TYPE 2 DIABETES RISK FACTORS AMONG THE UNEMPLOYED

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List of abbreviations:
WHO – World Health Organization
GUS – Główny Urząd Statystyczny (Central Statistical Office)
BMI – Body Mass Index
IL 1 – interleukin 1
IL6 – interleukin 6

Summary: Unemployment is a significant social problem which has numerous negative health consequences. Findings of numerous researches provide data on the range of the consequences of unemployment with risk of health deterioration being one of the most important. Unemployment remains an area of interest for the following fields of science: psychology, economics, sociology. More and more researches prove that there is a link between the increase of disease occurrence and death rate and long-term unemployment. Both in Poland and all over the world a steady increase in the incidence of type 2 diabetes is being observed. World Health Organization (WHO) estimates that, taking into consideration present dynamics of changes, in 2025 there will be 300 million people diagnosed with diabetes. That is why a diabetes epidemic is such a topical issue, and according to some epidemic data this epidemic is starting to reach Poland as well. Data provided by IDF (International Diabetes Federation) show that in Poland the percentage of diabetes patients is 9,1% of the whole population and it is a little higher than the European average (8,6%). It is predicted that by 2015 the percentage will rise to 11%. Identification of adverse health behaviors and introducing actions promoting health in a given population group can prove to be beneficial for the present condition of members of a given group as well as decrease the risk connected with the occurrence of diseases associated with the progress of civilization in the future. The aim of the article is to indicate type 2 diabetes risk factors among the unemployed in Poland.

Keywords: unemployment, type 2 diabetes, risk factors

Introduction

Unemployment still remains a significant social problem. Findings of numerous researches provide data on the range of the consequences of unemployment with risk of health deterioration being one of the most important. Unemployment remains an area of interest for the following fields of science: psychology, economics, sociology. More and more researches prove that there is a link between the increase of disease occurrence and death rate and long-term unemployment (Martikainen 1996, Zagożdżon 2008).

According to the International Labour Organization an unemployed person is someone who meets three conditions simultaneously: he/she is without employment or self-employment for more than one hour within a short period of time (one day or one week), he/she is available to take up employment and looks for a job (Kostrzewski 2008).

Both in Poland and all over the world a steady increase in the disease occurrence and the incidence of type 2 diabetes is being observed. According to World Health Organization (WHO) there were 135 million type 2 diabetes patients and taking into consideration present dynamics of changes it is estimated that in 2025 this number will increase by 122% and will reach around 300 million. It must be added that greater dynamics of changes is expected in developing countries where the predicted increase in the incidence of type 2 diabetes may rise to 170%. The reason for this may be the societies of these countries adopting so called the way of life in the West. It should also be remembered that structural changes within economy, globalization, political transformations bring also negative social consequences, which results in mounting social stratification and unemployment (WHO 1998, Kołodko 2002).

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Results of researches show that unemployment and worsening living conditions have a negative impact on health condition and forming proper health behaviors. On the other hand the research shows that in comparison with the control group, a higher percentage of diabetes patients was economically inactive (i.e. unable to work, sick or kept house), which is a vicious circle and may lower the quality of life and have a destructive impact on health (Robinson 1989). Thus it seems appropriate to bring up a discussion and broaden our knowledge about the risk factors of some chosen diseases associated with the progress of civilization among the unemployed in Poland with regard to the size of population group that these people constitute.

According to Central Statistical Organization between the years 2010-2013 in Poland the percentage of the unemployed fluctuated around 11-13% remaining on a relatively high level. In the Podlasie region the unemployment rate reached 14,9% in 2013 where 70 000 people were without employment.

Material and methods

Body composition of the unemployed from the Podlasie region was assessed in the research. The research included 81 people (64 women and 17 men) between 21-54 years of age from five districts: Zambrowo District, Sokółka District, Sejny District, Kolno District and Hajnówka District and were registered in District Employment Agencies. Measurement of body composition was conducted with the use of the analyzer TANITA BC 418 MA in accordance with the producer recommendation. The following parameters were assessed: actual body mass, BMI, mass and percentage content of fatty tissue, water content, fat-free body mass and basal metabolism. Results were related to the standards of IŻŻ (Instytut Żywności I Żywienia – Food and Nutrition Institute) in Warsaw. The shortest period of unemployment among the subject population was 12 months.

Results

16% of subjects (n=13) were diagnosed with obesity with BMI > 30, 27% (n=22) of subjects were overweight (BMI 25-30), around 49% (n=40) had normal body mass (BMI 20-25) and 7% of people had BMI < 18,5 which is classified as underweight (n=6). Table 2 presents average results as well as minimum and maximum values in a subject group and in individual cities.

Discussion

Being one of the major social problems, unemployment produces numerous negative health consequences (Latalski 2004, GUS 2010). It result from the fact that long-term unemployment entails growing financial problems and impoverished household. Lack of steady income force families to constant sacrifices and limitations as far as satisfying basic needs is concerned (Latalski 2002, 2004, Żyto-Uramowska 2003).

It is a common fact that according to Lalonde's health fields describing factors determining health condition of a population, a lifestyle and connected with it health behaviors have a decisive influence on a health condition. Health behaviors of the unemployed must be examined in social and cultural context where an economic factor is a major but obviously not the only determinant of a person's behavior. Kostrzewski's research shows that almost 80% of the unemployed declared that the their household budget did not allow them to satisfy their basic needs such as food, medication or clothes (Kostrzewski 2008). In literature there is little information about the lifestyle and eating habits among the unemployed. According to Latalski et al. almost half of the unemployed (around 45%) has fewer than three meals a day. They are deficient in vegetables and fruit and high in protein products. Almost 38% of respondents has three main meals regularly but this diet is monotonous, including only basic food products (Latalski 2003).

Previous researches conducted by numerous centres show that type 2 diabetes is closely related to such risk factors as improper eating habits, excessive body mass, low physical activity, smoking, alcohol abuse etc. (WHO 2000; Eliasson 2003; Socha 2003; Kłosiewicz-Latoszek 2011; Przybyłowicz 2008; IASO 2009). In literature there is no information about the frequency of overweight and obesity occurrence among the unemployed in Poland. The research showed that overweight and obesity causes many health problems and is one of the major diabetes type 2 risk factors (3,9,23,30). However it should be remembered that BMI, on the basis of which degrees of obesity are classified, does not provide information about the amount and distribution of fat in an organism. An average percentage content of fatty tissue in the subject group was 28,76 ± 10,26. In normal conditions an adult man's fat mass should not exceed 18% of his actual body mass and an adult woman's fat mass should not exceed 28% of her actual body mass. In a male group an average percentage content of fatty tissue was 18,46 ± 7,29 and It was close to standard values. In female group it was 31,5% ± 9,17 and it exceeded normal values. It should be noticed that 64% of women (n=41) were found to have an excessive fat cover (FAT% >28) and in 30 cases fatty tissues made more than 32% of their total body mass which, according to Tatoń's classification, fulfils the obesity criteria. It is common knowledge that obesity constitutes a hazard to health and life. The

most dangerous for obese people is diabetes, hypertension, hyperlipidemia, atherosclerosis and ischaemic heart disease (WHO 2000). As the research on health condition of the unemployed shows the biggest health problems among the respondents are the alimentary canal diseases headed by gastric and duodenum ulcer (41% of respondents), then mental disorder (30%) and cardiovascular diseases (21%) such as hypertension, myocardial infarction and atherosclerosis. It must be added that obesity is connected with risk factors of hypertension, atherosclerosis and ischaemic heart disease and they all constitute metabolic syndrome. The main reason for the above mentioned disorders is insulin resistance – a predisposing factor to type 2 diabetes (Pacholczyk 2008).

Losing a job is a very difficult and complex situation and not only due to much poorer financial situation but also physical and mental state of the unemployed. The research shows that the respondents had pessimistic feelings right after losing employment. Every fifth person feels indifference and helplessness. The most common feelings of the unemployed are feeling of injustice, breakdown, terror and despair, which may cause or intensify already existing depressive state. Montgomery et al. showed in their research that unemployment is a risk factor of depression which needs medical attention even among people who have never been diagnosed with the susceptibility to mental diseases (Dolecka 1997; Montgomery 1999).

Carnethon's meta-analysis was used to assess the link between depression and diabetes and it was proved that depression increases the risk of diabetes by 37%. It partly results from the fact that some diabetes risk factors are more common among people with depression. The factors are lack of physical activity, obesity, smoking. We should also take into consideration the negative impact of depressive disorders on glucose metabolism for example increase in secretion of counter-regulating hormones (for example catecholamine, glucagon, glucocorticoids), increase in the activity of inflammatory factors (interleukin 1 – IL1, interleukin 6 – IL6); the disorders contribute to the increase in insulin resistance. It must be added that there are risk factors of depression which diabetes patients have in common i.e. a young age, bad financial situation, low level of education, female sex, singleness (Talbot 2000; Musselman 2003; Katon 2004; Carnethon 2007).

Undoubtedly chronic depressive states, stress connected with being unemployed lead to somatic symptoms which influence the standard of living. Latalski's research shows that almost half of the unemployed experienced psychosomatic ailments such as headache, stomachache, nausea and vomiting. Such symptoms were observed mainly among people between 21-29 years of age. 1/5 of the respondents, mainly between 30-39 years of age, experienced lack of appetite and excessive losing weight. 15% of the respondents reported pain in their chest and dyspnea at rest. Such ailments were reported mainly by people over 50 years of age. English researchers showed that unemployed men had more medical appointments, took more medication and spent more time ill in bed in comparison with employed people, though the number of diagnosed illnesses in both group was similar (Linn 1985, Latalski 2003).

In addition, in case of people whose unemployment is long-lasting, the authors point at numerous anti-health activities connected with the decrease in physical activity, smoking and alcohol abuse. According to the same research almost 65% of respondents smoke every day, 28,5% occasionally and 7% do not smoke at all. Around 25% of the unemployed drink alcohol every day, almost 33% drink a few times in a week, 15% a few times in a month, and only 8% of the unemployed do not drink at all. Research conducted by Kostrzewski shows that the level of physical activity among the unemployed was very low. More than half of the respondents did not practice any sport or any other form of physical activity. 40% of respondents said that being unemployed had a negative influence on their physical activity, and only 10% of the unemployed reported higher level of physical activity during the period of unemployment. The interesting thing is that the decrease in the level of physical activity was more common among women than men (table 1). In must be added that as the period of unemployment prolongs, the above mentioned negative health behaviors intensify. Participation of smokers, being unemployed for more than two years, was higher in comparison with those unemployed for a shorter period of time (respectively 51,3% and 45,6%). What is more, almost 37% of respondents admit that while being unemployed they smoke more cigarettes in comparison with the time when they had a job (Latalski 2003, 2004, Kostrzewski 2008).

Conclusions

A lot is known about the health condition of Polish population taking into consideration differences concerning gender, age or region but there is still little information about health condition of the unemployed. Overweight and obesity may lead to lower standard of living in this population group. Researches on the differences in health condition and the link between poverty and health condition are being developed all the time. Literature provides materials concerning health of the unemployed in the economic and psychological and sociological contexts but they are based mainly on surveys. Nevertheless this study draws attention to a problem which may become the basis for further research into health condition of the unemployed.

Table 1. Changes in physical activity in the period of unemployment [10]

Changes in physical activity in the period of unemployment	Men		Women		Total	
	N	%	N	%	N	%
Physical activity increased	8	15,4	4	5,9	12	10
Physical activity decreased	19	36,5	29	42,6	48	40
Physical activity did not change	25	48,1	35	51,5	60	60
Total	52	100	68	100	120	100

Table 2. Average results in a subject group

	age	height	body mass (kg)	bmi	bmr (kcal)	fat%	fat mass (kg)	lbm (kg)	twc (kg)
Sokółka									
Average	29,41±10,09	168,29±7,40	76,08±19,09	27,06±7,53	1529,76±275,05	33,53±11,99	26,65±14,24	49,49±9,65	36,22±7,06
Max	54,00	182,00	114,20	48,20	2007,00	49,60	56,60	67,80	49,60
Min	21,00	154,00	53,30	18,10	1177,00	5,80	3,20	36,70	26,90
Zambrów									
Average	31,27±9,89	163,47±4,05	57,23±9,85	21,38±3,34	1284,07±107,52	25,60±8,02	15,27±7,36	40,62±4,66	30,73±2,67
Max	47,00	174,00	80,40	29,50	1500,00	39,70	31,00	49,40	36,20
Min	19,00	157,00	46,10	17,10	1151,00	12,00	5,50	28,30	27,20
Sejny									
Average	25,69±6,55	170,69±8,20	73,76±13,30	25,13±3,01	1674,13±288,60	24,64±8,12	18,36±7,66	55,42±10,86	40,58±7,94
Max	45,00	182,00	98,50	32,20	2045,00	40,20	39,60	69,70	51,00
Min	19,00	153,00	44,40	19,00	1148,00	12,30	7,90	36,30	26,60
Kolno									
Average	26,49±15,48	127,01±73,26	57,18±33,09	20,96±12,92	1182,26±652,09	22,63±15,07	19,45±16,22	38,24±21,77	28,56±15,89
Max	54,00	182,00	114,20	48,20	2045,00	49,60	56,60	69,70	51,00
Min	6,55	4,05	9,85	3,01	107,52	5,80	3,20	4,66	2,67
Hajnówka									
Average	27,21±16,70	123,91±70,12	57,53±35,42	21,58±14,52	1169,23±674,35	22,79±16,02	20,57±18,51	38,15±22,63	28,40±16,62
Max	54,00	182,00	114,20	48,20	2045,00	49,60	56,60	69,70	51,00
Min	6,55	4,05	9,85	3,01	107,52	5,80	3,20	4,66	2,67

Bmi – body mass index, bmr – basal metabolic rate, fat% - percentage fatty tissue content, fat mass – fatty tissue mass, lbm – lean body mass, twc – total water content
Source: *own elabotation*

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DYNAMICS OF THE CONDITION OF GENESIAL HEALTH OF WOMEN WORKING ON CHEMICAL PRODUCTION

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Esis E., Naumov I., Tishchenko E., But-Gusaim L., Aleksandrovich A. (2014), *Dynamics of the condition of genesial health of women working on chemical production*. Health Problems of Civilization, 4 (8), p. 9-15

Summary: In modern social and economic conditions the condition of genesial health (further - GH) the female population remains to one of the most acute medico-social problems, being a national security prominent aspect. Research objective: scientifically to justify a complex of the preventive actions referred on optimization of medico sanitary maintenance of women working on chemical synthesis. Materials and methods: work is based on the systemic approach to a studied problem. Following methods are applied: sanitary-and-hygienic and sanitary-statistical. Effect of factors of industrial medium were evaluated on value of hygienic parameters in premises of shops of Open Society «Grodno Nitrogen» in a place of work of the patients, received at realization of gauging at the next certification of jobs for working conditions. For an estimation of condition GH of working women of chemical synthesis results of periodic medical examination and a condition of a case rate with time disablement (further - TD) during 2008-2012 are studied. At studying of a condition of genesial health of women working on Open Society «Grodno Nitrogen» it is established, that their professional work in the conditions of effect of harmful production factors of the chemical, physical and psycho physiological nature is accompanied by its aggravation that is shown by growth of a gynecologic and extra genital case rate, and also an obstetric pathology including with temporary disablement. For prophylaxis of disturbances GH of the yielded contingent of working women introduction of a complex of sanitary-and-hygienic, socially-hygienic, treatment-prophylactic actions is necessary.

Keywords: genesial health, women, chemical production

Introduction

In modern social and economic conditions the condition of genesial health (further - GH) the female population remains to one of the most acute medico-social problems, being a national security prominent aspect. On it in the National program of demographic safety, the attention is especially paid to 2011-2015 which is realized in the country now.

Experience of the previous researches in the given area testifies, that female GH is mortgaged from first days of a life and formed in the conditions of effect of factors of medico-social medium among which conditions of labour activity have special value (Chan et al. 2004).

In modern conditions of one of groups of increased "risk" on aggravation GH are the women of fertility age, working in the conditions of single-step effect of a different sort of the chemical toxins which effect can be shown both in the form of a synergy are, for example, potentiating, and in other qualitatively new effects not studied till now capable not only to lead to development of professionally caused obstetric-gynecologic pathology in the form of disturbances of specific functions of a female organism, but also to render teratogenic and embryo toxic action.

Thus, medico-social aspects GH of women-working women of chemical synthesis acquire strategic value, and the new methodological base of its formation and protection in the conditions of effect of harmful production factors is the important scientifically practical problem (Sorokin 2007). Thus at the present stage developments of a medical science to database creation, in particular, in system alarm, intermediate and end results in the field of an estimation of potential GH of the women who are carrying out industrial activity in the conditions of modern chemical production, special significance as the obtained data should become a basis for creation and introduction of technologies of prophylaxis should be attached (Escriba-Aguir et al. 2001). All noted above indicates an urgency of a problem and justifies scientifically practical interest to it.

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Research objective: scientifically to justify a complex of the preventive actions referred on optimization of medico sanitary maintenance of women working on chemical synthesis.

Materials and methods

Work is based on the systemic approach to a studied problem. Following methods are applied: sanitary-and-hygienic and sanitary-statistical.

Work is executed on the largest petrochemical complex of the country of Open Society «Grodno Nitrogen» which includes more than 10 productions of chemical synthesis manufacturing to 40 names of production. At the enterprise work more than 10 thousand workers, from among working women constitute more than 30 %.

Effect of factors of industrial medium were evaluated on value of hygienic parameters in premises of shops of Open Society «Grodno Nitrogen» in a place of work of the patients, received at realization of gauging at the next certification of jobs for working conditions.

The condition of genesial health of 224 women working of Open Society «Grodno Nitrogen» at the age of 20-45 years (the basic group) is studied. Among surveyed persons with the experience till 10 years have constituted 24,2 %, from 11 till 20 years - 42,8 % and with a length of service more than 20 years - 33,0 %. The control - 212 women at the age of 22-44 years living in of Grodno, but on a sort of professional work not contacting to toxic substances (working women of administrative and managerial service, housing and communal services, public health services other). The length of service of patients of control group has constituted: till 10 years - 36,8 %, from 11 till 20 years - 38,8 %, over 20 years - 24,4 %.

For an estimation of condition GH of working women of chemical synthesis results of periodic medical examination and a condition of a case rate with time disablement (further - TD) during 2008-2012 are studied.

For an estimation of a current of pregnancy and labors the retrospective analysis of histories of labors (the registration form 096y) and histories of development of the newborn (the registration form 097y) at working women of chemical synthesis and the women of the control group who have received medical care in establishment of public health services «Urban hospital of the first help of of Grodno» for 2008-2012 is carried out.

The data processing, received as a result of research, lead with application of methods of variation statistics.

Degree of professional conditionality of disturbances of genesial health of working women carried out on the basis of account of relative risk (RR) and its etiological fraction (EF).

Research base have generated in electronic form, statistical accounts and charts have executed by means of computer programs Microsoft Excel, STATISTICA 6.0 (Borovikov 2008).

Results

It is established, that modern production of chemical synthesis is characterized by the big range of received production, a continuity of technological process, use of the modern process equipment.

Major of products of chemical synthesis are: caprolactam, a methanol, carbamidum, ammonia, a formic aldehyde, sulfuric acid, ethylene, propylene, benzene, ethyl benzene, toluene, styrene, butylenes, oxide ethylene, organic alcohols, heptyl etc.

Women in modern productions of chemical synthesis work in shops - machin-minders and operators, in laboratories - engineers-chemists, laboratory assistants of the chemical analysis.

Main element of activity of operators and machin-minders is observation over a course of technological process with resetting of parameters of its regimen from premises operational, record of parameters of a technological regimen in journals (45% of time of change), and also the control of a condition of the equipment possessed on the outside equipments (55% of time of change).

Laboratory assistants of the chemical analysis carry out researches of quality of raw materials, intermediate and definitive products of productions of organic synthesis with application of the modern analytical equipment. Laboratory assistants execute the large part of chemical analyses in fuming boards, thus to 60 % of time of change are in position standing. Engineers-chemists supervise over realization of laboratory analyses, perform experimental and research works. Carry out necessary accounts under the lead analyses, tests and researches, analyze the received results and systematize them.

By results of the lead hygienic researches it is established, that the basic harmful factor of a working environment in the studied productions is the chemical, 1-4 classes of danger presented by toxic substances.

It is necessary to notice, that in the basic productions where there are chemicals of 1-2 classes of danger, irrespective of their concentration (at level or below marginal concentration), work of women is forbidden. However, in laboratories of the working woman are exposed to contact to these substances, carrying out analyses of quality used in chemical synthesis of substances, and also manufactured production.

Principal cause of entering of harmful substances in air of a working zone of laboratories is necessity of fulfillment of separate analytical researches out of draught cupboards. Certain value in air pollution of a working zone takes place entering of harmful substances with affluent air. In premises of the laboratories placed in the basic productions, diffusive pollution by toxic products of the yielded production of air takes place.

The most widespread substances of 2-4 classes the dangers that are present at a production line of productions of chemical synthesis are presented in table 1. It is necessary to notice also, that According to Sanitary Rules and Norms 2.2.555-96, P.2.2.2006-05 number of chemicals to which working women contact, display also genesial toxicity (acetone, benzine, benzol, dimethylbenzene, dichloromethane, methyl benzene, a formic aldehyde, chloromethane, hloreten, oxide of ethylene, etc.).

By hygienic researches it is positioned, that concentration of harmful chemicals in the studied productions was up to standard or lower marginal concentration. However, coefficient of summation (further - C_{sum}) substances of unidirectional action for engineers-chemists, laboratory assistants and hallmarks selectors constituted from 1,1 to 1,6, and for operators, machin-minders of the cores and non-productive departments - from 0,7 to 1,9.

On a volumetric factor with allowance for work of operators and machin-minders, engineers-chemists, laboratory assistants modern productions of organic synthesis belongs to the class of its genesial toxicity 3.1. Considering, that C_{sum} chemicals in shop steam - and water supply has constituted 0,7 and according to the Management of the P.2.2.2006-05 «Hygienic estimation of factors of an actuation medium and work flow. Criteria and classification of working conditions» working conditions have been carried to admissible (2 class), that allows to conclude about preferable use of work of women in these shops of productions of chemical synthesis.

The significant had effect of physical factors on a state of health of working women.

It is positioned, that hum in the basic workrooms, on the outside equipments, in premises pump non-productive departments was to constants broadband.

Noise levels in the basic work rooms during all labour shift exceeded marginal levels: equivalent level of a sound has constituted 85-95 dBA and exceeded marginal level (further - EML) on 5-15 dBA, that corresponds to a class 3.2, that is harmful working conditions. In premises of laboratories equivalent level of a sound has constituted 85-90 dBA and exceeded EML on 5-10 dBA, that corresponds to a class 3.1.

Process equipment service was manufactured by women in the forced pose. So, during 80 % of a labour shift the body of women machin-minders of gas separation, gas dewatering was in the inclined position with a deviation from a vertical, exceeding 30 degrees. At typists compressor, pump and refrigerator sets of shop of production of methanol in view of necessity of constant detour of the process equipment routine moving for change have constituted from 5,5 km to 10,3 km.

Working conditions of operators, machin-minders of non-productive departments, engineers-chemists, laboratory assistants of chemical analysis laboratory-analytical management of modern productions of chemical synthesis have been carried to a class 3.1, that is to harmful working conditions.

For an establishment of a relationship of cause and effect of influence of working conditions on condition GH the analysis of structure and level of a gynecologic pathology at the women who were carrying out industrial activity in the conditions of influence of chemical toxins has been carried out.

By results of data of gynecologic and ultrasonic survey level of a gynecologic case rate on 100 women has constituted: 54,8 - in a basic group, 44,6 - in control group.

On one patient from a basic group 2,2 gynecologic diseases were necessary (the control - 1,8).

The most significant diseases at women working of chemical synthesis were disturbances of menstrual function, their frequency has constituted 27,2±1,8 (the control - 6,3±1,8, $p < 0,05$; RR=4,3, EF =76,7 %).

At studying of menstrual function it is positioned, that at patients of a basic group the age menarche has constituted 13,2 years (the control - 13,9).

In structure of disturbances of a menstrual cycle the first rating place was occupied with irregular character of a menses (38,51±3,14 %). The nosological form second for frequency was algodismenorrhea - 30,82±2,46 %. The third rating place was occupied with a hyperpolymenorrhea which share has constituted 12,26±2,18 % (figure 1).

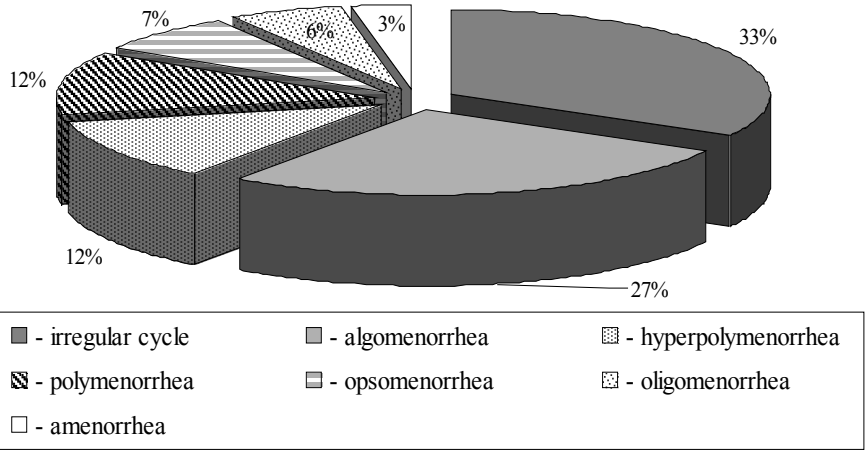

Figure 1. Structure of disturbances of a menstrual cycle at women working of chemical synthesis

High levels of menstrual disorders in workers identified in our investigation confirm the results of T. Wang et al. (2006) studies, where it was found that a violation of reproductive health in women of childbearing age by prolonged exposure to harmful chemical agents in concentrations not exceeding the maximum permissible values may occur without the presence of any clinical signs of poisoning.

The analysis of a current of pregnancy at working women of chemical synthesis has shown high frequency of an obstetric pathology in comparison with control group - 88,8 and 72,4 on 100 pregnant women, accordingly.

Frequency of pathology of pregnancy at working women of the basic and control groups (on 100 pregnant women) is presented in table 1.

Table 1. Frequency of a pathology of pregnancy at working women of the basic and control group, on 100 pregnant women

Pathology kinds	Basic group	Control group
In total complicated pregnancy	88,8±1,4*	72,4±0,9
Iron deficiency anaemia	73,2±1,9*	42,5±1,4
Gestosis of II half of pregnancy	52,3±2,4*	31,2±1,8
Abortion threat	44,2±2,4*	21,1±1,7
Premature birth	6,4±0,9	2,4±0,7

The note: * - an index of reliability concerning the control, p <0,05.

It is positioned, that authentically more often pregnancy at working women of a basic group unlike control group became complicated an anemia of pregnant women - 73,6±1,9 (RR=1,6, EF =37,5 %), gestosis of II half of pregnancy - 52,3±2,4 (RR=1,9, EF =47,4 %), abortion threat - 44,2±2,4 (RR=1,6, EF=37,5 %), premature birth - 6,4±0,9 (RR=2,3, EF =56,5 %).

As is known, health of newborns is defined by the determined set of the factors attacking a pre-natal fetation, as from a maternal organism, and actuation medium factors (Sivochalova 2000). In this connection, by us have been studied perinatal outcomes at women-working women of chemical synthesis.

It is positioned, that authentic differences in delivery times in compared groups it has not been taped (p> 0,05): the centre delivery time in a basic group has constituted 266,4 days, in control - 272,6 days. However frequency of occurrence of premature birth in a basic group has constituted - 6,4±0,9 % (the control - 2,4 %, p <0,05, RR=1,7, EF=41,2 %).

Statistically significant differences in ways of a delivery of women in compared groups are taped. So, among patients of a basic group operation cesarean sections has been executed to 34,8±2,9 % (the control - 26,8±1,9 %, p <0,05).

The basic indications to an operative delivery were: anomalies of patrimonial activity (28,8±2,7 % and 8,4±0,9 %, accordingly; p <0,05); a pelvic presentation (18,8±1,8 % and 16,4±1,7 %); an accompanying extra genital pathology (18,8±1,8 % and 14,2±1,5 %); cicatrix on a uterus (16,4±1,6 % and 18,2±1,9 %); premature amotio of normally located placenta (8,2±0,9 % and 4,8±0,4 %; p <0,05).

Centre weight of fetuses at patients of both groups authentically did not differ and has constituted 3242±126,8 gr. and 3428±119,4 gr., accordingly.

At primary survey of newborn both groups the condition of large majority of children (85,4±4,2 % - in a basic group and 95,6±4,9 % - in control group) has been estimated as satisfactory with an estimation on scale Apgar of 8/9 points. However 15,3±1,1 % of babies of a basic group and 5,3±0,8 % - from control group were born in a moderate severity level condition that has been caused by presence of neurologic symptomatology in the form of a syndrome of moderate oppression of the central nervous system and a syndrome of the raised nervously-reflex excitability (8,6±0,8 % and 3,2±0,4 %, accordingly; p <0,05, RR=5,2, EF=80,8 %), and also a syndrome of respiratory disorders (6,8±0,7 % and 2,8±0,4 %; p <0,05, RR=2,8, EF = 64,3 %). Cases of a serious asphyxia in analyzed groups was not.

We studied the dynamics of congenital anomalies (malformations), deformations and chromosomal abnormalities morbidity in children due to the fact that a number of chemical toxins generated during the production cycle of Open Society «Grodno Nitrogen» are assigned to Class 1A (development toxicant) (Joffe et al. 2003).

At profound medical examination at children born by women-working women of chemical synthesis, authentically more often, than at newborns from mothers from a basic group congenital developmental anomalies of a foetus - 6,9±1,4 (the control - 2,3±0,4 on 100 newborns, p <0,05 have been registered a different sort; RR=3,0, EF = 66,6 %).

By us it is positioned, that professional work in the conditions of influence of harmful factors result ins to disturbances of a state of health of the women-working women, displayed in TD.

So, at the analysis of a case rate with TD women-working women of chemical synthesis it is positioned, that case rate level on number of cases TD on 100 working from 2008 for 2012 was in limits 78,68±2,35 cases. Case rate level on number of days TD on 100 workers has constituted 722,97±16,06 day.

Case rate indexes on number of cases TD on 100 working for 2008-2012 in dynamics reached a maximum in 2009 and have constituted 84,8 cases, gradually dropping to 73,44 cases in 2012 Thus the case rate on number of days TD on 100 working also had the maximum value in 2009, constituting 769,4 days, the minimum value of an index has been registered in 2010 - 700,91 days.

At the analysis of a case rate with TD the groups of the diseases causing the most frequent labour losses on yielded production have been taped.

So, from 2008 for 2012 the greatest amount of cases of invalidity was necessary on diseases of organs of breath, disease of osteomuscular system, disease of system of a circulation of blood and digestion organs.

We studied the comparative dynamics of uterine leiomyoma morbidity, considering that a number of chemical toxins affect the metabolism of sexual steroid hormones or stimulate their effects on target organs, which is a possible cause of tumor development of certain locations (Sukumar et al. 2002).

In 2008-2012 significant growth of a case rate with TD, caused by growths of female genesial system is registered: the number of cases of diseases was enlarged by 10,3 %, and number of days - on 23,9 % (figure 2).

In 2008-2012 growth of a case rate with TD, caused by nonspecific inflammatory diseases of female genitals also is registered. So, the number of cases was enlarged by 6,7 % and has constituted 7,43 on 100 working women.

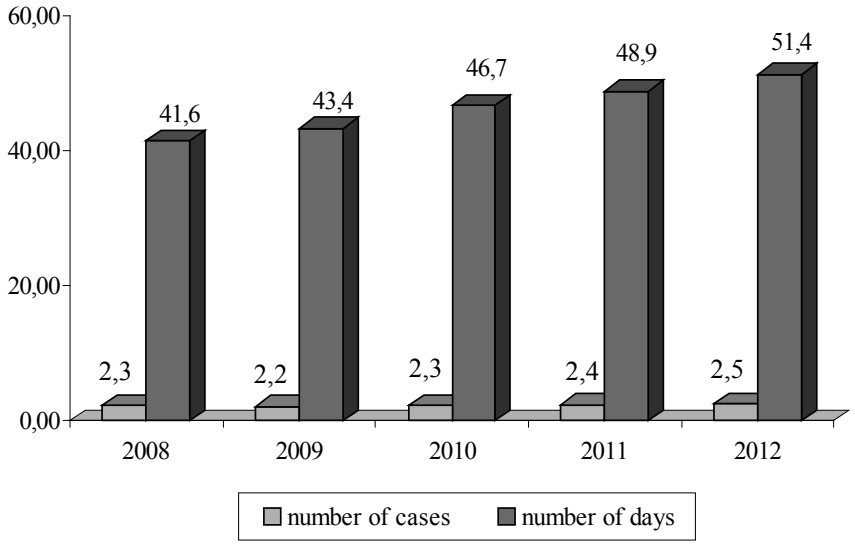

Figure 2. Dynamics of cases and days labour losses, caused neoplasms female genesial system

In 2008-2012 we tap substantial growth of level of a case rate with TD, caused by complications of pregnancy and labors at women working of chemical synthesis. So, the number of cases TD on working women has increased on 6,6 %, and number of days TD - on 26,0 % (figure 3).

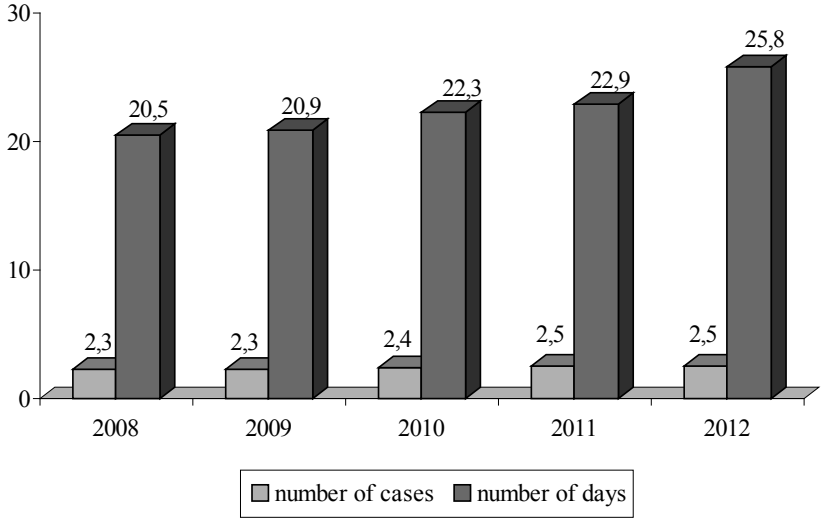

Figure 3. Dynamics of cases TD caused by complications of pregnancy and labors

Thus also the case rate with TD women-working women of the chemical synthesis, bound to growth of congenital anomalies at newborns was enlarged. So, if in 2008-2009 such cases were not registered, in 2010-2012 the number of cases and days TD on 100 working women has constituted, accordingly, 0,07±0,02 and 1,57±0,3.

It is positioned, that the relative risk (RR) disturbances GH on the majority perinatal indexes at women-working women of chemical synthesis has constituted more than 2,0 and its EF exceeded 50 % that (table 2) testifies to high degree of professional conditionality and an essential role of working conditions in formation of disturbances of genesial health of the yielded category of patients.

Table 2. The estimation of relative risk and degree of professional conditionality of separate disturbances of genesial health

Perinatalnye indexes	Estimation of degree of risk			
	rate, %±m	RR	EF, %	Conditionality degree
Inflammatory diseases of a uterus and appendages	46,1±2,2	1,5	33,3	the small
Disturbances of a menstrual cycle	27,2±1,8	4,3	76,7	very high
Good-quality growths of a uterus	18,6±1,6	2,5	60,0	the high
Sterility	9,1±1,2	2,2	54,5	the high
Anemia of pregnant women	73,6±1,9	1,6	37,5	the centre
Gestoses II half of pregnancy	52,3±2,4	1,9	47,4	the centre
Abortion threat	44,2±2,4	1,6	37,5	the centre
Syndrome of moderate oppression of the central nervous system and syndrome of the raised nervously-reflex excitability of newborns	8,6±0,8	5,2	80,8	very high
Congenital developmental anomalies	6,9±1,4	3,0	66,6	the high
Syndrome of respiratory disorders of newborns	6,8±0,7	2,8	64,3	the high
Premature birth	6,4±0,9	2,3	56,5	the high

Conclusions

1. Professional work in the conditions of influence of harmful production factors result ins to disturbances of condition GH of working women and is accompanied by growth of a case rate with TD.

2. For prophylaxis of disturbances GH of the yielded contingent of working women introduction of a complex of sanitary-and-hygienic, socially-hygienic, treatment-prophylactic actions is necessary.

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THE ROLE OF REACTIVE OXYGEN SPESIES IN THE PATHOGENESIS OF EXPERIMENTAL MAXILLARY SINUSITIS

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Andreychyn Y. (2014), *The role of reactive oxygen spesies in the pathogenesis of experimental maxillary sinusitis.* Health Problems of Civilization, 4 (8) p. 16-19

Summary: Simulated maxillary sinusitis was observed in guinea pigs following the surgical incision in superior cervical sympathetic ganglion. Additionally, toxic hepatitis development was stimulated after exposure to tetrachlormethane in experimental animals. The treated and control animals were observed for three months. A significant increase in the content of reactive oxygen species (ROS) in neutrophils and lymphocytes was noted in artificially developed sinusitis. The ROS values were slightly higher in the case of combined experimental sinusitis and toxic hepatitis. Based on the obtained data, the role of ROS in the development of sinusitis was discussed.

Keywords: sinusitis, hepatitis, reactive oxygen species

Introduction

Sinusitis belongs to common diseases in the world. About 3 million people suffer annually from acute sinusitis in Ukraine. The incidence is approximately 250 cases per 10 thousand (Деменков et al. 2013). Chronic sinusitis may develop following prolonged exposure to adverse factors (Betlejewski 2008). The high incidence of sinusitis requires studying pathogenesis of the disease, including causes and molecular interactions involved, as sinusitis was insufficiently studied so far (Боєнко 2013, Деменков 2013, Завалий М.А., Безшапочный С.Б. 2010, Meusel 2010, Zmijewski et al. 2009).

It is known that activation of free radical oxidation of lipids plays an important role in the pathogenesis of many diseases, including sinusitis. One of the factors that initiates lipid peroxidation is reactive oxygen species (ROS) - hydrogen peroxide, hypochlorite, oxygen radicals, superoxide and hydroxyl radical, which are produced during phagocytosis by polymorphonuclear leukocytes. Disorders of oxygen metabolites synthesis by phagocytes are related to the causes of respiratory system diseases. The products which are accumulated after partial reduction of oxygen include superoxide anion, which together with NO forms mediators of oxidative cell damage, including peroxynitrite. Those compounds damage proteins, lipids of cell membranes and the vascular endothelium, increasing platelet aggregation, and causing the processes of endotoxemia. The ROS also play an important role in the body protection from various harmful factors as they are involved in the oxidation and detoxification of various exogenous and endogenous compounds. They have antibacterial properties and affect immune system. In the process of phagocytosis, macrophages use ROS for the removal of phagocytized bacteria and destruction of cells infected by viruses. Macrophages destroy old or immunologically compromised cells, including malignant cells (Gilbert Daniel, Colton Carol, 2002, Губский 2006).

The objective of study

The objective of our study was to investigate the role of ROS in the pathogenesis of maxillary sinusitis using the experimental model of guinea-pigs.

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Tables: 2 **Figures**: 1 **References:** 17 **Full-text PDF** www.hpc.edu.pl **Indexation:** Index Copernicus, Database AGRO, ProQuest, Polish Ministry of Science and Higher Education.

Materials and methods

The experiments were performed on 84 guinea-pigs weighing 800-1200 g, which were fed standard vivarium diet. The animals were divided into three groups: (1) control (intact animals), (2) animals with maxillary sinusitis, (3) guinea-pigs with sinusitis and toxic hepatitis. Each group included 28 animals. Maxillary sinusitis was modeled according to our method. The guinea-pigs were undergone the cross-section of the upper cervical sympathetic ganglion on the left side of the neck which leaded to disruption of trophic function of the sympathetic innervation and development of inflammatory and degenerative processes particularly in the maxillary sinus mucosa. Formation of the inflammatory and degenerative process was confirmed by histological examination of the affected tissues. Toxic hepatitis was modeled using a mixture of carbon tetrachloride: olive oil at a ratio of 1:1 introduced into experimental animal at 2 ml/kg by subcutaneous injection for two days.

The animals were euthanized on the 15, 35, 75 and 90-th day of the experiment. Euthanasia was performed by complete bloodletting from the heart, after using thiopental sodium anesthesia (60 mg/kg^{-1} body weight intraperitoneally). Blood was used for the measurement of ROS.

As we were using animals as a model, we followed international standards of humane treatment of them in accordance with the rules of the «European Convention for the protection of vertebrate animals used for experimental and other scientific purposes» (European Convention, 1984) and methodological recommendations of the Ministry of Public Health of Ukraine «Preclinical studies of drugs» (2001).

The level of ROS in neutrophils was measured using dihydrofluorescein diacetate (DHF-DA) («Sigma Aldrich», USA), which is a fluorescent probe. After passive penetration into the cell and cleavage of acetate groups by esterases, DHF-DA becomes dihydrofluorescein. The interaction of hydrogen peroxide and other free radicals with dihydrofluorescein causes its molecular transformation into fluorescein, a highly fluorescent compound. For an assay, 90 µl of neutrophils suspension and 10 µl of DHF-DA working solution were placed in a test tube. Cells were resuspended and incubated for 20 min at 37°C. Following 10 min centrifugation step at 1000 rpm, the supernatant was separated and added to 400 µl of phosphate-saline buffer. The samples were placed on ice; the level of ROS production was analyzed by fluorescence intensity of the dye at the FL-1 channel using cytofluorimeter Epics XL («Beckman Coulter», USA). The values of the analyzed parameter were expressed in % (Li et al.2012, Дамбаева 2001).

Separation of neutrophils and lymphocytes was done by the density gradient centrifugation method.

Estimation of the differences reliability between groups was performed using the Uilkoksona-Mann-Whitney nonparametric method. Mathematical and statistical analysis of the digital data was done using Statistica program.

Results and discussion

ROS content in neutrophils of guinea-pigs with experimental sinusitis was 1.73 times greater compared to control on the 15-th day (P<0.02, table 1), while on the 90th day this index was 2.22 times higher (P<0.01, table 1). In the experimental group with both sinusitis and toxic hepatitis, the values were significantly higher compared to animals with sinusitis alone (for both day 15th and day 90th, P<0.05-0.001).

Table 1. Dynamics of ROS concentration in neutrophils of guinea-pigs with experimental maxillary sinusitis and toxic hepatitis (M±m)

Days	Animal groups			Indicator of reliability		
	control	sinusitis	sinusitis and toxic hepatitis	P1	P2	P3
15-th	34,44±0,68	59,69±3,96	68,29±0,21	<0,001	<0,001	<0,05
35-th	34,84±0,70	68,55±2,34	69,34±0,41	<0,001	<0,001	>0,05
75-th	34,24±0,63	78,00±0,81	79,57±1,24	<0,001	<0,001	>0,05
90-th	34,42±0,46	76,35±1,61	83,17±1,22	<0,001	<0,001	<0,001

Note. Here and in the next table: P1 – between control and guinea pigs with sinusitis, P2 - between control and guinea pigs with sinusitis and hepatitis, P3 - between animals with sinusitis and sinusitis plus hepatitis.

In the lymphocytes of the healthy guinea pigs the concentration of ROS remained at the same level during the entire experiment (table 2), however, for the guinea pigs with sinusitis this parameter increased 1.7-2.2 times (15-th-90-th day, P<0.02-0.001).

In case of the combined pathology (sinusitis and hepatitis), the level of ROS increased in comparison to sinusitis alone on the 15-th, 75-th and 90-th day of the experiment (P<0.02-0.03).

Table 2. Dynamics of ROS concentration in lymphocytes of guinea-pigs with experimental maxillary sinusitis and toxic hepatitis (M ± m)

Days	Animal groups			Indicator of reliability		
	control	sinusitis	sinusitis and toxic hepatitis	P_1	P_2	P_3
15-th	23,05±0,75	43,76±3,46	50,31±0,87	<0,001	<0,001	<0,05
35-th	23,14±0,79	59,45±1,19	59,27±0,22	<0,001	<0,001	>0,05
75-th	22,71±0,72	64,23±0,38	67,33±0,67	<0,001	<0,001	<0,01
90-th	23,28±0,54	65,68±0,86	71,93±0,65	<0,001	<0,001	<0,001

Comparative analysis (Fig. 1) has shown that the animals of all groups (healthy, with experimental sinusitis, and with sinusitis plus hepatitis) on the 15-th day of the experiment had greater ROS concentration in neutrophils compared to lymphocytes. Similar differences were also noted in another terms of experiment (days 35, 75 and 90, P<0.05-0.01).

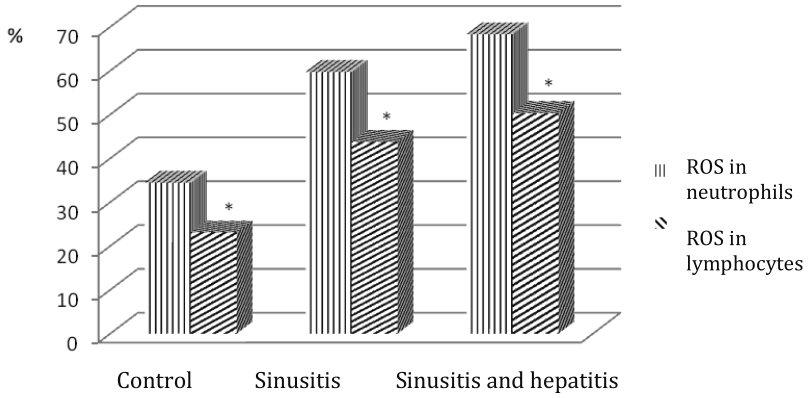

Figure 1. Comparison of ROS content in white blood cells of guinea-pigs of different groups on the 15th day of the experiment. Note: * P<0.05-0.01 between the neutrophils and lymphocytes.

Incision of the cervical sympathetic ganglia causes stress in animals. Oxidative reactions, which are accompanied by an increase in ROS concentration and stimulation of free radical oxidation, play the important role in the stress (Hiwari et al. 2002). Activation of molecular oxygen in sinusitis may be due to the high level oxygen concentration in the affected tissues as well as hypoxia and accumulation of reduced pyridine nucleotides forms and catecholamines, increase of their precursors and metabolites concentration, enhanced metabolism of arachidonic acid, activation of myeloperoxidase in phagocytes, decreased activity of enzymes of antioxidant system and levels of endogenous antioxidants, etc. (Голод Е.А., Кирпатовский В.И. 2003, Melley 2005). ROS damage proteins, lipids, DNA, leading to disruption of the structure and function of cell membranes and microcirculation (Looney M. R. 2009). Increased concentrations of nitric oxide and superoxide radicals cause damage of mitochondria, the energy deficit and death of cell (Новиков et al. 2008). This process promotes activation of microorganisms that penetrate the sinuses and cause inflammatory changes. The increase of ROS also occurs in toxic hepatitis and other liver diseases. The decrease of antitoxic liver function causes the body's intoxication and results in the development of various inflammatory diseases (Когутич 2013). Thus, ROS can cause significant disorders of protein, lipid and nucleic acid metabolism in the affected tissues and ultimately deepen inflammatory and degenerative processes in the tissues, including the mucous membrane of maxillary sinus.

Conclusions

1. Maxillary sinusitis in guinea pigs caused by the surgical incision resulted in the increased ROS content in neutrophils, and to lesser extent, in lymphocytes.

2. The concentration of ROS had a tendency to increase in neutrophils and lymphocytes during three-months observation period in experimental animals.

3. A combination of both experimental toxic hepatitis and sinusitis in guinea pigs resulted in higher concentration of ROS in neutriphils and lymphocytes compared to the effect of sinusitis alone.

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THE FUNCTIONAL LATERALIZATION AND COMPUTER DYNAMIC POSTUROGRAPHY

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Summary: Disorders in the functioning of the human body balance system exist in 20-30 % of adults and in 8-18% of children. The main causes of these aberrations are: benign positional vertigoes, migraine, anxiety disorders and depression, cerebrovascular diseases, brain traumas, labyrinthitis, toxic impairment of labyrinth, vestibular neuronitis, Ménière disease, brain tumours. Among the minor causes of these disorders are: internal ear disorders, inner ear circulation disorders, sclerosis multiplex (SM), epilepsy, arterial hypertension, postural hypertension, heart rhythm disorders, sclerosis, hypoglycaemia and involutional alternations (see: prezbiastazja). Human body balance disorders increase the risk of falls, which may threaten health and life. Frequency of these disorders raises with age, which is the cause of progressing degeneration of all the anatomical and functional systems, the efficiency of which affects the stability of the human body. Determination of the factors, which are related to a worse functioning of the body balance system of young people, who do not experience any clinical symptoms caused by this system is vital, especially in preventing falls and complications attributed to them. It allows to implement possibly early the preventive actions substantial for people encumbered by the risk factors. The aforesaid actions may consist in the alternation of a given factor (diet, sleep, physical activity). In case of the factors, which are not subject to modifications (i.e. heterogeneous form of the functional lateralization), it is essential to prevent potential diseases that disturb the functioning of the body balance system, which is already impaired.
This study aimed to acquaint with the findings concerning the evaluation of the functional lateralization enriched with a new diagnostic tool – a computerized dynamic posturography.
The computerized dynamic posturography (CPD) is a state-of-the-art and faultless evaluation tool of the functional lateralization. It provides a comprehensive knowledge, which concerns not only the preferences of the body, but also constitutes an objective and quantitative diagnostic method for the disorders in the functioning of the body balance system. CPD differentiates a few clinical protocols: the Sensory Organization Test (SOT); the Motor Control Test (MCT); the Adaptation Test (ADT). SOT evaluates the control of the body balance in different conditions (eyes closed/eyes opened; environment moves/ground moves) of the sensory systems stimulation. MCT assesses the postural reactions (body postures) in response to an unexpected changes in the location of the feet prop surface. ADT assesses the efficiency of the adaptation mechanisms in the body balance control.

Keywords: functional lateralization, computerized dynamic posturography, body balance

Introduction

Disorders in the functioning of the human body balance system exists in 20-30 % of adults and in 8-18% of children (Narożny et al. 2010). The main causes of these aberrations are: benign positional vertigoes(30%), migraines(10-15%), anxiety disorders and depression(10-15%), cerebrovascular diseases(10%), brain traumas(10%), labyrinthitis(5%), toxic impairment of the labyrinth(5%), vestibular neuronitis(3-6%), Ménière disease(3%), brain tumours(<2%). Among the minor causes of these disorders are: internal ear disorders, inner ear circulation disorders, sclerosis multiplex (SM), epilepsy, arterial hypertension, postural hypertension, heart rhythm disorders, sclerosis, hypoglycaemia and involutional alternations (see: prezbiastazja) (Prusiński 2009, 2010).

Body balance disorders increase the risk of falls, which may threaten health and life (Davis et al. 2011; Viswanathan, Sudarsky 2011). Frequency of these disorders raises with age, which is the cause of progressing degeneration of all the anatomical and functional systems, the efficiency of which affects the stability of the human

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Tables: 2 **Figures**: 0 **References:** 22 **Full-text PDF** www.hpc.edu.pl

body. The risk of a fall, which ends with death in the group of people who have turned 65 years old is seven times higher than in the group of young people. From 5 to 15% of falls end up in broken, dislocated limbs and severe head trauma as well as damage of soft tissues (Błaszczyk, Czerwosz 2005).

This study aimed to acquaint with findings concerning the evaluation of the functional lateralization enriched with a new diagnostic tool – a computerized dynamic posturography.

Functional lateralization

The notion of the lateralization (in other words asymmetry) specifies the lateral dominance, which concerns paired body organs as well as the mental functions of the brain (Mroziak 1992). Functional lateralization, which relates to paired body organs, determines the efficiency dominance and the propensity for a frequent use of one of them e.g. right or left limb. It is connected with the dominance of the centres representing the given organ in one of the cerebral hemispheres (Bogdanowicz 1989; Osiński 2003). The efficiency dominance and propensity for using right hand, eye, leg is called: right-handedness, right-sightedness and right-leggedness, respectively. The dominance concerning left side of the body is referred to as: left-handedness, left-sightedness and left-leggedness. Lack of functional dominance of the one body side over the other is defined as binocularity, ambidexterity, bipedalism (Osiński 2003). Taking into account a direction of the respective locomotor organs and senses lateralization, it is called a form of lateralization, a model of dominance or an asymmetry profile. There are the following models of the functional lateralization differentiated: homogenous (left or right-sided) or heterogeneous (hybrid or unspecified) (Osiński 2003; Bogdanowicz 1989).

In the model of homogenous dominance – along with right-handedness there occurs right-sightedness and right-footedness. Left-handedness appears exclusively in connection with left-sightedness and left-footedness. Within the heterogeneous unspecified lateralization model (weak) there exists a lack of dominance in respect to one of the paired organs (Osiński 2003; Bogdanowicz 1989).

Functional asymmetry appears during conduction of activities that require usage of only one of the paired organs. While being involved in the activities that engage a paired organ belonging to the right or left side of the body e.g. both upper limbs, lateralization emerges when it is necessary for one of them to become dominant. Then, a dominant organ becomes a leading one, while the second plays an auxiliary role (Osiński 2003).

When assessing a formation of the functional lateralization, the model of lateralization, pace of its development and neurophysiological background have to be included in this process. Models of homogenous lateralization, both left-sided and right-sided are deemed proper ones. They are related to a dominance of one of the brain hemispheres. We talk about abnormal models of lateralization in case of the heterogeneous profile of lateralization, both unspecified and hybrid as well (Bogdanowicz 1989).

Functional dominance that concerns a paired vestibular organ is set as early as at the fetal stage, which has an impact on the further development of functional lateralization of limbs (Previc 1991). Golomer and Mbongo (Golomer, Mbongo 2004) have observed that people with different preferences for using lower limbs, are led by distinct mechanisms of body balance control while standing on one limb. According to other scientists (Bogdanowicz 1989; Iteya, Gabbard 1996; Rengstorff 1967) the aberrations of perception, spatial orientation and motor coordination, which are substantial for the proper body balance control can be observed more frequently in people with heterogeneous form of functional lateralization.

An evaluation of the functional lateralization

An evaluation of the functional lateralization (eye, upper and lower limb) involves usage of an adequately prepared medical examinations (Osiński 2003; Zazzo, Galifret-Granjon 1974; Malinowski, Wolański 1988).

In order to establish the dominance of the upper limb, the examined subjects were asked to: pick up the box of matches, write down one's name with the pencil on the sheet of paper, throw a tennis ball. At the beginning of each task, the objects that were used in the examination lied on the table, in front of which the examined person stood. Distance between the object and the left and right hand of the participant was equal (Osiński 2003; Zazzo, Galifret-Granjon 1974; Malinowski, Wolański 1988).

Aiming at establishing the dominance of the lower limb, the participants of the experiments were asked to: move feet as if writing the letter "D" on the sand, stand on the wooden step of 30 cm height, kick the box of matches that lies on the floor. At the beginning of the second and third task, a participant stood in the position, in which the distance between his left/right foot and the wooden step and the box of matches was equal. A limb, which the participant put on the step in the first place was deemed dominant (Osiński 2003; Zazzo, Galifret-Granjon 1974; Malinowski, Wolański 1988).

When a participant used the same upper or lower limb in each of the three tasks, dominance of the said limb was recognized. If during next three examinations the examinee used interchangeably left or right, upper or lower limb, the surveys in the form of table proposed by Osiński (Osiński 2003) were used (Table no. 1 and no. 2).

Table no. 1 includes commands for the participants (holding the pen, spoon, toothbrush, scissors, knife, matches while lighting, ball while throwing it, hammer while hammering the nail), which concern the activity of the upper limb (RG- right, LF – left). The results presented within the following range of points: 36 – 40 points indicate a clear right-handedness, 29 – 35 points indicate a weak right-handedness, 20 – 28 points suggest ambidexterity, 13 – 19 points reflect weak left-handedness and 8-12 points suggest clear left-handedness.

Table 1. The evaluation of the upper limb functional lateralization (Osiński 2003)

Upper limb activity	Always RG – 5 points	often RG – 4 points	equally frequent – 3 points	the most frequently LF – 2 points	always LF – 1 point
writing with a pen					
eating with a spoon					
brushing teeth with a toothbrush					
cutting paper with scissors					
slicing bread with a knife					
lighting a match					
throwing a ball					
hammering a nail					

Table 2 contains the commands for the research participant (bounce before the long jump, entering a very high step, hitting the ball towards goal, long-lasting jumps on one leg, test of writing a specific letter with one's foot on the floor, standing on one leg in the "flamingo" position) regarding the activities of the lower limb (PN - right, LN - left). Results in the range of 27 - 30 are a clear right footedness, 22 - 26 poor right footedness, 15 - 21 ambidekstria, 10 - 14 weak left footedness, 6 - 9 clear left footedness.

Table 2. Assessment of functional lateralization of the lower limbs (Osiński 2003)

Lower limb activity	always PN – 5 points	Most often PN – 4 points	Equally often – 3 points	Most often LN – 2 points	always LN – 1 point
bounce before long jump					
entering a very high step					
hitting the ball towards goal					
long-lasting jumps on one leg					
test of writing a specific letter with one's foot on the floor					
balance test-standing on one leg in the „flamingo" position					

Right-handedness was diagnosed when the total score of points was at least 29, left-handedness- when the result did not exceed 19. Right footedness was diagnosed, however, when the result was at least 22, while left footedness when it did not exceed 14. In other cases, the lack of a functional limb dominance was diagnosed, the so called ambidexterity or bi-footedness (Osinski 2003).

In order to determine the eye dominance the Miles test is applied (Roth et al. 2002).The test participant was requested to do the following:

- put his hands in such a way as to create a gap between them in the shape of a triangle (the thumb of one hand covers the thumb on the other, the remaining fingers of one hand crossed fingers on the other, the gap should be such that when he brings his hands to his face he could see it only with one eye);
- straighten hands in elbows and lift his hand so that the gap was found at the level of the eyes;
- select any object located about 3 feet away, so that it is completely visible through a slot (the test participant cannot at this moment close his left or right eye);

- observe the object through the gap, and a very slow convergence of his hands until they touch the face (the whole time the left and right eye of the test participant should be open and the object cannot disappear for a moment from the limited by the slit view).

The eye, in front of which there was the gap between both hands once they got closer to the face, was considered the dominant one. In the case of vision defects participants joined the research in their own glasses or corrective contact lenses. Taking into account the observations of Zazzo and Galifret-Granjon (Zazzo, Galifret-Granjon 1974) according to which the ambivalence with regard to the eyes in case of healthy people aged above 14 years old is very rare, it was determined whether it is the left eye or the right eye which dominates, based on the result of a sample performed once.

Computer dynamic posturography (CDP)

Computer dynamic posturography is an objective and quantitative diagnostic method of disorders of the balance system of the human body. It was approved by the World Health Organization (WHO) and it meets the criteria of the International Classification of Functioning, Disability and Health (ICF). CDP has been defined by the American Academy of Neurology (AAN) and the American Academy of Otolaryngology, Head and Neck Surgery (AAO-HNS) as a method of enabling quantitative assessment (Nashner 1976; Nashner 1993a, 1993b, 1993c, 2008a Interna NeuroCom, 2008b):

- usefulness of the information of the organ of vision (sight), vestibular organ (balance), the somatosensory system (sensation of body position) in controlling the balance of the human body
- a mechanism of central sensory integration, allowing proper use of the information obtained from sense organs
- motor strategy used in response to balance disorders
- quantities characterizing the motor reactions, affecting the efficacy of postural responses.

In 1986, the American Agency on Food and Drug Administration (FDA) authorized the CDP device introduction onto the medical market.

In CDP a number of research protocols may be identified. These include sensory organization test (SOT), motor control test (MCT), the test of adaptation (ADT). Within SOT control of balance under different conditions is evaluated (eyes closed /eyes open, moving environment / moving surface) stimulating sensory systems (sensory). MCT assesses postural reactions (postures) in response to unexpected changes in the position of the foothold. The ADT estimates the efficiency of adaptive mechanisms in the control of body balance (Nashner 1976; Nashner 1993a, 1993b, 1993c, NeuroCom Interna 2008a, 2008b).

Sensory Organization Test

The Sensory Organization Test (SOT) consists of: body balance analysis (ES), sensory analysis (SRS), analysis of motor strategies (MS) and analysis of the countervailing position of the center of gravity of the body (COG AS) (Nashner 1976; Nashner 1993a, 1993b, 1993c , NeuroCom Interna 2008a, 2008b).

Result of the analysis of the balance of the body (ES) provides a quantitative assessment of the deviation of center of gravity of the body in the anterior-posterior direction. ES values for each sample are presented on a percentage scale. A score of 100% means that there is no deviation of the body center of gravity in the anterior-posterior direction. The greater the extent of these deviations the less the value of the outcome analysis of the balance of the body (Nashner 1976; Nashner 1993a, 1993b, 1993c, NeuroCom Interna 2008a, 2008b).

The results of sensory analysis (SRS) are calculated by a computer program and presented separately for the somatosensory system (SOM), visual organ (VIS), vestibular organ (VES), visual preferences (PREF). These results demonstrate the utility of the signal from the sensory system in the control of body balance. They are presented in a percentage scale. A value of 100% means full efficiency of the given sensory system and the proper use of the signal from this system in the control of body balance (Nashner 1976; Nashner 1993a, 1993b, 1993c, NeuroCom Interna 2008a, 2008b).

The result of the motor strategy (MS) provides a quantitative assessment of muscle activity responsible for the movements in the ankle joints and muscle activity responsible for the movement of one's hips during each SOT test trial. The higher the MS value the higher muscle activity responsible for ankle movement, compared to the activity of the muscle responsible for the movements of the hip joints. The smaller the MS value, the greater the muscle activity responsible for movement in the hip joints compared to the activity of the muscles responsible for the movements of the ankle joints (Nashner 1976; Nashner 1993a, 1993b, 1993c, Interna NeuroCom 2008a, 2008b).

Result of the analysis of the position of the countervailing center of body gravity (COG AS) of the person examined is presented for each sample using two values expressed in angle degrees CAX and CAY. The former of these is the angle of deviation of center of body gravity from the equilibrium position in the frontal plane and the other one in the sagittal plane. They are calculated on the basis of measurements of the angle of deviation from the center of body gravity from

the equilibrium position recorded during the 20s during each test. A positive value of the angle corresponds to the deviation of the center of gravity toward the right and to the front, and a negative value to the left and to the back relative to the equilibrium position (Nashner 1976; Nashner 1993a, 1993b, 1993c, NeuroCom Interna 2008a, 2008b).

Motor control test

In the motor control test (MCT) tensometric plates are moved by cylinders within the platform in a horizontal plane posturograph. This movement is independent from the variations of the person's center of gravity. Aperture constituting the visual environment is stationary. MCT test is carried out in six motion variants of tensometric plates conditions: weak translation (SFT), weak retrograde motion (SBT), average translation (MFT), average retrograde motion (MBT), strong translation (LFT), strong retrograde motion (LBT). Moving the tensometric plates causes deviation of the center of gravity of the body. The direction of such a deviation is opposite to the direction of the plates' movement. Movement of the plates is therefore a destabilizing stimulus. Range of shifts of these plates is chosen to match the height of the tested person. This is to serve giving the center of gravity of the body the same angular velocity for people of different heights. This causes postural response, which is assessed within the test. Within the test of motor control – MCT the following aspects are analyzed: symmetry of distribution of the body weight (WS), response latency (L), the amplitude of response (A), symmetry of responses (AS) (Nashner 1976; Nashner 1993a, 1993b, 1993c, NeuroCom Interna 2008a, 2008b).

Result of the analysis of the symmetry of body weight distribution (WS) provides a quantitative assessment of the load of both lower limbs. In the case of symmetrical loading of the lower extremities the value RF + RR is equal to the value LF + LR. Result of the analysis of the symmetry of load distribution achieves at that point a value of 100 score points. Result greater than 100 indicates a higher load of the right limb, and a result less than 100-of the left one (Nashner 1976; Nashner 1993a, 1993b, 1993c, NeuroCom Interna 2008a, 2008b).

Result of the analysis of response latency (L) allows to mark the time that elapses between the beginning of the moving of tensometric plates and the beginning of postural responses in milliseconds. Latency response is established, accordingly for the left and right limb (Nashner 1976; Nashner 1993a, 1993b, 1993c, 2008a Interna NeuroCom, 2008b):

- A weak translation movement of the tensometric plates (LLSFT, LRSFT);
- An average translation movement of the tensometric plates (LLMFT, LRMFT);
- A large translation movement of the tensometric plates (LLLFT, LRLFT);
- A weak retrograde movement of the tensometric plates (LLSBT, LRSBT);
- An average retrograde movement of the tensometric plates (LLMBT, LRMBT);
- A large retrograde movement of the tensometric plates (LLLBT, LRLBT).

On the basis of these values, the computer system calculates the cumulative result of the analysis of postural response latency (LC) (Nashner 1976; Nashner 1993a, 1993b, 1993c, 2008a NeuroCom Internal Medicine, 2008b).

Result of the analysis of amplitude of responses (A) allows to evaluate the effect of postural responses expressed in °/s. Amplitude of response is determined appropriately for the left and right limb (Nashner 1976; Nashner 1993a, 1993b, 1993c, 2008a Interna NeuroCom, 2008b):

- A weak translation movement of the tensometric plates (ALSFT, ARSFT);
- An average translation movement of the tensometric plates (ALMFT, ARMFT);
- A large translation movement of the tensometric plates (ALLFT, ARLFT);
- A weak retrograde movement of the tensometric plates (ALSBT, ARSBT);
- An average retrograde movement of the tensometric plates (ALMBT, ARMBT);
- A large retrograde movement of the tensometric plates (ALLBT, ARLBT).

Result of the analysis of the symmetry responses (AS) provides a quantitative assessment of the amplitude of the response of the left lower limb with respect to the amplitude of the response of the right lower limb. The result of symmetry of the response equal to 100 means equal values of amplitudes of responses of both lower limbs. Score greater than 100 indicates a greater amplitude of response of the right limb, and score of less than 100- of the left lower limb (Nashner 1976; Nashner 1993a, 1993b, 1993c, NeuroCom Interna 2008a, 2008b).

Test of adaptation

In the test of adaptation (ADT) the tensometric plates are deflected from the horizontal plane by the actuators in the platform of posturograph, regardless of the variations of gravity of the body. The aperture constituting the visual environment is stationary. The angular velocity of movement of the plates is 20 ° / s. Movement of the plates causes a change in the angle of the placement of the ankle by 8° within the time of 400 ms (Nashner 1976; Nashner 1993a, 1993b, 1993c, NeuroCom Interna 2008a, 2008b).

The test consists of two series. In each of these, five tests are performed. In one series the orientation change of tensometric plates causes flexion in the ankle (ATU). In the second series, the orientation change of tensometric plates causes straightening of the ankle (ATD). Stretch reflex triggered within the first trial of both series increases muscle tension and stiffness of the ankle. When tensometric plates deflect from the horizontal plane, it increases

the deviation of the center of body gravity from the equilibrium position. In the subsequent four attempts complex adaptive mechanisms should lead to a reduction in the amplitude of muscles cramps which act destabilizing and are a result of tensile-induced reflex (Nashner 1976; Nashner 1993a, 1993b, 1993c, NeuroCom Interna 2008a, 2008b).

In the test of adaptation a sway energy is determined (SE) after each deflection of the tensometric plates. It allows for a quantitative assessment of the size of the deviation of center of gravity of the body at the time of its return to the equilibrium position (Nashner 1976; Nashner 1993a, 1993b, 1993c, NeuroCom Interna 2008a, 2008b).

Sway energy (SE) is therefore the weighted sum of mean square of velocity and acceleration of movement of the point of application of the vertical component of the impact of both feet (that is resultant of vertical components of the impact forces of both feet) onto tensometric plates in the anterior-posterior direction in the time of 2s return of center of gravity of a examined person's body to the position of equilibrium after a sudden deflection of tensometric plates. Sway energy (SE) is a dimensionless parameter and takes values from 0 to 200. Its value may be greater, with an increase of the deviation of the center of gravity of the body at the time of return to the equilibrium position, and thus, with an increase of the imbalance in the body caused by deviation of the tensometric plates (Nashner 1976; Nashner 1993a, 1993b, 1993c, NeuroCom Interna 2008a, 2008b).

Summary

Computer dynamic posturography is a modern and superior method of assessing the functional lateralization. Supplemented with older research tests it gives a lot of knowledge about not only the preferences of the body, but also about an objective and quantitative diagnostic method of balance system disorders of the human body.

Determining the factors associated with worse functioning of the body balance system in young people without clinical symptoms on the part of the system is important in the prevention of falls and their complications in the elderly age. This allows for the timely implementation of preventive measures in patients burdened with these factors. Prevention may involve modification of a given factor (diet, sleep, physical activity). In the case of factor which are not subject to modification (ie. heterogeneous forms of functional lateralization) preventing additional illnesses which disrupt the work of the already worse functioning balance system becomes increasingly important.

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STATE OF KNOWLEDGE (CONCERNING THE ALCOHOL DEPENDENCE) OF THE PATIENTS UNDERGOING A THERAPY IN THE DEPARTMENT OF TWENTY-FOUR-HOUR ADDICTION TREATMENT IN ŁUKÓW

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Summary: The aim of research was to determine the effects of therapy and its influence on the way people addicted to alcohol perceive alcoholism. This work contains the basic knowledge concerning the core of alcoholism, its stages and symptoms of addiction. There are also characteristic features of addicted person which resulted from the analysis of defense mechanisms supporting alcoholism. The research was carried out from November 2012 to January 2013 in the Department of Twenty-four-hour Addiction Treatment in Independent Public Health Care Institution in Łuków. The study comprised of 50 patients who were in the final stage of therapy (seventh week of therapy). The research tool was the interview questionnaire, prepared by the researchers, which consisted of questions concerning demographic-social data of patients, their knowledge, concerning dependence syndrome, and the level of preparedness for living with disease after the end of therapy.
The research showed that men participated in the therapy four times more often than women. Half of the investigated patients completed only the primary education and had a status of an unemployed person. Basing on the conversations with patients, it was proved that the main reason for participation in the therapy was the desire to overcome their addiction. It has been stated that after 7 weeks of therapy more than ½ of patients gained knowledge concerning alcoholism and evaluated their own knowledge as sufficient. Thanks to the therapy, patients gained knowledge concerning the destructive influence of alcohol on the functioning of family. More than ½ of patients claimed that they are able to use assertive behaviours and prevent the recurrence of disease. According to patients, the instructor of therapy plays an important role in shaping some necessary skills at "building" a sober life.

Keywords: alcohol dependence, patients' knowledge, treatment

Introduction

Alcoholism is a process characterized by dysfunctions of the body, the addicts drink pathologically, bringing themselves to the state of intoxication, although it harms them in physical, mental, and emotional way, it destroys their abilities to work, earn money, and it disturbs the relations with family and society. According to the literature, it is "any use of alcoholic beverages which causes damage to the imbiber and society" (Woronowicz 2009). According to WHO, alcohol dependence syndrome is: " mental and sometimes physical state, caused by the interaction of a life form with a chemical substance, characterized by specific reactions which include a compulsion to take this substance in continuous or periodic way in order to experience the mental effects or to avoid some inconveniences resulting from the lack of this substance." (Mellibruda, Sobolewska 2006). On the basis of the available epidemiological data, it has been stated that there are 20 million of alcohol addicts in Poland, and more than 2-4 million of them suffer from alcoholism in various stages of this disease (Cierpiałkowska, Ziarko 2012).

According to Sztander, drinking alcohol and alcohol abuse lead to problems with work (absence, decline of productivity, accident rate, unemployment), lawbreaking (crime, violence, drunk drivers), problems with health, increased costs of health care and family/social problems (Sztander 2006).

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Jellinek distinguishes 4 stages of alcoholism (Woronowicz 2009). The first one, "pre-alcoholic", a symptomatic one, consists in drinking alcohol in order to feel relief, it is manifested by the increased tolerance towards alcohol. The second one - the prodromal stage - is characterized by lapses of memory (palimpsests), secret drinking, greediness, looking for and creating an occasion to drink. The third one, the crucial stage, is the loss of control over drinking, alcohol craving, guilty conscience, drinking alcohol in the morning, and problems with health and family. The last one is the chronic stage. It consists in drinking for many days, problems with all spheres of life, or even alcoholic psychosis. (Woronowicz 2009; Mellibruda, Sobolewska 2006).

Alcohol dependence syndrome consists of at least 3 out of 8 symptoms, i.e. strong and obsessive need for drinking alcohol, compromised ability to control drinking, drinking alcohol in order to mitigate the effects of alcohol withdrawal syndrome, alcohol withdrawal symptoms (muscle trembling, hypertension, tachycardia, sickness, vomit, diarrhea, insomnia, mydriasis, drying of mucosa, excessive sweating, sleep disorder, sensitive or depressed mood, anxiety), different tolerance towards alcohol, narrowing the range of behaviors concerning alcohol drinking to 1-2 modules, progressing neglect of alcohol drinking alternatives, drinking alcohol despite the awareness of its harmfulness (Sztander 2006; Woronowicz 2009; Cierpiałkowska, Ziarko 2012).

According to the researchers, alcohol dependence syndrome may also manifest itself in: alcoholic palimpsets (repeating epizodes of moments before someone passed out, breaks in their lives), attempts to control drinking (limiting drinking time and types of alcoholic beverages, freewill decision on periodic alcohol withdrawal in order to drink without any concern in the future), series of drinking (keeping a daylong intoxication over the period of two days or more), alcohol relapse after the periods of abstinence, denying the addiction, intensified fear, panic attacks for no reason, alcoholic psychoses, suicide attempts, self-mutilation (Cierpiałkowska, Ziarko 2012; Romaniuk 2009).

The National Institute on Alcohol Abuse and Alcoholism defines alcoholism as a chronic, progressive and potentially fatal disease which may lead to death caused by indirect or direct alcoholic intoxication, but in the process of addiction, even after the treatment, there may appear the recurrances which are increasing problems in sobering up and lead to the chronic use (Woronowicz 2008, Woydyłło 2003; Wojnar, Ślufarska, Lipiński 2007).

It is assumed in the addiction treatment that an alcoholic is a person who has shown symptoms of alcohol dependence because alcoholism disturbs functioning of the four spheres: physical (alcohol withdrawal syndrome, seizure, delirium, alcoholic psychoses, different tolerance, post alcoholic hepatisis, pancreatitis, alcoholic polyneuropathy, brain degeneration), mental (emotional difficulties, anger, upsetting emotional states, depression, suicide attempts), social (using violence, absence at work, conflicts with the law, conflicts with the family, failures in social contacts), spiritual (values deprivation, undermining of the faith, low self-esteem, feeling of alienation and isolation from the outside world) (Sztander 2006; Cichoż-Lach, Grzyb, Celiński 2008).

In the case of majority of healthy people, specific mechanisms and abilities, which make the human "ego" defend itself against the loss of strength, respect and values, play an important role in the process of dependence (Sztander 2006; Kostowski 2006). In the case of addicts, these are the mechanisms of alcoholism, e.g. the mechanism of compulsive regulation of emotions, mechanism of illusions and negations, mechanism of confused "ego". Those mechanisms make the alcoholic helpless towards the process of self-destruction; they disorganize his/her life, make it impossible to stop drinking and fight alcoholism (Sztander 2006; Kostowski 2006).

The mechanism of compulsive regulation of emotions, described in the literature, consists in alcohol abuse because alcohol regulates emotions, gives pleasure and relief, mitigates pain, and permanent alcohol abuse causes upsetting emotional states that provoke another desire to drink (Mellibruda, Sobolewska 2006). This state causes vicious circle of the mechanism of compulsive regulation of emotions because as the dependence is developing, man loses contact with the real world, perceives the environment as upsetting and glowering, isolates himself and spends all his time within the circle of his drinking friends. It is very painful for the alcoholic to realize his/her own isolation, but it is not enough to make some change. It rather encourages to have another drinking episode.

The mechanism of illusion and negation is connected to the cognitive processing and includes the perceptive and thinking processes. An addict denies the problems with drinking, According to Sztander and other authors: "system of illusion and negation makes it impossible for the addict to recognize the alcoholism", but the alcoholic sees nothing worrying about his drinking and believes he drinks just like everyone, justifies and mediates each drinking, blames others for his problems with alcohol, has some unrealistic plans and dreams concerning his own life. The mechanism of confused "ego" is also the mechanism of alcoholism development. It consists in breaking the coherence and integration of human "ego", and drinking for a long period of time makes the alcoholic's thinking about himself and his own self-esteem dependent on the fact if he is under the influence of alcohol or not (Sztander 2006; Mellibruda, Sobolewska 2006).

Mechanisms of alcoholism, described in the literature, create an internal, destructive "programming" that manipulates the way the addict functions. Therefore, in order to stop the internal process of dependence, it is necessary to treat the addict and it is necessary for the addict to participate in an intense addiction psychotherapy (Mellibruda, Sobolewska 2006).

According to the researchers, most of the alcoholics have some inner sources of stress that direct the way the addicts function, e.g. destructive forms of contact with oneself, low self-esteem, negative vision of oneself and one's own life, putting oneself down, suicidal thoughts and tendencies, consolidated sense of shame, guilt, and harm, destructive scheme of human relations (aggressiveness and conflictuality), readiness for withdrawal and isolation, suspiciousness and lack of trust, antisocial attitude, breakdown of value system, no constructive vision of life, doubts, nihilism, "spiritual emptiness", negative attitude towards norms and values, lack of faith in positive values and possibility to realize them, manipulating the destructive visions of one's own life (Rachowska 2007).

The modern attitude towards alcoholism treatment started in the 1950s and is connected to American experiments. In Poland, the alcohol issue started to be dealt with in the 1980s when some help for people suffering from alcoholism started to be organized. However, there was no consistent and effective treatment concept (Fudała 2008, 2007; Sobolewska 2001; Sagadyn 2007). The present model of alcoholism therapy was created by Jerzy Mellibruda, who claimed that families of alcoholics also need help. He initiated the program for the codependent people and Adult Children of Alcoholics (ACA). Professional models of therapy and modern centres of alcoholism treatment have been created in Poland since 1986 (Mellibruda, Sobolewska 2006).

According to the researchers, the aim of help given to the addicted patients is to increase the abilities of keeping abstinence, increase the abilities to solve personal problems, increase the abilities to have a health and constructive lifestyle, remove physical and mental disorders, remove disturbances in the family life caused by the alcohol abuse (Mellibruda, Sobolewska 2006; Bobas 2008).

According to the researchers, organization of the treatment process depends on the therapy in a particular treatment centre and individual needs of a patient. The aim of therapy is to give patients some skills and knowledge needed to maintain well-being and lead satisfactory life without alcohol. The attention is also drawn to the fact that effectiveness of treatment is evaluated through the duration of abstinence, physical and mental health state, family and vocational functioning, material stability, and spiritual development. The patient, in the course of this therapy, should participate in psycheducational groups and tasks groups, activities developing the spiritual aspects of life, AA meetings, sport and integration activities, self-supporting groups. The patient should also work individually, under the supervision of therapist - the instructor of therapy (Wnuk 2007; Sobolewska 2001; Szpak 2006). Due to the fact that addiction causes social isolation and problems with environment, group work is an important element of the therapy. It helps the alcoholic shape the sense of togetherness with others (Sagadyn 2007).

According to the literature, in the period of treatment, therapist - the instructor of the therapy, becomes the most important person for the alcoholic. The therapist provides the patient with information, supports and encourages to persevere in the therapy and sobriety (Fudała 2007; Woronowicz 2009; Lock, Kaner, Lamont et al. 2002).

According to the researchers, the family members are also involved in the alcoholic problems, they are codependent. In the literature, the codependency is defined as the way of reacting towards a very stressful situation of living with alcoholic who causes the progressing involvement in this situation (Woronowicz 2008, 2009). In researchers' view, work with the family bases on therapist's meetings with the family members, who usually know nothing about alcoholism and recovery process. Therefore, it is crucial to give information about the core of the disease, methods of treatment and patient's role in recovery (Szpak 2006; Mellibruda , Sobolewska 2006; Sieczkowska 2001).

Helping the family cope with the disease of one of the family members is an essential element of the modern addition treatment, equally important as treatment of the alcoholic (Sztander 2006; Woronowicz 2008, 2009).

When educating the alcoholic, it is important to make him refer the information to himself and his own life. The aim of this education is to develop skills important for leading the sober life, e.g. interpersonal skills, skills of preventing the recurrence of disease. According to various authors, micro-learning is a method particularly advised during the first stage of treatment. It bases on providing patients with information concerning their problems (Mellibruda, Sobolewska 2006; Sobolewska 2001).

The role and tasks of a nurse working in the addictions department result from her therapeutic function, daily schedule, and individual therapy program. The nurse takes care of patients, helps them in emergency situations and she is the instructor of the addiction therapy (Szpak 2006). Her main tasks are: making contact with patient, gaining information about patient's health, admitting patients, diagnosing patient's problems, planning the therapy, providing mental help and monitoring the process of therapy and healing. The nurse is obliged to make intervention in case of emotional, social or physical crisis of the patient. According to the researchers, the roles of nurse are also education, keeping records, assessment of the course and effects of therapy, consultations, referring patients to other specialists and institutions, adopting and developing the therapeutic procedures, and cooperating with the self-help groups (Szpak 2006).

Aim of research

The aim of research was to determine the effects of therapy and its influence on the way the addicts perceive alcoholism.

Material and methods

The study comprised 50 patients who were in the final stage of therapy (seventh week of therapy). Before the interview, there was a conversation in which the aim of research and technique of filling the questionnaire were explained. Patients were informed about the anonymity of research. The interviews were carried out with each patient individually in the patient's free time. The research was done from November 2012 to January 2013 in the Department of Twenty-four-hour Addiction Treatment in Independent Public Health Care Institution in Łuków.

Model of therapy used in Łuków is called the strategic-structural addiction psychotherapy which assumes that any disorder connected to the addiction concerns the person and his/her environment, and the main problems of alcoholic are: body injuries, somatic and mental diseases, destructive life orientation, deficit of skills, situational-environmental conditions of stress, personal problems. The department admits persons addicted to alcohol and/or other chemical substances, gambling, on the basis of referral or decision of court. The persons are admitted on condition that they keep abstinence. The patient's stay in the department lasts 7 weeks. During those 7 weeks the patient follows the Basic Program of Addiction Psychotherapy, and when the patient completes the program, he may participate in the follow-up program, i.e. various forms of therapeutic activities which aim is to deepen the knowledge, learn how to keep the effects of therapy and effectively prevent the recurrence of disease.

Methods of therapy are: Personal Plan of Therapy, group therapy, individual therapeutic meetings, education of patient/family, advice on the spiritual life, sport activities, behavioral techniques, relaxation, AA meetings.

The research uses the questionnaire prepared by the researchers. The questionnaire consisted of 29 questions and included questions which determined demographic-social data of patients, their knowledge, concerning alcoholism, and their ability to function without alcohol after the end of therapy.

Overview of research results

50 patients took part in the research, 80% of men and 20% of women. Each patient belonged to 1 of the 5 age groups, i.e. 18-25 years old, 26-35 years old, 36-45 years old, 46-55 years old, and 56-65 years old. The biggest ones were the 26-35 and 46-55 age groups. 20% of all the patients were in the 56-65 age group, and the lowest interest of patients were in the first and third age group (10% for each group).

40% of patients completed the vocational education. 30% of patients completed the secondary education. Only 20% of all the patients completed the higher education, and five persons completed only the primary education (figure 1).

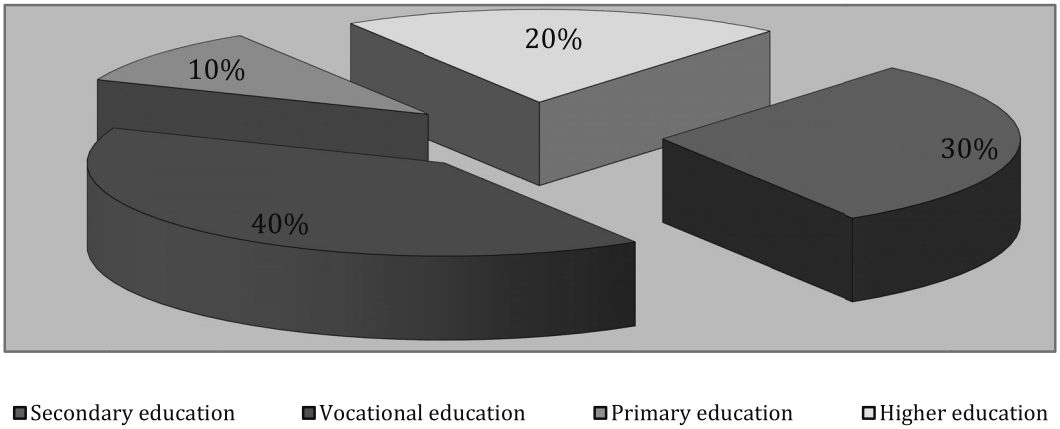

Figure 1. Level of education

A half of the patients (50%) was registered as unemployed, only 30% of patients had a full-time job, and 10% got pension or made a living by working in agriculture. Casual work was the main source of income for another 10% of patients (figure 2).

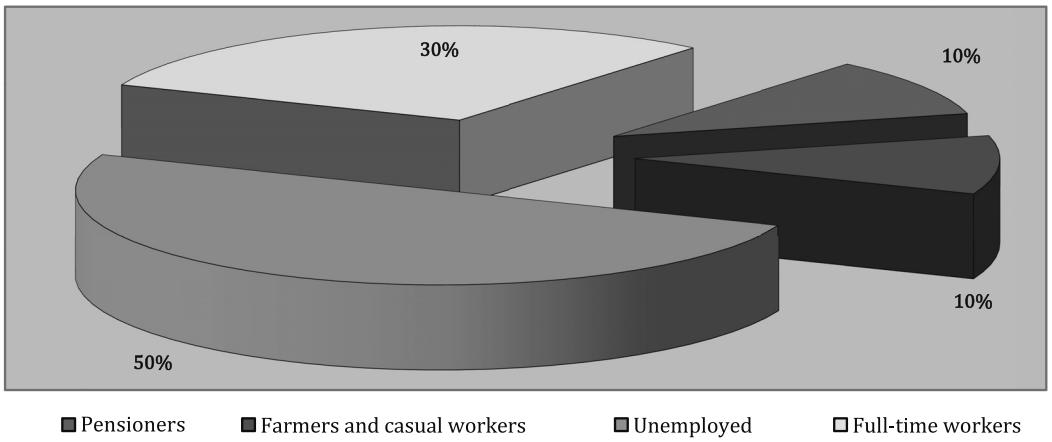

Figure 2. Source of upkeep

60% of patients were living in village - 30 persons in general. The remaining 40% of patients were living in city.

The results showed that 50% of patients were married. 30% of patients were maidens or bachelors. 16% of patients were divorced and 2 patients (4%) were widow or widower. 35 patients had children and 15 patients (30%) were childless.

A desire to overcome the addiction is the most motivating factor that makes the patients participate in the therapy. That was the answer given by half of the patients (50%). 10 patients (20%) participated in the therapy because they wanted to regain their families. Another 20% of patients participated in the therapy because of their health and 5 patients (10%) were in the department of addiction treatment on the basis of the decision of court (figure 3).

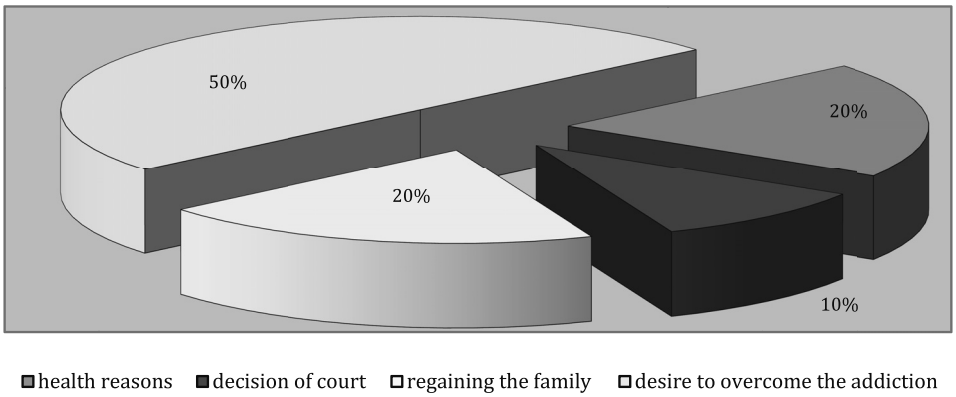

Figure 3. Reasons for the treatment in the addiction department

For the majority of patients (86%) it was the first stay in the addiction department. For 10 patients (20%) it was the second stay, and 6 patients (12%) participated in the therapy for the third time.

During the seven-week period of stay in the addiction department, 35 patients (70%) found out about the core and symptoms of alcoholism. Patients from this group evaluated their own knowledge as sufficient. Only 20% of patients answered that they still have some basic information about alcoholism, and 10% of patients answered that they already know a lot about it.

Nobody answered "I don't know anything about the mechanism of compulsive regulation of emotions" to the question about the knowledge of psychological mechanisms that would keep the dependence. 10% of patients knew very little about it, 40% of patients had some basic knowledge about it, 30% of patients had a sufficient knowledge, and 10 patients (20%) knew a lot.

It has been proved that the mechanism of illusion and negation was known to all of the patients, but 10 patients (20%) knew very little about it. 40% of patients had some basic knowledge about it. The same number of patients (20 % for each answer) answered that they know enough and they know a lot.

4% of patients, asked about the mechanism of confused "ego", answered that they do not know anything about it. Over ten times more patients (56%) had some basic knowledge about it. The numbers of patients who evaluated their knowledge about it as sufficient (16%), very little (12%) and extensive (12%) is similar.

To the question about the knowledge of the 12 steps of Alcoholics Anonymous and philosophy of the AA movement half of the patients (50%) answered that they have sufficient knowledge about it, and 20% gained some basic information thanks to the therapy. 22% of patients knew a lot and only 8% of patients still knew nothing despite the therapy and education.

The patients were also asked about their knowledge of their spirituality. 44% of patients evaluated their knowledge as basic and 40% as sufficient. Only 7 patients (14%) answered that they know a lot and 1 patients (2%) claimed that he/she still knows very little about it.

It has been stated that 30% of patients admitted their awareness of negative influence of drinking on their families at a basic level. More than a half of patients (56%) evaluated their awareness and knowledge as sufficient. Only 7 patients (14%) knew a lot about it, but none of the patients answered "I know very little about it" (figure 4).

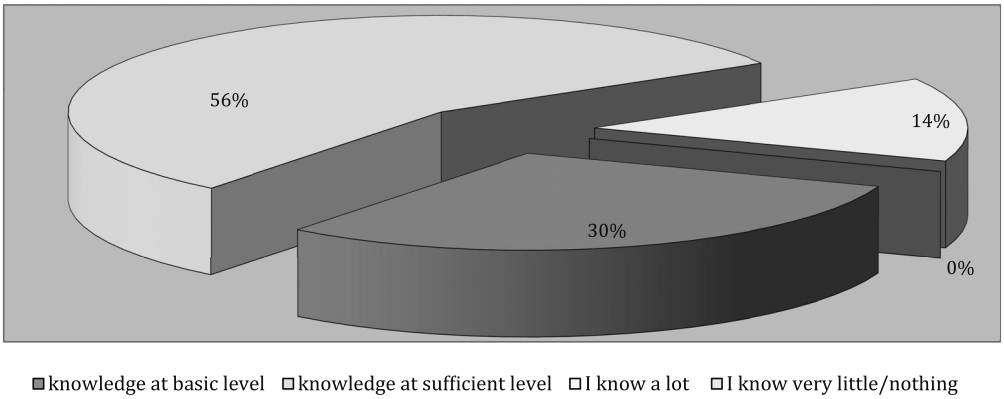

Figure 4. Self-evaluation of knowledge concerning the negative influence of alcohol on the family

More than a half of the patients (62%) evaluated their knowledge about the recurrence of disease as sufficient. There were 31 patients in general. More than ¼ of patients (32%) had some basic knowledge about it. Only 5 patients (10%) evaluated their knowledge as very good. None of the patients answered "I know very little".

All the patients answered that have some information about the alcohol craving. 3 patients (6%) evaluated their knowledge as very little and 15 patients (30%) had some basic knowledge about it. More than a half of patients (52%) evaluated their knowledge as sufficient and only 6 patients (12%) claimed that they know a lot about it.

All the patients were asked about the knowledge of rules of healthy eating. More than a half of patients (50%) claimed that they know these rules very well. 40% of patients evaluated their knowledge as sufficient, and 10% as basic. 74% of patients evaluated their knowledge of further treatment rules as sufficient, but 74% of patients claimed that thay have only basic knowledge about it. Only 10% of patients foud out a lot about it during the therapy, but 6% of patients knew very little about it despite the treatment and therapy.

80% of patients finishing the therapy claimed that they are able to control their emotions properly. Only 10% of patients claimed that they learned how to recognize the emotions and cope with them in a constructive way, but 6% of patients knew very little about it. Only 4% of patients evaluated their abilities as very good (figure 5).

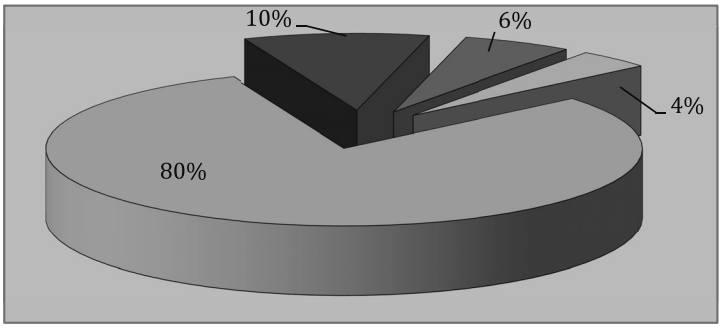

Figure 5. Abilities to cope with negative emotions in stressful situations

With regards to the question concerning the ability to use relaxation techniques 8% of patients answered that they cannot do it, and 20% had some abilities at very low level. 11 patients (22%) claimed that the relaxation was easy to do. 38% of patients mastered the relaxation techniques and 12% of patients claimed that they can do it very well.

All the patients were asked about the problem solving skill. 24% of patients knew very little, 19 patients (38%) knew how to solve the problems and mastered this skill. 34% of patients thought they know how to solve the problems and only 2 patients (4%) claimed that they always know how to solve them.

Only 3 patients (6%) did not know how to take care of their own health and lead a healthy life. 10 % of patients thought they know how to do it. 36 patients (72%) knew how to take care of their own health, and 12% claimed that they take care of their own health and lead a healthy life.

On the question concerning the assertive behavior and refusing alcohol most of the patients (62%) answered that they learned that skill, and 30% of patients claimed that they can refuse alcohol, and only 4 patients (8%) claimed that can move very well within the area of such behaviors.

10% of patients had low skills of building close relations with others. Almost half of the patients (40%) thought that they can be close to others, but the same number of patients (40%) had this skill. Only 4% of patients evaluated their skills very high, but 6% of patients admitted that they are not able to be in close relations with other people.

On the question concerning the recurrence of disease 2 patients (4%) answered that they cannot prevent the recurrence. A little bit more than a half of patients (58%) admitted that they thought they can recognize the triggers and warning signals of disease. Almost a half of patients (44%) learned those skills. Only 10% of patients had low skills and 6% of patients answered that they can prevent the recurrences very well (figure 6).

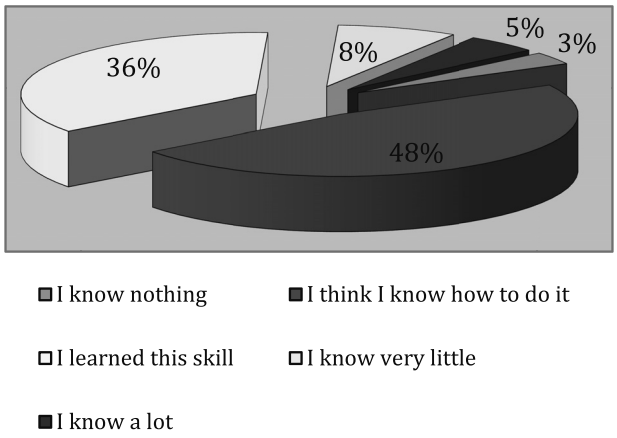

Figure 6. Self-evaluation of skills concerning the prevention of the disease recurrence

All the patients were asked to answer 2 open questions concerning the way they evaluate the influence of therapy on their readiness to cope with alcoholism. Patients also evaluated the work of the nurse. All of them answered that they gained the knowledge necessary to cope with alcoholism after the end of therapy, and educational activities helped them get ready for the sobering process. All the patients answered that the nurse-instructor of the therapy plays an important role in learning the necessary skills of "building" the sober life.

Discussion

Alcohol dependence causes a decline in quality of life in terms of economic and social aspects (Cierpiałkowska, Ziarko 2012; Fudała 2008, 2007; Bobas 2008). The research showed that 50% of patients were unemployed and 10% of patients were casual workers. This situation was probably connected to their alcohol dependence. It has been proved that 6% of patients could not remain in close relations with other people, and 10% could not even establish such relations. I has been stated, basing on the literature, that abstinence of the patient is not enough to make a full recovery, and according to some researchers, it is possible that participants of the therapy do not always overcome the addiction after the end of therapy. According to the Association of Alcoholics Anonymous, abstinence should be understood as an essential factor, but it is not enough to improve the physical, mental, spiritual, and social functioning of patient after the end of therapy (Woronowicz 2008; Mellibruda, Sobolewska 2006). The research showed that 62% of patients claimed that they are able to refuse alcohol after the end of therapy, whereas 20% of patients claimed that their main reason for therapy was a desire to stay healthy.

The researchers state that sense of self-efficacy, optimism, acceptance of dependence as disease, and anxiety are crucial for keeping the abstinence. 70% of patients got sufficient knowledge about the symptoms of alcoholism and mechanisms of dependence, but 20% of patients still had some basic information about it.

According to Wnuk, involvement in the Association of Alcoholics Anonymous helps its members find the meaning of life (Wnuk 2007), and thanks to participation in the therapy, the patients learn how to find the meaning of life, learn how to overcome all problems, obstacles and difficulties resulting from the recovery process. 52% of patients had enough information about the alcohol craving, and 62% of patients defined their level of knowledge about the recurrences of disease as sufficient. 38% of patients were able to solve their problems thanks to the therapy, although 24% of patients could still do very little about it. Thanks to the therapy, 38% of patients learned the relaxation techniques which were to help them cope with problems. 12% of patients evaluated their knowledge of relaxation techniques as very good.

The literature mentions that participation in the therapy helps them satisfy their needs for safety, belonging, identification, self-respect, support, and treatment (Woronowicz 2008; Fudała 2007; Trzebiatowski 2010). The research showed that, for 50% of patients, the main reason for participation in the therapy was the desire to overcome the addiction, whereas 20% of patients participated in the therapy due to desire to regain family, which supports them and provides the feeling of safety in difficult and dangerous situations.

The development of religious and spiritual sphere is the key element of the Alcoholics Anonymous philosophy and the Twelve-step Program. Additionally, the philosophy of Alcoholics Anonymous puts emphasis on the spiritual development of patient, basing on the three main aspects: approach to oneself, "Force Majeure", and other people and the world. The research confirms that identifying with Alcoholics Anonymous helps in gaining the spiritual experience and feeling the presence of God, joy, strength, peace, and balance. (Wnuk 2007). Numbers of patients who had basic (44%) and sufficient (40%) knowledge about their own spirituality were similar. Furthermore, the religious and spiritual development is one of the most important reasons for participation in the therapy and the experience of religious repentance causes the change of behavior, increases the control over one's own life, changes the attitude towards other people (family and friends) in a positive way, increases the self-contentment and acceptance of one's own life after the end of therapy (Sztander 2006).

Mellibruda (Mellibruda, Sobolewska 2006) divides the sobering process on the dynamic stages. First of all, it is cleansing the body of alcohol thanks to the sobriety understood as learning to live a good life without alcohol. According to Mellibruda and others (Mellibruda, Sobolewska 2006; Trzebiatowski 2010) the sobering process finishes with establishing the proper and sober life attitude. The number of patients who participated in the therapy for the third time (12%) was smaller than the number of patients who did it for the first time (86%). This result may be connected to the positive effect of therapy and skills learned by the patients in terms of refusing alcohol and knowledge of mechanisms keeping the dependence (Wnuk 2007).

Conclusions

The following conclusions have been drawn from the conducted research:

1. The number of men participating in the therapy was 4 times bigger than the number of women.
2. Almost half of the patients completed the lowest, primary education and had a status of unemployed person.
3. The main reason for participation in the therapy was a desire to overcome the addiction.
4. More than ½ of the patients, during the seven weeks of therapy, gained information about alcoholism and evaluated their knowledge about it as sufficient.
5. The therapy helped the patients gain knowledge about the destructive influence of alcohol on the functioning of the family.
6. More than ½ of patients claimed that they are able to use the assertive behaviors in their lives and know how to prevent the recurrence of disease.
7. A nurse -instructor of the therapy plays very important role in learning necessary skills of "building" the sober life.

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THE LEVEL OF KNOWLEDGE OF STUDENTS OF THE MEDICAL UNIVERSITY ABOUT CARDIOVASCULAR DISEASE PREVENTION

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Summary: The most effective and the cheapest method of cardiovascular disease prevention is changing lifestyle. Cardiovascular disease is caused by many factors. They include: a diet rich in saturated fat and cholesterol, smoking, a sedentary lifestyle, physical inactivity, overweight and obesity.

The aim of the research was to assess the level of knowledge of the students of the Medical University about cardiovascular disease prevention.

Material and methods: Research was conducted on 200 students of the Medical University of Lublin, residing in the Student House No. 4 in Lublin.

Self-authorship questionnaires were used to assess the level of knowledge of the students of the Medical University about cardiovascular disease prevention.

Research results: The students of the Medical University have broad knowledge about the influence of physical activity, diet, cigarettes and alcohol use on cardiovascular disease prevention. 90.5 percent of the respondents know that smoking greatly increases the risk of cardiovascular disease. More than a half of the students are aware that excessive alcohol consumption has a negative impact on the cardiovascular system. 38.67 percent of the respondents recognize moderate alcohol consumption as protective for cardiovascular disease. The remaining 3.13 percent of the students have no knowledge about this issue.

Almost half of the respondents (45 percent) is aware that psychosocial factors have an impact on the cardiovascular system. 86.5 percent of the students believe that there is a correlation between cardiovascular disease and factors such as: low socioeconomic status, social isolation, stress, negative emotions, depression. The remaining 13.5 percent of the respondents have incomplete knowledge about this issue. Almost the half of the respondents knows that type A personality increases the risk of cardiovascular disease, whereas the remaining 52 percent of the students have incomplete knowledge about this issue.

Keywords: prevention, cardiovascular disease

Introduction

Cardiovascular disease is one of the main causes of death among men and women. It is the most common reason for hospitalization and chronic inability to work. Cardiovascular disease refers to many serious diseases affecting the cardiovascular system, such as: atherosclerosis, lipid disorders, coronary artery disease, angina pectoris, high blood pressure and heart attack. Cardiovascular disease is caused by many factors including a diet rich in saturated fat and cholesterol, smoking and a sedentary lifestyle which means physical inactivity. (Łobaz-Grudzień et al., 2010). Overweight and obesity may also lead to problems with the cardiovascular system. In the higher risk group for developing cardiovascular disease there are people in whose families there were cases of such disease before and people with metabolic syndrome. The likelihood of disease increases with taking birth control pills and psychosocial factors such as low socioeconomic status, stress at work and home, social isolation, lack of social support, negative emotions (Carowicz, Krzemińska 2010, Pająk 2002).

Cardiovascular disease leads to family, social and economic consequences because of the health problems of people in the productive age. Health education is very important in cardiovascular disease protection. Introducing many protection programs raises awareness and decreases the risk of cardiovascular disease (Cybulska et al., 2008).

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Tables: 7 **Figures**: 6 **References:** 10 **Full-text PDF** www.hpc.edu.pl **Indexation:** Index Copernicus, Database AGRO, ProQuest, Polish Ministry of Science and Higher Education.

Material and methods: Research was conducted on 200 students of the Medical University of Lublin, residing in the Student House No. 4 in Lublin, studying Pharmacy (24.5 percent), Medicine (28.5 percent), Nursing (25.5 percent) and Public Health (21.5 percent). Research was conducted between 15 and 25 March 2013. Following factors were taken into account while describing the research group: gender, age, faculty and the year of studies. Research was conducted on 163 women (81.5 percent) and 37 men (18.5 percent). 28 percent of the respondents were between 19 and 20 years of age, 33.5 percent between 21 and 22, and 38.5 percent between 22 and 30.

A self-authorship questionnaire containing 31 questions was used to assess the level of knowledge of the students of the Medical University about cardiovascular disease prevention. The research results were statistically analyzed using χ^2 Pearson's chi-squared test. Statistical significance of $p>0.05$ was used, showing the existence of significant differences and relationships. The arithmetic mean was used to show the average level of knowledge. The calculations were made using STATISTICA 10 software (Stat Soft, Poland).

The research results

The level of knowledge of the students of the Medical University about physical activity in cardiovascular disease prevention is shown in Table 1.

Table 1. The level of knowledge of the students about physical activity in cardiovascular disease prevention taking into account their gender, faculty and the year of studies

Independent variable			The level of knowledge				χ^2 Test
			No	Low	Medium	High	
Faculty	Medicine	N	1	0	11	45	χ^2 =36.63586 p=0.00143
		%	1.75%	0.00%	19.30%	78.95%	
	Pharmacy	N	0	1	16	32	
		%	0.00%	2.04%	32.65%	65.31%	
	Nursing	N	0	2	24	25	
		%	0.0	4.0%	47.0%	49.0	
	PublicHealth	N	0	0	17	26	
		%	0.00%	0.00%	39.53%	60.47%	
Year of studies	I	N	0	2	19	30	χ^2 =21.15653 p=0.13190
		%	0.00%	3.92%	37.25%	58.82%	
	II	N	0	1	15	21	
		%	0.00%	2.70%	40.54%	56.76%	
	III	N	0	0	16	13	
		%	0.00%	0.00%	55.17%	44.83%	
	IV	N	1	0	9	32	
		%	2.38%	0.00%	21.43%	76.19%	
	V	N	0	0	7	19	
		%	0.00%	0.00%	26.92%	73.08%	
	VI	N	0	0	2	13	
		%	0.00%	0.00%	13.33%	86.67%	
Gender	Female	N	0	2	55	106	χ^2=5.006649 p=0.17131
		%	0.00%	1.23%	33.74%	65.03%	
	Male	N	1	1	13	22	
		%	2.70%	2.70%	35.14%	59.46%	
Total		N	1	3	68	128	
		%	0.50%	1.50%	34.00%	64.00%	

Source: Own study

The conducted statistical analysis revealed a strong correlation between the level of knowledge of the examined students of the Medical University about physical activity in cardiovascular disease prevention and their faculty ($p=0.00143$). There is no significant statistical correlation between the level of knowledge and their year of studies and gender ($p>0.05$).

Among the medicine students, 78.95 percent have high level of knowledge, 19.3 percent medium, 0 percent low and 1.75 percent of them have no knowledge about this issue. 65.31 percent of pharmacy students have high level of knowledge, 32.65 percent medium and 2.04 percent low. Nobody from them indicated lack of knowledge.

49 percent of the nursing students have high level of knowledge, 47 percent medium and 4 percent low. Nobody from them indicated lack of knowledge.

60.47 percent of the public health students have high level of knowledge and the remaining 39.53 percent of the respondents have medium level of knowledge.

Among women, 65.03 percent of the respondents have high level of knowledge, 33.74 percent medium and 1.23 percent low. Among men, 59.46 percent have high level of knowledge, 35.14 percent medium and 2.70 percent low.

The results of students' knowledge about physical activity in cardiovascular disease prevention are presented in Figure 1.

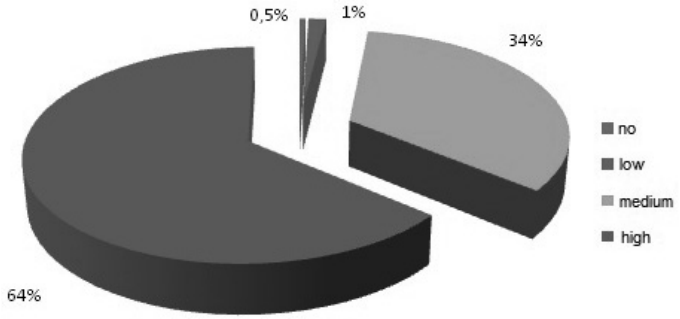

Figure 1. The level of knowledge of the students of the Medical University about physical activity in cardiovascular disease prevention

The statistical analysis showed that more than a half of the respondents, 64 percent, have high level of knowledge, 34 percent medium and 1.5 percent of them have low level of knowledge about this issue.

The level of knowledge of the examined students about nutrition, cigarettes and alcohol use in cardiovascular disease prevention is shown in Table 2.

Table 2. The level of knowledge of the examined students about nutrition, cigarettes and alcohol use in cardiovascular disease prevention taking into account their gender, faculty and the year of studies

Independent variable			The level of knowledge				χ^2 Test
			No	Low	Medium	High	
Faculty	Medicine	N	0	0	16	41	χ^2=24.29299 p=0.00686
		%	0.00%	0.00%	28.07%	71.93%	
	Pharmacy	N	0	2	13	34	
		%	0.00%	4.08%	26.53%	69.39%	
	Nursing	N	0	2	30	19	
		%	0.00%	4.00%	59.00%	37.00%	
	Public Health	N	0	2	13	28	
		%	0.00%	4.65%	30.23%	65.12%	
Year of studies	I	N	0	2	18	31	χ^2=10.62693 p=0.38731
		%	0.00%	3.92%	35.29%	60.78%	
	II	N	0	1	21	15	
		%	0.00%	2.70%	56.76%	40.54%	
	III	N	0	1	10	18	
		%	0.00%	3.45%	34.48%	62.07%	
	IV	N	0	1	11	30	
		%	0.00%	2.38%	26.19%	71.43%	
	V	N	0	1	8	17	
		%	0.00%	3.85%	30.77%	65.38%	
	VI	N	0	0	4	11	
		%	0.00%	0.00%	26.67%	73.33%	
Gender	Female	N	0	4	64	95	χ^2=4.549596 p=0.10282
		%	0.0%	2.45%	39.26%	58.28%	
	Male	N	0	2	8	27	
		%	0.0%	5.41%	21.62%	72.97%	
Total		N	0	6	72	200	

Source: Own study

The conducted statistical analysis revealed a strong correlation between the level of knowledge of the examined students of the Medical University about nutrition, cigarettes and alcohol use in cardiovascular disease prevention and their faculty (p=0.00686). There is no significant statistical correlation between the level of knowledge and their year of studies and gender (p>0.05).

Among the medicine students, 71.93 percent have high level of knowledge and the remaining 28 percent medium. 25.53 percent of pharmacy students have high level of knowledge, 26.53 percent medium and 4.08 percent low.

Among the nursing students, 37 percent have high level of knowledge, 59 percent of the respondents medium and 4 percent low. 65.12 percent of the public health students have high level of knowledge, 30.23 percent medium and 4.65 percent low.

Among women, 58.28 percent of the respondents have high level of knowledge, 39.26 percent medium and 2.45 percent low. Among men, 72.97 percent have high level of knowledge, 21.62 percent medium and 5.41 percent low.

The results of the students' of the Medical University knowledge about nutrition, cigarettes and alcohol use in cardiovascular disease prevention are presented in Figure 2.

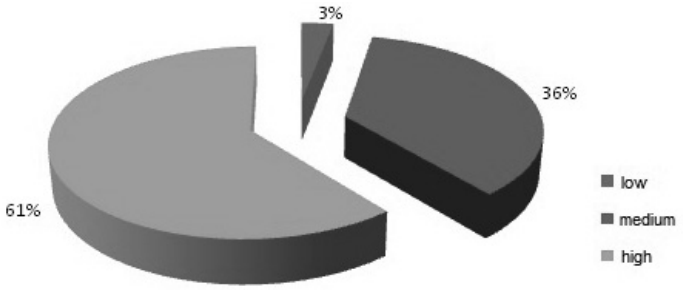

Figure 2. The level of knowledge of the students of the Medical University about nutrition, cigarettes and alcohol use in cardiovascular disease prevention

The statistical analysis showed that more than half of the respondents, 61 percent, have high level of knowledge about nutrition, cigarettes and alcohol use in cardiovascular disease prevention, 36 percent medium and 3 percent of them have low level of knowledge about this issue.

The level of knowledge of the examined students about normal values of lipid profile in biochemical analysis is shown in Table 3.

Table 3. The level of knowledge of the examined students about normal values of lipid profile in biochemical analysis taking into account their gender, faculty and the year of studies

Independent variable			The level of knowledge				χ^2 Test
			No	Low	Medium	High	
Faculty	Medicine	N	0	9	27	21	χ^2=11.73563 p=0.30314
		%	0.00%	15.79%	47.37%	36.84%	
	Pharmacy	N	0	11	24	14	
		%	0.00%	22.45%	48.98%	28.57%	
	Nursing	N	0	8	27	16	
		%	0.00%	15.68%	52.94%	31.37%	
	Public Health	N	0	9	19	15	
		%	0.00%	20.93%	44.19%	34.88%	
Year of studies	I	N	0	16	20	15	χ^2=17.60496 p=0.06200
		%	0.00%	31.37%	39.22%	29.41%	
	II	N	0	7	20	10	
		%	0,.00%	18.92%	54.05%	27.03%	
	III	N	0	4	16	9	
		%	0.00%	13.79%	55.17%	31.03%	
	IV	N	0	6	22	14	
		%	0.00%	14.29%	52.38%	33.33%	

Year of studies	V	N	0	4	8	14	
		%	0.00%	15.38%	30.77%	53.85%	
	VI	N	0	0	11	4	
		%	0.00%	0.00%	73.33%	26.67%	
Gender	Female	N	0	28	77	58	
		%	0.0%	17.18%	47.24%	35.58%	$\chi^{2=}$2.902321 p=0.23430
	Male	N	0	9	20	8	
		%	0.0%	24.32%	54.05%	21.62%	
Total		N	0	6	72	200	

Source: Own study

The conducted statistical analysis revealed a strong correlation between the level of knowledge of the examined students of the Medical University about normal values of lipid profile in biochemical analysis and their year of studies (p=0.06200). There is no significant statistical correlation between the level of knowledge and their faculty and gender (p>0.05).

Among the medicine students, 36.84 percent have high level of knowledge, 47.37 percent medium and 15.79 low. 28.57 percent of pharmacy students have high level of knowledge, 48.98 percent medium and 22.45 percent low. Among the nursing students, 31.37 percent have high level of knowledge, the more than a half, 52.94 percent, medium and 15.68 percent low. 34.88 percent of the public health students have high level of knowledge, 52.94 percent medium and 20.93 percent of the respondents have low level of knowledge.

Among women, 35.58 percent of the respondents have high level of knowledge, 47.24 percent medium and 17.18 percent low. Among men, 21.62 percent of the respondents have high level of knowledge, 54.05 percent medium and 24.32 percent low.

The results of the examined students' knowledge about normal values of lipid profile in biochemical analysis are presented in Figure 3.

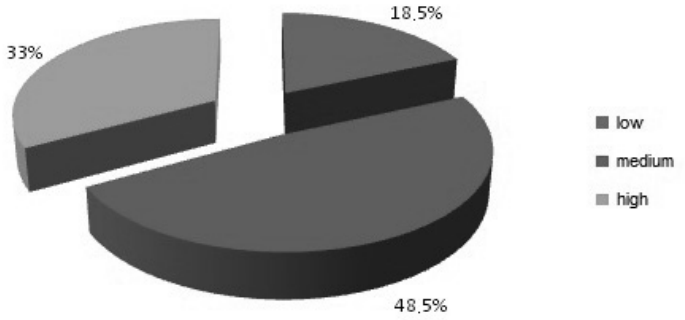

Figure 3. The level of knowledge of the students of the Medical University about normal values of lipid profile in biochemical analysis

The statistical analysis showed that 33 percent of the examined students have high level of knowledge about normal values of lipid profile in biochemical analysis, 48.5 percent medium and the remaining 18.5 percent have low level of knowledge about this issue.

The level of knowledge of the examined students about the influence of psychosocial factors on cardiovascular disease is shown in Table 4.

Table 4. The level of knowledge of the students about the influence of psychosocial factors on cardiovascular disease taking into account their gender, faculty and the year of studies

Independent variable			The level of knowledge				χ^2 Test
			No	Low	Medium	High	
Faculty	Medicine	N	1	0	20	36	
		%	1.75%	0.00%	35.09%	63.16%	
	Pharmacy	N	4	0	27	18	
		%	8.16%	0.00%	55.10%	36.73%	χ^2 =41.28988 p=0.00029
	Nursing	N	14	0	32	15	
		%	27.45%	0.0%	62.75%	29.41	
	Public Health	N	4	1	17	21	
		%	9.30%	2.33%	39.53%	48.84%	

Year of studies	I	N	7	0	27	17	χ^2 =9.026478 p=0.52959
		%	13.73%	0.00%	52.94%	33.33%	
	II	N	6	1	21	9	
		%	16.22%	2.70%	56.76%	24.32%	
	III	N	0	0	10	19	
		%	0.00%	0.00%	34.48%	65.52%	
	IV	N	5	0	18	19	
		%	11.90%	0.00%	42.86%	45.24%	
	V	N	5	0	5	16	
		%	19.23%	0.00%	19.23%	61.54%	
	VI	N	0	0	5	10	
		%	0.00%	0.00%	33.33%	66.67%	
Gender	Female	N	20	1	73	69	χ^2= 2.728706 p=0.43537
		%	12.27%	0.61%	44.79%	42.33%	
	Male	N	3	0	13	21	
		%	8.11%	0.00%	35.14%	56.76%	
Total		N	23	1	86	90	

Source: Own study

The conducted statistical analysis revealed a strong correlation between the level of knowledge of the examined students of the Medical University about the influence of psychosocial factors on cardiovascular disease and their faculty (p=0.00029). There is no significant statistical correlation between the level of knowledge and their year of studies and gender (p>0.05).

Among the medicine students, 63.16 percent have high level of knowledge, 35.09 percent medium and 1.75 of the respondents have no knowledge about this issue. 36.73 percent of pharmacy students have high level of knowledge, more than a half, 55.10 percent, medium and 8.16 percent of them have no knowledge about this issue. Among the nursing students, 29.41 percent have high level of knowledge, 62.75 percent medium and 27.45 have no knowledge about this issue. 48.84 percent of the public health students have high level of knowledge, 39.53 percent medium, 2.33 percent low and 9.30 percent of the respondents have no knowledge about this issue.

Among women, 42.33 percent of the respondents have high level of knowledge, 44.79 percent medium, 0.61 percent low and 12.27 percent of the female students have no knowledge about this issue. Among men, more than a half of them, 56.76 percent, have high level of knowledge, 35.14 percent medium, nobody from the respondents has low level of knowledge and 8.11 percent have no knowledge about this issue. The results are presented in Figure 4.

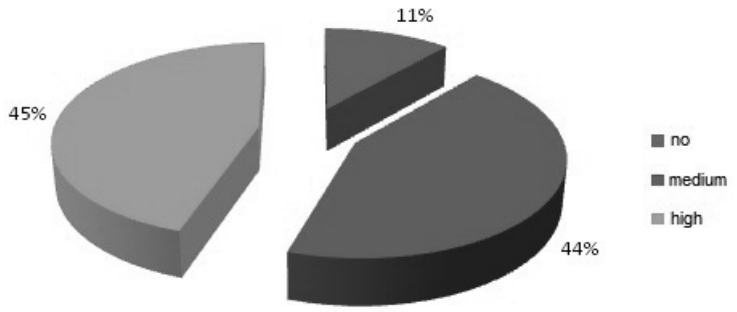

Figure 4. The level of knowledge of the students of the Medical University about the influence of psychosocial factors on cardiovascular disease

The statistical analysis showed that the most of the students, 45 percent, have the high level of knowledge and 44 percent of them have medium level of knowledge. 11 percent of the respondents did not know the correct answer.

The level of knowledge of the examined students about the genetic factors predisposing to cardiovascular disease is shown in Table 5.

Table 5. The level of knowledge of the students about the genetic factors predisposing to cardiovascular disease taking into account their gender, faculty and the year of studies

Independent variable			The level of knowledge				χ^2 Test
			No	Low	Medium	High	
Faculty	Medicine	N	2	8	22	25	χ^2 =24.52463 p=0.05670
		%	3.51%	14.04%	38.60%	43.86%	
	Pharmacy	N	2	5	25	17	
		%	4.08%	10.20%	51.02%	34.69%	
	Nursing	N	4	13	27	7	
		%	7.84%	25.50%	52.94%	13.75%	
	Public Health	N	1	6	15	21	
		%	2.32%	13.95%	34.88%	48.85%	
Year of studies	I	N	3	9	22	17	χ^2 =13.39247 p=0.57201
		%	5.88%	17.65%	43.14%	33.33%	
	II	N	3	10	17	7	
		%	8.10%	27.00%	46.00%	18.90%	
	III	N	1	4	13	11	
		%	3.45%	13.79%	44.83%	37.93%	
	IV	N	1	6	20	15	
		%	2.38%	14.29%	47.62%	35.71%	
	V	N	1	3	11	11	
		%	3.85%	11.54%	42.31%	42.31%	
	VI	N	0	0	6	9	
		%	0.00%	0.00%	40.00%	60.00%	
Gender	Female	N	7	27	76	52	χ^2= 4.021043 p=0.25920
		%	4.32%	16.67%	46.91%	32.10%	
	Male	N	2	4	13	18	
		%	5.41%	10.81%	35.14%	48.65%	
Total		N	9	32	89	70	

Source: Own elaboration

The conducted statistical analysis revealed a strong correlation between the level of knowledge of the examined students of the Medical University about the genetic factors predisposing to cardiovascular disease and their faculty (p=0.05670). There is no significant statistical correlation between the level of knowledge and their year of studies and gender (p>0.05).

Among the medicine students, 43.86 percent have high level of knowledge, 38.6 percent medium, 14.04 percent low and 3.51 of the respondents have no knowledge about this issue. 34.69 percent of pharmacy students have high level of knowledge, just more than a half, 51.02 percent, medium and 10.02 percent low. Among the nursing students, 13.75 percent have high level of knowledge, 52.94 percent medium and 25.5 low. Less than a half of the public health students, 48.85 percent, have high level of knowledge, 34.88 percent medium and 13.95 percent low.

Among women, 32.10 percent of the respondents have high level of knowledge, 46.91 percent medium and 16.67 percent low. Among men, almost a half of them have high level of kno wledge, 35.14 percent medium and 10.81 percent low.

The results of the examined students' knowledge about the genetic factors predisposing to cardiovascular disease are presented in Figure 5.

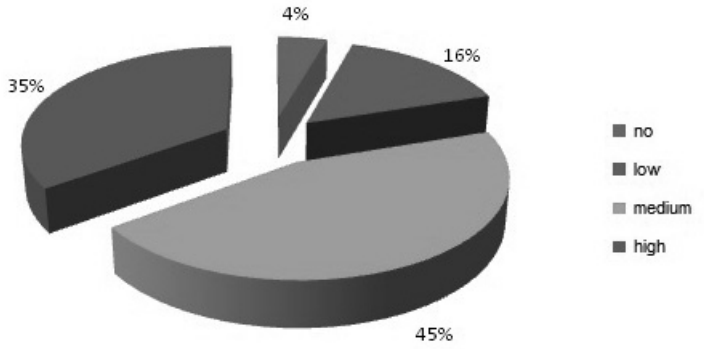

Figure 5. The level of knowledge of the students of the Medical University about the genetic factors predisposing to cardiovascular disease

The statistical analysis showed that the most of the students, 45 percent, have the high level of knowledge. Less of the respondents, 35 percent, have medium level of knowledge. 16 percent of them have low level of knowledge.

The correlation between the level of knowledge of the students about cardiovascular disease prevention and their faculty is shown in Table 6.

Table 6. The level of knowledge of the students about cardiovascular disease prevention taking into account their faculty

Faculty		The level of knowledge				Total in line
		No	Low	Medium	High	
Pharmacy	N	0	0	29	20	49
	%	0.0	0.0	59.18	40.82	
Medicine	N	0	1	17	39	57
	%	0.0	1.75	29.82	68.42	
Nursing	N	0	0	32	19	51
	%	0.0	0.0	62.75	37.25	
Public health	N	0	0	21	22	43
	%	0.0	0.0	48.84	51.16	
Total	N	0	1	99	100	200
$\chi^{2=}$17.28576 p=0.06828						

Source: Own study

The statistical analysis revealed no significant correlation between the level of knowledge of the examined students and their faculty (p=0.06828).

The research showed that among 68.42 percent of the respondents having the high level of knowledge, medicine and public health students are in majority (51.16 percent). Slightly less pharmacy students (40.82 percent) have the high level of knowledge.

The correlation between the level of knowledge of the students about cardiovascular disease prevention and their gender is shown in Table 7.

Table 7. The level of knowledge of students about cardiovascular disease prevention taking into account their gender

Gender		The level of knowledge				Total in line
		No	Low	Medium	High	
Female	N	0	0	82	81	163
	%	0.0%	0.00%	50.31%	49.69%	
Male	N	0.0%	1	17	19	37
	%	0.0%	2.70%	45.95%	51.35%	
Total	N	0	1	99	100	200
χ^{2}= 4.537834 p=0.10342						

Source: Own study

The statistical analysis revealed no significant correlation between the level of knowledge of the examined students about cardiovascular disease prevention and their gender (p=0.10342).

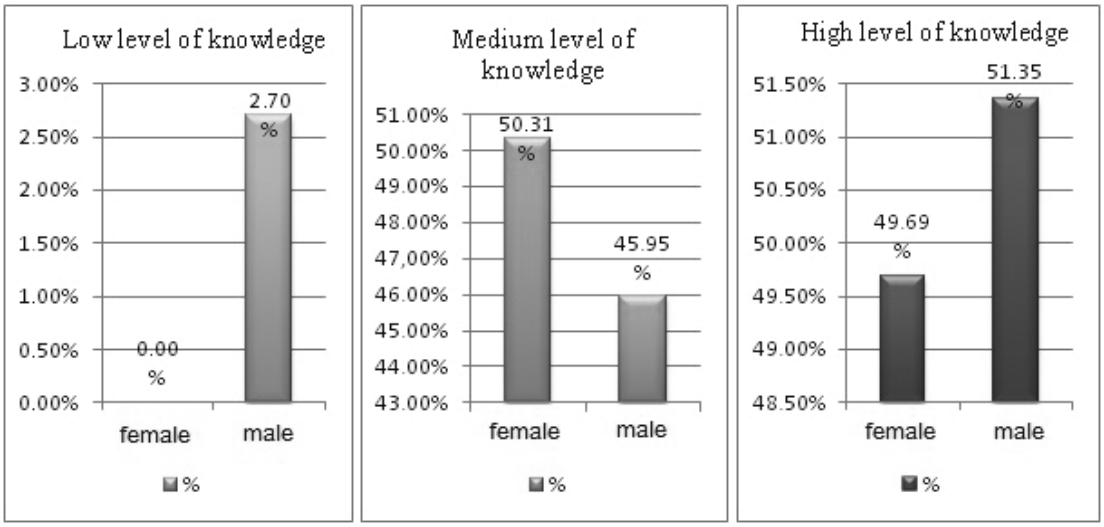

Figure 6. The level of knowledge of the students about cardiovascular disease prevention taking into account their gender

The research showed that 2.7 percent of men have low level of knowledge, whereas no woman has low level of knowledge. Medium level of knowledge was found among 50.31 percent of women and 49.95 percent of men. The examined men have more knowledge (51.35 percent) than the examined women (49.69 percent).

Discussion

Cardiovascular disease is one of the major causes of early death in Poland. There are many etiological factors of cardiovascular disease, including gender, age, genetic factors and a lifestyle. Cardiovascular disease prevention consists of promoting the healthy lifestyle and changing unhealthy behaviors such as smoking, bad nutrition, physical inactivity and life under constant stress (Antczak et al., 2000). The knowledge is necessary to understand health-seeking behaviors. That is why health education is needed. The knowledge and patterns of healthy behaviors are established during preparation for medical professions.

The own research showed that 61 percent of the students of the Medical University have high level of knowledge about the influence of physical activity and proper body weight on cardiovascular disease prevention. The similar research results were obtained by Markiewicz-Górka et al., 2012. They showed that almost every student of Wroclaw Medical University (98.94 percent) knows that physical activity is significant in cardiovascular disease prevention. Conducted own research allows to state that the examined students have high level of knowledge about the influence of a diet, smoking and alcohol use in cardiovascular disease prevention. 90.5 percent of the respondents know that smoking significantly increases the risk of cardiovascular disease. In the research conducted by Pietrzak (2001), 82.5 percent of the graduates of medical faculties recognized smoking as a cause of cardiovascular disease.

The own research showed that 94.5 percent of the students are aware that a diet influences the cardiovascular system. The majority of them, 98.5 percent, know recommendations about including vegetables, fruit and fish in a diet used in cardiovascular disease prevention.

83 percent of the examined students are aware of the negative influence of saturated animal fat on the cardiovascular system. Pietrzak (2001) showed in the research conducted among students of the Faculty of Medicine on the Medical University in Bydgoszcz that 77 percent of the respondents know that saturated animal fat should be restricted in a diet preventing cardiovascular disease. 54.3 percent of the examined students are aware of the importance of eating fruit and vegetable, and 78 percent of them know that eating products rich in cholesterol should be limited. Basing on the research conducted by Ślusarska et. al. (2012), it can be said that 83.65 percent of the examined medicine students know about the correlation between the low consumption of saturated fatty acids and a diet recommended in cardiovascular disease prevention. More than a half of the respondents, 55.77 percent, considered the high consumption of polyunsaturated fatty acids as an important feature of a diet preventing cardiovascular disease.

The research conducted by Poręba et al. (2008) showed that 41.8 percent of students of Wrocław universities know that unsaturated fatty acids have a positive influence on the cardiovascular system. 84.2 percent of the respondents considered excessive common salt use as inadvisable in a diet preventing cardiovascular disease.

Taking into account the knowledge about normal values of lipid profile in biochemical analysis, the research showed that almost the half of the students (48.5 percent) have medium level of knowledge. 83 percent of the respondents know the normal cholesterol level in blood. The vast majority of the examined students (92 percent) are aware that HDL cholesterol has a positive influence on health. The research conducted by Ślusarska et al. (2012) showed that 89.42 percent of the respondents know the normal cholesterol level in blood and 67.31 percent of them are aware that HDL cholesterol has a positive influence on health. However, the research conducted by Poręba R. et al. (2008) showed that only 21.7 percent of the respondents know that HDL cholesterol has a positive influence on health. Pietrzak (2001) showed in his research that 86.4 percent of the students considered hypercholesterolemia as one of the main causes of cardiovascular disease.

The own research showed that more than a half of the respondents know disease entities which increase the risk of cardiovascular disease. It corresponds with the research conducted by Pietrzak (2001) who stated that 81.3 percent of the respondents considered diabetes as a factor increasing the risk of cardiovascular disease.

The own research revealed that 45 percent of the students are aware that psychosocial factors have the influence on the cardiovascular system. 86.5 percent of the respondents know that there is the correlation between blood circulation pathologies and factors such as: low socioeconomic status, social isolation, stress, negative emotions, depression.

The own research revealed no correlation between the level of knowledge of the examined students about cardiovascular disease prevention and their faculty and gender. However, there was a correlation revealed between the knowledge of the respondents and their year of studies. The highest level of knowledge was shared by 6th year students (80 percent).

Conclusions

1. The students of the Medical University have high level of knowledge about cardiovascular disease prevention. The highest level of knowledge is shared by the medicine students, the lowest by the nursing students. The pharmacy and public health students have similar level of knowledge.
2. The examined men had high level of knowledge about cardiovascular disease prevention more often than women. However, the differences in the assessment were not statistically significant.
3. The lowest level of knowledge concerned the influence of lipid metabolism on cardiovascular disease, the highest – the significance of physical activity in cardiovascular disease prevention.
4. The level of knowledge about cardiovascular disease prevention depends on the year of studies. The 5th and 6th year students have the highest level of knowledge, while the 1st and 2nd year students have the lowest.

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PHYSICAL ACTIVITY, PHYSICAL DEVELOPMENT AND EATING HABITS WITHIN THE LIFESTYLE OF STUDENTS FROM UKRAINE

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Tsos A., Bergier B., Bergier J. (2014), *Physical activity, physical development and eating habits within the lifestyle of students from Ukraine*. Health Problems of Civilization, 4 (8), p. 46-53

Summary: The aim of this study was to investigate the physical activity, the basic parameters of physical development, and eating habits of students from Ukraine. The research method of diagnostic survey using a IPAQ questionnaire and nutrition questionnaire was carried out in 2013 among 2 125 students, for 60.8% of women and 39.2% men.
As a result of studies beneficial indicators of total physical activity were demonstrated, with higher physical activity of persons who have sufficient amount of free time.
The level of BMI indicator is in the majority of students at a normal level. The amount and frequency of meals is a sign of positive healthy behaviors.
Also the disadvantageous behaviors occur, such as avoidance and loss of control over eating and induction of vomiting for the sake of one's body.

Keywords: physical activity, physical development, eating habits, students from Ukraine

Introduction

It is quite commonly emphasized that regular physical activity is an important factor in a healthy preventive lifestyle (Blair, Brodney 1999, Andersen et al. 2006, Blair et al. 2001). In order to familiarize oneself with the status and determinants of physical activity levels of students active research has been conducted in recent years in Poland (Biernat 2011, Bergier, Kapka - Skrzypczak et al. 2012 Mynarski, Rozpara, Królikowska et al. 2012). It is estimated that the proper physical activity of the youth puts restrains to a large extent on the contemporary problem of civilization which is overweight and, consequently, obesity.

It is almost universally accepted that obesity is the cause of numerous diseases, including mainly cardiovascular system and thereby a factor which lowers the quality of life. Obesity consequently facilitates the development of other diseases. Over the past few years there has been a disturbing trend of growing number of the overweight people. According to the World Health Organization in 2007 a number of overweight people in the world amounted to 1,5 billion and 523 million of those obese, and already in 2015 these numbers will amount to 1,6 billion and 700 million people[1]. Also Polish studies indicate problems of overweight and obesity within the society (Rywik et al., 2003, Szponar et al., 2003, Zdrojewski et al. 2004). This problem also applies to Polish university students (Rębacz - Maron et al. 2013, Romanowska - Tołłoczko 2011, Szczodrowska - Krysiak 2013, Myszkowska-Ryciak i in. 2011, Seń i in. 2012, Marzec - Koch 2013, Krejpcio i in. 2013). The results of scientific research on the state of nutrition of students in our country are not unequivocal. Surveys among female students from the University of Szczecin (Rębacz- Maron et al. 2013) showed a positive image of the self-assessment of their physical activity and nutritional status in the light of BMI factor. Assessment of daily portions of food rations among the students of the Medical University of Lublin showed very low energy values in both women and men. A new phenomenon is reaching for dietary supplements. Survey among students of Dietetics of the University of Life Sciences in Poznan and psychology Academy of Special Education in Warsaw have shown that it is common among students, and one of the reasons is aesthetics (Krejpcio i in. 2013). These results of research (conducted in recent years), on the diet habits of students indicate that the problem is still present.

[1] World Health Organization. Obesity and overweight. Fact.. Sheet. No 311, September 2006

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Tables: 6 **Figures**: 4 **References:** 17 **Full-text PDF** www.hpc.edu.pl **Indexation:** Index Copernicus, Database AGRO, ProQuest, Polish Ministry of Science and Higher Education.

Research methodology

Aim of the study. The aim of the study was to investigate the level of physical activity, physical development, the basic parameters including body mass index (BMI), and eating habits as well as behaviors related to the above among students from Ukraine.

Material and research methods

The study was conducted in 2013 among 2,125 students from 12 faculties at the National University in Lutsk in Ukraine in the age range between 17-22, including 1,291 women (60,8%) and 834 men (39,2%).

For the evaluation of physical activity a long version of the International Physical Activity Questionnaire (IPAQ) supplemented by the author's questionnaire was applied. Data on basic parameters of physical development which enabled the calculation of BMI was also applied. A questionnaire regarding eating habits was applied, in which questions from the research conducted at the Institute of Medicine in Lublin were used.

Research results

Characteristics of physical activity and physical development.

The respondents indicated in the majority (51,4%) for too little free time, and the sufficient amount of time was indicated by 37.7%. Level of physical activity is satisfactory, since 50,2% has high activity and only 5,2% has a low one. Self-assessment of physical fitness is assessed by a vast majority as the average – 70,6% with high efficiency at the level of 13,9%.

What is also positive is the image of their sport activity, since 7 or more disciplines are trained by 23,1% and 36,3% of them train 4-6 disciplines. Only 3,1% of the students expressed the opinion that they do not practice any sport. Dreams of practicing disciplines are less impressive, as a clear majority (69,6%) lists from one to two disciplines, and only 13,0% indicated three or more.

The characteristics of the physical development involves positive development of BMI factor, which in case of 74,2% places their body weight at a normal level, with only 8,7% of people who are overweight. Slightly more critical self-assessment of their physique, as 69,2% rated it as normal, but 13,0% noted the overweight. Almost similar percentage distribution of student youth from Ukraine wants to lose weight – 47,8%, and does not see the need for it – 52,2%.

The vast majority of respondents (70,7%), for the sake of their figure, would not want to gain weight, while 29,3% of students expressed disagreement with this (Table 1).

Table 1. Researched students according to individual features

Assessment of amount of free time	None n=231(10,9%)	Too little n=1093 (51,4%)	Sufficient n=801 (37,7%)	
Level of physical activity	Low activity n=111 (5,2%)	Moderate activity n=948 (44,6%)	High activity n=1066 (50,2%)	
Self-assessment of physical activity	Low n=330 (15,5%)	Average n=1500 (70,6%)	High n=295 (13,9%)	
BMI classification	Underweight n=364 (17,1%)	Correct value n=1577 (74,2%)	Overweight n=184 (8,7%)	
Self-assesment of figure	Underweight n=379 (17,8%)	Normal weight n=1469 (69,2%)	Overweight n=277 (13,0%)	
Did the respondent want to lose weight	No n=1110 (52,2%)		Yes n=1015 (47,8%)	
Did the respondent want to gain weight	No n=1503 (70,7%)		Yes n=622 (29,3%)	
Number of tained sports	0 n=65 (3,1%)	1-3 n=797 (37,5%)	4-6 n=772 (36,3%)	7 and more n=491 (23,1%)

Number of sport types the respondents wishes to train	0		1-2		3 and more
	n=383 (18,0%)		n=1466 (69,0%)		n=276 (13,0%)
Self-assessment of capabilities	Low	Average	High	Very high	Perfect
	n=24 (1,1%)	n=443 (20,8%)	n=1185 (55,9%)	n=370 (17,4%)	n=103 (4,8%)

Factors which condition physical activity of students

The overall level of physical activity of young people studying in Ukraine is 3,560 MET / min / week * and in comparison with other studies it is high. A positive development is also the fact of large activity level in sports – 1,124 MET (Fig. 1).

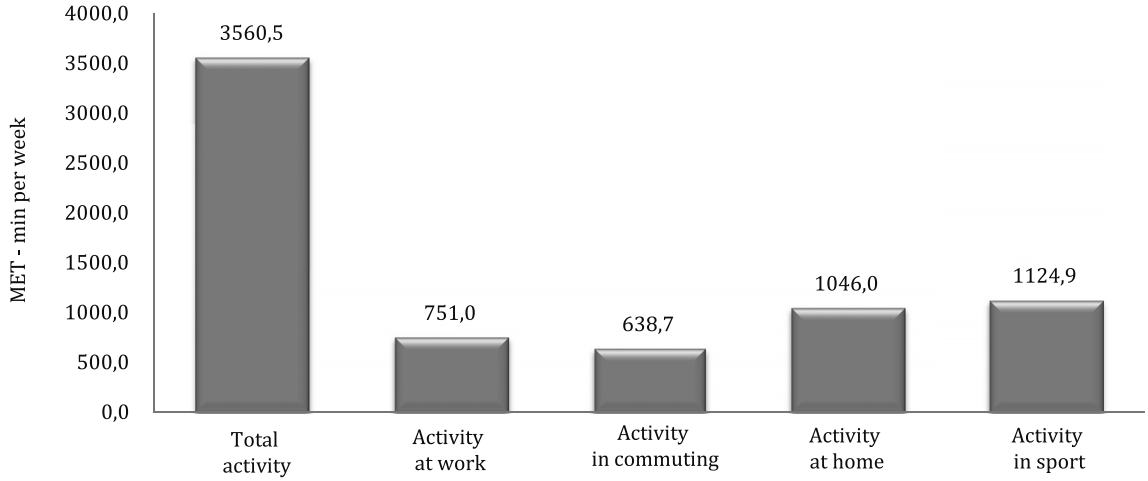

Figure 1. Areas of physical activity of students

Amount of free time students significantly determines their level of total physical activity. The lowest level of activity is characteristic of a group that does not have the free time – 3,280 MET.

It should be emphasized that in sports activities significantly higher scores were achieved by students with sufficient free time- 1,195 MET, with values of too short a time- 1,130 MET, and who do not have free time solely 823 MET (Fig. 2), (Table 2).

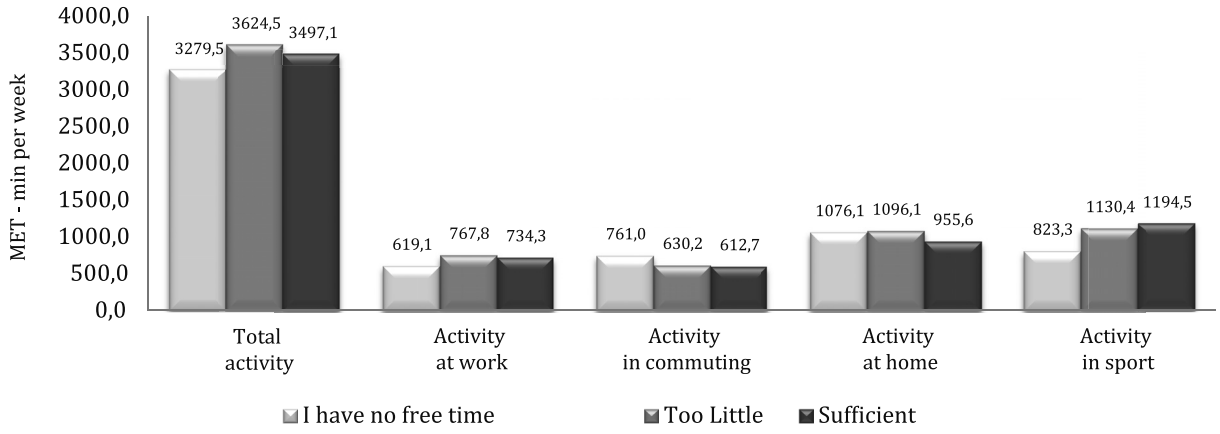

Figure 2. Areas of physical activity of students including their free time

Table 2. Diversification of areas of physical activity of students including the amount of free time

Kruskal-Wallis Test			
Area of activity	H	p	Differences
Total activity	**6,748251**	**0,0342***	**1-2**
Activity at work	**8,584067**	**0,0137***	**1-2,3**
Activity in commuting	**6,119259**	**0,0469***	**1-3**
Activity at home	**15,68305**	**0,0004***	**2-3**
Activity in sport	**32,49209**	**<0,0001***	**1-2,3**

*- Significant diversification at p<0,05

Higher self-assessment of fitness highly correlates with the size of the total activity and its particular areas.

In case of self-assessment of fitness defined as high, physical activity is at the level of 4,410 MET and that defined as the average - 3,560MET and as a low one only 2,669 MET. Also in the area of physical activity at work and in there occur significantly higher rates which are defined for students with high self-assessment of their physical fitness (Fig. 3), (Tab. 3).

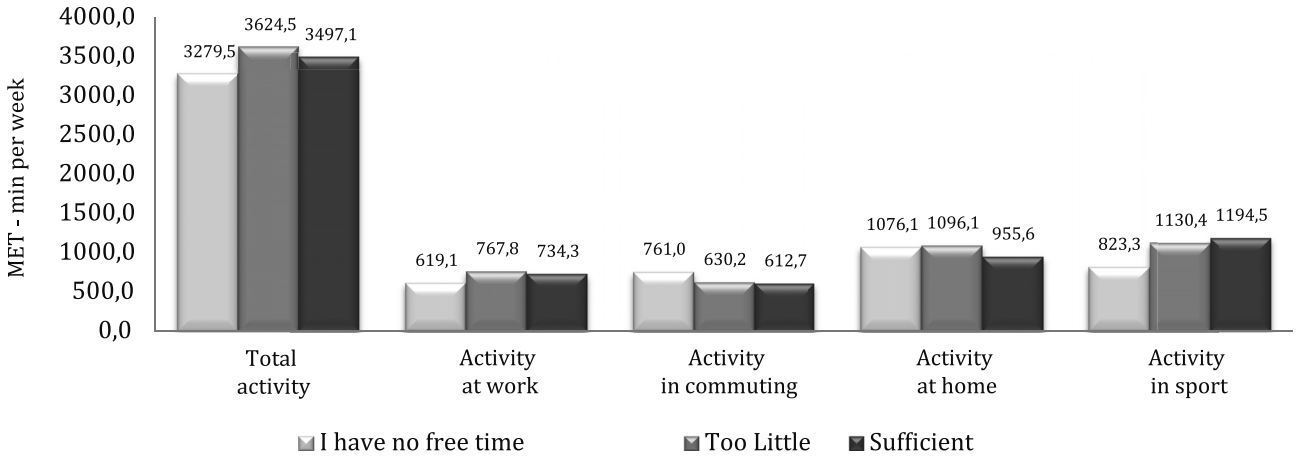

Figure 3. Areas of physical activity of students including self-assessment of physical activity

Table 3. Diversification of areas of physical activity of students in the scope of self-assessment of physical activity

Kruskal-Wallis Test			
Area of activity	H	p	Differences
Total activity	**83,85445**	**<0,0001***	**1-2,3; 2-3**
Activity at work	**52,93391**	**<0,0001***	**1-2,3; 2-3**
Activity in commuting	0,2476279	0,8835	-
Activity at home	4,439918	0,1086	-
Activity in sport	**143,2417**	**<0,0001***	**1-2,3; 2-3**

*- Significant diversification at p<0,05

Student nutrition patterns versus physical activity

The pattern in terms of amounts and frequency of meals reveals the fact that nearly half of the students eats 3 meals a day – 47,0%, with a similar percentage eating 1-2 meals - (24,5%), and 4 and more (28,5%). Breakfast is the most widely consumed meal every day (39,8%), or several times a week – 28,4%. What is an unfavorable phenomenon is the fact that as many as 31,8% of respondents do not eat breakfast at all. In case of the second breakfast consumption the answer which dominates - (44,6%) and a few times a week. The frequency of eating

* In the following paragraphs the form of the abbreviation 'MET' will be used

lunch every day is the highest of all meals and equates to – 79,0%, while for 19,9% it is several times a week, and only a non-material number of respondents admitted to not eating this meal - 1.1%. Afternoon snack is consumed by nearly half of the respondents - 46.5% several times a week. Supper is eaten every day by the vast majority of them; daily- (73,9%), and a few times a week - (20,7%) (Tab. 4).

Table 4. Volume and frequency of consumption of meals by the respondents

Daily number of meals				
Gender	1-2	3	4 and more	Statistics
Female	351 (29,9%)	550 (46,9%)	272 (23,2%)	X^2=64,78 p<0,0001*
Male	124 (16,2%)	362 (47,3%)	280 (36,6%	
Total	475 (24,5%)	912 (47,0%)	552 (28,5%)	
Frequency of eating breakfast				
Gender	Every day	Several times a week	Don't eat	Statistics
Female	427 (39,8%)	276 (25,7%)	370 (34,5%)	X^2=13,14 p=0,0014*
Male	270 (39,7%)	222 (32,7%)	188 (27,7%)	
Total	697 (39,8%)	498 (28,4%)	558 (31,8%)	
Frequency of eating second breakfast				
Gender	Every day	Several times a week	Don't eat	Statistics
Female	439 (39,8%)	528 (47,8%)	137 (12,4%)	X^2=31,43 P<0,0001*
Male	378 (51,2%)	312 (42,3%)	48 (6,5%)	
Total	817 (44,4%)	840 (45,6%)	185 (10,0%)	
Frequency of eating dinner				
Gender	Every day	Several times a week	Don't eat	Statistics
Female	997 (79,4%	241 (19,2%)	17 (1,4%)	X^2=2,40 p=0,3008
Male	630 (78,4%)	168 (20,9%)	6 (0,8%)	
Total	1627 (79,0%)	409 (19,9%)	23 (1,1%)	
Frequency of eating afternoon snack				
Gender	Every day	Several times a week	Don't eat	Statistics
Female	377 (34,4%)	523 (47,8%)	195 (17,8%)	X^2=15,42 p=0,0005*
Male	294 (42,7%)	306 (44,5%)	88 (12,8%)	
Total	671 (37,6%)	829 (46,5%)	283 (15,9%)	
Frequency of eating supper				
Gender	Every day	Several times a week	Don't eat	Statistics
Female	780 (64,6%)	333 (27,6%)	94 (7,8%)	X^2=133,24 P<0,0001*
Male	714 (87,5%)	86 (10,5%)	16 (2,0%)	
Total	1494 (73,9%)	419 (20,7%)	110 (5,4%)	

Respondents who consume more meals per day are characterized by significantly higher levels of total physical activity and physical activity in sport. The total activity with 4 and more meals equates to - 3,845 MET, 3 meals - 3,419 MET, and in case of one meal - 3,620 MET. The corresponding values of sport activities are as follows: MET 1,327, 1,112 MET and 1,001 MET (Fig. 4, Tab. 5).

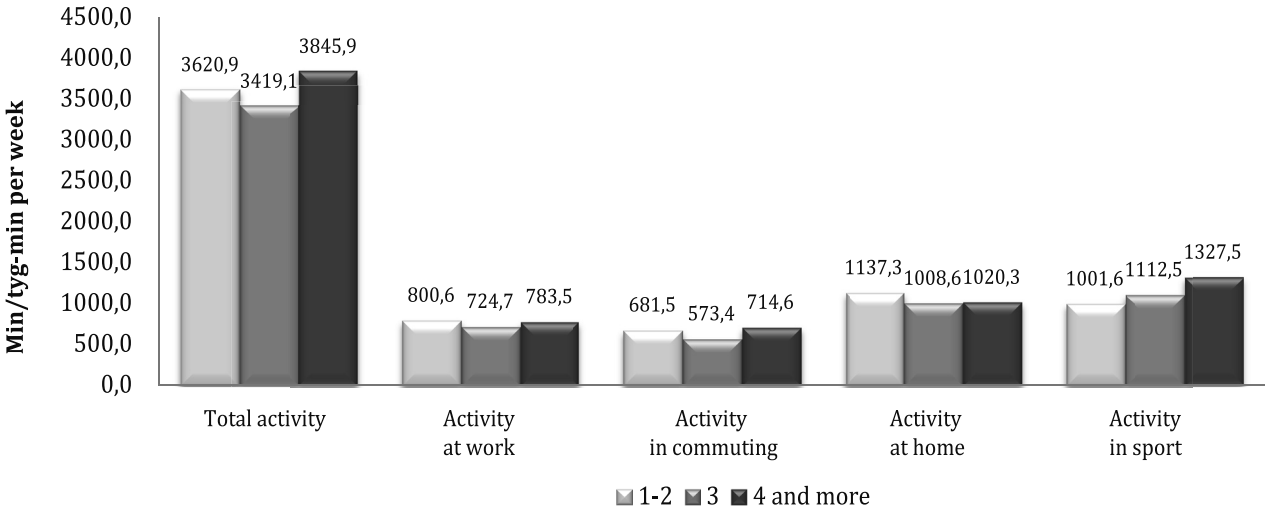

Figure 4. Areas of physical activity of students including number of consumed meals

Table 5. Diversification of areas of physical activity of students including number of consumed meals

Kruskal-Wallis Test			
Area of activity	H	p	Differences
Total activity	**9,62**	**0,0081***	**2-3****
Activity at work	3,60	0,1651	-
Activity in commuting	5,81	0,0547	-
Activity at home	4,64	0,0984	-
Activity in sport	**13,40**	**0,0012***	**3-1,2****

*- Significant diversification at p<0,05
**- Numbers of variables in the range of whcih there is a significant diversification at p<0,05
Number of consumed meals: 1 – one-two, 2 - three, 3 – four and more

Eating-related behaviors

Analysis of student behaviors related to their eating habits does not reveal a clearly positive image. What is positive is undoubtedly the fact that 72,2% of respondents eat regularly,

and 27,8% do it irregularly, and that 85,2% did not experience fear of gaining weight. Less favorable information, in which it was found that 27,2% of people see the loss of control over eating, 27,4% avoid eating and the fact that that causes vomiting 9,1% cause vomiting out of the "care" about their figure (Tab. 6).

Table 6. Behaviors related to eating habits of the researched students

Loss of control over eating			
Gender	No	Yes	Statistics
Females	906 (70,2%)	385 (29,8%)	X^2=11,00 p=0,0009*
Males	640 (76,7%)	194 (23,3%)	
Total	1546 (72,8%)	579 (27,2%)	
Fear of putting on weight			
Gender	No	Yes	Statistics
Females	1004 (77,8%)	287 (22,2%)	X^2=142,94 p<0,0001*
Males	806 (96,6%)	28 (3,4%)	
Total	1810 (85,2%)	315 (14,8%)	

Causing vomitting			
Gender	No	Yes	Statistics
Females	1152 (89,2%)	139 (70,8%)	X^2=11,30 p=0,0008*
Males	780 (93,5%)	54 (6,5%)	
Total	1932 (90,9%)	193 (9,1%)	
Avoiding eating			
Gender	No	Yes	Statistics
Females	833 (64,5%)	458 (35,5%)	X^2=108,20 p<0,0001*
Males	710 (85,1%)	124 (14,9%)	
Total	1543 (72,6%)	582 (27,4%)	
Irregular meals			
Gender	No	Yes	Statistics
Females	921 (71,3%)	370 (28,7%)	X^2=1,31 p=0,2516
Males	614 (73,6%)	220 (26,4%)	
Total	1535 (72,2%)	590 (27,8%)	

*- significant diversification at p<0,05

Discussion

The results of the study of Ukrainian youth physical activity show a positive image, as evidenced by the high value of their total physical activity- 3,560 MET, which is higher than the results of other studies of students in Poland (Biernat 2011, Bergier et al. 2012, 2014, Mynarski et al. 2012).

A positive image among the surveyed students is visible in their significant participation in sports activities and active participation in training many sport disciplines.

It ought to be also emphasized that the value of their high self-assessment of physical fitness, which significantly correlates with the level of physical activity.

The characteristics of physical development, expressed within the BMI factor, it is worth to emphasize the normal body weight in the great majority of students, and the fact that almost half of young people would like to lose weight, which is a good example of healthy attitudes.

Also the characteristics of eating patterns is positive which is due to the right amount and frequency of meals. It should be emphasized that the greater amount of eaten meals is the essential factor conditioning the physical activity.

Behaviors related to nutrition are shown as less positive, as a large group indicates a loss of control over eating, avoiding food, and moreover- the fact that there is a group, though sparse, the participants of which cause vomiting for the sake of care of their figure.

Taking into account the whole scope of the results of research on physical activity, physical development and the eating habits it should be noted that students from Ukraine have a positive image of their health attitudes.

Conclusions

Detailed analysis of the researched study issue allows for some generalizations about the health-related attitudes of students from Ukraine.

1. Students have a positive ratio of total physical activity, and half of them meets the requirement of high activity.
2. Increased physical activity is characteristic of persons with sufficient amount of free time.
3. Students are fond of significant amount of sporting activity as exemplified by their active participation in many sport disciplines.
4. The physical development of most students, expressed by BMI factor, is normal with the existence of a small group of respondents with overweight problems.
5. The amount and frequency of meals reveals a positive picture of healthy behaviors and significantly determines the level of total physical activity.
6. There are certain adverse behaviors related to nutrition, such as: the loss of control over eating, avoidance of eating or an issue of causing vomiting for the sake of one's figure.

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CORRELATION BETWEEN THE PARTICIPATION OF ELDERLY PEOPLE IN THE OCCUPATIONAL THERAPY AND THEIR ASSESSMENT OF THE HEALTH-RELATED QUALITY OF LIFE

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Nałęcz H., Derbich J. (2014), *Correlation between the participation of elderly people in the occupational therapy and their assessment of the health-related quality of life.* Health Problems of Civilization, 4 (8), p. 54-60

Summary: The aim of the research: discovering the relation between the participation of elderly people in the occupational therapy and their Health-Related Quality of Life. Research material and methods: research was carried out in the public social centres offering the occupational therapy devoted to the elderly people. 95 people whose average age was 72,1 years (58 women and 37 men) were examined. The examinees were divided into two groups: the participants and those who were not involved in the occupational therapy. The method of direct interview using EQ-5D-3L questionnaire - a standard instrument for measuring Health-Related Quality of Life of the elderly people was applied.
The results: Seniors involved in occupational therapy reported better HRQL. Difficulties with mobility (<0,05), pain/discomfort (<0,001) and anxiety (<0,001) were substantially more visible around people who did not take part in the occupational therapy. The average self-reported health was better among the occupational therapy participants (<0,001) in comparison with the other elderly people who were not engaged in those activities (76,5 vs. 43,6 respectively).
Conclusions: participation in the occupational therapy has a positive effect on the functioning of the elderly people in every sphere of their life: physical, mental and social one. Involvement in the occupations resulted in the improved perception of the Health-Related Quality of Life. Occupational therapy turned out to be an inexpensive and effective method that exerts a positive impact on maintenance of physical and intellectual abilities, social inclusion as well as physical rehabilitation of seniors.

Keywords: occupational therapy, seniors, quality of life, self-evaluation of health status, EQ5D, VAS

Introduction

In the European Union states, the age of 65 is acknowledged as delimitation of the old age boundary (http://www.euro.who.int). Seniors constitute a population that is in the spotlight of the scientist dealing with distinct areas of research. The reason of this intensified attention set on the groups of the elderly is the fact that due to dynamic demographic changes, the lifespan increases along with the growing number of people with decreasing functional capacity. Alongside, the need for prevention of the involutionary processes raises.

The process of ageing affects every structure and function of the organism. It is related to co-occurrence of many alternations and disorders, the increased risk of many diseases and the simultaneous treatment of those. Hence, the elderly people are among the most numerous groups that make use of the physiotherapy and occupational therapy as well (Steultjens et al. 2004). Engaging in either individual or organized forms of therapy and entertainment allows people of old age to maintain independence, self-reliance and use their lives optimally to the full. It also bears a great deal of significance for the perception of one's health and quality of life.

According to a definition coined by the World Health Organization, the quality of life is related to, as a subjective perception of one's life status interpreted through the context of a given culture, system of values and in relation to personal goals, expectations, standards and interests of an individual. The wide spectrum which this expression encompasses allows to embrace the essence of person's physical health, state of mind, level of independence, social relations, personal believes and relation to the most relevant characteristics of one's environment (The WHOQOL Group 1994).

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Tables: 1 **Figures**: 3 **References:** 21 **Full-text PDF** www.hpc.edu.pl **Copyright** © Pope John Paul II State School of Higher Education in Biała Podlaska, Sidorska 95/97, 21-500 Biała Podlaska **Indexation:** Index Copernicus, Database AGRO, ProQuest, Polish Ministry of Science and Higher Education.

An interest in the matters related to the Quality of Life (QoL) is connected with the imprinted in the memory of scientists researching holistic definition of health, which has been operating in the spectrum of medicine and public health since 1948 (Nutbeam 1998). In the light of such perspective on medicine, in the process of its maintenance and recuperation, the physiological parameters cannot be those solely taken into consideration. Notion of the QoL, which can as well be multi-dimensional describes those matters that are most valid for the individual person in assessing his/her health status.

Medicine takes an interest in the Quality of Life mainly in relation to the analysis of the end points, which in clinical examination are among other results of the laboratory tests, the range of everyday patients' activities and self-evaluation of well-being, thus in general indices of the Quality of Life. The scientists make use of the Health-Related Quality of Life (HRQL) (Jaeschke 1999).

In the environment of seniors, the correlation between health and Quality of Life marks itself as specially significant. Efficient and self-reliable functioning in everyday life, which gives oneself the feeling of stability and independence is connected with the constant care for maintenance of health and efficiency of psychomotoric functions. The occupational therapy brings excellent results within this area. Since 1990s, according to principles of Evidence Based Medicine (EBM), the articles that acknowledge the thesis about the effect occupational therapy has on its participants' health improvement and slowing down the ageing processes, especially in the context of large communities, in which the elderly live and function everyday has been published. (Clark et al. 1997, Alpert et al. 2009).

The occupational therapy consists in many activities focused on support, health and well-being recuperation through occupations. Everyday activities such as: play, work, self- service activities, chores at home, recreation or hobby can be a way to health and well-being maintenance and simultaneously serve as a therapeutic instrument (Perrin 2005). Aim of the occupational therapy always depends on the individual needs and capabilities, but generally it can be specified as a help in pursuing of maximal level of independence, increase of self-confidence and feeling of self-worth (McCormac 1997).

Taking into account the sphere of needs, the elderly are a specific group that makes use of the therapy. Multimorbidity, impairment of the organs of the sensory system, debilitation of the cognitive processes, psychogeriatric syndroms, lack of motivation, mood swings, lesser potential for rehabilitation and the apprehension to come to normal activities, decreased functional ability (control and coordination disorders), as well as a general inclination for tiredness and hypokinesia with its somatic and social outcomes (Kostka P., Kostka J., 2011).

Taking into account as general medical approach concerned on the end points analysis during treating senior patients and psycho-social perspective (the concept of prosperous ageing process and support for the qualifications of the elderly people) homogeneity of ideas and endeavors is noticeable in both approaches (Fernandez-Ballesteros 2006).

It is worth to notice the fact that the concept of Health-Related Quality of Life (HRQL) connects both directions of thoughts and actions into one consistent approach. Theoretical bases and examinations providing us with a positive result of a correlation between the occupational therapy and Health-Related Quality of Life can be found as early as in the works of Jackson and other scientists from 1998. Those dissertations describe the positive relation between the client centered practice in the occupational therapy and effect it exerts on the health and well-being recuperation of the elderly people(Jackson et al. 1998).

The goal of the examinations was to point out the correlation between the Health-Related Quality of Life of the elderly people and their participation in the occupational therapy. The examination was carried out on the sample of seniors living in Warsaw.

Study material and methods

The study was conducted in 2011 as a part of the scholarship project "Development of the pedagogic- scientific potential within the scope of the occupational therapy as a key to Higher Education development" co-financed by the European Social Fund. The project was executed in 2010-2012 at the University of Physical Education in Kraków, University of Physical Education in Warsaw and University of Physical Education in Wrocław and The School of Administration in Bielsko Biała. The schedule of the research as well as the bioethical sphere of the project was approved by the Scholarship Project Committee.

The research was carried out in Warsaw and the central institutions that constituted a form of operator selecting the seniors from the Senior Clubs in each town district were designated by the relevant district offices. Examinees were selected (purpose selection) and divided into two groups: participation (at least for 6 months) or lack of participation (at least for 6 months) in the occupational therapy at the social centre.

The therapy in the selected centers was carried out as an art therapy, which was mainly focused on the manual skills. Its aim was to share interests and passions of the participants, improve the communicative skills and

interpersonal relations – as elements of social rehabilitation, boost and maintain the simple coordinative-motor functions (fine motor skills). 95 people were examined, whose average age was 72,1 ±4,4 years. Survey method and interview technique were used, along with the EQ-5D-3L questionnaire, in Polish. EQ-5D-3L is a standardized tool formulated by EuroQuol Group and it is used to assess health and Health-Related Quality of Life. A written approval for usage of the questionnaire was attained from a full copyright owner (EuroQol Group 1990). This tool consists of two parts. In the first part (EQ-5D), the examinee describes his or her wellbeing in 5 dimensions: mobility, self-service activities, everyday chores, feeling of pain/discomfort, anxiety/depression. The assessment is carried out by marking the answers with values from 1 to 3, for which 1 means lack of problems and 3 stands for the intensified problems. The Visual Analogue Scale (VAS) constitutes the second part of the questionnaire, which operates on the scale of 0-100. Respondents are assessing their health at the moment of filling the questionnaire by allocating a particular scale value.

The research paper analyzed the Health-Related Quality of Life expressed by the two dependent variables: self-reported health and the occurrence of problems (five dimensions – five constituent variables: mobility, self-care, usual activities, feeling of pain/discomfort and anxiety/depression; and independent variables: the participation in the occupational therapy, gender and age of the patients.

In the statistical analyses the cross-tabulation with chi-square test, analysis of variance ANOVA, the multilevel logistic regression modeling and the generalized linear model (GLM) were used.

Results

58 women (SD 70,57 ± 3,88 years old) and 37 men (SD 74,57 ± 4,02 years old) were examined. 47 person, 21 of which were men and 26 women, from the whole group took part in the occupational therapy. The age structure is presented in the table 1. The most numerous age category in the examined group was ranging between 70 and 75 years, both women and men. The youngest examined person was 66 years old, whereas the oldest was 84.

Table 1. Age and gender structure of examinees

Age / Gender	Total	66-69 years old	70-75 years old	76-79 years old	80 years old and more
Women	58	21	31	4	2
Men	37	4	18	11	4
Total	95	25	49	15	6

The correlation of the analyzed variables with examinees' gender and age

The cross tabulation with chi-square test, analysis of variance ANOVA were used to assess the relation of the variables with examinees' gender and age. Gender did not significantly diversify people's participation in the therapy. The age structure was more substantial for the involvement in the therapy ($p<0,05$). Younger people made use of the therapy more often than the older ones. Taking into account the variables of gender and age and analyzing its effect on the frequency of the therapy attendance, the results showed that younger women were engaged in the therapy more often ($p<0,001$).

The occurrence of anxiety and depression was correlated with patients' gender- women enumerated this ailment more often than men ($p<0,05$). Feeling of pain/discomfort was related to age – people that passed the age of 69 felt the pain or experienced discomfort more often than their younger friends - ($p<0,05$).

The analysis of variance ANOVA has shown that the self-reported health was not dependent on gender or age.

The correlation of Health-Related Quality of Life with the participation in the occupational therapy

The cross tabulation with chi-square test demonstrated the existence of statistically significant differences between the problems occurrence in 3 from 5 analyzed dimensions and the seniors' participation in the occupational therapy. The elderly people that were not attending the therapy substantially more often complained about the ailments connected with: mobility ($p<0,05$); feeling of pain/discomfort ($p<0,001$); anxiety/depression ($p<0,001$) (Figure 1).

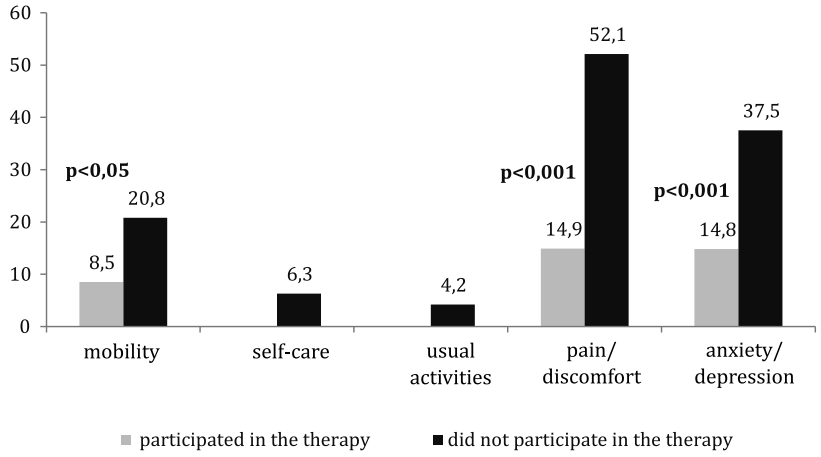

Figure 1. The correlation between the problems seniors complained about and their participation in the occupational therapy (% of examinees)

Within the analysis of variance ANOVA, the average self-evaluation of health that was measured on VAS scale was compared with the resulting correlation with the examinees' participation in the occupational therapy. Persons that partook in the therapy assessed their health on the higher level ($p<0,001$). The average VAS scale value amounted to 76,53 with 95% confidence intervals. [72,96-80,10]. People who did not join the classes attained a total average self-evaluation of their health that equals 43,60; PU [39,51-47,7].

The correlation of Health-Related Quality of Life with the attendance at the occupational therapy and age – interaction

Applying the multidimensional logistic regression modeling the possibility of the particular ailments occurrence quotients were established. They comprise the total HRQL depending on participation of the seniors in the therapy and their gender and age. An important co-variation was noted in cases of two domains: pain/ discomfort and anxiety/depression. Being engaged in the therapy has considerably reduced the risk of problems in both dimensions ($p<0,001$ and $p<0,05$ respectively). Moreover, the risk of feeling pain was augmented by the age of the patients – 70 years old and more ($p<0,05$) and the risk of experiencing anxiety or depression was smaller among men in comparison to women ($p<0,05$). The values showing the odds ratio (OR) and confidence intervals are presented at Figure 2.

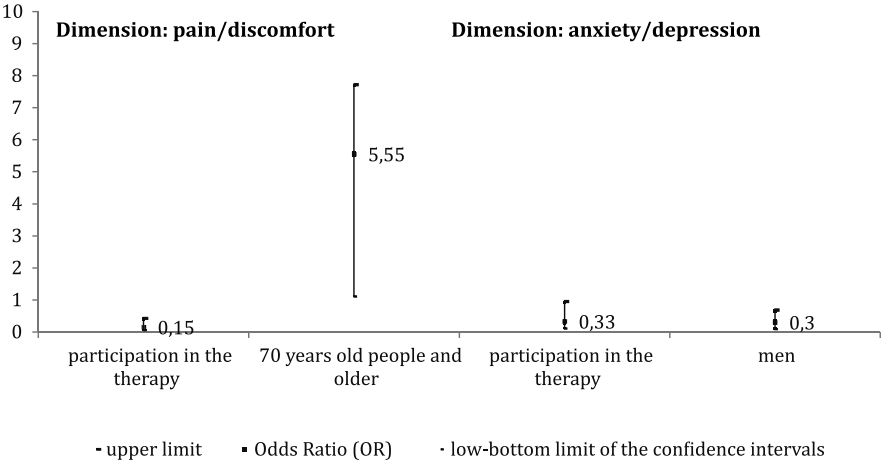

Figure 2. Factors that limit and intensify the risk of occurrence of ailments: pain/discomfort and anxiety/depression (odds ratio –OR)

Using the generalized linear model (GLM) the interaction between the self-reported elderly people's health with their partaking in the occupational therapy, age and gender. In accordance with the earlier results, only the participation in the therapy considerably influenced the self-reported health ($p<0,001$). The analysis of the co-

variation of all the examined factors did not show a statistical significance, but the strong tendency for changes was preserved, which can be inferred from the Graph no.3. Younger participants, both women and men, assessed their health at the higher level than their older friends and those who did not partake in the occupational therapy.

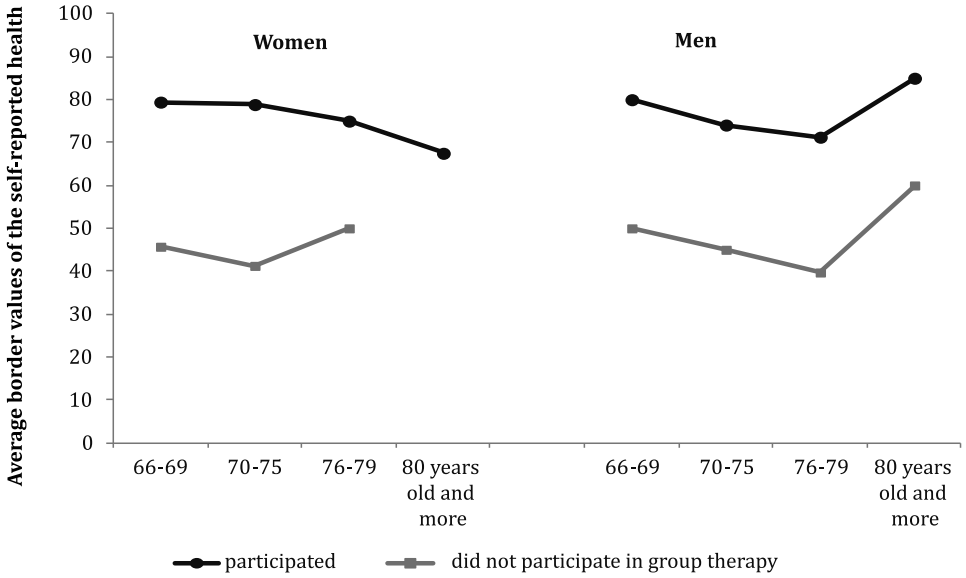

Figure 3. The relation between the participation of seniors in the occupational therapy and the problems in 5 dimensions reported by seniors (% of the examined)

Discussion

The examinations connected with the Health-Related Quality of Life of the elderly people in the context of participation in the occupational therapy were presented in the thesis paper. While analyzing the results, two constituents of the HRQL assessment were used: an objective indicator – an intensification of the ailments occurrence within the five dimensions and a subjective indicator – the self-reported health. The inner feelings and the state of well-being of the examined people always constitute a foundation for the measure and HRQL assessment, where not only the objective indicators are taken into account. This approach relates to a "equality of rights" of the disabled or chronically sick patients, who are enabled to, along with the healthy people, assess their quality of life on the fully dimensional scale. Within the realm of the clinical examinations of a medical background HRQL is assessed on the basis of the clinical results (examination results, level of recuperation, process of curing etc…) combined with the well-being or health self-assessment. Numerous simple and complex indices of the health status diagnosis are applied e.g. Life Expectancy (LE), Quality Adjusted Life Years (QALY), Disability Adjusted Life Expectancy (DALE), Healthy Life Years (HLY) and others (Gromulska et al. 2008). Depending on the aim of the examination and needs the projects evoke, the relevant indices of the heath state are applied to specify the Health-Related Quality of Life.

In the context of occupational therapy HRQL is used as a positive parameter of health, which is the most classic and universal definition of quality of life proposed by Thomas Gill and Alvan Frenstein. According to this approach the quality of life is a way, in which man perceives his health state as well as the reaction on it and other medical aspects of life e.g. family, work or friends (Gill and Feinstein 1994). Basing on the definition of the occupational therapy quoted earlier, the focus is placed on *the client centered practice* and in the therapeutic process individual needs and capabilities of a patient as well as his/her attachment to a particular social group (family, work environment, friends and acquaintances, local community) is taken into consideration.

The results of the examination conducted specify taking part in the occupational therapy as a factor contributing to a better assessment of Health-Related Quality of Life. Objective component HRQL (occurrence of problems) alike the subjective constituent (self-reported health) were represented by the higher values for patients that partook in the occupational therapy. Similar results can be found in a numerous Polish and foreign literature, in which the various therapeutic forms are proven to bear a positive impact on HRQL of the elderly people. The examinations carried out by Kathleen Matuska, which consisted in the six months participation of the elderly people in the comprehensive occupational therapy program, indicated a considerable improvement of HRQL assessment in the sphere of vitality, interaction in social groups and mental health (Matuska et al. 2003).

Carr-Tyszka i Farber obtained interesting results. They were analyzing the effect of the healthy lifestyle campaign exerted on the involvement in the therapy and Health-Related Quality of Life and the results indicated that the promotion of the healthy lifestyle causes the significantly greater engagement in the therapy and has noticeable impact on HRQL (Carr-Tyszka i Farber 2010). The proof that there is a direct and indirect positive correlation between the occupational therapy and the patients' Health-Related Quality of Life. Program against injuries caused by falls, which was implemented in the selected group of elderly people, resulted in the improvement of the balance system and other psychophysical parameters (Krampe et al. 2010). Within the program dance classes were used as a therapy. Better assessment of quality of life was a consequence of the participation in the classes.

A similar approach, but from the other perspective, can be seen in the work of Horowitz and other scientists, who implemented a program of the occupational therapy for students, which was based on the intergenerational educational effects during the practical contacts with the elderly people in their social environment (Horowitz et al. 2010). Besides the content-related results such as an improvement of the general quality of life, an interesting program of the occupational education for therapist based on the practice was created. Metz and Robnett bring about the less popular correlation between the occupational therapy and the state of mental health. Scientists prove that the therapy has a beneficial influence on the functioning and the quality of life of the elderly people (Metz and Robnett 2011).

Concluding, Clark and other scientists, within the report from the Well Elderly 2 project, confirmed that the occupational therapy lessened the feeling of pain, improved the general organism vitality, social functioning, mental health and boosted life satisfaction of the elderly (Clark et al. 2011). HRQL was also analyzed in the context of the occupational therapy effectiveness results. In order to obtain the desired results, the QALY index was used. Its growth was noticeable in the intervention group and it corresponds to greater effectiveness.

On the basis of the examinations conducted and those mentioned earlier in the study it can be inferred that within the population of the elderly, the participation in the therapy positively affects their physical, mental health as well as social interactions, well-being and HRQL. Moreover, the character of these interrelations is extensive, consistent with the holistic concept of health and it is connected with the costs reduction for treatment and rehabilitation of the elderly.

Limitations of the studies

EQ-5D-3L questionnaire contains both - somatic and psychological element of the HRQL, but it does not diagnose the social context.

People who were qualified for the group that did not participate in the occupational therapy could be more predisposed to make worse assessments. This situation could be related to their more negative attitude towards life and towards people as well as poor social interactions – also in the sphere of the willingness to partake in the various forms of activities, including therapy.

Conclusions and practical implications

The participation of the elderly in the occupational therapy has beneficial outcomes noticeable in every aspect of their lives and functioning, within the realm of physical and mental health as well. The client centered occupational therapy additionally enables the patients to activate and join in various activities organized as a part of the community, in which they life.

Health-Related Quality of Life constitutes a positive index of health and allows to extensively diagnose the state of the patients' health, encompassing all the social groups and thus contributing to the diagnosis of the whole population's state of health.

The positive effect occupational therapy has on the Health-Related Quality of Life is broadly covered in the literature. A special attention should be spared on the aspect of holistic influence and the economic benefits that stem from the therapy organized in such a way. The fact that complex therapy can constitute a perfect foundation for the healthy lifestyle campaigns, which as indicated in the quoted theses has a direct connection with the improvement of the Health-Related Quality of Life assessment.

Engaging in the therapy can improve or help to regain the quality of life that was lost due to the process of ageing, disease or disability. It is beneficial not only to the individual patient, but also to the systemic savings. The occupational therapy should become a tool used extensively within the modern public health system that is oriented on the preventive treatment and health promotion, and not solely a short-term action. As a result, the high level of educational courses for occupational therapists becomes more and more important.

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HOLISM IN HEALTH CARE IN UNCONSCIOUS PATIENTS

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Summary: Nowadays nursing focuses the care on the whole person with his instantaneous and potential health problems. The main role in the care of patients has a nurse, who perceives a patient as a unique, holistic being and not only merely his parts. She is increasingly interested in the link of physical, mental, social and spiritual needs. It is in the most important for the patient's health, well- being and his survival to apply the new dimension of a holistic approach in nursing, which means the quality of patient's life. One of the groups of patients hospitalized in intensive care units creates the patients who are unconscious, they have various injuries of many vital body systems and some of them can have irreversible damages as well. The aim of their treatment is the minimum of harm to the body and then, if possible, patient return to optimal functioning in the society. The right choice of methods for systematic and comprehensive approach is essential to provide holistic nursing care.

Keywords: holism, patient needs, unconsciousness, nurse, holistic nursing care

Introduction

Efforts to maintain a balance between technology and the needs of individuals in nursing should lead to the application of a holistic approach to people. "A holistic approach requires a focus on biological, psychological, social and spiritual aspects of health and disease. Application of a holistic philosophy cares for the health of people and stresses that the nurse has to take into account the person as a whole and must simultaneously try to understand the relationship of the parts in relation to the whole interaction and relationship to the whole of his body parts "(Pavlíková, 2006).

Holistic nursing as well as holistic medicine treats the whole person - body and psyche, as opposed to methods which focus on body parts, symptoms or diseases. It requires a new approach to the patients, but to their own health and diseases (Morton, Fontaine, Gallo, 2005). "Holistic nursing care accepts the rights of patients that are an integral part of treatment and healing process. An integral part of holistic nursing is the nursing process, which is a systematic approach and comprehensive solution to the patient problems. The main objective is to improve the quality of nursing care to the extent that it respects the individual needs of patients and increases their satisfaction. The result of this treatment is that one of their needs can meet all aspects. Each person is unique, has his typical characteristics, attitudes, beliefs and needs that affect his behaviour, expressions and reactions. In an unconscious patient following characteristics, attitudes, views and needs are influenced by the disease and the changed environment. Therefore the needs and requirements are appeared in patient which are not showed in the state of health.

Development of intensive care and emergency resuscitation can bring dramatic, sophisticated, positive diagnostic and treatment options, ambivalence, ethical - philosophical questions and problems associated with caring for critically ill patients (Rybarova, Argayova, 2011). Intensive care of patients always provides a comprehensive and individual care which is provided because of helping the patient at the moment as much as possible. The anaesthetic - resuscitation department is receiving patients who have imminent failure of basic life functions, or those who have been in this failure. Such as the patient resuscitation care is provided, the extent of nursing care is dependent on the diagnosis and medical condition of the patient. As the patient health is constantly evolving and the needs and demands for nursing care are evolving as well. An unconscious patient deprives his mobility, self-sufficiency, and decision bedridden him. He is completely dependent on others, is located in a subdivision. Activity of others (family, relatives and friends) can help him. Rhythm of life is determined by interventions from the patient's surroundings and not himself, e.g. doctors, nurses, physiotherapists, and etc. It is

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Tables: 0 **Figures**: 3 **References:** 8, **Full-text PDF** www.hpc.edu.pl **Indexation:** Index Copernicus, Database AGRO, ProQuest, Polish Ministry of Science and Higher Education.

important that the nurse is perfectly aware of all his needs, and they are fully satisfied. The rate of knowledge and needs of the patient depend on what a nurse needs to know how and is able to apply this knowledge into practice**.** Assess the unconscious person condition is one of the most important role of a nurse work (Horňáková, 2008). "From a nursing perspective, a nurse should know about the needs of the patients enough to recognize their rights to know and understand them in her professional nursing knowledge and skills to ensure patient satisfaction, affect and coordination.

The nurse should realize: what is activated the patient, as diseases are modifying current method and limiting to addressing the basic biological needs of life and disease-emerged, so far unknown needs, how it affects the patient's illness and social conditions as they are reflected back to the patient, to initiate the creation of new needs, how known needs of patients will influence to prevent any frustration of developing a complication and the resulting new needs (Kapounová, 2007). "The unconscious patient needs can be met by healthy or even harmful way. The question is whether to meet the physiological and psychological needs of the unconscious patients by largely objective judgments of nurses, but can also by subjective to the patient who is conscious. Among the factors that impede meeting the needs of the patient is disease, human individuality (personality), interpersonal relationships, human development stage, the circumstances in which the disease arises" (Trachtová et al., 2001). A need for breathing, nutrition, emptying, self-sufficiency and psychological balance are the most common needs of patients in intensive care. Kapounová (Kapounová, 2007) points out that to prevent the patient psychological well- being may contribute to the following factors to the maximum extent possible with regard to their diagnosis and health as: maintain or improve patient self-sufficiency, eliminate or minimize pain, communicate, to ensure sufficient rest and sleep, create a feeling of security and safety.

The aim of work

We try to check differentiations in knowledge and practical implementation of a holistic approach to an unconscious patient in the context of professional development of nurses and the places of occupation in the Anaesthetic-Intensive Care methodology (AIM) workplace from various cities in Slovakia.

Research objectives:

- Identify and compare the knowledge of holism and holistic nursing care within a holistic approach to the unconscious patient in nurses in the AIM workplaces from various cities in Slovakia.
- Identify and compare documentation of satisfying the needs of an unconscious patient in the AIM workplaces from various cities in Slovakia.
- Monitor the holistic approach to nursing care of the unconscious patient at the AIM workplace from various cities in Slovakia.

Material and methods

In the research area, we used a causal comparative research, ex - post facto. The research was realised in the months from March to October 2010 in nurses working in the AIM workplaces in Presov, Partizanske, Stara Lubovna, Vranov, Martin, Ruzomberok and Bardejov. All participants were informed in an adequate extent the research project and agreed to cooperate. To determine the individual components of the research we used the method of data collection by questionnaire and observation sheet. For statistical processing of our data, we used SPSS 15.0 software, Skewness test, nonparametric statistics, descriptive statistics, Kruskall-Waliss test for multiple independent selections and Mann-Whitney test for two independent selections.

Totally 158 nurses were participated in our research, we tried to compared them statistically based on the number of individual towns and sex. The final set of research ultimately consisted of 133 nurses.

Research hypotheses:

H1: We expect that knowledge of holism and holistic nursing care within a holistic approach to the patient who is unconscious will not significantly differ from respect to the place of occupation of a nurse.

H2: We assume that the more objective quality of realization and recording of nurses holistic approach to unconscious patient in the AIM workplaces will significantly differ from respect to the place of occupation of a nurse.

Results

The research results presented on figures 1-3.

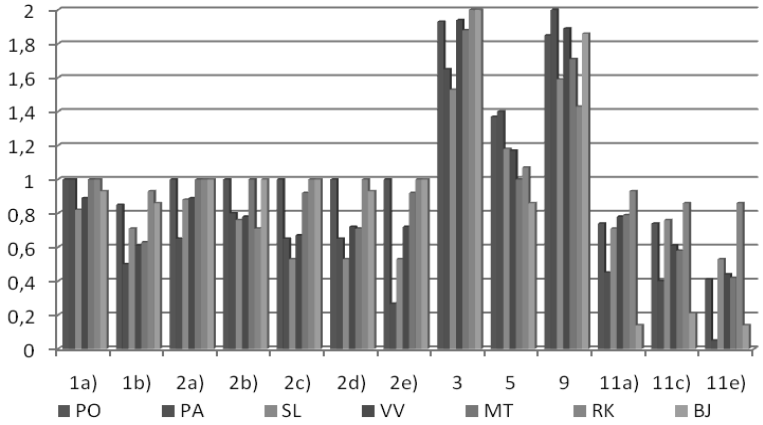

Figure 1. Knowledge of holism and holistic nursing care

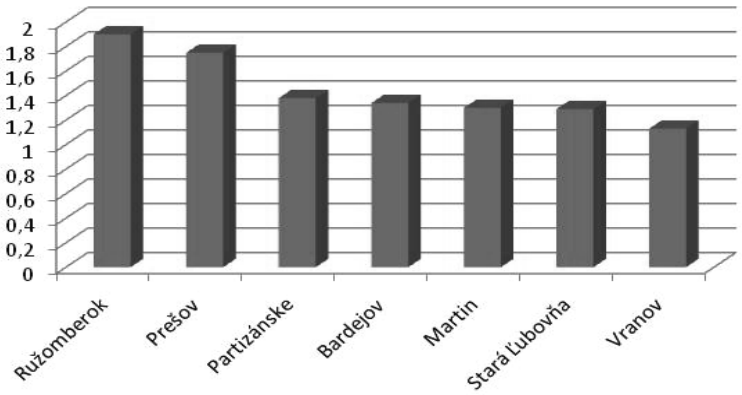

Figure 2. Comparison of average values of objectified quality realization and recording of the holistic approach to an unconscious patient in the AIM workplaces

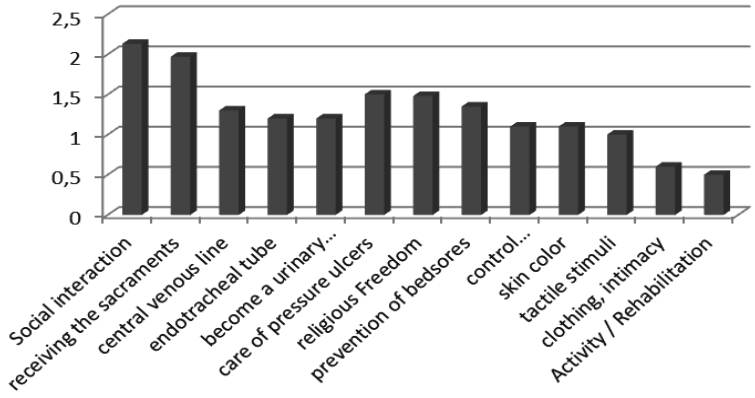

Figure 3. Comparison of average values of objectified quality realization and recording of the holistic approach to an unconscious patient in the particular categories.

- Only nurses from Presov considered necessary to provide holistic nursing care in all hospitalized patients.
- The most of nurses from Ruzomberok considerred necessary to record the satisfaction of psychological, spiritual and cultural needs of the patient to health care documentation.
- The most of nurses from Stara Lubovna wrote down the records of saturation, biological, social and spiritual needs of the patient in health care documentation.
- Objectified quality of realization and recording of a holistic approach of nurses in the AIM workplace statistically significantly differ from regarding the place of occupation of a nurse.

Discussion and conclusions

Based on the research results we would like to argue and agree with Cumbie (Cumbie, 2001), that the application of a holistic approach to nursing care of the patient who is unconscious requires widening the professional knowledge of nurses, their practical and clinical skills, and all this meets the needs of the patient in a holistic sense.

Recommendations for practice - we suggest the following activities:

1. Monitor the latest knowledge in the field of holism and provide the holistic nursing care as well.
2. Provide nursing care according to the standards developed and revised standards in accordance with the latest knowledge.
3. Monitor legislative changes and effectively implement them in clinical nursing practice.
4. Consistently and accurately document nursing care, as well as the patient's response to it.
5. Apply a holistic approach to the issue of patient health standards in health care, which is an important condition for improving the quality of provided health care.

Knowledge of basic needs form the theoretical basis for nursing process and its application in practice. Assessment of the patient needs who is unconscious is the basis for assessing the patient including the problems and priorities in planning nursing interventions. To provide holistic nursing care if the patient is unconscious, selecting the systematic and comprehensive approach is an important method. This is the secure method of using the nursing process and complexity of the chosen treatment model.

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