Health for Public, Public for Health. Heath systems in V4 countries

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Table of contents

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An analysis of Czech, Hungarian and Polish Presidencies of the Council of the European Union with regard to healthcare

Introduction

Czech Republic, Hungary and Poland are all former members of the Eastern Block. What distinguished them among other countries of the group were similar foreign policy priorities and the opportunities to achieve them. This fact laid the grounds for international cooperation started in 1991 under the name of the Visegrád Triangle. During its Presidency of the Council of the EU, the Member State defines the course of action and assumes a managing, mediatory, representative and symbolic role, presenting the positive qualities of the state internationally. From 1 January to 30 June 2009 the Presidency was held by the Czech Republic, which focused on financial effects of demographic changes and improvement of quality and accessibility of healthcare services. Hungary exercised the Presidency from 1 January to 30 June 2011 and its priority was to ensure sustainability of healthcare systems in light of ageing population and growing health gaps. The Polish Presidency, whose main aim was combating inequality in access to healthcare, lasted from 1 July to 31 December 2011. The common priority with regard to free movement of persons was an exchange of information and experiences, as well as promoting mutual understanding between EU Member States, which were all obliged by the cross-border Directive to provide all citizens with equal access to high-quality healthcare services, while preserving their distinctness.

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Aim

The paper intends to present priorities and activities of the Visegrád Group in the field of healthcare during its Presidency in the Council of the European Union as well as to assess the cohesion and integrity of those activities.

Material and methods

The assessment involved an analysis of selected documents regarding the healthcare-related priorities and the arrangement of meetings and conferences during the Presidencies of individual member states of the Visegrád Group. Similarities and differences visible during the Presidencies were analysed.

Analyzed documents came in the legal acts of the European Union (EUR-lex), Government websites relating to the Presidency of the European Union and to the Presidency of the V4 Group. Source were published in the period from 1 July 2008 to 30 June 2012. The criterion for the selection of documents were the keywords: the presidency of the EU, the Presidency of the V4, health care, health policy. The documents examined under the angle the similarities and differences in reference to these areas.

The history of the European Community

After the end of the Second World War, European states agreed that it was necessary to avoid similar tragedies in the future. One of the originators of the idea was Winston Churchill, who proposed to establish a European federation in his speech given at the University of Zurich in September 1946. In 1948 Józef Retinger and Duncan Sandys organised the Congress of Europe in the Hague, where delegates from 25 European countries discussed the unification of Europe [1, 2]. As economic abuse was common in the French sector of the Allied-occupied Germany, Jean Monnet, Commissioner of the French Planning Board, proposed an uncomplicated, technocratic mechanism for France's and Germany's common raw material market, which led to signing, on 9 May 1950, a declaration enabling a cooperation of the two countries, with the possibility of other states joining them. In consequence, on 18 April 1951 Belgium, the Netherlands, Luxembourg, Germany, Italy and France signed the Treaty of Paris. On 23 July 1952 the European Coal and Steel Community was established [3].

In 1958 two further organisations were established in Rome: the European Community and the European Wind Energy Association. Two years later the Special Committee on Agriculture was created. Its field of interest were financial and technical issues related to sanitary and veterinary aspects of food policy. SCA cooperated with the Committee of Permanent Repre-

sentatives on legislation regulating these areas. In 1967 those agreements were merged by the Brussels Treaty [4].

In 1986 the Single European Act, a revision of the 1958 Treaty of Rome, was signed in Luxembourg with a view to ensuring internal market freedoms and international cooperation.

In 1993 the Treaty on European Union came into force. The agreement concerned international cooperation which led to the creation of the European Union. it was signed by representatives of twelve European states: Belgium, Denmark, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, and the United Kingdom. In 1995 they were joined by Austria, Finland, and Sweden [4].

Changes in Europe required the admission of new countries, as defined by the Treaty of Nice, ratified in 2003. In 2004 the EU was enlarged to include the following countries: Czech Republic, Cyprus, Estonia, Hungary, Lithuania, Latvia, Malta, Poland, Slovakia, and Slovenia. In 2007 Bulgaria and Romania were admitted [5].

The need for further reforms of the EU led to the ratification of the Consolidated Version of the Treaty on European Union and the Treaty on The Functioning on The European Union in 2009. As regards the Council of the European Union, it set out that the Presidency system would be rotational and dependent on the decisions of the European Council. In 2013 Croatia joined the EU.

Principles of functioning

The main body of the EU is the Council of the European Union composed of ministers representing the Member States. The Council is convened by the representative of the State holding the Presidency at the time. This representative is at the same time the Chair of the meeting. The sole exception to this rule is the Foreign Affairs Council, chaired by the High Representative of the Union for Foreign Affairs and Security Policy.

The decisions of the Council are made unanimously, by simple or qualified majority vote. The meetings are not public. Only discussions on draft legislative act may be made public [6, 7].

Presidency

The Treaty on European Union modified the functioning of the Council of the European Union, e.g. it abolished rotational, six-month Presidency of the Council exercised by Heads of State, establishing the position of the President of the European Council elected for a mandate of two and half

years instead. This Treaty also introduced the system of 18-month long, triple-shared Presidencies with the aim of ensuring continuity and coherence of EU's actions.

For tasks related to foreign policy and external relationships of the Community, as well as to represent the EU on the outside, the Treaty created the position of the High Representative of the Union for Foreign Affairs and Security Policy. The High Representative *chairs* the Foreign Affairs Council, which means that presiding over this Council is excluded from the rotational system. The mandate of the High Commissioner lasts 5 years.

The order of Presidencies up to 2020 has already been established and is as follows:

- Germany, Portugal, Slovenia – January 2007 to June 2008;
- France, Czech Republic, Sweden – July 2008 to December 2009;
- Spain, Belgium, Hungary – January 2010 to June 2011;
- Poland, Denmark, Cyprus – July 2011 to December 2012;
- Ireland, Lithuania, Greece – January 2013 to June 2014;
- Italy, Latvia, Luxembourg – July 2014 to December 2015;
- the Netherlands, Slovakia, Malta – January 2016 to June 2017;
- United Kingdom, Estonia, Bulgaria – July 2017 to December 2018;
- Austria, Romania, Finland – January 2019 to June 2020 [8].

One of the main tasks of the Presidency of the Council of the EU is organising the Council's work, i.e. chairing the particular Councils, drafting the meeting schedule, preparing the agenda in coordination with the General Secretariat of the Council. The so-called initiating and planning function is very important. it consists in setting directions of action, priorities and goals that the Presidency wishes to achieve during its mandate. Mediatory tasks include moderating discussions and acting with the view to reaching consensus in the event of conflicting interests of Member States in the Council. The representative tasks of the Presidency were limited after the Treaty of Lisbon became effective; however, they remain an important area of Presidency's activity. Therefore, every Member State may distinguish itself before the Community, identify its preferred directions of develop-ment, define the role of the given country in the EU. During its Presidency of the Council of the EU the country should above all act for the suprana-tional good. The function of the Presidency of the Council consists in orga-nising the work of the Council, monitoring the meeting agenda and swift administrative management.

The activities conducted during the Presidency should, first and foremost, be long-term and compliant with the EU objectives. Such activities should be feasible and in harmony with the expectations of other states during the Presidency. Introduced in January 2007, a new Presidency system of the so-called Group Presidency of three states for a period of 18 months is a challenge, especially when it comes to political and administrative collaboration between individual states of the selected three countries

The Visegrád Group

The transformations which took place in the late 1980s and in the beginning of the 1990s in these countries of the Eastern Block (Poland – elections of 4 June 1989, Hungary – taking down the barbed wire fence along the Austrian border on 2 May and amending the constitution on 23 October 1989, Czechoslovakia – student demonstration on Wenceslaus Square in Prague on 17 November and representatives of the Civic Forum being elected to the government on 7 December 1989) brought about the need to set a common goal for foreign policies and integrate with European countries and the Atlantic zone.

Collaboration between Czechoslovakia, Poland, and Hungary was mentioned for the first time in the first meeting of Polish Prime Minister Tadeusz Mazowiecki and Czechoslovakia's President Václav Havel in January 1990 in Prague [9]. An official idea of regional collaboration between the said three states was presented by Havel in the Sejm of the Republic of Poland in January 1990 and a few days later in Budapest. A meeting in Bratislava convened in April 1990 by President Havel was attended by prime ministers, presidents, and members of parliaments of Czechoslovakia, Poland, and Hungary but did not lead to the expected results – i.e. to closer collaboration – because of Hungary's objection and difficulties in disbanding the Warsaw Pact and the Comecon. The governments of Poland and Czechoslovakia also argued about the scope and form of further collaboration.

On 15 February 1991, Poland's President Lech Wałęsa, Czechoslovakia's President Václav Havel, and Hungarian Prime Minister JózsefAntall met in the castle of Visegrád, Hungary, and signed a declaration on cooperation. The fundamental goals of those states were to make them completely sovereign again and integrated with the European and North-Atlantic structures. Participants of a meeting convened in September 1991 in Cracow decided that the collaboration would mainly concern foreign relations policy, economy, transport, environmental protection, and science. After the dissolution of Czechoslovakia on 1 January 1993, between 1993 and 1998 the Visegrád Group experienced a severe crisis. Czechoslovakia was

dissolved without any acts of violence, but it was the Czech Republic that integrated with Europe and adopted a liberal and democratic model more easily than Slovakia, where the post-communist worked very well for some time [10]. Meetings of the Visegrád Group were convened irregularly and touched upon mainly military issues. it is worth mentioning that the Group did not have any organisational structure on its own [11].

Poland, the Czech Republic, and Hungary joined NATO in 1999, whereas Slovakia did so in 2004. During the years 1999-2003 the collaboration of the Visegrad Group was more structured and ordered, prime ministers met regularly, the International Visegrád Fund was established, and the scope of collaboration was extended. In 2004-2012 the Visegrád Group strengthened collaboration between its members, particularly in 2004 when the states acceded to the EU. Meetings at different levels of power were convened regularly back then. The collaboration of V4 since the signing of the Kroměříž Declaration in 2004 concerned culture, science, nature, foreign relations, and crisis situations [12]. The 2012-2013 Polish Presidency of the Visegrád Group focused particularly on the energy policy by developing the infrastructure for transmission of gas, electricity, and petroleum [13]. The 2013-2014 Hungarian Presidency of the Group emphasised the importance of issues related to cash flows between individual states. The 2014-2015 Slovak Presidency of V4 paid particular attention to coordination of V4 issues in the EU, climate agreement, the Eastern Partnership, regional transport and developent, as well as healthcare.

Regional groupings similar to V4 function in Europe; they include, for instance, the Benelux Union and the Weimar Triangle. The Visegrád Group stood the test of time despite numerous difficulties and different attitude towards even such priorities as NATO membership. Such collaboration may be beneficial for all V4 states, particularly where they do not fight but complement each other, and their actions, when combined, may result in better outcomes [14]. A crucial component of V4 agenda is that a leader is needed for individual states there, where is an added value [15].

The Presidency of the Czech Republic (1 January-30 June 2009)

The Czech Republic began its Presidency of the Council of the EU with the motto "Europe without barriers" and followed it when choosing the most important EU issues [16].

The Czech Presidency showed efforts to improve patient mobility and the need to regulate (improve) cross-border health care. The Czech Republic dubbed its priorities "3E": Economy, Energy, EU in the world. Preparations of the Czech Republic and their implementation in a group of France,

the Czech Republic, and Sweden turned out to be very difficult for the Czech Republic. Many experts believe that there was no proper collaboration between those three states: "The French disdained the Czech and the Swedes pondered about their own Presidency, though the Czech did not ask for help anyway" [17].

The Czech Republic also recognised the importance of issues related to organ transplantation, in particular its accessibility, as well as storage and transport of organs.

The security improvement was supposed to cover hospitals and infectious disease wards. The Presidency, through its proposal to implement various models of controlling infections and antimicrobial resistance, wanted to improve the quality of patient service in Europe.

In the field of health protection, the Council of the EU was also to address legislative issues defined in the "pharmaceutical package", relating mainly to control and supervision over pharmacological treatments in the EU, distribution of pharmaceuticals and protection against illegal products. One of the Czech priorities was to present the application of telemedicine as an instrument of cooperation between the Member States.

Innovations in combating chronic diseases

In accordance with the Presidency programme planned by the Czech Republic, in February 2009 the meeting entitled "Securing the future of European healthcare: assessment of medical technologies and management of chronic diseases" was organised.

During the conference in Prague special attention was paid to the need of providing European funding for prevention and early detection of chronic diseases. Ensuring effectiveness requires employing trained personnel, creating new jobs for qualified professionals – mainly nurses.

In order to control and improve cost effectiveness of healthcare, implementation of the *dynamics performance management system* collecting data on chronic diseases was proposed. Based on this evidence, the decision-makers were supposed to make optimum decisions. However, according to WHO publications, implementing DPMS on a large scale would be very expensive and might prove counter-productive, as there is no evidence for cost-effectiveness of DPMS or its contribution to improving quality of life of chronically ill patients.

Another element of improving the quality of healthcare management is the implementation of the *information and communications technology*, which aims to strengthen the position of the patient in the healthcare system.

In reality ICT merely supports the control process and the activity of patients themselves is low. The development of *health technology assessment* is important for decision-makers, as it combines an economic analysis of the impact of refinancing technology costs on the payer's expenditure, with an analysis of clinical effectiveness.

Ministerial conference

In April 2009, representatives of EC, WHO, ECDC and ministers of health of EU Member States met at a ministerial conference in Prague. The participants discussed means of preventing infections in hospitals and of infection control in order to achieve high levels of medical services.

A/H1N1 influenza – extraordinary EU Council

The incidence of A/H1N1 influenza in Europe, related to spreading of the virus across the globe, motivated the members of the Council of the EU to call an extraordinary meeting of EPSCO in order to exchange experiences and opinions related to this problem and to adopt a common position. The meeting took place on 30 April 2009 in Luxembourg. Open borders of the EU enable its citizens to travel internationally, which constitutes a potential risk factor of new cases of influenza infections.

Europe was found prepared for the potential hazard, as it has contingency plans ready and the cooperation of the EU States as regards coordinating activities is being continually improved. Member States use WHO regulations with a positive outcome and collaborate with the *Health Security Committee* in the field of rapid notification and reaction in the event of infection.

The participants also discussed pharmaceutical protection in case of a pandemic. The need to immediately create, purchase and allocate a vaccine was discussed. Due to insufficient resources and controversies surrounding the composition of the vaccine, some Member States did not vaccinate their citizens. On 11 June 2009 stage six of epidemic – the highest risk level – was declared. Poland did not buy the vaccine, whereas Sweden purchased the highest number of doses – 18 million. The highest vaccination rate was observed in the Nordic countries, with 60% of Swedish citizens and 50% of inhabitants of Finland taking the vaccine. The pandemic was milder than expected and reports from Sweden implied undesirable effects caused by vaccines against A/H1N1 influenza.

The "Dignity and Hazard of Elderly" conference

In May 2009, the Czech Presidency organised a conference dedicated to issues related to care for the elderly and proposals of systemic changes

in that area. Representatives of EU Member States, as well as experts from the European AGE organisation network and participants of the project A European Strategy to Combat Elder Abuse met in Prague for a discussion.

One of the problems raised during the conference was disrespect towards the elderly resulting mainly from unclear social roles of these people, but also from lack of support on part of the social system. Educating the entire population about the ageing society was deemed essential in order to address the problem properly. The participants emphasised the great importance of the role played in that respect by local authorities of EU Member States, as well as by higher education institutes offering courses for senior citizens – the "universities of the third age", which encourage the elderly to be active.

Rare diseases

Approximately 30 million residents of the UE are afflicted with rare diseases [15]. Due to the specific character of these conditions, i.e. low incidence and insufficient knowledge on them, they pose a significant problem for the EU.

In order to address pending issues, the Council of the EU issued a recommendation for actions to be taken in the field of rare diseases. The Council recommendation concerned, above all, the need to define a course of action for rare diseases, until the end of 2013 at the latest, taking into account the guidelines set by the EUROPLAN project financed in 2008-2013 under the programme of Community action in the field of public health. The document also called on the Member States to list rare diseases in an appropriate part of the medical information system, i.e. to define and codify them in order to facilitate access to the list.

The Council of EU also called for scientists' participation in rare disease research in order to update the state of knowledge and collect data that would allow making right decisions.

The Presidency of Hungary (1 January-30 June 2011)

The Hungarian Presidency focused on the human factor, allowing for intelligent and sustainable progress, from economy, to common policy, to the moment of growth. The priorities were centred around four main subjects: ensuring stability of European economy; enlargement of the European Union and supporting the Eastern Partnership; a citizen-friendly Union and energy-related issues, "a stronger Europe" [18]. The priorities focused on four main topics: economic growth and employment, stronger Europe, citizen-friendly EU. In addition, the Hungarian Presidency tried

to overcome the euro crisis, to start preparations for adopting new financial perspective for 2014-2020, as well as to extend the EU and the Neighbourhood Policy [19].

The main goal of the Hungarian Presidency in the field of public health and medicine was to finalise the legislative process of the Directive on cross-border healthcare. Closely related to this issue was the problem of healthcare personnel migrations as well as shortage of doctors of some specialties. Improving that state of events was listed as part of Hungary's plan of action. An improvement in this field was listed in the Hungary's action programme [18]. Importance was also attached to promoting a healthy lifestyle, especially among children and adolescents, taking into consideration their mental health as well.

Innovations in the treatment of chronic diseases

The data collected by WHO show that 60% deaths in the world are caused by chronic diseases. Not only do they lead to death, but also significantly hinder normal participation in society. it is estimated that incidence will increase due to, among others, the ageing of the European population.

During the Hungarian Presidency, on 8 March 2011, the Council of the EU issued conclusions concerning the innovative approach to chronic diseases in public health and healthcare systems. The special importance of preventive healthcare was emphasised, as it is the deciding factor that conditions further course of action in the event of a potential disease. Both Member States and the EC were called upon to cooperate through an exchange of good practice and information on the occurrence of diseases in the EU.

The Council of the EU decided that the treatment process should be based on innovative solutions and easier access for patients, and that GP-level actions should not be considered any less important than other elements of treatment.

Cross-border Directive

On 9 March 2011 the Council of the EU and the European Parliament finally approved the Directive 2011/24/EU on the application of patients' rights in cross-border healthcare. The ratification of the Directive obliged Member States to provide citizens resident in their national territories with high level of healthcare while respecting the countries' sovereignty and ethical principles.

The document sets out specific guidelines with regard to patients' rights, fees for health services, or access to medicines. The ratification of the Directive obliges every Member State to establish at least one national contact point with the aim to inform interested parties of their rights.

Health personnel migration

Higher mobility of patients led a rise in healthcare personnel migration. In addition, ageing society and technological progress led to a decrease in the number of specialised physicians in some fields of medicine. The need to implement solutions in the area urged the Council of the EU to issue conclusions on investing in Europe's health workforce of tomorrow. Special consideration was given to the significance of cooperation between Member States in the exchange of good practice, as it is the only way to ensure coherence of actions and improve the situation across the EU. The Council of the EU called on the EC to provide support and elaborate policies for the education of future healthcare professionals, using and properly allocating EU funds provided for such purposes. Organisation of training for personnel should be based on collaboration not only among the EU institutions, but also with WHO and OECD.

The Presidency of Poland (1 July-31 December 2011)

Polish priorities in the field of healthcare ware: closing the gaps between EU Member States related to physical exercise, respiratory tract diseases in children and innovative medical treatments, as well as prevention of age-related illnesses and implementing an effective programme of education, health promotion and preventive healthcare in order to improve the quality of life of the European population and ensure stability in all sectors of economy [20].

Statutory preventive vaccination programmes in the EU

Open borders within the EU enable free movements of persons, but at the same time carry a risk of spreading infections. Primary prevention, i.e. compulsory vaccination programmes, is a task fulfilled individually by each Member State, which differs in both financing methods and content.

The Council of the EU noted that despite solutions existing on local levels, discussing the problem on the Community level provides an opportunity to exchange good practice and lay grounds to make right decisions in the future.

On 8 July 2011 the Council of the EU issued conclusions on childhood preventive immunisation. it emphasised the need to strengthen the dialogue between the Member States, particularly important due to migrations. Movement of people within the EU is so common that residents move from their country to another country for a time and come back with entire families, often with small children. The problem here is that the country where the child was born has a different vaccination programme than her or his parents' country of origin. Therefore, standardisation in this area

poses a challenge for the EU. A factor that ever further complicates the situation is the EU's increasingly liberal approach towards immigrants from Africa and Asia.

Effectiveness of the healthcare system

On 8 July 2011 the Council of the EU issued conclusions on innovative healthcare solutions necessary due to growing expectations of the patients and requirements on the part of technological progress.

In order to ensure efficiency of the healthcare system it is important to achieve effectiveness, i.e. benefit as much as possible at little cost. This goal can be achieved only through monitoring needs on a regular basis and satisfying them as quickly as possible. Special attention should be paid to preventing diseases, promoting health and employing optimum number of healthcare professionals. The key decision-making role should be played by health ministers of individual EU Member States.

Modern approaches to elderly healthcare

Technical and medical progress gave way to the possibility of using innovative solutions in prevention, diagnostics and treatment of many diseases.

On 8 July 2011 the Council of the EU issued conclusions on innovation in the medical device sector. it was emphasised there that a large part of funds for public health had been invested in implementing innovative solutions. This action may prove effective if, before any changes are introduced, the real needs of patients are researched and then, using *evidence based policy* and *evidence based medicine*, the changes to be introduced are adapted to them. This way they are beneficial above all for patients themselves, while taking into account the needs of the personnel and the requirements of Community economy.

The Council of the EU called upon the EC to continue the work on creating a clear and stable framework defining safety requirements for medical devices, in particular those related to in vitro procedures.

Conference on the "Prevention and control of childhood asthma and allergy in EU from the public health point of view: urgent need to fill the gaps"

Diseases of the upper respiratory tract, such as asthma, allergy or chronic obstructive pulmonary disease affect about 130 million EU citizens, and the costs of their treatment currently amount to more than 150 billion Euro. The Polish Presidency acknowledged these conditions to be the most important public health problem, as they are linked to all aspects covered by the previous Presidencies, such as environmental pollution, ETS, food additives. In addi-

tion, due to the character of these diseases, children and adolescents should be taken into consideration. The Polish Presidency organised an expert conference covering these issues; also the establishment of a European cooperation network in the field of disease prevention that would emphasise health promotion was proposed.

The European Disability Strategy 2010-2020

Improving the quality of life of EU citizens was among the priorities of the Polish Presidency in the field of disabilities in the years 2010-2020. One of its aims was creating an open society without barriers for the disabled. The strategy was to improve the situation in 8 areas: health, social protection, accessibility, equality, participation, education, employment, external action. Specific issues related to actions in each of those fields were included in Council conclusions issued on 11 October 2011.

As far as health is concerned, the most important step is to improve the availability of services and strengthen preventive healthcare, especially by promoting screening tests. it is also crucial to educate medical personnel in treating persons with disabilities.

Social protection should cover all measures of aiding the patients, monitoring their financial standing and undertaking proper actions in accordance with the quality framework approved by the Social Protection Committee.

A significant threat for persons with disabilities is being marginalised. The task of the EU is to protect these citizens from discrimination. Actions should be addressed to the entire society, educating it and raising its awareness. it may also prove indispensable to adopt legal regulations in the area.

Local authorities should guarantee citizens with disabilities access to comprehensive education, improvement of qualifications and development of skills, so that they can find employment in fields of their choice and thereby fully participate in the economic growth of their country. With that view, the Council of the EU proposed considering the introduction of supported and protected employment in sectors where it was possible.

Europeans' lifestyle

On 9 December 2011, the Council of the EU, under the Presidency of Poland, issued conclusions on closing health gaps among Europeans through the promotion of proper lifestyle. The EU States were called upon to promote, in cooperation with the EC, quitting tobacco and alcohol consumption. This was related to the undertakings of the previous Presidencies.

An issue of great concern for contemporary Europe is the fact that one in four children suffers from obesity. The Council of the EU called upon the Member States to support changes related to the composition of food, especially limiting the sugar, saturated fat and salt content by replacing these ingredients with other elements of better nutritional value.

The actions taken with the aim of improving Europeans' lifestyles should be coherent, but it is an area characterised by such enormous differences that each Member State should define its own individual priorities and adapt the programme of changes to its real needs.

The EU countries have been focusing on issues related to health policy for many years now. The Amsterdam Treaty of 1999, Article 52 §1 provides for measures aimed at ensuring a high level of health protection to be implemented in all the policies conducted by the EU. Such measures are intended to improve public health, to prevent diseases by counteracting health risks, to promote research identifying the causes of these diseases as well as studies in the area of health care education.

Conclusions

The EU countries have been focusing on issues related to health policy for many years now. The Amsterdam Treaty of 1999, Article 52 §1 provides for measures aimed at ensuring a high level of health protection to be implemented in all the policies conducted by the EU [21]. Such measures are intended to improve public health, to prevent diseases by counteracting health risks, to promote research identifying the causes of these diseases as well as studies in the area of health care education.

The research initiated in 2000, conducted among researchers who specialise in public health, has identified top 10 priorities in this respect. Selected issues concerned e.g. alcohol consumption, tobacco smoking, monitoring the population, quality of medical personnel, population ageing, environmental hazards, food, and food contamination. However, the aforementioned priorities were not reflected in official EU documents. at the beginning of this century, many countries of the European Union modified their health care programmes, shifting their focus primarily on changing the lifestyle through health promotion and disease prevention.

Consecutive presidency terms during the years 2004-2014 saw the finalisation of legislative procedures which are of great importance for European integration, including the cross-border healthcare directive.

Analysis of presidencies in the years 2004-2014 indicated a lack of cohesion and smoothness in the transfer of work between particular leaders. Each

country, upon assuming the EU presidency, wants to use the opportunity to internationally exhibit its significance and strives to put its name in the history books through new achievements. This results in large discrepancies between the practical and the theoretical use of the EU presidency. A typical example of such behaviour was the quoted trio of France, the Czech Republic, and Sweden in the period between July 2008 and December 2009. At first, the Czech presidency had far-reaching priorities indeed. The primary objectives presented in 2007 have not been achieved, though. This situation was due to the government crisis in the Czech Republic and a reshuffle of government during the presidency coupled with the relatively strong objections to the Czech leadership held by other countries, particularly the French President Sarkozy, as well as a highly challenging political situation in the world, including the crisis in Gaza and the gas dispute between Ukraine and Russia [22]. When exercising the presidency, it is essential to show the unity of the country, while in the case of the Czech Republic, President Václav Klaus made no attempt to conceal his Eurosceptic stance in public speeches, which depreciated the Czech presidency as perceived by the European Union [23].

It is important that the countries cooperate and that the previously established objectives are continued. There are large differences in health between the EU members, but a detailed overview of the presidency activities makes it possible to identify a trend common to all EU countries. The key element for improving the health status of a population is the early stage prevention, i.e. health promotion. Each presidency, when defining its priorities, addressed promotion of physical activity, proper diet, giving up alcohol and tobacco products, as well as prevention of sexually transmitted diseases, especially HIV/AIDS, implementation of innovative solutions in health care system and improvement of services in the medical sector with the use of a new technology, and, finally, active involvement of seniors in social and economic life. The cross-border healthcare directive is to provide a solution for many patients and it is undoubtedly one of the most important documents sanctioned by the EU.

When analysing the schemes proposed by the V4 countries, it may be concluded that during their presidency health care priorities were more extended compared to their counterparts [24]. The Czech presidency attempted to solve two issues concerning the climate package and the CAP Health Check [25].

Two issues were shared by the Czech, Hungarian and Polish presidencies:

- Innovations in chronic diseases – the Czech Republic, Hungary;
- Senior policy and dignity of seniors – the Czech Republic, Poland.

It is rather difficult to assess the presidency as regards the aforementioned aspects. Health care policies are, after all, at the margin outside the focus of "big politics" and they are not included among the basic priorities in the discussions held. The Hungarian presidency was assessed very positively by the Polish government. The assessment of the Polish presidency expressed by the citizens as per a CBOS (Public Opinion Research Center) survey is presented in the table below [26].

Table 1.

How do you evaluate Polish Presidency of the EU Council?	
Poland was sufficiently active – 37%	Poland achieved a lot – 26%
Poland was not active enough – 45%	Poland did not achieve very much –53%
Don't now (Not informed) – 18%	Don't now (Not informed) – 21%

At the KSAP (National School of Public Administration) conference, the Polish presidency was assessed very well, especially in terms of administration [27, 28].

During the Polish presidency, V4 were primarily focused on the integration of healthcare systems, the exchange of experience in the field of social inequalities, and in taking measures to prevent obesity and tobacco smoking. it should be noted that senior policy was not mentioned.

According to the published documents from the meetings of the V4 group that preceded the EU presidencies, health protection issues were not discussed.

To sum up, as regards the area studied in this paper, presidencies have made many innovative contributions, but it cannot be ascertained that they constituted an orchestrated venture of the V4 members. The Presidency is not responsible for working to improve the health status of the population of the European Union, because of their activities in this area cannot be considered spectacular.

Conflict of interest

The authors declare no conflict of interest.

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Clusters as a tool for system modernization. The features of health policy of Polish local governments

Abstract

The aim of this paper is to describe differences in the perception of local governments in Poland concerning health clusters as tools for the modernization of the healthcare system, as well as recognition of the scale and forms of direct involvement of local governments in the creation and development of cluster initiatives in health care. The study involved 219 Poviats offices in Poland. We used a CAWI questionnaire. The collected data were analyzed using a chi^2 statistical test. We observed low degree of participation in clusters and the scale of support provided by the local government in Poland. The reason for that is the distrust and the lack of relevant knowledge among local officials. Moreover, contrary to the specifics of the healthcare market and products offered in the market, local governments treat the cluster initiatives in healthcare exactly the same way as entities in other sectors of the economy are treated. Nonetheless, the occurrence of an identifiable key medical product in a given area slightly increases the tendency of local governments to pursue an active policy to support clusters. Thus, there are reasonable grounds for regarding the medical services as a potential tool to improve the competitiveness of the region.

Introduction

Prior to 1999, the health-care system in Poland was based on the state budget financing public health-care facilities, as determined by the Minister of Health and provincial governors.

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These entities also determined the size of health-care resources. A fundamental change in the system of financing occurred on 1 January 1999 as a result of system reform, resulting in the implementation of a financial insurance and health-care financing system under the law on universal health insurance[4]. The reform was to separate the two functions that until that time had been performed by the state, i.e. organizing the health-care system and acting as the payer; in this way, market mechanisms were introduced into the system.

The new health-care system has created three closely related partners:

- organizers of the system, which constitute the organizational – legal basis of the system and a control system consisting of parliament, government and local authorities;
- providers, which are entities that, in the light of the applicable law, provide health services; and
- payers; currently the National Health Fund (Narodowy Fundusz Zdrowia; formerly Kasa Chorych), as well as the state budget and the budgets of local governments.

An important element in the transformation was the introduction of universal health insurance, while at the same time achieving a few basic objectives:

- deriving health-care funds from the general budget pool;
- financing health services with funds from health insurance premiums;
- introducing a system based on social solidarity to ensure the provision of health-care benefits to the insured, irrespective of their wealth, health and age;
- equalizing rights and access to financial resources of public and private entities;
- ensuring the right of free choice of provider; and
- strengthening the role of the primary care/family doctor as the link rationalizing the use of health services.

Together with health-care reform, public administration reform was implemented in Poland and resulted in the strengthening of the territorial community in terms of internal consistency, relationships and a sense of responsibility

[4] *Ustawa z dnia 6 lutego 1997 r. O Powszechnym Ubezpieczeniu Zdrowotnym* [Act of 6 February 1997 on Universal Health Insurance]. Dziennik Ustaw Rzeczypospolitej Polskiej [Journal of Laws of the Republic of Poland] No. 28, item 53

for the local social structure by equipping the structures of local government administration with the tasks and responsibilities of health care. The health-care responsibilities falling to local governments now include securing access to health services, managing institutions providing health services and in some measure funding access to these benefits, co-defining priorities and state's health policy content, and direct involvement in subsequent implementation[5]. Political changes mean that local governments acting in the name of and on behalf of its residents perform the vast majority of today's public functions, thus affecting the operation of the local community[6].

Currently, the Polish health-care system should be considered organizationally correct, although not without flaws. it is a robust system component structure of the European Union, of which Poland has been a member since 2004. However, society's expectations with respect to improving the system's efficiency, understood as availability, productivity, continuity and comprehensiveness, are very high and at the same time universal. As a result, health system experts are constantly looking for ways to improve its performance. One such way is to use economic clusters as a tool to stimulate the health-care market, based on the principle that good and proven business practices can be successfully implemented and deployed in the health-care market.

The aim of this paper is to describe differences in the perception of local governments in Poland concerning health clusters as tools for the modernization of the health-care system, as well as recognition of the scale and forms of direct involvement of local governments in the creation and development of cluster initiatives in health care.

This study on the economic cluster in relation to the health-care market utilizes empirical science in an interdisciplinary context involving regional policy, health and entrepreneurship. The results provide information about the effects of clusters of health, local health policy and public-private cooperation. They also reveal the benefits of developing, defining and consolidating the barriers to transforming the health-care system locally.

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[6]Guć M., *Ekonomia społeczna – szanse i zagrożenia rozwoju z perspektywy samorządu [Social economy – opportunities and threats for the development from the perspective of local governments]*. *Ekonomia Społeczna Teksty* 2006, 24, p. 4

Materials and methods

The study was carried out in 2013 and involved 219 Poviat Starostys offices, which provided a representative sample of all middle level local government units in Poland. Sample selection was random, preserving the representativeness and dispersion of territorial units across the country.

The proprietary research tool was a questionnaire, which was implemented using CAWI (Computer-Assisted Web Interview) and CATI (Computer-Assisted Telephone Interview) methods. The collected data were analyzed using a chi-square statistical test.

Results

The collected material was analysed using several approaches. The first approach was to examine the scale of the involvement of local government in Poland in the implementation of policies in support of clusters, as well as to identify the characteristics of units which had a greater involvement in supporting clusters. The second approach was to determine whether those units active in supporting and engaging in cluster initiatives in health care had characteristics that were different from those exhibited by units that supported clusters in other industries. The results of these analyses are presented in Table 1.

Table 1. Membership and support for clusters by poviat category

	Membership in clusters			
	Urban poviat	Rural poviat	Metropolitan area	Non-metropolitan area
Yes	4 (21%)	25 (12.5%)	13 (22%)	16 (10%)
No	15 (79%)	175 (87.5%)	46 (78%)	144 (90%)
Total	**19**	**200**	**59**	**160**
	Support given to clusters			
Yes	3 (15.79%)	17 (8.5%)	8 (13.56%)	12 (7.50%)
No	3 (15.79%)	53 (26.5%)	13 (22.03%)	43 (26.88%)
Unknown	13 (68.42%)	130(65.0%)	38 (64.41%)	105 (65.63%)
Total	**19**	**200**	**59**	**160**

In terms of direct participation in cluster initiatives, a significantly higher proportion of urban poviats was observed as compared to rural poviats. This difference was even greater when data on units located in the metro-

politan area and non-metropolitan area were compared; however, the difference was only statistically significant in the latter case (p=0.0198, as compared to p=0.2932 for rural vs urban poviats). The percentage of support provided to clusters by urban poviats was almost double that provided by rural poviats. it was also found that support for clusters was more often declared by units located in the metropolitan area than by non-metropolitan units. In this case, however, the differences were not statistically significant (p=0.4027 for county districts vs. urban poviats and p=0.3434 for metropolitan vs non-metropolitan units). The very low percentage of units declaring support for clusters should be stressed, although a trend indicating a greater tendency in this regard in the case of a higher degree of urbanization is noticeable, despite the lack of statistical significance. No differences were recorded in terms of the specifics of the unit and the presence of clusters connected with health.

Another element of the study was a question directed to the local government units regarding the existence of key medical products within their area of competence. Of 219 units, 107 confirmed the existence of such products. it should be noted that respondents had a very different interpretation of the significance of the term 'medical product'. In many cases, the mere fact of the existence of a specialized hospital unit was considered to be a medical product. However, the most common form of such a product was a high degree of specialization in a particular type of benefit, such as providing a health resort, therapeutic rehabilitation or transplant surgery. All identified products were within the broader category of medical services; none of the units declared the production of medical technology and pharmaceuticals.

A higher percentage of clusters was observed in areas where a key medical product had been identified; however, this difference was not statistically significant (p=0.5005). Among the units which identified the existence of a key medical product, there was also a higher percentage of clusters of a medical nature; however, in this case, there was no statistically significant difference (p=0.2297). In addition, a higher percentage of units that supported clusters was found among those that identified a key medical product in their area than among those that did not identify a key medical product; however, as in the previous cases, the difference was not statistically significant (p=0.3992). it is worth noting that, of the units supporting cluster initiatives, 60% had a key medical product. Details in relation to this aspect of the research are presented in Table 2.

Table 2. Functioning of clusters and support for them depending on the existence of a key medical product in a given unit

The existence of a key medical product		**Yes**	**No**	**Total**
		107 (48.9%)	112 (51.1%)	**219**
Functioning of clusters	Yes	24 (22.4%)	21 (18.8%)	**45 (20.5%)**
	No	83 (77.6%)	91 (81.2%)	**174 (79.5%)**
Functional area of the cluster	Health care	13 (52.0%)	8 (34.8%)	**21 (43.8%)**
	Other	12 (48.0%)	15 (65.2%)	**27 (56.2%)**
Support for clusters	Yes	12 (11.2%)	8 (7.1%)	**20 (9.1%)**
	No	24 (22.4%)	32 (28.6%)	**56 (25.6%)**
	Unknown	71 (66.4%)	72 (64.3%)	**143 (65.3%)**

In addition, with respect to membership in the cluster, very similar percentages were observed both for units which reported the existence of a key medical product in their area and for units which did not (14% and 12.5%, respectively; p=0.7403). Thus, a certain pattern is observable, showing that units which specialized in medical services of particular importance for the local market in their area seem to be more involved in the policy of supporting clusters; however, the difference between the two categories of units is so small that drawing any conclusions is little more than speculation.

The last element that was examined was the type of support provided to clusters, and possible differences in this respect between the entities involved in the operation of the health cluster and those that exist in other industries. These results are shown in Figures 1 and 2.

Figure 1. Types of support provided to clusters, depending on the existence or non-existence of a cluster of health care in the poviat

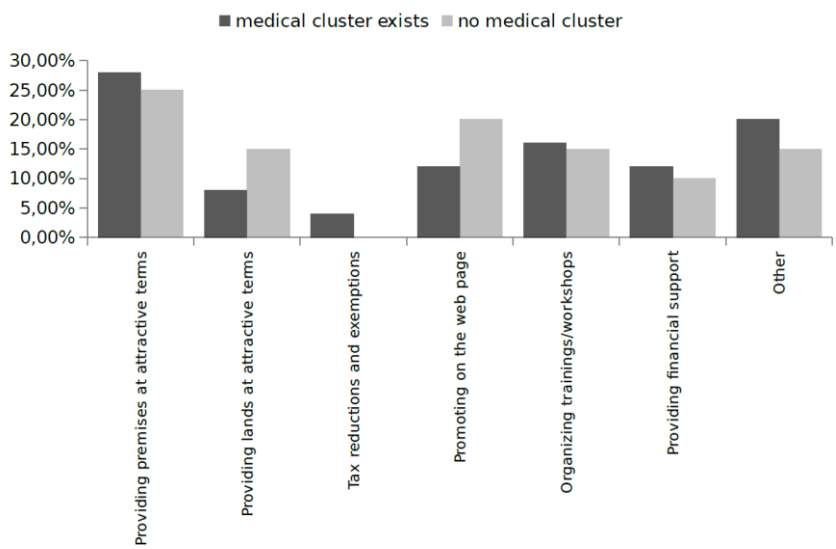

Figure 2. Types of support provided to clusters, depending on the unit's membership in the cluster

When comparing units that declared membership in the cluster and those that were not members of the cluster, there was a much higher percentage of responses in the 'other' category in the case of the latter group. This category included a number of different support formulas, largely of the 'soft' character, such as overall patronage over the initiative, or participation in events organized by the cluster. This group was also more likely to declare providing properties to clusters. In contrast, only bodies that were members of clusters opted for direct promotion of clusters via their own websites as well as through specific financial mechanisms.

When comparing those units that declared the existence of a medical cluster, some differences in the responses were observed, but the total dispersion of responses in both cases was similar. In addition, in both cases, the formula declared most often was making locations available on attractive terms for the needs of a cluster.

Discussion

The cluster concept is an important element of the economic policy of the European Union members, aligning with the strategic priorities of 'Europe 2020', including, among others, the issue of smart and sustainable development of the economy based on knowledge and innovation, support for environmentally friendly efficiency, prevention, and ensuring social inclusion and social and territorial cohesion, among others, by reducing the cost of doing business in Europe, promoting clusters, and improving affordable access to finance[7]. Similarly, the idea of development based on clusters is defined in the European Commission Communication of 2008, designed to create effective conditions for promoting the development of cluster initiatives in Europe[8].

In Polish law, the idea of clustering is provided in the Regulation of the Minister of Economy, 2006, where a cluster is understood as a spatial and sectorial concentration of actors for economic development and innovation and in which there are at least 10 enterprises, engaged in an economic activity in 1 or several neighbouring regions competing and cooperating in the same or related industries, an associated extensive network of a formal or informal nature, and where at least half of the entities operating within

[7]Communication from the Commission Europe 2020, A strategy for smart, sustainable and inclusive growth, COM (10) 2020, final

[8] Communication from the Commission to the Council, the European Parliament, the European Economic and Social Committee and the Committee of the Regions, Towards world-class clusters in the European Union: implementing the broad-based innovation strategy, COM(08) 652, final

the cluster are entrepreneurs[9]. This is a definition similar to the concept provided by M. E. Porter, who describes clusters as geographically cooperating groups of companies and associated institutions operating in a particular field, linked to a network of similarities and complementarities[10] define a cluster as a group of business and non-business organizations for membership in the community and state that it is an important part of unit competitiveness. A similar definition is provided in publications of the Organization for Economic Cooperation and Development[11], that is, that a cluster is a geographic concentration of similar or complementary businesses that use common active channels of communication and transactions and use specialized infrastructure, markets and services. The popularity of the concept of clusters is associated with hopes of improving the efficiency of business entities and obtaining a better competitive position, seen from the perspective of market players uniting in order to gain additional advantages for businesses, as well as from the perspective of local authorities seeking sustainable growth factors. Clusters can therefore be regarded as a useful tool for supporting the development of a given geographical area, by initiating the growth or formation of market advantage in terms of a globalizing economy. Thus, the two-fold nature of clusters, which, although traditionally derived from grassroots, spontaneous initiatives of business entities, have begun to be used by governments as a tool of economic policy, is revealed. it is worth noting that, in the context described above, the role of local authorities in the implementation of tasks related to health, also in this field draws some perspectives from the cluster formula. In view of the responsibilities of local government in co-creating both health policy and its implementation in the management of health institutions and meeting the health needs of the population, such benefit should not be underestimated.

It is important to note that the health-care market is different from other markets because of the fact that medical services are unique due to the importance attributed to health and its loss, as well as the specifics of the

[9]Rozporządzenie Ministra Gospodarki z dnia 2 grudnia 2006 r., w sprawie udzielania przez Polską Agencję Rozwoju Przedsiębiorczości pomocy finansowej niezwiązanej z programami operacyjnymi [Regulation of the Minister of Economy of 2 December 2006, On granting by the Polish Agency for Enterprise Development financial aid not related to operational programmes]. Dziennik Ustaw Rzeczypospolitej Polskiej [Journal of Laws of the Republic of Poland] 2006, No. 226, item 1651

[10]Porter M.E., Porter o konkurencji [Porter about the competition]. Warsaw: PWE 2001.; Bergman E.M., Feser E.J., Industrial and regional clusters: concepts and comparative applications. Web book in Regional Science, Regional Research Institute. Morgantown: West Virginia University, 1999

[11]OECD, Innovative clusters, drivers of national innovation systems. Paris: OECD Publishing, 2001

service as a useful intangible product[12]. In addition, pointing to the relationship between the state and health, it should be recognized that the health-care market cannot be characterized by one sole definition. it is undoubtedly a dual market, which combines the features of a typical market economy based on the principle of exchange value, the notion of 'service' as a specific mission, and responsibility for delegated tasks. Thus, it is all the more reasonable that the medical services market is not a perfectly free market, in which processes of efficient allocation of resources occur; on the contrary, state interference in the range of social activity is justified[13]. The role of the state, which can strengthen the clusterification of processes in health care, should therefore be seen in the context of social services, understood as all activities that deal with the social needs of citizens and which can be defined as different from the others in that they have a large portion of non-market character. They are provided primarily by the state but also by non-profit organizations, private businesses and professions, which are often subsidized by the state[14].

Within health care, therefore, due to the specificity and sensitivity of this particular type of social matter, on a slightly smaller scale one can speak of the development of the market formulas and building competitive advantage, and this is possible in the light of the far-reaching sphere of privatized health services in Poland. Still, building a network of cooperating entities, whether it is in the production of medical technology or simply the provision of health services, can be a useful tool for rationalizing operations, improving the efficiency of the health system in its local dimension and creating a more appropriate system response to the health needs of the local community.

Conclusion

1. The degree of direct participation in clusters and the scale of support provided by the local government in Poland are low, which means that the possibility of using innovative medical services in clusters emerging as an effective tool of local health policy is not practised in the Polish health-care system.

[12]Kotler P., Armstrong G., Saunders J., Wong V., *Marketing: podręcznik europejski [Marketing: the European handbook]*. Warsaw: PWE, 2002; Payne A. *Marketing usług [Marketing of services]*. Warsaw: PWE, 1996

[13]Holecki T., Syrkiewicz-Świtała M., *Rynek pracy w ochronie zdrowia [Medical Labour Market]*. Katowice: Wydawnictwo Śląskiej Akademii Medycznej, 2007

[14]Elfring T., *New evidence on the expansion of service employment in advanced economies*, Review of income and wealth 1989, 35, pp. 409-440

2. The reason for the limited form of cooperation with cluster initiatives is the general reluctance of local governments resulting from distrust of the formulation of the cluster and the lack of relevant knowledge among local officials. This is despite the suggestions flowing from the strategic European and national documents.
3. Contrary to the specifics of the health-care market and products offered in the market, local governments choose to get involved in the organization and support of cluster initiatives in health care and treat them exactly the same way as entities in other sectors of the economy are treated.
4. The occurrence of an identifiable key medical product in a given area slightly increases the tendency of local governments to pursue an active policy to support clusters. Thus, there are reasonable grounds for regarding the medical services as a potential tool to improve the competitiveness of the region.
5. Achieving the desired effect of improving the efficiency of the health-care system is, in fact, very similar in nature to that which clusters allow to achieve in the case of participation in the open market, but with the difference that the resulting benefit is not consumed by the market but by a public coordinator of processes occurring within the health system.

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Programming of modernization of the public space in a hospital taking into account Evidence-based Design in architectural designing

Abstract

The aim of this research is to prove that qualitative assessment of a hospital building should take into account the actual needs of patients as regards the space and functions of a hospital, and should not be a sum of potential expectations and ideas of its architecture.

Evidence-based design was created on the basis of a theory, which holds that architectural design of modern hospitals and the modernization of the existing buildings should be supported by reliable research and empirical evidence, and that the spatial and functional solutions adopted in the project have a significant impact on the efficacy of the therapeutic measures, and the comfort of patients, staff, and visitors.

This paper presents anexcerpt of a qualitative study conducted on the architectural space of the admission room in the St. Joseph Hospital in Poznan, which shows that the satisfaction of patients, with regard to the architectural solutions adopted in the hospital environment, is determined by a number of socio-demographic variables, such as gender, age, or admission waiting time.

The paper also analyzes the aspects of hospital design connected with the sociological and psychological role of architecture.

Hospital environment is presented herein not only from the patient's perspective, but also as a workplace, where suitable conditions have to be provided for the staff and the visitors.

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This study aims to analyze the key elements of hospital environment and their impact on patient behavior and the interrelations between all of the participants of the hospitalization process.

Introduction

"Architecture has its own realm. it has a special physical relationship with life. I do not think of it primarily as either a message or a symbol, but as an envelope and background for life which goes on in and around it, a sensitive container for the rhythm of footsteps on the floor, for the concentration of work, for the silence of sleep." Those are to words of Peter Zumthor[3], the winner of the 2009 Pritzker Prize [4]. What is then beauty in architecture and what are the functions of modern architecture? The mission of a physician is to treat patients, and of the role of an architect is to create environments, in which the diagnostic and therapeutic measures can be effectively applied.

Architecture is a form of our cultural adaptation to life in a natural and social environment. it is a culture of shaping the structure of spatial barriers and distances, which protects us from the adverse effects of the environment, compensates our biological deficits, and regulates the character and intensity of our relations with its other users. Spatial design flaws in functional and spatial solutions often pose adaptive requirements that are too high for the users, becoming a source of stress, and feelings of discomfort and vulnerability.[5] Architecture purposefully shapes human behavior, with the form of the building influencing the interrelations between its users. As noted by Czyński, human health is indivisible: somatic, psychic, social, and spiritual disturbances are all interrelated. Health care architecture is more anthropocentric than other types of archi-tectural design, as it follows closely the biological determinants of human nature[6].

[3]Peter Zumthor "Thinking Architecture" Birkhäuser2010

[4]The Pritzker Architecture Prize is considered to be the most prestigious award in architecture, and is often referred to as the "architecture Nobel prize". it was established in 1979 by an American financial entrepreneur Jay Pritzker and his wife Cindy, the owners of, among other things, the Hyatt hotels. The prize is awarded annually by the Hyatt Foundation to honor a living architect or architects whose built work demonstrates a combination of those qualities of talent, vision and commitment, which has produced consistent and significant contributions to humanity and the built environment through the art of architecture. Many of the procedures and the form of the Pritzker award are based on the Nobel Prize

[5]Czyński M. (2006). Architecture of the human behavior space. Selected questions of safety in built environment Szczecin: Published by Szczecin University of Technology 2006

[6]Ibid

We may assume that the relations between the patient and his or her environment can be manipulated in such a way as to promote well-being and healing.

Creating a suitable building space can have a calming effect and evoke feelings of safety and harmony; however, a space may also alienate its users, causing them stress and provoking anxiety, if not designed properly.

Thus, it becomes imperative to use design solutions that will positively influence the relations between patients, granting them privacy on one hand, and on the other allowing them to develop social contacts in the hospital environment.

Evidence-based design (EBD) of architectural objects such as hospitals, health centers, or doctor's practices was developed on the basis of a theory, which holds that the environment of health care objects and the architectural solutions adopted in them should be based on reliable scientific studies and empirical evidence.

The merits of this approach to architectural design were noticed in the second half of the 20th century, when architects started to implement its principles in designing children's hospitals. By designing spaces full of sunlight, plants and colors, they wanted to create conditions that would promote healing and diminish the psychological trauma of hospitalization. Their environments were created to bolster optimism and spark new interests in children, rather than to intimidate and estrange them with sterile hospital whiteness[7]. The foyer in the AshauHansaNickla orthopedic children's hospital constitutes a great example of that kind of approach: in a two-story hospital space, the architects have placed a climbing wall for children, which they may use with their doctor's consent and under the supervision of an instructor. Apart from a recreational and social function, this solution has also aesthetic value, serving as an abstract and original relief decorating the admission room.[8]

The blurring of the line between the aesthetics of health care architecture and recreational or residential buildings is causing a shift in social perception: hospitals, health centers, and nursing homes are becoming less isolated from the fabric of the city and break with the taboos typically

[7]Juraszynski J., Nitsch A., Porębowicz S., Radwański R. (1973).Healthcare building design Warszawa: Published by Arkady 1973

[8]Nickl H., Nickl- Weller Ch. Hospital Architecture (2007), Wirginia: Published byVerlagshaus Braun

surrounding them. More and more frequently, hospital architecture departs from stress-inducing forms that foster exclusion.

New types of cause-driven hospitals have been created, e.g. the hospital-cities such as the National University Hospital in Oslo, Norway.

It is the only transplant center in Norway, designed for 583 beds and 28 operating theaters.

The architects have created a hospital network in form a city, where different types of activities intermingle and coexist. This tremendous architectural project was divided into separate buildings to achieve more human scale. The horizontal dimension of the floor plan was limited by the shape of the plot and local topography. To remain true to the idea of creating a city, the architects used only natural materials, such as stone, wood, brick, and ceramics. The project has been divided into 4 zones: The Town, which is a public space with streets, public transport, and an entry zone; The City Block, which houses auditoriums, staff rooms, and libraries; The Workplace, in which the practices and laboratories are located; and the Home zone, which houses wards and patients' rooms[9].

This hospital conveys a message that design stimulates and assists medical treatment. it is also worth noting that this hospital is often deemed to be one of the best architectural objects of its kind, and has become a model and a trendsetter for health care architecture not only when it comes to its state of the art equipment, but also its modern design. Tony Monk, a famous British architect specializing in hospital design has commented on the patients staying at the hospital in Oslo: "People are happy to be there, to help themselves to get better." He also points out to the fact that hospital design positively influences the attitude of the staff, helping them identify with their workplace and improving their efficiency with visually attractive spaces.

The same also applies to hospital visitors. Hospitals attempt to provide opportunities for relatives to visit, as they have a positive influence on the well-being of patients and can relieve the staff of simple everyday duties such as washing or feeding. The unfriendly hospital space, complicated transport, unclear markings and signs, the smell of antiseptics, and the peculiar noise (not to mention the high risk of infection when the rooms are occupied by more than one patient) can confuse the visitors, cause them stress and, in consequence, make them less effective in helping the patients.

[9] Ibid

In the hospital environment, where most equipment requires regular maintenance or modernization, color plays a significant role.

Color, as the inherent property of any material and any environment, is connected not only with an aesthetic value of an object, but also with a functional value.

It has been found that lackluster, monochromatic interiors have a negative impact on the healing process and on staff morale.

It has also been experimentally confirmed that improving the visual quality of an interior through the use of color and lighting can influence the speed of the healing process, making the patient's return to health 10% faster[10].

Introducing colors into the hospital environment plays at least a double role: it influences the comfort of the users and their feeling of safety, but also it introduces a coherent visual identification system to the hospital. A coherent visual system improves the overall organization of the hospital, enhancing staff performance and making it easier for patients and visitors to find their way around the hospital.

This finds confirmation in earlier studies conducted by, inter alia, Hilary Dalke, who stresses the importance of conscious color design, especially for elderly patients, who need clear and straightforward visual markings. Furthermore,elderly patients need more time to read the visual information or visual code [11].

Hospitals are often vast, multi-story buildings, in which it is easy to get lost. This only increases the patients' level of stress, making it more difficult for the hospital staff to obtain their clinical history, or to examine and diagnose them. And when different colors or textures are used to identify a given functional area of the hospital, the users' spatial orientation is greatly enhanced.

The colors used in operating theaters and laboratories are chosen more restrictively, due to the technological processes in these rooms.

In public, social, representative and transport space, the colors are chosen in such a way as to evoke the feelings of relaxation, calmness, and harmony.

Color can also give the interior an individual touch, which positively influences patients' attitude towards hospitalization. Individual color

[10]Dalke H., Little J., Niemann E., Camgoz N., Setadman G., Hill S., Stott L. Colour and lighting in hospital design, Optics and Laser Technology 38 (2006) 243-365
[11]Ibid

solutions also positively influence the staff, integrating them and making it easier for them to identify with their workplace.

The choice of textures used for hospital surfaces and equipment is determined primarily by hygiene and health requirements. Nonetheless, the texture of walls, floors, and furniture plays a major role in how we perceive a given space. Thus, texture is often used to, for example, divert the patients' attention from their aliments or from the treatments they have to undergo.

A study by Sommer and Ross (1958) cited by Cherulnik shows a simple correlation between the way a social space of a geriatric hospital is furnished and patient behavior[12]. it was shown that furnishing living space with round tables encouraged people to talk more and to establish social relationships more frequently than when the TV rooms were simply filled with rows of seats[13].

Even the shape and color of furniture can have an impact on human psychology. Patients' mood can align with the atmosphere created by the interior design and furnishing. Environments perceived by the patients as "nice" or "ugly", in a simple way affect their feeling of comfort, and thus also the efficacy of their therapy.

It has been demonstrated that the subjective perception of environment quality can cause an increase in social interaction on the hospital ward, which in turn improves patients' mental health[14].

This is in line with a theory devised by Jan Gehl, according to which an increase in environment quality is directly connected with an increase in prosocial activities and prosocial behavior[15].

This article will present the results of a study conducted by the Division of Public Architecture and Housing of the Faculty of Architecture at the Poznan University of Technology. The study was primarily concerned with determining the patients' socio-demographic characteristics that could influence their level of satisfaction with a hospital environment. In this regard, satisfaction is understood as a feeling of well-being and a sense of security. The study further investigated the role of the socio-demographic characteristics in patients' perception of the hospital environment and their

[12]Cherulnik P.D. (1993r). Applications of Environment-Behavior Research: Case Studies and Analysis. Cambridge: Cambridge University Press

[13] Bell P.A. Greene Th.C. Fisher J.D Baum A. (2004). Psychologia środowiskowa. Gdańsk: Gdańsk Psychological Publishing House

[14]Ibid

[15] Gehl J. (2009). *Life between buildings. Using public space.* Kraków: Published by RAM

spatial needs. The results of the study conducted by the Faculty of Architecture at the Poznan University of Technology have established the relations between the socio-demographic characteristics of hospital patients and their spatial needs. Thus, the study was to become a basis for the evaluation of the planned modernization of the St. Joseph Hospital in Poznan. The aim of this article is demonstrate that patients' spatial needs should be acknowledged through design and administrative decisions alike, thus creating a spatial environment that effectively facilitates the healing process.

Methodology

In 2013-2014, in accordance with the principles of POE, we conducted a qualitative analysis in the admission room of the St. Joseph pediatric hospital in Poznan. The analysis was the first step of the extension and modernization project of the admission room located in the said hospital.

The methodology of the analysis was chosen primarily on the basis of the achievements of EBD in architectural projects of health care objects; in particular, on the report by R.S Urlich[16], which is a synthesis of over 600 scientific articles on the influence of architectural solutions on patients' feelings of comfort and safety, the diagnostic and therapeutic processes, and staff efficacy[17].

Furthermore, we conducted an analysis of relevant legal acts that may serve as guidelines for the architectural design process.

It is worth noting that the legal definition of health adopted in Polish regulations does not refer primarily to an absence of disease or disability. it is, first and foremost, a state of psycho-physical and psycho-social well-being.

The next parts of the study make use of the POE methods, which analyze the quality of a building after it is put into service. Thanks to the participation method, a building can be more effectively adjusted to the real needs of the users by giving them expert status.

[16] A professor of the Chalmers University of Technology in Switzerland and of the Aalborg University in Denmark. The most cited EBD scientist in the world with regard to health care architectural design

[17] Ulrich, R., Quan, X., Zimring, C., Joseph, A., &Choudhary, R. The role of the physical environment in the hospital of the 21st century: A once-in-a-lifetime opportunity [Electronic version]. Journal of Management Policy and Practice vol. 14(2) 2013 http://www.healthdesign.org/sites/default/files/Role%20Physical%20Environ%20in%20the%202 1st%20 Century%20Hospital_0.pdf, source: 10.04.2014r

A synthesis of a number of studies has shown that it is necessary to define the expectations and needs of patients with regard to the hospital environment when it still in the design stage.

Although the research on the influence of hospital design (admission room design) on patient well-being and on hospital organization is gaining popularity in Europe, it is still a fairly new topic in Poland, especially with regard to pediatric facilities.

The research methods used herein were developed on that basis of a study on users' view of hospital environment conducted by a group of researchers from the UK and published in the *Journal of Environmental Psychology*. The researchers used a questionnaire method, which allowed them to evaluate the influence of e.g. lighting, furnishing, and color schemes on the patients' view of the hospital space.

The results of their study show that users' satisfaction is determined by the quality of the environment, and that incorporating users' expectations into the design process can help in creating an environment that contributes to patient diagnosis and therapy. Furthermore, the study strongly supports the idea that the quality of a hospital environment is determined on very early design stages.

Our analysis also draws from a study conducted by a group of researchers from China and the United States (Chun-YenTsai, Wei-TsenLiao, Jui-HengLu, Mu-ChiaWang and Gerald-MarkBreen[18]). This group of researchers has for the first time evaluated the satisfaction level of the patients in the admission room, their needs, and their perception of the environment, taking the socio-demographic context into consideration, which is, as it turned out, an important factor in evaluating functional and spatial solutions. By analyzing 680 patients from 17 different hospital admission rooms they have demonstrated that:

1. Patients' personality traits influence how satisfied they are with their stay in the admission room;
2. Face-to-face surveys are more reliable;
3. Acknowledging patients' expectations when modernizing an admission room results in a higher level of patients' satisfaction.

[18] Chun-YenTsai, Wei-TsenLiao, Jui-HengLu, Mu-ChiaWang, Gerald-MarkBreen Hospital outpatient perceptions of the physical environment of waiting areas: the role of patient characteristics on atmospherics in one academic medical center, MC Health Services Research 2007, 7:198

After an analysis of the results of the above mentioned studies, we have prepared a survey, which incorporates architectural aspects that, according to the said studies, have an impact on patients' well-being. In consequence, we have determined the parameters of the admission room that have a direct impact on the quality of the environment, and thus on the satisfaction level, and can be applied in the design stage of the building.

The said parameters include: admission room accessibility (i.e. entrances, access routes, visual information system, parking space, etc.) privacy during admission (i.e. the ability to retain privacy when providing personal and health-related information), overall waiting room quality (i.e. the so called first impression), children's play area (i.e. safety, equipment, size), sanitary facilities (i.e. comfort, cleanliness, accessibility etc.), cloakrooms (i.e. is there a place to leave outerwear for the duration of the stay and secure it in such a way that it does not have be carried into doctor's practices or diagnostic rooms), color schemes (i.e. colors of walls, floors, furniture etc.), lighting (i.e. color, intensity, occurrences of glare etc.), furnishing (i.e. admission counter, chairs, etc.), art and design (elements – works of art, introduced to the environment e.g. posters, paintings, sculptures, graphics, etc.) as well as the immediate environment surrounding the hospital including: greeneries, lighting, street furniture e.g. benches, playgrounds etc.)

In this study, we made a distinction in environment quality evaluation by dividing the participants into two groups (two study models):

- participants who were staying in the admission room during the survey (patients' satisfaction evaluation – survey 01);
- participants who were not staying in the admission room during the survey (patients' expectations evaluation – survey 02).

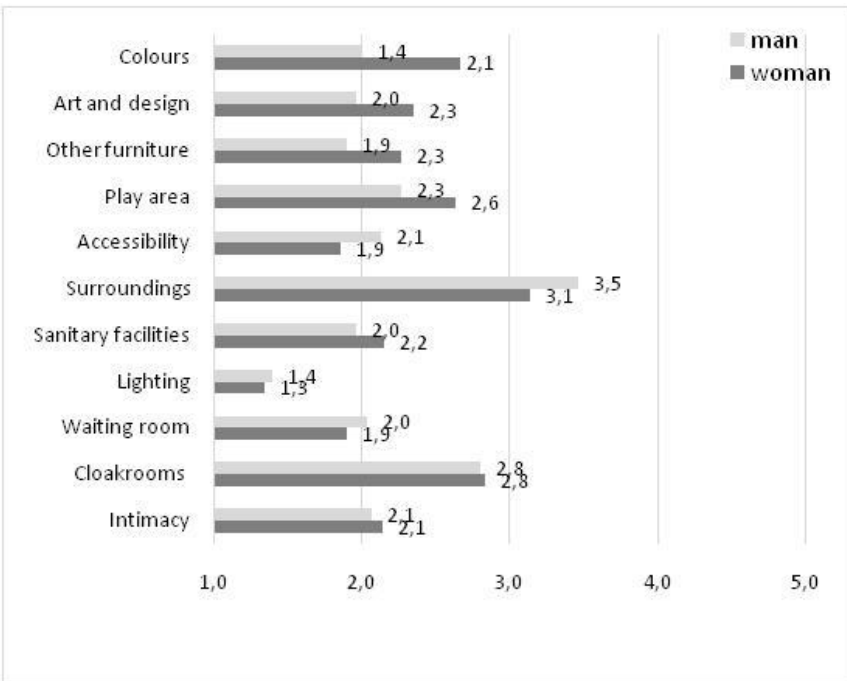
In introducing such a distinction, our aim was to compare the results of the two surveys and to evaluate how patients' satisfaction correlates with their expectations with regard the admission room environment. Thus, we intended to emphasize the fact that stress caused by e.g. staying at a hospital, the examination itself, or feeling unwell, may have an impact on the evaluation of functional and spatial solutions, and that the potential expectations about the architectural environment may be inadequate to patients' real needs and demands.

Analysis

The evaluation of participants' satisfaction (01) was conducted on the premises of the Admission Room on a group of 212 participants.

Sample size was determined on the basis of an average number of pediatric patients admitted by the Admission Room throughout a period of a year. In situ research was conducted in the end of 2013 and in the beginning of 2014.

To demonstrate a relationship between the evaluation of the quality of a hospital environment and participant's gender, a comparative analysis was conducted, comparing the answers of male and female participants. For that purpose, we used the Mann-Whitney U test. it is a nonparametric test that allows two independent groups to be compared (see Graph 1).



Graph 1 Patients' average evaluation of the solutions adopted in the Admission Room with a division by gender Author: A. Gawlak

The results of the comparative analysis indicate that the differences in the evaluation of most functional and spatial solutions made by female and male participants are statistically significant ($p<0.05$). Hence, the results confirm that participant's gender has an impact on his or her evaluation of spatial and functional solutions adopted in the Admission Room (see Graph 1).

As the next step, we conducted a comparative analysis between the admission waiting time and the evaluation of the functional and spatial solutions adopted in the Admission Room.

For this purpose, we used the Kruskal-Wallis test by ranks, which is an extension of the Mann-Whitney U test for more than two groups. it is used to verify the hypothesis that the differences between the medians of the analyzed variables are negligible in a number (k>=2) of groups (under the assumption that the variable distribution is comparable for all groups) (see Tab.1).

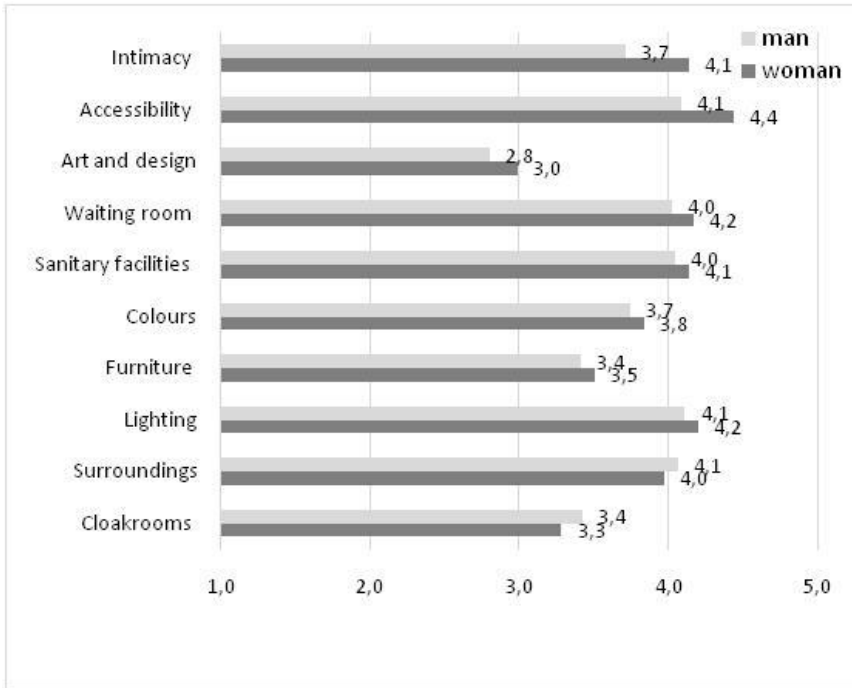
Tab. 1 Quality evaluation of the solutions adopted in the Admission Room and gender. Average score. Comparison between male and female participants. Author: A. Gawlak

Gender	woman	man	p-value
Intimacy	2,1	2,1	0,9705
Cloakrooms	2,8	2,8	0,8387
Waiting room	1,9	2,0	0,6360
Lighting	1,3	1,4	0,4783
Sanitary Facilities	2,2	2,0	0,2278
Surroundings	3,1	3,5	0,1995
Accessibility	1,9	2,1	0,0642
Play area	2,6	2,3	**0,0431**
Other furniture	2,3	1,9	**0,0258**
Art and design	2,3	2,0	**0,0180**
Colours	2,1	1,4	**0,0003**

The differences in the evaluations were statistically significant. Thus, we can assume that the admission waiting time has an impact on the evaluation of spatial and functional solutions used in the Admission Room.

The survey of patients' expectations (02) was conducted in a group of randomly chosen participants who, at the moment of the survey, were not patients of the hospital Admission Room. Sample size of the 02 survey was matched to the sample size of the 01 survey.

The analysis was conducted on a total number of 203 participants; similarly to survey 01, the participants were asked to evaluate the functional and spatial solutions, but in this case, that could be adopted in a hypothetical admission room. They were evaluating only how the functional and spatial features would potentially influence their feelings of satisfaction and safety, on a scale from 1 to 5, as in survey 01.



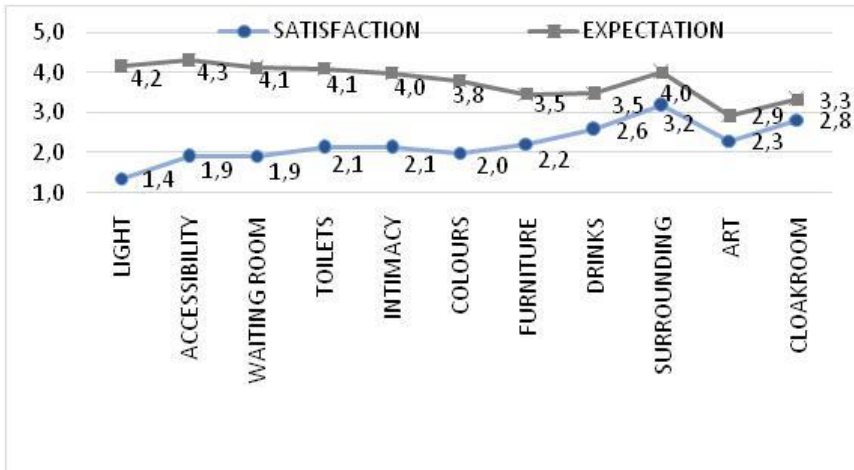
Graph2. Quality evaluation of solutions adopted in the Admission Room and gender. Average score. Comparison between male and female participants. Author: A. Gawlak

To demonstrate a relationship between the evaluation of the quality of functional solutions and participant's gender, a comparative analysis was conducted, comparing the answers of male and female participants. For that purpose, we also used the Mann-Whitney U test, the results of which show that participant's gender has little impact on his or her evaluation of the functional and spatial solutions if he or she is not the user of the admission room at the moment of the survey (i.e. a potential hospital patient) (see Graph 2).

The aim of the above analysis was to compare the results of the two surveys and to evaluate how patients' satisfaction correlates with their expectations with regard to the admission room environment.

The comparative analysis of the two study models (survey 01 and survey 02) aims to demonstrate that the satisfaction of Admission Room patients is determined on many levels by a number of variables, such as gender or age, and that the status of the participants, i.e. whether they are evaluating the object "on site" or only their mental representation of it, is a crucial factor for qualitative studies of health care objects. First, we compared the

evaluation of the chosen parameters of the Admission Room using the Mann-Whitney U test.



Graph 3. Quality evaluation of solutions adopted in the Admission Room. A comparison of satisfaction with expectations. Author: A. Gawlak

The evaluation of the environment (the significance of its parameters) made by the potential patients is in every case proportionally higher than the evaluation made by the Admission Room patients.

The results of the analysis show clear differences in the evaluation of functional and spatial solutions between the participants of the two surveys. The differences are statistically significant ($p<0.0001$[19]) and apply to all analyzed functional and spatial aspects of the Admission Room (see Graph 3).

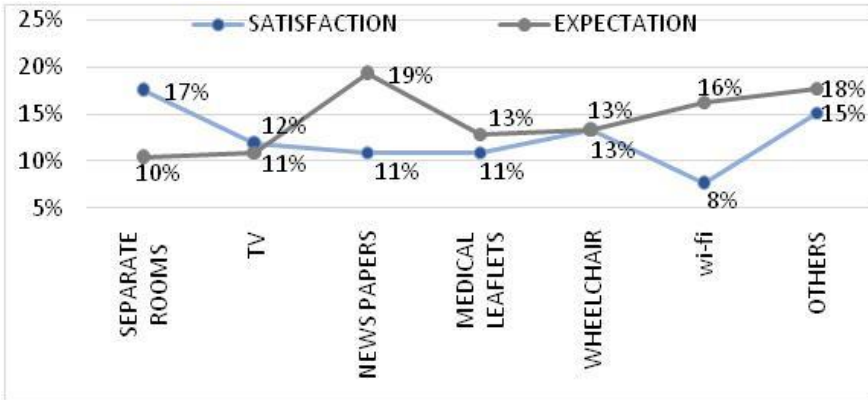
The other comparison refers to the suggestions made by the participants regarding Admission Room improvements.

By analogy, the answers of participants staying in the Admission Room were compared with the answers of the participants who were only imagining their stay in a hypothetical admission room.

In the analysis, we used the so called difference in proportions test.

The results reveal statistically significant differences ($p<0.05$) in evaluation of the impact of the improvements on patient comfort, satisfaction, and feeling of safety that were correlated with the place of the survey (see Graph 4).

[19]p-value is used in statistics to indicate the threshold value of the significance level



Graph 4. A comparison of the improvements suggested by patients staying in the Admission Room and potential patients. Author: A. Gawlak

We found significant differences in the perception of the hospital environment and in its quality evaluation between participants staying in the Admission Room during the survey and participants who were only potential patients. Therefore, we verified patients' expectations with regard to their real experiences and real perception of the Admission Room environment and their spatial needs.

Based on the results of our analysis, we concluded that:

1. The evaluation of functional and spatial solutions used in the Admission Room is significantly influenced by:

- participant's (patient's) gender;
- patient's admission waiting time;
- patient's examination waiting time;

2. The evaluation of functional and spatial solutions used in the Admission Room is not influenced by:

- patient's age;
- the time of day when the patient was staying in the admission room.

3. The expectations of potential patients with regard to hospital environment are proportionally higher than quality evaluation of patients staying at the hospital.

4. There are significant differences between the spatial expectations of patients staying at the hospital (real spatial needs) and of potential patients (mental representations of spatial needs).

The results of the surveys allowed for further analysis of patients' expectations with regard to hospital environment and their real interpretation of the architectural solutions.

In the analysis presented herein, evaluating the satisfaction levels of the patients of a pediatric Admission Room, the expectations of its potential patients, and the factors determining their comfort and feeling of safety, as well as the nature of spatial requirements, we referred to such architectural aspects of the Admission Rom as: the building's surroundings, visual information system, patients' comfort during admission, color schemes, furnishings, lighting, sanitary facilities, and accessibility to beverages etc. The functional and spatial demands of patients (and potential patients) were verified with respect to their gender and age, the time of day, and admission and examination waiting time.

In principle, our conclusion supports the notion that:"The architecture of an Admission Room in a pediatric hospital influences the comfort and the well-being of patients, in the context of socio-demographic factors, and other factors such as: patient's gender and age, examination and admission waiting time, and first and foremost, the place where the qualitative analysis was conducted".

Summary

There were presented the results, with the use of e.g. statistical analyses, including among other comparative analyses of both research models (indicated above). On these grounds, as well as based on the thorough analysis of literature it has been proven that the functional and spatial solutions applied in admission rooms have significant influence on well-being, safety and satisfaction of patients. it has also been proven that patients' satisfaction depending on the architectural solution applied within a hospital is determined by such variables as: gender, age, time of admission to the hospital, waiting time for registration or waiting time for examination by a doctor. Moreover, there have been indicated significant differences in perception of hospital space and in qualitative assessment between the examined persons present in the admission room during the probe research and examined persons, being potential patients of the hospital. With the same there were verified patients' expectations and their actual experiences and actual reception of the hospital space of the admission room. Conclusions indicate the possibility of implementation of the research and, first of all, the necessity of their continuation in broader

context, i.e. taking into account other factors, including the "non-architectural" ones, having influence on patients' satisfaction from their stay in the hospital. Comprehensive qualitative research of architectural space taking into account, e.g. acoustic quality of the space, reputation of a given hospital or medical staff, shall allow objective diagnosis of the space through the assessment of the satisfaction of its users and in the consequence proper execution of designing works during rehabilitation, reconstruction, repair or construction of a completely new hospital.

The results of our analysis were implemented at the design stage of the Admission Room renovation, courtyard modernization, and oxygen room renovation in the St. Joseph hospital in Poznan.

The project is currently ongoing. In the first stage of the project, the oxygen room was renovated.

Additionally, this justifies the need for such studies, lending support to their practical nature and meeting the objectives of Evidence-Based Design in architectural projects:

"Physical environment and architectural solutions in health care objects should be supported by reliable research and empirical evidence"[20].

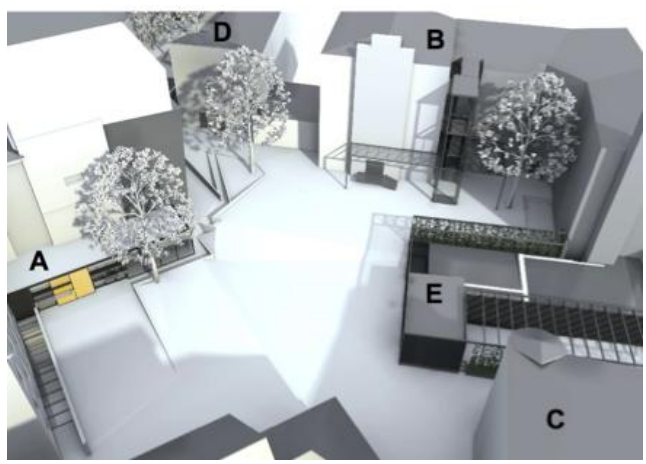


Fig. 1 Extension and renovation project of the St. Joseph Hospital in Poznan. View of the inner courtyard. A – admission room B,C,D – existing hospital buildings, E – oxygen room

[20] Ulrich, R., Quan, X., Zimring, C., Joseph, A., &Choudhary, R. The role of the physical environment in the hospital of the 21st century: A once-in-a-lifetime opportunity [Electronic version]. Journal of Management Policy and Practice vol. 14(2) 2013 http://www.healthdesign.org/sites/default/files/Role%20Physical%20Environ% 20in%20the%2021st%20 Century%20Hospital_0.pdf, source: 10.04.2014r

Fig. 2, 3. Extension and renovation project of the St. Joseph Hospital in Poznan. Admission room and oxygen room projects and an actual view of the oxygen room, currently under development

Fig. 4. Extension and renovation project of the St. Joseph Hospital in Poznan. Admission room and oxygen room projects and an actual view of the oxygen room, currently under development.

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The EU Directive on the application of patients' rights in cross-border healthcare and its impact on provision of healthcare services – experience learned from a survey of selected Polish providers

Abstract

The EU Directive on the application of patients' rights in cross-border healthcare brings many changes in the organization and financing of health care. The aim of this paper is to assess whether providers in Poland are prepared to function within the single European market and what may be the impact on the functioning of providers in the domestic market. We found that only few providers plan to carry out treatments for patients from other EU countries or declares endeavours to acquire foreign patients. Respondents usualy did not expect any change in the number of foreign patients in their institution, although they expect an increased number of foreign patients in the Polish health care system. Providers seemed to be aware of the danger of loss of patients, seing this primarily as a problem for public providers. The awareness of the possible consequences of the implementation of the Directive seems to be insufficient. The new circumstances may be a source of danger to Polish providers facing an outflow of patients, not compensated by a movement in the opposite direction.

Background

Ensuring access to health services is currently one of the key challenges for EU Member States, as well as for the Community as a whole[2]. The increasing demand for healthcare with simultaneous resource constraints and structures makes patients more willing to seek help outside their countries of origin. These patients are encouraged by the fact that this is clearly due to the basic assumptions and principles of European integration, which include the free movement of citizens, and the desire

[1] Department of Health Policy, School of Public Health, Medical University of Silesia in Katowice, ul. Piekarska 18, 41-902 Bytom, Poland, promaniuk@sum.edu.p
[2]Health at Glance: Europe 20014, OECD Publishing. Retrieved from: http://dx.doi.org/10.1787/health_glance_eur-2014-en. [12.10.2015]

to create a common area of trade and exchange of services. The health sector was not excluded from these processes; however, at the moment, healthcare services for non-resident people from other EU countries do not represent an important part of the services provided by medical facilities in any of the Member States. In fact, it can be assumed that the primary beneficiaries of the current mobility of patients are actors in the field of medical tourism (both providers and agencies organizing the above form of tourism)[3]. This is not in itself undesirable; however, it would be difficult to consider medical tourism in its classical form as significantly increasing access to treatment services. This is evidenced by both the overview of this area of services (mainly related to plastic surgery and dentistry) and the full payment for services[4].

Hence, the European Commission's efforts to expand freedom of access to health services in the area of the community comes as no surprise. The legal bases for this are regulations related to the functioning of the internal market, as well as the provisions of the Treaty on the Functioning of the EU in relation to health[5]. Article 168 of the Treaty, thoughy mainly concerned with public health needs in the European Union, also has a significant impact on the operation of the practice of cross-border health care due to the emphasis on co-ordination between Member States. Creating mechanisms for cross-border medical services is also a consequence of the provisions of the European Court of Justice rulings on Kohl & Decker[6] and Smits/Peerboom[7]. These ECJ verdicts lead to the conclusion that as a place of providing services to patients (consumers), the health sector is not

[3]Lunt N., Smith R., Exworthy M., Green S.T., Horsfall D., Mannion R., *Medical Tourism: Treatments, Markets and Health System Implications: A scoping review.* Retrieved from: http://www.oecd.org/els/health-systems/48723982.pdf [12.10.2015]

[4]Lunt N., Smith R., Exworthy M., Green S.T., Horsfall D., Mannion R., op. cit.; Hopkins L., Labonté R., Runnels V., Packer C. *Medical tourism today: what is the state of existing knowledge?* J Public Health Policy. 2010, 31(2), pp. 185-98

[5]Consolidated versions of the Treaty on European Union and the Treaty on the Functioning of the European Union OJ C 326, 26.10.2012, pp. 1-390; Piotrowska D.M., Sowa P., Pędziński B., Szpak A., Cross-border movement of patients – process of implementation of the Directive on the application of patients' rights in cross-border healthcare in Poland, Hygeia Public Health 2014, 49(1). pp. 6-11

[6]Palm W., Nickless J., Lewalle H., Coheur A., Implications of Recent Jurisprudence on the Coordination of Health Care Protection Systems Summary Report produced for the European Commission Directorate General for Employment and Social Affairs. Brussels: AIM 2000; Boyd N. Impact of the ECJ judgements on national healthcare delivery – The case of the UK, Eurohealth 7(4), 2001, p. 6

[7] European Parliament. The Impact of the European Court of Justice - Case Law on National Systems for Cross-Border Health Service Provision, IP/A/ALL/FWC/2006-105/LOT 3/C1/SC1 2007

excluded from the regulatory principles concerning the Community market but that health services cannot be treated on exactly the same basis as the commercial services markets.

The Directive 2011/24/EU of the European Parliament and of the Council of 9 March 2011 on the application of patients' rights in cross-border healthcare represents a new arrangement to the existing EU legal order. it provides rules for facilitating access to safe and high-quality cross-border healthcare and promotes cooperation on healthcare between member states, in full respect of national competencies in organizing and delivering healthcare[8].

The general aim of regulation was to emphasize the right of EU citizens to treatment in other Member States, with refunds for the cost of service coming from public funds and/or private health insurance. Three groups of services were excluded from this process:

a) services in the area of long-term care, the aim of which is to support people in need of assistance in carrying out routine activities of daily living;

b) the allocation of organs for transplantation and access to these organs;

c) public vaccination programs against infectious diseases[9].

At the same time, the Directive confirmed the primacy of Member States in the organization of their health policy by leaving the detailed rules on national health systems. The adoption of such a solution fully corresponds with one of the fundamental principles of the European Community, that of subsidiarity.

The Directive's introduction encountered many obstacles in Poland. Despite an initial assumptios that the Directive would be implemented at the end of 2013, the regulating Act only came into force on 14 November 2014[10].

[8]Directive 2011/24/Eu Of The European Parliament And Of The Council of 9 March 2011 on the application of patients' rights in cross-border healthcare. Official Journal of the European Union (OJ). 2011

[9]Directive 2011/24/Eu Of The European Parliament And Of The Council of 9 March 2011 on the application of patients' rights in cross-border healthcare. Official Journal of the European Union (OJ). 2011

[10]http://www.rynekzdrowia.pl/Polityka-zdrowotna/Implementacja-dyrektywy-ws-transgranicznej-opieki-zdrowotnej-szanse-i-zagrozenia,128313,14.html [12.10.2015];
Ustawa z dnia 10 października 2014 r. o zmianie ustawy o świadczeniach opieki zdrowotnej finansowanych ze środków publicznych oraz niektórych innych ustaw Dz.U. 2014 nr 0 poz. 1491

The Directive brings many changes both in the organization and financing of health care. it may also change market conditions for the service providers, forcing them to confront competition from other Member States but also providing an opportunity for national providers to enter new markets.

Aim of the study

This study had two main aims. The first was to assess the extent to which Polish providers are prepared to function within the single European market. The second was to conduct a survey of healthcare facilities in relation to the impact of the Directive 2011/24/EU of the European Parliament and of the Council of 9 March 2011 on the application of patients' rights in cross-border healthcare (hereafter referred to as the Directive) on the functioning of providers in the domestic market.

Materials and Method

The study was conducted between June and September 2014 on a random sample of health care institutions, in 5 of the 16 Polish voivodeships (Śląskie, Małopolskie, Lubuskie, Lubelskie and Łódzkie). The selection of voivodeships covered by the survey was deliberate and took into account both the voivodeships' located on the border (Śląskie, Małopolskie, and Lubuskie) and those that do not share a border with other EU countries. A test sample was designed with respect to the proportional representation of healthcare providers from each voivideship.

The healthcare providers were identified on the basis of data contained in the Registry of Healthcare Providers available on the website of the Centre for Information Systems in Health Care[11]. The study included all provider units in the register as of 8 May 2014 that offered a treatment regimen consistent with HC.1 to HC.3 inclusive. More than 3.5 thousand units of the voivideships met the above criteria. A group of 1051 units were invited to participate in the study. The sample size was dictated by the low percentage of online questionnaires that were filled out. Finally, the study involved 148 individuals, which is a response rate was 14.08%. A majority (58.11%) of the healthcare providers participating in the study were non-public. Analysing the sample by type of service reveals that the largest group of institutions were primary care providers (35.11% of the respondents). Detailed information on composition of the sample is presented in Table 1.

[11] www.csioz.gov.pl

Table 1. Sample characteristics by type of benefits

Services	Ownership form					
	Public providers		Non-public providers		Total	
Outpatient specialist care	10	24,39%	31	75,61%	41	100%
Hospital treatment	15	68,18%	7	31,82%	22	100%
Terminal/long-term care	6	60,00%	4	40,00%	10	100%
Primary health care	23	43,40%	30	56,60%	53	100%
Rehabilitation	6	35,29%	11	64,71%	17	100%
Others	2	40,00%	3	60,00%	5	100%

The study used an online questionnaire (CAWI), which included 37 questions divided into three blocks. The first block assessed the preparation of health care institutions to perform services for patients from other countries. The second block assessed the impact of the Directive on the provider's own facility, as well as the health care system in general. The last block of questions was the imprint. To compare results in different subgroups, we applied Pearson's chi-square test. This paper presents the results of a preliminary analysis of the information obtained.

Results

This study revealed that only a few of the providers indicated that they planned to carry out treatments for patients from other EU countries. Only 7% of the total number of healthcare units participating in the study carried out such services. An even smaller percentage of respondents (4.5%) declared endeavours to acquire patients from other EU Member States. Interestingly, a higher proportion of individuals intended to take steps towards obtaining foreign patients in regions that are not bordered with other EU countries (8.5% vs. 2.6% in the border regions; p=0.0122). With respect to the overall low number of affirmative statements, the survey showed that non-public providers were more willing to seek foreign patients (5.8%). The rate was only 1.6% for public healthcare units, but this difference was not statistically significant (p=0.0976). The low interest in attracting foreign patients was accompanied by an almost complete cessation in the area of information and promotion of activities outside Poland. Of all of the respondents (n=148), only 3 were interested in this type of activity. All of those units used online advertising for this purpose. Providers also declared no interest in conducting information and advertising campaigns in the future. Also in this case, only three providers planned promotional campaigns in other EU countries in the future.

The lack of interest in acquiring foreign patients can also be seen in response to a question about the translation of the department's website

into English. Of all of the providers surveyed, only 4.7% (n=7) declared to have such a website. In this group, there was only one public provider.

One of the factors constituting preparation for the implementation of services for patients from abroad is undoubtedly knowledge of English and other official languages of the EU. For this reason, the respondents were asked to assess how much of the facility staff is fluent in English. This issue was analysed in several aspects. First, the knowledge of English possessed by the medical team in the entire facility was determined. In addition, the survey investigated the provision of adequately qualified staff in positions responsible for the registration of patients, marketing activities and relations with contractors.

Most respondents declared that approximately half or less than half of the staff spoke English fluently (both cases were reported by nearly 30% of responses). A quarter of respondents stated that only a few persons spoke English fluently, and 15.5% reported that more than half of the medical staff was proficient. it was noted that the non-public providers with only a few employees fluent in English were twice as high as public providers (30.2% compared to 16.3% in the case of public institutions). This can be explained by a lower number of employees (42 of the 86 private providers employed fewer than 10 employees). Nonetheless, the chi-square test showed no correlation between the level of language skills and the form of ownership of health care facilities (p=0.229).

Fewer than 11.5% of the declared facilities employed at least one person in registration that spoke fluent English. Significant differences in the declarations of public and private institutions were not observed in this respect. The results reported in the case of employees who were fluent in English in positions responsible for marketing and liaison with contractors were even lower (8.8% and 6.8%, respectively).

Less than half of the respondents (46.6%) had knowledge of other official EU languages. German proved to be by far the most popular (59.4% of respondents), while slightly more than one-quarter of the above respondents reported having a team of people who spoke fluent French. Of the remaining identified languages, only Italian was declared by more than 10% of the respondents (11.6%).

Respondents were also asked to declare whether they worked with companies involved in medical tourism (Polish and foreign), public and private payers, and providers from other EU countries. There was only marginal activity in each of these areas. Three respondents confirmed that

they worked with companies involved in medical tourism. Only one provider demonstrated cooperation in other areas.

The following part of the study focuses primarily on issues related to the implementation and impact of the Directive on cross border healthcare. Study participants were requested to declare whether they were familiar with the content of the Directive. Of all respondents, more than half (52.7%) answered that question affirmatively. at the same time, fewer than 21% (n=31) of respondents said that they acknowledged reports and analysis on the subject. There was no significant correlation between the location of the providers and the form of ownership of the facility (p=0.28 and p=0.66, respectively). None of the respondents reported performing their own economic or legal analysis regarding the Directive.

One of the key objectives of the study was to verify the opinions of healthcare providers on the impact of the EU Directive. When asked about the impact of the Directive on the number of foreign patients in their own facility, respondents most frequently affirmed that this number will remain unchanged (86.4%). Other respondents assumed an increase in the number of patients. Of the 20 respondents declaring an increase in the number of patients, as many as 16 came from the regions bordering with other EU countries, but there was no statistical significance when compared with non-border regions (p=0.6797). There was also no correlation with regard to the form of ownership of the healthcare facilities (p=0.077).

At the same time, respondents recognized quite clearly that the Directive will lead to an increase in the number of foreign patients in the Polish health care system. A similar view was expressed by 58% of respondents. Only 1.3% of respondents felt that the Directive will reduce the number of patients from abroad. Comparison of indications in the border regions and other voivodeships paradoxically showed that the latter had a stronger conviction about an increased inflow of foreign patients (68% of respondents compared with 55% in the border regions).

At the same time health care facilities seemed to be aware of the danger of loss of patients. Over 35% of the units surveyed declared that, in their opinion, the introduction of the Directive will result in the outflow of patients from Poland. Again, a slightly higher percentage of responses suggesting the outflow of patients would appear in regions not adjacent to other EU countries (40% compared to less than 34% in the case of border regions; p=0.4902).

Considering this issue, taking into account the specific nature of the activities carried out by the provider, some disparities were observed, but

their evaluation is difficult because of the diverse number of different groups of health care providers. A detailed summary is included in Table 2.

Table 2. Provider's opinion on the effect of Directive 2011/24/EU on the number of domestic patients

Services	Public providers			Non-public providers			Total		
	n	Remain unchanged (%)	Decreases (%)	n	Remain unchanged (%)	Decreases (%)	n	Remain unchanged (%)	Decreases (%)
Outpatient specialist care	10	60,00%	40,00%	31	74,19%	25,81%	41	70,73%	29,27%
Hospital treatment	15	73,33%	26,67%	7	71,43%	28,57%	22	72,73%	27,27%
Terminal/long-term care	6	66,67%	33,33%	4	100,00%	0,00%	10	80,00%	20,00%
Primary health care	23	60,87%	39,13%	30	63,33%	36,67%	53	62,26%	37,74%
Rehabilitation	6	66,67%	33,33%	11	45,45%	54,55%	17	52,94%	47,06%
Others	2	0,00%	100,00%	3	33,33%	66,67%	5	20,00%	80,00%

Respondents appear to see the outflow of patients primarily as a problem for public providers (53.8%). The remainder of the group, which saw this type of threat to the Polish health care units, considered this to be a risk for both public and private institutions, with similar answers from both public and non-public units (p=0.7303). Germany (61.5%) and the Czech Republic (36.5%) were most frequently cited as the probable destination countries for obtaining healthcare services.

Next, respondents were asked about the impact of the movements on individual segments of health care. To this end, the respondents assessed the benefits for the individual segments on a scale of 1 to 6, where 6 was the most beneficial. The opinions of the respondents indicated that they expected relatively little benefit in the PHC (average score 1.81), which is understandable given the characteristics of this sector. at the same time, health resorts should benefit most from the influx of patients from abroad (average score 3.90). Relatively high scores were observed for rehabilitation services and long-term care (3.67 and 3.55, respectively).

Respondents made a similar assessment regarding the context of benefits for the health care systems of other EU countries due to the inflow of Polish patients. As before, the smallest benefits are expected in relation to the POS system (average score 2.17). Potentially the most significant benefits are expected in hospital treatment and outpatient specialist care (3.96 and 3.73, respectively). Analysis of the marks given by the respondents in the evaluation of the benefits for domestic and foreign health care system performed using Pearson's test showed no significant correlation.

Survey participants were also asked to identify factors determining decisions about treatment abroad (in the case of Polish patients) or for treatment in Poland (in the case of nationals of other EU Member States). In the first case, respondents most frequently cited the low availability of specialist services (83%). The cost of treatment in Poland was also raised (12.8%). In the case of the treatment of foreigners in Poland, the key role was played by the lower cost of treatment (75.7%). Quality of service and specialization of facilities were identified as main reasons by 19.6% and 4.7%, respectively.

Discussion

At present, as the available data are insufficient and often partial, the issue of cross-border health care demands further investigation. All we currently know is that the European Commission estimates that 1% of public healthcare budgets in EU Member States is spent on cross-border healthcare annually, which translates to 10 billion euros per year[12]. An overview of papers published on this issue reveals a number of case studies referring to the legal aspects of the implementation of the Directive in Member States[13]. Apparently, the point of view of healthcare providers was rarely ever taken into account. For this reason, the discussion is largely based on studies relating to the patient experience.

This study clearly showed that a relatively small share of services in healthcare institutions is devoted to patients from other EU countries. The specified level (7.4%) of institutions carrying out the above-mentioned services corresponds to data from the Eurobarometer of 2007. This survey was conducted at the request of the Health and Consumer Protection Directorate-General (DG SANCO) in which approximately 4% of EU citizens declared that they happen to use the healthcare services in other EU countries[14]. at the same time, this study seems to clearly confirm the readiness of citizens of EU Member States to take treatment abroad.

[12] http://europa.eu/rapid/press-release_MEMO-08-473_en.htm?locale=en. [12.10.2015]

[13] Vidalis T., Kyriakaki I. Cross-border healthcare: Directive 2011/24 and the Greek law Eur J Health Law. 2014 Mar;21(1):33-45; Bongers L.M., Townend D.M., *The implementation of the Directive on the Application of Patients' Rights in Cross-border Healthcare in the Netherlands,* Eur J Health Law 2014, 21(1), pp. 65-78; Kattelus M. *Implementation of the Directive on the Application on Patient's Rights in Cross-border Healthcare (2011/24/EU) in Finland*. Eur J Health Law. 2014, 21(1), pp. 23-32; Sheppard M.K. *Treatments of low-priority and the Patient Mobility Directive 2011,* an end to legal uncertainty for the English NHS? Eur J Health Law. 2013, 20(3), pp. 295-314

[14] European Commission. *Cross-border health services in the EU Analytical report*. Retrieved from: http://ec.europa.eu/public_opinion/flash/fl_210_en.pdf [12.10.2015]

The percentage of people declaring their willingness to travel abroad to get treatment was 53% in the EU and 57% in the case of Poland[15]. it therefore suggests that the implementation of the provisions allowing patients to obtain reimbursement for services obtained abroad may result in a significant increase in the movement of patients and that their outflow from Poland may be relatively larger than the EU average. This stands in line with the predictions of Polish providers who, as our study shows, do expect increased inter-country flows of patients but is inconsistent with the expectation of a greater inflow of foreign patients to Poland rather than outflow of Polish patients abroad. Moreover, our study showed that Polish providers do not consider the patients' flows to be an opportunity for their own facility. This may result from the assumption that the main mechanism, which could persuade foreigners to take treatment in Poland, is the lower cost of services, as declared by more than 3/4 of the respondents. at the same time, the provisions of the Directive undermined the financial factor by providing reimbursement mechanisms for cross-border healthcare, which makes the waiting time or other difficulties in obtaining services in the home country the basic premise for going abroad for treatment. This is confirmed both by the results of the Eurobarometer survey, as well as documents summarising a public consultation about implementation of the Directive in the UK[16]. In such conditions, the quality and accessibility of care becomes the main subject of competition between providers on the open European market, which, in turn, may raise concerns among Polish providers that they will not be able to meet the market requirements in this area.

According to our study, the low availability of services in Poland is perceived as the most important reason for potential outflow of patients from Poland, which is in line with previous studies in this area. As mentioned earlier, one of the strongest motivating factors for seeking treatment abroad is the lack of treatment options in the country[17]. Meanwhile, the waiting period for some services is highly extended in Poland, so patients' deprivation of those services appears to be a legitimate concern. The SCC (NIK) control carried out in 2010 showed that the average waiting time for cataract treatment in Poland was approximately 1.5 years[18]. For comparison

[15]Ibidem

[16]Ibidem; https://www.gov.uk/government/consultations/eu-directive-on-patients-rights-to-healthcare-in-other-european-countries [12.10.2015].

[17]Lunt N., Mannion R., Patient mobility in the global marketplace: a multidisciplinary perspective. Int J Health Policy Manag 2014, 2, pp. 155-157

[18]http://www.nik.gov.pl/plik/id,1980,vp,2416.pdf [12.10.2015]

with Viberg et al., studies show that the waiting time for a similar treatment in the UK was only 18 days, and the longest wait time recorded in a group of 23 countries was 119 days (in Denmark)[19]. Data provided by the Watch Health Care Foundation show that the average time for providing guaranteed services in Poland in 2014 amounted to approximately 2.5-2.7 months[20]. The effects of limited access to services, in combination with the introduction of the Directive's provisions in the Polish healthcare system, may result in a growing number of patients choosing treatment abroad. Within a few days of the introduction of treatment options in other EU countries, the NFZ reported an immediate increase in the number of patients applying for reimbursement for treatment abroad, with all new cases related to cataract surgery. The growing interest of Polish patients in obtaining cross-border healthcare was confirmed by healthcare providers from the Czech Republic[21].

Conclusions and recommendations

Our study shows that the vast majority of examined providers, regardless of treatment sector, are not prepared to operate on an open European health services market. Despite the rather large potential lying in this area, as evidenced by previous studies, health care institutions included in the study largely do not take any action to encourage cross-border patients to use their services – even in the most elementary way, such as the preparation of an English version of their website. Moreover, awareness of the possible consequences of the implementation of the Directive for cross-border treatment seems to be insufficient. Although providers see the possibility of a global outflow of patients from the system, they perceive it primarily as a problem affecting other institutions, not their own.

Although a small study sample raises the danger of unrepresentativeness of our results for the whole Poland, in light of the data obtained, there are some serious needs identified for public authorities' intervention. The Directive used to be widely recognized as a potential threat, primarily for the public payer responsible for reimbursement of the cost of services provided outside the country. However, our results note that the new

[19]Viberg N., Forsberg B. C., Borowitz M., Molin R. International comparisons of waiting times in health care-limitations and prospects. Health Policy 2013, 112(1-2), pp. 53-61

[20]Barometr Fundacji Watch Health Care nr 8/2/2014. Retrieved from: http://www.korektorzdrowia.pl/wp-content/uploads/raport_barometr_8.pdf [12.10.2015]

[21]NFZ sam się wkopał: szturm polskich pacjentów na Czechy rozpoczęty (EN: NHF dug himself: assault of Polish patients on Czech Rep. has started). Retrieved from: http://www.termedia.pl/NFZ-sam-sie-wkopal-szturm-polskich-pacjentow-na-Czechy-rozpoczety,15272.html [12.10.2015]

circumstances may also be a source of serious danger to Polish providers facing an outflow of patients, who may not necessarily be compensated by a similar movement in the opposite direction. In light of the above, it appears advisable to encourage health providers to engage more intensively in the acquisition of cross-border patients. A supportive tool in this direction could be regional platforms for exchanging experiences and perhaps information systems coordinated at the regional level that are addressed to foreign patients about the availability of medical services in a particular region.

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The use of tax base estimation methods for income tax purposes in the health institutions

Summary

The defining attribute of a free market economy is competition and one of the factors that clearly determine the functioning of enterprises is the amount of taxes they must pay. An important component of tax systems is income tax, but instead of paying income taxation some taxpayers choose to make illicit attempts to reduce their tax liabilities. Such activity can be observed also in health institutions. In order to protect the interests of the State Treasury and to ensure fair competition in the economy, measures must be available to prevent the occurrence of such attempts. Governments can reduce the scale of the grey economy by means of a variety of instruments. Legislation in both developed countries (such as Germany) and transition countries (e.g. Poland) allows tax authorities to make their own estimates of a taxpayer's taxable incomes. The provisions point out different methods of estimating of the tax base. The aim of the article is to evaluate the necessity of elaboration special methods of income estimation in case of tax fraud in health institutions.

Introduction

The defining attribute of a free market economy is competition. Also, the health institutions acting in nowadays health care systems have to challenge competitions of other entities. There are number of factors influencing the competitions like the number of enterprises, costs imposed on them. One of the factors that clearly determine the functioning of enterprises is the amount of taxes they must pay. An important component of tax systems is income tax. However, some taxpayers instead of paying income taxation choose to make illicit attempts to reduce their tax liabilities. The effect of such activity is the possibility to decrease their prices of medical services. it makes the economic conditions of doing business more difficult for the honest taxpayers or even can make them going bankrupt. They therefore need to be protected from unfair competition from health institutions which cut their tax liabilities in not a legal way. The tax

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administration is responsible for collecting taxes from all taxpayers. Tax systems cannot exist without tax administration. An important task of the tax administration is diminishing the tax evasion of income taxes. In order to protect the interests of the State Treasury and to ensure fair competition in the economy tax administration should reduce the scale of the grey economy by means of a variety of instruments. The legislation allows tax authorities to make their own estimates of a taxpayer's taxable incomes. The purpose of income estimation is to calculate as close as possible the amount of tax a taxpayer should pay in case of tax fraud. The provisions point out different methods of tax base estimation. If those methods are not able to be used, tax authorities may also use other methods which were not listed in provisions. Generally, the income estimation method can be used in case of tax calculation for health institutions.

The aim of the article is to evaluate the possibility of using the methods of estimation in case of tax fraud in health institutions.

The research hypothesis is as follows: The tax administration cannot use all income estimation methods indicated in provisions for estimation of income of health care institutions.

The conditions for estimation of income in Tax Ordinance Act

The Tax Ordinance Act determines the estimation of the tax base. The provisions allow tax authorities to estimate the tax base in specific conditions. The law indicates the reasons for the tax base estimation. The tax estimation is allowed in following cases[2]:

- there are no tax books or other data necessary to determine the tax base;
- the taxpayer has breached the conditions entitling him or her to lump-sum taxation, taxpayers' taxable incomes;
- the data resulting from the tax records do not allow the taxable base to be determined.

The first reason for estimation concerns the situation where the taxpayer should keep the tax records but he or she has not done it. There is no information on revenues or expenses of the taxpayer in such a case. The reasons for not keeping the tax books does not play any role in the decision of income estimation. it can be caused by the lack of knowledge of taxpayer,

[2] Adamiak B., Borkowski J., Mastalski R., Zubrzycki J., *Ordynacja podatkowa. Komentarz 2012*; Wrocław: Oficyna Wydawnicza „Unimex" 2012, pp. 223-224.

losing the tax books, stealing the tax books, destroying in an accident like fire or flood.

The next reason for estimation concerns the situation where the taxpayer has breached the conditions entitling him or her to lump-sum taxation taxpayers' taxable incomes. There are two lump-sum taxes imposed on medical activity in Poland: the charter tax and revenue lump-sum tax. Both taxes indicate conditions which have to be fulfilled by the taxpayer.

In the case of the charter tax, the provisions require the taxpayers to fulfill numerous conditions. They could be classified into following groups:

- the range of provided service;
- the limits in employment and the usage of other subjects' service;
- no conduction of specific kinds of taxpayer's or spouse's activity.

The first group of the conditions are involved with the range of provided service. Among these conditions we may distinguish: no providing of other economic activity, providing service only for the natural person who do not conduct any economic activity, conducting economic activity only in the territory of the Republic of Poland. The next conditions involved with this form of taxation concern restrictions put on the taxpayers in the range of employment and the usage of other subjects' service. Among them we may indicate: the prohibition of the usage of other subjects' service, no exceeding of employment's limitations. One of the conditions for the taxpayer is no using of other subjects' service. According to law taxpayers cannot do business and use the service of parties whom they do not employ by the employment contract and use the service of other companies excluding specialist service. Another group of conditions relate to no conduction of specific kinds of taxpayer's or spouse's activity. We can distinguish two situations: no conduction of health activity by taxpayer's spouse, no production of good taxed by excise duties[3].

The revenue lump-sum tax also indicates conditions imposed on taxpayers conducting the medical activity. Some of them are similar to those one regulated by the charter tax. They include the limits in employment and the usage of other subjects' service. Another condition refers to the limit

[3] R. Witczak, Opodatkowanie działalności medycznej lekarzy i pielęgniarek, Wolters Kluwer Polska, Warszawa, 2009, p. 31-39

of revenues earned in the tax year by the taxpayer. The limit of revenues amounts 150000 Euros[4].

Breaching the above-mentioned conditions causes imposing the income tax on the taxpayer. Due to fact that lump-sum taxes do not require keeping the tax books the income has to be estimated[5].

The last reason for estimation is involved with the reliability of tax evidences. The law in force states that tax records should be kept reliably and correctly. Tax registers are considered as reliable if their entries reflect the actual state. The effect of unreliable tax evidences can be estimation of the tax base[6].

The income estimation methods

It is stated in the law that the estimation of the tax basis may be abandoned if there are other evidences collected in the course of the proceeding supplemented the evidence from tax records making it possible to estimate the tax base [the Tax Ordinance Act, art. 23 item 2,].

The Tax Ordinance Act provides tax authorities with a list of six tax base estimation methods they can use. These methods are[7]:

- the internal comparative method;
- the external comparative method;
- the inventory method;
- the production method;
- the cost method;
- the type of income as a percentage of turnover.

The internal comparative method consists in comparing the amount of turnover with the previous years' turnover figures in the same company. As the provisions state the external comparative method consist in comparing turnover figures of companies that are similar to the one audited in terms

[4] Act on Lump-sum Income Tax on Certain Revenue Earned by Natural Persons of 20 November 1998 (Journal of Laws No. 144, item 930, as amended) art. 4,6

[5] B. Adamiak, J. Borkowski, R. Mastalski, J. Zubrzycki, *Ordynacja podatkowa. Komentarz 2008*, Oficyna Wydawnicza „Unimex" Wrocław 2012, p. 224

[6] The Act of 29 August 1997 - Tax Ordinance (Journal of Laws of 2005, No. 8, item 60, as amended.) art. 23 item 1, art193

[7] Dzwonkowski H. (ed.), *Ordynacja podatkowa. Rok 2014*, Wydawnictwo C. H. Beck electronic edition 2014

of business scope and conditions. According to its legal definition the inventory method consists in comparing the value of the assets of the enterprise at the beginning and at the end of the period, taking into account the turnover speed rate. The next method is production method. it estimates the production capacity of the taxpayer. The cost method derives the turnover figure from a company's expenses based on a coefficient indicating their share of turnover. In the type of income as a percentage of turnover method the amount of income is calculated from the sale of particular goods and particular services based on their share of total turnover[8].

In cases when none of methods indicated in the provision is applicable, tax authorities may use other methods to estimate the tax base. it is stated in the law that tax administration can use them only under especially justified circumstances. The law does not indicate what these methods should be[9]. Following methods as 'non-statutory' methods are presented as in the literature[10]:

- the determination of the turnover figure from information sources;
- the determination of the percentages of the particular products in total production;
- analysing the formulas used to make particular products;
- estimation business expenses in relation to turnover;
- examining the consumption of electricity;
- estimation a company's incomes based on its expenses;
- utilising an econometric model of costs.

In the case of the determining the turnover from information sources method we have the estimation used from the information about the purchases of goods in the definite period of time e.g. in the quarter. Using the information mentioned above we are able to calculate the size of the purchase in the estimated period of time (e.g. in the year) taking into account the potential seasonal differences. Then the share of the goods

[8] The Act of 29 August 1997 – Tax Ordinance (Journal of Laws of 2005, No. 8, item 60, as amended.) art. 23 item 3

[9] The Act of 29 August 1997 – Tax Ordinance (Journal of Laws of 2005, No. 8, item 60, as amended.) art. 23 item 4

[10] Schneider K. *Błędy i oszustwa w dokumentach finansowo-księgowych;* Warszawa: Polskie Wydawnictwo Ekonomiczne, 2007, pp. 223; Brzeziński B. et al. *Ordynacja podatkowa. Komentarz T.1;* Toruń: Dom Organizatora 2007, pp. 242; Kosikowski C. (ed.), *Ordynacja podatkowa. Komentarz;* Lex electronic edition 2011

in the total sale is determined. On this base the whole turnover of the company is estimated[11].

The method of the turnover's structure consists of the general turnover's determination from the known level of the purchase's rate of the specific kind of goods and the known rate of the purchase's share in the total turnover[12].

The method of formulas consists of the norm's usage with the determined materials in the particular products. it is indicated in the literary data that the method might be used to determine the turnover in the food and gastronomic companies[13].

As a different method we can indicate also the determination of turnovers' level from the known level of trade costs and the known relations of these costs to the turnover[14].

The next method of estimation is examining the consumption of electricity. it comes down to the determination of the electricity amount consumed in the particular period of time and usual energy consumption necessary to produce a unit of good. This method has to be used in determining tax base in following way: calculating the real consumption of electricity in production needs, calculating the usual energy consumption necessary to produce a unit of good, establishing the amount of produced goods by a taxpayer with the division on the types according to common energy consumption necessary to produce a unit of good and the cost of ready goods' sale[15].

The method of estimation a company's incomes based on its expenses relies on the determination of expenditure covered by a taxpayer, especially in such financial character like the purchase of property or luxury goods. The size of expenditured and owned already property are used to estimate the value of income obtained by a taxpayer[16]. it is worth indicating that the method described above seems to be an instrument of the determination of tax base and tax in the case of not revealed sources of incomes[17]. The analysis of above instrument and its character is not the aim of the

[11] Schneider K., *op. cit*,, pp. 223
[12] Brzeziński B., *op. cit*,, pp. 242
[13] Schneider K. *op. cit*, pp. 223
[14] Brzeziński B. *op. cit*, pp. 242
[15] Schneider K. *op. cit*,, pp.223-4
[16] Ibidem pp. 224
[17] Marciniuk J (ed.) *Podatek dochodowy od osób fizycznych;* Warszawa: Wydawnictwo C.H. Beck 2010, pp. 300-301

following research paper. However, it should be indicated that in the literary data there are doubts whether such a method of determination of tax base could be named as the estimation. There are opinions accepting the assessment of not revealed sources of incomes as a estimation method determining the tax base. In the literary data it is shown that the taxation of not revealed sources of incomes is described as the estimation. On the other hand, it is claimed that such utterance is not well-chosen[18].

The estimation of tax base might be provided by the econometric methods. it might be especially used to determine the value of full unit costs and the involvement of variable and fixed costs[19].

Tax authorities have to explain their choice of method and they should calculate a taxpayer's liability as accurate as possible[20].

The tax basis estimation methods and medical activity

It is important to evaluate particular estimation methods indicated in tax law if they are applicable to health institutions.

The internal comparative method and the external comparative method are the first method indicated in provisions. There is an opinion that those method are like one of the method used for transfer pricing purposes. Transfer pricing concerns transactions between the associated enterprises. In case when the prices established by the associated enterprises does not match market conditions, the tax administration is able to correct the price. The OECD has produced Transfer Pricing Guidelines to help business and tax administrations apply the arm's length principle which requires internal transactions to be priced as though they had taken place between independent parties. The OECD Guidelines indicate different methods of calculating the price. One of them is the comparable uncontrolled price method[21]. According to Sowinski[22] this method of transfer pricing calculation can be adopted for the rules of using the internal comparative method and the external comparative method. The comparable uncontrolled

[18] Pietrasz P., *Opodatkowanie dochodów nieujawnionych*, Lex electronic edition 2007; Dzwonkowski H. (ed.) *Opodatkowanie dochodów nieujawnionych. Praktyka postępowania podatkowego i odpowiedzialność karna skarbowa*; Warszawa: Difin 2009, pp 49-50

[19] Schneider K., *op. cit*, pp. 224-225

[20] The Act of 29 August 1997 - Tax Ordinance (Journal of Laws of 2005, No. 8, item 60, as amended.) art. 23 item 5

[21] OECD, *Transfer Pricing guidelines for multinational enterprises and tax administration*, OECD 2010

[22] R. Sowiński, *Metody oszacowania podstawy opodatkowania*, Przegląd Podatkowy, 2003, 7, p48

price method compares the price charged for property or services transferred in a controlled transaction to the price charged for property or services transferred in a comparable uncontrolled transaction in comparable circumstances. If there is any difference between the controlled transaction and the uncontrolled transaction reasonably accurate adjustments should be undertaken[23]. The OECD Guidelines indicates factors relevant to determining comparability of transaction or enterprises for example: the characteristics of services, the nature and extent of the services, functions performed by the parties (taking into account assets used and risks assumed), the contractual terms, the economic circumstances of the parties, and the business strategies, the level of risk[24]. Economic circumstances that may be relevant to determining market comparability include the geographic location; the size of the markets; the extent of competition in the markets and the relative competitive positions of the parties; the levels of supply and demand in the market as a whole and in particular regions; consumer purchasing power, the level of the market, the date and time of transactions [25]. it means that we cannot for example estimate the income of a dentist from Lodz with the income received by the dentist from Warsaw. In practice lots of circumstances of the particular case may determine existing differences in comparability. Due to numerous factors that may differ the activity of taxpayers (health care institution) the analysed internal or the external comparative method will be able to be used only in specific circumstances.

The inventory method can be rather applied in the trade sector as in the healthy sector. For its use it demands the value of the assets like goods at the beginning and the end of the period while estimation is applied. Moreover, the turnover speed rate is taken into account. it shows that this method concerns trading of goods especially retailing or wholesaling. The health institutions usually do not conduct trade business. Eventually, this method can be used in case of tax evasion in drug stores.

The next method is production method. As it estimates the production capacity of the taxpayer it indicates that should be applied to taxpayers who produce goods. it should not be used in case of services. This methods allows estimating the maximum number of patients of the health institution. However the potential number of patients, services does not equal the

[23] OECD, *Transfer Pricing guidelines for multinational enterprises and tax administration*, OECD 2010, p 63-64
[24] OECD, *Transfer Pricing guidelines for multinational enterprises and tax administration*, OECD 2010, p 43-44
[25] OECD, *Transfer Pricing guidelines for multinational enterprises and tax administration*, OECD 2010, p 48-49

genuine number of patients, services. This is why the method can be only used in the estimation of maximum income. So if the tax authorities estimate higher tax by the help of other methods than the one estimated by the production method it means that the tax should be reduced at least to the level estimated by the production method.

To apply the cost method in health care institutions we have to know the share of any cost in services. In my opinion it is very difficult to indicate any kind of costs which shares are fixed in services. One can analyse the possibility of using this method in dentistry. This method requires establishing the level of costs of specific materials used in curing the tooth. it seems to be very hard to indicate treatment which always uses the same amount of materials. Usually, the quantity of medicines or other medical materials are adjusted to the condition and specific of treatment. In some cases of treatment we can establish the minimum dose of medicine or other medical materials. Moreover, it is very probably that if the taxpayer does not register its revenues also the expenses are not registered properly in tax books. So even if the tax authorities establish the level of costs it does not mean that it is the base to estimate the income. We can assume that the level of income calculated by this method, provided we know the share of cost in the revenues, is the minimum income obtained by the taxpayer.

The type of income as a percentage of turnover income estimation method requires the knowledge of share of the sale of particular goods and particular services in total turnover. The possibility of using this method for estimation of health institutions income seems to be very small. First of all we need to know the income received from one type of activity of health care institution. If someone does not fulfil his or her tax obligation in one area it is not likely to do it in other parts of his activity. So we usually do not know the whole income like the income from particular parts of activity either. Even if we would know the income from particular part of the medical activity we would need to know their share in the total revenues from the hole activity, and it is not easy to establish.

On the basis of the analysis we can state that following methods of estimating of the tax base can be used for income estimation of health institutions:

- the internal comparative method;
- the external comparative method.

However those methods will not be able to be used in all cases. Moreover, the rest of statuary method will not be able to be used for income estimation of health institutions. This statement concerns following methods:

- the inventory method;
- the production method;
- the cost method;
- the 'income as a percentage of turnover' method.

Apart from statuary methods the provisions allow using other methods for estimation of income. Although they are not pointed out in tax law, the literature indicates some of them. it seems to be necessary to evaluate if they can be used for income estimation.

One of the non statuary methods is the determination of the turnover figure from information sources. As it uses the information about the purchases of goods it would be rather applicable for trading or production companies. So this method will not be used in case of health care units.

The next method is the determination of the percentages of the particular products in total production. it refers to the production and the share of the particular products in total production, so it should be applied for production companies not health institutions.

The third method analysing the formulas used to make particular products purchase's requires to know the rate of the purchase's share in the whole turnover. Similarly to the type of income as a percentage of turnover income estimation method we usually do not know the level of such rate. Moreover this method concerns trading or production of goods not services. This is why this method will rather not be used in case of health care units.

Another method of income estimation is the estimation of trade expenses in relation to turnover. This method is related to the trade activity so it will be not adequate to calculate the income of health care units.

The next method is the estimation of a company's incomes based on its expenses. The estimation a company's incomes based on its expenses seem to be used for health care units, especially when the natural person conducts their business also in the health area. However, this method is regulated in Personal Income Tax in case of not revealed sources of incomes. The tax provisions concern situation when this method can be applied. According to the law revenue not covered in the revealed sources or arising from the sources not revealed shall be taxed. The income will be calculated on the

basis of expenses incurred by a taxpayer in a tax year and the value of property gathered in a given year if the expenses and the assets cannot be covered by the assets gathered before incurring the expenses or gathering the property arising from the revenue previously taxed or exempt from taxation. Moreover, the Constitution Court ruled that the provisions on imposing the tax on undisclosed sources of incomes are unconstitutional**.** it is questionable if this method can be used in income estimation based on Tax Ordinance act. In my opinion it should be applied in case of income estimation based on Tax Ordinance Act but it should be directly expressed in the Tax Ordinance Act. We recommend making such an amendment to the law.

Another method uses the examining the consumption of electricity. it is very difficult to indicate the association between the use of electricity and the level of revenues obtained from health activity. it is obvious that the more services are provided the higher level consumption of electricity is. However, it is impossible to indicate the precise dependence between those factors.

The last analysed method is utilising an econometric model of costs. Firstly this method concentrates on cost. Secondly using an econometric model requires sets of data, which can be not obtained if the taxpayer has not kept his or her tax records. Moreover, we may have some doubts whether the usage of such methods of tax base estimation should be excluded as far as the element of randomness is contained.

Conclusions

Taxpayers do not always fulfill their tax obligations. Such an activity can also be observed in health institutions. The tax administration has a lot of instruments combating tax fraud. One of them is the estimation of income in case of tax evasion. The tax provisions point out different methods of income estimation. However not all methods will be able to be used in medical entities. Following statuary methods of estimation of the tax base rather cannot be used for income estimation of health institutions.

- the inventory method;
- the production method;
- the cost method;
- the ‘income as a percentage of turnover’ method.

There are methods of estimating of the tax base which can be used for income estimation of health institutions:

- the internal comparative method;
- the external comparative method.

However, we may indicate the obstacles of using the internal comparative and the external comparative method for estimating of income in health institutions.

The lack of income estimation methods in medical entities causes possibility of underestimation of income for taxpayers from „gray economy". The use of income estimation methods requires amendment to the law. The rules of using other estimation methods, which may be applied in medical business should be elaborated.

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Death certification and mortality reporting across EU countries

Abstract

Introduction: The accuracy of death and cause of death certification and reporting is of great importance for any epidemiological (or other) analysis. Survival is the basic outcome of any illness progress or treatment course. In case of death, this is certified by a specialized physician and reported through a particular document (Death Certificate) and procedure to relevant institution and eventually to national statistics office – the procedure varies in individual EU countries. Within the international project on traumatic brain injury (CENTER-TBI – Collaborative European Neuro Trauma Effectiveness Research in TBI) we explored, analyzed and described the death certification and reporting procedure in all countries of European Union with a special emphasis on potential spots of data error, loss or misinterpretation. **Methods:** We examined the procedure of death certification and reporting through the consultations with death certification experts in all EU countries. **Results:** We have identified potential weak points in the process of death certification and reporting: lack of training of death examining and certifying physicians; no control mechanism in place to monitor the performance of the examining physicians/coroners, namely the accuracy of cause of death ascertainment and their referral of the body of the deceased to the autopsy; inconsistency in nomenclature and coding of examining physicians/coroners and statistical officers. **Conclusions:** Certain inaccuracy of mortality data needs to be pointed out, caused by lack of monitoring and quality control of death certification and reporting procedure. Therefore, the mortality data need to be used with caution.

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Introduction

Mortality rate is an important indicator of population health. Knowing death rates of particular diseases at specific ages is itself an important descriptor of the epidemiological situation in a population (1). To reliably describe the burden of disease in populations, methods have been developed in large-scale global survey programs to estimate underlying mortality rates (2). Such statistics are also the keystone of much epidemiological study, directing the focus of research and complementing mortality data in follow-up studies (3, 4). Reliable information on deaths and their causes are vital for decision-makers as they provide information on the current health situation and allow monitoring the trends of the overall burden of diseases. Both the magnitude and distribution of disease burden are crucial to formulate health promotion and prevention policies, enable resource allocation for better addressing the health needs, and monitor the impact of health interventions on health outcomes (5). Mortality data are derived from death certificates. Death certification is a public health surveillance tool and a valuable source of information at the national and local levels (6, 7).

The data on the cause of death stated in the death certificates serve many purposes, such as assessment of the effectiveness of public health programs, providing a feedback for future policy planning and its implementation, improved health planning and management, and deciding the priorities of health and medical research programmes (8). Accuracy in certifying the cause of death is desirable at many levels: for the office of Population and Census Studies to provide reliable information to health planners; for families in understanding their inherited risks and taking necessary administrative steps after the death of their relative; and for individual doctors in preparing their performance review data (9).

The Medical certification of cause of death (MCCD) scheme, which is (basically) a part of International Statistical Classification of Diseases (ICD) and health related problems formulated by WHO, serves for systematic recording, analysis, interpretation and comparison of morbidity and mortality data collected in different countries or areas at different times (10).

However, the quality of data regarding the specific causes of death may be variable due to the nature of the recording and reporting procedures which may vary even within the EU (11). Many sources of error have been identified, including but not necessarily limited to: diagnostic errors, missing information, coding errors, unviability of medical records, misunderstandings of certification process, and difficulties in ascertaining casual sequence that led to death, confusing cause of death with mode

of death, and confusing immediate cause with underlying (especially in= cases involving multiple pathologies) (12).

Within the international project on traumatic brain injury (TBI) (CENTER-TBI – Collaborative European NeuroTraumaEffectiveness Research in TBI) we try to estimate overall burden of TBI in European societies. It *is important to collect and analyse data on TBI mortality in order* to better understand and prevent *fatalities.* However, there are many factors complicating the collation and understanding of TBI-related death statistics, such as the difficulty of detecting or diagnosing TBI events, missing complementary investigation, incomplete or inappropriate completion of death certification form, errors in coding and/or in transcription of codes and description of cause of death, etc. (13).

Within the CENTER-TBI project we explored, analysed and described the death certification and reporting procedure in all countries of European Union with a special emphasis on potential spots of data error, loss or misinterpretation. We present the methods and results of theanalysis in this study.

Methods

We performed the consultationswith death certification experts in all EU countries to examine the procedure of death certification and reporting.

The consultations were performed in four main topics:

1. organization and legislation of death certification and mortality reporting;
2. TBI death certification and cause of death ascertainment;
3. mortality data reporting, processing and publication and;
4. case scenarios in the final part of the questionnaire.

After the consultations additional clarifications were sought through internet-based resources. Obtained information was processed and presented as figures and textual summaries.

For the purposed of this report we focused on the results Visegrad Group countries (Czech Republic, Hungary, Poland and Slovak Republic) of all surveyed EU member states.

Results

Organization and process of the death certification and cause of death ascertainment

Certification of death is documented in a death certificate or, more appropriately, a 'certificate for the registration of the medical cause of death'. The administration of death records depends onthe following:

- the circumstances of the death,
- where it has occurred;
- whether or not it was anticipated vs. sudden;
- whether or not there is any suspicion of violence.

If the death occurs in a hospital, it is usually confirmed by treating physician and by the in-hospital autopsy. If person dies outside hospital, situation is different and is complicated by several factors that may lead to inaccurate reporting.

The document certifying death and listing primary and other causes of death is completed by the examining physician or a coroner in the surveyed countries and these persons are authorised for this duty by various institution.

Death certifiers

The accuracy of cause of death depends to a large extend on the knowledge, skill and experience of the examining physician. Overall, there is no dedicated institution overseeing the quality of death certification in the countries across Europe. The certifying physicians/coroners are usually guided by national legislation and further regulations. There is no systematic monitoring of their performance and feedback is provided only by autopsy findings and statistical office inquiries. Furthermore, the training of the certifying physicians is very often (in many EU countries) provided only within the medical school. No further continuing education is required.

In the Czech Republic the Institute of Health Information and Statistics – IHIS provides basic support and distributes information on how to complete the death certificate on its websites. In 2006 the manual on the Death certification and a leaflet with basic information were distributed to all physicians. In 2012 the dataflow and the Death certificate changed significantly.

In Hungary there is a non-compulsory postgraduate course devoted exclusively to death certification organized by Hungarian Central Statistical Office, involving public health experts, coroners and pathologists. In the

Slovak republic the Healthcare Surveillance Authority (HAS) provides 8 hour training for the examining physicians on how to examine the deceased body and complete the Death Certificate.

Death Certificate

The physician/coroner who examines the body completes a document about the death (Death Certificate, DC). This document contains personal information about the deceased (name, age, sex, address of residence), date, place and cause of death. In some countries one comprehensive form is completed, in some countries it is in 2 (or more) forms, where one lists only personal information and confirmation of death and is forwarded to a non-medical registry (of births, marriages and deaths) that further produces death certificate for the family of the deceased and for the administrative purposes and the second certificate contains also medical information, such as cause of death. The cause of death information is usually given in a sequential manner, to include immediate, underlying, primary (basic), and finally other contributing diseases/conditions.

The completed death certificates in the surveyed countries are collected by the National/Central statistical offices. In the majority of surveyed countries this document goes first through an institution that checks the accuracy of its completion, the accuracy of the cause of death and other data, performs a transcript from paper forms to an electronic system and submits it to the national statistics office.

The papier copy of the death certificate is prepared also for the local public registration offices, funeral services, patient´s health documentation.

Each country has its own legislation regarding certification of death and data collection. This is usually stipulated in a general act on health care services delivery with further regulations on death certificate completion, autopsy (i.e. in which cases an autopsy should be carried out), the process of submission of mortality data, and finally the processing, analysis and publication of these data.

Autopsy

In general the autopsy is obligatory for:

- sudden deaths, when it is not possible to clarify the cause of death;
- all violent deaths;
- cases, when there is a suspicion of wrong practice during healthcare delivery.

However, the autopsy in many countries is not performed as it should be. One of the problems might be the low capacity of the personnel or when the relatives ask the examining physician no to send the deceased for an autopsy.

Mortality data collection and reporting

It is important to mention that Regulation of European Commission[3] governing statistics on causes of death specifies a set of compulsory data that each country is obliged to provide to Eurostat (it forms a minimum set of data on the deceased that needs to be collected and reported) – comprising year of death, sex, underlying cause of death as an ICD code (4 digit), and country of occurrence.

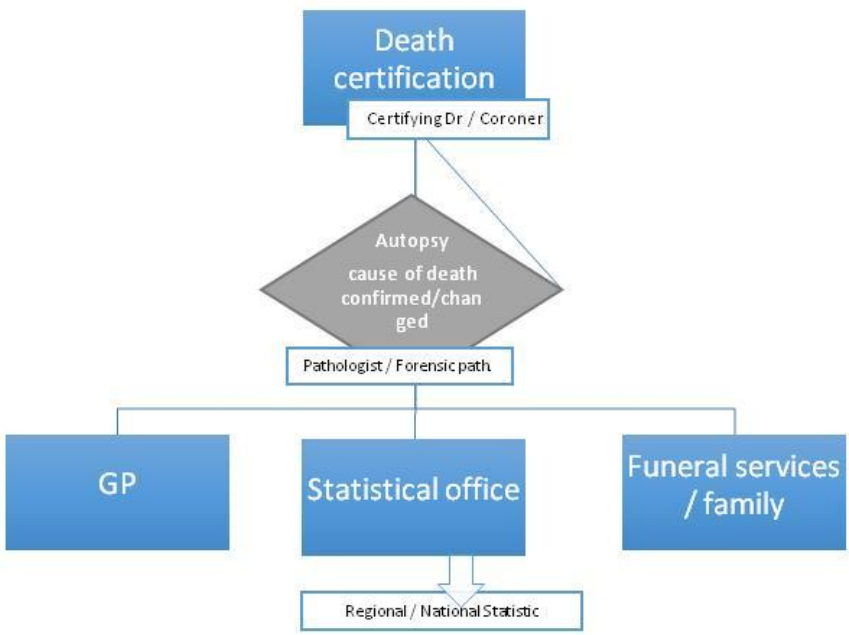

Figure 1 Process of the death certification and mortality reporting

[3]COMMISSION REGULATION (EU) No 328/2011 implementing Regulation (EC) No 1338/2008 of the European Parliament and of the Council on Community statistics on public health and health and safety at work, as regards statistics on causes of death

Mortality data reporting, processing and publication

In general, the employees of the National/Central statistical offices are responsible for the data transcription from death certificates to the system of Vital statistics.

In Hungary, there is a distinct staff for managing the transcription, validation and coding providing the whole country. The staff is supported by a computer based automated system to determine and code the underlying cause of death from 2005, which applies the coding rules of WHO.

In Poland the transcription concerns only causes of death, other data are collected in electronic form. There are national centers of the demography statistics in some countries, such as in Poland (Olsztyn) and in the Slovak Republic (Trnava).In the Czech Republic the relevant data for the Czech Statistical Office are provided by the Institute of Health Information and Statistics.

In many European countriesthe accuracy of data transcription is ensured by an automatic processing of the file of the deceased, where control mechanism checks the data – cause of death is being checked against the gender and age of the deceased.

In the Czech Republic the Czech Statistical workers have the special training on how to entry data into IRIS, and how to code the verbal diagnoses. IRIS is a system for automated coding of causes of death. In Hungary the validity check is managed by the automated cause-of death coding system. it applies the coding rules declared by the WHO. If the underlying cause of death cannot be determined then the reporting physicians or certified paramedic is requested to clarify the uncertainties. The Office of Medical Chief Officer has also a department staff to check the validity of the underlying cause of death.

The final output of the Vital/National Health statistics in the Slovak Republic is the database of the automated statistical information system that contains data on the individual persons who died in the territory of the Slovak Republic and also data on Slovaks that died abroad. The database is not publicly available as it contains individual/personal data. Data on causes of death are available for public in the aggregated form (total number of those that died according to sex, age, cause of death, permanent residency district/region/town, etc.).

Similar system is also in the Czech Republic and Poland. In the Czech Republic there is a database of causes of death, Statistical Yearbooks, publications and web presentations. More detailed data are provided to public and researchers on request by Institute of Health Information and

Statistics or Czech Statistical Office. All provided data are anonymous. So far the CZSO provided data on underlying cause of death only, from 2013 onwards also other causes reported on the certificate can be provided for multiple cause of deaths analyses on special request.

In Poland the data on causes of death are available for public in aggregated form (total number of those that died according to the sex, age, urban/rural areas, voivodships, civil status, education level, etc.), too.

In Hungary the database is processed and the results are published every year (Vital statistics of Hungary). The national and the regional number of observed deaths are broken down by sex, age groups, by education, by the professional background of the person who completed the death certificate, by the institutional environment of death, by the month of death, by the family status. The report is available as a CD appendix of the report. There is an on-line version available through the website of the Central Statistical Office free of charge.

If more detailed data are required then a special request is to be submitted to the Central Statistical Office which prepares the tables of the detailed data. This latter process is regulated by the Law on statistics, and is restricted by the personal data protection whereby the data which can be linked to a person by any methods cannot be available. This data purchasing is for fee, but the Central Statistical Office usually does not insist on charging if the request is from academic or governmental institution.

Weak points in the process of the death certification and mortality reporting

- Potential weak point in the step of the death certification and reporting process is lack of training of examining physicians. In surveyed countries the only training the examining physicians receive is within the studies at medical school. The accuracy of cause of death depends to a large extent on the knowledge, skill and experience of the examining physician;

- Potential other weak point is that there is no control mechanism in place to monitor the performance of the examining physicians/coroners, namely the accuracy of cause of death ascertainment and their referral of the body of the deceased to the autopsy. When dissection (autopsy) is not performed, the cause of death accuracy depends on the examining physician with limitations mentioned above. it is important to note though the autopsy is the only objective way how to confirm or revise cause of death stipulated by examining physi-cian/coroner. In all surveyed countries all TBI-related deaths are legally obliged to undergo autopsy;

- Potential weak point is also inconsistency in nomenclature and coding of examining physicians/coroners and statistical officers. The document certifying death contains more than one cause of death (usually immediate, underlying and primary). Although this can contain valuable additional information, there are a number of stages of the process where this may lead to inconsistencies or inaccurate information; e.g. if the certifying physician completes the codes or descriptions in the wrong order, or if in the process of transcription, the main cause of death and other contributory morbidities are selected by the transcribing officer and entered into the mortality statistics in the wrong order. In most cases, in the processing of death certificates only the main (primary) cause of death is transcribed. This may also a possible source of mistake, if there is any possibility of confusion over which cause is the main or primary reason for the death.

Conclusions

Summary recommendations or considerations can be made regarding the consistency of national reporting systems and the cooperation required to produce meaningful, comparable statistics.

There appears to be the opportunity for improvement in unified European guidelines for officers coding the cause of death based on death certificates. The stage of death registration where data entry staff or it officers compile the information from individual death certificates into national databases is a variable process, which is not always well understood by medical or statistical staff. Ensuring that this process is done consistently and with appropriate checks in place may be a simple way to improve overall statistical output.

It is also possible to make a more general recommendation, concerning the performance of examining physician and how well they send the deceased to the autopsy. The dissonance between those cases which officially require autopsy, and those situations where even these deceased may, for varied reasons, be exempted for this requirement, was noted in a number of countries. The relevance of this examination for establishing cause of death, particularly in cases of TBI or other relatively uncommon and not-natural events, has been noted above and would again allow researchers, and governments, to be more confident that differences between national statistics are real rather than artefact. There is a need to provide the appropriate training to the examining physicians in death certification or disease coding procedures.

A final possibility is in establishing a national level authority responsible for certifying and monitoring of examining physicians. i.e. providing detailed training as routine for those who are likely to certify deaths, with the possibility of monitoring performance of individuals and investigating where patterns of data suggest unusual or improper performance.

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Denisa Jakubcová[1], Martin Rusnák[1], Viera Rusnáková[1], Predrag Đurić[2]

Effects on quality of communicable diseases notification achieved by provision of access to the EU case definitions for primary care physicians in Tuzla, Bosnia and Herzegovina

Vplyv na kvalitu hlásenia prenosných ochorení prostredníctvom sprístupnenia EU štandardných definícií prípadov pre lekárov prvého kontaktu v Tuzle, Bosna a Hercegovina

Abstract

Introduction: The Public Health Reform II project was implemented in Bosnia and Herzegovina from December 2011 till December 2013 and funded by European Union. Principal aim of the project was to strengthen public health services in the country through improved control of public health threats. During several rounds of interviews with general practitioners inadequate use of case definitions was revealed. Trainings for family primary care physicians were organized to improve the situation and increase notification rates in eight selected primary care centres. The main aim was to increase notifications by trainings provided for primary care physicians. **Methods:** We compared quality of notifications from physicians in Tuzla before and after training, which took place on 15th of March 2013. The timeliness was used as indicator of quality. Timeliness reflects the speed between steps in a public health surveillance system. it means time interval between the first symptoms of diseases and reporting. We compared medians of timeliness before and after training by Wilcox test and averages by t.testusing R project with level of significance $p<0.05$. **Results:** There were 980 reported cases, 80% were before training and 20% were reported after the training. We found out significantly lower median of timeliness of all reported cases after the training (median=1 day) compared to the

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median of timeliness before the training (median=6 days) ($p<0.05$). **Conclusion:** Significant reduction in time response between the first symptoms and disease diagnosis represent results of the training in Tuzla. Primary care physicians provided better quality of reported data after the training.

Abstrakt

Úvod: V Bosne a Hercegovine bol implementovaný projekt Public Health Reform II v období od decembra 2011 do decembra 2013 zo zdrojov Európskej únie. Hlavným cieľom projektu bolo posilniť služby zdravia verejnosti v krajine prostredníctvom zvýšenej kontroly hrozieb zdravia verejnosti. Počas niekoľkých rozhovorov s praktickými lekármi bolo zistené nedostatočné uplatňovanie štandardných definícií prípadov. Pre zlepšenie situácie a pre zvýšenie miery hlásenia boli organizované tréningy pre lekárov prvého kontaktu v ôsmich vybraných centrách zdravotnej starostlivosti. Hlavným cieľom bolo zvýšiť hlásenie prenosných ochorení prostredníctvom tréningov pre lekárov prvého kontaktu. **Metodika:** Porovnali sme kvalitu hlásenia lekármi pred a po realizácii tréningu, ktorý sa konal dňa 15. marca 2013 v Tuzle.Ako indikátor kvality bola použitá včasnosť hlásenia. Včasnosť odráža rýchlosť medzi krokmi v systéme surveillance prenosných ochorení. Predstavuje časový interval medzi objavením prvých príznakov ochorenia a hlásením. Porovnali sme mediány včasnosti hlásenia pred a po tréningu použitím Wilcox testu a priemery použitím t.testuv R projekte s hladinou významnosti $p <0,05$. **Výsledky:** Spolubolo hlásených 980 prípadov, 80% bolo pred tréningom a 20% bolo hlásených po tréningu.Medián včasnosti všetkých hlásených prípadov po tréningu (medián = 1 deň) bol štatisticky výrazne nižší v porovnaní s mediánom včasnosti pred tréningom (medián = 6 dní) ($p<0,05$). **Záver:**Výsledkom tréningu v Tuzle bolo štatisticky významné zníženie časovej odozvy medzi objavením prvých príznakov ochorenia a jeho hlásením. Po tréningu hlásili lekári prvého kontaktu dáta vyššej kvality.

Introduction

Communicable disease control relies on effective disease surveillance. Communicable disease surveillance is defined as ongoing, systematic collection, analysis, interpretation and dissemination of infectious disease

data for public health action[3,4]. Effective communicable disease surveillance provides information about infections that are the most important causes of illness, disability and death, populations at risk, outbreaks, demands on health care services and effectiveness of control programs so priorities for prevention activities can be determined [5, 6].

Main aim of surveillance is to eliminate and eradicate disease incidence with two core function: early warning system for outbreaks and early response to disease occurrence. An early warning and response system for the prevention and control of communicable diseases is essential for ensuring public health at the regional, national and global levels. Recent cases of severe acute respiratory syndrome, avian influenza, hemorrhagic fevers and especially the threats arising from the possibility of misuse of biological and chemical agents demonstrate the need for an effective system of surveillance and early warning at national level providing higher data structure [7,8,9].

The structure of the surveillance system is based on existing legislation, setting goals and priorities, implementation strategies, identification of stakeholders and their mutual connections, networks and partnerships and also capacity for disease diagnosis. In the whole process of surveillance and data flow primary care physicians of first contact play a crucial role. Surveillance system relies on the detection of communicable disease in the patients and disease notification [10,11,12].

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[10]Jamison D. et al. *Disease Control Priorities in Developing Countries, 2nd edition;* Washington (DC): World Bank 2006

In Bosnia and Herzegovina, there was implemented The Public Health Reform II project from December 2011 till December 2013 and funded by European Union. Principal aim of the project was to strengthen public health services in the country through improved control of public health threats. One out of three components of the project dealt with enhancing and improving assessment of global public health and the system of communicable diseases notification.

During the implementation of project activities and interviews with general practitioners following challenges of surveillance system were revealed: very long list of mandatory diseases without clear case definitions and rationale for surveillance, mixture of case-based and syndromic surveillance, lack of capacity for cases confirmation and a low level of communication between all surveillance stakeholders.

Due to the fact that the primary care physicians play the most important role in data flow, trainings for family primary care physicians were organized in eight primary care centers during the March 2015. The aim of trainings was to improve the situation and increase notification rates in eight selected primary care centers. Expected outcome of the training is to improve primary care physician's knowledge and skills in disease notification and to increase effectiveness of surveillance system. In this report we share results from evaluation of training from one of the center – Tuzla, on data quality effects.

Methods

Study design

The study was designed with the aim to reveal potential effects of updating primary care physicians with details of surveillance. Thus a cohort of primary care physicians was used to follow effects. Selection of participants was on the basis of interest. No attempts to randomize were taken. The project collected baseline data on notification from the database maintained by the Tuzla epidemiologists for year 2012 up to February 2013. Workshop was carried in March 2013. The project tried to keep contact with participants by emailing and by personal visits. Data from the same source were collected until October 2013. There were 20 participants at the first workshop. We cannot estimate what proportion it makes from

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[12]Souty, C. Improving disease incidence estimates in primary care surveillance systems. Popul Health Metr 2014, 19, pp.12

all, who serve the region, as total number listed in 2014 was 378 physicians [13] as our participants were mostly from offices within the city of Tuzla. Our estimate is based on average number of citizens per general practitioner in the region is 1263 inhabitants per GP, Tuzla has 120441 inhabitants according to the census from 2013, which results in about 95 general practitioners in the city. Thus participation at the workshop represents approximately 21% of all primary care physicians in Tuzla.

Workshop

The workshop started with an introduction of aims and expected outcomes. Assessment of knowledge on surveillance, disease reporting and attitudes to disease notification followed. Principles of communicable disease surveillance and use of case definitions with emphasis on importance of surveillance, techniques, categories and use of EU case definitions were presented by the project. Following discussion dealt with everyday problems and opinions on the system of surveillance as well as the use of EU case definitions. In the end of the workshop each participant received a copy of EU case definitions, translated to local language. Local management of primary health care centres and people from epidemiology department were also invited to participate as observers.

Data processing

The timeliness for notifications obtained from primary care physicians in town of Tuzla was compared before and after the workshop. The timeliness was used as an indicator of quality, as it reflects the speed between steps in a public health surveillance system[14]. We have chosen following definition of timeliness out of several options: "Average time interval between date of onset and date of notification by general practitioners/hospital (by disease, region, and surveillance unit). it means time interval between the first symptoms of diseases and reporting." as defined by the ECDC[15]. Timeliness was computed from dates stated in individual notifications separately for those noted before the workshop and after. The file was sorted based on ICD 10 diagnosis stated by the physician notifying the case and laboratory confirmed. Timeliness was

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computed for all diagnosis as well as selected ICDs for tuberculosis (A15), scarlet fever (A38), enteritis (A09) and scabies (B86).Difference in medians before and after was statistically tested for significance by two-sample Wilcoxon test using Wilcoxon Rank Sum and Signed Rank Tests from the R project [16] with the level of significance $p<0.05$.

Results

There were 980 reported cases, 80% were before training and 20% were reported after the training. Totally 147 primary care physicians reported incidence of communicable diseases (140 before the training and 69 after the training).

Table I: Timeliness totally

Sample	Total	Before	After	p-value
Cases	980	784	196	
Median	1	6	1	$p<0.05$
Average	11.96	20.2	9.2	$p<0.05$
Range	0-152	0-152	0-133	

The difference in medians of timeliness for total sample (table 1) indicates a reduction from 6 days to 1 after the workshop; the average reduced to one half. The difference was statistically significant with $p<0.05$.

Table II: Tuberculosis (A15) timeliness

Tuberculosis (A15)	Total	Before	After	p-value
Cases	159	99	60	
Median	58	60	13	$p<0.05$
Average	57.1	57.6	27	$p<0.05$
Range	0-152	0-152	0-133	

Median of tuberculosis timeliness (table 2) after the training (median=13 days) was significantly lower compared to the median of timeliness before the training (median=60 days) and also there was significant reduction in averages ($p<0.05$).

[16]The R development core team. R: *A Language and Environment for Statistical Computing. Reference Index. R Foundation for Statistical Computing,* 2009

Table III: Enteritis (A09) timeliness

Enteritis (A09)	Total	Before	After	p-value
Cases	132	86	46	
Median	2	3	2	p<0.05
Average	3.7	3.2	2.7	NS
Range	0-41	0-41	0-23	

Median of timeliness notification of enteritis case (table 3) was significantly lower (median=2 days) compared to the median of timeliness before the training (median=3 days) (p<0.05).

Table IV: Scarlet fever (A38) timeliness

Scarlet fever (A38)	Total	Before	After	p-value
Cases	33	17	16	
Median	0	1	0	NS
Average	1.8	1.6	1.5	NS
Range	0-13	0-13	0-13	

As table 4 illustrates, there was no significant difference in medians of scarlet fever timeliness before the training and after the training (p=NS).

Table V: Scabies (B86) timeliness

Scabies (B86)	Total	Before	After	p-value
Cases	98	71	27	
Median	0	1	0	NS
Average	1.7	3.9	2.7	NS
Maximum, Minimum	37 0	37 0	13 0	

Median of scabies notification timeliness (table 5) after the training was not lower compared to the median of timeliness before the training (p=NS).

Discussion

The surveillance system in Bosnia and Herzegovina suffered after the war. it is not stabilized yet, experiences lack of funds, and is both, organizationally as well as politically atomized. it is run on regional basis, where all primary care physicians are legally required to notify cases based on syndromic diagnosis. Such a system is characterized by underreporting linked to lack of responsibility and weak supervision from authorities. Nevertheless, authors demonstrated effects of an information campaign on

improved notifications in a province of Vojvodina, Serbia[17] where public health services operate in similar environment to Bosnia.

Timeliness is a key performance measure of public health surveillance systems and should be periodically evaluated because it can reflect the time delay between steps in the public health surveillance process. Timeliness can vary by disease diagnosis and its epidemiological characteristic, aim of data use and type of surveillance level. Surveillance system timeliness depends on a number of factors and its assessment should include a consideration of how the data will be used and the diseases under surveillance[18].

This report presents significant reduction in time response between the first symptoms and disease diagnosis as results of the training in Tuzla. Primary care physicians provided better quality of reported data after the training which is baseline premise for an effective surveillance.

In other studies, timeliness of disease notification was also followed and reported, before and after some type of intervention with main aim: reduce time response between 2 steps in the process of reporting. By implementation of electronic laboratory reporting was achieved median of timeliness 20 days versus 25 days for non-electronic laboratory reporting ($p<0.001$)[19] . Within this kind of intervention, median of timeliness notification was lower for 17 days from year 2000 to year 2006. [20] Result of intervention implementation was reduction in time response and also higher rate of notification completeness.

This study also highlighted the importance of training for primary care physicians in communicable disease notification by using standard case definition. Standard case definition is premise for data quality and validity. [21]By training implementation for primary care physicians with case definition was achieved higher level of knowledge about communicable

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[21]Jajosky R. A., Groseclose S. Evaluation of reporting timeliness of public health surveillance systems for infectious diseases. BMC Public Health 2004, 4, pp.29

disease notification, dedication to reporting with data quality- timeliness and completeness of reporting[22,23].

Our study has some limits. at first, value of timeliness median can be influenced and biased by the factors that are not able to be managed, especially the patient's awareness of symptoms, the patient's search for medical care, capacity for case confirmation, the laboratory reporting test results back to the physician and to other surveillance stakeholders and public health agencies.

Second, limits of study also rely in data collection and analysis. We followed reported cases after the training only short time; this is the reason due to 80% of cases were reported before the training and 20% of cases were notified after the training. Another bias can be in fact, in process of data analysis, we did not selected physicians who did not participate in the training.

Conclusion

Communicable disease surveillance is first step towards prevention and it is one of the most important tools used in public health. Surveillance system should be regularly evaluated in terms of usefulness and quality by defined standards and recommendation. In this report, we shared results of surveillance system evaluation in Tuzla, Bosnia and Herzegovina by using one of quality standards- timeliness of disease notification before the training and after the training. This study underlined the importance and effectiveness of the training implementation for primary care physicians, using of standard case definition and also surveillance evaluation. Identified outcomes of evaluation should be the basis for the derivation of priorities and activities to improve the quality and effectiveness of surveillance.

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Maja Miłkowska[1]

Involving Citizens in Setting Public Health Agenda in Europe Based on the Example of the European Citizens' Initiative. Evidence from V4 Countries Compared to Other EU Countries

Abstract

The public of public health, people, lie at the heart of health systems, either as health services consumers, financial contributors, health workforce or actors through their health choices influencing the form of health policies. What is more, over recent years, active citizens involvement in public health through advocacy and empowerment is being increasingly recognized as essential element of health systems strengthening and is of crucial importance in the development of civil society, especially in the context of European integration. Introduced in 2012, the European Citizens' Initiative (ECI), an instrument of participatory democracy, strives for giving a stronger voice to citizens by proposing new legislation at EU level. Interestingly, to date, 3 out of 31 initiatives, all representing public health field, successfully gathered the required one million signatures: Right to Water, One of Us and Stop Vivisection. The aim of this study is to present the application of the European Citizens' Initiative to the field of public health and its relevance in influencing health policy formulation at European level. The potential of the ECI in designing public health policy in EU Member States and particularly in Visegrad countries (V4) is discussed. Qualitative approach to data analysis was chosen to investigate the research problem, with the three initiatives constituting case studies. The notion of citizens' initiative exists in most of the Member states and V4 countries. However, the legal solutions adopted differ essentially. The application of the ECI in the field of public health was found to be limited due to indirect nature of health policy formulation at the EU level. Moreover, weaker identification with the EU in V4 countries resulted in significantly lower, compared to other EU Member States, involvement in the campaigns. Civil participation of citizens from the V4 countries

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in European initiatives is substantially lower than in stable democracies, such as Germany, Austria or France. This poses additional challenges to the application of the ECI in the field of public health in the countries. However, its supranationality provides opportunities to initiate public debates on health issues on an unprecedented scale.

Introduction

Citizen engagement, as opposed to traditional forms of interplay between authorities and citizens, stipulates dialogue, information, and, most importantly, appreciates the right of citizens to participate in the decisions concerning their lives[2]. Active participation of citizens in policy-making offers the opportunity to debate and formulate different policy alternatives, which requires governments to make sure that citizens anticipate agenda-setting as well as their voice is considered in the final policy option[3]. Governments increasingly acknowledge that to rule better and to respond to the major challenges of the future, they need to strive for greater inclusion of citizens in those issues using the principles of direct participation. In order to do so, the European Union (EU) and national governments increasingly support and draw on the expertise and ideas of non-governmental organizations, academia or business environment[4]. The principle of participatory democracy is particularly valuable when consulting changes in public health and welfare policies[5]. Formally introduced on the 1st of April 2012, the European Citizens' Initiative is an example of a democratic instrument aiming at giving a stronger voice to ordinary citizens in European affairs by proposing EU legislation. Therefore, the aim of this study is to present the application of the European Citizens' Initiative to the field of public health and its relevance in influencing health policy at European level, with a particular focus on the issue of country engagement when it comes to V4 countries compared to other EU Member States.

[2]Sheedy A., MacKinnon, M.P., Pitre S., Watling J., *Handbook on Citizen Engagement: Beyond Consultation.* Ottawa: Canadian Policy Research Networks 2008

[3] OECD, *Citizens as Partners: OECD Handbook on Information, Consultation and Public Participation in Policy-making.* Paris: OECD Publications Service2001

[4]Holmes B., *Citizens' Engagement in Policymaking and the Design of PublicServices.*Research Paper no.1. Canberra: Parliament of Australia 2011-2012

[5]Chichevalieva S., Milevska N., *Participatory Democracy in Public Health: Committee for Healthcare System Advancement.* Euro Dialog 2012, 17, pp. 187-204

Citizens' initiatives in the European Union Member States and the Visegrad countries

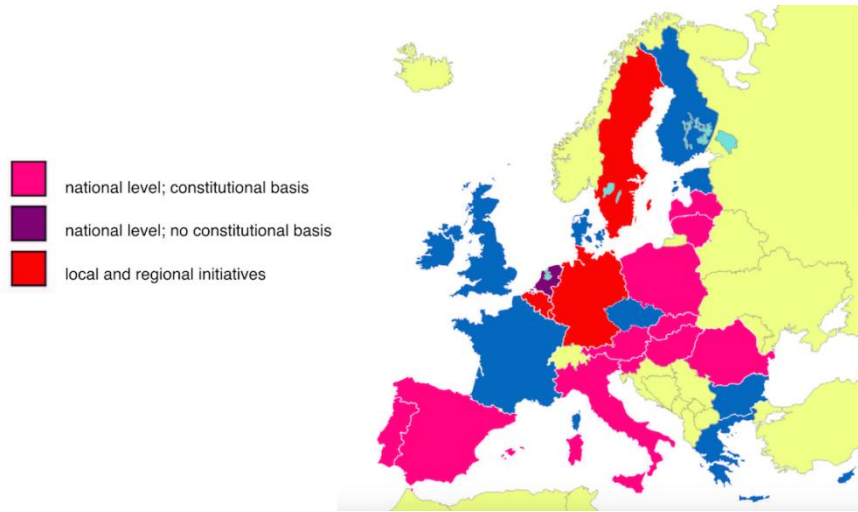
The concept of citizens' initiative does not constitute a novel idea, it has already existed for a long time in a variety of forms across Europe. Citizens' initiative, besides such forms of direct democracy as national assembly or referendum, represents an instrument enabling citizens to express their will in nationally important matters. As presented on Map 1, national citizens' initiative is known in most EU Member States. Considering state-level initiatives, it is present in 13 countries marked pink such as: Austria, Hungary, Italy, Latvia, Lithuania, the Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain and the UK, and it usually has its basis in the countries' constitutions (except the Netherlands). Additionally, in several states marked red (Belgium, Germany, Luxembourg and Sweden), citizens' initiatives can be found only at regional and local level. However, regulatory frameworks within the countries vary considerably in detail[6]. When studying instruments of direct democracy in the V4 countries, in Hungary, two forms can be distinguished – the referendum and the popular initiative. Their legislative frameworks are set out in three different legal acts (the 1989 constitution of the republic; Act no. III of 1998; Act C of 1997) as well as in the country's constitution. However, experience has shown that although existing in law, their use by citizens can be characterized as sporadic[7]. In Poland, citizens are able to participate in creating legislation through the institution of both national and local referendum as well as national legislative initiative. In order to benefit from the latter, it is necessary to form a legislative committee and gather 100 000 signatures under a draft law within the period of three months. Due to the procedures, including the relatively short period of signature collection, the process of proposing legislation using national legislative initiative is often deemed to be too complex and, therefore, very few draft laws end up being revised[8]. When studying Czech Republic and Slovakia, instruments of direct democracy can be considered as poor compared to other European countries. In both countries, basically only referendum can be used by citizens, however, experience has shown little

[6]Góra M., Burek W., Filipek P., *EuropejskaInicjatywaObywatelska (The European Citizens' Initiative)*. Warszawa: MinisterstwoSprawZagranicznych 2011

[7]IDEA, Direct Democracy.The International IDEA Handbook.Sweden: International Institute for Democracy and Electoral Assistance 2008

[8]Prezydent.pl website, *E-pojęciownik.Demokracja (Democracy. E-dictionary)*. Retrieved October 11th from:http://www.prezydent.pl/download/gfx/prezydent/ pl/defaultopisy/2468/4/1/e-pojeciownik_-_demokracja.pdf

social trust. Neither citizens' veto, nor a plebiscite is mentioned in the national legislation[9].



Map 1. Citizens' initiatives in EU Member States
Source: Góra M., Burek W., Filipek P., *EuropejskaInicjatywaObywatelska (The European Citizens' Initiative).* Warszawa: Ministerstwo Spraw Zagranicznych 2011

Associated primarily with national initiatives, the ECI takes on new meaning when related to society within European dimension, as it offers European citizens the possibility to raise their voice jointly in issues that matters for the European Community for the first time in history.

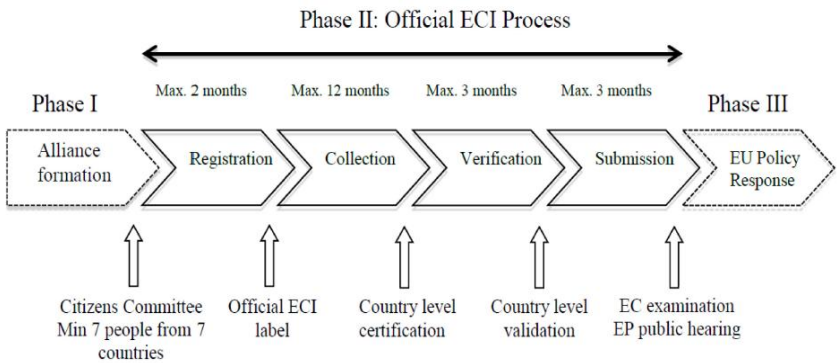
The European Citizens' Initiative

The legislative framework for the ECI is rooted in the Treaty on European Union[10] stating that at least one million individuals who are citizens of a significant number of Member States may use the initiative of inviting the EC, within the framework of its competencies, to submit any appropriate proposal on issues where citizens recognize that a legal act of the Union is required for the purpose of implementing the Treaties (Art. 11)

[9]Nyzio A., Instrumenty Demokracji Bezpośredniej na Przykładzie Republiki Słowackiej i Republiki Czeskiej(Instruments of Direct Democracy Based on the Example of the Slovak Republic and the Czech Republic).Retrieved November 3rd from: https://www.academia.edu/10129959/Instrumenty_demokracji_bezpośredniej_na_przykładzie_Republiki_Słowackiej_i_Republiki_Czeskiej

[10] European Union, Consolidated Version of the Treaty on European Union. Official Journal of the European Union: 30-3-2010, C 83/13

and in any field where the European Commission has the competence to propose legislation, such as agriculture, environment and also public health. The procedures necessary to launch an initiative are outlined in the Regulation of the European Parliament and of the Council of 16 February 2011 on the Citizens' Initiative[11] and are displayed on Graph 1.



Graph 1. The ECI process
Source: Głogowski P., Maurer A., The European Citizens' Initiative - Chances, Constrains, and Limits. Vienna: Institute for Advanced Studies 2013

In order to register an initiative, the organizers, coming from Member States and of voting age for the European Parliament (EP) elections (Art. 3.1.), shall create a citizens' committee including at least seven individuals originating from at least seven different Member States. Moreover, the organizers are responsible for designating one representative and one contact persons to communicate between the citizens' committee and the EU institutions (Art. 3.2.). An initiative supporters, similarly as in the case of organizers, must be EU citizens and of voting age for the EP elections (Art. 3.4.). In order to register a proposed initiative, the organisers have to provide information on the initiative, such as subject matter, objectives or the sources of support and funding that will be then available to the general public through an online register (Art. 4.1.). The EC may, however, reject the request for registration if, among others, the initiative clearly falls outside the framework of its powers to submit a proposal for a legal act for the purpose of implementing the Treaties or if the initiative is in contradiction to the values of represented by the EU. Any refusal needs to be duly justified by the EC (Art. 4.3.). it is important to mention that the organizers have a right to

[11] European Parliament and the Council, Regulation (EU) No 211/2011 of the European Parliament and of the Council of 16 February 2011 on the Citizens' Initiative. Official Journal of the European Union: 11.3.2011, L 65/1

propose the form in which the adopted act should appear, either as a regulation, directive or decision. On the other hand, it is at the EC discretion to determine the final shape of the proposal[12]. After registration, the organizers may start the process of support mobilization, which takes twelve months (Art. 5.5.). Both paper and electronic way of gathering signatures are valid (Art. 5.2.). An initiative supporters should represent minimum one quarter of Member States (Art. 7.1.), and, what is more, the Regulation introduces country quotas, minimum numbers below which gathered statements of support are not taken into consideration when counting signatories (Art. 7.2.) and are calculated on the basis of the size of a country. Given that, the minimum numbers refer to countries such as Estonia, Luxembourg or Malta (4 500), the maximum – to Germany (72 000). The quotas for the V4 countries are placed in between these numbers and are as follows: Slovakia – 9 750; Hungary and Czech Republic – 15 750; Poland – 38 250. After the period of signature collection, the organisers submit the gathered statements of support to the relevant authorities, which next have three months to verify and certify the support (Art. 8.1. & 8.2.). Finally, the initiative can be further submitted to the EC. The Commission is now obliged to publish the citizens' initiative in the register and receive the organisers in order to enable them to explain in more detail the issues raised by the initiative. After that, the Commission within three months needs to set out legal as well as political conclusions on the initiative that are publicly available, together with the action and its explanation that the EC intends to take (Art. 10.1. & 10.2.). In case of successful fulfilling of all the requirements, the organisers are given the chance to introduce the citizens' initiative at a public hearing. Such a hearing is organized at the European Parliament, with the presence of other relevant institutions and EU bodies if needed (Art. 11).

Methods

The research incorporates qualitative approach to data analysis, with the three initiatives: Right to Water, One of Us, and Stop Vivisection, constituting case studies. Each initiative is discussed first in terms of European realities as well as in Visegrad countries afterwards. Data from both primary (EU legal acts and communication, materials provided by the organizational committees, press releases, and social media) as well as secondary sources (scientific literature on the topic of the ECI and preliminary elaborations on the three initiatives) were used in the analysis.

[12]Głogowski P., Maurer A., *The European Citizens' Initiative - Chances, Constrains, and Limits*. Vienna: Institute for Advanced Studies 2013

Results

So far, only three out of thirty one registered initiatives managed to gather the required number of signatures: Right to Water, One of Us and Stop Vivisection. Although the three campaigns touch upon different areas and are characterized by disparate organizational approaches, they all fall into the scope of widely understood public health. The initiatives are briefly described below and their logos are presented on Graph 2.

Graph 2. The initiatives logos
Sources: Right to Water initiative website. Poster and campaign gallery. Retrieved September 4th from: http://right2water.eu/gallery/poster-and-campaign-gallery; Stop Vivisection initiative website. Retrieved September 4th from: http://www.stopvivisection.eu; One of Us initiative website. Retrieved September 4th from: http://www.oneofus.eu

Right to Water initiative (2012-2013)

The initiative which full name is ”Water and sanitation are a human right! Water is a public good, not a commodity!”, represents the very first initiative in the history of the instrument that managed to gain support of over one million citizens across the European Union. The initiative calls for the implementation of the human right to water and sanitation and, what is more, it promotes the provision of water and sanitary services as essential public services for every European citizen. Hence, the organizers went a step further proposing also the elimination of water services from the rules of internal market as well as the liberalisation of the EU water market[13]. The campaign was essentially Brussels-based and concentrated around the European Public Services Union (EPSU), its main initiator, representing over 260 unions with 8 million public service workers as potential supporters[14]. Additionally, almost 150 organizations and public figures from areas such as human rights, development, water industry,

[13]European Citizens' Initiative Official Register.Right to Water. Retrieved September 8th from: http://ec.europa.eu/citizens-initiative/public/initiatives/finalised/details/2012/000003
[14]EPSU website. Retrieved August 23rd from: http://www.epsu.org

environment, and public health offered a more or less direct support[15]. Funding needed to perform the campaign activities were essentially contributed from the EPSU budget and accounted for 140 000 EUR, with 100 000 EUR that had been fundraised before the campaign's beginning[16]. What is interesting, another tranche of almost 100 000 EUR was given to the organizers by the Member States as sign of their further endorsement[17]. The money collected was spent on the initiative registration, website maintenance, communication with supporters as well as on language and legal aid[18]. As the campaign called on the EC to take action in several areas, only a few were acceptable. Most importantly, the EC decided to exclude water services from the 2014/23/EU Directive on the award of concession contracts ("concessions directive"), which regulates the issue of public procurement across the EU, leaving the matter of providing water services fully to the discretion of national laws of the Member States[19].

In total, the initiative collected 1 659 543 valid signatures. The great majority of all signatures, over 1 200 000, was collected in Germany[20]. Number of signatures collected in each Member State is displayed in Table 1.

[15]Right to Water initiative website. Retrieved August 22nd from::http://www.right2water.eu/supporting-organisations

[16]European Citizens' Initiative Official Register.Right to Water. Retrieved September 8th from: http://ec.europa.eu/citizens-initiative/public/initiatives/finalised/details/2012/000003

[17]ECI Campaign website.An Overview of the First Two Years of the European Citizens' Initiative. Retrieved August 19th from: http://www.citizens-initiative.eu/eci/stats

[18] Kaufmann B., Berg C., *The European Citizens' Initiative Briefing. The First Year with Transnational Direct Democracy in Practice.* Brussels: Democracy International/European Citizens Action Service/Initiative for the European Citizens' Initiative/Initiative and Referendum Institute Europe 2013

[19] European Commission, *Communication From the Commission on the European Citizens' Initiative "Water and Sanitation Are a Human Right! Water Is a Public Good, Not a Commodity!"*.COM(2014) 177 final. Retrieved August 27th from:http://ec.europa.eu/transparency/regdoc/rep/1/2014/EN/1-2014-177-EN-F1-1.Pdf

[20]European Citizens' Initiative Official Register.Right to Water, 2014. Retrieved September 8th from: http://ec.europa.eu/citizens-initiative/public/initiatives/finalised/details/2012/000003

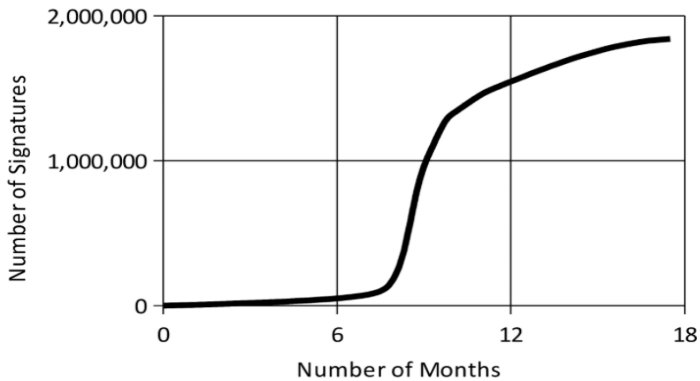
Table 1.Right to Water initiative. Number of collected signatures (V4 countries highlighted in green)

No.	Country	Number of valid signatures	No.	Country	Number of valid signatures
1	Germany	1 236 455	**15**	**Czech Republic**	**7 575**
2	Italy	65 223	16	United Kingdom	7 104
3	Spain	58 051	17	Luxembourg	5 566
4	Austria	57 643	**18**	**Poland**	**3 962**
5	Belgium	40 549	19	Romania	3 176
6	Greece	33 220	20	Cyprus	2 924
7	Netherlands	21 469	21	Ireland	2 513
8	**Slovakia**	**20 988**	22	Malta	1 635
9	**Hungary**	**18 245**	23	Bulgaria	1 406
10	Slovenia	17 546	24	Estonia	516
11	Finland	14 589	25	Latvia	393
12	Portugal	13 964	26	France	0
13	Lithuania	13 252	27	Croatia	0
14	Sweden	11 579	28	Denmark	0

Source: European Citizens' Initiative Official Register. Right to Water. Retrieved September 8th from: http://ec.europa.eu/citizens-initiative/public/initiatives/finalised/details/2012/000003

Interestingly, the initiative experienced a very slow start in terms of signature collection (Graph 3). The initiative collected only 3.5% of the required number of signatures after the first six months of the campaign. The real growth accelerated after the emission of a report on water privatisation on German national TV. After that, within only two months, the support for the initiative increased to over one million, gaining

supporters mainly from Germany as well as online[21]. 18% of the collected statements of support were submitted traditionally on paper[22]. Moreover, the EC decided to prolong the signature collection period due to technical difficulties related to the management of the online collection system (OCS) that had been reported by the citizens' committee[23].



Graph 3. Signature gathering graph - Right to Water initiative
Source: Berg C., Głogowski P., An Overview of the First Two Years of the European Citizens' Initiative. In: Berg C., Thomson J., An ECI That Works. Learning From the First Two Years of the European Citizens' Initiative.Alfter: The ECI Campaign 2014, pp. 11-18

As can be observed in Table 1, country quotas considering the V4 countries were reached only in Hungary and Slovakia, therefore only signatures from these countries were taken into account when counting the overall official engagement of Member States in the campaign. Gathered statements of support constituted only 2,40% of the total support.

One of Us initiative (2012-2014)

The second initiative that exceeded the one million signatures threshold was the One of Us citizens' initiative. In brief, the initiative introduced by ONE OF US European Federation for Life and Human Dignity, asked the European Union for ending the funding of activities involving the

[21]ECI Campaign website.An Overview of the First Two Years of the European Citizens' Initiative. Retrieved August 19th from: http://www.citizens-initiative.eu/eci/stats
[22]Głogowski P., Maurer A., *The European Citizens' Initiative – Chances, Constrains, and Limits.* Vienna: Institute for Advanced Studies 2013
[23] Kaufmann B., Berg C., *The European Citizens' Initiative Briefing. The First Year with Transnational Direct Democracy in Practice.* Brussels: Democracy International/European Citizens Action Service/Initiative for the European Citizens' Initiative/Initiative and Referendum Institute Europe 2013

destruction of human embryos, above all, in the field of research, development aid and also public health. The main assumptions of the initiative were driven by the desire to protect the rights to dignity, life, and integrity of every human from conception[24]. The initiative, nationally coordinated rather than led by Brussels based activists, was essentially introduced and supported mostly by pro-life movements, religious organizations as well as conservative communities[25]. In fact, the start of the campaign was planned to take place in the Vatican City, with the support of Pope Benedict XVI and Pope Francis. Gathering signatures in churches was a common practice[26]. In total, a budget of 159 219 EUR was provided to fund the initiative's activities. Most of the campaign funds – 120 580 EUR – were donated in two tranches by Fondazione Vita Nova, an Italian pro-life organization. The support was used for the rental of premises and utility charges as well as the maintenance of the initiative website. The funds provided by Provida de Catalona Foundation and Valores y Sociedad Foundation were allocated to the staff salaries[27]. Despite collecting the greatest number of signatures of the discussed initiatives, the EC saw no need to propose amendments to the EU Financial Regulation, as it was formulated inter alia based on respect of the right to life and human dignity. Moreover, the EU only shortly before the decision on the ECI had agreed on the Horizon 2020 and the stringent provisions with regard to research involving the use of human embryonic stem cells. Under current law, the EU does not provide funds for activities comprising the destruction of human embryos at the blastocyst stage for scientific purposes and fully recognizes national laws on that matter[28].

The initiative gathered the largest number of signatures in ECI history, with 1 721 626 valid signatures and 1,9 million supporters in general, almost doubling the EC signature requirement. Due to the initiative's message, the campaign gained the greatest support in traditionally Catholic member states such as Italy (623 947), Poland (235 964) or Spain (144 827). As many

[24]European Citizens' Initiative Official Register.One of Us. Retrieved September 8th from: http://ec.europa.eu/citizens-initiative/public/initiatives/finalised/details/2012/000005

[25] Del Pino A., *One Of Us.* In: Berg C., Thomson J., *An ECI That Works. Learning From the First Two Years of the European Citizens' Initiative*.Alfter: The ECI Campaign 2014, pp. 25-27

[26] European Parliamentary Forum on Population & Development, *Behind the European Citizen's Initiative "One of Us". 2 Popes & 1 Million Europeans Choose to Abandon Fight Against Maternal Mortality.* Intelligence Brief 2013, 8, pp. 1-5

[27]European Citizens' Initiative Official Register.One of Us. Retrieved September 8th from: http://ec.europa.eu/citizens-initiative/public/initiatives/finalised/details/2012/000005

[28] European Commission, *Communication From the Commission on the European Citizens' Initiative "One of Us"*. COM(2014) 355 final. Retrieved August 27th from: http://ec.europa.eu/transparency/regdoc/rep/1/2014/EN/1-2014-355-EN-F1-1.Pdf

as eighteen countries managed to reach country quotas[29]. Number of signatures gathered in each member state is displayed in Table 2.

Table 2. One of Us initiative. Number of collected signatures (V4 countries highlighted in green)

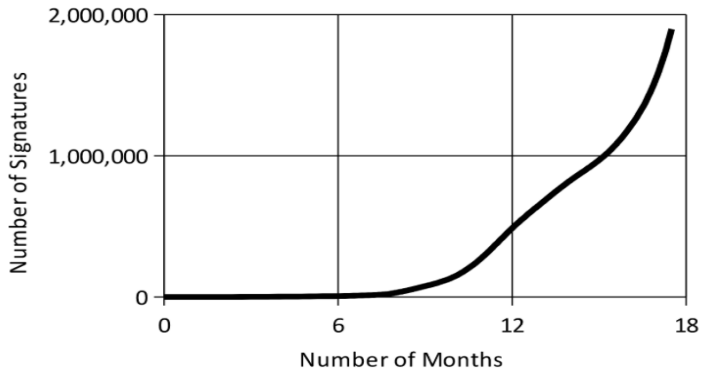
No.	Country	Number of valid signatures	No.	Country	Number of valid signatures
1	Italy	623 947	15	Croatia	12 778
2	**Poland**	**235 964**	16	Lithuania	11 646
3	Spain	144 827	**17**	**Czech Republic**	**11 468**
4	Germany	137 874	18	Latvia	9 132
5	Romania	110 405	19	Denmark	7 563
6	France	83 503	20	Ireland	6 679
7	Portugal	65 564	21	Cyprus	6 407
8	Greece	52 977	22	Belgium	5 478
9	**Hungary**	**45 933**	23	Luxembourg	5 469
10	**Slovakia**	**31 951**	24	Slovenia	3 481
11	Netherlands	27 271	25	Sweden	2 468
12	United Kingdom	26 298	26	Estonia	2 417
13	Austria	24 973	27	Finland	1 230
14	Malta	23 017	28	Bulgaria	906

Source: European Citizens' Initiative Official Register. One of Us. Retrieved September 8th from: http://ec.europa.eu/citizens-initiative/public/initiatives/finalised/details/2012/000005

Interest-wise, the process of gathering signatures started slowly, however, approximately from the eighth month of the campaign, it attracted a great

[29]European Citizens' Initiative Official Register.One of Us. Retrieved September 8th from: http://ec.europa.eu/citizens-initiative/public/initiatives/finalised/details/2012/000005

interest, leading to the impressive result (Graph 4). Interestingly, most of the gathered signatures, 65%, were collected in paper format[30].



Graph 4. Signature gathering graph - One of Us initiative
Source: Berg C., Głogowski P., An Overview of the First Two Years of the European Citizens' Initiative. In: Berg C., Thomson J., An ECI That Works. Learning From the First Two Years of the European Citizens' Initiative.Alfter: The ECI Campaign 2014, pp. 11-18

Considering the participation of the V4 countries in the process of support mobilization, country quotas were successfully reached in Poland, Hungary and Slovakia, with the great majority of signatures collected in Poland, which represents as much as 18,23 % of the total support.

Stop Vivisection initiative (2012-2015)

Stop Vivisection constitutes the third initiative that collected the required number of signatures and has been answered by the EC most recently. The initiative called for changing the way in which biomedical and toxicological research are being carried out, by proposing legislative framework intended to replacing animal testing with alternative and more human-specific methods. Besides ethical concerns related to the practice of vivisection and animal suffering, the organizers questioned as well the accuracy of animal models used in research conducted to determine human response and human-specific health consequences, urging the EC to make the usage of human-relevant data mandatory in biomedical research[31]. The campaign towards phasing out animal experiments was initiated by eleven European citizens representing scientific community as well as activists

[30]Berg C., Głogowski P., An Overview of the First Two Years of the European Citizens' Initiative. In: Berg C., Thomson J., An ECI That Works. Learning From the First Two Years of the European Citizens' Initiative.Alfter: The ECI Campaign 2014, pp. 11-18
[31]European Citizens' Initiative Official Register. Stop Vivisection. Retrieved September 8th from: http://ec.europa.eu/citizens-initiative/public/initiatives/finalised/details/2012/000007

advocating for animal welfare and alternative research practices from different member states[32]. Citizens' committee members included researchers (physicians, zoologist, biologist, bioethicist), NGOs representatives and former national and European politicians with promotional coordination based in Italy[33]. Essentially, the campaign was run by volunteers and supported by more than 230, often of national span, animal rights organizations and almost 50 MEPs from 10 Member States[34]. Due to scarcity of financial resources, the campaign was based on Internet marketing and electronic communication, frequently using social media to promote the initiative ideas and gain supporters[35]. The campaign received a relatively modest financial support compared to the other initiatives – 23 651 EUR and is characterized by the highest fragmentation of donors among the initiatives under study (delivering amounts starting from 500 to 6 000 EUR)[36]. In conclusion, While in its official response the European Commission ensured that it supports the organizers' view on the need to gradually eliminate animal experimentation in research, as this constitutes the ultimate purpose of the European Community legislation, however, at present, the complete substitution of animal studies is impossible in the absence of alternative solutions. Moreover, the Commission expressed the lack of consensus about the raised issue of invalidity of animal models for human-relevant research. The EC pointed out the existing provisions of Directive 2010/63/EU, which, with the "Three Rs" principle (to replace, reduce and refine the use of animals in research wherever possible), facilitates the animal safety and development of alternative approaches[37].

Given the challenges associated with limited funds and dominant national scope of the campaign, Stop Vivisection collected an impressive number of 1 173 130 valid signatures. The bulk of all signatures was gathered in Italy (690 325), followed by Germany (164 304)[38]. Country-specific quotas

[32] Stop Vivisection initiative website. Retrieved September 4th from: http://www.stopvivisection.eu

[33] Stop Vivisection initiative website. Citizens Committee. Retrieved September 4th from: http://www.stopvivisection.eu/en/content/citizens-committee

[34] Stop Vivisection initiative website. Supporters. Retrieved September 4th from: http://www.stopvivisection.eu/en/content/supporters

[35] Berg C., Głogowski P., *An Overview of the First Two Years of the European Citizens' Initiative.* In: Berg C., Thomson J., *An ECI That Works. Learning From the First Two Years of the European Citizens' Initiative*.Alfter: The ECI Campaign 2014, pp. 11-18

[36]European Citizens' Initiative Official Register. Stop Vivisection. Retrieved September 8th from: http://ec.europa.eu/citizens-initiative/public/initiatives/finalised/details/2012/000007

[37]European Commission, *Communication From the Commission on the European Citizens' Initiative "Stop Vivisection"*. COM(2015) 3773 final. Retrieved August 27th from: http://ec.europa.eu/transparency/regdoc/rep/3/2015/EN/3-2015-3773-EN-F1-1.PDF

[38]European Citizens' Initiative Official Register. Stop Vivisection. Retrieved September 8th from: http://ec.europa.eu/citizens-initiative/public/initiatives/finalised/details/2012/000007

were successfully reached in nine member states. Number of signatures collected in each member state is presented in Table 3.

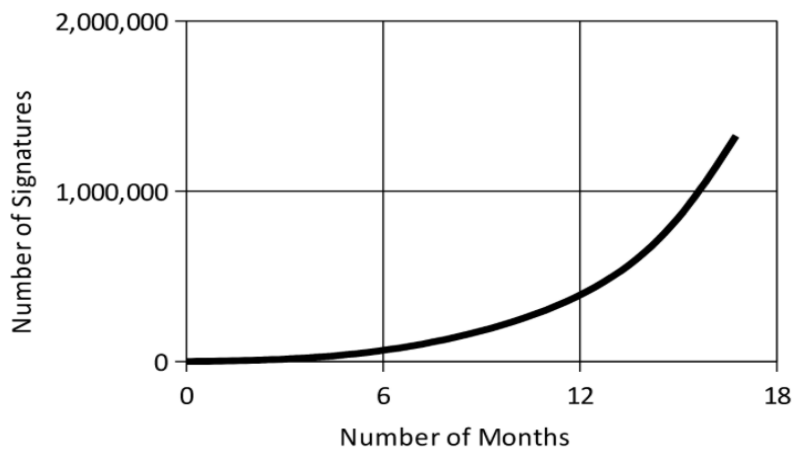
Table 3. Stop Vivisection initiative. Number of collected signatures (V4 countries highlighted in green)

No.	Country	Number of valid signatures	No.	Country	Number of valid signatures
1	Italy	690 325	15	Sweden	7 661
2	Germany	164 304	16	Lithuania	4 737
3	France	61 818	17	Denmark	4 610
4	Spain	47 194	**18**	**Czech Republic**	**4 075**
5	**Poland**	**38 824**	19	Ireland	3 333
6	**Hungary**	**26 948**	20	Latvia	3 167
7	Slovenia	19 507	21	Estonia	2 502
8	United Kingdom	19 472	22	Greece	1 952
9	Bulgaria	12 598	23	Malta	1 662
10	Finland	12 495	24	Romania	1 645
11	**Slovakia**	**12 055**	25	Luxembourg	1 291
12	Portugal	11 305	26	Cyprus	533
13	Netherlands	9 909	27	Belgium	0
14	Austria	9 208	28	Croatia	0

Source: European Citizens' Initiative Official Register. Stop Vivisection. Retrieved September 8th from: http://ec.europa.eu/citizens-initiative/public/initiatives/finalised/details/2012/000007

Although registered in June 2012, the signature collection period began with 6-month delay, in January 2013, because of experienced difficulties related to the online signature collection system. However, that fact did not

considerably affect the process of signature collection as the EC decided to begin a new process once the issues were solved. The online approach to gathering supporters proven to be the most effective, providing 800 000 signatures compared to 500 000 collected traditionally on paper. As of July 2013, the campaign gathered 500,000 supporters. Therefore, at that time the initiative promotion required significant intensification. Through the work of national committees and using social media, the campaign managed to collect the majority of signatures, almost 700 000, within the last three months allowed for the signature collection (Graph 5). The citizens' committee experienced several impediments while collecting signatures. The paper forms that were difficult to read and the requirement of providing overly extended personal information and ID numbers, causing privacy concerns among potential supporters, constituted serious impediments to mobilize greater public support for the initiative[39].



Graph 5. Signature gathering graph - Stop Vivisection initiative
Source: Berg C., Głogowski P., *An Overview of the First Two Years of the European Citizens' Initiative.* In: Berg C., Thomson J., *An ECI That Works. Learning From the First Two Years of the European Citizens' Initiative.*Alfter: The ECI Campaign 2014, pp. 11-18

When taking a closer look at the participation of the V4 countries when it comes to the official support of the campaign, similarly to the One of Us initiative, citizens of Poland, Hungary and Slovakia supported the citizens' committee by signing the statement of support, however, the countries support is estimated to constitute only 6,63% of the overall initiative support.

[39]Varrica A., *Stop Vivisection.* In: Berg C., Thomson J., *An ECI That Works. Learning From the First Two Years of the European Citizens' Initiative.*Alfter: The ECI Campaign 2014, pp. 29-31

Conclusions

As can be observed, the issue of the participation of Member States in the European Citizens' Initiatives is determined by several factors. The support shown to the initiatives is undoubtedly related to the size of each country. it is clear that five of the six countries that cover the largest area among EU Member States gathered almost two thirds of all ECI signatures (Germany – 32%; Italy – 26%; Spain, Poland and France together – 16%; other EU Member States – 26%)[40]. Country engagement is also closely associated with the fact of existence of the initiatives in Member States, in terms of initiating an initiative, performing promotional activities or mobilizing crucial stakeholders. What is more, the issue of campaigns' relative importance for each country as well as national perception of their application in local settings, and social attitudes towards an issue are also essential. As an illustration, the Right to Water initiative took an advantage of very well organized and resourced national group of activists and significant media interest on the topic of the liberalization of water services in Germany. As presented above, the One of Us initiative gained its supporters mostly in traditionally Catholic Member States such as Poland, Italy or Spain, using religious networks in order to increase its visibility and impact. Finally, the Stop Vivisection initiative, as strongly endorsed by organizations of Italian origin dealing with animal rights, received the greatest support from Italian citizens. Summarizing the engagement of the V4 countries in the campaigns launched under the European Citizens' Initiative, except major participation of Poland in the second successful initiative, One of Us, one can speak about a modest involvement of the countries in all the three initiatives compared with other European countries. This can be explained by several reasons. First of all, in general terms, despite the official period of operation of over three years, European citizens are still not fully familiar with the instrument and the level of awareness on the ECI process remains low, which was particularly burdensome especially for initiatives registered at the outset, in the year 2012. Raising awareness only on the ECI process, not mentioning the actual initiatives, in 28 Member States certainly poses a major challenge. However, most importantly, due to political settings and democratic transformations, that the V4 countries have experienced, it seems that there is much to be learned by the countries when it comes to involving citizens in decision-making and developing a public sphere, as shown in the case

[40]Berg C., Głogowski P., An Overview of the First Two Years of the European Citizens' Initiative. In: Berg C., Thomson J., An ECI That Works. Learning From the First Two Years of the European Citizens' Initiative.Alfter: The ECI Campaign 2014, pp. 11-18

of deep-rooted democratic traditions in stables democracies such as Germany, Austria or France. The ECI is an instrument with a large social potential, however, to some extent restricted due to formal and legal conditions that come to expression with the tool evolution, given the lack of management of human and material resources in the event of rejecting a successful initiative, for instance. Having said that, citing Van der Berge: "The ECI must be seen for what it is: an agenda-setting tool for citizens to initiate a Europe-wide debate on a certain topic and turn the attention of the Commission, as well as the media and general public, to the subject"[41]. Nevertheless, its strongest advantage, generating attention of the European Community, can be successfully used in the public health field in order to discuss emerging public health challenges of a transnational importance.

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Evaluation of health programmes and health promotion in Siemianowice Śląskie

Abstract

There are the care and health promotion in the activities of local governments, which are responsible for the implementation of health politics in their territory. The purpose of this research was to evaluate the Health Programmers and the health promotion which were made in Siemianowice Śląskie from 2009 till 2013. The documents which were received from the Department of Health and Social Affairs of Siemianowice Śląskie. City Authority, concerning the activities of local government in the field of health promotion and prevention of disease. All programmers were evaluated of Polish Quality Assurance Tools in Local Government Health Promotion Programmers. In the analyzed period the local government of the city of Siemianowice Śląskie decided to implement four health programmers in the field of mental health, alcohol problems, drug addicts and program of action related to the improvement of the situation of people with disabilities. There are no health programmers for prevention of cardiovascular disease, cancers and anti-obesity among children and adolescents. Activities related to health promotion are mainly school health promotion programmers or outdoor events. it seems legitimate to implement health programmers in the field of cardiovascular disease, cancers and obesity among children and adolescents. it is necessary a proper evaluation of prepared health programmers.

Introduction

The term“ health promotion” is often misinterpreted as disease prevention. This results from the fact that the activities included in primary prevention and health promotion frequently overlap. Prevention is aimed at protection against a disease via the control of its causes and risk factors, whereas promotion addresses starting point, objectives and beneficiaries [19].

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At any stage, prevention centers around supporting normal development of an individual. it is addressed to all persons, irrespective of their age and health status. it should play an educational role, mostly pertaining to the distribution of information helpful in the development of health-oriented attitudes [7, 9, 1].The objectives of health promotion are practically achieved with its three basic components: health education, disease prevention and local health policy. In turn, prevention includes all activities aimed at detection, diagnosis and elimination of conditions that may promote a disease, accident, injury or intoxication.

The rationale for health promotion and prevention is to protect community against the consequences of the diseases that have been detected too late. Development of health promotion-oriented attitude is a consequence of new processes taking place in modern medicine and some related sciences, among them appropriate understanding of health.
According to World Health Organization, the leading cause of preterm mortality worldwide are cardiovascular diseases, associated with too low physical activity, high blood cholesterol, arterial hypertension, obesity, diabetes mellitus and atherosclerosis, and resulting from excessive consumption of energy-dense high-fat and -salt foods. The second leading cause of mortality are malignant neoplasm the incidence of which is promoted by tobacco smoking, high-fat diet, too low physical activity and high-risk sexual behaviors. The third most common group of mortality causes are chronic obstructive respiratory diseases, primarily linked to tobacco smoking.

The last, fourth group of mortality causes according to WHO includes road accidents, injuries and intoxications. They are most prevalent among young men, under 40 years of age. Principal risk factors for these conditions include alcohol abuse, risky driving, unfastened safety belts, drug abuse and cigarette smoking [18].

Previous research, inter alia the studies conducted in the US and Canada, showed that a half of deaths result from the influence of factors that could be adequately controlled.

Human beings differ considerably in terms of their everyday health behaviors. The choice of a given health-oriented behavior is determined not only but one's will and readiness, but also by his/her environment. Consequently, it can be stated that not only disease-preventive behaviors but also the illness-promoting ones are an outcome of individual preferences and extrinsic influences, such as culture, as well social and socioeconomic conditions [8].

Expansion of chronic diseases and environmental threats, as well as growing health inequities between people from various social classes, constitute an increasing problem of a modern era. Improvement, strengthening and potentiate on of health-oriented behaviors are one way to meet the expectations and needs of community in this matter.

Health promotion dedicated to a local community includes many activities, also those addressed to the subpopulations who may influence social, cultural and environmental determinants of health. This includes also knowledge and experience gained by qualified personnel and then used for the purposes of many community-addressed educational initiatives.

Public health experts emphasize a need for justifying public expenditures for health promotion. Appropriate justification is a key to identify these initiatives that are most likely to be successful.

In the biomedical approach, particular emphasis is put on high-risk groups, screening tests and health care. In turn, behavioral approach centers around the programs aimed at modification of high-risk attitudes and unfavorable health behaviors. Finally, socio environmental approach focuses on the determinants of high risk and on the ways people adjust to them [5].

Healthcare and health promotion represent important areas of local self-government activity, and the principal role of local authorities it to satisfy the needs of their inhabitants in this matter [2].

The activities of self-governments directly linked to health promotion are summarized in Table IV.

Table IV Activities related to health promotion, being at a discretion of local self-governments [5, 14].

Provincial self-government	**District self-government**	**Communal self-government**
- environmental protection - water management - physical culture and tourism	- environmental protection - water management - physical culture and tourism - public education - public order	- land management and environmental protection - regulations with regards to water management and wastewater treatment - physical culture and tourism - physical culture, including care for recreational areas and sport facilities - organization of landfill sites - elimination of communal wastes - care for green belts - public order

Source: Krajewski-Siuda K., Olszanecka-Glinianowicz M., Kaczmarek K. [Self-governmental health promotion]

Legal acts regulating the activities of self-governments that may influence health status of local communities are directly associated with the implementation of public health concept included in the National Health Program.

National Health Program addresses main directions of health policy. Due to its objectives, its raises possibility for more effective execution of the tasks linked to public health [6].

Objective

The aim of the study was to assess the activities undertaken within the field of health programmes and health promotion conducted by the Department of Social Affairs and Health, Municipality of Siemianowice Śląskie in 2009-2013.

Material and methods

We analyzed and evaluated documentation provided by the Social Care and Healthcare Unit, Siemianowice Śląskie City Council, regarding activities of local self-government in the field of health promotion and disease prevention. The following programs were analyzed:

1. Municipal Program for Mental Health Protection for 2012-2014:

- resolution no. 201/2012 of 22 March 2012.

2. Municipal Program for Prevention and Management of Alcohol-Related Problems:

- resolution no. 389/2008 of 29 December 2008;
- resolution no. 576/2009 of 22 December 2009;
- resolution no. 727/2010 of 28 October 2010;
- resolution no. 151/2011 of 15 December 2011;
- resolution no. 298/2012 of 22 November 2012;
- resolution no. 440/2013 of 21.November 2013;
- resolution no. 536/2014 of 30 October 2014.

3. Municipal Program for Drug Abuse Prevention:

- for 2007-2010 – resolution no. 110/2007 of 26 July 2007;
- for 2011-2014 – resolution no. 27/2011 of 10 February 2011.

4. Program of Activities for Disabled Persons from Siemianowice Śląskie for 2012-2013 [10÷17].

The instrument used for the assessment of the abovementioned health promotion and preventive programs was a simplified version of the Polish Questionnaire for Providing Quality of Self-Governmental Health Promotion Programs [5]. The instrument is used for the development and assessment of low-budget programs.

The version included in this study was comprised of three distinct thematic parts:

1. planning – including eight items regarding the process of program development, e.g. scale of the problem, institutions involved in the execution of the programme, financial outlays, communication with target group or results confirming efficacy of selected method;
2. activities – with four items regarding monitoring of the project and potential obstacles that may occur during its implementation;
3. evaluation – containing three items regarding the evaluation of the results e.g. timing of the evaluation and continuation of the project provided that results will be positive.

Each item included in the questionnaire was scored on a 3-item scale: as (+) achieved,(+/-) partially achieved, or (-) non-achieved. If any aspect cannot be evaluated, as non-applicable for a given program, or respective information was missing, the field was left blank.

Results

A total of four health programs were implemented in Siemianowice Śląskie in 2009-2013. We analyzed the assumptions and execution of the projects, including their planning, implementation and evaluation stages.

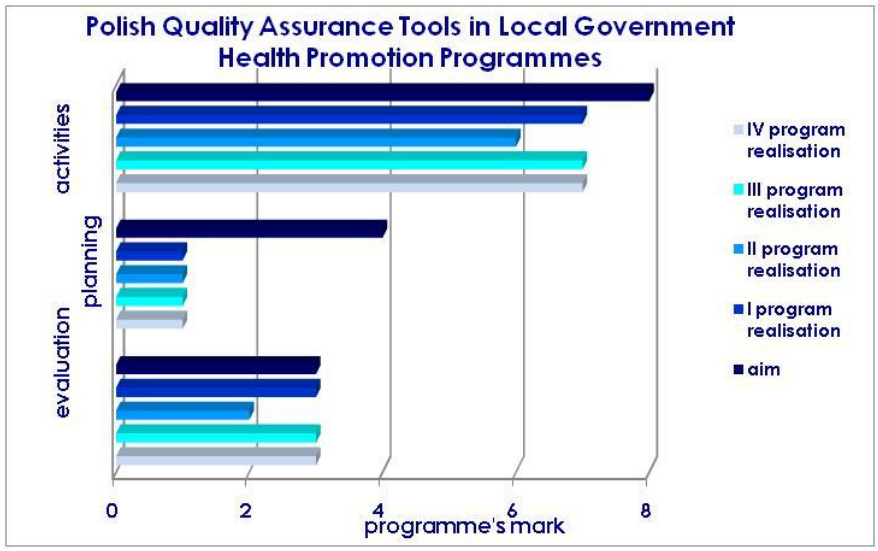

Fig.1. Assumption and execution of analyzed programmes

During the analyzed period, the self-government of Siemianowice Śląskie implemented four health programs dedicated to mental health, alcohol-related problems, drug abuse and improvement of the situation of disabled persons. The analysis revealed many flaws at each of the analyzed stages. at the planning stage no one project has taken into consideration the opinion of target group. Furthermore, there was no schedule regarding informing about the programme on the prevention and solving of alcohol problems. Stage "activities" contains many flaws, regarding analysis of the alternative methods, information on possible obstacles, and dealing with them. In three of four programmes under the evaluation the stage of evaluation of the results has reached maximum value. The programme on alcohol problem solving is the only one, which does not predict evaluation of the results, what contradicts the point on continuation of the project provided that results are positive.

In summary, the municipal authorities did not undertake conduction of of health programmes aimed at prevention of cardiovascular diseases, cancer and obesity in children and adolescents. This could be due to conducting other programmes in Siemianowice Śląskie, funded by the National Health Fund, or the Province Sanitary-Epidemiological Station in Katowice.

Discussion

One principal task of the state should be appropriate organization of primary health care, since it is activity within this area which contributes to approximately 70% of successful therapeutic outcomes. Equally important are early prevention and health promotion, as they both protect community against the consequences of the diseases that have been detected too late. As widely known, appropriate modification of health behaviors may postpone the time point when the implementation of an expensive treatment remains the only option [3].

For a long time, all prophylactic measures have been a subject of continuous verification and evaluation. The list of factors that were showed to hinder appropriate implementation of preventive activities includes the lack of public health specialist involvement in the creation of local policies and health promotion strategies, as well as too low expenditures on healthcare [3].

A key component from the viewpoint of health program organization seems to be its duration. In line with the Act on Healthcare Benefits, health programs should be implemented as one-year or multiannual projects. However, in real life, the activities undertaken within the framework of a typical program usually do not last longer than 6 months. This results from the specificity of one-year budgeting within local self-governmental units, as well as from concerns regarding the implementation of multiannual programs without previous securing their financing.

Resources dedicated to a given program seem to be sufficient only if its target group is not too large. Consequently, access to markedly greater financial resources should enable implementation of multiannual programs which by default are more efficient and effective.

According to the Agency for Health Technology Assessment, a body which in theory should evaluate each newly developed health program, implementation of each preventive or health promotion project should be preceded by social diagnosis; this will identify determinants of health in a given population and target group for the project, and explain if the activities planned within the framework of the program can really modify the habits of its beneficiaries. Unfortunately, the analysis of health programs executed in Siemianowice Śląskie revealed flaws at all the stages of their development and implementation.

First, their authors did not consider opinions of local inhabitants during the planning stage. Furthermore, information on the projects was not spread in form of posters or personal invitation letters. Importantly, the latter

problem is not unique for Siemianowice Śląskie but inherent to most projects implemented in other Polish towns and cities.

Another important issue is the lack of a rationale for the activities undertaken by Siemianowice Śląskie City Council. While the health programs implemented in most other towns and cities of Silesian province are driven by the data from the Report on the Health Status of Local Inhabitants, such report has not been prepared in Siemianowice Śląskie. Consequently, the only source of information were the data from the District Sanitary-Epidemiological Station and from the Report on the Health Status of Silesian Province Inhabitants. it is a matter of discussion if the Reports on the Health Status of Local Inhabitants should be generated more often than every 5 years. Krakow is the only city where the reports on the inhabitant health status are generated on a yearly basis. Nevertheless, complete resignation from generation of such report is a serious failure.

Analysis of epidemiological data implies that the incidence of both malignant neoplasms and cardiovascular diseases increases on a yearly basis. However, contrary to other towns and cities of Silesian Province, namely Dąbrowa Górnicza, Bytom, Piekary Śląskie and Katowice, no health programs aimed at prevention of these conditions were ever implemented in Siemianowice Śląskie. This may reflect poor cooperation between the local self-government, City Council and Local Healthcare Unit.

Also poor promotion of health programs implemented in Siemianowice Śląskie seems to be a serious issue. Information on the programs was available at the City Council's website, and sporadically also in form of posters, usually displayed in local healthcare facilities, or invitation letters sent to randomly chosen inhabitants. If the health programs were promoted in local newspapers and television, both the probability of reaching a larger target group and the number of individuals participating in the projects would be greater.

Choice of the entities responsible for implementation of the programs was based on the results of contests organized by the local self-governmental unit. Similar procedure is used by nearly all local self-governments, and as such is not specific for Siemianowice Śląskie. Information on the contest procedure was available on the City Council's website, at least 30 days prior to the submission deadline. Call for submission specified the requirements for potential providers, as well as the deadline and place of submission. Although the abovementioned scheme seems to be a relatively simple procedure, in fact none of the documents specified that an integral part of submitted material should be an outline of the project.

Therefore, the question arises on the criteria that have been used to eventually choose the entity responsible for implementation of a given project. Unfortunately, based on the available data we were unable to verify if the candidates submitting their proposals to the contest provided any project outlines, or rather the final decision was based solely on the list of proposed tasks and estimated cost thereof.

Analyzing the health program-related issues, one should remember that financial condition of most local self-governments is extremely difficult, and therefore they rarely opt for the implementation of multiannual programs. One exception is Krakow, where most programs implemented by local self-government are multiannual. Furthermore, the vast majority of programs implemented in Krakow were previously consulted with specialists in a respective medical discipline, as well as with the provincial consultants. Due to such approach, all projects that have been eventually qualified for realization were well designed and likely to receive positive opinion from the Agency for Health Technology Assessment (AOTM) [3].

Another important issue which needs to be discussed is project implementation. Organizational units being responsible for implementation of health programs typically do not consider any potential problems in execution thereof. As a result, most projects lack crisis management strategies. According to the AOTM specialists, all potential problems related to implementation should be considered already at the stage of health program development, and the so-called "critical points" need to be identified.

Monitoring of the programs and evaluation thereof are the key components considered during assessment by the AOTM reviewers. Optimally, these procedures should take place every 2-3 years. Lack of appropriate monitoring and evaluation is inherent not only to the programs implemented in Siemianowice Śląskie, but also to the projects executed in other Polish towns and cities. Typically, monitoring of a health program is based on its periodical evaluation and reporting. The entity being responsible for the implementation of the program is obliged to provide the City Council with a periodical report, which is a subject of further analysis. The outcome of this analysis constitutes the basis for the opinion on cost-effectiveness of the program. Health programs should be designed in a way enabling them to reach possibly the largest target group, modify their habits and exert persistent effects.

Since 2009, in line with the amended Act on Publicly Funded Healthcare Benefits (Journal of Laws, 25 June 2009, no. 118, pos. 989), all health programs should receive an opinion from the Agency for Health Technology Assessment. The Agency recommends that the projects should

be submitted on a dedicated template they have developed. Unfortunately, in real life most projects are developed inform of the City Council resolutions, and as such do not satisfy the AOTM's criteria of health programs.

Aside from the program of vaccination against human papilloma virus (HPV), which is to be implemented later this year, the Social Care and Health Care Unit at Siemianowice Śląskie City Council did apply to the AOTM for their opinion on any of the hereby analyzed projects. However, our analysis with the Questionnaire for Providing Quality of Self-Governmental Health Promotion Programs showed that even if submitted, all other ongoing projects would receive a negative opinion, as they lacked most components being critical for their successful development and implementation. Despite specifying detailed objectives for all the programs, none of the projects included a rationale for their implementation, opinions of specialists in a respective medical discipline, and research evidence regarding a given health-related problem. Furthermore, similar to the projects run in other cities and towns, the programs implemented in Siemianowice Śląskie lacked detailed procedures for their monitoring and evaluation. Importantly, despite the rigorous evaluation by the AOTM experts, the number of local self-governments that submit their projects to the Agency still increases [20].

Discussing the problem in question, one should emphasize that the quality of health programs is to a large extent determined by advice from experts in a given discipline. Apparently, none of the programs implemented in Siemianowice Śląskie were consulted with public health specialists; although the number of such specialists increases, this is not reflected by their greater employment rate at local self-governmental units.

This is probably related to the fact that the law on public health has not been implemented thus far. In most City Councils, there are no dedicated health program counselors, as opening such positions would generate additional costs. One potential solution of this problem would be allocation of additional financial resources to local self-governments, as stated in the new public health bill.

According to the new law proposal, all prophylactic programs will constitute a part of the National Health Program, supervised by the Government Plenipotentiary for Public Health, appointed and dismissed at the Prime Minister's sole discretion. Furthermore, according to the bill, 0.5% of the National Health Fund budget will be spent to cover healthcare benefits related to public health. Consequently, the expenditures on

prophylactic screening and cancer prevention, i.e. Pap smears and mammographic screening, will be twice as high as in 2011 [4].

Our analysis showed that it is the better quality of health promotion and preventive programs which is a prerequisite of improved health status of Siemianowice Śląskie inhabitants.

Conclusions

1. Most programs implemented in Siemianowice Śląskie involve health promotion in school and during outdoor events. Such programs only to a small extent fulfill the priorities of public health. No programs dedicated to prevention of cardiovascular diseases, malignant neoplasms and obesity of children and adolescents were implemented throughout the analyzed period.
2. The most serious flaw of the analyzed health programs is the lack of their appropriate evaluation. Planning and evaluation were the stages of health program development that should be assessed the best and the worst, respectively.

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Evidence-Based Medicine and Evidence-Based Nursing Practice – knowledge and attitudes of nurses taking a state examination

Background

The awareness of benefits resulting from the use of the latest research findings in the professional practice of modern nurses is a prerequisite to ensuring safe nursing care satisfying the highest standards. Adequate decision-making in nursing care requires not only an adequate clinical diagnosis but also knowledge of scientific data and determination of the degree of their credibilityThe aim of the study was to analyse the knowledge and attitudes of nurses with respect to Evidence-Based Medicine (EBM) and Evidence-Based Nursing Practice (EBNP).

Material and methods

225 nurses taking a state examination organized by the Centre for Postgraduate Education of Nurses and Midwives in summer semester 2014 (6 male), mean age was 42 years (min. 26, max. 66, SD=8,45), mean length of service amounted to 16.5 years (min. 4, max. 35, SD=5.25). Standardized Evidence-Based Practice: 7 domains, 74 questions. Statistical analysis: STATISTICA version 10.

Results

59,5% (n=134) was aware of EBP in their profession and its current development in Nursing (58,2%, n=131). Main barriers to implement EBM into practice is the access to the computer (38,2%, n=86), workload (37,7%, n=85) and a lack of time (35%, n=80). For 57,7% (n=130) literature and research findings were useful in their day-to-day work however in making decisions about professional work 39,5% value clinical/field experience more than scientific studies (n=89).

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Conclusions

1. The questionnaire used to measure the level of knowledge and attitudes with respect to Evidence-based Nursing Practice among nurses was an efficient and reliable method.
2. The awareness of benefits resulting from using EBMP was high. The attitudes towards evidence-based nursing practice were positive, even though the supplementation of knowledge about EBNP is recommended.
3. It is necessary to expand the skills of nurses with reference to search for scientific evidence.

Introduction

The use of scientific evidence in clinical practice has a beneficial impact not only on the safety of the very patient and medical personnel but also on the growth of the financial effectiveness and efficiency of medical procedures performed [1÷10]. Adequate decision-making in nursing care requires not only an adequate clinical diagnosis but also knowledge of scientific data and determination of the degree of their credibility. Hence the ever growing emphasis on the use of scientific research finding in the professional practice of nurses which is expected to have a favourable influence not only on the safety of the patient and the medical personnel or the effectiveness of the medical procedures performed but also on their financial effectiveness. A prerequisite is thus to make nurses aware of the necessity of using the latest scientific research findings and development of their skills and competence in the field of methodology of conducting scientific research [1÷10].

The idea of evidence-based medicine (EBM) was considered as a breakthrough in medicine. By the year 2000 appeared more than 200 major trials and 1500 articles and worked about 200 websites devoted to EBM [1]. The concept and Medicine Based on scientific evidence (evidence-based medicine - EBM) developed epidemiologists, clinicians from McMaster University in Hamilton (Canada). The same term was first used in 1991, Gordon Guyatt, a professor of medicine and clinical epidemiology in the material with information for doctors. The aim was to raise awareness on which scientific data is based on someone's practice and how much those data are reliable and what conclusions can be drawn from them. The concept of EBM was time "borrowed by other clinical areas such as nursing and as a result we can use the term Evidence-Based Practice (EBP) today

and its application in selected groups of specialists in health sciences, i.e. empirical verification of the assumptions and the results obtained.

A specialization block of postgraduate trainings comprises five modules and a general vocational block in a total of 1070 class hours and it aims to teach a nurse specific qualifications in nursing as well as acquisition of a title of specialist in this field. The general vocational classes that are the same for all fields of various specializations include also 15 hours of the "Research in Nursing" course that covers all issues associated with Evidence-Based Practice.

The dissemination of research activities in nursing and the development of the profession, knowledge and practice based on Evidence-based Nursing may contribute to the increase of the effectiveness and quality of provided health services. it is extremely important to append subjects related to Evidence-based Medicine, including the methodology of scientific research and critical analysis of the scientific literature in the educational programs in Nursing studies.

Aim

The aim of the study was an analysis of the knowledge and attitudes of nursing taking a state examination towards practical practice based on scientific evidence and the application of the latest research finding in everyday clinical practice.

Material

The study was conducted among a group of nurses taking the state examination after completing a specialist training in nursing organized by the Postgraduate Training Centre for Nurses and Midwives in summer semester in 2014. Correctly completed questionnaires were returned by 225 persons. 119 women and 6 men took part in the study. Mean age of the group amounted to 42 years (min. 26, max. 66, SD=8,45). The largest group (75 persons) had a Master's degree, 59 study participants had a medical secondary education, 33 with Bachelor's degree, 85 Master's degree and 2 graduated doctoral studies.46 persons provided no answer to that question. As many as 95 study participants completed a postgraduate training (directly increasing their professional competencies), 42 nurses said that they had not graduated from such a course.

The largest subgroup among the study group had completed a qualifying course (25 nurses), 20 of the total graduated from a specialist course, 18 of the study group completed a specialist training (other), and 3 persons graduated from a retraining course. The length of service among the study participants amounted to 16.5 years (min. 4, max. 35, SD=5,25). 106 of the

nurses took employment in the public sector, 20 of the total worked in the private sector, and only two persons stated another form of employment. As many as 121 nurses were employed under a contract of employment (full-time), 4 persons worked under a contract of mandate and other4 persons had another form of contract. The largest number of the study participants (67 persons) worked in town hospital departments and 23 persons worked in teaching hospital wards. Among the study group, five persons carried out functions related to management / supervision/ training/ teaching profession. The remaining persons were employed in an institute (6 nurses) and in a specialist outpatient clinic (3 nurses).

Among the study group, senior nurses constituted the largest subgroup (126 persons), followed by divisional nurses (22 persons), and departmental nurses (10 persons). Six persons coordinated and supervised the work of other nurses, three study participants worked as operating room nurses.

Methods

In the study we used the diagnostic probe method, the questionnaire technique. The study was carried out in April 2014. We used the 'Evidence-Based Practice Profile Questionnaire developed by a team of authors: McEvoy MP, Williams MT, Olds TS. of the School of Health Sciences, University of South Australia, Adelaide, Australia, published in 2010 in the *Medical Education* journal [11]. The authors of the present study obtained the consent for its use. The questionnaire was validated and doubly translated by independent translators for the use in our own research. Participation in the study was voluntary and the questionnaire was anonymous.

The questionnaire consisted of 4 questions with the Likert scale or the nominal scale in the area of professional practice based on scientific evidence, 13 questions concerned personal information, education and employment and one question concerned an earlier encounter with the subject-matter discussed. Questions concerning evidence-based practice were divided into 7 subject domains:

1. Nurses' knowledge of and attitudes to EBP;
2. Nurses' relation to expanding their EPB competence;
3. EBP application in the professional nursing practice;
4. Knowledge of EBP terminology;
5. Frequency of the application of individual EBP elements in everyday clinical practice;
6. Level of EBP-related skills;

7. Predispositions and barriers limiting the application of EBP by nurses.

The obtained data were gathered in Microsoft Excel Sheet 2010 (v14.0). STATISTICA version 10.0 statistical packet licensed by Medical University of Warsaw was used to perform an analysis of the data. to determine the degree of reliability of the questions based on the Likert scale we estimated the value of α-*Cronbach coefficient which serves to evaluate the internal compliance of measurement results. P<0.05 was adopted as the level of statistical significance for all analyses.*

Results

In the evaluation of the degree of reliability of the questions based on the Likert scale (domains 1, 3, 6 and 7; a total of 44 questions) the total level of the internal compliance of the measurement findings was high and amounted to $\alpha = 0.867$. A detailed analysis of reliability showed that in the case of Domain 3 the questions fell into two separate groups which cross-measured the same set of features and properties of the respondent. That is why this domain was divided into two sub-domains 3a and 3b. α coefficient for domains based on Likert's scale alike was high: $\alpha=0.892$, $\alpha=0.806$/ $\alpha=0.927$, $\alpha=0.686$.

The first thematic domain aimed to assess the level of knowledge of and attitudes towards *Evidence – Based Practice* among nurses, rated by the respondents on a scale from 1 to 5, depending on the degree to which they agreed with a statement (1 – strongly disagree; 5 – strongly agree). 59,5% of nurses (100 persons) were aware of EBP in their profession and knew the meaning of the term of *Evidence - Based Practice* (121 persons).

In the following part of the questionnaire, the respondents expressed their attitude towards broadening their competencies related to EBP on a scale from 1 to 5 (1- certainly not, 5- certainly yes). The nurses expressed strong probability of improving their skills and knowledge related to EBP: as many as 117 nurses were going to use the best available scientific evidence to improve the quality of their professional practice and wanted to use relevant scientific literature to update their knowledge.

The questionnaire also concerned the use of EBP in professional practice of nurses and they were also assessed on a scale from 1 to 5 (1 – strongly disagree; 5 – strongly agree). Most nurses admitted that scientific information was useful in their professional practice (87 persons) and agreed that they should use scientific evidence in their daily work more often (113 persons). As many as 98 nurses were interested in improving skills necessary to include EBP in their professional practice.

Questions asked in the next part of the questionnaire aimed to assess the level of nurses' knowledge of research terminology. The terms and issues in the questionnaire were assessed on a scale from 1 to 5 (1 – never heard of it, 5 – I understand it and I can explain its meaning to others). Only 8 persons understood and were able to explain the term of the *statistical significance*. 56 nurses understood the term of the *systematic review* quite good, a little less of the total understood the terms of the *clinical relevance* (38) and *confidence interval* (33). 32 nurses had never heard about the term of the *forest plot*, and 49 nurses had never heard about the term of the *publication bias.*

In the following part of the questionnaire, the respondents assessed the frequency of using particular elements of *Evidence - Based Practice* in their everyday practice, using a scale from 1 to 5 (1 – never, 5 – every day). 46 persons have never critically appraised any literature that they have discovered to determine the methodological quality of the evidence. Details are presentedin the following table 1.

Table 1.Frequency of the application by respondents of EBP elements in everyday professional practice.

	In the past year how often have you:	**Never**	**Monthlyor less**	**Fortnightly**	**Weekly**	**Daily**
1.	Formulated a clearly answerable question that defines the client or problem, the intervention and outcome(s) of interest	26 (11,55%)	46 (20,44%)	23 (10,22%)	31 (13,77%)	25 (11,11%)
2.	Tracked down the relevant evidence once you have formulated the question	40 (17,77%)	45 (20%)	16 (7,11%)	31 (13,77%)	16 (7,11%)
3.	Searchedanelectronicdatabase	9 (4%)	44 (19,55%)	27 (12%)	36 (16%)	27 (12%)
4.	Critically appraised any literature you have discovered to determine the methodological quality	46 (20,44%)	34 (15,11%)	29 (12,88%)	32 (14,22%)	9 (4%)
5.	Integrated research evidence with your expertise	43 (19,11%)	48 (21,33%)	22 (9,77%)	30 (13,33%)	10 (4,44%)
6.	Considered your clients' preferences when making clinical/professional decisions	26 (11,55%)	34 (15,11%)	32 (14,22%)	30 (13,33%)	27 (12%)
7.	Read publishedresearchreports	34 (15,11%)	45 (20%)	25 (11,11%)	39 (17,33%)	15 (6,66%)
8.	Informally shared and discussed literature/research findings with others in your workplace	44 (19,55%)	60 (26,66%)	20 (8,88%)	31 (13,77%)	12 (5,33%)
9.	Formally shared and discussed literature/research findings with others in your department/practice (eg journal club, in-service presentation)	40 (17,77%)	39 (17,33%)	12 (5,33%)	23 (10,22%)	11 (4,88%)

Nurses were also asked to assess their skills related to *Evidence-Based Practice* on a scale from 1 to 5, with 1 referring to "I definitely cannot", and 5 meaning "I definitely can". Although 76 nurses said they could gain access to scientific evidence and use the electronic scientific literature databases 84 persons), as many as 89 nurses had no opinion on their research skills. Only 48 respondents said they could define the level of clinical usefulness of particular scientific evidence and 42 nurses had the ability to determine the level of its reliability.

The next part of the questionnaire concerned predispositions and barriers that limit the use of EBP in the nurses' workplace. 99 study participants expressed their willingness to learn new information, even though it was impossible for 85 nurses to update their knowledge on a regular basis due to the excessive workload. On the one hand, support from co-workers (63 nurses) and from management (70 nurses) constituted one of the greatest motivation to use *Evidence-Based Practice* in everyday professional practice. On the other hand, 60 study participants admitted that the costs of using information resources limited the use of EBP in everyday work. 42 nurses believed that their employer definitely did not require the use of EBP in their everyday professional practice.

In the last question nurses were asked to indicate whether and where they had met the term of the "*Evidence-Based Nursing Practice.*" 76 respondents said that they met this term during one of the classes at university and 31 persons pointed to a conference or training. 16 respondents met the term of EBP in their workplace. 62 study participants had never heard about the *Evidence-Based Practice*.

Discussion

In the available world literature PubMed, SCOPUS, EMBASE, PROQUEST, dates of search: 1 January 2000-12 – November 2013, language of publication: English; key words: *nursing, evidence-based practice, evidence-based nursing practice*) we found numerous publications dealing with opinions and attitudes of different groups of nurses on *evidence-based nursing practice* [1÷10].

What draws attention in the majority of the publications is the fact that the application of EBP presented concerns primarily everyday clinical practice or primary health care rather than programmes for the education of students of nursing [5÷10]. Nevertheless all publications emphasize the necessity of possibly earliest introduction of EBP issues in the programmes for the education of nurses [5÷25].

The present health care system requires highly qualified and well-trained nurses in palliative treatment. Attention paid to the quality of services provided by health care centres constitutes one of the greatest challenges for the modern health care system. The role of a nurse has changed with a development of a long-term care. A traditional nurse-oriented attitude in which a nurse was focused on securing and meeting the basic care needs has changed into an autonomous professional model.

A study by Rogala and Kozak-Szkopek enrolled a total of 60 nurses (Group 1 comprised nurses working in nursing and care facilities, Group 2 comprised nurses working in emergency departments, and Group 3 comprised students of nursing). The study results demonstrated that the level of knowledge of the study participants was diverse and it depended on clinical experience [12]. Our study shows that more than a half of the nurses participating in the study values professional experience more than the results from published studies and that clinical experience is the best way to assess the effectiveness of a particular activity.

Research conducted by Bernadette MazurekMelnyk among 160 nurses belonging to the American Nurses Association (ANA) describes the numerous benefits of using current medical knowledge in everyday clinical practice. However the level of knowledge of the subject is insufficient. The author also highlights the fact that in addition to assessing the skills by nurses about the critical analysis of scientific literature, the key should be to strengthen the faith of nurses that the professional practice based on scientific evidence is effective by lifelong learning and support from superiors [18]. This is also confirmed by Waters studies conducted in a group of 383 nurses in Australia where nurses were interested in the use of EBP in their everyday clinical practice but had a very low level of knowledge to independently implement current medical knowledge to their professional practice [20].

56.2% nurses said that they liked learning and they had management predispositions, and 37% of the total admitted that they were critical towards new ideas. As many as 31% of the respondents believed that in their job, the management was constantly looking for new possibilities of learning and 32% of the total said that support from management was one of the greatest motivations to use EBP in professional practice. The knowledge of nurses about the concepts associated with EBP was very low: only eight persons could explain the meaning of the terms of the *statistical significance* or *confidence interval.* The frequency of using particular elements of Evidence-Based Practice in everyday professional nursing practice was also very low: only 10% persons referred study results to their

own diagnosis once a week, and 38% of the total had never evaluated methodological soundness of the scientific literature they had been using.

The dynamic development and growth of competences in modern patient care require from specialists in health sciences, including nurses, permanent development of professional skills, gaining of new information and upgrading of their knowledge on an ongoing basis already in the course of their studies. Expansion of these nurses' knowledge of methodology of scientific research, critical analysis of its results or their ability to critically read scientific texts, that is all the key elements of *Evidence-Based Practice,* can have a significant impact not only on the development of competences of nurses and specialists in this field but also on the future development of the whole nursing as a science.

Conclusions

1. The questionnaire used to measure the level of knowledge and attitudes with respect to *Evidence-based Nursing Practice* among nurses was an efficient and reliable method.
2. The awareness of benefits resulting from using EBMP was high. The attitudes towards evidence-based nursing practice were positive, even though the supplementation of knowledge about EBNP is recommended.
3. It is necessary to expand the skills of nurses with reference to search for scientific evidence.

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Knowledge and attitudes of Medical University of Warsaw nursing students towards expanding professional competences of nurses and midwifes

ABSTRACT

Introduction

From 1st January 2016, due to amendment, certain groups of nurses and midwifes (N&M) will be entitled to prescript some drugs and issue referrals for certain diagnostic tests. Level of competences will depend on level of education of nurse or midwife.

The aim of study

To assess knowledge and attitudes of Medical University of Warsaw (MUW) nursing students towards expanding professional competences of nurses and midwifes.

Material and methods

106 nursing students of MUW: 50 bachelor students and 56 master students; 103 females and 3 males. The mean age was equal 25 years (min. 21, max. 55, mode and median 23, SD=7,27). Voluntary and anonymous study; questionnaire prepared by authors and assessed using Cronbach α-coefficient. 13 questions concerning knowledge with one correct answer; 26 statements concerning attitudes assessed in Likert scale (1÷5).

Results:

Cronbachα-coefficient: 0,782. 50% of students knows when the amendment will come into force, and 21% knows the criteria for independent nurse prescriber. 57% of respondents think, that the amendment is needed in Poland. 65% of students claim, that new competences seems to be only new duty to N&M.

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Conclusions:

1. The value of Cronbachα-coefficient shows, that the questionnaire is valid and can be apply in further research.
2. In the research group, knowledge concerning the amendment is unsatisfactory and needs urgent improvement, particularly since new competences will directly affect respondents after graduation.
3. The research group have generally positive attitude to amendment, but they concern about rising amount of duties.
4. Due to the fact, that research have a preliminary character, further studies in wider group of students shall be conducted.

Introduction

There have been a few reforms recently introduced in Polish health care system. The reforms primarily concerned medical professions. Among others, legislator tried to define the legal status of public health specialists, and physiotherapist [1, 2]. However one of the most significant amendment concerned so called non-medical prescribing.

From 1st January 2016, due to the amendment of Law on profession of nurse and midwife [3], certain groups of nurses and midwifes will be entitled to prescript some drugs and issue referrals for certain diagnostic tests. Level of competences will depend on level of education of nurse or midwife.

The first new right of nurses and midwifes is possibility to prescript medicines ordered before by a physician (as a continuation of i.e. chronic diseases treatment). Entitled to this activity will be nurse or midwife with bachelor studies and additional course (form of post-graduate education). In further part of the article authors will define this right as Supplementary Nurse Prescribing (SNP).

The second competence is possibility to order certain drugs independently and to prescript them. From this medicines, strong substances and psychotropic drugs have been excluded. Detailed list of substances, which can be ordered and prescript by nurses will be defined in regulation of the Ministry of Health. This right will cover nurses and midwifes with master degree or with so-called specialization. Additional post-graduate course will be also required in both cases. In further part of the articleauthors will define this right as Independent Nurse Prescribing (INP).

The last one new competence of nurses and midwifes is possibility to issue referrals for certain diagnostic tests (excluding procedures with high risk

of complications). All of the procedures will be defined by Ministry of Health as in case of list of drugs to INP.

Nursing students are group of future nurses, who will be directly covered by all aspects of the reform. They will be entitled at least to prescript drugs as continuation of treatment and to issue referrals. Some of them (master students) will also have a possibility to order medicines independently. Their knowledge about the amendment and attitudes regarding the reform will have a direct impact on introducing this competences into force.

The aim of study

The aim of study is to assess knowledge and attitudes of Medical University of Warsaw (MUW) nursing students towards expanding professional competences of nurses and midwifes.

Material and methods

Inthe study took part 106 nursing students of the Medical University of Warsaw. 50 of them were bachelor students and 56 – master students; 103 respondents were females and 3were males. The mean age was equal 25 years (min. 21, max. 55, mode and median 23, SD=7,27).

The study was voluntary and anonymous. Questionnaire prepared by authors and assessed using Cronbachα-coefficient have been distributed among 200 students. In relation to number of respondents, the respond rate was equal 52,5%. The questionnaire included 13 questions concerning knowledge with one correct answer and 26 statements concerning students attitudes assessed in Likert scale (From 1 – I strongly disagree to 5 – I strongly agree). Descriptive statistics have been performed using StatSoftStatistica 12.0 (license of Medical University of Warsaw).

Results

The Cronbachα-coefficient can presuppose value between 0 and 1. The higher value means better internal coherence of questionnaire.The value ofcoefficient, assigned for statements concerning students attitudes, assessed in Likert scale was equal 0,782.

Vast majority of asked students knew, that the new competences were introduced by the amendment to the Act of July 15th 2011 on professions of nurse and midwife. 14% pointed wrong Act. 16% admitted, that they do not know it. Half of the respondents knew when the amendment will come into force. Also half of the students knew, in what legal act they should look for executive regulations concerning new competences i.e. list

of medicines, which can be independently ordered by a nurse or midwife. However, 3 out of 4 respondents are aware, that new competences of nurses and midwifes will not be a duty – only a right.

Generally, less than a half of asked students knew criteria, which nurse or midwife shall meet to gain certain competences. For example, only one of five respondents knew, that only nurse or midwife with master degree or specialist nurse or midwife, who graduate additional specialist course concerning new competences will be enabled to order medicines and right out prescriptions. 29% was aware, that only nurse or midwife with bachelor degree, who graduate additional specialist course will have an opportunity to prescript medicines as a continuation of treatment ordered by a physician. Requirements for referring patient for diagnostic tests knew only 6% of students, although almost 70% were aware, that high risk tests are excluded from this authority. Detailed data, regarding knowledge of nursing students have been presented in the Table1.

Table1. Knowledge of nursing students of the Medical University of Warsaw regarding extending professional competences of nurses and midwifes.(correct answers have been bold by authors)

Question	**Answer**	**% of answers**
1.To whatlegal act have been introduced amendment, which enable certain groups of nurses and midwifes to order medicines and issue prescriptions?	To the act of May 12th 2011 on reimbursement of medicines, Foodstuffs Intended for Particular Nutritional Purposes and Medical Devices	8%
	To the act of July 15th 2011 on professions of nurse and midwife	**69%**
	To the act of July 1st 2011 on self-government of nurses and midwifes.	0%
	To the act of July 5th 1996 on professions of nurse and midwife	6%
	I do not know	16%
	Lack of answer/missing data	2%

2.When the new competences regarding ordering medicines and issuing prescriptionsby nurses and midwifes will come into force?	From theJuly1st 2017	1%
	From the January 1st 2017	10%
	From the July1st 2016	12%
	From the January 1st 2016	**50%**
	I do not know	26%
3.Will authority to order certain medicines and issue prescriptions be a duty of enabed nurse or midwife?	Yes	14%
	No	**75%**
	I do not know	9 %
	Lack of answer/missing data	1%
4.Will every nurse and midwife be enabled to order certain medicines and issue prescriptions?	Yes, every nurse and midwife	5%
	Only nurse or midwife with master degree	15%
	Only nurse or midwife with master degree, who graduate additional specialist course concerning new competences.	49%
	Only nurse or midwife with master degree or specialist nurse or midwife, who graduate additional specialist course concerning new competences.	**21%**
	I do not know	9%
	Lack of answer/missing data	1%

5. Will every nurse and midwife be enabled to prescript medications as a continuation of treatment ordered by a physician?	Yes, every nurse and midwife	5%
	Only nurse or midwife with bachelor degree	4%
	Only nurse or midwife with bachelor degree, who graduate additional specialist course concerning new competences.	**29 %**
	Only nurse or midwife with master degree, who graduate additional specialist course concerning new competences and every nurse or midwife who can prescript certain medicines independently.	39%
	I do not know	23%
	Lack of answer/missing data	1%
6. Will every nurse and midwife be enabled to refer patient for certain diagnostic tests?	Yes, every nurse and midwife	4%
	Only nurse or midwife with master degree, who graduate additional specialist course concerning new competences.	25%
	Only specialist nurse of midwife and nurse of midwife with bachelor degree	**6%**
	Only specialist nurse of midwife and nurse of midwife with master degree	42%
	I do not know	24%
	Lack of answer/missing data	1%

7.Will the competence to refer patient for diagnostic tests be somehow limited?	No, nurse or midwife will be able to refer patient for every diagnostic procedure.	1%
	Yes, nurse or midwife will be able to refer patient for diagnostic procedures excluding laboratory tests.	9%
	Yes, nurse or midwife will be able to refer patient for diagnostic procedures excluding high risk tests.	**69%**
	I do not know	20%
	Lack of answer/missing data	1%
8.New competences of nurses and midwifes concerning ordering medicines and issuing prescriptions will refer to:	ordering OTCmedicines	5%
	orderingreimbursedmedicines	8%
	Ordering medicines, Foodstuffs Intended for Particular Nutritional Purposes and Medical Devices	**36%**
	Ordering medicines and Medical Devices as a result of physicians' order	20%
	I do not know	30%
	Lack of answer/missing data	1%

9.Will the level of competences regarding ordering medicines and issuing prescriptions would differ between nurses and midwifes with bachelor and master degree>	**Yes**	**66%**
	No	12%
	I do not know	21%
	Lack of answer/missing data	1%
10. The list of medicines to independent prescribing for nurses and midwifes will be specify in:	**Regulation of health ministry**	**51%**
	New act on nurse and midwife profession	13%
	Amendment to act on profession of nurse and midwife	21%
	I do not know	15%

Attitudes of nursing students concerning introducing new competences into profession of nurse and midwife are ambiguous. Students are convinced, that it will have positive impact on patient situation and will improve health care system. Vast majority of respondents claim, that "nurse prescribing" authority will make shorter waiting lists, and make the health care system more patient-friendly. Almost 80% agree, that reform will save time of patient. Detailed data have been presented on chart 1.

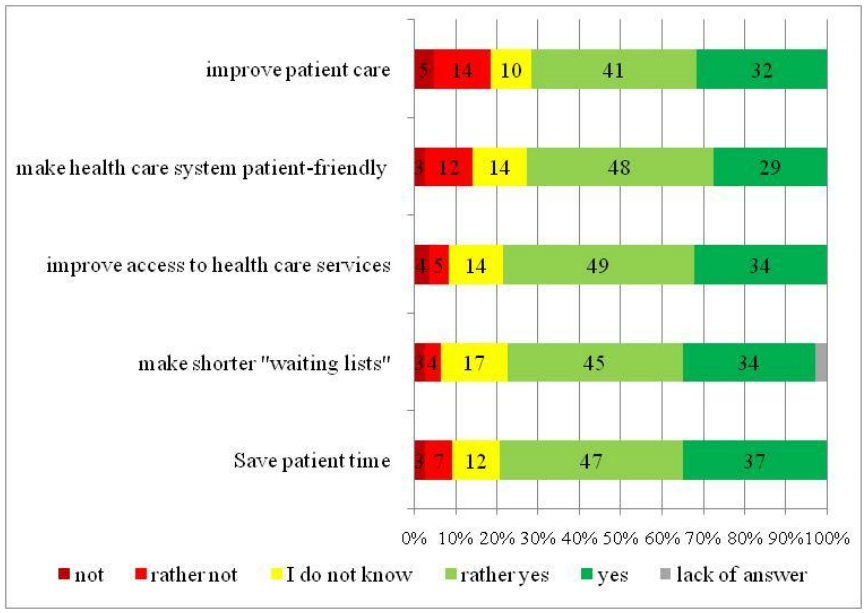

Chart 1. Predicted results of introducing the new competences into profession of nurse and midwife concerning ordering certain medicines and issuing prescriptions for patients. (Question – Amendment in nursing law will…)

The students were more sceptical about the consequences of introducing new law for the professions of nurse and midwife. Some of them are concerned about increasing number of medical malpractise cases with connection with extended authority of nurses and midwifes. Respondents are also aware, that new competences will increase level of professional and legal liability of these professions. From the other side, majority of asked nursing students admitted, that it will increase prestige of the professons too. Almost 80% think, that prescribing authority will increase control of nurse or midwife on treatment process. In the same time, only about 20% claim, that it will decrease phisitian's control on this process. Detailed data have been presented on chart 2.

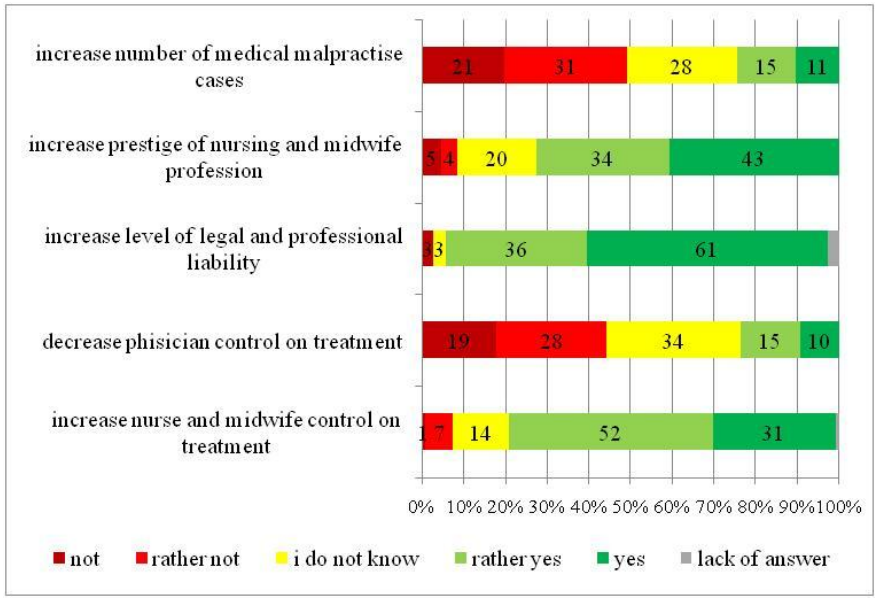

Chart 2. Predicted results of introducing the new competences into profession of nurse and midwife concerning ordering certain medicines and issuing prescriptions for nurses and midwifes. (Question – Amendment in nursing law will…)

Discussion

Due to the fact that the subject of extending the powers of nurses and midwives is a new issue in Polish scientific literature, no papers(Polish Bibliography of Physicians) concerning knowledge of Polish students regarding these new competences have been found. However there are some papers concerning attitudes of nursing students and nurses towards this reform [4, 5].

Many publications have been found in the world's scientific literature (PubMed, ProQuest, Google-Scholar, search period 1.01.2000-29.03.2015, language: English, keywords: nurse prescribing, nurse prescribers), including meta-analyses relating to the powers of nurses to prescribe and referring for diagnostic tests, as well as evaluations of the implementation of these rights [6÷8]. Unfortunately, none of them considered students opinions.

Firstly, authors would like to discuss validity of the applied questionnaire. The value of Cronbachα-coefficient for statements concerning students' attitudes suggest that statements are coherent and the questionnaire can be applied in further research. However, due to some legal changes and

interpretation discrepancy there is a need to correct some questions concerning knowledge of respondents.

Knowledge of Medical University of Warsaw students is only general. Students rather know, which law was amended, and where to find details of the new regulations. On the other hand, most of them do not know about the criteria required for nurse prescribing authority. it is not easy, to compare students' knowledge with other groups, or with findings of other researchers, because this kind of papers were not published yet.

However, there is a British study, conducted by Hay, Bradley and Nolan [6] where the issue of knowledge regarding prescribing authority of nurses have been raised.In Great Britain, 19 years after introducing so-called Independent Nurse Prescribing (INP) authority, in 2003 also Supplementary Nurse Prescribing (SNP) have been introduced. Supplementary prescriber gain power to order and prescribe wide range of medicines, but only under (agreed by physician with patient) clinical management plan. The qualitative research showed, that knowledge of both nurses and physicians about the new regulations was superficial or just weak. Respondents generally knew, that nurse will be enabled to change dose of ordered medicine, but they often used interchangeably terms: nurse prescribing, INP and SNP. Only one respondent knew answered fully correct.

Nursing students views on the new competences of nurses and midwifes concerning ordering and prescribing medicines and issuing referrals for diagnostic procedures are positive. Students think, that these legal changes will have a positive impact on health care system, and will improve access to services. This results are similar to findings from qualitative study conducted by Zarzeka and co-workers [5]. In this study, ward nurses agreed, that amendment will have a positive impact on patient. From the other side, they criticized increasing legal and professional liability of nurse or midwife, particularly, when it probably will not be connected with increasing their salaries. Aspect of increased liability of nurses and midwifes, who gain prescribing authority have been raised also by respondents in own research.

On the other hand, in paper of Bradley and Nolan [7], issued 2005, nurses claimed, that prescribing competences is "something more" for them, than an additional duty. This power integrate their current competences and makes care more holistic. Bradley and Nolan study had also qualitative design.

Summarizing, the attitudes of nursing students on new competences of nurses and midwifes are positive or even enthusiastic. Due to the fact,

that these students, after graduation will be empowered to prescribe medicines (after additional post-graduate course), own study suggests, that the amendment could meet with warm welcome (at least from the future users of the competences). Nevertheless, more important are views of current nurses and midwifes.

Limitations

There is necessary to point some limitations of the study. The research group is not wide and the sampling is not random. That is why, there is a need to conduct further research in wider and more representative group of students, including also midwifery students and medical students. Their opinions will also have an impact on introducing new powers of nurses and midwifes. Authors feel obliged to indicate, that the study have preliminary character.

Conclusions

1. The value of Cronbachα-coefficient shows, that the questionnaire is valid and can be apply in further research.
2. In the research group, knowledge concerning the amendment is unsatisfactory and needs urgent improvement, particularly since new competences will directly affect respondents after graduation.
3. The research group have generally positive attitude to amendment, but they concern about rising amount of duties.
4. Due to the fact, that research have a preliminary character, further studies in wider group of students shall be conducted.

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Magdalena Syrkiewicz-Świtała[1]

The importance of health information obtained via Internet in the opinion of Generation Y in terms of possibility of using social media marketing to promote health services

Abstract:

Introduction: Forms of health services' promotion evolve along with the emergence of new technologies. **Objective**: Getting to know the opinion of the representatives of the Generation Y on the importance of health information posted on the Internet in order to be able to use social media marketing tools in promoting health services by medical units. **Material and methods**: A group of 350 people from Generation Y from the province of Silesia (Poland) was examined. The survey was conducted in the electronic way. **Results**: Generation Y is actively using social media. They seek and evaluate health information published on the Web Sites. **Conclusions**: Social media is a significant source of health information for respondents from Generation Y andtherefore active medical units (enterprises) should try to use the social media marketing tools in the promotion of their health services.

Introduction

The Internet as a medium has gained in importance recently, it has become widely available and is now used by an increasing group of people (Kaplan, 2010; Belch and Belch, 2011). it allows to process information andto provide feedback timely and unrestrictedly (Jankowska, 2014; Kietzmann, 2011). More popularity gain social media and numerous discussion forums (Pabian, 2008a).

The most common social media channels such as Facebook and YouTube enable to place many different paid promotional marketing tools, among them there are internet applications, assumptions, fun pages (like pages) (Jabłoński, 2013; Rak, 2014). However, it requires constant upgrading,

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reconfigurationsand other activities. For example an image campaignshould be performed. Additionally,it is highly recommended that current decisions on image change are consulted constantly in forums and social networking sites (Andreasen, 2002; Ślipko, 2013).

Social media allows to publish content not only built of text, but also enables to addgraphics (pictures), videos, photos or tunes. The more sophisticated materialmay cause certain emotions in recipients of the remittances (Boguszewicz-Kreft, 2009). Nowadays the social media does not concentrate on private social information exchange, contrary it createsa scope for trade and business activities (Witczak, 2013). This makes it possible to extend the area of marketing activities for organizations on different vertical markets, including the health market (Evans, 2006; Syrkiewicz-Świtała and Świtała, 2012). The social media usersobtain information on products, services, brands and even on their health status or a given ailment (Nowak, 2014; Fast et al., 2015). The patients suffering from a particular disease (e.g. diabetes or leukemia) associate medical support groups on numerous online forums (Pal, 2014; Zieliński 2015).

Social media marketing may support communication ofhealth service providers health or medical brands with the environment. Thethematic areas may be numerous for example: communication with the media, communication with patients (e.g. by creating dedicated platforms of free expressions), medical education, health education, epidemiological crisis management, promoting preventive examinations, transplantation, blood donation and even the management of the crisis in relations with patients or even on-line recruitment (Panahi, 2014;Trzciński, 2015). However, the information must be reliable and meaningful to their customers.

The above mentioned assumptions were background for conducting field research, which results are described later in this paper. for it has become a prerequisite for the given topic, which aims to investigate the views of representatives of the Y generation on the importance of health information posted on the Internet in order to be able to use social media marketing tools in promoting health services.

Objectives, material and method

The main objective of the research was to investigate the views of representatives of the Y generation on the importance of health information posted on the Internet in order to be able to use social media marketing tools in promoting health services. The aim was also to identify the social media marketing tools used by Generation Y and identification of health information most frequently sought by Generation Y.

Finally the goal was to set the determination of medical advice which benefited in recent representatives of Generation Yand also the identification of social media marketing tools used by Generation Y in the search for health information. Parallelythe point was to evaluate the reliability of health information published by the tools of social media marketing.

The research was conducted on the basis of primary data upon the method of diagnostic survey addressed to a group of people from Generation Y, (i.e. born in the years 1980-1995 (Gordon, 2014), living or residing in Silesia in Poland (students, who are studying or working in the Province of Silesia). The research group was selected using the "snowball". The proprietary research tool was a questionnaire with open goal, made up of 32 closed questions. A electronic form was used to collect data of the survey questionnaire. Electronic version of the questionnaire was placed in service www.interankiety.pl, which deals with the creation and analysis of this type of surveys. 371 people were tested, ultimately after rejectingincomplete answers 350 valid questionnaires were analysed. A computerized database was created that have been through a careful analysis of the basic methods of descriptive and statistical software available in MS Excel and MS Word. The achieved results were interpreted and conclusions were drawn.

Results

239 women (68.29%) and 111 (31.71%) men were examined. The largest group were people aged 22-25 years (41.71%; 146) and then at the age of 18-21 years (39.43%; 138). Respondents aged 26-29 years were 10% (35) at the age of 30-33 years, only 8.86% (31). 60.29% (211) were people living in the city over 50 thousand residents, 12% (42) of those in the range of 25-50 thousand inhabitants, 10.57% (37) lived in a village, 9.43% (33) lived in cities with a population of 10-25 thousand inhabitants and 7.71% (27) of those in the cities of 10 thousand inhabitants. In terms of occupation the largest group were people studying (41.71%; 146), then studying and working (31.43%; 110), studying in high school (13, 71%; 48) and the smallest working (13.14%; 46). There were no learners in vocational school.

At the outset it was analysed if Generation Y respondents make use of health services. Most often the respondents use dental services (64%; 224) and in the field of primary health care (50.57%; 177). Gynecological services (37.71%; 132), ophthalmic (30,57%; 107), orthopedic (16%; 56) and ENT (11.71%; 41) also are sought by young respondents from Generation Y. 14 % (49) of the respondents indicated that they used the other not listed in the form of health services i. e.: allergy, cancer. In the range of 5-10% percent were specialty services such as cardiac (8.29%; 29),

neurological (6.29%; 22), physiotherapy (5.71%; 20) in the field of aesthetic medicine (5, 14%, 18). The services of psychiatric (3.71%, 13) and dietary (3.14%, 11) use fewer respondents from Generation Y (Fig. 1).

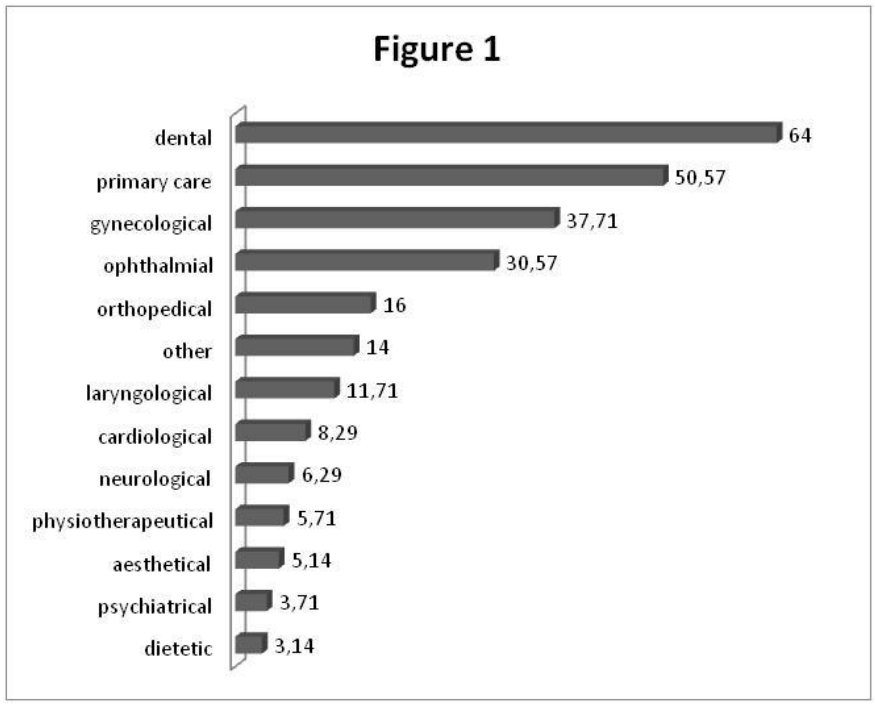

Figure 1. Use of medical advices (the results are given as a percentage, in a question respondent could select more than one answer so the results do not add up to 100%)
Source: Ibid

Respondents most frequently use the Internet searching for health information (69.43%; 243). Analysing the use of portals / websites and social networking sites, all of which benefit most respondents to the first place stand out Facebook (76.29%; 267) and YouTube (66.86%; 234). Definitely less popularare onet.pl (44.29%; 155), wp.pl (25.71%; 90), interia.pl (19.71%; 69) and znanylekarz.com (11.14%; 39). Other portals or sites were marked individually and each of them does not exceed 5% of responses. Only 2.29% (8) of the respondents do not use social networking sites and Internet (Fig.2).

Inquiring more deeply about social media marketing tools respondents indicate search engines (93.71%; 328). More than half uses social networks (53.14%; 186), followed by forums (36.29%; 127) or pages with a collection of pictures (17.43%; 61). Uses far less people search engine news,

aggregates news (8%; 28), reads or writes blogs and microblogs (7.71%; 27). The least people useblogs search engines (2%, 7) or declares the usage of not mentioned in the survey instruments of social media marketing (3.14%, 11), such as bankier.pl, money.pl, o2.pl.

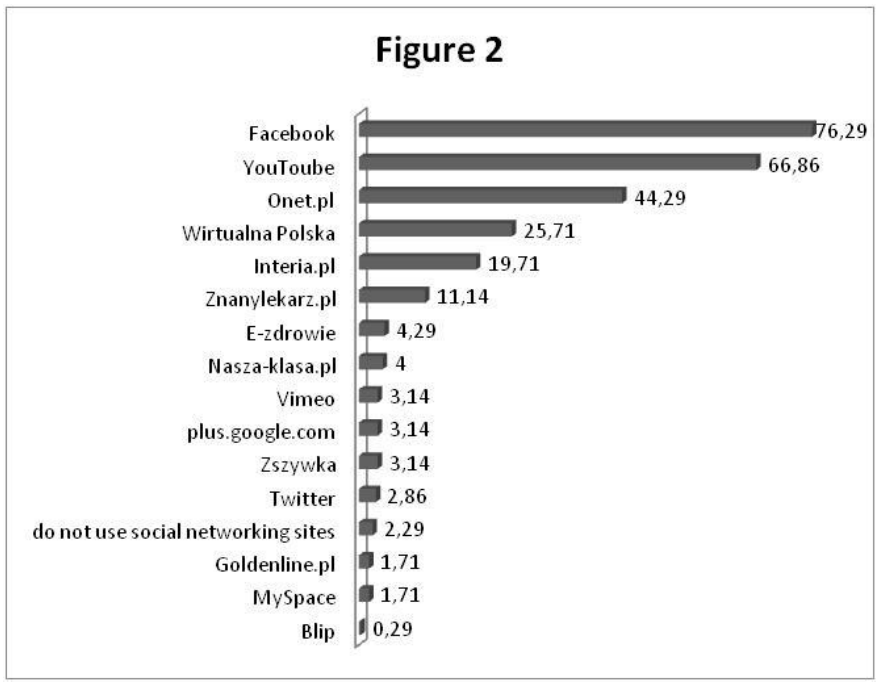

Figure 2. Portals / Internet social networking sites most commonly used by respondents (the results are given as a percentage, in a question respondent could select more than one answer so the results do not add up to 100%)
Source: Ibid

One of the tasks assigned in the study was to determine the attitude ofthe respondents to theinformation on health obtained from the Internet. Most felt that such information is relevant to them (80.58%; 282). In each compartment of positive answers 50.29% (176) of people determined that rather is important, 20.86% (73), and that is important for 9.43% (33) of the surveyed Internet health information definitely make a difference. In the group of negative answers: probably not a group of 16.57% (58) of respondents answered "no" marked 1.43% (5) of respondents and the same percentage of people marked the hint "definitely not" (Fig. 3).

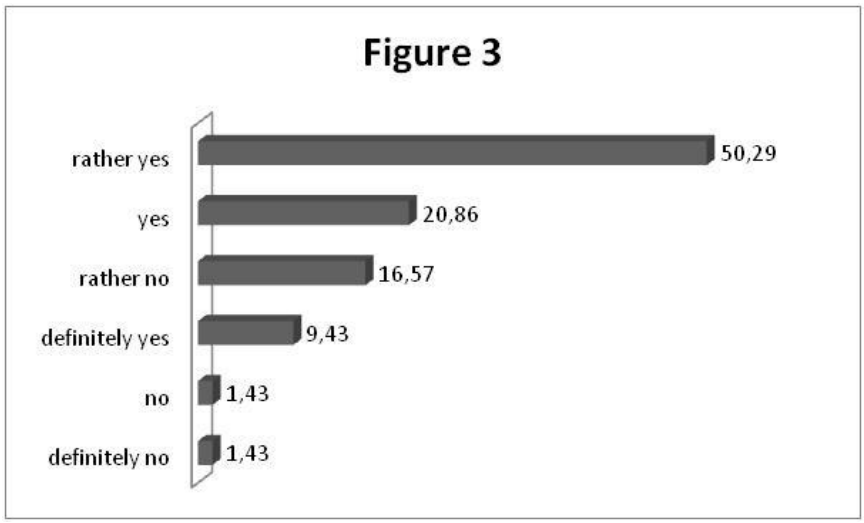

Figure 3. The importance of health-related information obtained via Internet (the results are shown as a percentage)
Source: Ibid

More than a half of the respondents (65.42%; 229) considered that health information gained through social networking sites are relevant to them. Positive response in the adopted intervals (definitely yes, yes, probably yes) in turn granted: 2.57% (9); 15.14% (53); 47.71% (167) respondents. The opposite view had 34, 58% (121) of respondents: not (30,29%; 106) and definitely not (4.29%; 15).

Discussion

Generation Y has a natural tendency to make use of modern information technology (Anders, 2014), which also confirmed the respondents audit. The popularity of using the Internet and media communities, does not guarantee success in the field of marketing and even more to spread health information. Although the number of people searching for health information in the Internet increases, especially in the group of Generation Y, the requested data typically include areas of knowledge about healthy lifestyles, treatments or preventive care. Less popular is promotion of health services and medical entities (Puchalski, 2007; Właśniak, 2007). The trend in Poland and all over the world is still growing, as shown by numerous studies and it gives opportunities for greater use of social media marketing also to communicate with the generation Y in the field of health in general (Trzcinski, 2015; Tunceli et al., 2014; Zielinski, 2010;

Nieciecka, 2015; Griffis et al., 2014). it is therefore necessary to try to invite Generation Y to dialogue with the brand of medical health services and health education (Krupa, 2013; Lisowski, 2014). However this must be done in a monitored and intelligent way to meet the needs of users of social media but also to give them a reliable source of information on health care (Amrita and Biswas, 2013).

Representatives of Generation Y has always been surrounded by brands (Gordon, 2014). In terms of marketing the examined Generation Y group is a demanding client on which traditional forms of promotion do not affected. This generation it is more resistant to promotion, advertising, which was also confirmed by other reports (Kocoń, 2014; Anders, 2014; Stopczyńska, 2014; Clarke, 2014). The consumer from this generation learns faster the brand's errors so it means that the customer /patient may therefore be less loyal. This customer requires agile marketing approach, also on the health services market (Zemlik, 2013; Ball, 2014). it is necessary to respond quickly to displeasure and dissatisfaction with the use of a particular brand of health (Kwiecień, 2014).

The screened representatives of Generation Y are actively use the Internet, including media communities. They have a positive attitude to posted health information on the network. it encourages to the conclusion that it is worthwhile to attempt to use social media marketing tools in the promotion of health services in this age group.

Conclusions

The respondents from Generation Y among the available media (press, radio, television and the Internet), mostly use of the modern medium of the Internet, which is in use several times a day. The most preferred social media marketing tools by analysed Generation Y are: Facebook, You Tube, onet.pl, wp.pl, interia.pl. Almost all internet users surveyed which were born in the years 1980-1995 use search engines, a half use social networking sites, one in three use online forums, and one in five use sites with the collection of images. The respondents are much less willing to use blogs, microblogs, blogs search engines, information search engines. Almost half of the respondents are active users of social networking sites. Every third respondent eagerly reads and forwards fanpages (like pages) of brand, to which is convinced. Every fourth person from Generation Y participates in discussions on Internet forums. Much less of respondents indicated: participation in moderating online forum, participation in consulting online forum on specific specialized topics on their own blogs or microblogs writing or in self-initiate discussion on Internet forums and

social networks on the "good" or "bad" brands. Surveyed from Generation Y have recently reported the demand mostly on dental and primary care services. Every third respondent pointed to the benefits of the following areas: ophthalmology and gynecology. One in five respondents used the services of orthopedic and ENT and one in 10 used physiotherapist.

According to the respondents in the Internet there is mainly published information on healthy eating, physical activity and dietary supplements. Under the influence of the information published on social networks almost a third of the respondents changed their eating habits and physical activity but also one-third did not take any action. For the majority ofrepresentatives of Generation Y the health-related information obtained in the Internet are important. Equally are the positive and negative votes when it comes to the impact of the Internet and social networking sites on increase of awareness of health and a healthy lifestyle. For a half of the respondents the information obtained from the Internet affect increase awareness of health and a healthy lifestyle.

Generation Y actively uses the Internet, including the social media. They positively relate to health information obtained through these canals. The social media is an important source of health information for respondents from Generation Y. Therefore it is worthto try to use social media marketing tool in the promotion of health services.

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Training health workers providing of health care to patients with HIV in the region Kwale

Vzdelávanie zdravotníckych pracovníkov v poskytovaní zdravotnej starostlivosti HIV pozitívnym pacientom v regióne Kwale

Abstract

Introduction: In the low and middle-income countries, there are the health workers with lower qualifications and shorter training providing the health care. The aim of the study was to evaluate the needs for on-going education of health workers who provide health care to HIV positive patients in MatugaSub-county in Kwalecounty, Kenya Coast. **Methods:** The tool for areas of on-going education assessment of health workers was a questionnaire which was distributed to 63 health workers in 20 Government facilities in Matuga Sub-county. **Results**: From total sum of health workers, 95% took part in the training for providing the health care to HIV positive patients. Seventy-three percent health workers took part in the training – Prevention of mother-to-Child transmission (PMTCT) and 68% health workers took part in the training How to test HIV. We recorded a significant lack of knowledge in the field Nutrition of HIV positive patients and Couple counselling. On-going education of health workers is necessary in the field of Opportunistic infections management and in the field of ART. Health workers considered as the main barriers in providing health care the knowledge, motivation, salary and the workplace technical equipment. **Conclusion:** We want to point out the need of on-going education for health workers and subsequently provide the care for HIV patients in better quality, taking into account the conditions they live in.

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Abstrakt

Úvod: V krajinách s nízkymi a strednými príjmami pôsobia v zdravotníckych strediskách zdravotnícki pracovníci s nízkou kvalifikáciou a krátkym tréningom v poskytovaní zdravotnej starostlivosti. Cieľom štúdie bolo zhodnotiť potreby ďalšieho vzdelávania zdravotníckych pracovníkov, ktorí poskytujú zdravotnú starostlivosť HIV pozitívnym pacientom v Matuga Sub-county v Kwale county, Kenya Coast **Metodika:** Nástrojom pre hodnotenie oblastí ďalšieho vzdelávania pre zdravotníckych pracovníkov bol dotazník, ktorý bol distribuovaný 63 zdravotníckym pracovníkom v 20 zdravotníckych strediskách v rámci MatugaSub-county. **Výsledky:** Z celkového súboru absolvovalo tréning pre poskytovanie zdravotnej starostlivosti HIV pozitívnym pacientom 95% zdravotníckych pracovníkov. Tréning v oblasti PMTCT absolvovalo 73% zdravotníckych pracovníkov a v oblasti Ako testovať infekciu HIV absolvovalo 68% zdravotníckych pracovníkov. Výrazné nedostatky vedomostí sme zaznamenali v oblasti liečby ART u detí, kde 27% zdravotníckych pracovníkov neabsolvovalo tréning a potom v oblastiach výživy u HIV pozitívnych pacientov a poradenstva pre páry. Potreba ďalšieho vzdelávania je potrebná v oblasti manažmentu oportúnnych infekcií a voblasti ART. Zdravotnícki pracovníci uviedli ako bariéry pri poskytovaní zdravotnej starostlivosti nedostatočné vedomosti, motiváciu pracovať a technické vybavenie pracoviska. **Záver:**Chceme poukázať na potrebu ďalšieho vzdelávania zdravotníckych pracovníkov, a tak zároveň poskytnúť pacientom s HIV lepšiu zdravotnú starostlivosť vzhľadom na podmienky, v ktorých žijú.

Introduction

UNAIDS (Joint United Nations Program on HIV/AIDS) states in their report from 2015, that globally estimated 36.9 (34.3-41.4) million people lived with HIV (human immunodeficiency virus) in 2014. Since 2000, 38.9 million people were infected by the HIV infection and 25.3 million people died due to AIDS (Acquired Immune Deficiency Syndrome). In 2014, 2 (1.9-2.2) million new HIV cases have been recorded and at the same time 35% decline in the number of new HIV infections was recorded when compared the year 2000.

In 2014, 25.8 (24.0-28.7) million people with HIV infection lived in the Sub- Saharan Africa and women made up more than half of the total number of people living with HIV.

The number of new infections in 2014 was 1.4 million and 39% decline in the number of new HIV infections was recorded between years 2000 and

2014. Seventy percent of the new HIV infections from the total global number occur in the Sub- Saharan Africa[3].

Kenya AIDS Response Progress Report states that in 2013 in Kenya there were 1 592 343 million HIV-positive people. From this total number of HIV positive patients, 10% were children under 14 years. The number of new infections in 2013 was 100 501. In 2013, 58 047 AIDS patients died in Kenya. HIV prevalence in Matuga Sub-county in 2014 was 25%[4].

The introduction of a protease inhibitor and a non-nucleoside reverse transcriptase inhibitors for the treatment of HIV enabled the creation and use of antiretroviral combination known as Antiretroviral Therapy – ART. ART was defined as receiving the combination of antiretroviral therapy consisting of ≥3 antiretroviral drugs. One line of treatment normally consist of two nucleoside reverse transcriptase inhibitors and one protease inhibitor orreverse transcriptase non-nucleoside inhibitor[5].

The main effect of ART is to suppress viral replication, allowing the individual's immune system to recover and protecting patients from the development of AIDS and death[6].

In Sub-Saharan Africa, the availability of treatment increases. More and more patients with HIV have access to treatment but we also encounter treatment failure. The reason for this is the need to move to the second line of treatment or improperly adjusted combination of drugs. WHO recommends viral load monitoring and determination of levels of CD4 lymphocytes for all patients receiving the treatment.This way we can determine when the patients' treatment is failing.

Unfortunately, viral load monitoring and CD4 lymphocytes levels are not available in many parts of Africa due to limited resources and lack of workplace equipment[7].

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Not only barriers in the provision of ART but also the knowledge and the number of qualified health workers are a problem in the provision of health care to HIV positive patients[4].

Some specialist recommend delegating the task from doctors to nurses or from clinical workers to community health workers. World Health Organization (WHO) also states that the specific tasks in health care are moved from highly qualified health workers to health workers who attended a short training and have lower qualification in order to more efficiently use available human resources.

Gimbel-Sheer et al. in his study conducted in Mozambique provides an assessment of the quality of provided health care services to HIV positive patients by doctors and nurses. it states that in two health centers more nurses than doctors treated patients and patients were provided antiretroviral treatment only by the nurses. They have shown that the quality of services provided to patients with HIV were the same, in some cases much better provided by the nurses than by doctors[8].

Therefore, the aim of ourstudy was to evaluate the needs for on-going education of health workers, who provide health care.

Methods

The need for on-going education of HWs in the area of providing health care to HIV positive patients was examined in 20 Government facilities (1 sub-county hospital (Kwale hospital), 3 Health centers (Tiwi, Mkongani and Shimba Hills) and 6 Dispensaries (Vyongwani, Mbuguni, Kiteje, Ng'ombeni, Waa, Matuga, Magodzoni, Mazumalume, Msulwa, Mwapala, Mwaluvanga,Kibuyuni, Lukor, Mkundi, Kizibe and Mwaluphamba) in Matuga Sub-county in Kenya.

The data was collected from 19th until 26th of March 2015. The data was collected from the respondents using a non – standardized questionnaire. The questionnaire included questions concerning the profession of HW, his current tasks in providing health care to HIV positive patients, attending

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training in the areas of providing health care, work with current Guidelines for treatment of patients with HIV and areas in which the health workers would like to attend further training.

The pilot testing of questionnaire was done in Kinango by five health workers. Sixty-three questionnaires were distributed and the response rate was 100%. Health workers were informed about the anonymity of our questionnaire.

Results

In 2014, health care was provided to 1560 HIV positive patients in Matuga Sub-county. From the total number of HIV positive patients, 1222 (78.3%) were provided antiretroviral treatment and 338 patients were given prophylaxis Cotrimoxazole.

In reality, the number of HIV positive patients is a lot higher, but as a result of stigma and discrimination many patients don't admit their disease and refuse treatment.

The observed group of health workers was made up of 63 health workers – of 41% of men and 37% of women and the average time of providing health care was 119 months.

Most often the position of health workers were: nurses 64%, laboratory technicians 13% and a clinical officers 8% and not one doctor.

Ninety-five percent of health workers received training for providing of health care to HIV positive patients (Table 1, Table 2).

Table 1 Basic characteristic of the study group (N=63)

Basic characteristic	**n = 63**	**%**
Gender		
Male	**26**	41
Female	**37**	59
Profession		
Clinical officer	**5**	8
Nurse	**40**	64
Voluntary counselling and testing - Counselor	**2**	3
Laboratory technologist	**8**	12
Pharmacist	**2**	3
Public Health	**2**	3
Pharmacist technologist	**1**	2

Table 2 Basic characteristic of the study group (N=63)

Basic characteristic	n = 63	%
Months of experience		
Average ± SD	**118.5** (± 88.8)	
Median (IQR)	**120** (120)	
Training		
Yes	**60**	95
No	**3**	5

In the provision of health care to HIV positive patients in Matuga Sub-county, health workers most often provided the following services: HIV testing and counseling (68%) and antiretroviral treatment (44%). The management of patients with tuberculosis (TB) andtreatment of opportunistic infections only provide (3%) of the total number of health workers.

Areas in which health workers most frequently attended training were: PMTCT – Prevention of Mother to Child Transmission HIV(73%) How to test for HIV (68%), HIV Testing and Counselling (57%) and antiretroviral treatment for adults (43%).

The areas in which the health workers attended the least training were: antiretroviral treatment for children (16%), Clinical PWP – Clinical Prevention with positives (15%) and Home based care (18%). Home based care isa trainingsuitable rather for community health workersthan health workers (Table 3).

Table 3Areas of training for health workers (N=60)

Training	n = 60	%
HIV Testing and Counselling	**34**	57
PMTCT	**44**	73
Pharmacovigilance	**23**	38
Couple counselling	**15**	25
Clinical PWP	**9**	15
Adult ART	**26**	43
Nutrition HIV	**18**	30
Pediatric ART	**16**	27
How to test for HIV	**41**	68
Home based care	**11**	18

In the observed group of respondents we asked according to which of the available and current guidelines they work. We focused on guidelines issued by the World Health Organization, according to which it is

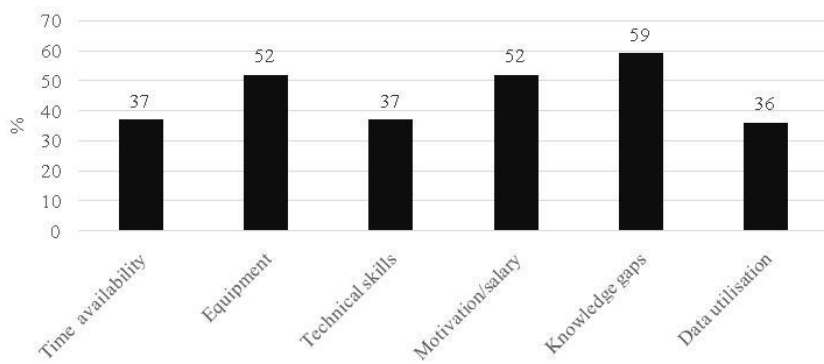
necessary to proceed when health care to HIV positive patients is being provided.

From the total number of health workers, 70% reported that they follow the PMTCT Guideline, which was issued in 2013 and 67% of health workers follows the HIV testing and Counselling Guideline.

Sixty two percent of health workers reported that they operate according to the Antiretroviral Guideline, which was issued in 2011 and 5% of health workers already used the Antiretroviral Guideline from 2014 in their work. Thirty percent of health workers work according to the Nutrition Guideline.

Among barriers that affect the quality of the health care provided by the health workers were included: Knowledge gaps in 59% of health workers, insufficientequipment health centers, motivation and salary in 52% of health workers.

As other barrier in the provision of health care, 37% reported time availability and 36% of health workers reported data utilization (Graph 1).



Graph 1 Barriers for health workers in health care provision (N=63)

Health workers have indicated the need for an on-going education in the provision of health care to HIV positive patients in the following areas: antiretroviral therapy (65%), management of opportunistic infections (64%), ART monitoring and evaluation (59%) and Information System about HIV positive patients (46 %) (Table 4).

Table 4. Areas of on-going education

Training	n = 63	%
Voluntary/Routine counselling and testing 25 40		
Basic HIV Care	**28**	44
ART	**41**	65
HIV Prevention	**18**	29
Adherence counselling	**33**	52
PMTCT	**20**	32
Management of opportunistic infections	**40**	64
Information system	**29**	46
ART monitoring and evaluation	**37**	59
Laboratory monitoring in ART	**23**	37
Data collection and analysis	**33**	52

Discussion

Efforts to scale up HIV treatment and care about HIV positive patients in Sub-Saharan Africa over the past decade, while successful, have exposed pre-existing weaknesses of health systems in this region in particular the lack of health workers to provide antiretroviral treatment. Sub-Saharan Africa has just 3% of the global health workforce and it means mainly nurses and community health workers with a lack of knowledge[9].

This study emphasizes the need for on-going education of health workers who provide health care to HIV positive patients in Matuga Sub-county.

The observed group was made up of 63 health workers –and it 64% of nurses, 12% laboratory technologist, 8% of clinical officers and not one doctor. Training in at least one area of health care was attended by 95% of health workers. Particularly in the area of PMTCT – Prevention of Mother to Child Transmission of HIV (73%), How to test for HIV (68%) and HIV Testing and Counselling (57%). On the other hand, the least health workers attended training in providing antiretroviral therapy in children and adults.

The Infectious Diseases Institute, in collaboration with the Ugandan Ministry of Health evaluated knowledge in the field of antiretroviral treatment doctors, clinical officers, nurses and midwives, who worked in health facilities accredited to provide antiretroviral treatment. They rated their

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knowledge in the areas of knowledge of the human immunodeficiency virus and antiretroviral therapy. Of the total 64% of the study group of people who were not doctors prescribe ART. Training for the provision of ART was completed by 76% of doctors, 62% of clinical officers, 62% of nurses and 51% of midwives. Training in the field monitoring antiretroviral treatment was completed by 73% of doctors, 46% of clinical officers and 50% of nurses.

Seven percent of doctors, 42% of clinical officers, 35% of nurses and 77% of midwives believe that their knowledge in the field of antiretroviral therapy was lower than good. The authors report that education of health workers should be an integral part of support and antiretroviral therapy provision. This will prove that ART is administered properly and there is no resistance in patients with HIV[10].

The aim of study conducted in Montenegro was to evaluatethe health workers' knowledge of HIV, attitudes and provision of health care to HIV positive patients. Data was collected byusing a questionnaire with 526 health workers. Very low levels of knowledge about HIV transmission was found in health workers.It was found that a large number of health workers had a bad attitude towards inpatients with HIV and have a problem with testing them. Up to 6.2% of health workers refuse to treat HIV positive patient. In order to improve the health workers' skills and knowledge, to change their attitudes toward HIV positive patients and to improve prevention in the workplace, on-going educationof health workers is necessary[11].

The study, which was conducted in Tamatave (Madagascar) was aimed at health workers and their knowledge in the following areas: HIV/AIDS, Voluntary Counselling and Testing and testing for HIV infection in antenatal care. The sample included midwives, nurses and medical students.

Health workers lacked basic knowledge about the prevention of transmission of HIV. Seventy-three percent of health workers thought that HIV infection is always transmitted from mother to child, and there is

[10]Lutalo, I. Schneider, G. Weaver, M. Oyugi, J. Sebuyra, L. Kaye, R. Lule, F. Namagala, E. Scheld, W. McAdam, K. Sande, M.,*Training needs assessment for clinicians at antiretroviral therapy clinics: evidence from and national survey in Uganda*. Human resources for Health 2009, 7, pp. 76-80

[11]Gledovic, Z. Rakočevic, B. Mugoša, B. Grgurevic, A.,*HIV Related Knowledge, Attitudes and Practice among health care workers in Montenegro.* Collegium Antropologicum 2015, 39, pp. 81-85

no possible prevention in this area. Twenty percent of health workers reported that patients who have AIDS should be isolated in quarantine. The authors report the need for on-going education of health professionals. They confirm that continuous education will increase the quality of health care[12].

In our study we highlighted existingbarriers in health care provision from health workers: Knowledge gaps in (59%), insufficient equipment health centers, motivation and salary in (52%).

A study conducted in East Africa identified barriers in the provision of health care to HIV positive patients co-infected with TB (Tuberculosis). The most common barriers for health workers included revising of medication delivery systems, training hospital nurses to counsel and initiate medications in inpatients, integrating care between inpatient and outpatient systems, and cultivating a team approach to consistent ART guideline implementation.

Most of these barriers can be easily overcome by reorganization, training and political changes at minimal cost. The problem is that the current regulation World Health Organization- guidelines isnot actually fully implemented in low- and middle-income countries. it is necessary to take simple and realistic proposals for the early treatment of HIV infected patients co-infected with TB[13].

Peitzmeier et al., in their study in Gambia states that stigma greatly affects the provision of good quality health care to patients. it is one of the barriers. HIV-positive people look for health care very late due to internal stigma and stigma in the community. They confirmed that HIV-positive patients even refused antiretroviral therapy as a result of stigma. it highlights the importance of addressing the internal stigmatization by the community health workers and health workers, so that the people are able to seek health care early and use all possibilities of treatment[14].

We emphasize the need for on-going education of health workers in the following areas: antiretroviral therapy in children and adults (65%),

[12]Hentgen, V. Jaureguiberry, S. Ramiliarisoa, A. Andrianantoandro, V. Belec, M., *Knowledge, attitude and practices of health personnel with regard to HIV/AIDS in Tamatave*. Bulletin de la Societe de pathologieexotiqueet de sesfiliales 2002, 2, pp. 103-108

[13]Bahati, M. Peck, R. Kalluvya, S. Fitzgerald, D. Smart, L. Downs, J.,*Healthcare worker Perceived Barriers to Early Initation of Antiretroviral and Tuberculosis Therapy among Tanzanian Inpatients.*PloS One 2014, 9

[14]Peitzmeier, SM. Grosso, A. Bowes, A. Ceesay, N. Baral, SD.,*Associations of stigma with negative health outcomes for people living with HIV in the Gambia: implications for key populations*. Journal of Acquired Immune Deficiency Syndromes 2015, 68, pp. 146-153

management of opportunistic infections (64%) and ART monitoring and evaluation (59%).

Delobelle et al., mentions the need for on-going education in a study which took place in South Africa in 2005. The need for education was evaluated in nurses using a questionnaire, focus groups and interviews. Barriers to the provision of healthcare reported by the nurses were higher workload, lack of training and stigma. In the study's conclusion the authors indicate the need for fast training courses mainly for nurses in rural areas in South Africa[15].

The number of HIV positive patients in low- and middle-income countries is constantly rising. The real number of these patients is higher than stated in official statistics. Many HIV positive patients do not admit their illness due to the stigma and discrimination in their social surroundings.

In 20 facilities in Matuga Sub-county we show mainly the need for implementing the measuring of CD4 lymphocytes levels and viral loading. That way the patients would be provided adequate treatment and long term failure would be avoided.

The limitation our work is, that the non-standardized questionnaire we used had a limited number of questions considering the busyness of health workers. Another problem is the insufficient equipment of health centers, which is a barrier for the on-goingeducation of health workers in the field of antiretroviral treatment.

Conclusions

In our work we pointed to the need for on-going education of health workers mainly in the area of providing antiretroviral therapy to HIV positive patients. Another area in which it is necessary to educate HWs is management opportunistic infections. Antiretroviral therapy is set according to the levels of CD4 lymphocytes. In many facilities it is impossible to measure levels of lymphocytes and the treatment is given based on the weight of the HIV positive patients. it is one of the barriers mentioned by health workers that is not easily influenced.

Therefore, it is important to focus on keeping patients on the treatment and to educate health workers in the area of management of opportunistic infections.

[15]Delobelle, P. Rawlinson, JL. Ntuli, S. Malatsi, L. Decock, R. Depoorter, AM., *HIV/AIDS knowledge, attitudes, practices and perceptions of rural nurses in South Africa.* Journal of advanced nursing 2009, 65, pp. 34-39

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11. Peitzmeier S. M., Grosso A., Bowes A., Ceesay N., Baral S. D., *Associations of stigma with negative health outcomes for people living with HIV in the Gambia: implications for key populations*, Journal of Acquired Immune Deficiency Syndromes 2015, 68, pp. 146-153
12. Steven R., Kapogiannis B., Soe M., Sullivan K., Abrams E., Farley J., Palumbo P., Koenig L., Bulterys M., *Trends in Opportunistic Infections in the Pre-and Post-Highly Active Antiretroviral Therapy eras Among HIV-Infected Children in the Perinatal AIDS Collaborative Transmission Study, 1986-2004*, Official Journal of the American Academy of Pediatrics, 2007, 120, pp. 100-109

APPENDIX

Questionnaire for HW

My name is Katarína, and I am PhD student at Trnava University and I work here. By using this questionnaire, we try to find out educational and training gaps for health workers that offer services to HIV patients. This interview is confidential and private. Your name will not be used and this will take about 10 minutes. Your ideas are very important for improvement of health care provision. Please kindly, can you answer the following questions?

FACILITY: RESPONDENT NUMBER:

DATE:

Is the respondent female or male?

Female □ Male □

What is your profession? (Select the option by using √)

Physician/Medical Officer		VCT Counselor	
Clinical Officer		Laboratory technologist	
Nurse		Pharmacist	
Nutritionist		Public Health	
CHEW			
If other, specify			

For how long have you been providing HIV/AIDS care?

.....months .....years

What are your role in HIV/AIDS care?

Have you ever taken any training for HIV/AIDS care services provision?

YES □ NO □

If you have taken some training, in which field? (Select option by using √).

HTC		Adult ART	
PMTCT		Nutrition HIV	
Pharmacovigillance		Paediatric ART	

Couple counselling		How to test for HIV	
Clinical PWP		Home based care	
If other, specify			

Which guidelines do you work with? (Select option by using √).

	YES	NO	Comments
ART Guideline 4th edition 2011			
PMCT Guideline			
HTC Guideline			
HIV/Nutrition Guideline			
If other, specify			

What are the barriers for HIV/AIDS care provision in your position? (√)

	YES	NO	Comments
Time availability			
Equipment of workplace			
Technical skills			
Motivation, salary			
Knowledge gaps			
Data utilisation			
If other, specify			

1. In which field of HIV/AIDS would you like to take any training? (√)

HIV related field	Need for training	Comments
Voluntary/Routine counselling and testing		
Basic HIV Care		
Anti-Retroviral Therapy		

HIV Prevention		
Adherence counselling		
Research/HIV		
PMCT		
Management of opportunistic infections		
Information system		
ART monitoring and evaluation		
Laboratory monitoring in ART		
Data collection and analysis		
If other, specify		

2. In which areas of HIV/AIDS would you like to improve on?

Thank you very much for your help and ideas!

Denisa Jakubcová[1], Viera Rusnáková[1], Hannah Kache[2]

Needs for training in notifiable diseases surveillance for healthcare workers, Matuga sub-county, Kenya

Potreby pre vzdelávanie v oblasti surveillance prenosných ochorení pre zdravotníckych pracovníkov v Matuga sub-county, Keňa

Abstract

Introduction: Reporting of communicable diseases in Kenya is mandatory within the Integrated Disease Surveillance and Response system. Based on the quality analysis of notified data in the year 2014 from selected health facilities in Matuga sub-county, Kenya, the needs for training of healthcare workersin the notification of communicable diseases were identified. **Methods:** As a tool for data collection was used questionnaire. The questionnaire wasaimed at evaluating the level of healthcare workers knowledge about reporting and atidentifying the barriers for the reporting in the adequate time response and necessary quality. **Results:** Totally, study group consisted of 20 (100%) healthcare workers. From all healthcareworkers realizing notification disease surveillance, 55% participated at training and the remaining 45% of workers carry out notification without any appropriate training. The need for the training focused on the communicable diseases surveillance expressed 100% of healthcare workers. Workers need the training focused on the issue of computers work skills (55%), reporting process and data entry (30%), to understand the general principle of surveillance (15%), updating the IDSR system (15%) and standard definition case (35%). **Conclusion:** Based on the results of the needs assessment, designed training will be prepared for health workers. The expected outcome of the training implementation is to increase the knowledge and skills of health workers in disease reporting.

Abstrakt

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[2] Surveillance sub-county coordinator, Kwale County, Ministry of Health, Kenya

Úvod: Hlásenie prenosných ochorení je Keni povinné v rámci systému Integrated Disease Surveillance and Response. Na základe analýzy kvality hlásených dát za rok 2014 z vybraných zdravotníckych zariadení v Matuga sub-county, Keňa, boli odvodené potreby pre ďalšie vzdelávanie pracovníkov v hlásení výskytu prenosných ochorení. **Metódy:** Ako nástroj zberu údajov bol použitý dotazník. Dotazník bol zameraný na evaluáciu úrovne vedomostí zdravotníckych pracovníkov o notifikácii prenosných ochorení a na identifikáciu bariér pre včasné hlásenie v adekvátnej kvalite. **Výsledky:** Sledovaný súbor tvorilo spolu 20 (100%) zdravotníckych pracovníkov. Zo všetkých pracovníkov vykonávajúcich surveillance, 55% absolvovalo tréning a 45% realizuje hlásenie bez adekvátneho zaškolenia. Potrebu pre absolvovanie tréningu špecificky zameraného na surveillance vyjadrilo 100% pracovníkov. Pracovníci potrebujú tréning zacielený na oblasť počítačových zručností (55%), proces hlásenia a zadávania dát (30%), na porozumenie všeobecného princípu surveillance (15%), na aktualizácie systému IDSR (15%) a štandardné definície prípadov (35%). **Záver:** Na základe zistených výsledkov hodnotenia potrieb bude navrhnutý dizajn tréningu pre zdravotníckych pracovníkov. Očakávaným výsledkom implementácie tréningu je zvýšenie vedomostí a zručností zdravotníckych pracovníkov pri hlásení výskytu prenosných ochorení.

Introduction

Communicable diseases are leading cause of morbidity and mortality in Africa. Strong and effective surveillance system is critical for communicable disease control. Functional surveillance system provides data useful for early warning, outbreak detection, to follow trends of endemic diseases to set priorities, plan and evaluate public health programme. Disease surveillance is critical to public health since it provides essential information for control, prevention and health care[3, 4, 5].

To provide a framework for strengthening disease surveillance and response capacities in Africa countries, the World Health Organization Regional Headquarters for Africa developed Integrated Disease Surveillance and Response (IDSR) aimed at improving national surveillance and laboratory system. A major goal of IDSR is to strengthen district-level surveillance

[3]World Health Organization. *Disease and injury regional estimates for 2004-2008.* [accessed March, 2015]. Available from:
http://www.who.int/healthinfo/global_burden_disease/estimates_regional_2004_2008/en
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[5]Weinberg J. *Surveillance and control of infectious diseases at local, national and international levels.* Clinical Microbiology and Infection 2005, 1, pp. 11-14

capacities for detecting, confirming and responding to priority diseases that afflict African communities. In the IDSR implementation framework, epidemiologic surveillance is linked with laboratory support in order to produce relevant information for taking public health action[6, 7].

The integrated disease approach to communicable disease surveillance envisages all surveillance activities in the country as a common public service, performed using similar structures, processes, personnel and other resources. These activities comprise core surveillance function: case detection and registration, case confirmation (epidemiological and laboratory), data reporting and feedback, data analysis and interpretation, and a resulting action (outbreak investigations, appropriate case management, community prevention activities, programmatic adjustment). The support function enable effective surveillance including the availability of appropriate surveillance standards and tools, training, supervision, communication, adequate and appropriate resources and laboratory support[8, 9].

Disease-specific guidelines provide robust recommendations to create laboratory networks, but may not always include guidance on how to organize, mobilize and integrated the essential resources, procedures and policies for creating strong surveillance system with trained health workers[10,11].

Existence of poor health information tools and shortage of skilled manpower affect timely and accurate flow of surveillance information, impinging negatively on response to public health threats. There is a growing need for electronic health systems in low- and middle-income countries; however, the challenge is to optimize the use of these technologies in ways that translate into

[6] World Health Organization, Regional Office for Africa. *Technical guidelines for Integrated Disease Surveillance and Response in the Africa Region.* [accessed March, 2015]. Available from:http://www.afro.who.int/en/clusters-a-programmes/dpc/integrated-disease-surveillance/features/2775-technical-guidelines-for-integrated-disease-surveillance-and-response-in-the-african-region.html

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[10]Kebede S. et al. *Strengthening system for communicable disease surveillance: creating a laboratory network in Rwanda.* Health Research Policy and Systems 2011, 9:27

[11]Nkengasong J. *Strengthening laboratory services and systems in resources-poor countries.* American Journal of Clinical Pathology 2009, 131:774

gains infighting disease outbreaks and improving health[12]. In the whole process of surveillance and data flow play a crucial role health care workers of first contact. Surveillance system relies on the detection of communicable disease in the patients and disease notification[13,14,15].

Based on quality analysis of notified data in the year 2014 from selected health facilities in Matuga sub-county, Kenya, as well as on consultations with surveillance sub-county coordinator, the needs for training of healthcare workersl involved in the notification of communicable diseases in the scope of individual health facilities was identified (there were time delay in reporting, duplicates cases notified and also mistakes in data fulfilling so reporting was not easy to understand). The study objective was to determine the education needs for healthcare workers in Matuga-subcounty, Kenya and to define priorities for a design of effective training.

Methods

As a tool for data collection was used non-standardized questionnaire and interview. The questionnaire was aimed at evaluating the level of healthcare workers knowledge on communicable disease reporting. The second part of the questionnaire was focused on identifying the barriers (at the level of workers' skills and the level of technology needs) for the reporting of communicable diseases in the adequate time response and necessary quality.

Questionnaire was fulfilled by the health worker in each facility responsible for reporting communicable diseases incidence. They were selected systematically and they all agreed to participate. The first author together with clinical officer from Ministry of Health moderated the personal interviews and questionnaire fulfilling due to translation into Swahili. Data were collected in 20 health facilities in Matuga sub-county Kenya, during the March 2015.

[12] Public Health Practise. African one health e-surveillance initiate. [accessed October 14, 2015] Available from: http://publichealthpractice.com/project-detail/the-african-field-epidemiology-network-afenet

[13] Jamison D. et al. *Disease Control Priorities in Developing Countries, 2nd edition;* Washington (DC): World Bank 2006

[14] Baker M.G., Fidler D.P. *Global Public Health Surveillance under New International Health Regulations*. Emerging Infectious Diseases 2011, 7, pp. 1058-1063

[15] Souty, C. *Improving disease incidence estimates in primary care surveillance systems.* Population Health Metrics 2014, 19, pp.12

Results

Study group consisted in total of 20 (100%) healthcare workers. From all healthcare workers responsible for diseases notification in the health facilities, 65% worked as a nurse, 25% as a clinical officer and 10% worked as a public health officer. Grade of secondary education achieved 15% with field of nursing and community health, 5% achieved diploma and 80% achieved diploma grade from public health and clinical medicine.

Table 1: Basic characteristics of respondents, n=20

Current position	**n**	**%**
nurse	13	65%
clinical officer	5	25%
public health officer	2	10%
Education	**n**	**%**
secondary school	3	15%
certificate	1	5%
diploma	16	80%

Knowledge level

One of study aim was to determine the level of health workers knowledge and to find the possible gaps. All healthcare workers (100%) were able to identify list of mandatory diseases and they notify the disease within the standard case definition. Workers (30%) were not sure which reporting tool there are(they are confused which tool is appropriate to use)and 30% did not know whether there is reporting tool for outbreak detection and the way how to use the protocol in specific conditions. Healthcare workers (85%) are not sure which kind of dataand the time interval they are responsible to report to surveillance stakeholders.

Table 2: Healthcare workers knowledge of reporting, n=20.

List of mandatory diseases	**n**	**%**
yes	20	100%
no	0	0%
Familiar with standard case definition	**n**	**%**
yes	20	100%
no	0	0%
Protocol of reporting	**n**	**%**
no	6	30%
IDSR forms, MOH forms	14	70%
Protocol of outbreak detection	**n**	**%**
yes	16	70%
no	4	30%
Reporting to whom	**n**	**%**
yes	17	85%
no	3	15%

Health workers (45%)were unable to describe the process of reporting and its individual steps and 40% of them were not aware of steps, which create the process of reported data analysis. Priorities and objectives of the surveillance were not clear for 30% of healthcare workers and 25% of workers did not know how surveillance system contributes to public health and the reasons they should do reporting.

Table 3: Healthcare workers knowledge of surveillance system, n=20

Process of reporting	**n**	**%**
not able to answer	9	45%
weekly, monthly reporting, in case of epidemics	2	10%
in suspected cases, take a specimen, reporting with IDSR form to surveillance sub-county coordinator	9	45%
Data analysis process	**n**	**%**
yes	12	60%
no	8	40%
Surveillance objective and priorities	**n**	**%**
yes	14	70%
no	6	30%
Surveillance contribution to public health	**n**	**%**
no	5	25%
early detection, preventive action is taken	15	75%

Barriers and needs for training

From all healthcare workers involved in disease surveillance, 55% participated at some training two or more years ago and remaining 45% of workers carry out notifications without any appropriate training. After the initial training, there were not any activities to ensure healthcare workers knowledge and skills in disease reporting with updates in IDSR system.

All workers acknowledged the need for training focused on communicable diseases surveillance.They also agreed on further needs for training focused on computers work skills (55%), reporting process and data entry (30%), understanding general principles of surveillance (15%), updating the Integrated Disease Surveillance and Response (IDSR system (15%) and standard case definitions.

Table 4: Needs for training, n=20

Surveillance training	**n**	**%**
yes	11	55%
no	9	45%
Need for training	**n**	**%**
yes	20	100%
no	0	0%
Area of training	**n**	**%**
using case definition	2	10%
data entry	1	5%
reporting	6	30%
general surveillance system in public health	3	15%
IDSR updates	3	15%
internet services	1	5%
computer knowledge	11	55%

Discussion

Surveillance of infection diseases are fundamental too public health decision- making and practice. Surveillance data are crucial for monitoring the health status of populations, detecting diseases and triggering action to prevent illness and containing public health problems[16]. Most traditional global disease surveillance system target specific diseases, infrastructure and support is relatively weak for the more difficult tracking emerging and

[16]Sahal N., Reintjes R., Mahgoub A.E., Aro A.R. Staff views about the quality of the communicable disease surveillance system in Khartoum state, Sudan, 2005-2007: a qualitative study. Eastern Mediterranean Health Journal 2011, 17:7, pp.565-569

re-emerging diseases. This is true especially in developing countries, where human and material resources do not cover even routine surveillance tasks[17].

In Kenya, reporting of communicable diseases is mandatory within the Integrated Disease Surveillance and Response on 36 public health conditions. Responsible person for disease notification is staff in charge of health facility (clinical officer, public health officer or nurse) in the scope of individual health facilities to sub-county coordinator. Reporting is set to be done weekly, monthly and in case of epidemic within IDSR technical guidelines by using tools- forms of IDSR system and Minister of Health forms[18,19].

Surveillance system in Kenya challenges now to epidemic of cholera, measles, viral hemorrhagic fevers, yellow fever, influenza, malaria, and tuberculosis which are also leading cause of death. Main challenges for surveillance system improvement are following: healthcare staff knowledge and dedication to reporting, weak reporting and communication system from health facilities to districts surveillance units, diagnosis capacity and confirmation, lack of quarantine and adequate isolation facilities[20, 21].

Personnel that contributes to the national surveillance and response system are the most valuable part of the system. Each individual plays essential role to ensure that the system is functional, appropriate, timely and responsive. Experiences has shown that the human factor is more important than the design of surveillance system[22, 23].

Main results of this study is finding that 55% workers participated at one surveillance training two or more years ago and remaining 45% of workers

[17]Choffnes E. Improving infectious diseases surveillance. Bulletin of atomic scientists. [Accessed September 21, 2015]. Available from: http://thebulletin.org/improving-infectious-disease-surveillance-0

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[21]Connolly M.A. et al. 2004. *Communicable diseases in complex emergencies: Impact and challenges.* The Lancet 2004, 364: 9449, pp. 1974-1983

[22]Chretien J.P., Lewis S.H. 2008. *Electronic public health surveillance in developing settings: meeting summary.* BMC Proceedings 2008, 2:3

[23]Veenema T.G., Toke J. 2006. *Early detection and surveillance for bio preparedness and emerging infectious diseases.* Journal of Issues in Nursing 2006, 11: 1, pp.3

carry out notifications without any appropriate training. In study for assessment core activities in IDSR system in India was similar situation. Only 37% of health care workers responsible for disease notification in health facilities participated in the surveillance training[24].

One of study aim was to found out level of health care workers knowledge about disease reporting. We found out that 30% of workers were not sure which reporting tool there are responsible to use. They are usually confused if they should use Ministry of Health forms or IDSR forms, or both. Similar situation was revealed in Nigeria, 33% of health care workers were aware of IDSR forms. Generally, knowledge about using forms of IDSR system is very low, in spite of the fact, that they are available at each health facility[25].

Thirty percent of workers did not know whether there is reporting tool for outbreak detection and the way how to use the protocol wit data entry process and reporting to the relevant structure. Healthcare workers (85%) are not sure which kind of data and the time interval they are responsible to report to surveillance stakeholders. In Phalkey et al. study, 59% of healthcare workers understood the situation of outbreak detection and reporting with appropriate tools[22].

Healthcare workers (45%) were not able to describe process of reporting, 40% did not understand the process of data analysis and 30% were not familiar with surveillance objectives and priority disease which were set to be eradicated. In study with main aim to evaluate surveillance system in India, 24% of health workers were able to do basic data analysis and only 6% were able to calculate incidence and prevalence of diseases[26].

Study participants expresses the need for on-going education and training in disease surveillance. The priorities for education training are area of computer knowledge, data entry and reporting with using appropriate reporting tools and forms according to the standard case definition. Next part of the training will be general surveillance system introduction and also its contribution to public health. In study conducted in Morroco, physicians and nurses expressed the following gaps they felt in

[24]Phalkey R. et al. Assessment of the core and support functions of the Integrated Disease Surveillance system in Maharashtra, India. BMC Public Health 2013, 13: 575

[25]Nnebue C. et al. Awareness and knowledge of disease surveillance and notification by health-care workers and availability of facility records in Anambra state, Nigeria. Nigerian Journal of Medicine 2012, 53:4, 220-225

[26]Bose A. et al. Case Based Measles Surveillance in Pune: Evidence to Guide Current and Future Measles Control and Elimination Efforts in India. PLoS One 2014, 9:10

disease notification: data analysis, outbreak detection, and surveillance system working and pc skills[27].

Expected outcome of the training implementation is increased knowledge and skills of health workers in reporting data and using communication technology as a condition for providing information in timely and efficient way for all surveillance stakeholders.

Conclusion

The health workforce is one of the key building blocks for strengthening health systems. it is very important to take surveillance staff views into account as listening to their opinions and enhance their motivation for better performance within the system and give them appropriate training, feedback and motivation to work[28].

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Psychological, environmental and socio-economic determinants of school students health status

Abstract

It is believed that the age of puberty (10-18 years old) is the most important period in human life, during which own identity is being shaped. it occurs the most important, intensive need to seek self-acceptance in relationships with family members or peers, and striving for independent goals and ways of achieving them. This process forces the young man to a big involvement, intellectual effort, and is connected with making mistakes. According to developmental psychologists, success in the form of the emergence of a strong sense of self-identity depends on many factors and it is the basis of a stable self-image, a relatively high level of self-acceptance, an optimistic approach to itself and others, resistance against social pressure, ability to combine short-term and long-term plans, and make responsible decisions (2). With the development of self-identity a sense of responsibility for own actions is being shaped and the ability to be in a close relationship, both emotional and physical with a family or peers as well.

Background

Psychological, environmental, and socio-economic factors affecting the biological as well as mental health of young people at the age of puberty. During this stage of life, adolescents shape attitudes towards themselves, their beliefs, their image on the background of the surrounding environment (family, school, peers), and their lifestyle (nutrition habits, use of stimulants – tobacco and alcohol, attitude towards sport and physical activity, as well as exposure to stress). During this period of life young people select and support or reject the environmental patterns of social behavior. In theory, it is assumed that the process of identity formation runs in stages. However, not every person

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passes successively through the same steps, some of them may be omitted, there may be a return to previous stages, finally, not everyone manages to reach a level of fully mature identity. Studies on the role of family and teachers in shaping the identity of the individual have been conducted by Woititz (21), which stated that the most important is clear marking the borders and requirements, and not letting yourself be provoked by young people. Another attitude characteristic for this stage of life is uncritical acceptance for, imposed by the close or extended environment, attitudes or ideas of how to live created by people who teenager trusts. This behavior is often caused by treatment of other people's thoughts as your own and concerns, inter alia, choice of future profession, and social and religious beliefs. This is connected with idealization of people and groups with which teenager identifies. at this time, it is important to encourage the child by parents to own thinking by asking questions and initiating conversations and discussions as part of so-called parental monitoring. The task of the family environment, but also school environment, should be consistent and firm expressing negative opinions, however without compromising the child's dignity and overly strong emotions towards it (3). Another task of the adult population is to ensure that the parents' protectiveness and their misunderstood concern about adolescent children won't delay the process of becoming independent. In the context of these issues, to ensure and maintain physical and mental health of young people is a difficult and complex problem and it requires an integrated approach. Many studies have shown that failure to engage in even one aspect of teenager's life can induce specific educational, social, and psychic effects. Knowledge about the teenager's mental health from an comprehensive perspective of development requires consideration of his functioning in the individual context: emotional, cognitive, mobility, and functioning in the three most important systems for him, which are: family, school and peer group.

Family structure

Researchers are consistent about the fact that the family structure (a second home or a second family, communication with parents and siblings, satisfaction with family relationships, parental monitoring, relationship with parents) is the most important psychosocial factor in a proper as well as disturbed human development. Family is defined on several levels: for sociologists is the basic unit of society, for psychoanalysts is a place where mother-baby bond is being shaped, and in later life- a place of the processes of separation and individualization, for systemic therapists is a place of relationships between family members, coalitions, triangles, and

multigenerational transmission link as well. Family-related factors affecting the child are divided into:

- factors related to the pathology of a family, such as crime, family members' alcoholism, drug addiction, physical or sexual abuse of a child (13);
- factors related to family structure such as family size, the presence of one or both parents, the child's position in the family (birth order) and more subtle features of family structure, such as boundaries, coalitions, alliances, excessive emotional involvement or emotional separation;
- factors related to the methods of communication in a family and a way of raising a child (a flexible and tailored to the age and needs of a child, an excessively authoritarian, or characterized by the lack of commitment in general and a neglect of a child (12).

It should also pay attention to economic and socio-cultural changes which have been taking place in Poland for last 20 years, and which have caused effects in the structure of families, such as an increasing number of divorces, a growing number of single-parent families, lack of emotional availability of parents, economic emigration, unemployment, the role of the Internet as a means of communication in a family (easy to make – difficult to maintain the bonds) (18). For comparison, among negative factors associated with a school Woynarowska (23) indicates: deficiencies in the physical environment of a school, abnormalities in the organization of the teaching process, an unfavorable structure of a teaching staff, an inadequate parents-school cooperation, and a growing phenomenon of aggression among school students, which may be a direct aggression, an indirect aggression, or an exclusion from the group.

Peer and school environment

Moreover, in adolescence the importance of peers increases, in both shaping the health and as a factor of mental disorders. In this difficult period of development relationships with peers help in the process of separation, because they compete with a child-parents relationship, additionally they are a support and provide patterns for the identification and sense of belonging. Peer environment proposes some, sometimes different from family, values, styles, and ways of life. it has been examined that among peers a lot of aggression appears, while there is a clear tendency to alienation, inability to make a contact, getting lost in a virtual world in

which friends mean "the others in front of the computer". Peer and school factors affecting the child are divided into:

- school environment (satisfaction with the results achieved at school, effort put into the study, achieving goals, relationships with teachers, relationships between pupils, violence in the school environment);
- peers (number of close classmates and contact with them after school, spending time in the evenings, communication with peers, contacts by electronic media, friendship and social competence);
- social inequalities (socio-economic status of the family, parents' education and work, the scale of material resources, subjective assessment of wealth of the family);
- free time activities (participation in various activities, individual or group classes);
- puberty (occurrence of menarche, puberty severity scale, self-perception in the process of sexual maturation);
- health-related quality of life and health status (self-assessment of physical and mental health, life satisfaction, subjective disorders, the scale of own body perception and image);
- chronic diseases declared by young people;
- nutrition habits (eating breakfast, frequency of consumption of selected food products, frequency and methods of weight loss);
- physical activity and sedentary behavior (reasons of physical activity, watching TV, computer games, computer use);
- tobacco and alcohol use (age of initiation, frequency of smoking and number of daily smoked cigarettes, the frequency of drinking alcohol, binge drinking by peers, binge drinking);
- use of illegal substances (marijuana use – ever, the first time in life, use of stimulants by peers) (10, 16).

Above statements are consistent with the WHO data from 2005 (4) which show that within 10 years along with the clinical improvement of young people's physical health, a deterioration of their mental health is observed. World statistics show an increase from 10% to 20% in the proportion of young people suffering from mental disorders and suicides in this age group are the third leading cause of death. In Poland, among 7.5 million of children and adolescents, according to research Wolańczyk (22), there is

9% young people with diagnosed emotional disorders, including depression. Studies on secondary school students' depression which are conducted for several years in Krakow (11) show that the prevalence of this disease reaches 30%. Similar results were obtained by Jaklewicz et al (6), who also show a high prevalence of depression in the population of young people aged 1-18 years in secondary schools in Gdansk and Koszalin. In the cited study, relationship between life satisfaction and depression and anxiety about the future turned out to be statistically significant. The authors of these studies concluded that the increase of the indicator of depressiveness causes transfer of the results towards the outer locus of control. Relationship between external sense of control of success and depressiveness turned out to be significant. However, relationship between loss of employment by a parent and life satisfaction of the examined young people was not confirmed. The authors considered as very interesting the fact of the lack of paternal authority which was clearly correlated with depression. Maternal authority was not a variable which differentiated the group of young people with depression and without symptoms of depression. Economic status and physical strength was indicated by the respondents as factors determining the position in the peer group (6).

Health-related nutritional habits and health status

In another study conducted between 1988 and 2008 risk behaviors in adolescents from Warsaw, the Mokotów district were assessed. Ostaszewski et al (16) showed that the upward trend of drug use was inhibited and in 2004 it was 17.4% and in 2008 16.0%. The proportion of smoking young people also decreased and reached 12% and 8.4%, respectively. Group of young people who declare not drinking alcohol increased from 19.3% in 2004 to 28.2% in 2008. Many studies on risk behaviors among young people also show weaknesses in health condition caused by an incorrect diet. Lack of sufficient number of meals, not eating breakfasts as well as insufficient energy and nutrients intake in nutritional rations may result in malnutrition, anemia and osteoporosis in subsequent decades of life. Such nutritional habits are observed more frequently among girls who following the fashion for slim figure are very often on a drastic, exhausting their bodies, diet. it has been shown that statements "I am a little too fat" and "definitely too fat" are expressed by approximately 40% of youth in Poland, according to HBSC study from 2011 (9,24). The report analyzed how the interaction of pairs of variables describing the social conditions affects the teenagers' own body image. Two interactions turned out to be significant: a subjective assessment of a family wealth with a subjective assessment of the wealth of place of residence and the severity of problems

in the place of residence with the subjective assessment of the wealth of place of residence. The increase of wealth of a family and place of residence was followed by improvement of the own body image. In addition, own body image of rich or very rich teenagers was the worst, when they lived in a very poor area and the best when living conditions were adequate to the wealth of a family. In addition, high level of social capital (so-called cooperation for the common good) resulted in improvement of own body image among adolescents (9). The work Alizadeh Aghdam et al (1) also demonstrated that social trust declared by young people significantly improves the perception of own body among the students. Thomason (19) showed a protective effect of social capital on own body image among 86 girls before and after joining the female organization "Cool Girls". The image of the own body is shaped from an early age by parents, peer group and the media. Parents assess the child's appearance and not always give positive patterns by criticizing it. Such lack of acceptance may result in taking actions risky for health aimed at the change of appearance. Especially girls believe that slimmer figure will make them more popular. it should be noted that according to HBSC study (10, 24), in the group of the youngest respondents aged 11-12 years, the frequency of weight loss in 2002, 2006 and 2010 increased from 11.9% to 13.6% and 18.2%, respectively. In older age groups, frequency of weight-loss diets were in those years at a similar level of 16-17%. Frequent attempts of weight lose, not connected with a change for a health-promoting dietary behaviors, result in yoyo effect and weight gain. it has been shown in studies that with increasing number of trials of weight loss decreases the effectiveness of their use (7, 17). Improper nutritional habits, eating fast food, low physical activity associated with watching TV and using the Internet causes a peculiar adaptations to the environment resulting in excessive adipose tissue. Studies currently conducted around the world are focused on getting to know new non-nutritional factors influencing the development of this disease. The problem of obesity is mainly caused by excessive, in relation to physiological needs, energy intake, but interesting is the fact why perfectly designed diet and its use is not effective in many patients (14). Reasons of this phenomenon are most likely connected with many areas of personality related to the psychological and social determinants, such as: wrong patterns and beliefs about eating, disorder of control processes – the theory of inhibited greed, sectional and point style of eating, disorder of self-regulatory mechanism and being other-directed (excessive sensitivity to taste or smell versus availability of food), stress and emotions and unreasonable ways of coping with them, neuroticism and extraversion (17). Challenges resulting from health condition of the young

generation become a social priority of countries, because the proportion of obesity among young people rapidly increases around the world. Studies among children and teenagers from seven European countries, Netherlands and the USA have shown the fastest-reaching changes in the direction of the increase of excessive body weight in England and Poland (5). The most worrying is that these children probably will be obese also after they reach adulthood. In addition to the health consequences in the form of hypertension, dyslipidemia, orthopedic diseases, disorders of carbohydrate metabolism, asthma, sleep apnea attacks, cancer risk, obese children suffer from psychosocial problems, lack of acceptance in the environment and reduced sense of self-esteem (5, 8). Lifestyle of children and teenagers in the world, both in developing and industrialized countries, significantly deviates from the health-promoting recommendations. Among others following factors are health risks: unbalanced diet, consumption of highly processed food, low fruit and vegetable intake, lack of exercise, long hours spent on the TV or computer and stimulants use: cigarettes and alcohol. Among girls and boys in adolescence lack of knowledge of the fundamental principles relating to proper nutrition and a healthy lifestyle amazes. Especially at this time when they are interested in their own appearance, proper body weight, shapely figure, they show embarrassingly low level of knowledge related to the principles of rational nutrition and a healthy way of life. This is the reason for making many mistakes in this field (15). Research indicates that low economic status, as well as the occurrence of non-communicable chronic diseases in a family is correlated with development of diseases in children (20). It may be also affected by congenital factors resulting from a low birth weight. Subsequent compensation of low birth weight increases the risk of insulin resistance, visceral obesity and other components of the metabolic syndrome (20). Zachurzok-Buczyńska (25) notes that puberty is a critical period in the development of the metabolic syndrome. In this time nearly 30 percent reduction in insulin sensitivity of peripheral tissues takes place as well as an increase in concentrations of fasting insulin and glucose. In adolescence insulin resistance seems to be selective for the metabolism of glucose and does not concern the metabolism of proteins, what increases the anabolic effect of insulin and growth hormone during pubertal spurt. Growth hormone impairs insulin sensitivity of tissues and enhances lipolysis and an increase of concentration of free fatty acids. In middle school (13-15 years), and subsequent in secondary school (16-18 years), young people show increasing independence and self-reliance among others in selection of consumed products (snacking habit, snacks, fast food) and in frequency of meals eaten during the day. Some teenagers independently attempt to control their weight by changing the diet and severity of physical activity,

and also with greater frequency smoke cigarettes and consume alcohol. There are emotional issues that also determine health behaviors. Further, independent of age and gender factors that influence the development of obesity and other symptoms of metabolic syndrome relate to low socio-economic status, low birth weight and the incidence of non-communicable metabolic diseases in the immediate family.

Conclusion

Evaluation of the impact of individual psychological, social or environmental determinants on the health status of school students is the main challenge nowadays. The results obtained in the many studies will allow for a broader view of already implemented educational programs in schools, but also more effective and efficient development of new prevention programs aimed at all adolescents, their families, teachers and especially those young people from the health risk groups.

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Differences in health behaviours among junior high school students from selected schools in County Bialski regarding gender

Abstract

Health for most people is the most precious value, but not every one of us acts so as to enjoy it to the late years of his/her life. The work, which, among others, education, the maintenance of good health should begin at an early age of the child and continue especially in adolescence. The aim of the study was to find differences in behaviour towards health of girls and boys in a lower secondary school.

The study was carried out by diagnostic survey with the use of a questionnaire. The survey included questions regarding, among others, subjective assessment of the state of health and physical activity, the attitude to following the principles of a healthy lifestyle and diet. There were questioned 393 lower secondary school pupils from the district of Biała Podlaska.

The boys statistically significantly are more likely than girls to evaluate better both their health status ($p = 0,013$) and the level of physical activity ($p = 0,001$). The analysis showed the existence of statistical differences between the number of meals consumed by the subjects in favour of boys. In contrast, girls rarely eat the fast-food type of meal.

The research results showed that education to a healthy lifestyle should be continued in lower secondary school. Adolescence is the second period, after the growth, in which great changes occur in the physical, mental and social development, and neglecting the health education may result in many diseases later in life.

Introduction

For most people, health is the most precious value, but not everyone's conduct allows them to enjoy good health to the late years of their lives.

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The research reports on the declared value hierarchy of Poles, health is always in the top three [Public Opinion Research Centre 2010 – 1st Place; Public Opinion Research Centre 2013 – 2nd place]. Actions to improve or maintain good health stem from attitudes towards health that should be the result of a properly conducted health education [26]. Work on the maintenance of good health, i.e., developing health skills and habits, education to a healthy lifestyle, conducted by teachers and reinforced at home by their parents, should be started from the early years of a child's life and continued especially in adolescence [10, 12]. Many researchers emphasize the role of the family in the health education of children and young people, noting that family health is not just the sum of the health of their members but it also takes into account the psychological, emotional and social relations between them [20, 29, 28,]. A child at the preschool and early school age is closely watched by both parents and teachers. at school, teachers call students' attention to, among other things, eating fruit and vegetables (eg.: salad for lunch at the canteen), taking an active part in curricular games and movement activities, sitting up straight in the classroom, i.e. developing health behaviours of their wards. at the same time, parents choose nutrition products, diversified meals with special care, eg.: colourful sandwiches for breakfast. They pay heed to their small growing children's extracurricular physical activities, in a word, they take care of widely understood health. Among preschool and early primary school children, differences in health behaviours of girls and boys do not seem to be clear. Certainly, there are discrepancies in the health behaviours of children. However, the elimination of the discrepancies from everyday life or reducing their severity is easier to make, because parents and teachers are great authority for the youngest children. The situation changes when children begin to mature and move to the next stage of education.

Puberty is a difficult time for young people, during which not reinforced positive health behaviours may contribute to the occurrence of negative health effects. Unfortunately, the state of health education in middle and secondary schools is unsatisfactory. Health education classes are often held at a very low level, and parents often do not pay attention to the content of the curriculum in this area. Adolescence is a period of turbulent hormonal changes associated with physical, mental and social maturation, in which, i. a., self-image, identity, searching and creating a hierarchy of values are shaped [8, 11, 9]. Any abnormalities in the perception of oneself can contribute to the emergence of many diseases, in both the somatic and psychological undertow. Parents and teachers, thinking that kids are already so mature and moulded enough that they know what is good and what is bad for their health, do not watch the children's health

behaviours as meticulously as before. And this is unfortunately a big mistake, because adolescents left to their own devices, being often influenced by community, change their earlier formed health behaviours, not always for the better.

Puberty includes an increased interest in the other person, a desire to please others. Therefore, while trying to meet the needs of others, young people acquire certain demeanour, often imposed by the immediate circle of their friends, and start to experiment with all kinds of stimulants, take a lot of risky behaviour, which is not healthy [15, 27]. That time often results in health behaviour disturbances, which often go unnoticed by parents or ignored considering them to be unimportant. Research in this area shows that boys are more likely to reach for different drugs. Girls, on the other hand, diet much more often, which not seldom results in anorexia or bulimia [19, 17, 7]. With the awareness of noticeable differences in health behaviours between middle school-aged girls and boys, the purpose of this study is to find these differences in the fields of nutrition, physical activity and ways of spending one's leisure. Monitoring of differences in adolescents' health behaviors will allow for early identification of irregularities and can prevent many diseases in the future.

The objectives of the research

The main objective of the study was to find the differences in adolescents' health behaviors. Taking into account the main objective, the specific objectives are set:

- study of the subjective assessment of the state of health and physical activity of adolescents;
- study of the frequency and regularity of meals among the surveyed adolescents;
- study of preferred leisure activities by the surveyed adolescents.

Material and methods

The managements of the schools and most parents or guardians of the children gave their consent to carry out the study. The study involved 393 students from selected middle schools from County Bialski (Janów Podlaski, Konstantynów, Terespol), including 189 girls and 204 boys. In total, 89% of students of these schools were tested, the remaining 11% are students absent on the day of the study, or those whose parents did not agree to participate in the study. The subjects were aged 13-15.

The research was carried out by means of a diagnostic survey with the use of a questionnaire. The author's survey included closed questions with the possibility of one choice. The questions were related to basic health behaviours associated with, among other things, proper nutrition, physical activity, ways of spending free time, etc. The obtained results were statistically analysed with the use of the programme 'Statistica'. A *p value* of less than 0,05 was considered significant.

Results

Health behaviours related to physical health include, i.a., proper nutrition, physical activity, the amount of time spent on a night's rest, a way to spend one's free time. This paper presents the results of research on health behaviours among middle school students.

It has been widely known that women more often complain about their health and their well-being. it is also known that they care about their health more, by, i.a., having medical examinations more frequently, or adhering to the doctor's orders or through controlling weight. Despite these actions, they may assess their health as unsatisfactory. The results presented below relate to health self-assessment by middle school students (table 1.). The Analysis of responses to the question on the subjective assessment of their health showed that boys better assess their health status than girls. The observed differences in the assessment of health by girls and boys are statistically significant ($p = 0,013$).

Table 1. Subjective assessment of health status by the respondents' gender

Variable	Gender	Average value	Standard deviation	M W-U Test Result	Significane level
Medical condition	**Girls**	1,99	0,71	2,48	0,013
	Boys	1,84	0,83		

The basic condition for rational nutrition is regular eating. Most of the surveyed young people admitted that they do not eat regularly (table 2.). The results found that girls more often than boys did not eat on a regular basis (69,84% and 57,35%). The results showed statistically significant differences between girls and boys in the regularity of meals in favor of boys ($\chi 2 = 6,59$; $p = 0,01$).

Table 2. Declared regularity of eating meals of the respondents by gender

Variable	Gender			
	Girls		Boys	
	Number	%	Number	%
Yes	57	30,16	87	42,65
No	132	69,84	117	57,35

Having analysed the number of meals consumed by the subjects, the vast majority of respondents, both girls (78,31%) and boys (74,51%), turned out to declare from 3 to 5 meals a day (table 3.). Too small a number of meals per day (fewer than 3) are eaten by more girls than boys (15,87% and 7,84%). On the other hand, more boys reported eating more than 5 meals throughout the day (17,65% and 5,82%). Differences in the number of consumed meals by the subjects regarding gender are statistically significant ($Z = 4,04$, $p < 0,001$).

Table 3. Number of meals eaten by the subjects during the day by gender

Variable	Gender			
	Girls		Boys	
	Number	%	Number	%
Fewer than 3 meals	30	15,87	16	7,84
From 3 to 5 meals per day	148	78,31	152	74,51
more than 5 meals per day	11	5,82	36	17,65

The fast pace of life, high availability on the market and adequate advertising of fast-food products as well as mindless adoption of Western lifestyle models make one often reach for products of this type (table 4.). One of the questions in the survey referred to the frequency of fast-food products intake by the respondents. The results obtained showed that every fifth girl and every third boy consume fast food products 2-3 times per week (21,69% and 37,25%). The largest group among the respondents were students who eat such meals once a month (girls 48,15% and boys 44,61%). One satisfactory fact is the that the smallest part in the surveyed group were those youngsters consuming fast food meals on a daily basis (2,2% girls, boys 2,94%).The analysis of the research showed that boys consume fast-food products much more often than girls ($Z = 3,98$, $p < 0,001$).

Table 4. Frequency of eating fast food by students

Variable	Gender			
	Girls		Boys	
	Number	%	Number	%
Every day	4	2,12	6	2,94
2-3 times per week	41	21,69	76	37,25
Once a month	91	48,15	91	44,61
Occasionally (Once –Twice a year)	45	23,81	28	13,73
I don't eat such meals	8	4,23	3	1,47

Physical activity is one of the health determinants. An adequate dose of physical activity affects the development and proper functioning of the body positively. Young people in adolescence often give up recreational activities in favor of spending time in front of the computer and socializing with friends. Since the need for physical activity among young people is obvious, the question was asked: 'To what extent do you consider yourself physically active?'. The analysis noted that boys more often than girls consider themselves to be physically active (table 5.). The observed differences between girls and boys in the evaluation of the one's perception as physically active were statistically significant ($Z = 3,18$, $p < 0,001$).

Table 5. Subjective assessment of one's physical activity

Variable	Gender	Average value	Standard deviation	M W-U Test Result	Significane level
Physical activity	**Girls**	2,20	0,76	3,18	0,001
	Boys	1,96	0,77		

Developing and nurturing in childhood health behaviours concerning, i.a., ways of spending one's leisure undergo a "trial" at puberty. With the growth of information technology one gains more free time, because technology makes performing certain tasks easier and faster, being very attractive at the same time. Particularly for children and young people, it constitutes a major threat to the physical, mental and social health. Absorbed with Internet browsing, tracking changes on social networks or playing on the computer, young people often confine meeting their "real life" friends family, or they neglect their hobbies. One purpose of this study was to answer the question about the most common way of spending

leisure time by middle school students from the Bialski County schools (table 6.). The analysis of the results showed that girls spend the most of their time off on meetings their friends (28,57%), and the boys – by browsing the Internet and playing computer games (28,43%). The least of leisure is spent on social work and voluntary service. 2,12% of the girls were reported to do that, while among boys there was no one to do that. Free time filled with physical activity was reported among 7,94% of the girls and 24,51% among the boys. The noticed differences in the way leisure is spent by the respondents were statistically significant ($\chi 2 = 37,21$; $p < 0,001$).

Table 6. Most often declared ways of spending free time by the respondents

Variable	Gender			
	Girls		Boys	
	Number	%	Number	%
I watch tv	24	12,70	13	6,37
I surf the Internet Play computer games	40	21,16	58	28,43
I study	16	8,47	7	3,43
I do sport	15	7,94	50	24,51
I do the house chores	23	12,17	20	9,80
I sleep	13	6,88	19	9,31
I meet my friends	54	28,57	37	18,14
Community service, voluntary service	4	2,12	0	0,00

The hygiene of night rest, that is the quality and quantity of sleep, affects the state of human health. During the middle school period of study, the amount of time devoted to sleep is often needlessly shortened, which affects health in general, and directly, among other things,: trouble concentrating in class, and indirectly academic performance. High social activity and an increased number of school duties during this period is conducive to reducing night-time sleep. Having analysed the results of the research on middle school students' sleeping time, statistically significant differences between girls and boys ($Z = 2,87$; $p = 0,004$) (table 7.) were reported. Girls (56,08%) declared mostly sleep period ranging from 5 to 7 hours, and boys over 7 hours (51,96%). More girls than boys reported that they sleep less than 5 hours at night.

Table 7. Duration of night-time rest of the respondents by gender

Variable	Gender			
	Girls		Boys	
	Number	%	Number	%
Less than 5 hours	14	7,41	13	6,37
From 5 to 7 hours	106	56,08	85	41,67
More than 7 hours	69	36,51	106	51,96

Discussion

The period of study in middle school is very difficult for young people, on the one hand, due to the increased number of school duties, on the other hand, due to the changes that occur in physical and mental development of man. Adolescence is a very important period in the life of every person, because then consolidate or mould new behaviours and attitudes, both health ones and counter-health ones. During this period, there is a desire to manifest their views by the growing-up, their independence, often resulting in a rebellion against the parents, the ruling standards and principles. Therefore, it is worth noting and emphasizing it strongly that the maturation process affects not only teenagers but also their parents, who must accept the changes in the development of their children, whether it's physical, mental, social, and particularly important during this period, emotional development. Parents, wishing to support their children during this period and, concurrently, to influence their attitudes, as well as, shaped by young people their own value hierarchy, should learn how to learn their kid from "anew". During this period, differences between girls and boys' conduct, also in the health behaviour, become more visible. Girls seeking, through their appearance, those lean silhouettes presented in the media often use a debilitating body diet. And boys are also followers of the trendy muscular physique are applying too strenuous exercise or experiment with products of unknown origin, eg.: to increase muscle mass or to cause rapid weight loss. The pace of developmental changes in the body differentiates, depending on sex, the demand for energy as well as nutrients, which results in different attitudes towards diet [4]. The results of this study indicate the existence of statistically significant differences in health behaviours connected with rational nutrition among surveyed girls and boys. Girls from the Bialski County more often than boys do not eat regularly (69,84%; 57,35%). The presented results are confirmed in the previously conducted research among young students [13, 16, 17, 26]. The problem of irregular diet, is not typical for adolescents, it is also observed

among secondary school students [27] and university students. Eating regular meals is one of the components of a balanced diet, in which an important element is the number of meals consumed during the day. One can eat two meals a day regularly, but it is not consistent with the recommendations of a proper, healthy diet. In our study, the majority of middle school students, both girls and boys from the Bialski County, declared the consumption of 3 to 5 meals a day (78,31% girls and 74,51% boys). it was noted that significantly more boys than girls consume more than 5 meals a day ($Z = 4,04$; $p < 0,001$). it is worth noting that there has been a large group of youth, more girls than boys (15,87% and 7,84%), declaring eating fewer than three meals a day. Most of the girls (60%) in the study by Mędrela-Kuder also declared the consumption of 3-5 meals per day [14]. Comparable results of the research were presented, among others, by Gajda R. i Jeżewska-Zychowicz M. [13], Wajszczyk B. [14], Pieszko-Klejnowska M. [15]. Similar test results were obtained by Pieszko-Klejnowska, who demonstrated that boys consumed more meals a day than girls [15]. However, in J. Maksymovych-Jaroszuk and J. Karczewski [30] researches the number of meals did not differentiate statistically girls and boys.

Irregularities in nutrition among the surveyed youth also rely on frequent fast food eating. Among the many studies on the frequency and amount of eating such food, the results and conclusions are similar. Namely, young people, as in our study, declare the excessive consumption of such produce. Fast-food is more often eaten by boys, which is also confirmed by the results of Grochowska A and Schegel-Zawadzka [7]. Different results were received by Buczak A., whose both middle school surveyed students (62,2%), as well as university students (81%) claimed not to use fast-food products too often [1].

Another health behaviour, without which it would be impossible to preserve health into old age is regular physical activity. The right amount and frequency of physical effort is necessary both for proper human development, as well as for maintaining good physical and mental health. Our findings regarding self-assessment of physical activity were confirmed in the studies by Woynarowska and Mazur [25], in which the boys more often than girls considered themselves to be physically active persons. The progress of civilization makes work and study much easier to people, however, there are also its negative effects. One of them is the limitation of physical activity by children and young people in particular. The results obtained in the research concerning ways of spending leisure by middle school students speak for themselves. A large group of them spend their time passively, both girls and boys, watching TV or sitting in front of the

computer. Among those declaring sport in their spare time, the majority were boys (24,51%-7,94%). The differences shown in this youth group were statistically significant ($\chi 2=37,21$; $p<0,001$). In the research by Waśkiewicz et al. conducted in a group of teenagers aged 11-16 similar results were obtained, where more boys than girls did sport in their spare time; a different result was an indication of the sedentary way of spending free time by the respondents [23]. Świderska-Kopacz showed a similar trend, ie. the main way of spending free time for young people was watching TV and spending it in front of the computer [21]. In her study it was also noted that the older students (middle school – secondary school) were, the greater the percentage of spending leisure time passively was.

Sleep, its quality and length is another of the surveyed health behaviors. The recommended amount of sleep for teenagers is the amount close to school-aged children, namely 9-10 hours, preferably during the nighttime [16]. In puberty, that falls on the learning time in middle school, it often comes to disorders in quantity and quality of sleep, which are caused on the one hand by tumultuous changes taking place in the body, on the other, larger social activity among young people. The resulting disturbances during this period can result not only in the lowering of the academic results and worsening of interpersonal relations, but also in much more serious health problems, including depression or cardiovascular diseases [16]. Although the results of this study showed statistically significant differences in the length of sleep declared by girls and boys ($Z=2,87$, $p=0,004$) in favor of the latter, they also indicated that young people spent too little time on overnight rest.

Summary and conclusions

The results of this study showed differences in health behaviours among middle school boys and girls.

On its basis the following conclusions were formulated:

1. The boys assess their health status better than girls and consider themselves physically active more often.
2. The vast majority of adolescents do not eat on a regular basis, more often these were the girls, while boys ate fast-food more often.
3. The surveyed adolescents spent most of their free time watching TV or at the computer, while physical activity during their leisure was undertaken more often by boys than girls.
4. More boys than girls declared to have spent more than 7 hours on overnight rest, but a large part of the young people devoted too little time for sleep.

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Fitness level and anthropometric indicators in adult men and women exercising regularly

Abstract

Introduction: The physical activity for adults is closely related to their leisure time and the desire to rest and pleasure. Modern lifestyle, convenience and sedentary nature of the work cause that physical activity is eliminated from everyday life. The physical activity is a crucial part of our life that impact on good physical condition and human psyche as well as has a positive effect on the functioning of the whole organism and is an effective way of health prevention in the future.

Aim of the study: The aim of this study was evaluation of physical fitness level and body type in randomly selected adult women and men exercising in the Club Fitness.

Material and methods: The study group consisted of 25 women and 25 men selected randomly by using computer program. The study group were divided into two subgroups: women from 18-25 years of age – I group, women aged 26-35 years – II group, men aged 22-25 years – I group and men aged 26-40 – the II group. Anthropometric measurements were based on: height and weight, waist and hip circumference and the calculated indicators: BMI, Rohrer, slenderness, WHR and WHtR. Fitness level was determined on the basis Zuchora Physical Fitness Index, made up of six skill tests evaluating the speed, jumping ability, strength shoulders, flexibility, endurance and strength of the abdominal muscles. The intensity of the exercise was determined using a questionnaire: timing, frequency and number of hours per week of physical activity.

Results: Weight-height ratios in most subjects were in norm and depended on mobility, particularly jumping and endurance test in men. Physical fitness adult in all age groups was very good, and its level depend on the time interval training, the amount and frequency of physical activity at week.

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Conclusions: The high level of physical fitness determined by age of male respondents had an impact on their normal weight and type of body, whereas some women low fitness level was influenced by an incorrect weight and body composition, and worse flexibility. On a very good physical fitness of adults had an impact systematic and prolonged physical activity.

Poziom sprawności fizycznej a wskaźniki antropometryczne u dorosłych kobiet i mężczyzn regularnie ćwiczących

Streszczenie

Wprowadzenie: Podejmowanie aktywności ruchowej przez osoby dorosłe jest ściśle związane m.in. z ich czasem wolnym, chęcią wypoczynku oraz przyjemnością. Współczesny tryb życia, liczne udogodnienia oraz siedzący rodzaj wykonywanej pracy sprawiają, iż aktywność ruchowa jest eliminowana z życia codziennego. Aktywność fizyczna stanowi jeden z głównych elementów decydujących o zachowaniu dobrej kondycji fizycznej i psychicznej człowieka, wpływa pozytywnie na funkcjonowanie całego organizmu oraz jest skuteczną formą profilaktyki na przyszłość.

Cel badań: Celem pracy była ocena poziomu sprawności fizycznej oraz typu budowy ciała losowo wybranych dorosłych kobiet i mężczyzn ćwiczących w Clubie Fitness.

Materiał i metody: Grupa badana składała się z 25 kobiet i 25 mężczyzn, którzy zostali podzieleni na dwie podgrupy: kobiety od 18-25 roku życia – I grupa, kobiety w wieku 26-35 lat – II grupa, mężczyźni w wieku 22-25 lat – I grupa oraz mężczyźni w przedziale wiekowym 26-40 lat – II grupa. Wykonano pomiary antropometryczne: wysokość i masa ciała oraz obwód pasa i bioder, na podstawie których obliczono wskaźniki: BMI, Rohrera, smukłości, WHR i WHtR. Poziom sprawności fizycznej określono na podstawie Indeksu Sprawności Fizycznej Zuchory, składającego się z sześciu prób sprawnościowych oceniających: szybkość, skoczność, siłę ramion, gibkość, wytrzymałość oraz siłę mięśni brzucha. Intensywność ćwiczeń fizycznych określono przy pomocy kwestionariusza ankiety: czasookres, częstość i ilość godzin aktywności fizycznej w tygodniu.

Wyniki: Wskaźniki wagowo-wzrostowe u większości badanych były w normie i współzależały od sprawności ruchowej, a zwłaszcza u mężczyzn w teście skocznościowym i wytrzymałościowym. Sprawność fizyczna badanych dorosłych we wszystkich kategoriach wiekowych była bardzo dobra, a jej poziom zależał od czasookresu treningów, ilości i częstości aktywności fizycznej w tygodniu.

Wnioski: Wysoki poziom sprawności fizycznej determinowany wiekiem badanych mężczyzn wpływał na ich prawidłową masę ciała i typ budowy ciała, natomiast u niektórych kobiet niski poziom sprawności fizycznej decydował o nieprawidłowej masie i budowie ciała oraz gorszej gibkości. Na bardzo dobrą sprawność fizyczną badanych dorosłych miała wpływ systematyczna i długotrwała aktywność fizyczna.

Introduction

Physical activity is one of the main elements which decides about human physical and mental condition. it has a positive influence on the function of the whole organism and it is effective prophylaxis for future. The physical activity for adults is closely related to their leisure time and the desire to rest and pleasure. However this style of life is not consistently implemented by society, what caused and still cause passive lifestyle for a lot of people who live in our country.Additionally, this form is forced by kind of work and many facilities so it is important to relay the knowledge to people and encourage them to do sport and tourism what help to recover peace of mind and body [6, 10]. So it is necessary to pose a question about physical fitness level in our society. Therefore, the aim of this study was evaluation of physical fitness level and body type in a group of randomly selected adult women and men exercising regularly in the *Club Fitness.*

Material and methods

The study group consisted of 50 people selected randomly – 25 women and 25 men who had sport training two or three times per week. Randomization was performed by using the computer program. Age was criterion for inclusion in the study, taking into count the division of people aged studying and after graduation. All subjects were in series training at least from 2 months. The women group were divided into two subgroup: in the first there were 11 women in the age 18-25 years, the second group was consisted of women in the aged 26-35. Also the men were divided into two subgroup. First group was made up of 16 men at the age of 22-25 and the second group was consisted of 9 men 26-40 years. For the both group, the age line was characterized by equation: younger <25,5years – first group and older ≥25,5 years second group. Anthropometric measurements were based on: height, weight, hip and waist circumference. These measurements were carried out in the straight standing position, in the leisurewear, without shoes. By use antropometer, the height was measure – from basis measurement to Vertex point (with accuracy up to 5 mm) [2]. The weight was assessed by use scales (with accuracy up to 0,5 kg).The waist circumference was measured with sewing tape in the narrowest part of the

waist between down part rib arch and upper wing of ilium at the end of expiration mild (with accuracy up to 5 mm) [3]. The sewing tape was used also to measure hip circumference in the place of greater trochanters tight bones – points *trochanterion*, right and left (with accuracy up to 5 mm) [2]. On the basis on gained results, it was calculated Body Mass Index (BMI), Rohrer indicator, slenderness indicator, WHR (Waist to Hip Ratio), WHtR (Waist – to– Height Ratio) [5, 7].

In order to evaluate physical fitness level, *Zuchora Physical Fitness Index* was studied consists of six skills tests: speed, jumping ability, strength of shoulders, flexibility, endurance and strength of the abdominal muscles. For each of this categories the points were awarded and the sum of points was fitness level of particular groups [12]. The results of the study for each participant was compared with literature norms, that be enable to sort out women and men to proper category vary depending on age.Results from anthropometric measurements were analyzed in Microsoft Office Excel 2007 program. For each parameters arithmetic mean ($\bar{x}$) and standard deviation (SD) were calculated By using correlation coefficient Pearson relationship was assessed between each of parameters [11].

Results

The results were depicted in the tables from 1 to 7.

Table 1.Anthropometric characteristics of subjects in particular group

Measured parameter	**WOMEN**				**MEN**			
	Group I		**Group II**		**Group I**		**Group II**	
	$\bar{x}$	SD	$\bar{x}$	SD	$\bar{x}$	SD	$\bar{x}$	SD
Height [m]	1,68	0,07	1,65	0,05	1,81	0,09	1,78	0,06
Weight [kg]	60,59	6,68	61,14	6,89	78,94	12,01	83,67	8,04
Waist circumference [cm]	71,55	6,53	75,86	6,68	84,00	6,26	89,00	6,38
Hip circumference [cm]	95,09	4,25	96,57	6,24	98,69	7,04	100,44	4,07

Both younger women and men were higher and light weight than subjects from II group had lower waist and hip circumference.

Table2.Mean values of anthropometric indicators

Anthropometric indicators	**WOMEN**						**MEN**					
	Group I			**Group II**			**Group I**			**Group II**		
	$\bar{x}$	**SD**	**Me**	**$\bar{x}$**	**SD**	**Me**	**$\bar{x}$**	**SD**	Me	**$\bar{x}$**	**SD**	Me
BMI	21,45	2,04	21,80	22,45	2,14	22,40	24,06	2,04	23,79	26,35	23,41	26,20
Indicator Rohrera	1,28	0,14	1,27	1,36	0,14	1,36	1,33	0,12	1,32	1,48	1,31	1,47
Indicator slenderness	42,84	1,48	42,89	41,97	1,43	41,86	42,24	1,21	42,34	40,77	39,50	40,81
WHR	0,75	0,06	0,74	0,79	0,04	0,77	0,85	0,07	0,85	0,89	0,80	0,90
WHtR	0,43	0,05	0,42	0,46	0,04	0,45	0,46	0,03	0,45	0,50	0,45	0,49

Based on the obtained results, it was noticed, that women from I group had lower BMI and Rohrer indicator. The same situation was observed in the case of men from I group. Of all subjects, women and men from I group gained higher values slenderness indicator. Also, younger women obtained lower WHR and WHtR. For women from II group and men from I group, WHtR was on the similar level.

Table 3.Proportion of subjects belong to the particular group act on BMI, Rohrer indicator, slenderness indicator, WHR and WHtR

Parameter	Subjects				TOTAL%
	WOMEN		MEN		
	Group I	Group II	Group I	Group II	
BMI –percentage of subjects (%)					
Proper weight	20	24	22	6	**72**
Overweight	2	4	10	12	**28**
Indicator Rohrera –percentage of subjects (%)					
Type leptosomic	8	4	0	0	**12**
Type athletic	12	12	20	4	**48**
Type pyknic	2	12	12	14	**40**
Indicator slenderness – percentage of subjects (%)					
Far built	2	4	2	0	**8**
Medium built	16	22	26	18	**82**
Slim built	4	2	4	0	**10**
Indicator WHR – percentage of subjects (%)					
Type gynoid	18	18	24	8	**68**
Type increased	2	8	8	10	**28**
Type android	2	2	0	0	**4**
Indicator WHtR– percentage of subjects (%)					
Lack of abdominal overweight	20	24	28	10	**82**
Abdominal overweight	2	4	4	8	**18**

Based on the information on anthropometric indicators, it can be claimed, that proper weight had 72% of subjects. Rohrer indicator showed that the most popular body type was athletic type, which had 48% of subjects – including 24% women and 24% men. The pyknic type was represented in majority by women from II group than women from I group. In the case of group of men, the pyknic type was presented almost in the same degree but with minimally margin for men from II group. The leptosomic type had

only women, men were laid of this type of body. it was observed that both women and men characterized medium built. Slim built had only a few people from all subjects.The next indicator showed that 68% of subjects had gynoid type, what means they could have a tendency to accumulate fat in the down part of their body (for example hips). it was an interesting fact that android type was presented only in women group. These women seems to have a propensity to accumulate fat in the upper part of their body (for example neck, face, chest). it is possible for them to have heart diseases or diabetes. 82% of subjects were laid of abdominal overweight. The abdominal overweight involved more men and women, especially from II group.

Table 4. Mean numbers of points obtained in the Zuchora test

Measured paremeter [pkt]	**WOMEN**				**MEN**			
	GroupI		**Group II**		**Group I**		**Group II**	
	$\bar{x}$	SD	$\bar{x}$	SD	$\bar{x}$	SD	$\bar{x}$	SD
Speed	4,64	0,67	4,71	1,07	4,50	1,10	4,00	0,50
Jumping ability	3,09	0,70	3,07	0,47	3,63	0,96	3,44	0,73
Strength of shoulders	4,00	1,26	4,14	1,56	4,25	0,86	4,33	0,50
Flexibility	4,91	1,22	4,93	1,07	3,81	1,11	4,00	1,58
Endurance	4,73	1,27	4,57	1,40	5,44	0,73	4,67	1,58
Strength of the abdominal muscles	3,73	1,10	3,79	0,97	3,75	0,68	3,33	1,00

On the speed test, the women from I group gained worse score compared with women from II group. A little spread existed on the jumping test what evidenced that both group of women were at the comparable level. On the strength of shoulder test and strength of the abdominal muscles test's, women from II group had better results than their colleagues from I group and these results showed that women from II group had strongest the abdominal muscles (also compared with men group). On the endurance test, younger women achieved better results but the similar points values were obtained in the flexibility category for both women from I and II group. it can be claimed that all women were characterized by similar fitness level, but better results in the majority tests were gained by women

from II group. The speed, jumping ability, endurance and strength of the abdominal muscles tests were categories in which men from I group achieved better results than older men. In the next tests, strength of shoulders and flexibility, the men from II group obtained more scores. Younger men made different varied scores and it cannot be noticed any correlation between each tests, but men from II group made the same sores on the speed and flexibility tests. it can be claimed that men from I group had better results than men from II group, because men from I group achieved better results from the four Zuchora tests.

Table 5. Mean sum of points obtained from Zuchora test

Sum of points	**WOMEN**		**MEN**	
	Group I	**Group II**	**Group I**	**Group II**
$\bar{x}$	25, 09	25,21	25,38	23,78
SD	3,86	4,34	3,79	2,28

The mean sum of points from Zuchora test on the six categories were similar for both group of women and men at the age of 22-25. The older men were the worst and had the least amount scores.

Table 6. Level of women and men's physical fitness (the test results)

The level of physical fitness	**WOMEN**				**MEN**			
	Group I		**Group II**		**Group I**		**Group II**	
	Number of people who have reached a certain assessment							
	N	%	N	%	N	%	N	%
Good	4	8	4	8	5	10	2	4
Very good	6	12	4	8	9	18	7	14
Excellent	1	2	6	12	2	4	0	0

Very good level of physical activity had more than 50% of subjects, 30% subjects from all groups were characterized as good level and 18% women and men achieved excellent one. In the group of women the most of them gained very good fitness level and a few of them had excellent one. In the case of men, the majority of them had a good and very good fitness level. Only 2 men had high fitness level. Of all subjects nobody received superior, sufficient and minimal marks.

Table 7. Mark obtained from Zuchora test

Mark from Zuchora test	**WOMEN**		**MEN**	
	Group I	**Group II**	**Group I**	**Group II**
$\bar{x}$	3,73	4,14	3,81	3,78
SD	0,65	0,86	0,66	0,44

In the Zuchora test, the best group was 26-35 age women group, the next, men 22-25, third place had men 26-40. Women 18-25 obtained a little worse mark.

In the women and men's group very strong correlation was observed between some parameters (range 0,8-1,0), what was characterized by use of Pearson correlation coefficient [11]. In women group were noticed:

- weight and waist circumference (0,805) and weight and hip circumference (0,868);
- waist circumference and BMI indicator (0,821) and waist circumference and WHtR indicator (0,926);
- BMI and Rohrer indicator (0,943), BMI and slenderness (-0,939) and BMI and WHtR indicator (0,868);
- Rohrer indicator and slenderness indicator (-0,997) and WHtR (0,847);
- slenderness and WHtR indicator (-0,846);
- WHR and WHtR indicator(0,809);
- strength of shoulder and the sum of points from fitness tests (0,814);
- endurance and the sum of points from fitness tests (0,815);
- the sum of points and mark from fitness tests (0,918).

In the men group parameters were correlated in very strong degree between:

- weight and waist circumference (0,806);
- waist circumference and WHtR indicator (0,822);
- BMI and Rohrer indicator (0,889) and BMI and slenderness indicator (-0,899);
- Rohrer and slenderness indicator (-0,998) Rohrer and WHtR (0,835);
- slenderness and WHtR indicator (-0,833);
- the sum of points and mark from fitness tests (0,857).

In the case of positive correlation and following dependence existed. If one parameter rises, the residual parameters also rise. For negative correlation inversely interdependence was noticed and following dependence existed. If one of the parameter rises, value of the second indicator falls off.

Discussion

Anthropometric indicators provide a range of information about a person studied and use to assess the profile and predict of future tendencies – positive or negative. Assessment of the level of physical activity helps to prognosticate about human health and the physical activity affects the proper functioning of the body. The anthropometric measurements allowed for BMI evaluation, Rohrer and slenderness indicators, WHR and WHtR values. Comparatively BMI, WHR and Rohrer indicator for women from I group with the results gained by scholars (female group) PWSZ in Nowy Sacz [1]. it was claimed that values gained by women from I group differed slightly from results for scholars[1]. In the subjects of men's BMI and WHR valued compared with BMI and WHR of men who had 20-40 and were employees of HTS Krakow in Nowa Huta. These men were classified as physically active. Their BMI values was between BMI of men from I and II group. On the other hand, WHR of men 20-40 were higher [4] than men from the study group. On the based on results from Zuchora test has shown that generally subjects had good and very good physical condition. it was noticed that out of all tests, endurance was a test in which the best scores were received. This situation told that subjects could concentrate on developmental endurance skills or this outcome could be also associated with their individuality and proclivity to development this properties. In this category the best result was achieved by men, what was not surprise because it could be connected with gender diversity. In the subjects group of women and men, speed and flexibility were tests in which similar scores were gained and these categories turned out well in compared with residual tests. In the speed test, the women achieved better results than men and women gained a margin. The similar situation took place in the flexibility test and it could be caused by their anatomic body built. In the others three fitness tests: jumping ability, strength of shoulders and strength of abdominal muscles, the least numbers of points were obtained by both women and men group in jumping ability, the next, in the strength of abdominal muscles category. So the mean value physical fitness level according to *Zuchora Index* was on the very good level in all aged group. In studies on the topic of physical activity based on *Zuchora Physical Fitness Index* more information was found for youth than adults, nonetheless, the same *Zuchora Fitness Test* was carried out in University of Economics in Katowice. In this test attended 115 scholars (women) from first year full-

time studies from all-faculty. Only two students from all subjects participated active in collegiate club game AZS. The rest of them declared that they participated occasionally in different form of physical activity. This research was carried out in October and May 2005/2006. Results from Zuchora test have shown that the mean value of physical activity in the students' group (women) from first year according to *Physical Fitness Index* was on the very good level [8, 9]. The best comparison group consists of the women 18-25, against female students from University of Economics. These women as distinct from students from Katowice achieved results on the excellent level in the four tests: speed (1 woman), the strengths of shoulders (2 women), flexibility (5 women) and endurance (5 women).

In the women and men's group very strong correlation was observed between Rohrer indicator and slenderness indicator and WHtR, slenderness indicator and WHtR, the sum of points for Zuchora test and final mark. So it can be claimed that the higher value of the Rohrer indicator, the lower the value of the slenderness ratio. The same relationship existed between the slenderness indicator and WHtR. On the other hand, with the increase (or decrease) value of Rohrer indicator, took place an increase (or decrease) WHtR. Also the higher the number of points from *Zuchora Physical Fitness Index* made a higher final grade.

Conclusions

Based on results from this study it was claimed that:

- the physical fitness level had influence on weight-height ratios;
- basal parameters and indications in most subjects were in norm;
- the physical fitness was at good or very good level in majority of subjects;
- results from tests have shown that subjects were characterized by good endurance, but they had low level of jumping ability;
- the best mark from Zuchora test received a group of older women, the next group was younger women and men from I group;
- very good physical fitness according to the norm of *Physical Fitness Index* had more than 50% of subjects and the rest of subjects had good and excellent physical fitness;
- very strong degree correlation in the women and men group was noticed between: weight and waist circumference, weight and weight-height ratios, endurance test and the total sum of the points from the test Zuchora.

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Effects of Amphizoic Amoeba Spread in Human Environments – Emerging Threat for Public Health in Poland

Abstract

Different strains of Acanthamoeba species are free-living organisms ubiquitous and widely distributed in various natural and man-made environments. known from many parts of the world including Poland. Some amphizoic strains of these amoebozoans are facultative parasites and thus present a serious risk to human health. Particularly, the amoebae cause emerging threat for public health in Poland as the causative agents of a vision-threatening diseases, *Acanthamoeba* keratitis.

Here, we present factors that influence the amphizoic amoeba spread in different human environments and threat for public health, generated by pathogenic *Acanthamoeba* strains.

It is still insufficient recognized medical problem that should be taken into consideration as emerging threats of the public health also in Poland.

Introduction

Different species belonging to *Acanthamoeba* genus are known from many parts of the world, including Poland as amoeboid protists ubiquitous and widely distributed in various natural and man-made environments.

In the life cycle of the amoeba, the active, phagotrophic stage – trophozoite occurs, 15µm-45µm in size, changing in shape, containing one nucleus with

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large central nucleolus, contractile vacuole, numerous digestive vacuoles as well as characteristic, the spine-like protrusions – acanthopodia. The vegetative form feeds on bacteria, algae, yeast and small organic particles; it can transform into the second stage – smaller, 8μm-24μm in size, dormant cyst, that occurs particularly after the growth developmental phase of amoeba population as well as under adverse conditions. Cysts are round or polygonal, double-walled with ostioles, indicate minimal metabolic activity and are resistant to desiccation, starvation and extremes in osmolarity, temperature, pH. (2, 14, 23, 229, 32, 41).

A classification of *Acanthamoeba* spp. has changed following the recognition of the amoebae in the human environment.

For years, the species of *Acanthamoebae* genus were classified using morphological criteria. The endocysts and ectocyst structure, size and the number of arms within a single cyst were the main criteria (24, 35, 36, 41).

At the time, 18 species have been determined, classified in three morphological groups.

Group I included four species: *Acanthamoeba* astronyxis, *A. comandoni, A. echinulata* and *A. tubiashi*.

Group II consisted of 11 species: A. *mauritanensis*, A. *castellanii*, A. *polyphaga*, A. *quina*, A. *divionensis*, A. *triangularis*, A. *lugdunensis*, A. *griffini*, A. *rhysodes*, A. *hatchetti* and *A. paradivionensis.*

Group III included five species: A. *palestinensis*, A. *culbertsoni*, A. *royreba*, A. *lenticulata* and A. *pustulosa*.

However, this classification was considered as doubtful because of variations in the cyst morphology, particularly in culture conditions.

Advances in molecular methods influenced the classification of *Acanthamoeba* isolates. Recently, 19 genotypes are distinguished based on genotype associations – the 18S rRNA gene sequence. In the modern approach, the *Acanthamoeba* species are identified basing on the combination of the morphological and molecular characterization.

It is considered that among of T1-T17, T4 genotype mainly, and also T2 and T11 genotypes are detected / associated of human organs and tissues (7, 14, 24, 27, 29, 37, 38, 40, 46).

Here, we present factors that influence the amphizoic amoeba spread in different human environments and threat for public health, generated by pathogenic *Acanthamoeba* strains.

Acanthamoeba spp. distribution in natural and man-made environments

The amoebae occur in a wide range of soil and aquatic habitats and in air. Trophozoites and cysts of *Acanthamoeba* spp are detected in the sea, fresh, tap, chlorinated water, and also in bottled mineral water as well as in drinking water systems. The protists were found as contaminants on mushrooms, vegetables, fruits and also in healthy, diseased or dead animals: monkeys, dogs, birds, fishes, reptiles, amphibians. The amoebae are detected in thermal recreational waters, swimming pools, Jacuzzi, also in air conditioning systems, humidifiers, in dust and in sewage.(1, 4, 17, 18, 20, 27, 28, 39).

Moreover, the amoebae have been also detected from a hospital environment, both moist area as well as dust. Recent investigates indicate the wide global geographical distribution of the amoebae. Among others, the amoebae were isolated from water and air conditioning systems, from dental irrigation units, dialysis units, contact lens and solutions; they were found on surgical instruments, on surfaces of equipment and different accessories (6, 26, 29, 34, 49).

Acanthamoeba sp. as causative agents of human diseases

The free-living amoebae realize their life cycles in the different outer environments, without entering a human or animal bodies. However, it is known that in predisposing circumstances, some *Acanthamoeba* species are able to enter the human body from different environmental sources; they can colonize some human organs and tissues, multiply within them, and thus live as parasites. For this reason, the amoebae that can exist as free-living protists and as facultative parasites are believed to be amphizoic organisms.

It is believed that developmental forms of the amoebae come into the human body relatively frequently. Chappel et al. (9) showed that more than 80% of healthy human populations have *Acanthamoeba* antibodies. Recently it is considered that humans in various regions are exposed frequently to the amoebae without pathogenic consequences (9, 23, 24).

Acanthamoebae strains have been described from various human cavities and tissues (5, 24, 44): from skin surfaces, oral cavities, paranasal sinuses, lungs.

Trophozoites and cysts of some *Acanthamoeba* spp. were also detected in periodontal swabs among the oral cavity microbiota as accompanying infections with *Entamoeba gingivalis* in patients with systemic diseases (10, 11).

Several strains of the amoebae differ in their pathogenicity to man, however people may be exposed to non-pathogenic as well as pathogenic *Acanthamoeba* strains (24, 29, 47).

Infections with these amphizoic amoebae in humans may be asymptomatic and self-limited. Nevertheless, some *Acanthamoeba* strains may generate a human health threat due to their pathogenic potential. The amoebae may be causative agents of the rhino-sinusitis, skin inflammation, skin ulceration and pneumonia (16, 22, 30, 44).

The risk is particularly serious to human health and life when pathogenic *Acanthamoeba* strains infect human brain causing rare but usually fatal granulomatous amoebic encephalitis.

The opportunistic disease develops in immunocompromised individuals (8, 24, 31, 42, 45).

Other serious disease caused by the pathogenic strains of the amphizoic amoebae is a sight-threatening *Acanthamoeba* keratitis, AK, occurring mainly in immunocompetent persons (7, 12÷15, 19, 21, 29, 33, 34, 37, 40, 42, 47, 49).

Additionally, the amoebae may act as causative agents of secondary infections because of their role as carriers for more than 20 bacterial species pathogenic for humans among others from genera *Legionella, Pseudomonas, Mycobacterium, Escherichia.* (5, 24, 42, 43), The microorganisms are able not only to survive but even proliferate within the amoebae, thus mixed cornel infections are frequent.

Acanthamoeba keratitis as emerging threat for the public health

The vision-threatening corneal infection, *Acanthamoeba* keratitis was first recognized in a Texas rancher in 1973 (24, 29). The eye disease symptoms may include photophobia, redness, excessive tearing, lid edema and severe eye pain. Active epithelial inflammations, corneal ulcers and significant deterioration of the visual acuity appear in affected eyes.

The characteristic ring-like stromal infiltration is detected in ~20% incidences. Keratitis symptoms intensify in different degrees as the disease progress. Without adequate therapy, the amoebic infection may lead to blindness.

It is noteworthy that the clinical symptoms of AK are nonspecific, similar to those observed in the course of other eye diseases, and variable in their intensity (13÷15, 19, 22, 29, 33, 34, 37, 38, 49).

Acanthamoeba infections are often,misdiagnosed as viral infection with *Herpes simplex*, bacterial with *Pseudomonas aeruginosa* or keratitis caused by fungi of genus *Fusarium.* Additionally, the mixed keratitis caused by amoebae and concomitant bacterial, viral, fungal and infections may also occur.

For this reason, the diagnosis based on clinical symptoms alone is not sufficient to indicate a causative agent of human *Acanthamoeba* keratitis.

Moreover, proper diagnosis that is made by direct microscopic visualization of amoebae in slides prepared from corneal scraping or by cultivation of the amoebae from samples, is often delayed, thus difficult.

Also, the treatment of the diseases caused by *Acanthamoeba* strains is complicated, and results of therapy applied are often disappointing. Moreover, it has been shown that both, clinical and environmental *Acanthamoeba* strains/isolates vary in their pathogenicity.

It is also noteworthy that extremely high resistance of *Acanthamoeba* cysts to chemicals, disinfectants as well as anti-microbial and anti-parasitic drugs result in disappointing therapeutic management.(2, 3, 6, 12, 25, Additionally, some chemicals can induce amoebic encystment that next, by excystment, may lead to repeated development of trophozoites, thus to recurrence of the disease.

It is considered that the leading predisposing/ risk factor for *Acanthamoeba* keratitis is contact lens wear.: more than 85% of all AK incidences are reported in the lens wearers!

The first case of AK associated with contact lenses was reported in Central Europe from Germany (1984); after, more and more incidences were reported in different countries and an association between *Acanthamoeba* corneal infection and contact lens wear was confirmed (24 ,29)

However, *Acanthamoeba* corneal infections are also detected in persons not using contact lenses.

Other important risk factors for acquiring AK are:

- a corneal epithelial injury;
- eye surgery;
- exposure of the eye to water or moist soil in which *Acanthamoeba* forms exist.

The careful anamnesis is very important and helpful: if the contact lens wear, a history of swimming in a lake, in recreational pools while contact lenses wearing, any case of corneal trauma, exposure to soil or surgical procedures are reported to clinician, AK should be suspected. Also, the amoebic etiology of the keratitis cannot be excluded in persons who previously were unsuccessfully treated with antiviral, antibacterial and/or antifungal medications.

Recently, as the popularity of contact lens use is rising, the severe, vision-threatening AK cases are reported with increasing frequency year after year, from various regions of the world, including Poland, particularly from contact lens wearers.

Since the first incidences of AK were reported (19), further AK cases have been studies and described in Poland (13, 14, 19, 34, 40, 49).Also, further studies are performed in many centers on environmental and clinical sources, reservoirs as well as *Acanthamoeba* isolates.

Currently, an awareness and knowledge about the serious eye infection is still insufficient in Poland.

The widely distribution of the amoebae in natural and the man-made environments, a high resistance of *Acanthamoeba* cysts to disinfectants and drugs as well increased number of high risk groups result in growing up significant for human health worldwide.

It should be taken into consideration that strict hygiene while cleaning and using contact lenses is crucial as preventive measures, thus educational efforts directed first of all to the contact lens users are desirable for prevention of the vision threatening corneal disease., *Acanthamoeba keratitis*.

Human infections with *Acanthamoeba* strains are serious increasing medical problem that should be taken into consideration as emerging threats of the public health also in Poland.

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The health disorders of children and adolescent in the last decade in the Silesia Voivodeship

Regularity of children`s development from birth is subject to an obligatory and systematic evaluation. The control of this process is done with such tools: anthropometric measurements or indicators of physical development. The aim of this study is an analysis of the most frequent health disorders of children and adolescents (0-18 years old) reported by outpatient health care facilities over the years 2004 to 2013 in the Silesian Voivodeship. The material of the research is derived from Mz-11 reports (annual report about an activity and employment in basic ambulatory health centres) gathered and analyzed by the Department of Supervision System of Healthcare at the Silesian Voivodeship Office. The most frequent health disorders in the questioned population are deformation of backbone, disturbances of refraction and accommodation of the eye and allergic asthma.

Introduction

The health of children and adolescent constitute a good that must be protected at each stage of their physical and mental growth. The children of primary school age and those in adolescence are subjected to dynamic and rapid growth, which contributes to formation of health disorders, which if untreated or diagnosed too late, influence further life condition and quality[3]. The research shows that many health disorders have their origin in childhood and they only perpetuate in adulthood subsequently being a cause of associated complications[4].

The correctness of child development from the first moments of life is subjected to mandatory and systematic assessment. The control of this

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[4] A. Oblacińska, B. Woynarowska, *Zdrowie subiektywne, zadowolenie z życia i zachowania zdrowotne uczniów szkół ponadgimnazjalnych w Polsce*. Warszawa: Instytut Matki i Dziecka 2006

process is carried out using tools such as anthropometric measurements or indicators of physical development[5]. it is essential to inspect and monitor a child's development regularly by the general practitioner (during the preventive medical examinations – the so-called health check) and by the nurse (screening tests conducted in schools). Only close cooperation of specialists provide comprehensive control of the state of health of a child, as well as being able to detect abnormalities in development at early stage, which influence the efficiency of diagnosis and treatment.

The prevalence of improper eating habits and low physical activity in children and adolescents underlies many diseases of affluence, the number of which is rapidly increasing in children and adolescents in recent years. Chronic disease according to the definition of Commission of Chronic Diseases at the World Health Organization is a disorder or deviation from the norm, which is permanent, often leaves a disability, due to irreversible changes and requires a long period of supervision, observation or care[6]. In the course of many health disorders, the pathological changes occur in organs, reduce the psychophysical efficiency and thus decrease the quality of life. In children, the health disorders have taken a different course than in adults, often characterized by symptoms of varying intensity over time and the long-term course[7].

The European strategy for health and development of children and adolescents of 2005 emphasizes that the health of children and their development have an impact on the achievement of welfare and stability in European countries in the coming decades. Good health from prenatal period until the youth is a great value for social and economic development[8]. In Poland, over the past decades many documents have been developed, which focused on the problems of the health of children and young people. The National Health Programme for 2007-2015 puts emphasis on the active care of the children and young people and improves early diagnosis of health disorders[9]. Mental health care of children and adolescents was discussed in detail in the "National programme for mental health care" for

[5] B. Woynarowska, *Rozwój fizyczny oraz motoryczny dzieci i młodzieży.* http://www.wydawnictwopzwl.pl/download/ spis_tresci/231200100.pdf [date of access 10.10.2015]

[6] World Health Organization, *Preventing chronic diseases: a vital investment : WHO global report*, 2005

[7] W. Pilecka, *Przewlekła choroba somatyczna w życiu rodziny i rozwoju dziecka. Problemy psychologiczne*. Kraków: Wydawnictwo Uniwersytetu Jagiellońskiego 2002

[8] World Health Organization. *European strategy for child and adolescent health and development*, 2015

[9] *Narodowy Program Zdrowia na lata 2007-2015*

2011-2015[10]. In turn, the "National Plan for Children 2004-2012 "Poland for Children" highlighted the importance of activities, which promote a healthy lifestyle through healthy environment and prevention of diseases with epidemic potential[11].

The protection of the children's health both within the ambulatory health care and at schools has been regulated by numerous acts. The regulation of the Minister of Health of 28 August 2009 on the organization of preventive health care for children and young people (Journal of Laws of 2009 no. 139, item. 1133) emphasizes that providing health care for children and young people is a duty of both a general practitioner and a dentist, in case of students – also a nurse and a hygienist working at school[12]. Also, the Act of 27 August 2004 on healthcare services financed from public funds (Journal of Laws of 2008 no. 164, item 1027, as amended) regulates the preventive health care of students[13]. Conditions, scope and frequency of preventive medical examinations of students are subjected to Regulation of the Minister of Health of 29 August 2009 on guaranteed services in the field of primary health care (Journal of Laws of 2009 no. 139, item 1139). Accordingly to the above-mentioned regulation, the health checks are performed in children at the age of 3, 6, 10, 13, 16 and 18[14].

According to Woynarowska and Oblacińska there is no accurate and comprehensive epidemiological data in Poland on the prevalence of health disorders in children and adolescents. Available data usually has a partial and fragmented nature and therefore is not applicable to the entire population of children and adolescents and cannot be analyzed in terms of trends in incidence and prevalence[15].

It is estimated that health disorders relate to 20-25% of the population of Polish children. According to the authors indicated above, ocular defects occur in 15-25% of the population of children and the number of ascertained cases over the years has remained at the constant level. Diagnosable

[10] *Narodowy Program Ochrony Zdrowia Psychicznego*. Rozporządzenie Rady Ministrów z dnia 28 grudnia 2010 r. Ministerstwo Zdrowia. Warszawa: 2011

[11] *Narodowy plan działań na rzecz dzieci 2004-2012 „Polska dla dzieci"*. Warszawa: 2004

[12] Rozporządzenie Ministra Zdrowia z dnia 28 sierpnia 2009 r. w sprawie organizacji profilaktycznej opieki zdrowotnej nad dziećmi i młodzieżą (Dz. U. z 2009 r. Nr 139 poz. 1133)

[13] Ustawa z dnia 27 sierpnia 2004 r. o świadczeniach opieki zdrowotnej finansowanych ze środków publicznych (Dz. U. z 2008 r. Nr 164 poz. 1027, z późn. zm.)

[14] Rozporządzenie Ministra Zdrowia 29 sierpnia 2009 r. w sprawie świadczeń gwarantowanych z zakresu podstawowej opieki zdrowotnej (Dz. U. z 2009 r. Nr 139 poz. 1139)

[15] *Ibidem*

disorders are the most common refractive error (short-term and long-sightedness, astigmatism) and strabismus. Hearing organ dysfunction relate to less than 20% of the students. On the other hand, locomotor disorders such as scoliosis, kyphosis and static distortion of the lower limbs relate to approx. 10-15% of the population of children. Cancer as the second leading cause of death in children over 4 years in the population of children and adolescents is a rare phenomenon. Incidence concerning cancer over the last few years has remained constant[16].

The purpose of the paper

The purpose of the paper was to analyze the most common health disorders in children and adolescents (0-18 years old) reported by outpatient health care facilities over the years 2004 to 2013 in the Silesian Voivodeship.

Material and method

The research material originated from reports Mz-11 (annual report on the activities and employment in the primary ambulatory health care) collected and analyzed by the Department of Supervision of the Health System of the Silesian Voivodeship Office. These data came from all outpatient healthcare institutions of the Silesian Voivodeship which are committed to report data for each calendar year to the Department of Supervision of the Health System of the Silesian Voivodeship Office.

The analysis included the most common health disorders in Polish children and adolescents and these disorders, which are or in the near future will pose the biggest challenge to public healthcare as such obesity. The analysis included data on selected health disorders over the years 2004-2013, taking into account the age of children and adolescents. The research material that has been used in this study concerned the children and adolescents of the Silesian Voivodeship divided into the following age groups: 0-2, 3-4, 5-9, 10-14, 15-18. Health disorders in the reports Mz-11 have been assigned to individual diagnoses according to ICD-10.

The figures contained in the reports Mz-11 on the number of reported cases of health disorders have been converted into percentages using data on the size of the population of children and adolescents compiled by the Central Statistical Office.When analyzing the data constituting the material for this paper, one did not use statistical software or advanced statistical analysis, because it was not necessary for the above elaboration.

[16] *Ibidem*

Results

The analysis included the most common health disorders in Polish children and adolescents and these disorders, which are or in the near future will pose the biggest challenge to public healthcare as such obesity.

The most common health disorders reported in children and adolescents in the Silesian Voivodeship (deformation of backbone, allergic asthma, disturbances of refraction and accommodation of the eye)

The most frequently reported health disorders in children and adolescents studied in the Silesian Voivodeship include spinal deformity (M40-M41) (5% – 2004, 6% – 2007), allergic asthma (J45) (1.5% – 2004; 3% – 2011) and eye refraction and accommodation (H52) (3.7% – 2004; 4.2% – 2007). Both the number of reported cases of spinal deformity (M40-M41), as well as eye refraction and accommodation (H52) remained at a similar level in 2004-2011. On the other hand, in the case of allergic asthma (J45), there is a growth from 1.5% in 2004 to 3.0% in 2011. Figure 1 shows the most common health disorders that have been reported in children and adolescents in the Silesian Voivodeship.

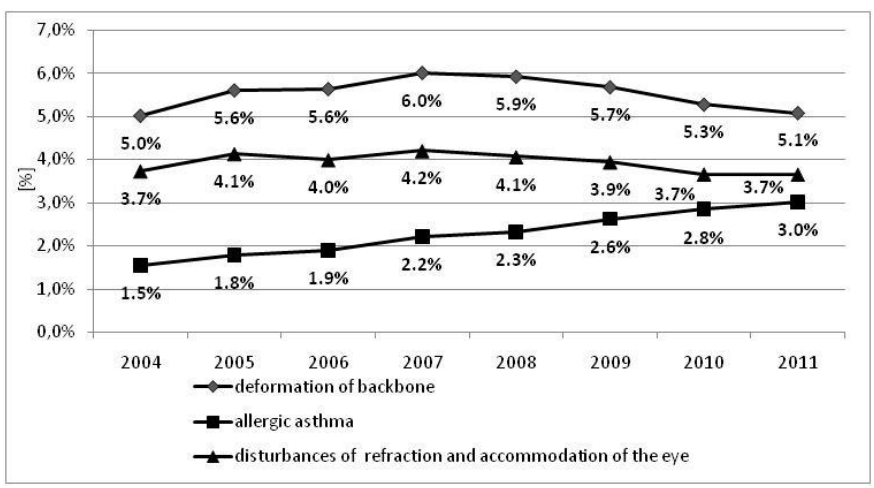

Figure 1. The most common health disorders reported in children and adolescents in the Silesian Voivodeship in 2004-2011

With age, the number of the most common health disorders increases in the studied population. In the group of children at the age of more than 5 years the most common are disorders such as spinal deformity (M40-M41) – 496 519

cases as well as eye refraction and accommodation (H52) – 339 081 cases, and allergic asthma (J45) - 173 219 cases, which then prevails in children under 4 years. The number of cases of eye refraction and accommodation (H52) and the spinal deformity (M40-M41) increases steadily in children till the age of 10-14, where it reaches the highest value. Figure 2 illustrates the most common health disorders with division into age groups.

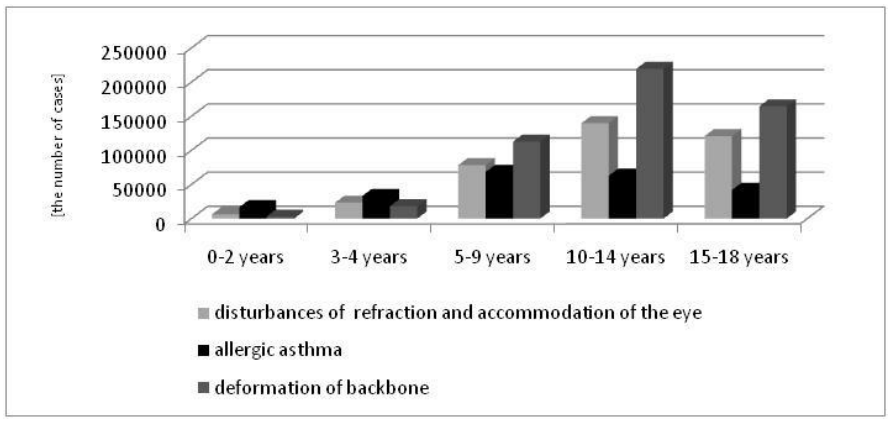

Figure 2. The most common health disorders with division into age groups in 2004-2013

The most common forms of allergic disorders reported in children and adolescents in the Silesian Voivodeship

In our population, the most frequently reported cases related to allergic asthma (J45), the number increased steadily from 1.5% in 2004 to 3% in 2011. Food allergy (K52.2) (0.8% – 2004; 1.1% – 2007) and skin allergy (L27.2) (0.9% – 2004; 1.3% – 2011) occurred in the studied population at a similar rate over the analyzed years. Figure 3 shows the forms of allergic disorders in the studied population over the years 2004-2011.

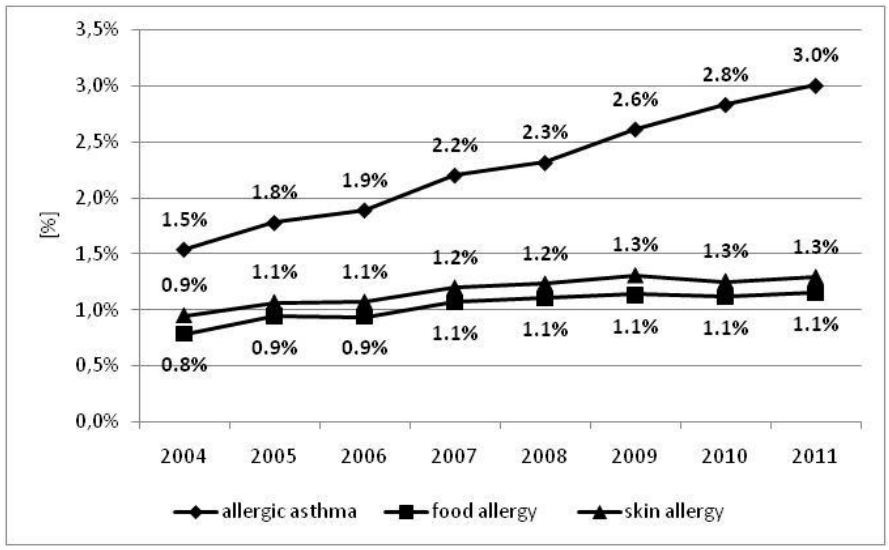

Figure 3. The forms of allergic disorders in 2004-2011

The most reported cases (68 360) of allergic asthma (J45) has been reported in children at the age of 5-9 years. The children under 2 suffer mostly from both skin (L27.2) – 34 317 cases and food allergy (K52.2) – 37 430 cases. With age there are less cases of food allergies (K52.2) (37 430 cases-0-2 years; 8 579 cases-15-18 years). A similar phenomenon was observed in case of skin allergy (L27.2) (34 317 cases-0-2 years; 14 006 cases- 15-18 years). The figure 4 shows the most common forms of allergies in different age groups.

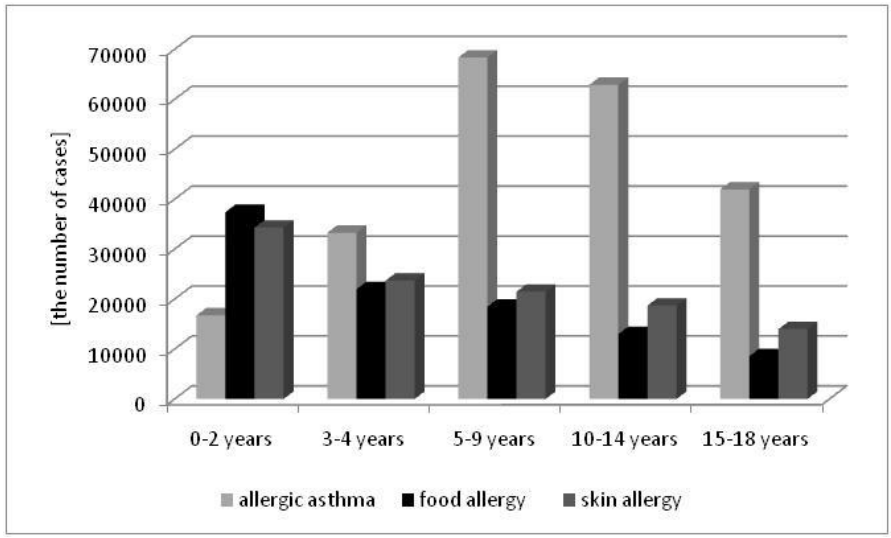

Figure 4.The most common forms of allergic disorders in different age groups in 2004-2013

The obesity in children and adolescents in the Silesian Voivodeship

For the assessment of nutritional status during childhood one uses centile charts of BMI value (body mass index), taking into account the age and sex of the children. According to the Polish development standards, child's obesity is diagnosed when the BMI is equal to or higher than the 95 percentile.

The obesity (E65-E68) occurred the most frequently in the group of children at the age of 10-14 (1.4%-2004; 1.7%-2009) and 3-4 years (1.3%-2004; 1.67%-2008). In the studied population of patients (over 5 years old) the trend of obesity (E65-E68) increased over the years 2004-2011. Obesity at the age of 0-2 years remained at a similar level over the years 2004-2011 (0.38%-2011; 0.49%-2008). Figure 5 shows the trends of obesity in the population over the years 2004-2011.

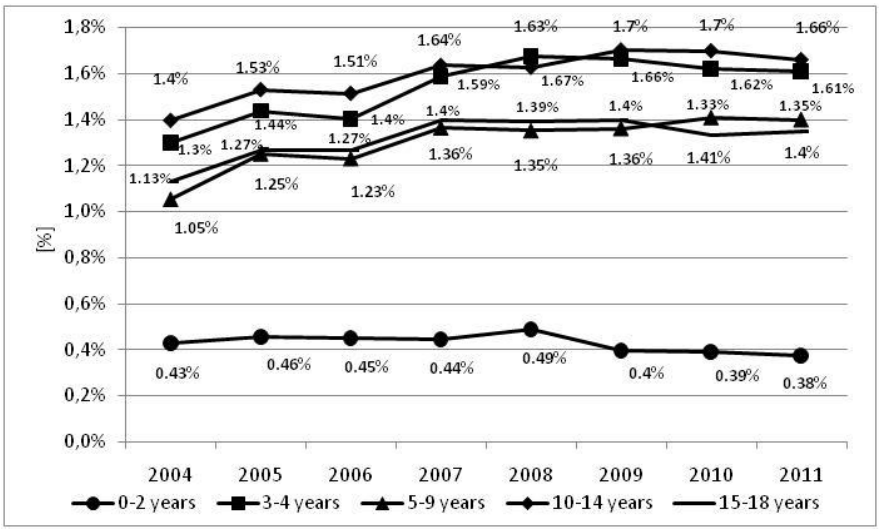

Figure 5. Obesity in the population divided into age groups in 2004-2011

The development disorders and malformations of individual systems in children and adolescents in the Silesian Voivodeship

Development disorders (R62) were defined as the absence of expected normal physiological development. The category of this type of disorders includes disorders of physical development (R62.8), so abnormal weight gain and development disorders, as well as infantilism, lack of growth and physical retardation. On the other hand, psychomotor disorders (R62.0) were defined as the delay of stages of physiological development (delayed speaking and walking).

Physical development disorders (R62.8), occurred more frequently in the studied population (0.53% – 2004; 0.69% – 2006) than psychomotor development disorders (R62.0) (0.27% – 2004; 0.32% – 2007), which remained at a similar level over the years 2004-2011. Figure 6 shows the trends of developmental disorders in the population in the Silesian Voivodeship.

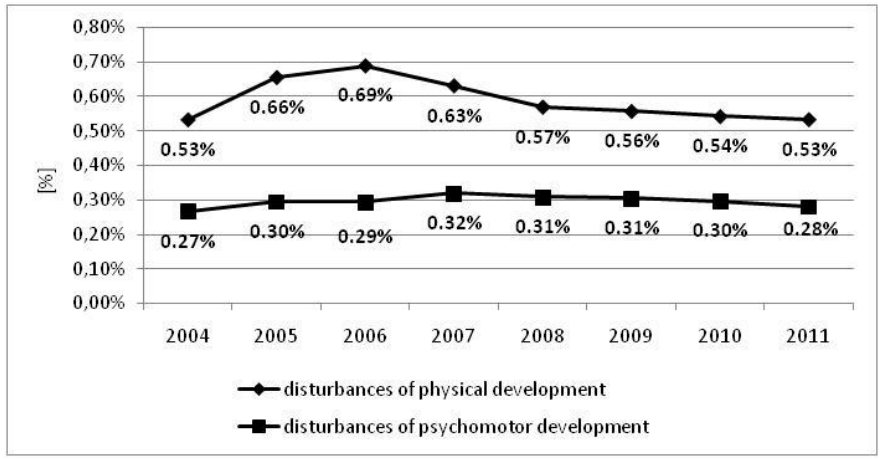

Figure 6. The development disorders in studied children and adolescents in the Silesian Voivodeship in the years 2004-2011

The category of developmental anomalies includes, among others, diseases involving the nervous system (Q00-Q07) (e.g. anencephaly, encephalocele, microcephaly, hydrocephalus congenital spina bifida and other congenital malformations of the spinal cord) and the circulatory system (Q20-Q28) (e.g. congenital malformations of the heart chambers and connections, compartments of the heart, the pulmonary valve and tricuspid valve).

The category of genital malformations (Q50-Q56) included among others congenital malformations of ovaries, fallopian tubes, uterus,, cryptorchidism, hypospadias. In turn, the chromosomal aberrations (Q90-Q99) include, among others Down syndrome, Edwards syndrome, Turner syndrome and other trisomies and monosomies.

Among the analyzed malformations occurred, most often, those associated with the cardiovascular system (Q20-Q28) – 6 435 cases. Less frequent were the malformations of the nervous system (Q00-Q07) – 2 089 cases and genital organs (Q50-Q56) – 1 828 cases. Chromosome aberrations (Q90-Q99) – 1 104 cases were the least likely to be reported by the outpatient healthcare institutions. Figure 7 shows malformations of individual systems in children and adolescents in 2004-2013.

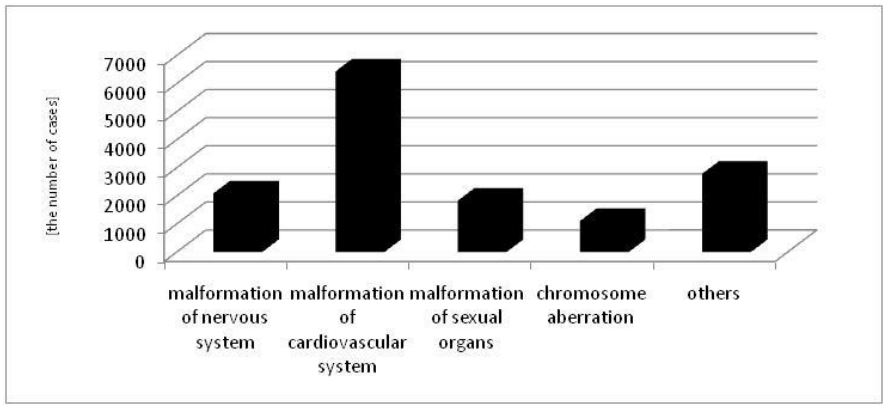

Figure 7. Malformations of individual systems in the population at the age of 0-18 years in the Silesian Voivodeship in 2004-2013

Discussion

The aim of this study is an analysis of the most frequent health disorders of children and adolescents (0-18 years old) reported by outpatient health care facilities over the years 2004 to 2013 in the Silesian Voivodeship. The most frequent health disorders in the questioned population are deformation of backbone, disturbances of refraction and accommodation of the eye and allergic asthma.

Deformation of backbone

The research by Kocka et al., involving more than 3 500 students of Lublin primary and junior high school shows that the most common health disorder occurring in the studied population were **posture defects**. In the school year 2010/2011, they were found in 29.7% of primary school students and in 24.6% of junior high school students. Valgus knee and flat valgus foot occurred most frequently in the group of static musculoskeletal disorders[17]. The study "Analysis of the State of Child and Adolescent Health" drawn up in 2010 by Public Health Centre Warmia-Mazury shows that **postural defects** occurred in 44.9% of primary school and in 39.2% of junior high school students. it should be emphasized that the data used by the Centre came from reports from all nurse offices in an educational setting and reports on preventive healthcare for pupils in schools (forms

[17] K. Kocka, H. Kachaniuk, A. Bartoszek, U. Fałdyga, M. Charzyńska-Gula, *Najczęstsze problemy zdrowotne dzieci w wieku szkolnym – na przykładzie szkoły podstawowej i gimnazjum w Lublinie*. Medycyna Ogólna i Nauki o Zdrowiu 2013, 19, 4, pp. 508-513

Mz-06), so the resulting data can be regarded as credible and reflecting the facts for children and adolescents in the Warmian-Masurian Voivodeship[18]. The research by Haor et al., based on the analysis of the documentation of preventive healthcare originating from 402 students at the age of 6 and 10 years from Bydgoszcz primary school, shows that the most common health disorder in the studied population was **faulty posture** that involved up to 77.6% 6-year-olds and 83.1% of 10-year-olds[19]. In turn, the European Health Interview Survey analyzed, among others, health disorders indicated by respondents as stated by the doctor and occurring within the 12 months preceding the survey. In 2009, 1.5% of children under 14 years of age suffered from **spinal disease**. The diseases of the spine have been reported among older children, aged 10-14 years[20]. The study of Noczyńska et al., who analyzed data on past and current diseases and general health status from 1984 in children from Wrocław primary schools at the age of 6.5-9.5, shows that the **false posture** was diagnosed in 402 children (20.2%)[21]. The research based on the method of diagnostic survey, involving a group of 588 people aged between 16.6 and 18 years, shows that only 33.16% of the students was not affected by any health disorders. The most common health disorders among the high school students were **musculoskeletal disorders**, the incidence of which was highest among students of technical schools (64.07%) and secondary schools (53.73%). The most common disorders in this group were scoliosis, flat feet, excessive thoracic kyphosis, asymmetry of the blades, hips and shoulders, and varus knees[22]. Krzyżaniak et al., analyzed the health disorders of a representative sample of 3059 students from Poznań aged 7-18 years. **Postural defects** occurred in 532 boys (34.8%) and 495 girls (32.3%). With age, the number of students with **postural defects** decreased[23]. Based on the data from the Healthcare Information Systems Centre (CSIOZ), prepared on the basis of form Mz-11

[18] Warmińsko-Mazurskie Centrum Zdrowia Publicznego. *Analiza stanu zdrowia dzieci i młodzieży szkolnej w województwie Warmińsko- -Mazurskim w roku szkolnym 2008/2009.* Olsztyn: 2010

[19] B. Haor, M. Głowacka, K. Szczukowska, E. Barczykowska, M. Rybka, R. Ślusarz, *Wybrane problemy zdrowotne 6-letnich i 10-letnich uczniów w środowisku nauczania i wychowania*. Pielęgniarstwo XXI wieku 2014, 4(49)

[20] Główny Urząd Statystyczny. *Zdrowie dzieci i młodzieży w Polsce w 2009 r. Studia i analizy statystyczne*. Kraków: 2011

[21] A. Noczyńska, A. Zubkiewicz-Kucharska, M. Mysłek-Prucnal, M.Bosak-Prus, *Ocena stanu zdrowia dzieci wrocławskich w wieku 6,5–9,5 lat. Część 2*. Family Medicine & Primary Care Review 2014, 16, 1, pp. 29-31

[22] J. Krawczyńska, B. Karakiewicz, E.Zięba, G. Nowak Starz, *Ocena stanu zdrowia młodzieży w świetle wybranych wskaźników zdrowia*. Medycyna Ogólna i Nauki o Zdrowiu 2013, 19, 2, pp. 193-199

[23] A. Krzyżaniak. *Zdrowie poznańskich uczniów*. Praca zbiorowa. Poznań: 2009

– report on the activities and employment in the primary ambulatory health care, among children and adolescent in Poland in 2007, the **spinal deformity** concerned 5.19 % of the population aged 0-18 years. Changes in skeletal elements (chest, pelvis) and other disorders of the musculoskeletal system sections (upper and lower extremities) accounted for 45-55% of total postural defects[24]. Pigorowicz et al., analyzed the medical records of students in terms of causes of exemption from physical education classes. The study involved a group of 613 high school students in Kędzierzyn-Koźle at different levels of education. **Postural defects** allowed to classify students to the group Bk (students are able to PE classes with restrictions requiring corrective activities) and those students amounted to 158 (25.8%)[25]. These results are significantly different than those obtained in the own study, where the incidence of the **spinal deformity** was significantly lower -**occurred in 5-6% of the population studied.**

Disturbances of refraction and accommodation of the eye

Another group of common disorders was **eye diseases**, which were diagnosed in 15.7% of primary school students and in 22.0% of junior high school students. The study involved more than 3500 students of Lublin primary and junior high school[26]. In turn, **vision defects** were diagnosed in 10.8% of children attending primary schools and 14.9% among secondary school students in the Warmian-Masurian Voivodeship [27].The research by Haor et al. shows that **sight disorders and diseases** occurred in 12.9% of 6-year-olds and 19.9% of 10-year-olds[28]. On the other hand, the European Health Interview Survey shows that **sight diseases** related to 4.2% of the studied population. The diseases of the eyes have been reported among older children, aged 10-14 years[29]. In turn, the study of Noczyńska et al., shows that **sight defects** occurred in 236 students

[24] *Profilaktyka wad postawy u dzieci i młodzieży w środowisku nauczania i wychowania*. Warszawa: 2009. http://www.pedhemat. wroclaw.pl/ptp/files/profil_wad_postawy_ 24022010.pdf [date of access12.10.2015]

[25] I. Pirogowicz, G. Żurek, J. Tworek, I. Markiewicz-Górka, *Stan zdrowia dzieci i młodzieży – analiza zwolnień z wychowania fizycznego a dyspanseryzacja w wybranych szkołach w Kędzierzynie-Koźlu*. Family Medicine & Primary Care Review 2011, 13, 3, pp. 489-493

[26] K. Kocka, H. Kachaniuk, A. Bartoszek, U. Fałdyga, M. Charzyńska-Gula, *Najczęstsze problemy… op.cit*

[27] Warmińsko-Mazurskie Centrum Zdrowia Publicznego. *Analiza stanu zdrowia… op.cit*

[28] B. Haor, M. Głowacka, K. Szczukowska, E. Barczykowska, M. Rybka, R. Ślusarz, *Wybrane problemy… op.cit*

[29] Główny Urząd Statystyczny. *Zdrowie dzieci… op.cit*

(11.8%) from 1984 in children from Wrocław primary schools[30]. The research based on the method of diagnostic survey shows that **among sight defects** refractive errors prevailed: myopia, hyperopia and astigmatism, which most commonly occurred in vocational high school students (29.12%) and technical schools (27.57%). The lowest number of young people diagnosed with impaired vision have been found among high school students (10%)[31].The research Krzyżaniak et al., shows that **sight diseases** were diagnosed in 234 boys (15.3%) and 281 girls (18.3%). With age, the number of students with **sight defects** increased[32]. In turn, the study of Pigorowicz et al., shows that the students were classified to the qualification group B (students able to participate in PE classes with limitations or requiring special attention of the teacher) because of a diagnosed **myopia** in case of 26 students (4.2%)[33]. These results are also significantly different than those obtained in the own study, where the incidence of the **eye refraction and accommodation was found in case of 3.7%-4.2% of children and adolescents**.

Forms of allergic disorders

The study of Kocka et al., shows that **allergy** as the most common civilization disease was diagnosed in 4.5% of primary school pupils and in 7.6% of junior high school students[34]. On the other hand, the study "Analysis of the State of Child and Adolescent Health" drawn up in 2010 by Public Health Centre Warmia-Mazury shows that **allergies** in 2008/2009 were found in 10.8% of pupils in primary schools and in 9.7% of junior high school students[35]. The research by Haor et al., based on the analysis of the documentation of preventive healthcare, shows that chronic respiratory diseases related to 8.5% of 6-year-olds and 10.9% of 10-year-olds[36].In turn, the European Health Interview Survey shows that 16% of children under 14 years of age most often suffered from **allergy and 2.8% – asthma.** The most common **allergies and asthma** have been reported in children aged 5-9 years. On the other hand, in the age group of 15-19 years, 10.5% of the studied population suffered from **allergies,**

[30] A. Noczyńska, A. Zubkiewicz-Kucharska, M. Mysłek-Prucnal, M.Bosak-Prus, *Ocena stanu zdrowia… op.cit*
[31] J. Krawczyńska, B. Karakiewicz, E.Zięba, G. Nowak Starz, *Ocena stanu zdrowia… op.cit*
[32] A. Krzyżaniak. *Zdrowie… op.cit*
[33] I. Pirogowicz, G. Żurek, J. Tworek, I. Markiewicz-Górka, *Stan zdrowia dzieci… op.cit*
[34] K. Kocka, H. Kachaniuk, A. Bartoszek, U. Fałdyga, M. Charzyńska-Gula, *Najczęstsze problemy… op.cit*
[35] Warmińsko-Mazurskie Centrum Zdrowia Publicznego. *Analiza stanu zdrowia… op.cit*
[36] B. Haor, M. Głowacka, K. Szczukowska, E. Barczykowska, M. Rybka, R. Ślusarz, *Wybrane problemy… op.cit*

and asthma as well as allergic asthma were noted in case of 4% of adolescents[37]. The study of Noczyńska et al., shows that from 1984 in children from Wrocław primary schools the most common was allergy in 597 children (30.1%) and **asthma** - 33 (1.51%)[38]. The research based on the method of diagnostic survey shows that **allergic disorders** occurred in 15.38% of the students of technical schools, 10% of high school students and 7.09% of vocational high schools[39].The research of ECAP (Epidemiology of Allergic Diseases in Poland) conducted in 2006-2008 showed that **food allergy** was present in approx. 13% of children aged 6-7 years and 11% of children aged 13-14 years, atopic dermatitis in approx. 9% of the studied population in both age groups, and in turn **asthma** related to 11% of children. The largest studied group suffered from allergic rhinitis (24% of children at the age of 6-7 years and 30% of 13-14 year-old-children)[40].The prevalence of allergic disorders based on research results of ECAP is much higher than that obtained within the framework of own study based on analysis of reports. The study of Krzyżaniak et al., shows that **allergy** was diagnosed in 170 boys (11.1%) and 163 girls (10.6%). **Allergic disorders** were most often found in children aged 9, 10 and 12 years old[41]. Pigorowicz et al., who analyzed the medical records of students in terms of causes of exemption from physical education classes, shows that the students were classified to the qualification group B (students able to participate in PE classes with limitations or requiring special attention of the teacher) because of a diagnosed **asthma** in case of 28 students (4.6%)[42]. These results are significantly different from the ones obtained in the own study, where the incidence of the most common health disorders was significantly lower. **Allergy in the form of asthma related to 1.5% –3% of children.**

Obesity

As it results from the research by Olszanecka-Glinianowicz et al. conducted in Silesian voivodeship on a group of 631 children (306 girls and 325 boys), excessive body weight in the form of obesity was present in 3.2% of the studied population. Moreover, compared to the general Polish

[37] Główny Urząd Statystyczny. *Zdrowie dzieci… op.cit*
[38] A. Noczyńska, A. Zubkiewicz-Kucharska, M. Mysłek-Prucnal, M.Bosak-Prus, *Ocena stanu zdrowia… op.cit*
[39] J. Krawczyńska, B. Karakiewicz, E.Zięba, G. Nowak Starz, *Ocena stanu zdrowia… op.cit.*
[40] E. Dadas-Stasiak, B. Kalicki, A. Jung, *Najczęściej występujące przyczyny i rodzaje alergii u dzieci w świetle aktualnej epidemiologii*. Pediatria i Medycyna Rodzinna 2010, 6, 2, pp. 92-99
[41] A. Krzyżaniak. *Zdrowie… op.cit*
[42] I. Pirogowicz, G. Żurek, J. Tworek, I. Markiewicz-Górka, *Stan zdrowia dzieci… op.cit*

population, the frequency of occurrence of obesity is higher in case of girls from the Silesia and lower in case of boys from the Silesia[43]. On the other hand, the study conducted by Felińczak et al., which covered 1800 children and teenagers aged 8-18 studying in Wrocław schools, indicates that from among the studied boys aged 8-18, 4.4% were obese. From among the girls included in the study, 3.37% were characterized as obese[44]. On the other hand, the research by Polish Project of 400 Cities which covered 1515 persons aged 6-18 from small towns and countries, it results that the obesity occurred in case of 5.1% respondents in the studied population. In the age group of 14-18 years old, excessive body weight occurred statistically significantly more often than in case of boys[45]. Similar frequency of occurrence of obesity in children in Poland was observed in 2007 by Oblacińska et al.. The study performed in several provinces covered more than eight thousand teenagers aged 13-15. Obesity occurred in case of 2.9-3.6% boys and 5.2-6.2% girls, respectively[46]. The research by Mazur concerning the dynamics of occurrence of excessive body weight among children at school age in the years 1998–2008 indicates that obesity among girls in the years 1998–2008 was decreased with regard to 1998 (10.1% vs 7.7%). On the other hand, in case of boys its occurrence was stabilized (6.8% vs 6.4%)[47]. These results are significantly different than those obtained in the own study, where the incidence of the **obesity** was significantly lower – **occurred in 0.5-1.5% of the population studied.**

The development disorders and malformations

Other health disorders analyzed in the context of own study, i.e. abnormal physical and psychomotor development as well as malformations were not studied by as many authors as it was in case of the most commonly

[43] M. Olszanecka-Glinianowicz, E. Małecka-Tendera, P. Matusik, A.Żak-Gołąb, *Otyłość, nadwaga i niedobór masy ciała u dzieci śląskich w wieku 7-9 lat.* Endokrynologia Pediatryczna 2004, 1(6), tom 3

[44] A.Felińczak, F.Hama, *Występowanie zjawiska nadwagi i otyłości wśród dzieci i młodzieży we Wrocławiu*. Pielęgniarstwo i Zdrowie Publiczne 2011, 1, 1, pp.11-18

[45] M. Stankiewicz, M. Pieszko, A. Śliwińska, S. Małgorzewicz, Ł. Wierucki, T. Zdrojewski, B. Wyrzykowski, W. Łysiak-Szydłowska, *Występowanie nadwagi i otyłości oraz wiedza i zachowania zdrowotne dzieci i młodzieży małych miast i wsi – wyniki badania Polskiego Projektu 400 Miast.* Endokrynologia, Otyłość i Zaburzenia Przemiany Materii 2010, tom 6, nr 2, pp. 59-66

[46] A. Oblacińska, M. Jodkowska, *Otyłość u polskich nastolatków- epidemiologia, styl życia, samopoczucie*. Instytut Matki i Dziecka. Warszawa 2007

[47] A. Mazur, *Dynamika zmian nadwagi i otyłości u dzieci szkolnych*. Wydawnictwo Uniwersytetu Rzeszowskiego, 2009

occurring health disorders. Therefore, the reference of results of the study to other authors in case of these conditions is impossible.

Significant differences in the incidence of these health disorders in the own study and studies of other authors are associated with a diverse methodology for collecting data on the health of population in developmental age, as well as the quality and reliability of epidemiological data obtained. it is assumed that the data derived from reports, which constitute the research material of the above work are characterized by relatively low reliability and thus the cannot be related to the results obtained in epidemiological studies. The relatively low reliability of data from reports, resulting from the above analysis, can be related to incomplete and inaccurate reporting from individual ambulatory health care units from the entire province. One can also assume that the poor quality of these data results from the excessive formalization and complexity of the procedures related to the provision of statistical data as well as the excessive scope of the duties of staff in health care institutions.

According to Oblacińska and Woynarowska, system of preventive health care for children and young people in Poland over the last decades has been subjected to many negative changes that contributed to the decline in the quality of healthcare. In addition to decreasing number of paediatricians for many years, which began to be replaced by family doctors, there are also no reliable methods of evaluation and quality control concerning activities carried out in the framework of preventive health care for children and young people, both in primary healthcare and at schools[48].-There is the need to improve the system of reporting data from outpatient healthcare institutions to regional units that collect and analyze statistical data. The complete reporting should fully reflect the actual incidence of each disease in the studied population, and simultaneously should provide a reliable source of data on state of health in such a population.

Conclusions

The most frequently reported health disorders in the studied population include spinal deformity, abnormal eye refraction and accommodation as well as allergic asthma. With age, the number of the indicated health disorders increases and is the highest in the age group of 10-14 years. The analyzed data concerning reports of the outpatient healthcare facilities tends to be highly underestimated and does not represent actual reflection of the epidemiology of the most common health disorders in children and adolescents.

[48] B. Woynarowska, A. Oblacińska, *Stan zdrowia dzieci…, op.cit*

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