest standard of health care and protection, from trained, competent professional doctors and nurses / technicians, on time and in adequate conditions, applying the principles of good medical practice.

The Paediatric Clinic of CCU Sarajevo is organized through:

- The hospital part and
- The Outpatient Clinic

The total area of the Paediatric clinic is 6500 m2; with a 24h laboratory serviceandX ray department including a mobile X-ray machine for immobile patients, patients form intensive care and postsurgical patients.

The Paediatric Clinic of Clinical Centre in Sarajevo, offers **knowledge and experience** of the noble art of medicine to students of medicine, dentistry, Faculty of Health Studies, as well as interns, students of secondary medical schools, residents, subspecialists and doctors on professional education.

Its Staff consists of 232 employees as follows: 41 paediatricians (4 Professors, 8 Assistant Professors, 4 dr. med. sci. and 14 masters), 3 residents, 2 psychologists, 18 graduated nurses, 7 senior nurses, 2 graduate physiotherapists, 124 medical nurses, 4 physiotherapists, with workers of support services.

It requires courtesy, professionalism, hygiene, order and professionalism to provide optimal health care services to the youngest citizens of Bosnia and Herzegovina through diagnosis, care and treatment.

The Clinic Organization

The Clinic is organised through13 departments and 3 Sections:

- Centre of urgent Paediatrics (CUP) and **Day hospital** /9 beds/
- I = Gastroenterohepatology, **Day hospital** (if needed),

Section for invasive gastroenterohepatology,

- II=Nephrology,
- III= Cardiology,
- IV=Neonatology,
- Paediatric intensive care and therapy /8 beds/,
- Neonatal intensive care and therapy /22 beds/ and Post-intensive Care,
- V=Pulmology,
- VI=Neuropaediatrics,
- VII=Endocrinology,

Section for insulin pumps and education,

- VIII=Haemato-oncology with **Day hospital,**

Section for autologous transplantation of autologous stem cells

- IX= Physical therapy and early rehabilitation department
- X = Allergo-immuno-rheumatology

Each department has Out-pts clinics**.**

Paediatric rooms:

- Room for Cystic Fibrosis
- Room for Autisms
- Rooms for TBC
- Biologic room
- Sterile room

and being prepared:

- Room for palliative care
- Simulation room /for staff training/

The working and living space /hallways, children's rooms, day care centres, playrooms/ are modernized and humanized by TV-switch cartoons and appropriate educational and promotional materials of Sarajevo and Bosnia and Herzegovina, the hallways are painted by students of the Academy of Fine Arts in Sarajevo in collaboration with the Association of Women Helping Hands and Hearts and there are posters on the walls showing different Schools,

training seminars, educational posters from Congress for the acquisition of knowledge of the pupils, students, residents.

Every department and Outpatient clinic with an Emergency centre of Paediatrics is equipped with network computers, as well as the administrative department of the Clinic. On the TV screen at the entrance to the Clinic and the Clinic floors there is a schedule of doctors on duty and daily scheduling of physicians in outpts clinics, clear signalling of Departments and Out patents clinics. A second shift of psychological work in counselling is performed, and if necessary, these rooms are used for meetings of the Association of parents. Outside the Clinic, thanks to the Friends of Paediatrics, a Fountain is placed with a place to rest and play.

In the **Book of impressions** there are records of the stay of patients and parents at the Clinic. There are three **boards** in the lobby of the Clinic which are also presented on the Web site: ”Board of staff: We are here for you“; „Board of Clinics Friends“; Board of Chair for Paediatrics“.

The functioning of the Clinic

The clinic is open 24 hours continuously. Teams are formed and they consist of an on-duty doctor /five doctor specialists/ during 24h: on the Standard and Post-intensive care, paediatric and neonatal intensive care and therapy with a specialist physician at the Centre emergency paediatrics. The transport of patients from “Jezero” to “Koševo” is organized: an ambulance with a monitoring system, oxygen, transport ventilator, patients are accompanied by doctors and nurses trained for the transport of life-threatened patients (plan made prior to relocation: ambulance car, training staff, plan (24h) day and night transport) to and from surgery: Children, Cardiac surgery, Neurosurgery, Maxillofacial surgery, Otorhinolaryngology, Clinic for Infectious Diseases, Orthopaedic Clinic, Eye Clinic. A 24h schedule of visits with specialist paediatrician in transport of patients for consultative check-up at Koševo, and the transport pre and postoperative cardio surgical patients, an on call team for emergency procedures of removing a foreign body from the digestive and respiratory tract, and if necessary, the placement of insulin pumps, with monthly schedule of cardiologists and intensivists on duty at the Centre for heart, during visits of foreign cardio surgical teams.

Morning meetings are mandatory as well as meetings in the afternoon, where the college of physicians is informed of the status of patients at the ICU, post-intensive and standard care, admissions, discharges, transfer and

consultative examinations, along with discussions of each case and consultations for solving possible problems. In addition to the daily Department rounds, Grand rounds (which are stored on CD-s) are conducted weekly in the presence of the entire medical staff, as well as residents, interns, students (medicine, dentistry and Faculty of Health Studies), sub-specialists and doctors on professional education in different fields of paediatrics. The Heads of Departments organize work of their departments and outpatient clinics, with an indicated time of consultation, time of patients discharge, hospital discharge letter and interview with a parent.

The College doctors and College of General Nurses are held every Friday during which the following issues are discussed: patients, the state of each department in relation to available facilities, equipment, staff, interpersonal relationships, solving of possible problems in their day to day work, epidemiological situation, with a plan for the upcoming weekend.

The College of Nurses, during the process of admission and deciding on future working places of new nurses / technicians, evaluates their supervised period of training in all divisions. Proposals are made for future working places according to necessities for the provision of a service. The Education of accompanied mothers is established on site and is conducted by the General Nurses in all 13 departments,

July 15th 2011 - *The Discipline for child's health is established together with Children's Surgery clinic.*

June 12th 2014 - *The Discipline for health protection of child and women together with Children's Surgery clinic and Clinic for Gynaecology and Obstetrics.*

Interactive classes are introduced, they are held once a week for residents, doctors interns and doctors on training with organized training for transportation of life-threatened children, Paediatric Advanced Paediatric Life Support /APLS/, Neonatal reanimation training, communication in healthcare. Every month, an analysis of the **Clinics Business** is conducted: work of departments (admissions/discharges), outpatient clinics, admissions infirmary, clinic services, day clinic with diagnostic procedures, clinic services, consultative examinations, collection services and through the cantons, as well as patients status on discharge: cured, recovered, tested, uncured, transferred. At the weekly meetings of the **Expert College of physicians** interesting cases are presented with current news/insights from literature, as well as at **professional meetings of nurses.**

Monthly meetings regarding **Mortality** with an analysis of each patient, weekly meetings with children's **radiologists,** and, where appropriate, **Consultative meetings**, **meetings of the Cathedra for paediatrics**, represent daily work of the Clinic. Monthly meetings of the **Epidemics-Micro Infectious groups** are also organized. The **Hospital school for children** has continued its work from February 21st 2005. i.e. the pre-war practice of Paediatric Clinic of Clinical Centre in Sarajevo in the form of continuous teaching for our patients.

The Clinic achieves remarkable results in the diagnosis, treatment and care of patients, education of personnel of all profiles. All thirteen departments have **a mandatory written consent form for parents regarding interventional and invasive procedures,** which are forwarded for approval of the Legal Service of CCU Sarajevo. **Internet access** is provided to all employees.

The **Cathedra for Paediatrics** of CCU Sarajevo created its **Web page** in 2003 - Internet site of Paediatric Clinic of CCU Sarajevo: www.pedijatrija.sa-ba, which is exceptionally well visited, organized in a modern fashion and regularly updated. The DRG and AKAZ system are in progress for the Clinic and IMPAX established program (X-Ray, MRI, CT on the network) with the pager system.

Continuous staff education and research is a process that is sustained through participation in conferences and meetings in the country and abroad. From 2015 onward /with or without scientific papers/ the staff of the Paediatric clinic travelled 55 times. **The following scientific research projects** are in progress**:** Strategy "Early growth and development" - Federal Ministry of Health and UNICEF, as well as the "Strategy Nutrition - Federal Ministry of Health and UNICEF."

In accordance with good medical practice and evidence-based medicine, **clinical pathways and clinical protocols** were established /procedures for all 13 departments are stored on desktops of each department/.

The best reflection of the development of a country is reflected in the level of development of paediatric cardiology and cardiac surgery, which achieved remarkable results in Sarajevo till 2016 thanks to cooperation with colleagues from Austria, headed by Prof. Wollenek as well as a Swedish team headed by Prof. Sune Johansson. The total number of cardiac paediatric patients from 1997 to date is 1189, of which 883 were operated and 306 were catheterized. Period: 1996 - 2003: relocated 165 patients. The staff for non-invasive diagnostic tests was educated in: echocardiography, Holter ECG 24h, 24h

Holter BP, Tilt Table Test, exercise test, EFCG as well as in invasive diagnostic and therapeutic cardiac catheterization: closure of ASD and DAP, balloon dilatation of PS. The cardiosurgical team that was formed was composed of physicians, cardiac surgeons, anaesthetists, nurses, perfusionists. The training of local staff from 1996 to 2016 was undertaken by teams of experts from America, Switzerland, Austria, Sweden, Germany, Italy; training of cardiologists/intensivists with certified APLS+*NICU, masters from Cardiology: 5 paediatricians.* Regular preoperative Consultations were established from 1997 - 2016 and they consisted of: cardiologists, cardiac surgeons, anaesthesiologists, nurses, radiologists, perfusionists with local and foreign teams during which a list of pts was presented for cardiac catheterization and surgery including History disease, invasive and non-invasive imaging tests, with discussions of Board members, a treatment plan and a talk with parents. In 2015, a total of 58 cardiac patients were treated: the Swedish team operated on 9 patients, 7 CC, whilst the Austrian team operated on six patients and 3 CC, a local team in 2015 operated on 43 patients and 11 CC patients and implanted 3 Pace makers. Patients allocated via the Federal Institute for health insurance of BHTurkey: 5, 9 in Austria and in Italy 6.

2009: Neonatal Intensive Care Unit: 22 respirators, Paediatric Intensive Care Unit: 8 respirators, at which time a surgical room for interventions was opened.

In 2015, the first autologous stem cell transplantation under the supervision of doctors from Clinical Centre Ljubljana was performed, including another 2 patients which saved about 1.500.000,00KM.

Mortality in 2015 was up to 1.8% (on 5297 patients), compared to 2014 where mortality was 1.6% (5828 patients).

Business of Paediatric Clinic during 2014 / 2015.

In the course of **2015,** 5031 patients were admitted (Canton Sarajevo - 3161, Outside Canton Sarajevo - 2140) in the Admission room and Outpatient clinic 53.347 patients were examined. BO days: 2003 - 2016: 9.2 - 6.7

From the aforementioned it is obvious what remains: the number of diagnostic and therapeutic procedures increased, the number of services increased with statistical significance, new diagnostic tests + treatments were introduced, and the number of days spent in hospital is shortened.

During the period of time from 2003 to 2016, several contacts and meetings were made, including written suggestions to **Health centres /HC/ in Canton Sarajevo**, offering help to paediatricians in HC, until their additional education and training by clinical paediatricians is completed, in order to

reopen Outpatient Clinic within Health Centres in Canton Sarajevo. The aim of this initiative was to decrease the number of patients requiring service at tertiary health institutions. Now, those services could be provided in Outpatient clinic in the Canton Sarajevo by competent staff. Such Outpatient centres within the Health centres would offer the same pathology that is most required by patients of the Paediatric Clinic. The services would be provided by further educated specialists and subspecialists, resulting in no waiting lists, the possibility of having therapy nearby to their home, so that the colleagues from the tertiary level health centre would have less pressure in everyday work and provide their services at an adequate level. Also, suggestions of the management of Health Centres were given to plan in advance the admission of new paediatricians as was done at the Paediatric clinic.

The interest for Paediatrics is remarkable. Currently, 20 physicians and related disciplines including psychologists, librarians, biologists, and geneticists have applied for employment at the Paediatric Clinic, as well as 30 nurses and technicians.

Teaching / Training is performed for students from the School of Medicine, School of Dental Medicine, Faculty of Health Sciences, Specializations in paediatrics, subspecialty, Education and Training.

The survey of students in 2011 at the School of Medicine, University of Sarajevo, on the organization of teaching, textbooks, CDs, lectures, exercises, hands-on techniques, schools, training, showed that the Department of Paediatrics is one of the best departments at the Medical Faculty of the University of Sarajevo.

2003 Academic Status: 1 Professor, 2 Assistant Professors, 1 dr. med. sci, 6 MSc, 0 graduated nurses. During the period from 2013 - 2016, 20 master thesis were done, 12 doctorates, 15 medical nurses graduated at the Faculty for Health studies, so the **Academic status in 2016 was:** 5 Professors /2 full professors and 3 associate professors/, 7 Assistant professors, 4 Dr. med. sci: 4, 14 MSc.

Friends of Paediatric Clinic of Clinical Centre in Sarajevo and people of good will in the the period from March 2nd 2003 to January 1st 2016 have enriched the clinic through equipment, diagnostic and therapeutic educational possibilities of this institution in the value of 1.638.662.74 KM. Adequate thanks were presented to all organizations and people of good will who have remembered the patients and staff of the Paediatric Clinic with their humanitarian gestures.

Equipment, diagnostic/therapeutic procedures, new medications, protocols

In the period 2003 - 2016, modern equipment was purchased and new diagnostic and therapeutic procedures were introduced with new medication, so the Paediatric clinic of CCU Sarajevo was successfully completed in 2015, with new diagnostic procedures/therapies available to all patients in Bosnia and Herzegovina of paediatric ages from birth until they are 18 years of age:

Proximal endoscopy, plasmapheresis, kidney biopsy, peritoneal dialysis, ergometry, ECG, EFCG, 24hrs Holter ECG, blood pressure and glucose in the blood, heart therapeutic and diagnostic catheterization, pre-and post-operative cardiac treatment, Tilt Table Test, ultrasound of the: heart, brain, abdomen, thyroid, kidneys, hips and wrists, portable colour ultrasound, transoesophageal echocardiography, Long line insertion with central venous catheter, video EEG, bronchoscopy, spirometry, allergy tests, determination of chloride levels in sweat, tests on respiratory syncytial viruses, hypothyroidism and phenylketonuria, ventilatory therapy: IMV, IPPV, CMV, BiPAP, CPAP, HFV, 24hrs electroencephalogram, placement of insulin pumps, determination of nitric oxide level in exhaled air, lumbar, sternal and ventricular puncture, puncture of lymph node, uroflow /multifiltrat, biopsy of small, large bowel, stomach, liver and kidney, LP, SP, LE cells, growth hormone determination, the method of Vojta&Bobate, applications of botulinum toxin, distal endoscopy/colonoscopy, removal and extraction of foreign matter, electromyography, haemodialysis, plasmapheresis intra-articular application of steroids are, PH metry, hypothermia, implantation of PEG.

Organization of Clinics work: internal control, epidemics-micro-infective group, regular meetings of mortality, professional meetings of doctors and nurses/technicians, business of departments, education, grand rounds, publications: books, textbooks and CDs, CD publications, newsletters, Days of open doors at the Clinic together with the Association of parents, health education: seminars, symposia, schools, printed and electronic media, TV, participation in conferences, symposia, trainings of staff within the Clinics.

Residents: work under the supervision of a Mentor and heads of departments during residency, organisation of regular Interactive teaching for residents. The Manual of knowledge and skills for residents was created in accordance with good medical praxis, algorithms of modern knowledge and skills. The presence at rounds at various departments, Great rounds, Expert meetings, Interactive training, schools, training for the transportation of

life-threatened children, the continuous acquisition of knowledge and skills of labour at departments with training in communication with patients and parents. The passing of colloquium with the exact number of techniques mastery and procedures was mandatory. Providing the stimulus for writing and publishing research and scientific papers, is an ongoing process.

Regular meetings on **Communication in Healthcare** with moderators: psychologists; mobbing in health.

The Paediatric clinic within the **education program** traditionally organizes the following Schools for doctors nurses/technicians, parents, patient, students: Paediatric Summer School, Asthma schools, Ultrasound schools, Reanimation school: Advanced Paediatric Life Support + Neonatal Intensive Care Unit (all doctors APLS certified, in cooperation with the Manchester branch in RCPCH, UK); Diabetes school; School of Pulmonary Arterial Hypertension; School of Foetal echocardiography; Coeliac school.

Publishing: Annual Publications: "News from Paediatrics"; 2003-2014; ISBN 978-9958-9903-6-6; Book 60. and 65. years of Paediatric Clinic of Clinical Centre in Sarajevo; Textbooks on Paediatric + CD for 3 Faculty: Medical, Dentistry and Faculty of Health Science (2005); Bulletin no.1-12; CD: Professional Papers (News, Dilemmas in paediatrics and Case reports) of doctors, nurses / technicians from 2005 - 2013, printed on 2500 pages. Expert and scientific works of employees Clinic: physicians and nurses in country and abroad.

Admissions: *2003: 2895**;** 2014: 5789*

Outpatient Clinic: *2003: 25 921;2014: 52 584*

Stimulation of staff: public praise, days off, proposals of financial incentives towards managers, the training of nurses / Faculty of Health Studies, individually adopted new technologies / and doctors; masters and doctoral theses, subspecialisations, writing scientific papers by nurses and doctors, public praise for published and presented papers in journals, congresses, symposia, surveys of customer satisfaction, employee satisfaction surveys.

On 10th October 2014, Paediatric Clinic of the University Clinical Centre in Sarajevo was assigned the name of the **Referral centre for paediatric subspecialist of:** gastroenterohepatology, nephrology, cardiology, neonatology, neonatal intensive care, paediatric intensive care, pulmonology, neuropaediatric, endocrinology, haematooncology, rehabilitation and habilita tion,alergoimunorheumatology and emergency paediatrics, for the period of five years by the Federal Ministry of Health Bosnia and Herzegovina.

Specialization and subspecialisation are conducted within Paediatric Clinic after Paediatric clinics staff training at the Clinical Centre of Ljubljana and individual physicians trainings.

Savings:

- reduced number of patients' days spent in hospital
- decreased mortality
- cardiac surgery and autologous transplantation of stem cells, as well as intensive therapy with developed subspecialty diagnostic/therapeutic procedures within the Referral Centre of Bosnia and Herzegovina.

PRIZES:

- April 6th 2007 - Sixth of April Award of the City of Sarajevo,
- European Society for Quality Research Rome, International Diamond Prize for Customer Satisfaction, 2012,
- European Society for Quality achievements Award, London 2013.

VISION:

The continuation of the construction of the Centre/Institute for Mother and Child at the Jezero locality

The acts of the Ministry of Health of Canton Sarajevo preliminary drafted and adopted the draft in 2000 that entails the construction of a modern Centre for mother and child at the site of Jezero, which every developed country in Europe has.

Phase I construction of the Centre for Mother and Child completed the reconstruction of the Paediatric Clinic at the site of Jezero on March 15th 2009. The clinic started working on 6.500m2 (hospital and Outpatient clinic).

Phase II involves the completion of construction and procurement of equipment for the Clinic for Genecology and Obstetrics (completed on November 25th 2010).

Phase III Reconstruction of the "Pavilion for accompanying mothers, visiting doctors, nurses / guests /2500m^2/- donated the completed preliminary design.

Phase IV Reconstruction of the remaining buildings on the site of Jezero: the amphitheatre, technical block, Outpatient clinic, Kindergarten for children of employees.

Phase V Reconstruction of flats for Paediatric employees.

Phase VI Reconstruction of the former main building of Paediatrics for the needs of Children's surgery Clinic /2800m^2/ with two surgical theatres / completed procedure of preparation: preliminary design /.

Phase VII Restored function of the Children's Hospital "Dr. NemanjaVlatković" in Cavtat, Croatia.

Finalization of the afore mentioned Centre / Institute for the Woman and Child, would at its disposal have the capacity of 3 clinics, namely: Paediatrics 6500 m^2, Clinic for Gynaecology and Obstetrics 8500 m2, Children's surgery clinic /2800m^2/ with the "Pavilion for accompanying mothers, visiting doctors, nurses / guests"/2500m^2/, the amphitheatre, Facilities (Laboratory and X-Ray, CT), Flats for employees, Kindergarten for the children of employees.

The Institute for the Health of the Woman and Child

It is the only institution of tertiary health care in the Federation, it is comprehensive in its structure which includes comprehensive multidisciplinary therapeutic and diagnostic activities, with further expansion of its activities, both in the diagnostic and therapeutic sense, following the most recent trends in paediatrics and child surgery. The Institute would be „national„ because of its leading role and responsibility in the planning and carrying out of numerous (epidemiological, health, research and educational) activities.

One of the Clinics of the Institute is engaged in Paediatrics (medicine of developmental age) i.e. a branch of medicine which is defined by the object of their interest – a child, from birth to the end of its adolescence. The time span of human life in regard to paediatrics has expanded from prenatal (foetal) medicine to the time after reaching maturity. Paediatrics covers and combines three main forms of medical activities: prevention, treatment and rehabilitation.

A special responsibility of paediatricians in caring for the health of the child in the developmental age is largely for what the health of future generations of adults will be like. Therefore, the development of a country is reflected by the level of development of paediatric services, and in the profile of the Institute for the Woman and Child's Health, which includes Child Surgery, would be the same and realized.

In the following years the Institute for Women and Child's Health was like a comprehensive paediatric centre, it conducted activities and took care of the child from birth to 18 years of age, providing a multidisciplinary balanced

development of all health professions that are related to paediatrics and the treatment of treating child's diseases. In terms of organization, the Institute's activities were divided into 4 groups: - health care, research, education and epidemiology. In addition to such an organizational association through the Institute, in cooperation with other clinics of CUS, as a basic working model, it re-established the existence of multidisciplinary paediatric teams for each paediatric disease. The Institute would, as the leading institution of its kind in Bosnia and Herzegovina, be responsible for the implementation of a multidisciplinary treatment through the formation of Consilium, which in their work would open not only to clinics and centres of CCUS but to all health institutions in the country. The leading role of the Institute through these activities, in collaboration with the Federal Ministry of Health and the Association of Paediatricians of B&H culminated in the final presentation of the guidelines for the diagnosis and treatment of childhood disease. Through professional connections with all medical disciplines, the basic quality mode of Paediatrics, different from other medical disciplines - multidisciplinarity would be carried out at the Institute in a manner of quality. The Institute would serve for the implementation of health activities at the secondary and tertiary levels, as well as in the field of education, training and research, in collaboration with the Federal Ministry of Health in the area of paediatrics.

As a comprehensive institution, the Institute in collaboration with other health care institutions and competent political authorities (Cantonal and Federal Ministries of Health, Cantonal and Federal Employment Health Insurance, Public Health Committee of the Canton, FB&H and others) would direct and coordinate programs of main activities in the field of paediatric disease, problems such as: - prevention - early detection (screening) of disease - diagnostics - treatment and rehabilitation - as well as research, education and training.

A multidisciplinary approach to treatment and teamwork, success in professional and scientific research, cooperation with other clinics within CCUS, other paediatric institutions in the country, proactive involvement in the network of international scientific research paediatric institution, gave the Institute a good foundation for further development.

VISION of ACTIVITIES of the INSTITUTE

The high quality of treatment and health care and intensive activity in the field of research and education should enable the Institute to have the leading

role among leading paediatric institutions in Southeast Europe. To realize this vision, the Institute set clearly defined goals in all areas of its activity:

- *In the vocational field* the goal of the Institute was to continue to improve its multidisciplinary approach throughout the whole process of diagnosis and treatment of patients with childhood illnesses through the equitable development of all specialties in paediatrics, which would enable the Institute to serve as the only comprehensive paediatric centre in the country. The particular aim here was the establishment of guidelines (recommendations) for minimum standards in managing patients with paediatric diseases in B&H, which would allow equal access to diagnostics and treatment for all patients. Also, an important objective was maintaining connections and co-operation with the leading European and American paediatric centres through the exchange of experts in all fields.
- *In the educational field* a goal of the Institute was to remain the reference institution for the Medical, Dental and Medical Faculty in Sarajevo, other colleges, and vocational schools at the high school, undergraduate and postgraduate level and become an international educational institution in the field of all branches of paediatrics for this part of Europe. Also at the national level, the goal of the Institute was to become a leading institution for specialist training in all branches of paediatrics,
- *In the research field* a goal of the Institute was to become the leading Institution in B&H and the Balkan region in the field of clinical research. Through increased participation in various regional and international research groups, the aim was to include a larger number of patients that participated in clinical testing. Further objectives included the process of initiation of organizing and implementing research as well as the improvement of the coordination of research in the field of paediatrics at the level of whole country.
- *In the area of financing* the Institute aimed to obtain adequate funds to enable stable management and development, to increase the impact of the policy of reassigning funds within CCUS, Canton Sarajevo, Federation of B&H and finally the country as a whole.
- *In the area of spatial planning and equipment* the goal was to complete facilities on the site of Jezero, and during the coming period to ensure the procurement of additional appropriate medical equipment, with subsequent proper maintenance and renewal.
- *The health activities* of the Institute would be, for the first time, organized through 2 Clinics with subspecialties in the field of child's pathology,

especially children's radiology and extending the range of laboratory tests relating to the child population, including a pharmacy.

Paediatric clinic and Children's Surgery Clinic

- *As a hospital institution:* CCU Sarajevo is the largest medical institution in B&H and its clinics in the context of this Institute receive patients mainly from the Federation, and other parts of B&H, i.e. regional centres and smaller hospitals for diagnosis and treatment and care of patients in regular and emergency department from Sarajevo, Visoko, Zenica, Tuzla, Bihać, Travnik and Mostar.
- *As a teaching base:* The Clinic Institute is the teaching base of the Medical Faculty, School of Dentistry and Faculty of medical studies and students of High medical school in which graduate and postgraduate study programs are taught. With the beginning of the Bologna process, teaching in the early years of the Medical and Dental School, which requires special conditions to be able to teach in accordance with European standards, must be conducted in a timely manner also meeting the terms for obtaining accreditation of the given institutions for the implementation of higher education in every teaching cycle. Associates of the Clinic are the leaders of a number of postgraduate studies and courses that require additional resources in the sense of adequate teaching space. Institutions must fulfil the conditions for the education of physicians in the specialties required according to European standards.
- *As an institution associate of the Ministry of Health FB&H*: FB&H Ministry of Health should, on the basis of staff, expertise, and equipment, i.e. the legal basis, establish reference centres at the clinics of the Institute.
- *As an institution Associate* of School of Medicine, School of Dental Medicine and Faculty of Health Sciences, University of Sarajevo. The Clinic's Institute is a teaching base, and thus it is necessary for it to fulfil the adequate space and staffing requirements. Clinics are highly specialized institutions with facilities for the diagnosis and treatment of child diseases from the moment of conception, birth to 18 years of age.

The work program and development in the future period

- *General work conditions:* At the Department of Paediatrics, spatial conditions are adequate with the possibility of reconstruction of other buildings on the site "Jezero", Gynaecology and Obstetrics is in function since

2010. The department of Children's Surgery will be moving to new premises where it will be able to function more efficiently.

- *Computerization:* It delves into all aspects of the entire CCU, including the aforementioned Institute. Small systems developed at the Department of Paediatrics have to be integrated at the level of CCU. Successful execution of this important segment will facilitate the provision of services to our customers starting from billing, medical records (discharge letters) and data storage, imaging and laboratory findings. The solution to this important segment for the functioning of the Institute is in the competencies of the CCU.
- *Staff :* doctors, nurses, administration, support staff

Program for specialization

In the past period a lot of improvement was done to the program for specialization and quality performance of service at the clinics. At the Department of Paediatrics, there is an educational team of: a mentor, a doctor in charge of the timetable, off-hours, and the doctor in charge of the seminar meetings with the heads of wards who perform weekly interactive classes with residents. Specialization internship is done according to a program which extensively lists the necessary knowledge and skills in various fields which have to be obtained. In the following period a chief resident should be appointed, and he/she would coordinate the work of residents, solve their problems and make contact with the head of the program i.e. Head of the clinic. A Club journal should be established and the residents could critically analyse scientific papers published in leading international journals with the help of specialists who are experts in certain areas. During the third and fourth year of service, if necessary, residents would return to the department as senior residents, within their future engagement, where they could make decisions and assist specialists.

It is necessary to provide conditions that according to good clinical practice would continue to implement clinical trials in the early stages I and II, conduct continuing education, additional education, and health and media enlightenment.

As for defining **the structure of management of clinics**, a similar level of organization and functioning to the one at the Paediatric clinic, which has received top marks for the way its organized in regard to all health institutions of this character, from the top officials in a country and abroad in the past

eight years, should be established at the at the Children's Surgery clinic and Clinic for Gynaecology and Obstetrics. So it is necessary to establish: monthly meetings of the epidemics-micro-infectious group, a two-month Analyses of the Clinic's Business, monthly meetings on mortality at the Clinic, weekly professional meetings for doctors and nurses, interactive classes for residents, training for new nurses and technicians, resume regular morning and after midday meetings of the Professional College. Also, it is necessary to establish weekly meetings of the College of physicians and the College of Nurses - major nursing departments, ensure the current Web page of Children's surgery and GAK modelled on the web Paediatrics, establish daily education of accompanying mothers, make further educational plans for doctors in CCU and outside the country, as well as nurses, introduce new diagnostic and therapeutic methods, plan publishing of textbooks, newsletters and manuals by the Clinic for Paediatric Surgery, expand Library Fund, subscribe to foreign newspapers, improve information system and "online" access to international medical databases and works.

The Pharmacy

The Pharmacy would in cooperation with the Central pharmacy of CUS supply the Institute with drugs, medical supplies and magistral formulas (i.e. a sterile solution for epidural and subcutaneous individually prescribed to patients for continuous pain relief). The Pharmacy with pharmacist at the forefront would be specialized in the field of paediatric pharmacy and provide a better and more regular supply of drugs to our patients. This would help to implement rationalization in the field of paediatric medicine by using so called equivalents that are less expensive. Generic formulas have certain economic effects and are not inconsistent with professional tendencies, they allow greater access for patients. Paediatric pharmacists would facilitate and participate in a variety of clinical studies, membership in internationally related associations. Pharmacy through its activity is responsible for: organizing the central preparation of cytotoxic and other oncology - preparation solutions individually for each patient in a separate unit with digesters for dissolving drugs, while ensuring security and economy, and finally conformity with EU legislation and the WHO, related to this issue.

The Department for the planning and analysis of the development of health care of the child would be formed as a part of the Institute.

The plans of the Institute relate mainly to the professional integration of these three Organisation Units for child care from birth to adolescence with the

intense development of prenatal diagnosis (ultrasound, genetic ... etc.), which will greatly improve the number of perinatal parameters. It would be necessary to realize and purchase additional equipment for the Children's Surgery Clinic, as well as to renew the equipment of the Department of Paediatrics and Clinic for Gynaecology and Obstetrics, with a special focus on in vitro conception, having in mind the fact that in 1981 the Clinic for Gynaecology and Obstetrics was the first Clinic in this region which delivered a test tube baby. By re-establishing this possibility within the Clinic, it would make this kind of service available to a larger number of patients, making the public sector competitive to the private sector. These services would be covered by health insurance. Certainly, it is necessary to realize education plans at all levels.

Epidemiological services - hospital REGISTER

Epidemiological activities and the existence of a hospital registry for certain paediatric diseases guarantee access to information (incidence, prevalence, treatment success) that are essential in establishing the optimal process of diagnosis and treatment of patients with paediatric disease. Expanding the capacity of the Clinics at the site of "Jezero" should make maximum use, not only in line with current needs, but also predictable changes in conditions in the health care market in the next 10-15 years.

Adaptation of the old space at "Jezero" and the emergence of a new space, will certainly improve the conditions of care for children within the Institution in accordance with not only the requirements of the regulatory authorities of the European Union, but also the demands of the market, where the Institute's assurance for health would be replaced by a series of market competition moves of insurance companies. In this context, the spatial, professional and scientific potential of the Institute may contribute to the development of better health as a whole in B&H, as well as a long-term planning in order to provide health care services in line with European trends. Within the Institute, the Department for Molecular Diagnostics would be created with a prospect to adopt different techniques and molecular diagnostics, given the current trends in paediatrics, and to participate in various scientific research projects.

Establishing this department is crucial because it would allow catching up with current trends in molecular pathology. In addition to the health service, clinical staff would be involved in all aspects of educational and scientific research. Besides the professional part, the Institute would give full consideration to the research and educational activities segment. It must be recognized

as a place for the implementation of multi-centre clinical trials as part of a network with other international groups and institutions. In addition, it would take active participation in the education of medical students and postgraduate education (specialization) of doctors. Paediatrics and Children's surgery are an indispensable part of multidisciplinary treatment of patients with paediatric diseases.

The work area of Paediatric includes prevention and treatment of complications by systemic treatment (supportive therapy), the treatment of the symptoms of the disease (palliative), and the finally treatment of dying patients (terminal Medicine). The plan would be to develop Pain therapy unit - a unit with the goal of optimal diagnosis, treatment monitoring in patients with confirmed pain, with a special segment for psychooncology and related subspecialties. Paediatricians and child surgeons would participate with colleagues from the Institute, but also from other Department of CCUS in the work of multidisciplinary teams in the planning and implementation of diagnostics, treatment and rehabilitation of patients with paediatric disease. The Clinic would confirm the regional recognition of the extent and quality of implementation of clinical research with the aim of introducing new forms of treatment to standard clinical practice.

CONCLUSION

Health system network study: Bosnia and Herzegovina/world

1. Service delivery: 24h
2. Health force: doctors, nurses, workers
3. Information: bulletin board /doctors + sisters + workers/, website, newsletter, regular courses: doctors + nurses
4. Medical products: treatment of patients at departments, outpatient clinics, application of modern technology
5. Finances: Federal Health Insurance Company, Cantonal Insurance Company, people of good will, savings by the development of clinic after training: Cardio surgery, therapeutic and diagnostic cardiac catheterisation, autologous steam cell transplantation, Intensive therapy and all the mentioned above.
6. Leadership: Director, Heads of Departments, departments, colleges of doctors, nurses and workers
7. Evidence based medicine; Clinical pathways, guides and protocols
8. Monitoring health system: in Bosnia and Herzegovina

9. International continuous contacts: Ljubljana, Beograd, Zagreb, Austria, Sweden, Italy, Germany, United States of America.
10. Highly specialised equipment: intensive modern therapy via ventilator techniques: IPPV, MV, CPAP; BiPAP, HFV, laboratory, IMPAX /X - Ray, CT, MR/
11. Network: all departments and Outpatient clinics: PC; administration; web site for all: employees, patients and parents
12. Education: specialization, sub-specializations, teaching for students of medicine, dentistry, Faculty of Health Studies, secondary medical school, students on summer praxis, additional education, training, schools: students summer practice, "hands on".

This is a model of a successful organization and operation within the health system of the most vulnerable population in Bosnia and Herzegovina that created a health brand competitive in the Balkan countries and the European labour market, while respecting the principles of good doctor practices and evidence-based medicine.

When organizations manage their investment in people wisely, the result is a satisfied and motivated workforce that delivers high-quality health services and an organization that fulfils its mission, meets its health objectives, and contributes to its community by providing excellent service.

ANU BiH АНУ БиХ

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MENADŽMENT U ZDRAVSTVU SA POSEBNIM OSVRTOM NA KARDIOVASKULARNE BOLESTI

Sažetak

Cilj ovog rada je evaluacija zdravstvenog sistema u Evropi, uključujući viziju zdravstva u 21. vijeku, upravljanja ljudskim resursima u zdravstvu, doktrinarnim pristupima, osnovnim zadacima javnog zdravstva te glavnim zdravstvenim problemima u Evropi. Dat je i osvrt na stanje zdravstva u našoj zemlji. Poseban akcent je na problematici upravljanja ljudskim resursima tj. principima, tehnikama i problemima menadžmenta ljudskim potencijalom u zdravstvu. Naglašene su aktivnosti i procesi od poslovne važnosti za menadžment u zdravstvu. Ukazano je na otvorenost ka Evropskim integracijama u oblastima zdravstva i edukacija, potrebu finansijske, organizacione i strateške rekonstrukcije zdravstvenog sistema i edukacija, jaču povezanost edukacionog sektora i sektora zdravstva kao i marketa rada, uz uslov da je pacijent uvijek u fokusu zdravstvenog sistema. Neophodno je ulaganje u zdravstvo i edukacije, koje treba biti shvaćeno kao benefit za buduće generacije, jer će doprinijeti jačem ekonomskom razvoju zemlje, uz rast GDP. U drugom dijelu rada prikazan je model uspješne organizacije i poslovanja zdravstvenog sistema najvulnerabilnije populacije, pedijatrijske, uzrasta od rođenja do 18 godina, u Bosni i Hercegovini, u periodu 2003 – 2016. godina, koji je rezultirao zdravstvenim brendom, kompetitivnim u zemljama Balkana kao i Evropskom marketu rada, brend koji poštuje principe dobre lječničke prakse i medicine zasnovane na dokazima. Kada institucije mudro ulažu u ljudske resurse: edukacije, treninge svog osoblja, rezultat je zadovoljna i motivirana radna snaga, koja daje visoko kvalitetnu zdravstvenu uslugu u zemlji i regionu. Prikazana je institucija, koja u potpunosti ispunjava svoju misiju, doprinosi društvu, dajući izvrsnu zdravstvenu uslugu stanovništvu, institucija koja jeste prepoznata i priznata u ovom regionu od strane medicinskih eksperata.

Ključne riječi: menadžment, zdravstvo

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Professional article

PUBLIC HEALTH INTERVENTIONS IN MANAGEMENT OF CARDIOVASCULAR DISEASES IN THE FEDERATION OF BOSNIA AND HERZEGOVINA IN THE LIGHT OF WHO HEARTS STANDARDS AS A MODEL OF GOOD PRACTICE

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Abstract

Aim*:** The aim of this paper is to assess the current role and influence of the public health interventions involved in Cardiovascular disease (CVDs) management in the Federation of B&H, in line with international good practice. ***Introduction: CVDs remain the main public health challenge all over the globe, as a result of interactions among individual, metabolic, behavioural and environmental risk factors. ***Methods:*** assessment of recommendations defined in the WHO HEARTS technical package for CVDs management in PHC from 2016, in the light of results of the current public health interventions of CVDs management in the Federation of B&H. ***Results:*** WHO HEARTS is a technical package composed of strategic and operational measures aimed to reduce the number of premature deaths from CVDs. The paper assesses the latest public health interventions in the Federation of B&H involved in CVDs management and its review in line with six WHO HEARTS package elements such as: healthy lifestyle, evidence based treatment protocols, access to essential medicines and technology, risk-based management, team care, task-sharing and systems for monitoring. ***Conclusion:*** Major part of WHO HEARTS standards for CVDs management is partially implemented in the Federation of B&H. Current morbidity and mortality rates of CVDs represent the evidence for the need of a more active involvement of public health interventions in CVDs management in the Federation of B&H.

Key words: CVDs, Public Health, Federation of Bosnia and Herzegovina

Introduction

Cardiovascular diseases (CVDs) remain a global public health challenge, as a result of interactions among genetics, individual behavioural risk factors,

metabolic disorders and environmental influence. Despite the traditionally well known risk factors, such as : hypertension as the main precursor to the development of CVDs, tobacco, alcohol, unhealthy diet, physical inactivity, diabetes, stress exposure, effective strategies for prevention and management of CVDs remain somehow still percepted more as a cost for the health system, instead as a long-term investment in the health of a population. (1, 2, 3)

According to the data of the World Health organization (WHO) 17,7 million people die each year due to CVDs which is estimated to represent 31% of all deaths worldwide. If current trends continue, the annual number of deaths from CVD will rise from 17.7 million in 2017 to 22.2 million by 2030. CVDs occur almost equally in men and women. Approximately, 80% of all CVDs deaths are due to heart attacks and strokes. Almost 75% of all CVDs deaths occurs in low-income and middle-income countries, while 50% of deaths caused by cardiovascular diseases occur in the WHO European Region. (4-6)

Each year CVDs cause 3.9 million deaths in Europe and over 1.8 million deaths in the European Union (EU). WHO reports show some progress in prevention and treatment which has led to decreases in the rates of mortal CVDs in many high-income countries but similar trends have not been seen in so many other countries. Death rates from both ischaemic heart disease (IHD) and stroke are generally higher in Central and Eastern Europe than in Northern, Southern and Western Europe. (6,7)

Aim: to analyze involvement and role of the current public health interventions aimed to improve CVDs management in the Federation of B&H, in line with good international practice, particularly the document of WHO HEARTS technical package for cardiovascular disease management in primary health care (PHC).

Methodology: Use of WHO recommendations as „best buys“ for efficient CVDs management, with particular emphasis to the WHO HEARTS technical package for cardiovascular disease management in primary health care (PHC) as a framework for evaluation of CVDs management in the Federation of B&H. Through the use of available data of regular statistical system, results of periodical surveys as well the recently enforced policy and strategy documents in the Federation of B&H, particularly in relation to involvement and comprehensiveness of the current public health interventions in CVDs management, an estimated level of implementation of six main WHO HEARTS elements is assessed: healthy life style, evidence-based treatment protocols, access to essential medicines and technology, risk-based management, team care and task-sharing and system for monitoring.

Results

WHO recommendations for CVDs management

WHO considers CVDs as a global health challenge and the world's leaders committed themselves to ambitious reductions in premature CVDs deaths by the United Nations 2030 Agenda for Sustainable Development, the World Health Organization (WHO) Global Action Plan for the Prevention and Control of Noncommunicable Diseases (NCDs) 2013–2020 and the Political Declaration of the High-level Meeting of the United Nations General Assembly on NCDs. (8-10)

The World Health Organization (WHO) has recommended a package of essential NCD interventions (WHO-PEN), with protocols and tools for NCD management (including management of cardiovascular risk) in PHC.

This package includes clinical measurements, simple laboratory testing, CVDs risk assessment charts, blood pressure measurement devices for early detection and treatment. (11)

In 2016 WHO published The HEARTS technical package for cardiovascular diseases management in primary health care which represents a strategic and practical approach in reducing the number of premature deaths from CVDs. The aim is to improve clinical preventive services in primary health care by using highly effective, sustainable and proven interventions. It involves a public health approach to CVDs management through a simplified treatment with standard protocols for primary and secondary prevention and appropriate referral, using a core set of medicines and basic technology; and improved cascade of service delivery by task-sharing and robust clinical monitoring. Main elements of the WHO HEARTS package are: healthy life style, evidence-based treatment protocols, access to essential medicines and technology, risk-based management, team care and task-sharing and system for monitoring. (12)

Role of Public Health in CVDs management

Public health interventions are aimed at influencing national policies and providing guidance and tools to support effective measures in CVDs prevention, treatment and monitoring at all levels, both health and health related sectors. (13,14)

Public Health as actually „Health of Public" approach is significant in CVDs as leading death causes are strongly associated with so many health inequalities. Many surveys all over the globe have confirmed that risk factors

such as smoking, physical inactivity and obesity are higher in lower socio-economic groups, as well the CVDs burden of morbidity and mortality. (15-17)

Public health strategies aimed to detect, prevent, and control CVDs can be effectively implemented to so many levels of changes in population. Actually, CVDs management through Public Health approach integrates activities on all three levels of prevention.

Primary prevention is aimed at reducing risk factors for a development of CVDs in a population, and to reducing CVDs duration and consequences. Public health interventions on this level are based on individual and multiple health riks, particularly behavioural risks such as smoking, harmful drinking, unhealthy diet and physical inactivity. Motivation for individual behavioral changes involves new knowledge and skills on how to improve health through a change of lifestyle, as an argument which shows why public health is not health cost, it is a long-term investment for the population to remain healthy. Recommended physical activity reduces riks of CVDs by 20-35%. Quitting smoking is linked to a 35% reduction of all causes of mortality among patients with CVDs. (18,19)

Secondary prevention is aimed at an early detection of CVDs in the pre-symptomatic phase with the treatment focus on reduction of further health consequences. Public health approach at this level is actually a significant part of health services through evidence based treatment protocols and it makes available access to preventive services in the health system.

The aim of public health approach is to eliminate inequality among population groups or individuals in use of health services.

Early diagnostics and approriate treatments for hypertension as main risk factors for CVDs are very effective and relatively inexpensive, but still not available to so many people all over the globe. Over 20% of the overall hypertension as a major risk for CVDs is linked with alcohol misuse. Every 1 mmol/L decrease in total cholesterol reduces a relative risk for CVDs mortality by 24,5%. Every 10 mmHg reduction in systolic blood preasure reduces the risks of of stroke for 27%, the risk of CHD for 20% and the risk of a heart failure for 28%. Over 100 CVDs deaths could be avoided per 1000 familiar hypercholesterolaemia patients who are treated optimally compared to the ones with no treatment. (20-22)

Tertiary prevention is aimed at reducing the incidence or recurrences of chronic diseases which cause incapacity among patients with symptomatic CVDs. Public health approach is involved in interventions mainly on system level to support CVDs quidelines implementation. (23)

Beside the above mentioned three levels of CVDs prevention, public health interventions are significant in other sectors aimed at improvement of housing, transport, employment, poverty, environmental risk factors and making changes in socio-economy, cultural and environmental policies that are important for the prevention and management of CVDs factors which affect the entire population and society.

CVDs management in the Federation of B&H

Similarly to other countries, the trends of increasing morbidity and mortality from cardiovascular diseases in the Federation B&H are caused by interaction of different behavioural, metabolic and socio-economic factors. Emerging trends in morbidity and mortality from cardiovascular diseases are one of the major public health challenges in the Federation of B&H. (24)

Formal statistical reports show that more than a half of the population in the Federation of B&H (53,1%) is dying from CVDs. Recently performed surveys show high prevalence of CVDs leading risk factors in adult population in the Federation of B&H such as: tobacco and alcohol consumption, unhealthy nutrition, obesity and physical inactivity. (24-27)

As it is obvious that public health has an important role in influencing measures of prevention, treatment and monitoring of CVDs, the aim of this paper is to assess possible impact of the current public health interventions in the Federation of B&H, in line with the WHO HEARTS technical package for cardiovascular diseases management in primary health care (PHC).

Throuh the use of the available data, current public health interventions in the Federation of B&H will be assessed in the light of elements recommended by WHO HEARTS technical package: healthy life style, evidence-based treatment protocols, access to essential medicines and technology, risk-based management, team care and task-sharing and system for monitoring.

WHO HEARTS element : Healthy life style

WHO standards in this segment involves the access of population groups and individuals to counselling on tobacco cessation, diet, physical activity, alcohol use and self-care.

This segment of CVDs management is partially implemented in the Federation of B&H.

Results of recent surveys performed in the Federation of B&H show a high prevalence of all main CVDs risk factors. According to results of the Study of the Health status of adult population in the Federation of B&H 2012, daily

tobacco consumption is confirmed by 44,1% of adults out which 56,3 males and 31,6 females. According to the results of the same Study, exposure to passive smoking in the home is confirmed by more than half of the population in the FB&H (54.1%), out which almost a half (44.4%) stated exposure to tobacco smoke by other smokers at the workplace, and over a half (52.7%) confirmed the exposure to tobacco smoke by other smokers in public places.(26)

According to the results of the Global Youth Tobacco Survey in School Children (GYTS) performed in 2013 in the Federation of B&H, daily consumption of cigarettes is confirmed by 12.7% of school children aged 13-15, 15.5% of which are boys and 9.7% are girls.(27)

According to the results of the Study of the Health Status of the adult population in the Federation of B&H 2012, alcohol consumption represents a significant public health problem for adults. Over a quarter of respondents in the FB&H (28.8%) confirmed that they had consumed some of the alcoholic beverages over the past 12 months, almost a half of which were men (46.1%), with the highest rate (54.3%) of men aged 25-34 and the lowest (30.0%) of people of 65 years of age and more. Alcohol consumption accounts for 11.0% of women, with the highest rate (20.5%) of women aged 18-24 and the lowest (5.0%) of women aged 55-64 years.(26)

Through results of the same Study, almost one quarter of adult population in the Federation of B&H (21,2%) is obese out of which 19,1% are males and 23,3% females. Only one quarter of the population is physically active (24,6%) out which 28,7% males and 20,3% females. (26)

According to the Health Law, the family medicine team within the PHC provides continuous and comprehensive health care that is oriented to the prevention and control of health factors and the early detection of disorders and diseases.

There are periodical health promotion interventions directed towards the whole population, aimed to increase their knowledge and change their attitude and behaviour related to CVDs and health risk factors. Major part of health promoting actions in CVDs prevention are performed by the Institutes for Public Health in the Federation of B&H, in cooperation with NGOs, and are mainly related to marking internationally significant dates, publishing thematic promotional materials and co-operating with the media. (24)

WHO HEARTS element : Evidence-based treatment protocols

WHO standards in this segment involve simple, standardised algorithms for clinical care.

This segment of CVDs management is significantly implemented in the Federation of B&H.

With the aim to harmonize preventive, diagnostic and therapeutic services for the prevention and control of CVDs, in partnership between the Swiss Agency for Development and Cooperation (SDC) and the World Health Organization (WHO) in the period 2013 – 2017, the Project "Strengthening and improving modern and sustainable public health strategies, capacities and services for improving the health of the population in Bosnia and Herzegovina" was started. Within this Project Initiative, during 2017, by the Public Health Institute of the Federation of B&H, in cooperation with the Federal Ministry of Health and representatives of the Association of cardiologists of Bosnia and Herzegovina, guidelines for the control of CVDs have been published. (28)

The Public Health Institute of the Federation of B&H, in cooperation with the Federal Ministry of Health published the following guidelines for the control of CVDs: hypertension, diabetes and dyslipidemia, based on the European Guide for the prevention of cardiovascular diseases in clinical practice (version 2012) developed by the European Association for Cardiovascular Prevention and Rehabilitation (EACPR). (28)

The guidelines are based on the SCORE principle of examining the 10-year risk of CVDs based on the assessment of health status based on the value of multiple risk factors (age, sex, smoking status, systolic blood pressure, total cholesterol). The use of these SCORE estimates is recommended to people without symptoms of CVDs, especially to men over 40 years of age and women over 50, or if they are in postmenopausal age, and in people with established CVDs for the purpose of assessing the risk factors and confirmation of the chosen therapy.

Also, in accordance with the recommendations from the relevant WHO and CDC documents, guidelines for family medicine teams were made, containing an algorithm of recommended promotional preventive interventions at the level of Primary Health Care (PHC) related to leading risk factors such as: malnutrition, obesity in children and adults, physical inactivity and quitting and smoking cessation. (28)

WHO HEARTS element : Access to essential medicines and technology

WHO standards in this segment involve access to the core set of affordable medicines and basic technology.

This segment of CVDs management is partially implemented in the Federation of B&H.

There are inequalities in the access to the core list of essential medicines for CVDs between ten cantons in the Federation of B&H, as well in the access to health services in urban and rural areas, due to location of health facilities and shortage and disbalance of health professionals.

The health workers coverage in Federation B&H is low in comparison with the European region. According to health statistic data of the Institute for Public Health of the Federation of B&H in 2016, there were total of 26.543 employees in health sector in the Federation of B&H (rate 1.203/100.000), out of which more than one quarter of all medical doctors (28,3%) were 55 years of age and more, with over one fifth of 45-54 years of age (22,5%). Among medical specialists in 2016 there was one third (37,2%) of 55 years of age and more, particularly in PHC. In comparison to previous years, there is an unfavorable age structure of family medicine specialists, of which there was over one third (33,8%) of 55 years of age and more in 2016, with close to one half of 45-54 years of age (44,5%). (24)

The systematic activities of education of health workers, especially at the level of Primary Health Care (PHC), are regulated by the Law on Health Care and the Regulations on Specialties for Health Workers, done by the Federal Ministry of Health. According to the Law, the family medicine team within the PHC provides continuous and comprehensive health care that is oriented to the prevention and control of health factors and the early detection of disorders and diseases. Within the specialization of family medicine and continual education for work in the team of family medicine, by the Federal Ministry of Health in cooperation with the Public Health Institute of the Federation of B&H, education of doctors of medicine and nurses / technicians for CVDs management is carried out. Accreditation standards for health centers have been introduced by the Federal Agency for quality and accreditation (AKAZ) particularly through Policy on smoking ban in the National Health Service and family medicine teams (Chapter 3 - health promotion and disease prevention).(29,30)

WHO HEARTS element : Risk-based management

WHO standards show that this segment involves total cardiovascular risk assessment, treatment and referral.

This segment of CVDs management is significantly implemented in the Federation of B&H.

As a part of the above mentioned Project Initiative "Strengthening and improving modern and sustainable public health strategies, capacities and services for improving the health of the population in Bosnia and Herzegovina" in partnership between the Swiss Agency for Development and Cooperation (SDC) and the World Health Organization (WHO) in the period 2013 – 2017, the Public Health Institute of the Federation of B&H, in cooperation with the Federal Ministry of Health and representatives of the Association of cardiologists of Bosnia and Herzegovina, published guidelines for the CVDs management in PHC/family medicine teams.(28)

Main goal of these guidelines was increasing an early detection of people with undiagnosed or undetected cardiovascular disease risk factors or risk conditions such as smoking, obesity, diabetes, pre-diabetes, raised cholesterol, raised blood pressure, driving of effective interventions for people to reduce their risk of cardiovascular diseases and improving the care and management of people with established cardiovascular diseases.

The guidelines are based on the SCORE principle of examining the 10-year risk of CVDs based on the assessment of health status based on the value of multiple risk factors (age, sex, smoking status, systolic blood pressure, total cholesterol). The use of these SCORE estimates is recommended to people without symptoms of CVDs, especially to men over 40 years of age and women over 50 years, or if they are in postmenopausal age, and in people with established CVDS for the purpose of assessing the risk factors and confirming the validity of the chosen therapy. Also, in accordance with the recommendations from the relevant WHO and CDC documents, guidelines for family medicine teams were made, containing an algorithm of recommended promotional preventive interventions at the level of Primary Health Care (PHC) related to leading risk factors such as: malnutrition, obesity in children and adults, physical inactivity and quitting and smoking cessation. (28)

WHO HEARTS element : Team care and task-sharing

According to WHO standards, this segment involves decentralized, community-based and patient-centred care.

This segment of CVDs management is partially implemented in the Federation of B&H.

Generally, human resource management in the health sector is still significantly challenging, through a shortage of physicians, particularly specialists, in PHC, internal medicine, surgery, paediatrics and all public health disciplines, with substantial teritorial, gender and age disbalance of health

professionals. A lack of health professionals in rural areas is evident, in most disciplines there are three quater female health profesionals, a complete lack of physicians under the age of 34 and over 50% of physicians in the age group over 55, additionally challenged with an increasing migration trends of health professionals to the EU labour market. These facts are strong evidence for the need of a systematic approach in human resource development in health sector in the Federation of B&H. (24)

WHO HEARTS element : System of monitoring

According to WHO standards, this segment involves patient data collection and program evaluation.

This segment of CVDs management is partially implemented in the Federation of B&H.

Main challenge for CVDs monitoring is still the absence of a single registry for CVDs in B&H or at the entity level. To improve CVDs monitoring in the Federation of B&H, during 2017, by the Public Health Institute of the Federation of B&H in cooperation with the Federal Ministry of Health, the report forms of the regular health statistical system have been revised, which will enable a more detailed monitoring of morbidity and mortality of CVDs. Instead of the current tracking of CVDs trends according to the chapters of the 10th ICD Revision, it will be possible to monitor the trends of CVDs by individual types of illness.(28)

Also, in accordance with its legally defined functions, the Public Health Institute of the Federation of B&H, in cooperation with relevant international organizations (WHO, CDC, UNICEF) regularly performs periodic population surveys in which trends of frequency of individual risk factors for CVDs are monitored, and the assessment of using preventive health care is made. Some of the more relevant surveys performed by Institute for Public Health of the Federation of B&H were: Multiple Indicator Cluster Survey (MICS) (2002, 2006, 2012), Study of the health status of the population of the Federation of B&H, (2012), Global Youth Tobacco Survey (2003, 2008, 2013), Baseline research of risk factors for NCD (2015). (24-27)

Discussion

Public health interventions in the Federation of B&H were assesed in line with the WHO HEARTS technical package for CVDs management in PHC and through six main elements: healthy life style, evidence-based treatment

protocols, access to essential medicines and technology, risk-based management, team care and task-sharing and system for monitoring.

Analysis shows that major part of public health interventions in the light of WHO HEARTS package is partially implemented in the Federation of B&H.

Healthy life style which involves the access of population groups and individuals to counselling on tobacco cessation, diet, physical activity, alcohol use and self-care is partially implemented in the Federation of B&H. The family medicine team within the PHC provides preventive health services towards main CVDs risk factors, with disbalance of teritorial access, location of health services and a shortage of health professionals in PHC.

Results of recent surveys performed in the Federation of B&H show a high prevalence of all main CVDs risk factors, such as daily tobacco consumption by 44,1% of adults, alcohol 28,8%, over one fifth of adult population (21,2%) is obese and only 24,6% of adult population is physically active.

Periodical health promotion interventions directed towards the whole population, are not covered by systematic approach and are without continual financing mechanisms. (24-27)

Evidence-based treatment protocols which involve simple, stadardized algorithms for CVDs are significantly implemented in the Federation of B&H. Guidelines for the control of CVDs for hypertension, diabetes and dyslipidemia, have been published, based on the European Guide for the prevention of cardiovascular diseases in clinical practice (version 2012) developed by the European Association for Cardiovascular Prevention and Rehabilitation (EACPR). (28)

Access to essential medicines and technology which involves access to the core set of affordable medicines and basic technology in CVDs is partially implemented in the Federation of B&H, due to the inequality in access to the core list of essential medicine for CVDs among the cantons in the Federation of B&H as well in access to health services in urban and rural areas, due to location of health facilities and shortage and disbalance of health professionals. (24)

Risk-based management which involves total cardiovascular risk assessment, treatment and referral is significantly implemented in the Federation of B&H due to the published guidelines for the CVDs control based on the SCORE principle of examining the 10-year risk of CVDs based on the assessment of health status based on the value of multiple risk factors (age, sex, smoking status, systolic blood pressure, total cholesterol). (28)

Team care and task-sharing which involves a decentralized, community-based and patient-centred care is partially implemented in the Federation of B&H due to a shortage of physicians particularly in PHC and in all public health disciplines, with substantial teritorial, gender and age disbalance of health professionals. (24)

System for CVDs monitoring which involves patient data collection and program evaluation is partially implemented in the Federation of B&H, mainly due to the absence of a single registry for CVDs in BiH or at level of Federation of B&H. A complete reform of health statistical system and continual performance of relevant internationally comparable population surveys of trends of individual risk factors for CVDs offers room for a significant progress for the full implementation of CVDs monitoring in the Federation of B&H.

However, beside the review on segments of WHO HEARTS technical package for cardiovascular diseases management in primary health care, it is significant to underline support through the enforcement of recent policy and legislative measures in the Federation of B&H, which could have influence on CVDs management.

In 2017 the Federal Ministry of Health initiated documents of new Tobacco Control Strategy and the Law on Protection from Tobacco and Other Smoking Products in the Federation of B&H. This activity was realized with the support of the Swiss Government through the Swiss Development Agency and administration by the World Bank (WB) Office in B&H. The Law involves a complete ban of smoking in all closed places, protection of exposure to second-hand smoking, health warnings and a complete ban on all forms of tobacco advertisement, promotion and sponsorship. At the moment, the Law is completed as a proposal, accepted by the Federal Government in July 2018 and is ready for further procedure of Parliament enforcement. (31)

Additionally, in 2018, Federal Ministry of Health initiated a draft of Action plan for noncommunicable diseases in the Federation of B&H for the period 2019 - 2025, in which most part of CVDs risks factors are covered. (32)

Conclusion

Similarly to other countries in WHO European region, current trends in morbidity and mortality from cardiovascular diseases are one of the major public health challenges in the Federation of B&H, causing significant rates of premature deaths, disability and increasing costs within the health and social care system.

This paper analyzed some aspects of the scope and comperhensivness of the public health interventions involved in CVDs management in the Federation of B&H, through estimated level of implementaion of six main WHO HEARTS elements: healthy life style, evidence-based treatment protocols, access to essential medicines and technology, risk-based management, team care and task-sharing and system for monitoring.

In the light of WHO HEARTS package, most part of the recommended standards for CVDs management are partially implemented in the Federation of B&H.

High exposure to behavioral CVDs risk factors in the Federation of B&H show only a partial implementation of healthy life style as one of important WHO HEARTS standards. More efforts should be made with the focus on health promotion interventions directed towards the whole population, aimed to increase their knowledge and change their attitude and behaviour related to CVDs and health risk factors.

WHO standards of evidence-based treatment protocols and risk-based management are fully implemented in the Federation of B&H due to recently enforcement of guidelines for CVDs in PHC with diagnostic and therapeutic protocols, as well training of health professionals, but CVDs prevention as a part of systematic monitoring of NCDs should include preventive services at all other levels of health care in the Federation of B&H.

Standard of CVDs system monitoring is improved through a reform of health statistical system and continual performance of population surveys, but more efforts are needed for the development of appropriate CVDs registry for B&H as a crucial segment of monitoring system.

Finally, further enforcement of legislative measures such as ban of smoking in public places, increases of tobacco prices, health warnings, increases in alcohol taxes, promotion of healthier diets through food pricing and labelling and marketing controls should be a form of a substantial support to public health interventions in CVDs management in the Federation of B&H. (33,34)

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JAVNO ZDRAVSTVENE INTERVENCIJE U MENADŽMENTU KARDIOVASKULARNIH BOLESTI U FEDERACIJI BOSNE I HERCEGOVINE U SVIJETLU HEARTS STANDARDA SVJETSKE ZDRAVSTVENE ORGANIZACIJE KAO MODELA DOBRE PRAKSE

Sažetak

Cilj: Cilj ovog rada je procjena sadašnje uloge i utjecaja postojećih javno zdravstvenih intervencija u oblasti menadžmenta kardiovaskularnih bolesti (KVB) u Federaciji BiH, u skladu s međunarodnom dobrom praksom. ***Uvod:*** KVB kao rezultat interakcije između individualnih, metaboličkih, bihevioralnih i ekoloških faktora rizika, još uvijek predstavljaju vodeći javno zdravstveni izazov širom svijeta. ***Metode:*** procjena implementacije preporuka sadržanih u tehničkom paketu Svjetske zdravstvene organizacije (SZO) HEARTS standarda za menadžment KVB u Primarnoj zdravstvenoj zaštiti (PZZ) iz 2016 god. u odnosu na rezultate ostvarene kroz aktuelne javno zdravstvene intervencije uključene u menadžmemt KVB u Federaciji BiH. ***Rezultati:*** dokument SZO HEARTS standarda je tehnički paket sastavljen od strateških i operativnih mjera s ciljem smanjenja broja preuranjenih smrtnih slučajeva od KVB. Rad predstavlja osvrt na aktuelne javno zdravstvene intervencije koje su uključene u menadžment KVB u Federaciji BiH, klasificirane u skladu sa standardima šest elemenata dokumenta SZO HEARTS paketa kao što su: zdrav način života, protokoli zasnovani na dokazima, pristup osnovnim lijekovima i tehnologiji, upravljanje rizikom, podjela i timski rad i sistemi za praćenje. ***Zaključak***: Veći dio standarda za menadžment KVB navednih u dokumentu SZO HEARTS djelimično je implementiran u Federaciji BiH. Aktuelne stope morbiditeta i smrtnosti od KVB predstavljaju argument za potrebu aktivnijeg učešća javno zdravstvenih intervencija u menadžmentu KVB u Federaciji BiH.

Ključne riječi: kardiovaskularne bolesti, javno zdravstvo, Federacija Bosne i Hercegovine

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Original article

EUROPEAN UNION HEALTH SYSTEMS AND RESPONSES TO THE ECONOMIC CRISIS

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Abstract

There is no doubt that the overall health of the population is the area of a special social concern of a state, hence, this concern is most often expressed through complex systems of healthcare insurance. Having in mind the fundamental social significance of the healthcare system, debates pertaining to its functioning and efficiency have been ubiquitously present all around the globe. The importance of scientific and practical research in the healthcare area are becoming particularly important in the unfavorable economic conditions as have been present in the most of the World's countries during and after the 2007 economic crisis. Considering the severity of the crisis, many of the countries have been facing the need for a revision of their health systems in order to assure sustainability of their healthcare in newly arisen, adverse and uncertain financial reality. Additionally, although the healthcare systems can be grouped and attributed to a certain model, we must not neglect the fact that healthcare systems are different from state to state and that they are under a strong influence of history, tradition, political system, economy and national values of every state. Because of this, it has not been possible to offer a single set of universally efficient measures for tackling the crisis' repercussions on healthcare systems. In this paper we analyze the responses implemented by European Union countries in the light of the most recent economic crisis, deemed unprecedented in the Union since its establishment.

Key words: healthcare systems, healthcare consumption, economic crisis

1. HEALTHCARE SYSTEMS

The definition of a healthcare system mostly includes an organized approach to providing health services which requires the existence of a system or a program through which the population is given the access to healthcare and which is financed by the state, private subjects or by public and private subjects in combination. According to the definition of the World Health Organization, a healthcare system enhances "all activities the primary purpose of which is to improve, renew and take care of health" (Todaro, 2006). In other words, a healthcare system consists of all organizations, people and activities whose primary intention is to promote, regain and maintain health (WHO, 2000). The previously mentioned includes activities that directly improve a health condition, as well as all other endeavors aimed at raising health determiners. Despite the fact that some authors tend to narrow the definition of healthcare system thus reducing it to the obvious elements – organizations, institutions and resources that directly provide healthcare to their users (Mills and Ranson, 2012), the complexity of healthcare systems requires a broader approach that enhances more than the obvious pyramid of public institutions that are direct providers of health services to their users.

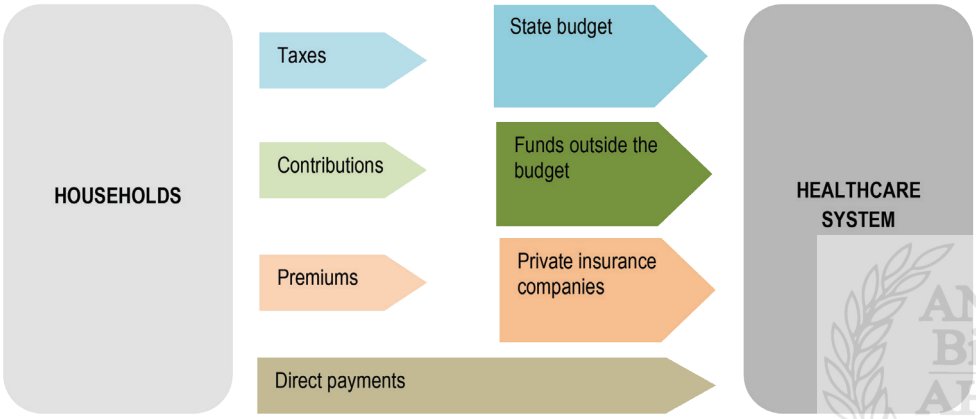
Following the conclusions of World Health Report 2000, the primary aim of a healthcare system refers to improving health and health equity in ways that are responsive, financially fair and that secure the best, that is, the most efficient usage of available resources. In the same report, a basic medium-term aim is also stated and that is to direct the transformation of health inputs according to the final health output in a way that will secure a broader enhancement and a better availability of efficient health interventions to users, without compromising the quality level and the security of the provided service.

Global development of the healthcare system through time has been defined by numerous and various factors, among which some are especially important: historical and cultural context, political system and ideology, geographic-climatic factors, and the level and direction of socio-economic development of a state. Certain form of the healthcare system has been present as long as is the natural tendency of the people to take care of their health and to treat diseases, but organized health systems, as political and social institutions of today, have only been present in the last hundred years, even in industrially developed countries. The establishment of primary healthcare as the elementary interest of mankind can be seen as the first attempt of creating

a unified approach to the issue of health, that is, forming a unique frame for health policies, for it has as such been articulated in the international declaration Alma Ata in 1978. Although the Declaration defines governments as responsible for the health of their people and states that primary healthcare is key to achieving this aim, within a socially just development, only ten years later, unfavorable economic tendencies in most of the World's countries have forced upon the need for a revision of the modus of providing health services, partly discarding the imperative of social justice and equality. Globally endangered financial prosperity of the 80s, which was marked by high prices of petrol, low tax income and economic adjustment to the newly established conditions, has introduced two difficult ways for basic healthcare financing – directing public consumption exclusively on interventions that are cost-efficient and improvement of financing through charging for the provided services. Although most countries introduced increased fees for health services, which as a consequence had poor categories distanced from a good healthcare service, the other choice – spending exclusively on essential interventions – was politically and practically impossible to implement. Expanding the crisis in the 90s directed creators of healthcare system policies toward market based reforms of European public services shaped within the common phrase – do more at lower expense. International Community took a serious approach to revising the sources of financing needed for a functional and overall healthcare system only at the beginning of the 21st century, when it was faced with the fact that the operability of the healthcare system with per capita allocations which are limited primarily by cost efficiency is not a sustainable solution as well as with the growing problem of HIV/AIDS pandemia. This lead to signing the declaration in Jakarta in 1997 and Millennium Declaration of the United Nations in 2000, where 189 countries from around the world became obliged to fulfill eight common goals, four of which referred to health issues.

Theories of organizational sociology and industrial organization assume that the activities which are implemented within the public healthcare system are primarily determined by available resources, the way those resources are organized and the defining attributes of the community, that is, the market that is provided by the health system. (Mays et al., 2006). When we talk about basic resources available to the public health system, it is primarily about financial means and human resources. Naturally, the available financing is the basic determiner of the number of human, technological and other resources that could be engaged in the process of implementation of public health

activities. Thus, although systems of healthcare can be classified according to different criteria, it is evident that the financial aspect, that is, way of collecting means, as well as the way of paying services, is the main criterion. When we talk about the basic ways of collecting means of financing healthcare sector, the following things are singled out: taxes, income, participation, paying full price in healthcare system, as well as voluntary monetary contributions and gifts from institutions, groups and individuals (Cučić, 2000). From economic aspect, it can be said that money coming from households is the primary source of financing in all healthcare systems. *(Scheme 1).*



Scheme 1: **Healthcare financing**
Source: the authors' image

Yet, regardless of this fact, all individual types of health systems have specific attributes, having in mind that using the above mentioned methods of securing financial means as well as ways of paying service providers create the system of healthcare which is directly defined by the position of the user, that is, citizen who has the approach to and uses the health service. Institutional frame of a health system can be seen as a system of economic regulations and mutual interactions within healthcare which enhances the owner's structure, organization of the flow of financial and material resources as well as the rules that regulate the approach to the means and services that are exchanged in health markets. (Lyszczarz, 2014). It is exactly on the basis of the methods of securing financial resources and the modus of paying the service provider that the most often used and most famous division of the healthcare system is made, according to which systems of healthcare are separated into three basic models: Beveridge, Bismarck and Market model of Health Insurance.

1.1. The Beveridge Model

The model was named after Sir William Beveridge who was a social reformer, a principal of London School of Economics and a co-author of the Report made by a committee in charge of social insurance and allied services, better known as The Beveridge Report *(The Report of the Inter-Departmental Committee on Social Insurance and Allied Services; Beveridge Report)*. A unique significance of this report is seen in the fact that on the basis of its recommendations in 1948, the National Health Service (NHS) of Great Britain was established, although the report itself „says very little of medical care and literally nothing of diseases." (Musgrove, 2000). The focus of the Report, despite a logical assumption, is not directed toward health interventions but treats them as „joined services" included in the all-enhancing scheme the basic intention of which is the upkeeping of national employment and revenues. This was in line with the time in which Beveridge lived and which was marked by the consequences of the Depression and the fear from an economic collapse due to war once the economic stimulus was gone. Beveridge's primary endeavor was to protect, that is, renew the ability of the population to work, and thus the real accent was put on post-medical care and rehabilitation. Today NHS, which was established on the Beveridge Model, is considered to be the pioneer of the universal government financed health insurance and is in charge of organizing and financing the health sector as well as of making agreements with providers of health services, so that prices and ways of payment could be defined. When NHS was established in 1948, it had a budget of 437 million pounds (around 15 billion according to today's value), while, according to the publicly available data for the year 2015/2016, the budget of HNS amounted to 116,4 billion pounds (source: www.nhs.uk). NHS has more than 1,5 million employees (which places this service among five biggest employers in the world) and it provides services to the population of 54,3 million users.

According to the model created by Beveridge, healthcare system is financed by the government, from the budget, while actual sources of financial means are general taxes. The model is based on principles of solidarity and equality and services are free and equal for all which means that they include the whole population and that bills are not issued to patients. It is evident that the model offers a high level of fairness when it comes to system financing, as well as availability and quality of service provision. Most hospitals and clinics are owned and governed by the state, while service providers, such as

doctors and pharmacists, mostly have the status of civil servants (the system also recognizes private doctors who receive financial means from the government). The advantage of this kind of healthcare financing is primarily seen in a rather simple way of governing and the possibility of direct cost control. In the systems based on the Beveridge Model, the primary focus is set on keeping expense per an individual as low as possible, because the Government solely controls what service providers can do and which services they have the right to charge (Pijalović, 2015).

In systems which follow the principles of the Beveridge Model, defining the amount of financial means allocated for healthcare is a process that happens usually once a year, when budget structure is decided upon. Having in mind that healthcare is only one of the numerous elements that are financed from the budget, it is very often the case that the necessary means for the adequate and good health care are underestimated, and this is also the main downside of the Beveridge Model, together with the fact that a significant number of countries face the problem of budget deficit. Practice shows that this system has proved to be good only in those countries that have stable and strong government budgets, such as Scandinavian countries: Sweden, Denmark, Norway, Finland. Apart from them, this model has been applied in the already mentioned Great Britain, Ireland, Iceland, Australia and New Zealand, and in Greece, Italy, Portugal, Spain and South Korea that made transition from the Bismarck to the Beveridge Model in the 1970s and 1980s.

1.2. The Bismarck Model

Named after the first Chancellor of the New German Empire, Otto von Bismarck, who set the new basis for the establishment of an overall system of social and health insurance by introducing a statutory health insurance in 1883. Bismarck's primary goal was to face social unrests and to repress the growing popularity of socialist ideas, as well as to economically weaken the voluntary social insurance of the Trade Union and working associations which were governed by the Church. (Franke, 2004) Basic characteristics of the systems based on the Bismarck Model include the following: (a) insured individuals are persons who are employed, that is, persons who are paid for their work; (b) financing is secured through taxes that are ranked on the basis of income and (c) taxes are paid on the basis of the amount of salary or wage, which means that every individual in the system contributes according to his/her possibilities.

Bismarck's system is the system that uses insurance, that is, funds of health insurance that are independent and non-profitable and that can be public or private, and that are strictly defined by special laws and regulations. Funds are mutually financed by both employers and employees through taxes on and from salaries, or taxes on the overall income for agriculturists and independent entrepreneurs, according to the defined corresponding rate on obligatory regular basis. The system is regulated so that the funds are those that manage the collected means, make arrangements with health service providers and make payments, and in this way they provide health services to all the insured individuals.

It is possible to make arguments for the assertion that the system of salaries tax is more fair than the Beveridge Model, the downside of which is reflected in the lack of insight into variations of outlays given for the healthcare sector. A person who is employed can insure children and family members by paying salaries tax. Healthcare expenses for other categories, such as the unemployed, pensioners, invalids and others, are covered by social care funds (funds for the unemployed, pension, invalid and other funds), while those who are socially unattended for, who have no assets or income, that is those who social care funds are not obliged to cover expenses for, they are given special compensations from the budget, mainly on municipality level. On the other hand, individuals who cannot exercise their right to health insurance on any basis, have the right to health care only in cases of emergency. Also, the government is obligated to allocate financial means from the budget for capital investments, cover expenses for epidemiological controls and research in the field of healthcare (Pijalović, 2015).

It is important to emphasize that the Bismarck Model of healthcare offers the possibility of a voluntary additional insurance, as well as additional and replacement insurance. Replacement insurance is possible in cases when, for example, the income of the user is above a certain limit, which was not seen as the best practice in public healthcare, because it violated the principles of fairness and equality, and it carried a greater healthcare expense and a more difficult cost control. In that case, the required redistributory role of financing nor the concept of mutual risk among different categories are fulfilled. Voluntary insurance is defined by special regulations and can vary from country to country.

Although this is a model for more than one insured individual, (often described as decentralized), a tight regulation of health services and fees provides the government with the possibility of cost control similar to the Beveridge Model of one insured individual (centralized model). It is important

to emphasize that the Bismarck Model, as well as the Beveridge Model, is based on the principles of solidarity and equality, which means that it guarantees for an undiscriminatory approach to providing services to all, regardless of financial possibilities of the insured.

The key significant problems of this model are related to the notion of „moral hazard". A „moral hazard" appears when the population, that is, the insured individuals, having in mind that they do not directly pay for healthcare services, start considering them to be free and use them in an overly and unnecessary way, thus increasing the cost.

In recent years, the trend of private medicinal practices and hospitals is present, especially in the countries which apply the Bismarck Model, for example, Japan has more private hospitals than USA. Applying this model results in a mix of private and public service providers, which makes cost control in public healthcare easier and more efficient.

Countries that apply this model or its variations are: Germany, Austria, France, Japan, Luxemburg, Belgium, the Netherlands, Switzerland, Czech Republic, Slovenia, Croatia, Serbia and Bosnia and Herzegovina.

1.3. Market models of private insurance

In the model of private insurance, healthcare is conceived on voluntary basis while financing is based on premiums that are defined according to health state, age, salary and such. It is justified to claim that this models represents a certain form of discrimination and a classic example of violation of solidarity principles. Premiums are paid to private insurance companies that are profitable, and in its pure form this model actually exists only in USA. Anyway, it is important to point up that American healthcare is fragmented, as it offers various kinds of care and covers different categories of population. When it comes to treatment of veterans and the military, the USA applies the Beveridge Model. For those Americans who are work capable and employed, and who get their right to insurance at work, the USA applies the Bismarck Model and the employees pay, entirely or partly, the insurance for their employees and for members of their families who are not insured. For Americans above 65 years of age and for the poor as well as for beneficiaries of public monetary compensations, that is, for those who have the right to Medicare and Medicaid programs, the USA applies the model of National Health Insurance, the same as in Canada. For those who do not enter in the previously mentioned groups, that is, for the population that does not exercise the right to health insurance,

to live in the USA is the same as to live in the Third World countries, with health care services provided only in cases when the seeker of medical help is able to pay the bill during the period of treatment directly „out of pocket“ or when his/her health is endangered seriously enough for him/her to be admitted to the emergency center of a public hospital.

The Law on Healthcare Insurance Reform in the USA (*The Patient Protection and Affordable Care Act),* better known as Obamacare, which was passed in both Houses and was signed by the President in 2010, and also verified on the Supreme Court, had the aim to establish a common universal health insurance coverage, which would solve the problem of 44 million of Americans who were, before the Reform, uninsured (healthcare reform in the USA in more details on http://obamacarefacts.com/obamacare-facts.php). Yet, current American administration won the elections in 2017 with the program that, among other things, promised to abolish and replace Obamacare Law that was presented as a „huge economic burden“ for the Unite States. Despite numerous attempts, Obamacare hasn't been completely abolished and it has been the subject of a continuous conflict between the two opposing parties.

2. HEALTHCARE COSTS

Costs and financial resources which countries direct towards healthcare sector are determined by a great number of socio-economic factors as well as the financial and organizational structures of the healthcare system of a specific country. Great majority of countries has been continuously facing the problems related to financing of the healthcare system, which places this sector at the very top of important economic and political issues in developed countries. On the other hand, in countries with low and middle income and in European countries in transition, health sector has since the 90s been one of the central issues when it comes to economic reforms.

Most of the world costs in the health sector refer to the countries with high income, while the expansion of diseases is reverse proportional to the amount of invested means. (Gottret and Schieber, 2006). Based on this, there is no doubt that countries with low or middle income per capita are facing more difficult problems related to securing the means necessary for treatments of illnesses. World Health Organization has recognized this problem and has, as one of its main goals, set the establishment of a financing system for healthcare that would secure the availability of health services to all members of population, without them being exposed to financial risks. However, according to the latest report of World Health Organization, direct or out-of-pocket

payments for health services made, in 2015, 32% of the overall world healthcare costs (in 2012, the percentage amounted to 17,6%), which is proven to create catastrophic consequences in terms of population impoverishment. In Bosnia and Herzegovina, out-of-pocket payments made almost a third (28,64%) of overall costs for health services, that is, 123,48 USD per capita.

On the other hand, in those countries in which governments took the responsibility for healthcare, the costs of healthcare have become one of the main and continuously growing components of the public finance. Because of this, in the conditions of recession and increased fiscal pressures, the growth of health costs becomes an especially important problem.

In the countries of OECD, the overall public and individual costs for healthcare has been increased for 3,4% on average in 2016, which is the highest rate since 2009. The USA spent more in 2016 than any other OECD member, spending the equivalent of 9982 USD per capita. This amount of costs for health services surpasses almost a triple average of thirty-five OECD countries (an average cost in 2016 was 4003 USD).

According to the World Bank data from 2015, on the world level, 7,2 trillion USD or 10% of the overall world GDP was spent. On the other hand, financial means directed by the state toward the healthcare sector compared to overall costs on all other goods and services in economy are a good indicator of the position of the health sector as well as of the overall performances of the overall economy. According to the assessments of OECD in 2016, healthcare costs made an average of 9.0% of GDP in OECD countries.

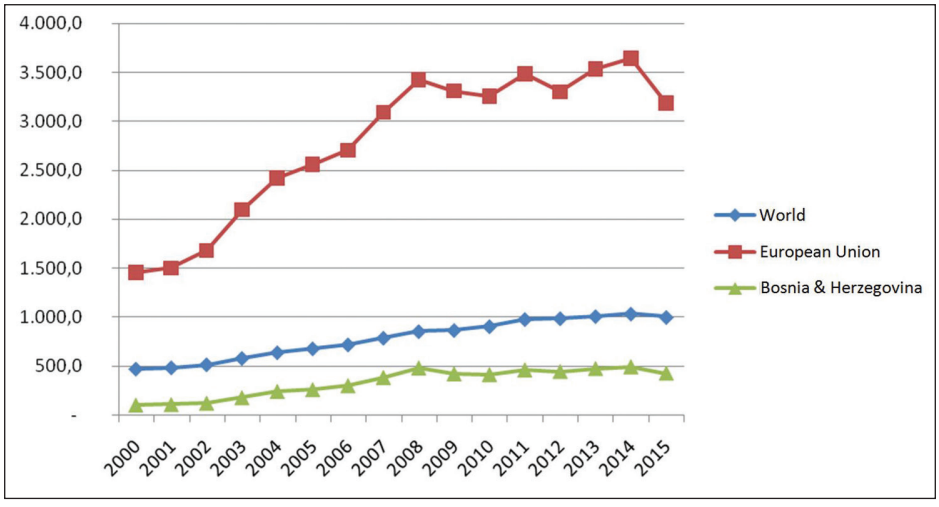
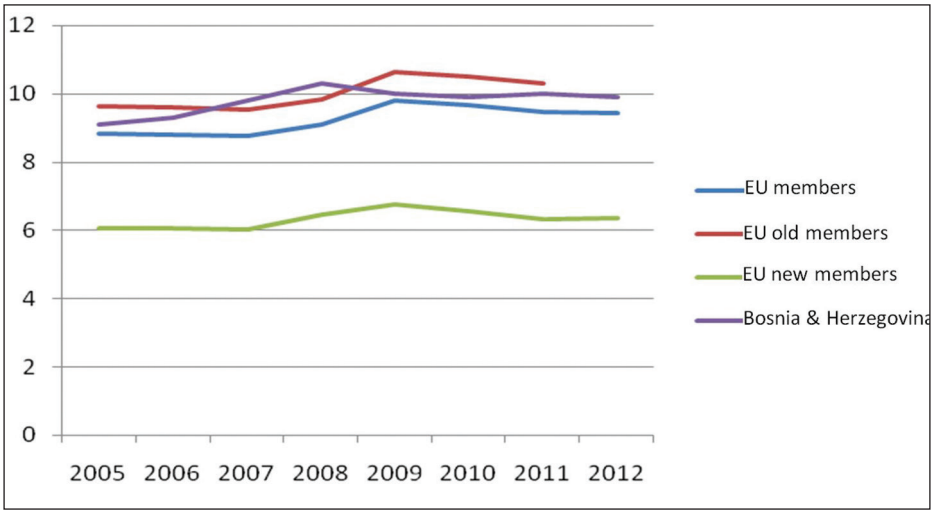


Chart 1: Healthcare cost per capita, (World, EU and B&H)
Source: WHO, Regional Office for Europe, 2018



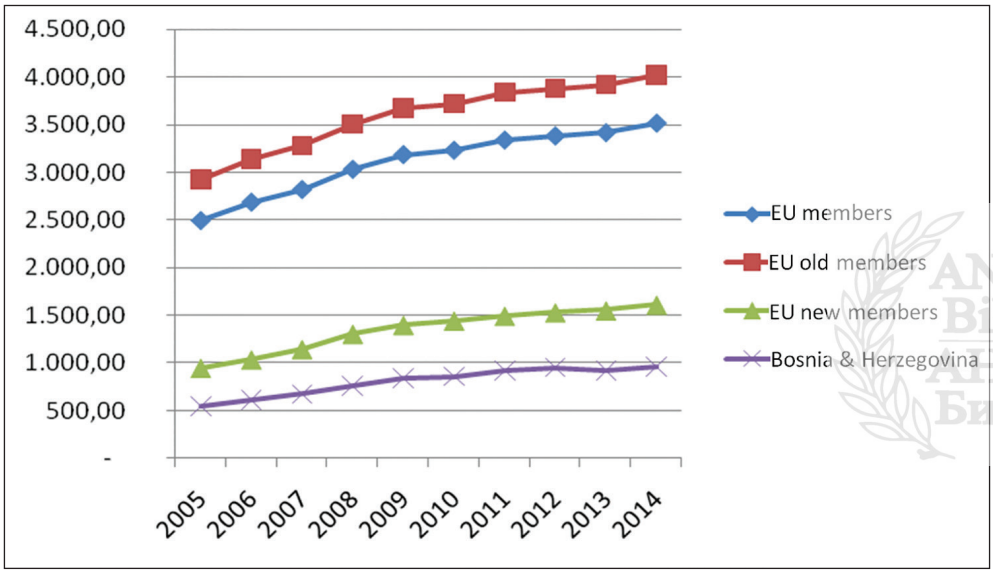
	2005	2006	2007	2008	2009	2010	2011	2012
% Share of overall costs in GDP EU members	8.85	8.82	8.78	9.12	9.79	9.65	9.45	9.43
% Share of overall costs in GDP EU old members	9.63	9.59	9.54	9.85	10.62	10.49	10.29	
% Share of overall costs in GDP EU new members	6.06	6.07	6.02	6.48	6.77	6.56	6.32	6.37
% Share of overall costs in GDP B&H	9.1	9.3	9.8	10.3	10	9.9	10	9.9

Chart 2: Healthcare costs as GDP percentage (EU and B&H)
Source: WHO, Regional Office for Europe, 2018

By analyzing the data showed in Chart 2, we can conclude that in 2012, the last year for which official data are available, healthcare costs in Bosnia and Herzegovina was 9.9% of GDP, which is a little more than an average cost made by all the countries that are members of European Union and much more than the cost of new members (members that jointed the EU in 2004: Bulgaria, Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Romania, Slovakia, and Slovenia – Croatia was not included in the given data because it became an EU member in 2013.) For old members of EU, known as the EU15 (members of EU before 2004: France, Germany, Italy, Belgium, the Netherlands, Luxemburg, Great Britain, Denmark, Ireland, Greece, Spain, Portugal, Finland, Austria and Sweden), the data for the year 2012 are not available, but it is evident that in the previous year, 2011, overall healthcare costs in these countries made 10, 29% of GDP, which is a little

more in comparison to the costs in Bosnia and Herzegovina (10,00%) and to the average of all countries in the European Union (9,45%).

Precisely because of the fact that Bosnia and Herzegovina has a high share of healthcare costs in GDP that is practically on the same level as the costs of the EU, it has often been said that a cost of healthcare sector in Bosnia and Herzegovina is too big, and that this is the reason why a reform of the healthcare sector is indispensable. Yet, if we look into the data showing the health care costs per capita, we come to a significantly different conclusion. Also, it should be noted that consequences of 1992-1995 war on health of B&H population are still present and therefor imply higher healthcare costs on a state level.



	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
% Overall healthcare costs per capita (PPP) EU members	2,494.3	2,688.1	2,820.9	3,033.2	3,188.4	3,234.5	3,341.4	3,384.6	3,418.4	3,518.8
% Overall healthcare costs per capita (PPP) EU old members	2,927.7	3,146.9	3,282.9	3,506.3	3,676.1	3,719.3	3,839.4	3,880.1	3,921.3	4,021.8
% Overall healthcare costs per capita (PPP) EU new members	941.7	1,029.7	1,139.8	1,301.8	1,396.1	1,441.6	1,491.6	1,527.9	1,549.0	1,608.9
% Overall healthcare costs per capita (PPP) B&H	544.8	607.6	671.8	754.9	837.7	855.8	915.1	947.9	919.2	957.4

Chart 3: Healthcare costs per capita (EU and B&H)
Source: WHO, Regional Office for Europe, 2018

The overall healthcare cost per capita in B&H in 2014 was 957,4$, which is considerably below the EU average, which was 3518,8$ per capita. Healthcare costs per capita in the given year were 4021,8$ in old EU members, and new members had a lower per capita cost (1608,9$), but we have to bear in mind that public expense is higher in these countries than in Bosnia and Herzegovina.

When it comes to the human resources engaged in the health sector, it is evident that Bosnia and Herzegovina significantly lags behind the EU15 average in terms of number of doctors, dentists, nurses and particularly pharmacists. For example, Bosnia and Herzegovina has more than three times fewer dentists and almost twelve times less pharmacists per 100.000 inhabitants when compared with the EU15 average. Also, if look into the material resources used by the health sector the most prominent difference is noticable in the number of hospitals. While Bosnia and Herzegovina counts 1,02 hospitals per 100.000 inhabitants, EU15 countries have almost three times more (2,94).

Table 1: Health sector resources: EU15, EU12 and B&H

Indicator	2012			2011		
	B&H	EU15	EU12	B&H	EU15	EU12
Human resources (per 100.000 inhabitants)						
Doctors	24,74	35,35	9,63	25,08	35,99	9,61
Dentists	22,81	68,45	55,77	21,04	68,34	54,92
Nurses	520,8	944,36	587,17	502,77	947,32	571,27
Pharmacists	11	119,79		10,21	118,99	83,06
Hospital capacity						
Number of hospitals per 100.000 inhabitants	1,02	2,89	2,66	1,02	2,94	2,59
Number of hospital beds per 100.000 inhabitants	350,36	500,12	639,78	346,14	506,78	640,97
Average length of stay in hospitals (in days)	7,5	8,3	7,5	7,4	8,4	7,6

Source: WHO, Regional Office for Europe, 2018

4. REFORM OF HEALTHCARE SYSTEMS IN EU COUNTRIES

According to the data of Eurostat, it is estimated that the population of European Union had the overall of 511,5 million people at the beginning of 2017. The young (0-14 years of age) represented 15,6% of the population, and working-age population (15-64 years of age) represented 64,9%. The rest

of 19,4% referred to members of older population, above 65 years of age and more, which, in this category represents an increase of 0,2% compared to the year 2016. Perhaps the data that carries even more significance is that this same research showed that for every person of 65 years of age or more, the European Union counted only a little more than three persons who were considered to be capable for work (15-64 years of age). In addition, the share of the population of 65 years of age and more, has been continuously increasing in every country that is a member of the European Union, a member of EFTA and in every country that has the status of a candidate (EUROSTAT, 2018) .

In the last 50 years, there has been an extension of the expected lifetime in all European countries. Only in the period from 2003 to 2013, the expected lifetime was increased for 3,2 years for men and 2,5 years for women. However, researches show that the extension of a lifetime does not necessarily mean a longer life spent in good health. On the level of European average, a man and a woman of 65 years of age have an expected lifetime of nearly 18 and 21 years respectively. Yet, according to EUROSTAT data, only 9 of the rest of 18, that is, 21 years are to be spent in good health. The rest of the lifetime is mostly marked by chronic diseases which result in a significantly lower quality of life which then automatically initiates the increase of a financial burden on the healthcare system. When we talk about concrete causes of death, 85% of mortality on the level of the European Union is caused by chronic diseases, including cancer, cardio-vascular diseases, chronic respiratory diseases, diabetes, and mental diseases (Brennan et.al., 2017). It is exactly chronic diseases that represent a separate matter of care, bearing in mind that they carry significant social costs in the sense of lower compensations, participation and productivity of working capable population and an increased number of early or invalid retirements. It is assumed that the need for expensive health interventions will have a significant increase in Europe in a middle term. At the same time, it is expected that there will be a limited economic growth as well as a stagnation of national budgets. All the above mentioned leads to the conclusion that reforms of the existing health models will have to be placed in the primary focus of all European countries. Defining health policy, financing as well as organizing health systems are all under the jurisdiction of EU members and so, as in other areas of legal regulations on the EU level, they are established only in case when it has been estimated that a certain problem cannot be efficiently solved on national, regional or local level. Only in some cases, such as smoking control, blood, cell and organ trafficking, the EU defines special regulations with which it tries to take care of and improve the health state of the population. (source:

http://ec.europa.eu/health/legislation/policy). As the consequence of this, all the previously mentioned models of healthcare systems are present in Europe (besides the market model), as well as their combinations.

The research made by OECD in 2009 showed that basic primary health care is present in practically all countries that are members of OECD. When we talk about European countries that were included in the research, it was concluded that automatic health insurance which covers the whole population and which is financed by taxes is present in ten countries (Denmark, Finland, Iceland, Ireland, Italy, Norway, Portugal, Spain, Sweden and the United Kingdom). Eight countries applies public health insurance which is obligatory for the whole or almost whole population and is financed through social contributions based on revenues (Austria, Belgium, France, Germany, Greece, Hungary, Luxembourg and Poland). In all countries, insurance is most often related to the profession, and it also includes emloyees' family members. „Security networks" exist so that they would subsidize the insurance or secure health services to the poorest groups of the populations. In this context, Germany represents a unique case because citizens with the highest income have the right to be exempted from social health insurance, that is, they have the right to choose private health insurance, which is the case with 15% of the population.

In two countries, Slovakia and Czech Republic, special arrangements have been developed. According to those, workers are insured by obligatory health insurance that is financed through contributions of employers and employees based on revenues. Their families and individuals who are not employed are insured through direct payments of national government that pays premiums to companies that deal with health insurance in the name of the user. On the other hand, in the Netherlands and Switzerland, health insurance is obligatory for all citizens but is not fully financed through contributions based on revenues. Instead of the above stated, individuals pay premiums to competitive funds of private health insurance. It is important to point out that markets of health insurance are strictly regulated with the aim of protection from market turbulences and assuring the universal approach to health care services– health insurers must not forbid insurance to clients, and there are mechanisms of risk adjustment so that cost and risk could be controlled. Therefore, health insurance in these countries is characterized as „social health insurance" rather than „private health insurance". During this research, Turkey implemented a combined system in which obligatory social and voluntary insurance is dominant for one part of the population, while one third of the population is marked as uninsured.

Table 2: Characteristics of basic primary health care (end of 2008) (% population)

Country	Automatical insurance	Compulsory insurance	Voluntary insurance	No insurance	Provider of basic primary health care:
Austria	0	98.7	0	1.3	More than one insurer
Belgium	0	99	0	1	Scheme of common health insurance
Czech Republic	0	100	0	0	More than one insurer
Denmark	100	0	0	0	Local health services
Finland	100	0	0	0	Local health services
France	2.5	97.5	0	0	More than one insurer
Germany	0.5	83.3	15.2	0	More than one insurer
Greece	0	100	0	0	More than one insurer
Hungary	0	100	0	0	National Health Services (NHS)
Iceland	100	0	0	0	National Health Services (NHS)
Ireland	100	0	0	0	National Health Services (NHS)
Italy	100	0	0	0	National Health Services (NHS)
Luxembourg	0	96.8	1.1	2.1	Scheme of common health insurance
The Netherlands	0	100	0	0	More than one insurer
Norway	100	0	0	0	More than one insurer
Poland	0	99	0	1	Common scheme of health insurance
Portugal	100	0	0	0	National Health Services (NHS)
Slovakia	55.7	44.3	0	0	More than one insurer
Spain	100	0	0	0	Local health insurers
Sweden	100	0	0	0	National Health Services (NHS)
Turkey	0	58.6	8.6	32.8	Scheme of common health insurance
United Kingdom	100	0	0	0	National Health Services (NHS)

Source: OECD, 2009

Apart from financial arrangements and right to insurance, countries are also differentiated according to the ways of securing primary health care organization. The previously mentioned research showed that National Health Services (NHS) are basic providers of primary health care in eight countries (Hungary, Iceland, Ireland, Italy, Portugal, Sweden and United Kingdom) while local health services have the same part in four countries (Denmark, Finland, Norway and Spain). Scheme of common health insurance are present in Belgium, Luxembourg, Poland, and Turkey. The possibility of taking insurance from more than one insurance providers is available in eight countries. In Austria, France and Greece, to „belong" to a certain insurance provider is not a matter of individual choice, but is usually related to professional status. On the other hand, in Czech Republic, Germany, the Netherlands, Slovakia and Switzerland citizens have the right to choose the insurer.

Legal frame of health is regulated by policies which do not directly refer to health sector and many inter-sector activities, that is policies that do not directly refer to healthcare, and which, as a consequence, can have impact on the area of healthcare as well. Bearing in mind that the purpose of this paper is to show the experience of EU members with the aim of making suggestions of reform directions in the healthcare system in Bosnia and Herzegovina, we will now show some of the changes in health policies which were taken over by EU members in the context of their response to the financial crisis.

When faced with economic shocks that hit the healthcare sector, policy makers can decide whether to increase, decrease or maintain the existing level of public health expense. In each of these alternatives, a redistribution of means within the health system is possible, so that they would increase efficiency and make adaptation of the system to new conditions. Thus, within three basic areas of politics, it is possible to use a number of tools:

- Change of income level policy (the size of national budget for healthcare, taxes from social insurance and transfers from health budget, aspects of fiscal policy such as taxes, transfer to private consumption in the form of fees or public health insurance).
- Scope and quality of publicly financed care (legal right to health services, population coverage, waiting periods for health services).
- Costs of publicly financed care (prices of medicinal goods, health workers' salaries, payments to suppliers, overheads, reconfiguration services).

In 2007, health care on average represented 13% of the overall European public cost. According to the data of World Health Organization, during the crisis and in the first period of recovery, from 2007 to 2011, the share of spending public means on health care was decreased in 44 out of 53 countries. This leads to the conclusion that many European countries decreased public expenses for health care and mostly so in the countries that were severely hit by the crisis, with a few exceptions (Azerbaijan, Norway, Denmark), while this was reversed in certain countries – healthcare expense was increased (Italy, Cyprus, Estonia and Czech Republic).

4.1 Change of income level policy

The activities aimed at the increase of revenues for health sector tend to strengthen the performances of the health system, that is, to promote health care and stability of income flow so that good quality and service availability

would be maintained. Policies of income increase also have the aim to promote equality in financing, as well as transparency and administrative efficiency. With regard to the previously said, it is justified to assume that healthcare system will be in need of more and not less resources. The ability of a country to maintain or increase the level of public cost on health care in time of crisis is thus of crucial importance for maintenance of the health system and with that the populations' good health.

4.1.1 Health budget

In this context, health budget represents the overall available means in the healthcare sector regardless of the way of collecting these means. As it was previously stated, in several European countries, there has been a decrease of national budget for healthcare sector as a response to the financial crisis (Bulgaria, Croatia, Estonia, Hungary, Iceland, Ireland, Italy, Greece, Latvia, Romania, Portugal, Spain), where some countries (as Bulgaria and Latvia) decreased the budget for more than 20%. The decrease was partly caused by the increase of unemployment, which decreased the income from taxes for social insurance (Bulgaria, Estonia, Hungary, Romania). In other countries, revenues and expenses of social insurance are still increasing (Austria, Czech Republic, Poland, Slovakia, France and Denmark). In Denmark, the education budget was used to compensate the decrease in the healthcare budget. On the other hand, health budget was maintained on the same level in the period before and after the crisis in Belgium, England and Norway. Help also came from the World Bank, which approved a loan to Latvia, as an external source of financing health services for the poor. The last crisis has shown a special exposure of countries with significant fiscal balances, such as Greece, which was compelled to decrease the overall expense in the public sector, including the health sector, as a prerequisite to get help.

4.1.2 Fiscal policy

Very few countries applied the use of fiscal policy as a means of increasing the necessary revenues for healthcare sector, although the increase of tax can affect the decreased need for government getting in debt. Italian regions which had big deficits in health care have increased local taxes in order to recover from the crisis. In France, new tax rates have been applied to certain income sources so that they would secure the financing of cost in the social sector (including the health sector). Hungary introduced tax on food and

beverages with a high percent of sugar so that they could finance the health sector. It is important to point out that, before the financial crisis, a big number of countries had not introduced dedicated taxes which are intended exclusively for financing health care and as an example we can suggest France in which around 13% of all revenues collected in the health sector come from dedicated taxes, so-called sin taxes, as well as taxes on turnover of pharmaceutical companies (Chevreul and others, 2010).

4.1.3 Taxes on health insurance

Countries which apply the Bismarck Model of the healthcare system have the possibility to maintain revenues by increasing the amount of salaries, extending tax basis on other revenues, or by increasing the transfer from the state budget. These are all probably relevant options for governments that want to stimulate employment together with maintaining or increasing public expense on health care. The other alternative is to make national taxes anti-cyclic for economically inactive population categories and relate them to average salaries in previous years, as it was done in Lithuania and Slovakia.

As a response to the crisis, certain countries have made the decision to increase the rate of taxes either for all or for certain sub-groups of the population (Bulgaria, Greece, Portugal, Romania and Slovenia). On the other hand, Slovakia decreased national taxes for economically inactive persons. Hungary lowered the tax rate and the government increased budget transfers for the people who have the obligation but do not pay taxes, so that it would compensate for the loss in the fund of health insurance. In Austria and Romania, the governments introduced subsidies in order to help payment of debts and to prevent the funds of health insurance from further getting into debt.

4.1.4 Users' participation

To increase revenues in health care on the one side and to lower "moral hazard" on the other is possible to realize by introducing or increasing of the existing participations. Several countries increased or introduced compensations for health services to users as a response to the crisis (Czech Republic, Denmark, Estonia, France, Greece, Ireland, Italy, Latvia, the Netherlands, Portugal, Romania and Slovenia) In some countries, compensations to users were introduced or increased in the hospital sector (Czech Republic, Estonia, France, Ireland and Romania), while in others, higher compensations were required for medicines (Czech Republic, France, Ireland, Latvia, Portugal

and Slovenia). In England, programs for introduction of free prescriptions were announced by the previous government, but they were not carried out. Users' compensations for ambulatory care were increased in Greece, Italy and Romania. Compensations for urgent services were increased in Ireland and in Italy they were increased even for services that were not considered to be urgent. Several countries introduced or increased costs for specific services such as in vitro fertilization (IVF) (Denmark and the Netherlands), ambulatory transfer (France and Slovenia), physiotherapy (the Netherlands), some services related to mental health (the Netherlands), dental prosthesis and some ophthalmic devices (Slovenia).

Contrary to this, other countries' responses were expanding the sets of services that are covered by health insurance aimed at groups with low revenues in the field of pharmaceutics (Austria, France, Ireland, Italy and Moldavia), decreasing users' compensations (Croatia, for primary care and medical prescriptions outside the hospital), or suspension of users' compensations for certain services (Italy and Hungary). (Mladovsky et al, 2012)

It is important to emphasize that all new members of the European Union and some of the old members had, within reform measures that refer to the health sector, introduced various ways of financing the health care even before, so that among the new EU members it is hard to find a state that finances the health sector only from one of the above mentioned sources (for more details on organization and financing of health sectors in all EU members and countries that are EU candidates, consult Pijalović, 2011).

4.2 Policies of influence on the volume and quality of health care

Subtle cost reductions in the healthcare sector do not automatically allude to worse performances of the health system. However, it is justified to assume that such reductions will have negative consequences if they are constant and if they are implemented in the already underfinanced health systems, that is, systems with high levels of direct (out of pocket) payments for health services.

Apart from that, in conditions of a serious crisis, the first function of a secure financial protection should be the guarantee that citizens will not be exposed to an additional financial pressure when using healthcare services. Equality in the approach to health services can be jeopardized in different ways. A growing unemployment and poverty in the crisis can increase the need of the population for health care and turn them away from using private

healthcare services especially in countries where direct payments were high even before the crisis. In addition, in crisis conditions, there is often the case of absence of prompt and efficient activities aimed at addressing deep inequalities and coverage of the population with health insurance.

4.2.1 Healthcare benefits

In general, the legal set of services has not been radically changed in the crisis, but in some states there have been certain reductions. Registered reductions of obligatory coverage included: dental care of certain population categories (Estonia, Ireland), physiotherapy, mental health services and medical care coverage outside the EU (the Netherlands), esthetic surgery (Portugal), certain medicines, ambulatory services that are not urgent, dental prosthesis and some ophthalmic services (Slovenia), glasses (Switzerland), and temporary compensations for sickness leave paid by the legal fund of health insurance (Estonia, Hungary and Lithuania).

4.2.2 Population coverage

Ireland is the only country that has undertaken measures which lead to a decrease of population healthcare coverage. Irish government has, namely, exempted rich members of the population from the legal primary healthcare coverage, although since the general elections in February 2011, the government has announced plans for wider coverage, that is, realization of a universal coverage. In Czech Republic, there has been a decrease in legal healthcare service coverage for foreigners. Cyprus advocates further prolongation of implementation of universal coverage during financial crisis, while Hungary introduced stricter controls so it could identify and punish those who avoid paying taxes.

4.2.3 Non-price rationing (waiting, weakening and delay of services)

Supervisory Board of the Health Insurance Fund in Estonia tried to rationalize the scope of services by introducing the decision on increasing the maximum waiting period for ambulatory visits from four to six weeks. Other countries have not reported the increase of the waiting period as an explicit measure against the financial crisis. Instead, in countries such as Ireland, reforms of the healthcare sector have unintentionally lead to a prolongation of the waiting period, where changes of policies regarding healthcare sector lead to the

increase of the number of patients on waiting lists of 9% in the period between 2009 and 2010. (Mladovsky et al, 2012)

4.2.4 Change in behavior of individuals (health prevention and promotion)

Within this measure we can number several countries that have increased taxes on alcohol and cigarettes (Bulgaria, Estonia, Ukraine) or that have resorted to health promotion, such as encouragement of healthy nutrition and exercise (Belgium, Greece, Hungary and Moldavia).

4.3 Policies of influence on healthcare costs

In the first years of the crisis, a significant number of countries faced a serious volatility of public spending aimed at healthcare on per capita level. The biggest annual decreases in healthcare compensations were the result of government decisions (Greece, Ireland, Latvia and Portugal), and not of the decrease of revenues generated by the employed members of the population. A slower growth of costs in all areas of healthcare is noticeable in the period between 2007 and 2011 along with concrete decreases of costs in all areas except dispensary care. Decreases are mostly present in areas of stationary care, prevention and public health and medicines. Initial reductions in costs for administration in 2009 were followed by an increased spending in the following years. Logically, the biggest costs in the healthcare sector were registered in countries that were most severely hit by the crisis (Greece, Latvia, Lithuania, Portugal and Spain), although consistent decreases in countries that have not suffered any form of economic shock were also noticeable, which was the case with Poland.

4.3.1 Prices of medical goods

A great number of countries have introduced or have encouraged policies aimed at lowering of prices of medical products (medications, medical devices and equipment) or at improving rational consumption of medicines (Austria, Belgium, Croatia, Czech Republic, France, Estonia, Greece, Iceland, Ireland, Hungary, Latvia, Lithuania, Malta, Moldavia, Poland, Portugal, Romania, Russia, Serbia, Slovakia, Slovenia, Spain). A wide spectrum of measures was used, including generic substitutions, INN prescriptions, price negotiations and prolongation of prescription validity. It is a fact that these policies were, in most countries, already a part of ongoing reforms, but the crisis urged their

execution. Bulgaria and Czech Republic are in the process of increasing state regulations on procurement of medical devices. At the same time, the influence of VAT on the increase of prices has weakened the advantages gained by lowering product prices as a result of the reform and crisis.

4.3.2 Salaries and motivation of the employed in the healthcare sector

Some countries decreased salaries of health professionals (France, Greece, Ireland, Lithuania, Romania). Some countries fixed these salaries (England, Portugal, Slovenia) or decreased their growth rates (Denmark). Other approaches to lower salaries included a significant increase of pension taxes in public sector and a decrease of benefits, which leads to de facto decreased salaries (England), reduction of overtime and night shifts, and to longer shifts which require fewer staff members and smaller costs (Iceland) and similar. In Czech Republic, physicians managed to stop lowering of their salaries through negotiations or protests.

4.3.3 Payment of service providers

As a response to the crisis, several countries lowered tariffs (that is, prices) given to service providers (Estonia, Ireland, Romania, Slovenia) or connected paying with improved performances, so that they would achieve greater efficiency and lower accompanying expenses (plans on introducing diagnosis of related groups (DRG), hospital care fees in Bulgaria, paying for services (P4P) in Italy, primary care payments per capita in Portugal, working estimates and financing based on results in Moldavia.

4.3.4 General costs (restructuring of the Ministry of Health and Agency for Provision)

Some countries restructured their Ministries of Health, Funds of Obligatory Insurance and other agencies in an attempt to decrease general costs and increase efficiency (Bulgaria, Croatia, Czech Republic, England, Iceland, Latvia, Lithuania, Portugal and Romania).

4.3.5 Providers of infrastructure and capital investments

In a great number of countries, the economic crisis initiated the urgency of the existing process of hospital sector restructuring through closing, merging and centralization (Denmark, Greece, Latvia, Portugal, Slovenia), a shift to

ambulatory care ((Belarus, Ireland, Greece, Lithuania), an improved coordination with primary care or investment in primary care (Armenia, Lithuania, Moldavia, the Netherlands), merging of healthcare centers (Iceland) and reorganization of emergency service (Macedonia). Some countries (Romania) gave up on or suspended investment plans for building new hospitals, slowed down programs of modernization of hospital and ambulatory care, slowed down procurement of expensive equipment or lowered the share of capital costs. Opposed to this, some countries increased means for modernization of public health services by using the means from Fund of Obligatory Health Insurance or developed e-health systems, together with the implementation of an integrated health system for information and electronic health care management (Latvia, Macedonia), as well as the need for a new electronic system of signing prescriptions (Croatia). (Mladovsky et al, 2012)

5. CONCLUSION

Healthcare systems have been developed gradually and under the influence of various factors, the most important of which are: national history and culture, dominant politic ideology, local geographical and climate conditions and socio-economic development of a state. Healthcare systems can be classified according to different criteria, and the most important among them are ways of collecting means and ways of service payment. According to these criteria, we group health systems into the Bismarck model, the Beveridge model and Market model. The Beveridge model accounts for financing of health care directly from the budget, and the sources of financial means are general taxes. This model has good results in states that do not have problems with budget deficits and fiscal lack of discipline. The Bismarck model is based on financing through taxes and the Market model is based on financing premiums that are paid in to insurance companies.

Definition of healthcare policy, financing as well as organization of healthcare systems are under the jurisdiction of EU country members and they, as in other areas of regulations on the EU level, are only dealt with if it is estimated that certain problem cannot be efficiently solved on national, regional or local level. In the European Union there are all previously mentioned models of healthcare financing but we have to point out that among new EU country members it is almost impossible to find a state which is financed from only one source that has been designated by a healthcare model.

Faced with economic shocks which affect the healthcare sector, policy makers in the European Union made decisions to increase, decrease or maintain the existing level of public expense on health care. In addition, they used a number of tools within three main policy domains: (i) Policy of change of income level (size of national budget for health care, taxes of social insurance and transfers from the budget to health care, aspects of fiscal policy such as taxes, transition to private consumption in forms of fees or private health insurance). (ii) Scope and quality of publicy financed care (legal right to health services, population coverage, health services waiting period) and (iii) Cost of publicly financed care (prices of medical goods, health workers' salaries, payments to suppliers, overheads, reconfiguration services).

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SISTEMI ZDRAVSTVENE ZAŠTITE EVROPSKE UNIJE I ODGOVOR NA EKONOMSKU KRIZU

Sažetak

Zdravlje populacije nesumnjivo predstavlja područje koje zahtijeva posebnu brigu države stoga je ta pažnja najčešće instituicionalizirana kroz kompleksne sisteme zdravstvene zaštite. Imajući u vidu fundamentalni društveni značaj sistema zdravstvene zaštite, može se reći da su rasprave na temu njihove funkcionalnosti i efikasnosti globalno sveprisutne. Značaj znanstvenog i praktičnog istraživanja u području zdravstvene zaštite, posebno dobiva na važnosti u nepovoljnim ekonomskim uslovima, kakvi jesu bili prisutni u većini zemalja svijeta tijekom i nakon ekonomske krize 2007. godine. Obzirom na ozbiljnost krize, veliki broj zemalja suočen je sa potrebom revidiranja postavki sistema zdravstvene zaštite kako bi se osigurala njihova održivost u novonastaloj nepovoljnoj i neizvjesnoj finansijskoj realnosti. Osim toga, iako je sisteme zdravstvene zaštite moguće grupisati odnosno pridružiti određenom modelu, ne smije se zanemariti činjenica da su zdravstveni sistemi različiti u različitim zemljama te da su njihovi atributi ogledalo historije, tradicije, političkog uređenja, ekonomije i nacionalnih vrijednosti konkretne zemlje kojoj pripadaju. Obzirom na navedeno, nije moguće ponuditi jedinstven set univerzalno efikasnih mjera za suočavanje sa posljedicama koje je kriza ostavila na zdravstvene sisteme. U ovom radu, analiziramo odgovore implementirane od strane zemalja Evropske unije u svjetlu posljednje ekonomske krize, posljedično najrazornije od svih s kojim se Evropska unija suočila od svog osnivanja.

Ključne riječi: sistemi zdravstvene zaštite, potrošnja na zdravstvenu zaštitu, ekonomska kriza

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Original article

RELATIONSHIP BETWEEN CARDIOVASCULAR RISK FACTORS AND SOCIO-ECONOMIC FACTORS: THE EXAMPLE OF SOUTH-EASTERN EUROPEAN COUNTRIES

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Abstract

Cardiovascular disease is recognized as a leading cause of mortality in developed societies and one of the most fatal conditions affecting the health of developing countries' populations. In addition to the generally expected risk factors such as family history, diabetes, obesity, smoking and hypertension, recent research shows that socio-economic status plays important part in the pathogenesis of cardiovascular disease. There are many evidence that adverse socio-economic conditions are associated with a higher risk of cardiovascular disease and premature mortality. Therefore, in the present article, we aim to review the relationship between the six dimensions of socio-economic factors at macro level (economy, education, transport, urbanization, health habits and health management) and the selected risk factors for cardiovascular diseases (obesity, diabetes and hypertension). The analysis was conducted on the example of the following countries of South Eastern Europe: Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Cyprus, Greece, Macedonia, Montenegro, Romania, Serbia, Slovenia and Turkey.

Key words: cardiovascular disease, epidemiological transition, economic factors

1. Introduction and background

The World Health Organization defines Cardiovascular Diseases (CVDs) as a group of diseases of the heart and blood vessels that includes (i) coronary heart disease – the disease of the blood vessels supplying the heart muscle; (ii) cerebrovascular disease - the disease of the blood vessels supplying the brain; (iii) peripheral arterial disease – the disease of the blood vessels supplying the arms and legs; (iv) rheumatic heart disease – the damage of the heart muscle and heart valves from rheumatic fever caused by streptococcal bacteria; (v) congenital heart disease - malformations of the heart structure existing at birth; (vi) deep vein thrombosis and pulmonary embolism - blood clots in the leg veins, which can dislodge and move to the heart and lungs. (World Health Organization, 2018).

Coronary heart disease (CHD) is the single most significant cause of mortality in developed countries and one of the leading disease burdens in developing countries. At the beginning of the 20th century, cardiovascular disease was responsible for less than 10% (Gaziano T.A, 2005) of all deaths, globally observed, whereas today it is 31%. Namely, the World Health Organization estimates that in 2015, 17.7 million people died of cardiovascular disease, 7.4 million died from coronary heart disease and 6.7 million died of stroke out of the total number of cardiovascular disease deaths. Cardiovascular diseases occur due to elevated blood pressure, elevated blood glucose levels and excessive weight and obesity, which is harmful to heart health. According to the same resource, triggers for these diseases are tobacco consumption, unhealthy diet, physical inactivity and alcohol use. (WHO, 2018)

Most of the world's spending on the health sector refers to high income countries, while the prevalence of the disease is inversely proportional to the size of the funds that are invested. (Gottret P & Schieber G, 2006). From this relation it is easy to conclude that the low and middle income per capita countries are faced with difficulties providing the needed treatments for patients. This is especially noticeable in the case of cardiovascular diseases where a number of problems appear. Low and middle income countries often don't have sufficiently developed integrated primary health care programs for early detection and treatment of patients with risk factors compared to high income countries. Thus, for example, in low and middle income countries, CVD preventions and early detection programs are not sufficiently developed, causing the disease to be discovered late and patients die in their most productive years.

In addition, with diagnosed patients problems arise because they do not have access to effective and equitable health services that meet their needs. At the household level there is evidence that cardiovascular diseases and other diseases contribute to poverty due to unplanned spending on health and high out of pocket costs. At the macroeconomic level, cardiovascular diseases pose a severe burden on the economies of low and middle income countries. (WHO, 2018) Due to the above said, cardiovascular diseases are in the focus of interest of not only the health sector but of the economists too.

In the first part of this paper we have given an overview of the relationship between economic growth and health indicators while the second part refers to the concept of epidemiological transition that analyzes the changes in the dominant forms of disease and mortality that are burdened by the population, which occurs at different stages of economic development and development of health systems.

In the central part of the paper we will analyze the relationship between the six dimensions of socio-economic factors at macro level (economy, education, transport, urbanization, health habits and health management) and the selected risk factors for cardiovascular diseases (obesity, diabetes and hypertension in women and men) . The analysis was conducted on the example of the following countries of South Eastern Europe: Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Cyprus, Greece, Macedonia, Montenegro, Romania, Serbia, Slovenia and Turkey. Due to the lack of data, Kosovo was not included in the analysis.

2. Economic development and health

Numerous studies carried out in recent years have shown that there is a mutual causal link between health and economic growth. In 1966, Barro already showed that there was a significant positive impact of the population's health status (measured by the expected life expectancy at birth) on economic growth. (Barro, 1966) Similar results have been obtained by authors who measured the population's health indicators through child mortality, adult mortality, or the expected lifetime at the age of five. In the regression analysis, Doppelhofer, Miller and Sala-Martin (2004) included more than twenty factors that could have an impact on economic growth and came to the conclusion that health is the most important component of human capital affecting economic development. Studies dealing with health and economic development issues can be divided into three major groups. (Pijalović, 2016). The first group consists of

studies based on historical data on economic growth and the effect of income. These studies deal with the question of how the advancement of health in a certain historical period influenced the growth of income. Thus, for example, Fogel concluded that health and nutrition improvements could account for more than 50% of the British annual growth rate per capita in the 200-year period from 1780 to 1979, which was about 1.15% (Fogel, 1994a, 1994b, 2002).

The second group of studies are the studies looking at the macroeconomic effects of investing in health, i.e. studying how this investment affects individuals' income. In addition to increasing the productivity of workers, investing in health also influences the economic development by increasing the number of working-age population members and by reducing direct and indirect treatment costs. (Pijalović, 2016)

The third group of papers are macro or cross-country studies that use data on various initiators of economic development. Thus, Jamison, Lau and Wang calculate the impact of health on technological progress in 2006, with the assumption that health impacts investment in education, education then contributes to increasing the number of investments and finally investments have impact on technological development.

In addition to the impact of health on economic growth, numerous studies have also dealt with the repercussions of economic development on health. Nevertheless, although numerous other studies that we haven't cited here indicate that there is a measurable, positive and significant bilateral relationship between economic development and health, it is evident that, despite economic development, there is an increase in some diseases such as cardiovascular diseases.

The reasons for this phenomenon can be sought in the elasticity of demand for calories. The elasticity of the demand for calories (i.e. the measure of the percentage of changes of demand for calories when income changes by 1%) tends to decline with income growth, with two different patterns of consumption appear: for people with higher and lower incomes. The results Zhou and Yu got showed that when the revenue increases by 10%, the elasticity of calorie income will be 0.012. (Zhou and Yu, 2014) When consumers reach the stage of wealth, additional revenue growth has no significant impact on the elasticity of demand for calories. Such shift in calorie elasticity can be explained by two factors: revenue is spent on food but also on other goods and the second part of the increased food costs is used to increase the variety of food without necessarily increasing the calorie expending. If the link between income and nutrition is really low, as some studies show, then

the development policies that emphasize the increase in income of the poor without paying attention to the way these extra resources are spent can't lead to health improvement and successful development in general, at least not so quickly. (Todaro, 2010). In addition, even if calorie income elasticity is greater than the, traditionally, very low estimates, it is important to highlight the difference between nutritional needs of adults and their children and the fact that increased income often allows families in developing countries to change consumption of nutrients such as potato and spinach, to "empty calories" such as candies and carbonated juices. Namely, such nutrition in developing countries can be perceived as "modern" or even as a symbol of success. Very important initiators here are urbanization, trade, direct investment and marketing. Namely, the openness of the market for trade and foreign investment leads to numerous economic benefits, but also leads to an increase in the risk of adopting an unhealthy lifestyle. Several non-financial transnational corporations engaged in the production of food, beverages, cigarettes and cars belonging to one of the world's top 100 companies are linked to the risks of chronic illnesses. (Yach et al., 2004).

3. Epidemiological transition

Over the past decades, most of the cardiovascular diseases have occurred in industrialized countries or higher income countries. However, developing countries now experience a much greater burden of cardiovascular diseases than the developed countries so they will bear the greatest burden of cardiovascular disease in the future. It is estimated that more than 75% of all deaths from cardiovascular disease in 2015 occurred in low- and middle-income countries. (WHO, 2018) However, the mortality rate of cardiovascular disease varies dramatically among developing countries. Trends are not consistent even among countries within the same geographic region. In general, there are three forms: the first in which we note growth and decline, where rates of mortality rose, fell and then fell considerably; the growing pattern, where rates are constantly increasing, pointing to the current epidemic; and the even pattern, where mortality rates remained relatively low and stable. The pattern of growth and decline is the most significant in high-income Anglo-Celtic, Nordic and Northwestern Continental Europe as well as in the United States and Australia. In these countries mortality rates reached the peak in the 60s or early 70s and have since fallen sharply, about 50 percent on average. The growing pattern is the most significant in the Eastern European and former Soviet countries, where rates of mortality have continued to grow at an alarming pace

and where the highest rates of mortality are currently being observed. By contrast, mortality rates in Japan and several European Mediterranean countries remained relatively low, following a consistent picture (Fuster V. and Kelly B.B, 2010). Reasons for different rates of incidence, prevalence and mortality can be sought at different levels of risk factors, the existence of others, cardiovascular diseases associated with death, the availability of resources to combat cardiovascular disease and the emergence of epidemiological transition in which each country or region is located. (Gaziano A. T and all, 2010).

Epidemiological Transition, the concept first proposed by Abdel Omran in the 1970s (Omran, 1971), refers to changes in dominant forms of illness and mortality that burden the population which occurs when the economy and health system are developed. As countries progress from agrarian to industrial to post-industrial countries, there is a number of ecological, social and structural changes that occur, some of which lead to an increase in longevity, while others lead to exposure to risk factors for chronic diseases.

With increased development, there comes an increased level of risk factors, as well as improved public health and increased accessibility to more efficient health systems for a higher percentage of the population. The balance of these factors can lead to different levels of coronary heart disease incidence and various levels of prevalence and mortality from cardiovascular disease. Secondly, certain additional pressures in some regions, such as war or contagious diseases, may limit the aging of the population and consequently the death rate from cardiovascular disease has not increased as in other regions. Third, different regions may have a genetic predisposition to risk factors of coronary heart disease, as is the case with possible metabolic syndrome in South Asia. In underdeveloped countries in the early phases of epidemiological transition, infectious diseases are dominant, but as the economy, development status and health systems of these countries improve, the population moves to a later stage of epidemiological transition and chronic non-communicable diseases become the major causes of death and disease.

According to Omran (Omran, 1971), all societies experience three phases in the process of modernization: "age of pestilence and famine", during which mortality is high and fluctuating, with an average lifespan of up to 30 years; "age of receding pandemics", life span is significantly increasing, from less than 30 to over 50 years "age of degenerative and man-made diseases", during which the rate of mortality decreases, while the disappearance of contagious diseases increases the visibility of degenerative diseases.

During the first phase, Pestilence and Famine, cardiovascular disease, which accounts for less than 10% of deaths, takes the form of rheumatic heart disease and cardiomyopathies due to infection and malnutrition. Per capita income and life expectancy increase during the phase of receding pandemics as the emergence of public health systems, cleaner water supplies, and improved nutrition combine to drive down deaths from infectious disease and malnutrition. Rheumatic valve disease, hypertension, coronary heart disease and stroke are the predominant forms of CVD. CHD is often seen at an equivalent or lower prevalence rate compared to stroke. During the stage of Degenerative and Man-made Diseases, CHD and stroke are predominant and between 35% and 65% of all deaths can be traced to CVD. Typically, the rate of CHD deaths exceeds that of stroke by a ratio of 2: 1 to 3: 1. In the Stage of Delayed Degenerative Diseases, which didn't exist in the original Orman model, it was introduced later, CVD and cancer remain the major causes of morbidity and mortality, with CVD accounting for 30-40% of all deaths. (Gaziano et al., 2010).

4. Variables and model specification

In order to decrease the burden of illnesses related to cardiovascular diseases, risk factors such as hypertension, obesity, diabetes and physical inactivity for CVD are often studied in developed countries. Moreover, more and more studies have documented social determinants such as economic situation, cultural changes, health behavior and lifestyle in high income countries. However, previous studies rarely focused on low and middle income countries. On the other hand, the growing pattern of cardiovascular diseases is most significant in Eastern and former Soviet countries, where mortality rates have continued to grow at an alarming pace and where the current highest mortality rates are recorded. Therefore, we have decided to include the countries of South East European our analysis: Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Cyprus, Greece, Macedonia, Montenegro, Romania, Serbia, Slovenia and Turkey. Due to the lack of data, Kosovo is not included in the analysis.

Starting from the concept of economic transition, as outlined in the previous part of the paper, this paper analyzes socio-economic factors on macro-level including six dimensions: economic, education, transportation, urbanization, health behavior and health governance and analyzes the correlation of these factors and risk factors for cardiovascular diseases.

Table 1 shows overview of dependent and independent variables that we have used.

Table 1. Overview of dependent and independent variables

Indicator	Unit	Description	Source
Dependent variables			
Obesity	% of population	Percentage of defined population (aged 18 years and over) with a body mass index (BMI) of 30 kg/m2 or higher.	World Health Organization (WHO) - Global Health Observatory (GHO)
Raised fasting blood glucose	mmol/l	Percent of defined population with fasting glucose ≥126 mg/dl (7.0 mmol/l) or history of diagnosis with diabetes or use of insulin or oral hypoglycaemic drugs.	World Health Organization (WHO) - Global Health Observatory (GHO)
Mean systolic blood pressure	mm Hg	Mean systolic blood pressure, for men and women	World Health Organization (WHO) - Global Health Observatory (GHO)
Independent variables			
GDP per capita	USD/capita	GDP per capita is GDP divided by midyear population.	The World Bank
School enrollment, tertiary	% gross	Gross enrollment ratio is the ratio of total enrollment, regardless of age, to the population of the age group that officially corresponds to the level of education shown.	The World Bank (WB) & UNESCO Institute for Statistics.
Infrastructure investment	%GDP	Total inland infrastructure investment	OECD Statistics
Urban population	% of total population	Urban population refers to people living in urban areas as defined by national statistical offices. It is calculated using World Bank population estimates and urban ratios from the United Nations World Urbanization Prospects.	The World Bank
Current Health Expenditure	USD/capita	Current Health Expenditure (CHE) per Capita in US$	World Health Organization (WHO) - Global Health Observatory (GHO)

Source: the authors' table

As *dependent variables* we used obesity, systolic blood pressure for males and for females, and fasting blood glucose. Dependent variable obesity refers toWHO assessment age-standardized prevalence of obesity defined as BMI = 30 kg/m2 for people of 18 years of age and more, showed in percentages. The variable Raised fasting blood glucose shows a percentage of defined population with fasting glucose ≥126 mg/dl (7.0 mmol/l) or a history of diagnosis with diabetes or use of insulin or oral hypoglycaemic drugs. Independent variable means systolic blood pressure is gender-specific and is shown in mm Hg.

Having in mind the number of countries analyzed for each dimension, we used one *independent variable*. For economic dimension we used GDP per capita shown in dollars, for education we used the variable School enrollment,

tertiary in percentages, for transportation we used variable Infrastructure investment which represents the total inland transport infrastructure investment per GDP. For urbanization we used the percentage of urban population, for health behavior we used alcohol consumption in liters per capita among people> = 15 years within a calendar year and as the variable for health governance we used the current health expenditure per capita in US dollars. Sources of data are official statistics of international organizations (World Health Organization and World Bank) and the latest available data were collected, which in this case is data from 2014.

Table 2: Descriptive statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Obesity	12	22.23333	3.339116	17.1	30.8
Blood glucose	12	9.291667	1.42603	7.8	13.2
Blood pressure- male	12	132.525	5.260163	120.6	137.4
Blood pressure- female	12	124.6167	4.162131	117.1	129.4
GDP per capita	12	12149.41	7998.188	4578.7	27400.8
Infrastructure	10	1.2558	.5842773	.26	2.074
School enrollment	9	63.50711	15.82448	38.329	87.019
Urban	12	57.83583	15.62622	22.37	77.68
Alcohol	12	7.296667	3.797471	1.13	12.14
Health expenditure	12	875.3434	630.7549	314.8626	2052.64

Source: the authors' table

Table 2 shows descriptive statistics for dependent and independent variables. The prevalence of Obesity ranges from 17.1% to 30.8% with the mean value of 22.23%. Among the analyzed countries, Cyprus has the lowest percentage of population with diabetes with 7.8% and Turkey has the highest one with 13.2%. The results show slightly higher values (both minimal and maximal) of mean systolic blood pressure for men than for women. The lowest mean systolic blood pressure (117.1 mm Hg) was recorded among female population in Greece while the highest mean systolic blood pressure (137.4 mm Hg) was observed for males in Slovenia.

In order to examine the correlation between each dependent variables and the independent variables mentioned above, we used Linear regression models and we estimated four models: Model 1 - Link between variable Obesity and Independent Variables; Model 2: Connection between variable Blood

Glucose and Independent Variables, Model 3: Relationship between Variable Blood Pressure Variables and Independent Variables and Model 4 Connection of variable Blood Pressure (Female) and Independent Variables. After analyzing the normality of the distribution, the logarithmic transformation of GDP and Health expenditure per capita was performed, and because of the problem with multicolinearity, the variable Alcohol was excluded from the model, after which the problem was solved (VIF = 3.16). Table 3 gives an overview of the beta coefficients and standard errors for each of the estimated models.

Table 3: Linear regression model

	Model	Model 2	Model 3	Model 4
	b/se	b/se	b/se	b/se
GDP_log	0.124	-1.765	2.096	0.124
	(0.57)	(1.24)	(1.29)	(0.57)
School enroll.	0.169**	-0.065	0.203**	0.169**
	(0.02)	(0.04)	(0.03)	(0.02)
Infrastructure	5.146**	-4.166	6.770	5.146**
	(0.53)	(1.54)	(2.23)	(0.53)
Urban	-0.059	0.059**	-0.026	-0.031
	(0.00)	(0.00)	(0.00)	(0.00)
Healthexp_log	2.139	-1.658	3.902	2.139
	(0.84)	(1.74)	(1.28)	(0.84)
_cons	94.717**	57.634	70.359	94.717**
	(9.83)	(21.22)	(24.02)	(9.83)

* p<0.05, ** p<0.01, *** p<0.001

Although we have analyzed three risk factors for cardiovascular diseases (Obesity, Diabetes, Blood Pressure for Women and Men), our analysis has not shown that there is a link between these factors and GDP. Similar results came from Li-yuan Sun and others who in 2015 analyzed the correlation of these risk factors and GDP with the example of the Low-Middle Income State (Li-yuan Sun at al, 2015). Although our research has not shown that there is a significant relationship between these values, before making the final conclusion it is necessary to do a panel analysis by using data from several years and to include more states in the analysis.

Percentage of School enrollment tertiary in our analysis proved to be significant in Models 1, 3 and 4 while in Model 2 there is no significance. Unlike

our model, Li-yuan Sun and others did not find a significant link between this variable and the observed risk factors. It is important to note that, contrary to our expectations and assumptions of the theory, there is a positive relationship here that indicates that a higher rate of enrollment is associated with a greater risk of cardiovascular disease.

There is a positive and significant link between investing in infrastructure and obesity and blood pressure for women. This connection can be explained by the fact that in countries that invest more in the infrastructure, people use cars, they move less, which results in an increased risk of cardiovascular diseases.

The percentage of urban population associated with fasting blood glucose is expected to be positive, suggesting that greater percentage of urban population increases the percentage of diabetes population. Other authors have shown that there is a significant relationship between the percentage of the population and the cardiovascular risk factors (obesity, diabetes, and high blood pressure). (Li-yuan Sun at al, 2015).

No significant correlation between cardiovascular risk factors and the healthcare variable was found. Other research also shows that there is either no or very weak correlation between the health expenditure variable and risk factors for cardiovascular diseases. (Li-yuan Sun at al, 2015).

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5. CONCLUSION

The World Health Organization's statement that out of the total number of deaths, 31% or 17.7 million people died of cardiovascular disease points to the global significance of studying this modern age monster. That is why it is no surprise that, apart from numerous papers in the field of medicine, cardiovascular diseases are becoming a major area of interest for economists. There are numerous papers and studies that show that there is a mutually strong causal link between different health and economic development indicators, which stem from the assumption that economic growth leads to a decrease in the number of people affected and vice versa, that better health status of the population leads to a faster economic growth. However, this connection is not unambiguous. Namely, in spite of the recorded economic growth, there is a rise in some diseases among which cardiovascular diseases are the most significant. The World Bank warns that cardiovascular illnesses at the macroeconomic level represent a difficult burden on the economic development of less developed countries.

As countries pass through different phases of development, a number of economic, ecological, social and structural changes occur, some of which lead to an increase in longevity and others lead to exposure to risk factors for chronic diseases. At the same time, there are two forces: one which leads to an increase in the level of risk factors, and the other, that acts in the direction of improving public health and increasing access to more efficient health systems. The balance of these factors leads to different levels of prevalence and mortality from cardiovascular diseases, so that in developing countries we have three forms: (i) the first in which we note growth and decline, where rates of mortality rose, fell and then fell considerably; (ii) a growing pattern, where rates are constantly increasing, pointing to a current epidemic; and (iii) a flat pattern where mortality rates remained relatively low and stable.

As the growing pattern is related to the Eastern European and former Soviet states, this work is focused on the countries of South-Eastern Europe. In this paper, we assessed four models of four risk factors for cardiovascular diseases, dependent variables being: Obesity, Blood glucose, and Systolic blood pressure values for women and men. As independent variables, we took country-level macroeconomic indicators that included the following variables: GDP per capita, infrastructure investments, urban population share, enrollment rate at tertiary level of education, and health expenditure per capita. The results of regression analysis have shown that the risks of cardiovascular diseases are multidimensional concepts that cannot be directly measured by one set of indicators. Risks of cardiovascular diseases are related to indicators of education, infrastructure investment and urbanization, whereas the link between different risk variables of cardiovascular diseases and GDP and healthcare expenditure has not been demonstrated in our paper.

Although a small sample size can cause low reliability and low static power, since this paper is focused on South-Eastern European countries, we believe that this can serve as a solid basis and guidance for future research that should include panel analysis with the involvement of a larger number of countries.

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RELACIJA IZMEĐU KARDIOVASKULARNIH FAKTORA RIZIKA I SOCIO-EKONOMSKIH FAKTORA: PRIMJER ZEMALJA JUGOISTOČNE EVROPE

Sažetak

Kardiovaskularne bolesti prepoznate su kao vodeći uzrok smrtnosti u razvijenim društvima i imaju status jednog od najfatalnijih oboljenja kada je riječ o zdravlju stanovnika zemalja u razvoju. Osim generalno očekivanih faktora rizika, kao što su porodična historija, dijabetes, gojaznost, pušenje i hipertenzija, novija istraživanja pokazuju da socio-ekonomski status pojedinca igra značajnu ulogu u patogenezi kardiovaskularnih bolesti. Postoje brojni dokazi koji ukazuju na vezu između nepovoljnih socio-ekonomskih uslova i visokog rizika od kardiovaskularnih oboljenja odnosno preuranjene smrtnosti. Stoga, u ovom radu, nastojimo ispitati vezu između šest dimenzija socio-ekonomskih faktora na makro nivou (ekonomija, obrazovanje, transport, urbanizacija, zdravstvene navike i upravljanje zdravstvom) i odabranih faktora rizika za kardiovaskularne bolesti (gojaznost, dijabetes i hipertenzija). Analiza je sprovedena na uzorku sljedećih zemalja Jugoistočne Evrope: Albanija, Bosna i Hercegovina, Bugarska, Hrvatska, Kipar, Grčka, Makedonija, Crna Gora, Rumunija, Srbija, Slovenija i Turska.

Ključne riječi: kardiovaskularna oboljenja, epidemiološka tranzicija, ekonomski faktori

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CONCLUSIONS

- Healthcare systems have been developed gradually and under the influence of various factors, the most important of which are: national history and culture, dominant politic ideology, local geographical and climate conditions and socio-economic development of a state.
- Risks of cardiovascular diseases are related to indicators of education, infrastructure investment and urbanization, with the link between different risk variables of cardiovascular diseases and GDP as well as healthcare expenditure.
- Given the current state of health of the population in Bosnia and Herzegovina, and the possibility of cardiovascular medicine, Committee for Cardiovascular Pathology of the Department of Medical Sciences of the Academy of Sciences and Arts of Bosnia and Herzegovina, considers that is necessary to re-establish the systemic approach over cardiovascular diseases, with the aim of integrating into modern medical trends, which would result in decreasing in morbidity and mortality from the cardiovascular diseases, monitoring of risk factors, starting from foetal period until adulthood.
- In the team for health management promotion, it is necessary to include all relevant segments of the society, from ministries of health, public institutes for health promotion, educational institutions, economic institutions, doctors in primary and secondary health care, clinicians, family medicine teams, physician practitioners, cardiologists, paediatricians, cardiologists paediatricians, with the aim of implementing the conclusions of leading health care institutions in Europe and world, according to good medical practice, evidence based medicine and best economic postulates.
- We believe that this Symposium data could serve as a solid basis and guidance for future research that should include panel analysis with the involvement of a larger number of all relevant subjects in the country and as well in South East European countries.

Sarajevo, September, 2018. Academician Senka Mesihović-Dinarević

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