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In memory of Professor Józef Bergier
(17 February 1952 – 21 March 2019)

We regretfully announce that Professor Józef Bergier, Head of the Scientific Council for the *Health Problems of Civilization* journal and rector of Pope John Paul II State School of Higher Education in Biała Podlaska, which is the publisher of our journal, passed away on March 21, 2019.

Józef Bergier was born on 17 February 1952 in Międzyrzec Podlaski, where he also attended and graduated from primary and high school. He studied at Warsaw University of Physical Education (AWF), Faculty in Biała Podlaska, from which he graduated in 1975.

He worked as an academic at AWF from 1975 until 2013. He obtained his PhD in 1983, and his postdoctoral degree in Cultural Physical Studies in 1999. In 2000, he was appointed rector of the newly established State School of Higher Education in Biała Podlaska and he performed this function until 2009, and then again from 2013 until his last day. From 2009 until 2013 he was vice-rector and rector's proxy. During those two decades, he was involved in the administration, operation and development of the State School of Higher Education. Being in charge of the school, Professor Bergier focused not only on improving educational activity as a basic aim of the institution, but also on expanding research and development activity and publishing activity as a way of reforming its scientific staff, and also on strengthening the role of the school as a modern regional academic centre. With great enthusiasm he pursued his vision of establishing a new Bialska Academy. Modern didactic, scientific and sporting facilities representing the school's material foundations and the ever-growing renown of the school around the country are proof of his success. In the last decade, the State School of Higher Education in Biała Podlaska worked its way up the Polish rankings of universities, receiving the title of Poland's Best State School of Higher Education in the last three years.

Professor Bergier was a notable scientist in the fields of Cultural Physical Studies and of Sport Theory, a specialist in team sports training theory and practice, and a coach of football masterclass. In 2012 he was appointed a professor of Cultural Physical Studies. He published over 500 scientific papers and 6 textbooks. He was an editor of many joint publications ensuing from organised scientific conferences. Many papers were published in journals from Master Journal List. Over the last years the professor participated in international research programs while also promoting and actively participating in scientific cooperation with universities located abroad.

As the school's rector, Professor Józef Bergier paid special attention to the expansion of publishing activity, which is reflected in the establishment of the school's three scientific journals, and in publication of many monographs and textbooks. From 2010 he served as Editor-in-Chief of the scientific journal *Człowiek i Zdrowie/ Human and Health,* renamed in 2014 to *Health Problems of Civilization*. He was Deputy Editor-in-Chief of the journal *Rozprawy Społeczne,* and a member of Editorial Council of the journal *Economic and Regional Studies/ Studia Ekonomiczne i Regionalne*. He was also a member of Scientific Councils of journals published in other scientific centres including *Polish Journal of Sport and Tourism*.

Professor Józef Bergier carried out many functions outside the school, in the area of science and sports. In years 2012-2013 he was a member of the Polish Accreditation Committee (PKA) in the Medical, Health and Physical Culture Sciences team. He was engaged in self-government and political activity. He was a member of the City Council for Biała Podlaska until 2006, and Vice-President of Lubelskie voivodeship assembly in 2007. He also served as a Member of the Polish Parliament in the 3rd term (1997-2001) and in the Polish Senate in the 7th term (2007-2011). In years 1981-1985 he was Head of the football association in Biała Podlaska (BOZPN), and as Head of the Women's Football at the Polish Football Association between 2009 and 2013. He was also a member

of the International Association of Sport Kinetics and Deputy Chairman of the International Scientific Society of Sports Games.

He received many collegiate and Ministry of Science and Higher Education awards. He was awarded the Golden Medal for services rendered to the school and was awarded the title of Distinguished Person for the Town of Biała Podlaska. He was also awarded the Cross of Merit and the Knight's Cross Order of Polonia Restituta. In 2017 he was elected as Honorary Professor of Ternopil State Medical University (Ukraine).

The passing of Professor Józef Bergier is a great loss for his close friends and relatives, for members of staff and students of the school, and for his many colleagues.

The Policy Council of Pope John Paul II State School of Higher Education Publisher in Biała Podlaska, together with Editorial Committees and Scientific Councils of journals published by the school regretfully say farewell to Professor Józef Bergier, the rector of the school. We have lost the founder of our journal, and a distinguished scientist and promoter of science. The bereaved academic society will always keep their founder and his achievements in our memory.

Professor Mieczysław Adamowicz
Rector's Proxy
for Research and Applications
Pope John Paul II State School of
Higher Education in Biała Podlaska

Associate Professor Wioletta Żukiewicz-Sobczak, PhD
Deputy Editor-in-Chief
Health Problems of Civilization

Pamięci Profesora Józefa Bergiera
(17 lutego 1952 – 21 marca 2019)

Z głębokim żalem informujemy, że 21 marca 2019 roku zmarł Profesor Józef Bergier, Przewodniczący Rady Naukowej czasopisma *Health Problems of Civilization,* a jednocześnie rektor Państwowej Szkoły Wyższej im. Papieża Jana Pawła II w Białej Podlaskiej, uczelni, która jest wydawcą naszego czasopisma.

Józef Bergier urodził się 17 lutego 1952 roku w Międzyrzecu Podlaskim, gdzie ukończył szkołę podstawową i średnią. Studiował w Akademii Wychowania Fizycznego w Warszawie, Filii w Białej Podlaskiej, którą ukończył w 1975 roku.

W tej uczelni pracował w latach 1975-2013 w charakterze nauczyciela akademickiego. W 1983 roku uzyskał stopień doktora, a w 1999 roku został doktorem habilitowanym nauk o kulturze fizycznej. W 2000 roku został rektorem nowo powstałej Państwowej Wyższej Szkoły Zawodowej w Białej Podlaskiej, którą to funkcję sprawował do 2009 roku, a następnie od 2013 roku aż do śmierci. W latach 2009-2013 pełnił funkcję prorektora bądź pełnomocnika rektora. Był osobą, która przez całe dwudziestolecie angażowała się w organizację, funkcjonowanie i rozwój Państwowej Szkoły Wyższej. Kierując uczelnią, Profesor Bergier zwracał uwagę nie tylko na doskonalenie działalności edukacyjnej, jako podstawowego zadania Państwowej Szkoły Wyższej, ale także na rozwój działalności naukowo-badawczej i publikacyjnej, rozwój własnej kadry naukowej, a także na umacnianie roli uczelni jako nowoczesnego ośrodka akademickiego w regionie. Z zapałem i sukcesem realizował wizję budowy nowej Akademii Bialskiej. Ewidentnym dowodem na to są zarówno nowoczesne obiekty dydaktyczne, naukowe i sportowe, tworzące bazę materialną uczelni, ale także rosnąca z biegiem lat renoma uczelni w całym kraju. W ciągu ostatniego dziesięciolecia Państwowa Szkoła Wyższa w Białej Podlaskiej pięła się co roku w górę w ogólnopolskich rankingach uczelni wyższych, dochodząc w ostatnich trzech latach do pozycji najlepszej państwowej szkoły zawodowej w Polsce.

Profesor był wybitnym naukowcem w dziedzinie nauk o kulturze fizycznej i teorii sportu, specjalistą w sferze teorii i praktyki treningu w zespołowych grach sportowych, trenerem klasy mistrzowskiej w piłce nożnej. W 2012 roku otrzymał tytuł profesora nauk o kulturze fizycznej. Opublikował ponad 500 artykułów naukowych i 6 podręczników. Był redaktorem wielu prac zbiorowych, powstałych zwłaszcza w wyniku organizowanych konferencji naukowych. Wiele prac ukazało się w czasopismach z listy filadelfijskiej. W ostatnich latach Profesor uczestniczył w międzynarodowych programach badań naukowych i wspierał współpracę naukową z uczelniami zagranicznymi czynnie w niej uczestnicząc.

Profesor Józef Bergier jako rektor uczelni przykładał dużą wagę do rozwoju działalności wydawniczej, czego wyrazem jest funkcjonowanie w uczelni trzech czasopism naukowych, a także publikacja licznych monografii i podręczników. Od 2010 roku był Redaktorem Naczelnym czasopisma naukowego *Człowiek i Zdrowie / Human and Health,* które od 2014 roku przyjęło nazwę *Health Problems of Civilization*. Był też Zastępcą Redaktora Naczelnego czasopisma *Rozprawy Społeczne* oraz członkiem Rady Redakcyjnej czasopisma *Economic and Regional Studies/Studia Ekonomiczne i Regionalne*. Był też członkiem rad naukowych czasopism wydawanych w innych ośrodkach m.in. *Polish Journal of Sport and Tourism*.

Profesor Józef Bergier sprawował szereg funkcji poza uczelnią zarówno w działalności naukowej jak i sportowej. W latach 2012-2013 był członkiem Polskiej Komisji Akredytacyjnej w Zespole Nauk Medycznych o Zdrowiu i Kulturze Fizycznej. Zajmował się działalnością samorządową i polityczną. Do 2006 roku zasiadał w Radzie Miasta Biała Podlaska, w 2007 roku pełnił funkcję wiceprzewodniczącego w sejmiku województwa lubelskiego. Był posłem na Sejm III Kadencji (1997-2001) oraz senatorem VII Kadencji Senatu Rzeczypospolitej (2007-2011). W latach 1981-1985 był prezesem Bialskopodlaskiego Związku Piłki Nożnej, a w latach 2009-2013 sprawował

funkcję Przewodniczącego Wydziału Piłkarstwa Kobiecego Polskiego Związku Piłki Nożnej. Był także członkiem Międzynarodowego Stowarzyszenia Motoryki Sportowej i Zastępcą Przewodniczącego Międzynarodowego Towarzystwa Naukowego Gier Sportowych.

Otrzymał liczne nagrody uczelniane, a także nagrody Ministra Nauki i Szkolnictwa Wyższego. Został wyróżniony Złotą Odznaką za zasługi dla własnej Uczelni i otrzymał tytuł Zasłużonego dla Miasta Biała Podlaska. Odznaczony brązowym i złotym Krzyżem Zasługi, a także Krzyżem Kawalerskim Orderu Odrodzenia Polski. W 2017 roku otrzymał tytuł Honorowego Profesora Uniwersytetu Medycznego w Tarnopolu (Ukraina).

Odejście Profesora Józefa Bergiera jest ogromną stratą dla bliskich mu osób, dla pracowników i studentów uczelni, oraz dla szerokiego grona współpracowników.

Rada Programowa Wydawnictwa Państwowej Szkoły Wyższej im. Papieża Jana Pawła II w Białej Podlaskiej oraz Komitety Redakcyjne i Rady Naukowe wszystkich czasopism wydawanych w Uczelni, z głębokim żalem żegnają Profesora Józefa Bergiera, Rektora Uczelni. Z odejściem Profesora tracimy założyciela naszego pisma, wybitnego naukowca, organizatora nauki. Pogrążona w żałobie społeczność akademicka zachowa w dobrej pamięci swojego lidera i tworzone przez niego dzieła.

Prof. zw. dr hab. Mieczysław Adamowicz
Pełnomocnik Rektora ds. Nauki i Wdrożeń
Państwowej Szkoły Wyższej
im. Papieża Jana Pawła II w Białej Podlaskiej

Prof. nadzw. dr hab. Wioletta Żukiewicz-Sobczak
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PART I. DISEASES AND PROBLEMS DISTINGUISHED BY WHO AND FAO
DZIAŁ I. CHOROBY I PROBLEMY WYRÓŻNIONE PRZEZ WHO I FAO

HISTOPATHOLOGICAL RESULTS ANALYSIS IN WOMEN UNDERGOING HYSTEROSCOPIC PROCEDURES DUE TO ENDOMETRIAL POLYPS

ANALIZA WYNIKÓW HISTOPATOLOGICZNYCH U KOBIET PODDAWANYCH ZABIEGOM HISTEROSKOPOWYM Z POWODU POLIPA ENDOMETRIALNEGO

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Authors' contribution
Wkład autorów:
A. Study design/planning
zaplanowanie badań
B. Data collection/entry
zebranie danych
C. Data analysis/statistics
dane – analiza i statystyki
D. Data interpretation
interpretacja danych
E. Preparation of manuscript
przygotowanie artykułu
F. Literature analysis/search
wyszukiwanie i analiza literatury
G. Funds collection
zebranie funduszy

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Figures: 2
References: 13
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Summary

Background. Endometrial polyps are the most common pathology of the mucous layer of the uterine cavity. In most cases, they do not cause symptoms and are detected accidentally during ultrasound.
Material and methods. Medical records of 79 patients hospitalized in the Obstetrics and Gynecology Ward of the Provincial Specialist Hospital in Biała Podlaska, who underwent hysteroscopy due to suspicion of endometrial polyps, were analyzed.
Results. In the final histopathological evaluation after the hysteroscopy procedure, presence of endometrial polypoid cells was found in 14 out of 79 women (17.7%).
Conclusions. The final diagnosis of pathological changes in the uterine cavity should be based on hysteroscopic examinations – they enable accurate assessment of the uterine cavity and allow for targeted biopsy collection.

Keywords: endometrial polyp, diagnostic ultrasound, hysteroscopy

Streszczenie

Wprowadzenie. Najczęstszą patologią błony śluzowej jamy macicy są polipy endometrialne. W większości przypadków nie powodują one objawów i są wykrywane przypadkowo, podczas badania USG.
Materiał i metody. Analizie poddano dokumentację medyczną 79 pacjentek hospitalizowanych na Oddziale Ginekologiczno-Położniczym Wojewódzkiego Szpitala Specjalistycznego w Białej Podlaskiej, u których wykonano zabieg histeroskopii z powodu podejrzenia obecności polipa endometrialnego.
Wyniki. W końcowej ocenie histopatologicznej po zabiegu histeroskopii, obecność komórek polipa endometrialnego stwierdzono u 14 spośród 79 kobiet (17,7 %).
Wnioski. Ostateczna diagnostyka zmian patologicznych w obrębie jamy macicy powinna opierać się na badaniach histeroskopowych – umożliwiają one dokładną ocenę jamy macicy i dają możliwość pobrania biopsji celowanej.

Słowa kluczowe: polip endometrialny, diagnostyka ultrasonograficzna, histeroskopia

Introduction

The concept of building an ultrasound scanner dates back to the beginning of the 20th century, when German and Russian scientists discovered the possibility of using ultrasound for tracking submarines. The first devices using this phenomenon attracted the interest of medical researchers, who quickly in the 1940s, began to carry out experiments with the use of ultrasound on living organisms. The first devices were used particularly for

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diagnostic evaluation of organs such as kidneys, gallbladder and brain, although one of the most spectacular was the diagnosis of fetuses and organs of the genitourinary system.

Nowadays, ultrasound techniques, clearly improved in comparison to the original ones and are the most frequently used methods of imaging. They are still based on the same phenomena as several decades ago. Thanks to ultrasound diagnostics, we can visualize a number of changes and defects of the uterus and ovaries. Gynecological diagnostics of patients of reproductive and postmenopausal age is usually based on vaginal examination. The image of the ultrasonographically examined endometrium is characteristic for a given moment of the menstrual cycle. In the menstrual phase the endometrium is 2-4 mm thick, in the follicular phase it reaches up to 8 mm, in the ovulation phase between 8 and 11 mm and in the luteal phase as much as 14 mm. Measurement disorders can occur with the coexistence of endometrial cancer, endometrial hyperplasia, uterine fibroids, endometrial polyps and mucositis, which is characteristic of miscarriage, postpartum period or an ascending infection. Uterine defects are found in a small percentage of fertile women, and even in 26% of infertile women. For women in which pre-term birth occurred, the percentage is up to 30%. In most cases, changes in the reproductive organs, especially in the initial stage, do not give clinical signs and are therefore not diagnosed. Manifestations in the form of menstrual disorders, pain, abnormal and pathological vaginal bleeding promote a visit to a gynecologist and the detection of functional or anatomical abnormalities of the reproductive organs.

Endometrial polyps are the most common pathology of the uterine mucosa. It is a local hyperplasia of the basal layer of the mucosa of the uterine cavity. Endometrial polyps are a mild change, with a diameter not exceeding 3 cm, most likely caused by unbalanced estrogen stimulation. Most often they grow towards the uterine cavity and are pedunculated. They can be found as single and multiple changes in the uterine cavity. Polyps of the body of the uterus can be found in any period of a woman's life. The frequency of their occurrence is about 10% in women of reproductive age and up to 15% in women in the perimenopausal age. In the vast majority of cases, endometrial polyps do not cause clinical signs and are found during routine gynecological examination and ultrasound imaging. If symptoms manifest themselves, women most often complain of heavy menstrual bleeding, breakthrough bleeding/spotting. These changes in women trying to get pregnant may be the cause of infertility acting in a similar way to an intrauterine device. In ultrasound examination endometrial polyps are shown as limited, hyperechoic (significantly higher echogenicity than the uterus muscle) areas of thickening of the uterine mucosa. The image of an endometrial polyp during hysteroscopy procedure is shown in Figure 1 and Figure 2 [1, 2, 3, 4, 5, 6, 7, 8, 9, 10].

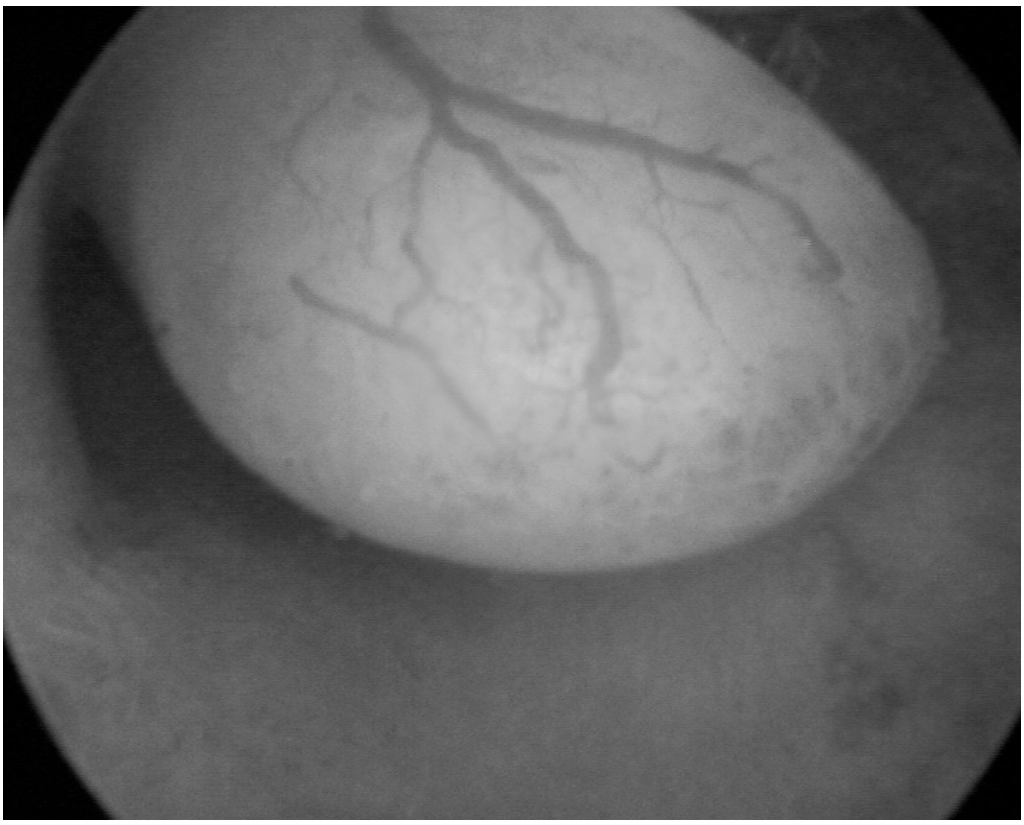

Figure 1. Image of an endometrial polyp during hysteroscopy procedure

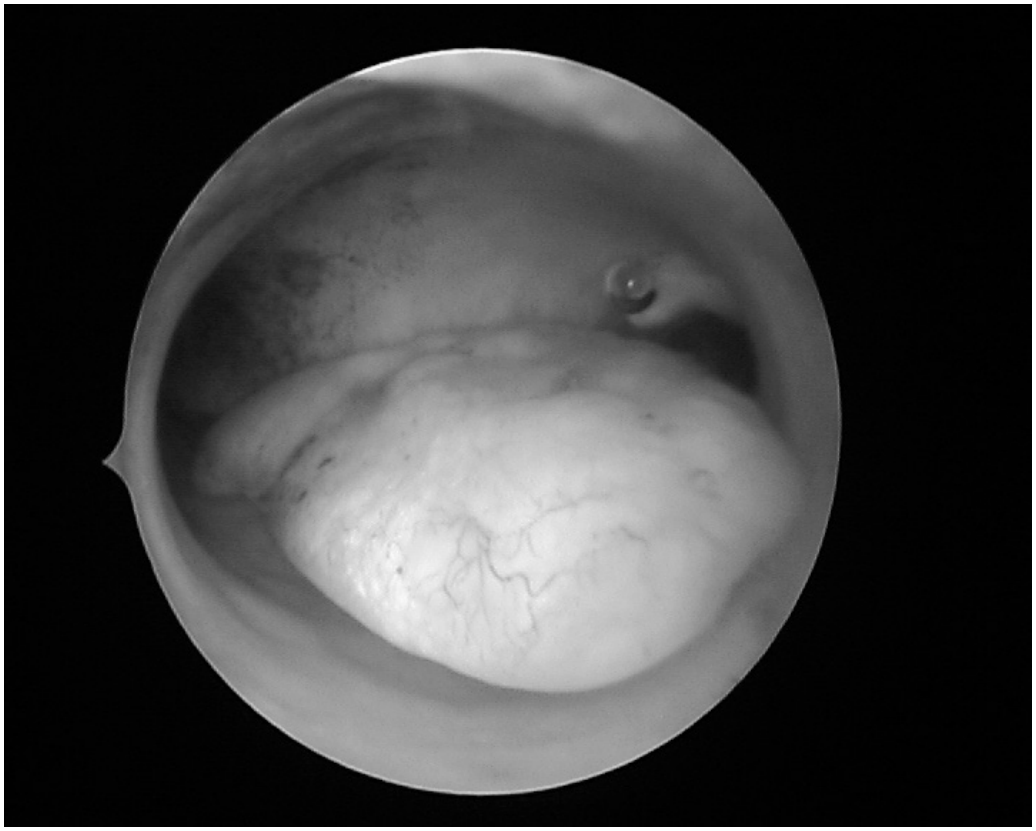

Figure 2. Image of endometrial polyps during hysteroscopy procedure

Material and methods

The material was collected on the basis of retrospective studies conducted on materials and collected as part of routine medical procedures. Medical records of 79 patients hospitalized in the Obstetrics and Gynecology Department of the Provincial Specialist Hospital in Biała Podlaska, who underwent hysteroscopy due to suspicion of presence of endometrial polyps, were analyzed. In the statistical analysis of the study, the basic methods of describing and evaluating the results were used. The analysis was carried out using the statistical package Statistica 12.0. The assumed significance level p was 0.05.

Results

79 women aged from 19 to 75 years (mean age - 46 years) were referred to the hospital with the diagnosis of endometrial polyps. 53 women were of premenopausal age and 26 of them were of postmenopausal age (age > 50 years). In all patient's ultrasound measurement of uterine size was performed. Its longitudinal dimension ranged from 24 to 91 mm (mean 56 ± 13 mm) and its transverse dimension from 18 to 64 mm (mean 42 ± 11 mm).

The endometrium thickness measurement results ranged from 3.9 to 26.1 mm (mean 12.5 ± 5.1 mm). Pathology (thickness >10 mm before menopause or > 4 mm after menopause) was found in 53 subjects (67.1%). The majority of cases of endometrial hyperplasia (34 out of 53) concerned premenopausal women, who constituted the majority of the study group (51 out of 79), but the incidence of endometrial hyperplasia was significantly higher in postmenopausal women (95% vs. 67%). The relationship between menopause age and endometrial hyperplasia was statistically significant ($\chi^2 = 6.1$; $p = 0.014$) (Table 1, Table 2).

Table 1. Table of relationships between age and endometrial hyperplasia

Age	Endometrial hyperplasia		Both
	No	Yes	
Premenopause	17 [33.3%]	34 [66.7%]	51
Postmenopause	1 [5.0%]	19 [95.0%]	20
Both	18	53	71

Table 2. Table of correlations between menopause age and confirmation of polyp diagnosis in histopathological examination

Menopause age	Polyp in histopathological evaluation		Both
	No	Yes	
Before	46 [86.8%]	7 [13.2%]	53
After	19 [73.1%]	7 [26.9%]	26
Both	65	14	79

Hysteroscopy was performed in the whole group of patients:
- in 75 (95%) surgical hysteroscopy,
- in 4 (5%) diagnostic hysteroscopy.

In all 53 women with endometrium hyperplasia, hysteroscopy performed was surgical.
In the final histopathological evaluation after the procedure, the results were as following:
- normal result - 35 (44.3%)
- endometrial hyperplasia without atypia - 18 (22.8%)
- endometrial hyperplasia with atypia - 1 (1.3%)
- endometrial atrophy - 2 (2.5%)
- endometrial polyp - 14 (17.7%)
- uterine fibroid cells - 7 (8.9%)
- cancer cells - 2 (2.5%).

12 (92%) out of 13 patients with histopathologically confirmed polyps which had their endometrium measured earlier had endometrial hyperplasia.

However, the relationship between endometrial pathology and referral accuracy was not statistically significant ($\chi^2 = 1.6$; $p = 0.21$).

Discussion and conclusions

The findings presented in this article highlight an important cause for concern. Out of 79 women referred to the hospital because of endometrial polyps, histopathological confirmation was obtained only in 14 patients. In the majority of cases the initial diagnosis was established on the basis of routine ultrasound examination. Hysterosonography (administration of contrast agent into the uterine cavity) enables improvement of ultrasound imaging and, consequently, better differential diagnostics. Another option for enhanced diagnostics is the use of color Doppler. Characteristic of polypoid lesions is vascularization in the form of one or more vessels penetrating directly into the lesion (these are nutrient vessels). However, the final diagnosis of pathological changes in the uterine cavity should be based on hysteroscopic examinations - they enable accurate assessment of the uterine cavity and allow for targeted biopsy collection. Very often hysteroscopy is not only a diagnostic but also a therapeutic tool [11, 12, 13].

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SOCIAL SUPPORT NETWORKS FOR MOTHERS WHO RAISE INTELLECTUALLY DISABLED CHILDREN

SIECI SPOŁECZNEGO WSPARCIA MATEK WYCHOWUJĄCYCH DZIECI Z NIEPEŁNOSPRAWNOŚCIĄ INTELEKTUALNĄ

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Wkład autorów:
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B. Data collection/entry
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dane – analiza i statystyki
D. Data interpretation
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Summary

Background. A social network is a group of people with whom a given person – the central person in the network – maintains contact. Social support networks for families raising an intellectually disabled child offer significant advantages for the functioning of family members: from providing help in performing everyday tasks, to sharing information, and offering emotional support.
Material and methods. The aim of the paper is to analyse the structure of social networks and the types and sources of support received by mothers raising intellectually disabled children. The study was based on quantitative methods. Bizoń's Questionnaire of Social Surroundings (Kwestionariusz Otoczenia Społecznego) and a categorised interview were used. Each interview lasted about 2 hours. Fifteen mothers who raise intellectually disabled children have participated in the interviews.
Results. The social support networks of the mothers were usually comprised of more than 10 people. Close relatives and more distant family members act as the most important elements of social support networks for mothers who raise intellectually disabled children.
Conclusions. A multifaceted and complete spectrum of support was found in the mothers who participated in this study. The fact that the support systems are very centralised is alarming – if the main person leaves, the entire network of support might collapse.

Keywords: social support network, intellectual disability, child, mother of intellectually disabled child

Streszczenie

Wprowadzenie. Sieć społeczna to pewna liczba osób, z którymi dany człowiek – centralna osoba sieci – utrzymuje kontakt. Sieci społecznego wsparcia rodziny wychowującej dziecko z niepełnosprawnością intelektualną posiadają istotne korzyści w funkcjonowaniu członków rodziny, od pomocy w wykonywaniu codziennych czynności, po otrzymanie informacji, czy oparcie emocjonalne.
Materiał i metody. Celem pracy jest analiza badań własnych dotyczących struktury sieci społecznych oraz rodzajów i źródeł wsparcia otrzymywanego przez matki wychowujące dzieci z niepełnosprawnością intelektualną. Badania miały charakter jakościowy. Wykorzystano Kwestionariusz Otoczenia Społecznego Bizonia. Posłużono się wywiadem skategoryzowanym. Każdy wywiad trwał około 2 godzin. W wywiadach uczestniczyło 15 matek wychowujących dziecko z niepełnosprawnością intelektualną.
Wyniki. W skład sieci wsparcia badanych matek wchodziło zazwyczaj ponad 10 osób. Najważniejszymi węzłami sieci wsparcia matek wychowujących dziecko z niepełnosprawnością intelektualną są członkowie bliższej i dalszej rodziny.
Wnioski. W grupie badanych matek można wskazać na wielostronny i pełny zakres wsparcia. Niepokojący jest fakt zogniskowania systemów wsparcia – jeżeli osoby dominującej zabraknie może dojść do załamania systemu podtrzymania.

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Słowa kluczowe: sieć społecznego wsparcia, niepełnosprawność intelektualna, dziecko, matka dziecka z niepełnosprawnością intelektualną

Introduction

In Polish, social support (wsparcie społeczne) is usually treated as a synonym of providing help (udzielana komuś pomoc) [1]. McDowell and Newell indicate that support can be understood as providing a person who is experiencing some kind of difficulties with emotional, informational or material resources by other people – that is, by that person's social network [2].

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Thoits perceives social support as a degree to which an individual's basic social needs (such as belonging and safety) are awarded by contact with others [3]. Janocha, indicating the popularity of this term, highlights the fact that it is defined in multifaceted ways by various scholars [4]. Social support can be understood as:

- the expected help that is available for an individual (or a group) in difficult, stressful, life-changing situations which the individual (or group) cannot manage on their own [5];
- the attitude that is based on being ready to bring help to those who need it in order to regain mental balance, or the attitude that is based on being ready to prevent situations that may lead to such a condition [6];
- passing information that shapes an individual's sense of being respected, cared for and functioning as a member of a specific network of communications and mutual responsibilities [7];
- the resources provided by others that are helpful in coping with various situations, or the exchange of resources in the process of social interaction [8].

Taking into consideration the functioning of a family with a disabled child, and the fact that the appearance of a child who does not develop in a standard way is a difficult situation, I assume that support is a type of social interaction that has been initiated by one of a few individuals who participate in a difficult, problematic, stressful, or critical situation [8]. This approach can also be found in J. S. House's works (1981) – he treats social support as an interpersonal transaction, a type of interpersonal exchange [9].

There are various ways of supporting a family who raises a disabled child. According to Janocha, help can take the form of emotional, informational, or material support, as well as showing understanding, acceptance, and reassurance [4]. Social support may come from various sources. Singer and Lord indicated three categories of sources of support: personal, formal and professional. Friends, relatives, and acquaintances constitute the first one. The second one is made up of various organisations such as charities, institutions whose role is to provide help, social security, sports clubs, or church groups and communities. The third category is reserved for clinics that offer professional help and psychotherapy, as well as access to special, dedicated support groups [10].

According to Axer's definition, a social network is a certain number of people with whom a given person – the central person in the network – maintains contact [in: 11]. A social network is different from a small social group because not every member needs to know every other member [12].

The close relationship between an individual's social network and the support that is available to that individual is emphasised [2]. The existence of social networks is seen as a sufficient indicator of social support. A social network might be seen as "a structure or an arrangement, through which support is provided" [2].

In the case of a family group, the social network is made of the closest and more distant relatives, as well as non-related people whom the individual meets in various places and circumstances. For a given individual, all these people are important to various degrees. They are sources of both positive and negative stimuli; they provide support but they also add burden. This is why the terms "social network" and "social support network" should not be treated as synonyms – as we know, social interactions do not always influence an individual in a positive way [13].

Social support networks of families that raise a disabled child offer noticeable benefits in the context of the family members' functioning, from offering help in everyday chores to providing information that is valuable in terms of rehabilitation, treatment, or taking care of a disabled child [14]. Axer describes three views on social support offered by the environment to a disabled person: people who constitute the closest environment (their feelings, attitudes, and behaviours may have a positive influence), organisations offering support, and institutions that provide medical, social, and psychological help [12]. A. Maciarz discusses the support of a family raising a disabled child in its psycho-emotional aspect, in terms of social structures and services, in terms of care and upbringing and, finally, in terms of rehabilitation [15].

A family that raises a disabled child needs constant support – it is necessary not only when a diagnosis is presented. Social support facilitates the formation of an adequate image of a child's disability, adaptation, and the process of learning skills associated with care and rehabilitation. Social support networks also play an important role in the quality and effectiveness of education, rehabilitation and socialisation of a disabled child.

The aim of the study

The aim of the study was to analyse the structures of social networks, as well as the types and sources of the support that mothers who raise an intellectually disabled child receive. The main research problem was defined in the following question: what is the individual perception of their own support networks for mothers who raise a disabled child?

Material and methods

The description of the research method

The research was based on qualitative methods. A categorised interview has been employed. Bizoń's Questionnaire of Social Surroundings (Kwestionariusz Otoczenia Społecznego) was used – it was created in the 1980s. The tool is made of the following elements: the Map of Social Network (Mapa Otoczenia Społecznego), the List of Social Network (Lista Otoczenia Społecznego), and the Support System Record Sheet (Arkusz Zapisu Sytemu Oparcia). The second, revised version has been used – it is the one that is referred to as the research version (wersja badawcza) by the authors [16].

In order to determine who belongs to the category of a social support system for mothers of disabled children, eight fields were specified within the social environment: household members (1), closest relatives (2), other relatives and family members (3), colleagues (4), neighbours (5), other friends and acquaintances (6), therapists (7), other significant people (8). In the case of the first two groups, participants were encouraged to list all the people who meet the given criterion. In the case of the remaining groups – only those people who, for some reason, are more significant for the participant than others. These people are recorded by the participant on the Map of Social Network (Mapa Otoczenia Społecznego), which illustrates a social network in a graphic form.

The next stage is based on filling in the List of Social Network (Lista Otoczenia Społecznego) – using a questionnaire and the Map of Social Network. A participant responds to questions related to the length of their relationships with the aforementioned people and their intensity, as well as questions about the availability of those people.

Then, we use the Support System Record Sheet (Arkusz Zapisu Sytemu Oparcia). An interviewer records answers to questions related to the specific types of support. The aim is to distinguish people who fulfil specific supportive functions, and to eliminate those network members who do not offer any kind of support. These questions allow us to characterise the surroundings, the support system, and the supportive functions in detail.

Indexes used to characterise social support networks

The criteria for the evaluation of the supporting features of a support system are divided into the scope of support and the level of support.

1. The scope of support – this is the number of a network's functions in a person's system; it does not depend on the number of people who fulfil a given function. We have:
   A/Very narrow systems – 1 to 2 functions
   B/Narrow systems – 3 to 4 functions
   C/Average systems – 5 to 8 functions
   D/Broad systems – 9 to 10 functions
2. The level of support expressed through the support system index.

The support level index (wskaźnik poziomu podtrzymania, wpp) – includes the number of a network's functions in a given system (the scope of support) and the degree to which a given function can be replaced by other sources; it is also sensitive to the differences in the significance of particular functions. The value of the support level index also depends on the deficits in the support system – i.e., it takes into consideration the importance of the functions that are missing in the support system.

The support level index is calculated as follows: functions with one source – 1 point, functions with two sources – 2 points, functions performed by 3 three or more sources – 3 points. In the case of a lack of functions, we deduct points according to the following rules: the lack of the function indicated in questions 7 and 10 – we deduct 3 points, the lack of the function indicated in questions 1 and 8 – we deduct 2 points, the lack of the function indicated in the remaining questions – we deduct 1 point. Thus, the value of the support level index ranges from -18 to +30 points.

The criteria for the evaluation of the features of a support system are also based on the size, components and structure of the system.

1. The size of a support system (the number of the support sources) – this is the number of people who belong to the social environment of a participant and who perform supportive functions for the participant (at least one supportive function). We can have small (1 to 3 people), medium (4 to 10 people) and large systems (more than 11 people).
2. The components of a support system – this is the description of the area of social environment, which is made up of people who act as sources of support. We differentiate between the following types of systems:

- family systems (areas I, II, III),
- non-family systems (all the other areas), including institutional ones (area VII).

In terms of the length of a relationship, we have old systems (those in which relationships with the majority of members are over 10 years old), intermediate systems (those in which the relationships with the majority of members are from 1 to 10 years old) and new systems (those in which the relationships with the majority of members began less than 1 year ago).

3. The structure of a support system is based on its homogeneity of heterogeneity, its concentration or dispersion, and the density of relationships within the system.

A homogenous system is the one in which sources come from a single area. A heterogenous system is the one in which sources come from at least three different areas of the surroundings.

A concentrated system is a system in which one person dominates all the other members in terms of the performed functions (i.e., that person performs at least 3 more functions than the others). In a dissipated system, all the members perform the same or a similar number of functions.

The description of the studied group

The research was conducted with the use of a categorised interview in a group of mothers who raise intellectually disabled children via nonprobability sampling, were the fundamental criterion was being a parent of a disabled school-age child. Some of the children were mildly disabled, others had medium-degree disabilities, and others were seriously disabled. The research was conducted among mothers whose children attended Zespół Szkół Specjalnych (Special School Complex) in Biała Podlaska in 2017 and 2018. Fifteen women participated in the study. Every interview lasted about 120 minutes.

The mothers' age ranged from 33 to 60 years. The majority was 40-50 years old (11 women), three were younger – 33, 33 and 29 years old – and the oldest participant was 60 years old. The majority finished a vocational school or less (6 graduated from a vocational school, 4 had primary education). Three finished high school, and two were university graduates. Seven of them were single mothers, they had been divorced and were often conflicted with their children's fathers. Two of the fathers had rejected their disabled children, the others did not really maintain contact with their children. Eight women lived in complete families and they indicated that they do have the support of their husbands or partners. Three mothers reported that when they had given birth to a disabled child, their closest relatives (in-laws, more distant relatives) avoided contact. Other women have not experienced such reactions from their family members, neighbours or friends.

The families lived in both blocks of flats (8 families) and houses (7 families). None of the mothers worked professionally.

In one case, the disabled child was the only child, in five families there were two children, in six families there were three children, one family had four children and one had five. In one of the families there were 14 children. In three of them, there were two intellectually disabled children, and in one there were twins. In total, there were 18 disabled children in these families. Ten of the children were severely disabled, five had medium-degree disabilities, and three were mildly disabled. Three children had to use a wheelchair apart from their intellectual disability, one boy had been diagnosed with autism, most of the children could perform everyday tasks on their own (15 children could perform everyday tasks unassisted, 3 needed help).

The youngest of the disabled children of the mothers who participated in the study was 6 years old, the oldest one was 22 years old. The children of the mothers do not have non-disabled friends at the moment, even though a few mothers indicated that the situation was different when the children were younger – when they were in kindergarten.

The mothers were asked about the most common difficulties that they experience in their everyday lives and in raising a disabled child. They could choose between: difficulties in providing health care and rehabilitation, difficulties related to education, architectural barriers, difficulties associated with that fact that other people treat a disabled person differently, and difficulties in obtaining information related to disabilities and disabled people's rights. Three women selected architectural barriers as problems, since their children use wheelchairs – one of them was a single mother raising a son. The most popular choice was the one related to difficulties in obtaining information related to disabilities and disabled people's rights – this point was selected 7 times. Three mothers mentioned negative social attitudes towards their intellectually disabled children, describing these situations as particularly difficult.

Summarising the description of the studied group, it should be noted that the mothers are usually not well-schooled, they live in both blocks of flats and detached houses, and they are either single mothers or they live in complete families. They do not work professionally – they take care of their children full-time. Their economic

situation and living conditions are average. Their children are of various ages and have various degrees of intellectual disabilities. The description proves that the mothers constitute a varied group, which is beneficial for the study.

Results

The type and the scope of support

Ten types of support were determined: appreciation/recognition, replacement (performing certain tasks for the mother), taking care of the mother's rest, support/protection, providing information, providing care, providing help with unexpected problems, comforting, offering a chance to confide in, and unconditional support – "they won't leave me when the situation is extremely bad" (results from 0 to 10).

In the selected group, one can see a multifaceted and complete scope of support. The social environment provided support in a broad scope for 11 mothers (9-10 functions; in detail: 7 mothers – 10 functions, 4 mothers – 9 functions). The remaining four participants indicated an average scope of support (5-8 functions; in detail: 1 mother – 6 functions, 2 women – 7 functions, 1 woman – 8 functions). None of the mothers indicated fewer than 5 functions of support. All of them indicated in their environment some people who express their **appreciation for and recognition of** what the mothers do, people who can **comfort** them when they are worried and cheer them up, people that they can **confide in** and tell them about their most personal worries and problems, and people who **will not leave them when the situation is extremely bad.** People who take care of the mothers' opportunity to rest were most often missing (there were no such people in the case of 5 of the mothers), just like people who would take care of the women themselves (in the case of 3 women), and people who would act as important sources of information about the world and people (in the case of 3 women). Two mothers indicated the lack of people they could depend on when support is needed, or when an important matter has to be taken care of (Table 1).

The mother who functions in the narrowest system (participant number 10) did not have anyone in her environment who would take care of her (function number 6), who would take care that she had a chance to rest (function 3), who would help her settle important matters (function 2), and on whom she could count in case of a serious problem (function 7).

Table 1. The scope of support for mothers of intellectually disabled children in relation to the type of social support; support level index (wskaźnik poziomu podtrzymania, wpp)

No.	Types of social support	Participant number														
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	Appreciation/recognition	4	11	8	4	5	12	5	9	17	6	3	19	10	11	6
2	Replacement	0	2	3	3	4	3	2	2	3	1	2	1	3	3	2
3	Taking care of rest	0	2	0	2	1	1	1	2	3	0	0	0	1	3	3
4	Support/protection	1	11	3	3	5	5	2	1	3	0	0	1	3	3	1
5	Providing information	0	6	4	3	1	13	2	0	0	3	1	1	2	3	1
6	Providing care	1	2	3	2	3	2	1	2	7	0	0	0	0	2	1
7	Helping with unexpected problems	2	10	3	2	5	6	2	3	7	0	3	1	3	3	3
8	Comforting	2	9	2	4	5	6	1	3	1	2	1	8	1	2	2
9	Confiding in someone	2	10	1	3	1	2	1	5	7	2	1	2	1	2	2
10	Unconditional support "they won't leave me when the situation is extremely bad"	2	5	3	3	5	2	1	7	7	1	4	1	2	2	4
	Support level index (wpp)	10	28	23	27	24	25	16	21	24	6	11	11	18	26	21

The level of support

The size of a support system depends on the number of people that the mothers can count on within the various types of support.

The size of a support system is measured by the support level index (wskaźnik poziomu podtrzymania, wpp), which ranges from -18 to +30. In the selected group of mothers who raise intellectually disabled children, the value of the wpp index ranged from 6 to 28. There were no values below zero, which is a positive trait. For the

majority of the studied women, the value of the index exceeded 20 (9 mothers), for one the value was below 10, and the others had a support level index (wpp) of 10, 11 (two mothers), 16, and 18 (Table 1).

If a given function is performed by only one person, then the person is practically irreplaceable. If that person leaves the system (e.g., due to an illness or travelling), the mother loses support in the given category. In the case of 12 mothers, there was an irreplaceable person (Table 1). Most of these cases were noted in the area of the following types of social support: taking care of the mother's rest, offering a chance to confide in, and comforting. The functions in which someone could be replaced (doubled functions) belonged to one category of social support: recognition/appreciation (Table 1).

The size of the support system

The size of the support system is understood as the number of people in the participant's environment that perform supportive functions for the participant. These are the people on whom the mothers can count in various situations.

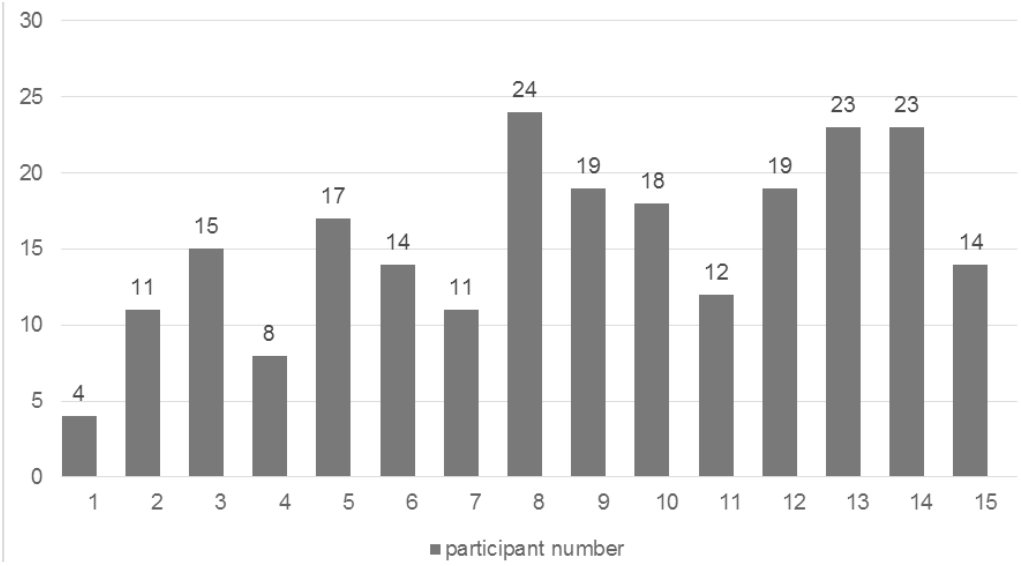

Figure 1. Number of people in mothers' social support networks

The number of people in a system ranges from 4 to 24. Most of the systems included more than 10 people (in the case of 13 mothers) (Figure 1).

In the studied group of mothers who raise disabled children, one could notice medium-sized systems (4 to 10 people), and large ones (more than 10 people). Large systems were the dominant type: 13 mothers functioned in this kind of a network, while two had medium-sized networks. Small systems (ones that include fewer than 3 people) were not recorded (Figure 1).

Participant no. 1 had the smallest social support network (4 people). This can be explained by her personal experiences. She has been raised in an orphanage and did not have a family of origin, and the disabled child's father does not maintain contact with the family. The mother has also struggled with alcohol addiction. The largest support system (for participant no. 8) included 24 people. The mother has five children who have their own families (all of them, apart from the intellectually disabled son). The other children accept their disabled brother. The mother is an active, open person. An article that she wrote has been published in the "Bardziej Kochani" quarterly, and she is the chair of the Parents' Council in Zespół Szkół Specjalnych in Biała Podlaska.

The components of a support network

The components of a support system are the detailed features of the social environment to which the people who provide support belong.

Table 2. Areas in the support system of mothers who raise intellectually disabled children

No.	Support systems	Total		Participant number														
		n	%	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
	FAMILY:	130	56															
1	Household members	47	20,3	1	5	2	2	2	1	2	2	4	5	4	4	6	4	3
2	Closest relatives	56	24,1			3	3	4	3	4	9	4	3	3	4	3	7	6
3	Other relatives and family members	27	11,6			5		3	2		3	4		3	2	2	3	
	OUTSIDE OF THE FAMILY:	102	44															
4	Colleagues	0	0															
5	Neighbours	22	9,5			1	1	4	2		3	3	1		2	3	1	1
6	Other friends and acquaintances	30	12,9	1	2	1	1	1	4	1	2		5	1	2	4	3	2
7	INSTITUTIONAL: Therapists, teachers	48	20,7	2	3	3	1	3	2	3	5	4	4	1	5	5	5	2
8	Other significant people	2	0,9		1					1								
	Total	232	100	4	11	15	8	17	14	11	24	19	18	12	19	23	23	14

In a support system, the closest relatives and more distant family members function as the sources of support most often. In terms of composition, family members constitute 56% of the entire support system for mothers in comparison to all the other areas. Interviews prove that contacts with the closest relatives were initiated directly or via phone calls every day or at least a few times each week. When it comes to more distant relatives ("other relatives and family members") these contacts were not as frequent, and they usually took the form of phone calls or online messaging – they were not direct as often as those initiated with the closest family members. Institutions dominated the fields outside of family: they constitute 20.7% of entire systems. Mothers mentioned lead teachers and teachers who specialise in oligophrenopedagogy. Moreover, they indicated speech therapists, physiotherapists, psychologists, the headmaster, and the school's club room teacher. The mothers usually contacted these people directly, and in many cases the contact took place everyday. In the case of specialists – it was two times a week, and in the case of the headmaster – only when there was a specific need. The next group of people that mothers can rely on are friends and acquaintances. Other mothers of disabled children were mentioned most often in this context (Table 2).

The majority of relations in the mothers' support systems have lasted for more than 10 years (old systems), and this refers to family members, teachers, and therapists, as well as neighbours and acquaintances. Hence, we see an indicator of prominent preservation and continuity of a support system, as well as its low elasticity or openness, understood as the ability to include new people who could act as sources of support.

The people indicated by the mothers are usually easily available. But is should be noted that some of the women experience difficulties in maintaining contact with their disabled children's fathers (5 cases of divorce, one of the fathers passed away) and sometimes with their in-laws, too.

The structure of a support system

The structure of a support system is based on its homogeneity of heterogeneity. A homogeneous system is one in which all the sources of support come from one area. In a heterogeneous system, sources come from at least three different areas of the environment. The closest relatives and more distant family members should be treated as one area, while non-relatives who live together with the respondents should be treated as a separate category – no such situation occurred among the participants. The people who support the mothers come from at least three different types of groups, so these support systems might be described as heterogeneous. In one case (respondent no. 1) the supportive people came from only three areas (Table 2).

Defining the degree of concentration or dispersion of a system was the next task. A concentrated system is a system in which there is one major source of support – i.e., one person fulfils a large number of supportive functions (they perform at least 3 functions more than the other members). In a dispersed system, various types of supportive functions are distributed among various members.

By analysing the degree of concentration or dispersion of a support system for mothers who raise disabled children, one can propose two theses: the first one says that the character of the degree of concentration varies; the second one says that it depends on the mother's marital situation. Six of the systems were dispersed – these were the mothers' families which were not complete. Nine of the mothers functioned in concentrated systems: in six cases, only one person dominated over others in terms of performed functions – the systems were extremely

concentrated. That person was usually a husband/partner, or a mother (the child's grandmother), and one woman indicated her older son. In the remaining concentrated systems, two people were dominant (a daughter and a sister, a husband a mother – the child's grandmother – a husband and an older sibling).

The danger of concentrating the majority of supportive functions in one person is based on the fact that a respondent is much more prone to a loss or a disruption of the entire system of social support.

Discussion

While comparing families who raise a non-disabled and a disabled child, we notice a higher degree of dysfunctional elements and the need for support in the case of the families who raise a disabled child. Significant differences can be observed in the areas of adjustment, partnership, development, tenderness, determination, the coherence of a family, support, organisation, and communication [17].

The findings reported here are in line with Wrona's conclusions – she used the same research tool (Bizoń's Kwestionariusz Otoczenia Społecznego – Questionnaire of Social Surroundings). 25 parents who raise disabled children and live in śląskie voivodeship participated in the research. The findings showed that the respondents' own families constituted the foundations of all the networks, and functioned as the most important factors of support. In S. Wrona's analysis teachers and specialists constitute the second most numerous group in terms of connections, which is similar in the case of the present study [14].

Seybold, Fritz, and Macphee arrived at similar conclusions based on interviewing 163 mothers of intellectually disabled children. The mothers declared that they receive more instrumental and emotional help from informal networks than from formal ones. The degree of satisfaction related to the support was related to a mother's sense of her own parenting competence and her ability to overcome the numerous demands that a mother of a disabled child experiences. As a result, the authors propose to use informal support networks while working with a family. Mothers who received higher education and those living in complete families were coping better – they were more often able to use instrumental support [18].

Ćwirynkało and Żywanowska analysed the types of support that families who raise intellectually disabled children receive. They analysed 20 families in which there were children with mild, medium-degree and severe intellectual disabilities. The authors indicted that 81% of families use social support. 19% of the parents reported that they have no access to support – especially in small towns and in rural areas. Kindergartens, schools, healthcare institutions, and early intervention centres, as well as psychological and pedagogical clinics were listed as those institutions that provide support most often. Support offered to the children in the form of classes included speech therapy classes, psychological sessions, and pedagogical meetings. The parents emphasised the value or Parent's Associations (Koła Rodziców) – self-help groups that share information and offer mutual support. It seems that institutional organisations such as clinics focus on diagnoses and opinions, while they do not pay enough attention to other forms of support such as therapy for the whole families, the children, or the parents [19].

The help provided for families raising a child with a mild intellectual disability was analysed by Kazanowski and Byra. A community interview that they conducted using their own original questionnaire was focused on families whose children attend vocational schools. The authors found the results disturbing. More than 40% of the families believed that their children did not need special psychological and pedagogical help, and the parents' expectations in terms of help were focused on material aid – 40% – and financial aid – 20% [20].

Many academics emphasise the correlation between a high level of social support and a lowered level of stress associated with the necessity of taking care of a disabled child. They also focus on the degree of the received support, and the intensity of satisfaction; they take the size of a support network into consideration, as well as the type of the support provided, making these variables dependent on the type and the degree of a child's disability [21].

Crnic and colleagues used an approach based on development and working with the entire family was emphasised. A methodically planned training for parents will lower the degree of their stress and it will generate indirect benefits for the behavioural competence of the children [22].

In a later study based on analysing the situation of 50 families with disabled children, it was determined that a complete family – and especially healthy relations between the parents, and the parents' personal resources (such as the willingness to take risks and openness) – influences the quality of the family's life and helps all the family members in coping with stress [23].

In 2011, Silibello et al. used a questionnaire to study 154 families. The study defined the needs and changes that occur in the everyday lives of families that include children suffering from rare diseases of various degrees of severity – including intellectual disabilities. Deficiencies in social support systems – particularly in relations

within families – were found. The need to focus on the family and improving the quality of its members' lives was highlighted [24].

Conclusions

1. In the group of the studied mothers, one can indicate a multifaceted and complete scope of support. The social surrounding provided 11 mothers with a support characterised by a broad scope: 9-10 functions (out of 10 in total).
2. All the mothers indicated in their environments people who express appreciation for what they do, who can comfort them and cheer them up, who can be confided in, and who will not abandon the mothers in an extremely bad situation.
3. The support systems usually lacked people who would take care of a mother's opportunity to rest, who would take care of the mothers themselves, and who would provide information about the world and people.
4. The environments of 12 of the mothers included irreplaceable functions (ones that were fulfilled by just one person). The disappearance of this person from a mother's social surroundings will result in the lack of this kind of support. This situation was found in the following areas: taking care of rest, confining in, comforting.
5. The mothers' support systems usually included more than 10 people. One of the participants listed 24 people belonging to her network, while two respondents indicated only 4 and 8 people who have ever provided them with help.
6. The members of the closest and more distant family act as the most important elements of the support systems of mothers who raise intellectually disabled children.
7. The fact that teachers who specialise in oligophrenopedagogy are the second most important group should be treated as a positive factor – they support the children's upbringing and education. These people have very good relations with the mothers, and the contact between them is frequent and direct. The cooperation between parents and teachers is very important in the context of effectively raising and teaching intellectually disabled children.
8. Friendships between mothers whose children attend the special school are a strong suit of the systems. Not only do these interactions provide information, but they also offer mutual support, specific forms of help (writing and submitting applications and requests) and, as the mothers said, they also help because they allow the mothers to spend time together outside of school – which is where they usually meet.
9. The studied systems of social support were usually concentrated. The concentration of a support system for mothers seem to be significant in the context of prognoses. If the dominant person disappears, the entire system may collapse.

The family as well as specialists still continue to function as irreplaceable sources of support for mothers who raise intellectually disabled children, and this support helps them in overcoming difficult situations. The fact that the systems of support are so concentrated is worrying, just like the lack of such people in the systems who would take care of the mothers' opportunity to rest for shorter or longer periods of time.

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KNOWLEDGE OF PARENTS OF CHILDREN WITH AUTISM FROM POLAND, BELARUS AND FRANCE CONCERNING THEIR CHILD'S CONDITION

WIEDZA RODZICÓW DZIECI Z AUTYZMEM Z POLSKI, BIAŁORUSI I FRANCJI NA TEMAT CHOROBY DZIECKA

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Wkład autorów:
A. Study design/planning
zaplanowanie badań
B. Data collection/entry
zebranie danych
C. Data analysis/statistics
dane – analiza i statystyki
D. Data interpretation
interpretacja danych
E. Preparation of manuscript
przygotowanie artykułu
F. Literature analysis/search
wyszukiwanie i analiza literatury
G. Funds collection
zebranie funduszy

Summary

Background. Autism is not only a problem for people with autism, but also for their entire families. **Material and methods.** 83 families were analysed, including 30 families from Poland, 25 families from Belarus and 28 families from France, an author's questionnaire was used. **Results.** The majority of respondents were aware of the fact that autism can also be diagnosed in an adult person. Likewise, the notion of the autistic spectrum was known. While parents from Poland and France realised that a one-time diagnosis of the condition is insufficient, parents from Belarus more often chose the incorrect answer, and therefore they express the tendency to immediately start a therapy without additional consultations. All respondents from France chose the statement that treatment of autism should be started before the age of 3, which was confirmed by the majority of respondents from the other two countries. Polish parents barely considered the importance of preparation required to understand their child's behaviour, whereas this aspect of the therapy was indicated by almost 90% of the respondents from the other two countries. Parents from Poland (69%) and Belarus (76%) were mostly convinced that autism cannot be cured completely. A different opinion was expressed by 42.9% of parents from France, who were convinced about it. The Poles most willingly used the Internet as a source of knowledge, while the French and Belarusians - a psychologist. A paediatrician was a preferred educator in Poland, in Belarus and France - a psychologist. **Conclusions.** The parents of autistic children, regardless of the country, showed a low level of knowledge about autism. The vast majority of respondents declared a desire to deepen their knowledge on autism, expressing their preference to have an individual conversation with an educator.

Keywords: autism, parents, knowledge

Streszczenie

Wprowadzenie. Autyzm nie jest problemem jedynie osób z autyzmem, ale również całych ich rodzin. **Materiał i metody.** Analizie poddano 83 rodziny, w tym 30 rodzin z Polski, 25 rodzin z Białorusi oraz 28 rodzin z Francji i wykorzystano kwestionariusz autorski. **Wyniki.** Większość ankietowanych wiedziała, że autyzm można zdiagnozować także u osoby dorosłej, znane było także pojęcie spektrum autystycznego. O ile rodzice z Polski i Francji zdawali sobie sprawę, że jednorazowa diagnoza choroby jest niewystarczająca, to rodzice z Białorusi częściej wybierali błędną odpowiedź, a więc natychmiastowe rozpoczęcie terapii bez dodatkowych konsultacji. Wszyscy ankietowani z Francji wybierali stwierdzenie, iż leczenie autyzmu należy zacząć przed 3 rokiem życia, co potwierdziło większość ankietowanych z pozostałych dwóch krajów. Rodzice z Polski ledwie w połowie za ważne uznali przygotowanie rodziców do zrozumienia zachowań dziecka, podczas gdy ten aspekt terapii wskazało niemal 90% ankietowanych z dwóch pozostałych krajów. Rodzice z Polski (69%) i Białorusi (76%) byli w większości przekonani, iż autyzmu nie można wyleczyć całkowicie. Odmienną opinię wyraziło 42,9% przekonanych o tym rodziców z Francji. Polacy najchętniej jako źródło wiedzy wykorzystywali Internet, Francuzi i Białorusini - psychologa. Za edukatora w Polsce preferowano pediatrę, na Białorusi i we Francji - psychologa. **Wnioski.** Rodzice dzieci autystycznych, niezależnie od kraju, wykazywali niski poziom wiedzy na temat autyzmu. Zdecydowana większość respondentów deklarowała chęć pogłębienia wiedzy na temat autyzmu preferując w tym celu rozmowę indywidualną z edukatorem.

Słowa kluczowe: autyzm, rodzicie, wiedza

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Introduction

Children's autism is a developmental disorder, present in almost all communities, which is characterized by abnormalities in the development of social interactions, communication and serious limitations in terms of activity and interests [1].

The progress in the diagnosis of the disorder has caused an increase in the frequency of diagnoses of children with autism in the world (in 1970 - 1 case per 10,000 births, and in 2009 - 1 case per 150 births), which means that the number of families involved in the care, upbringing and education of children with autism is also rapidly increasing [2, 3].

The first epidemiological study on autism was completed in 1966 in Great Britain and was carried out by Lotter [4] in Middlesex County.

In the literature [5, 6, 7] it is emphasised that the difficulty of defining autism lies in the fact that the phenomenon itself is a complex problem, and the diagnostic perspectives adopted make it possible to perceive only its individual fragments, which, when considered in their entirety, form a meaningful whole.

It is not easy to be a parent of an autistic child, since more often it is connected with experiencing very difficult moments. Moreover, frequently such guardians are close to a breakdown and simply do not know what to do, how to proceed, where to ask for help, how to teach their child.

The development of an autistic child is different from that of their peers. According to Greenberg et al. [8], such parents need reliable knowledge, so that they can efficiently motivate the child to act and help them overcome difficulties. Taking care of a sick child and their upbringing requires patience, perseverance and entrepreneurship in obtaining the help of specialists and skills to cope with difficult situations. The involvement and dedication of parents in the hardship of caring for an autistic child and the atmosphere in the family affect the functioning of a sick child. It has been observed that the high level of negative emotions in the family system causes the intensification of maladaptive behaviours and other symptoms of autism [8].

Therefore, one of the tasks of specialists is to support parents in creating a coherent and realistic picture of their child, in order to help them strengthen their sense of satisfaction with the achieved successes and to increase their awareness and level of knowledge.

In the literature on the subject [9-13], it is emphasized that contemporary activities are aimed at the greatest possible activation and involvement of parents in the therapeutic process of children. In this respect, attention is drawn to the importance of professional therapeutic programmes aimed at parents of children with autism. On the one hand, they are based on directing parents to active participation and cooperation in the activities conducted with autistic children, and on the other, on deepening their teaching skills and causing the change in their behaviour.

Unfortunately, in the professional literature there are sporadic studies concerning parents' knowledge of autism and their preparation for cooperation with such a child.

The aim of the study was to assess the knowledge of parents of children with autism from Poland, Belarus and France on the subject of a child's condition.

It was hypothesised that parents to a large extent show interest in the knowledge about their child's condition, mainly in the field of forms of therapy.

Material and methods

The study was carried out after obtaining the consent No. RI-002/242/2009 of the Bioethics Committee of the Medical University in Bialystok.

Parents of children diagnosed with autistic disorder were subjected to a questionnaire survey. The parents came from three European countries: Poland, Belarus and France, while the attempt was made to make the numerical structure with regard to the origin similar. The following inclusion criteria have been adopted: joint living with a child now and throughout the entire period of the condition, being biological parents, diagnosed (according to ICD 10 or DSM IV) and documented chronic disorder, with its minimum duration of 3 years and consent to the study. Furthermore, the exclusion criterion was the lack of consent to the study.

83 families were analysed, including 30 families from Poland, 25 families from Belarus and 28 families from France.

The study was based on an author's questionnaire, which consisted of general and fundamental questions composed of 18 questions, among others: knowledge of the percentage of the population affected by autism, most affected gender, the possibility of its diagnosis in adults, knowledge of the concept of autistic spectrum, symptoms of autism, evaluation of myths about autism, the period in which a therapy should be started, opinions on the treatment of autism with a diet, the existence of effective medicines, the possibility of curing autism completely, whether a one-time medical examination is sufficient to diagnose "autism", sources of knowledge

about autism, the need to expand the knowledge in this area, preferred individuals who should provide parents with knowledge about autism, topics they would like to have discussed in the field of autism, preferred forms of communication of such knowledge.

The study was carried out in 2011-2012. In total, 30 questionnaires were distributed in Poland and 30 were used in the study, 30 questionnaires were distributed in Belarus and 25 were used, while in France, 30 questionnaires were distributed and 28 were used.

In view of the nature of the data, the chi-squared test was considered an appropriate tool for statistical inference. Based on the result of the test (p-value test), which is included in the header of the table, it was concluded that the studied dependence between the country and the approach to the disease was statistically significant. It has been assumed that when p^3 is 0.05 it indicates that the tested difference, dependence, effect, it was not statistically significant; when $p< 0.05$ we talk about statistically significant dependence (we mark this fact with *); $p<0.01$ is a highly significant dependence (**); $p<0.001$ is a very highly statistically significant dependence (***).

Results

Parents in Poland have mainly resided in the city (57.7%), the rest (42.3%) in the rural areas. Parents from Belarus - also mainly resided in the city (88%) and a small percentage (12%) in rural areas, and parents from France - primarily in the city (74.1%), and only 25.9% in rural areas. Generally, the mothers studied were a few years younger (means age was 36.2±6.7 years) from their spouses (39.4±7.5 years). The mean age of fathers in Poland was 42.7±8.0 years, in Belarus - 38.1±6.9 years, and in France - 37.1±6.4 years. The mean age of mothers in Poland was 38.4±6.8 years, in Belarus - 36.0±6.2 years, and in France - 34.1±6.5 years. The mean time from the diagnosis of autism in a child in Poland was 7.9±2.7 years, in Belarus mean age was 7.2±5.2 years, and in France - 5.2±3.2 years.

In the next part of the paper, the authors attempted to present the information on the level of parents' knowledge about autism, taking into account the country of their origin.

25% of parents from Poland, 4.3% of parents from Belarus and 3.6% from France have correctly defined the percentage of the world population suffering from autism as 0.5%. 50% of respondents from Poland, 34.8% from Belarus and 3.6% from France were convinced that the value isbetween 0.5 to 1% of the population. 7.1% of respondents from Poland, 8.7% from Belarus and 14.3% from France believed that the problem of autism concerns over 10% of the population. 17.9% of respondents from Poland, 52.2% from Belarus and 14.3% from France had a problem with an unambiguous response. The distribution of responses differed significantly between the countries (p = 0.0000***).

Regarding the question about the determination of a gender that is more vulnerable to autism, Polish parents have provided the most incorrect answers, as 53.2% of parents from Poland, 83.3% of parents from Belarus and 78.6% of parents from France were convinced that the boys are mainly affected by the disease. The girls were indicated by 10% of respondents from Poland and 17.9% from France. About 10% of parents from Poland and 3.6% from France were convinced that the same percentage of both genders was concerned. 26.7% of respondents from Poland and 16.7% from Belarus did not express an unambiguous opinion on this matter. The distribution of responses differed significantly between the countries (p=0.0122*).

The majority of respondents were correct to indicate that autism can also be diagnosed in an adult person - 69% of parents from Poland, 52% from Belarus and 78.6% from France stated that. A different opinion was expressed by 3.4% of the respondents from Poland and 4% from Belarus. 27.6% of the respondents from Poland, 44% from Belarus and 21.4% from France were undecided on this issue. The distribution of responses did not differ significantly between the countries (p = 0.3086).

The autistic spectrum, as a general name for all forms of autism, was well defined by 96% of parents from Poland, 94.6% from Belarus and 96.2% from France. Concerning the group of colours, which autistic children do not distinguish, it was correctly defined by 4% of respondents from Poland and 3.8% from France, and as a device to stimulate positive behaviours of a child - 5.3% from Belarus. The distribution of responses did not differ significantly between the countries (p = 0.4881).

While the parents from Poland (70%) and France (72%) were mostly aware that a one-time diagnosis of the condition was insufficient, parents from Belarus were less convinced about it (40%). The latter preferred to start the treatment immediately (60%), which was supported by 23.3% of parents from Poland and 4% from France. 6.7% of Polish parents and 24% of French parents were advocates of waiting two years after the specialist's diagnosis and repeating the examination. The distribution of responses differed significantly between the countries (p = 0.0001***).

Table 1. shows the parents' responses to the question about the most recognizable symptoms of autism. Polish parents most often mentioned the delayed speech development (73.3%) and the development delay (63.3%). Parents from Belarus - repetition of the same activities (96%), and parents from France - obsessive repetition of behaviours (82.1%). Details are provided in Table 1.

Table 1. Symptoms of autism

Symptoms of autism	Country			p
	Poland	Belarus	France	
delayed speech development	**73.3%**	24.0%	60.7%	0.0009***
impaired social communication	50.0%	68.0%	46.4%	0.2451
no response to the name, commands	56.7%	56.0%	42.9%	0.5071
repeating the same activities	50.0%	**96.0%**	60.7%	0.0009***
fluttering with hands	46.7%	56.0%	67.9%	0.2653
attachment to routine	43.3%	28.0%	71.4%	0.0055**
tantrums, fury	30.0%	52.0%	64.3%	0.0298*
lack of natural fear	46.7%	36.0%	39.3%	0.7080
sleep, nutrition disorders	43.3%	32.0%	35.7%	0.6714
the impression of absence	56.7%	36.0%	28.6%	0.0784
bed-wetting	33.3%	8.0%	17.9%	0.0623
biting	50.0%	32.0%	25.0%	0.1232
mental numbness	23.3%	20.0%	10.7%	0.4388
no response to commands	50.0%	52.0%	17.9%	0.0144*
delay in development	**63.3%**	80.0%	39.3%	0.0094**
pedantry	13.3%	36.0%	3.6%	0.0057**
unwillingness to change in routine	26.7%	36.0%	42.9%	0.4300
low / excessive sensitivity to stimuli	20.0%	16.0%	64.3%	0.0001***
obsessive repetition of behaviours	10.0%	68.0%	**82.1%**	0.0000***

Table 2. presents a detailed analysis of the answer to the question concerning the truthfulness of certain statements about autism in the consciousness of the respondents from different countries. On many issues statistically significant differences were observed between the respondents from Poland, Belarus and France.

Table 2. Characteristics of autistic children

Characteristics of autistic children	Country												p
	Poland				Belarus				France				
	yes	no	not always	I do not know	yes	no	not always	I do not know	yes	no	not always	I do not know	
they do not hug	7%	50%	40%	3%	4%	29%	42%	25%	14%	54%	32%	0%	0.0200*
they do not look in the eyes	23%	20%	57%	0%	16%	8%	76%	0%	68%	7%	21%	4%	0.0004***
autism only affects children	3%	55%	31%	10%	0%	58%	21%	21%	4%	79%	11%	7%	0.3070
all autistic children behave the same	0%	73%	27%	0%	4%	76%	20%	0%	0%	56%	44%	0%	0.4208
they are aggressive	3%	27%	67%	3%	0%	24%	76%	0%	4%	22%	70%	4%	0.9144
autism is caused by the mother's attitude	0%	47%	43%	10%	4%	54%	13%	29%	4%	93%	4%	0%	0.0001***
people with autism do not speak	10%	23%	57%	10%	4%	40%	56%	0%	4%	48%	44%	4%	0.3125
if someone can speak, it is not autism	10%	43%	40%	7%	0%	72%	24%	4%	7%	86%	7%	0%	0.0224*
they avoid people, they isolate themselves	7%	47%	43%	3%	8%	24%	60%	8%	57%	7%	36%	0%	0.0000***

autistic children are calm	7%	37%	57%	0%	12%	8%	80%	0%	36%	18%	46%	0%	0.0166*
people with autism create their own world	23%	27%	33%	17%	48%	8%	16%	28%	71%	4%	25%	0%	0.0009***
children with autism tend to tum various objects	20%	30%	50%	0%	60%	4%	36%	0%	71%	18%	11%	0%	0.0021**
people with autism are exceptionally talented	3%	28%	59%	10%	20%	0%	68%	12%	50%	4%	46%	0%	0.0001***
autism is incurable	24%	28%	24%	24%	48%	20%	8%	24%	48%	44%	8%	0%	0.0236*
autism is associated with mental retardation	3%	37%	57%	3%	12%	36%	48%	4%	25%	21%	54%	0%	0.2582
autistic children do not understand what is being said to them	10%	31%	52%	7%	0%	44%	56%	0%	4%	11%	81%	4%	0.0607
children grow out of autism	7%	60%	13%	20%	4%	67%	13%	17%	0%	86%	14%	0%	0.2003
the child should be sent to kindergarten	17%	34%	41%	7%	42%	17%	38%	4%	0%	82%	11%	7%	0.0000***
autism is a form of schizophrenia, a mental illness	7%	55%	24%	14%	32%	28%	16%	24%	14%	61%	25%	0%	0.0178*
people with autism have no ambition, no sense of dignity	21%	31%	38%	10%	17%	26%	30%	26%	64%	7%	29%	0%	0.0008***
children with autism are not interested in other children	17%	40%	40%	3%	8%	33%	50%	8%	14%	11%	75%	0%	0.0788
they do not have any interests	3%	40%	43%	13%	0%	58%	33%	8%	0%	14%	82%	4%	0.0092**
people with autism are sad	7%	41%	45%	7%	4%	67%	21%	8%	0%	43%	57%	0%	0.1152
the speech of these people is monotonous as if they were chanting	14%	24%	48%	14%	21%	17%	46%	17%	32%	29%	39%	0%	0.2699
people with autism do not like changes	30%	30%	30%	10%	50%	21%	25%	4%	89%	7%	4%	0%	0.0013**

All respondents from France chose the statement that the treatment of autism should be started before the age of 3. A similar opinion was expressed by 86.7% of respondents from Poland and 83.3% from Belarus. Starting the therapy before the age of 5 was preferred by 13.3% of parents from Poland and 4.2% from Belarus, and after 7 years of age - 4.2% of respondents from Belarus. 8.3% of Belarusians parents considered the time before puberty to be optimal to start the treatment. The distribution of responses did not differ significantly between the countries (p = 0.0588).

The views of the respondents from individual countries on the scope of therapy of a sick child were different. 50% of parents from Poland, 88% from Belarus and 89.3% from France (p=0.0005***) preferred to receive the preparation in the form of explaining the child's behaviour. Extension of forms of contact with a child was emphasized by 33.3% of parents from Poland, 68% from Belarus and 57.1% from France (p=0.0295*). Stimulation of the child for social contacts was indicated by 66.7% of respondents from Poland, 92% from Belarus and 71.4% from France (p=0.725). 30% of parents from Poland, 72% from Belarus and 53.6% from France (p=0.0076**) were in favour of pharmacological treatment. Only 6.7% of respondents from Poland (p=1636) claimed that the child cannot be cured, and 16.7% had a dilemma of which answer to choose (p=0.0091**).

The majority of Polish (86.7%) and French (78.6%) parents believed that the diet is an effective secondary treatment in the case of autism, which is a false assumption. Only 8% of Belarusian parents expressed this opinion. 56% of the Belarusian parents and 10.7% of the respondents from France doubted the effectiveness of the diet, whereas 13.3% of respondents from Poland, 36% from Belarus and 10.7% from France had a problem with the response. The distribution of responses differed significantly between the countries (p = 0.0000***).

Similarly, Polish parents (41.4%) believed that there is an effective medication which helps to neutralize the symptoms of autism. Parents from other countries were more restrained in their optimism, because 4% of parents from Belarus and 14.3% from France thought so. A significantly different opinion was expressed by 27.6% of respondents from Poland, 32% from Belarus and 46.4% from France. 31% of respondents from Poland, 64% from Belarus and 39.3% from France were undecided on the above issue. The distribution of responses differed significantly between the countries (p = 0.0048**).

Parents from Poland (69%) and Belarus (76%) were mostly convinced that autism cannot be cured completely. Parents from France (39.3%) believed so. 44.9% of parents from France, 17.2% from Poland and 4% from Belarus were convinced that autism can be cured completely. An unequivocal answer was not given by 13.8% of respondents from Poland, 20% from Belarus and 17.9% from France. The distribution of responses differed significantly between the countries (p = 0.0101*).

Most parents (56.7% from Poland, 76% from Belarus, 96.4% from France) were aware that one-time examination of a child was not enough. A different opinion was expressed by 30% of respondents from Poland, 8% from Belarus and 3.6% from France. 13.3% of respondents from Poland and 16% from Belarus had a problem with answering this question. The distribution of responses differed significantly between the countries (p = 0.0043*).

It was concluded that there is a strong differentiation in the sources of knowledge about autism that were used by parents from three countries. The Internet was indicated by 83.3% of parents from Poland, 52% from Belarus and 46.4% from France (p=0.0079**). The psychologist was mentioned by 36.7% of parents from Poland, 76% from Belarus and 67.9% from France (p=0.0065 **). As a preferred medium the Internet was indicated by 76.6% of parents from Poland, 36% from Belarus and 39.3% from France (p=0.0029**), a doctor - 43.3% of parents from Poland, 48% from Belarus and 64.3% from France (p=0.252), the press - 60.3% of parents from Poland, 20% from Belarus and 21.4% from France (p=0.0015**), and a nurse - 3.3 % of parents from Poland and 28.6% from France (p=0.0010***).

The vast majority of respondents (90% from Poland, 100% from Belarus, 92.9% from France) felt the need to deepen their knowledge about autism. 3.3% of parents from Poland and 3.6% from France did not feel such a need, and 6.7% of respondents from Poland and 3.6% from France had a problem with the response. The distribution of responses did not differ significantly between the countries (p=0.6104).

There were very clear statistical differences in the choice of the preferred educator by parents depending on the country of residence. The psychologist was preferred by 56.7% of parents from Poland, 88% from Belarus and 57.1% from France (p=0.0228*). The family doctor was indicated by 53.3% of respondents from Poland, 12% from Belarus and 53.6% from France (p=0.0020 **). The paediatrician was mentioned by 73.3% of respondents from Poland, 20% from Belarus and 17.9% from France (p=0.0000***). 43.3% of parents from Poland and 40% from Belarus (p=0.0003***) indicated a pedagogue as an educator and a nurse - 33.3% of parents from Poland, 4% from Belarus and 21.4% from France (p=0.0270*). 10% of respondents from Poland and 8% from Belarus (p=0.2460) were undecided on the above issue.

Parents preferred very different forms of transfer of knowledge. An individual interview was indicated by 60% of parents from Poland, 44% from Belarus and 78.6% from France (p=0.0350*). Lecture - 53.3% of parents from Poland, 284% from Belarus and 46.4% from France (p=0.1554). Film - 60% of parents from Poland, 16% from Belarus and 28.6% from France (p=0.0019**). Leaflets/brochures - 30% of parents from Poland, 20% from Belarus and 14.3% from France (p=0.3386), and wall leaflets - 16.7% of parents from Poland and 10.7% from France (p=0.1105). 16.7% of parents from Poland and 16% from Belarus had a problem with unequivocal response (p=0.0763).

The hypothesis put forward at the beginning of the study assumed that parents were largely interested in gaining the knowledge about their child's disease, mainly in the field of forms of therapy. On the basis of the results of the study, different views of respondents from different countries on the scope of treatment of a sick child were observed, e.g. Polish respondents barely considered as important the preparation of parents aimed at gaining understanding of their child's behaviour, while the treatment aspect was indicated by almost 90% of respondents from the other two countries.

Discussion

Raising an autistic child is not a simple or easy matter, however, it is not devoid of much joy. Nevertheless, people struggling with this problem need to be able to obtain the adequate knowledge about the condition and the support from their environment.

The majority of autistic patients' present behaviours that can cause significant stress in their families. Therefore, parents need to learn many strategies to support their child. Understanding the experiences of parents of children with autism is essential for the development and delivery of parental support systems.

Koydemir-Ozden and Tosun [14] examined 13 mothers (aged 30-40 years) of children with autism (aged 7 to 14 years). The analysis of the research allowed to identify categories and sub-categories, such as: reaction to a child's disability, experience of stress and burnout, involvement in the child's education and evaluation of measures dealing with the child's education and distinguished several zones within which categories and sub-categories

emerged [14]. Zone I - mother's understanding of disability [14], consists of two categories 1-description of autism by the mother and 2 - a degree of information on autism and ways of obtaining further information about it. Zone II - responding to disability [14], consist of typical reactions to the diagnosis experienced by parents: shock, rejection, denial, depressive states, sadness. In this zone, further categories have been distinguished: 3- stress and burnout and ways of coping with stress, 4 - inclusion of the child in education, 5 - evaluation of the Special Education Centre and teachers (committed, helpful, compassionate), 6 - the impact the child has on the personal life of the mother and 7- hopes and expectations for the future (for both mothers and children).

Konwińska et al. [15] included 346 people aged 16 to 18 years in the study and their aim was to assess their knowledge about autism. Every second woman was able to name at least three features of this disease (55%), while only 37% of men knew what autism was. The awareness of the respondents about autism is similar to the lack of knowledge about it. The study has shown that high school students have disturbingly high deficits in the knowledge about autism [15].

189 people aged 16 to 19 years participated in the study by Marecka [16], and it was found that the women's awareness of this disease was significantly higher (38.6%) than men's (27.3%). However, the above did not change the fact that only 36% of young people were able to name at least three symptoms of autism [16].

Unfortunately, in the present study it also has been concluded that the parents of autistic children, regardless of the country, showed a low level of knowledge about autism.

Kurpas et al. [17], from February to April 2009, were conducting surveys among parents of children with autistic disorders. The study involved 35 parents of children with comprehensive developmental disorders - 29 mothers and 6 fathers. Parents expressed the need to cooperate with a psychologist. They emphasized that such help was needed for all family members.

In the present study there were clear statistical differences in the choice of a psychologist as an educator of parents, hence such form of help was preferred by 56.7% of parents from Poland, 88% from Belarus and 57.1% from France and as a source of knowledge about autism - 36.7% of parents from Poland, 76% from Belarus and 67.9% from France.

Palka [18], in their studies on family support for children with autism spectrum, point to the most frequently asked questions of family assistant nurses in making critical decisions, information on available therapies and planning the future of a sick child. The authors [18] conclude that the families of children with autism, after receiving professional information support from nurses, are able to understand the nature of their child's disability and meet its challenges and learn to function well.

In the present study, 33.3% of parents from Poland, 4% from Belarus and 21.4% from France indicated a nurse as a source of knowledge about the child's disease, while 3.3% of parents from Poland and 28.6% from France perceived them only as an educator.

90% of all parents in the Bodora study expected to obtain reliable information and guidance from the specialists [19]. All 25-35 year olds, 95% of 36-45 year olds and 83% of 46 year olds and above needed to obtain complete, true and comprehensive information [19]. However, the lack of cooperation of specialists in the area was felt by 66% of the total number of respondents, and the coldness of professionals - 56% of them. A significant role of mass media in familiarizing with the problem of autistic children and their families was indicated by 80% of all participants in the Bodora study, including the largest number of parents aged 36-45 years (85%). Parents in the 25-35 age group also pointed to the importance of the mass media in making the public aware of what autism is and what it means (67%), and 79% of parents in the age group of 46 and above also believed that the media can help to solve problems of coexistence with an autistic child [19].

In the study conducted by Konwińska et al. [15] 72% of women and 51% of men were of the opinion that the media should definitely be interested in the problem of autism, while in Marecka study [16] - 60% of women and 27.3% of men surveyed indicated the answer: "The media should definitely be interested in issues related to autism", and 3.7% of the respondents did not want the subject of autism to be addressed in the media at all.

On the basis of the present study, it was found that the vast majority of respondents (90% from Poland, 100% from Belarus, 92.9% from France) felt the need to deepen their knowledge about autism. However, there was a strong diversity in the sources of knowledge about autism, which were used by parents from three countries - Poles were most likely to use the Internet and information in the media, whereas Belarusians and French - a specialist (psychologist, doctor, nurse).

In many countries, specialist centres are being established, such as the "GiantSteps" Autistic Children's Therapy Centre in Canada, or the St. Colman's School in the United States, whose educational programme covers not only children, but also their parents [12, 20, 21]. The counselling, awareness-rising, education, and support for families influence the better functioning of families with autistic children and improve the quality of their lives [12, 20, 21].

In Manchester, for Mockett [22], since early 1998, the standard of conduct is early intervention and interdisciplinary cooperation of specialists (psychiatry, paediatrics, speech therapy, psychology, physiotherapy) with parents who have the opportunity to participate in similar programs every year.

The purposefulness of the above is justified, e.g. by the results of the research conducted by Konwińska et al. [15] and Marecka et al. [16] showed that young people participating in sensory workshops had little knowledge about autism before the workshops, and it significantly increased after the classes. Disseminating the knowledge about autism is very important. The fact that this is still a neglected issue may be worrying

In Poland, as noted by Czenczek et al. [13] under the auspices of associations and foundations dealing with autistic children, schools are also starting to operate, in which special branches for autistic children are organized, however, still too little support is directed towards their parents and guardians.

Nevertheless, it should also be remembered that every child with autistic disorder is exceptional and unique, which is why parents must show their great sensitivity, openness and perceptiveness in order to be able to see and understand the signals transmitted to them by their children. The above may be summarised through the words of Igancio Estrada - "If children are unable to learn in the way we teach them, perhaps we should start to teach them in the way they learn."

Conclusions

1. The parents of autistic children, regardless of the country, showed a low level of knowledge about autism.
2. The vast majority of the respondents declared the desire to deepen their knowledge about autism, expressing their preference to have an individual conversation with an educator.

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LIFE SATISFACTION IN WOMEN AFTER MASTECTOMY – A PILOT STUDY

SATYSFAKCJA ŻYCIA U KOBIET PO MASTEKTOMII – BADANIE PILOTAŻOWE

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Summary

Background. Cancer is the second most common cause of morbidity and mortality in Poland and breast cancer is the most frequent malignant neoplasm occurring in Polish women. The aim of this paper is to analyse life satisfaction in women after mastectomy.
Material and methods. The pilot study comprised of women with breast cancer after mastectomy and women in a good overall health.
Results. On the basis of the conducted studies, it may be stated that women after mastectomy have a similar life satisfaction level as healthy individuals. The statistically relevant differences have been obtained only in some subscales related to leisure time, residence and parenting attitude.
Conclusions. More detailed studies are required to elucidate some subtle differences in life satisfaction between women after a mastectomy and healthy women.

Keywords: breast cancer, mastectomy, life satisfaction

Streszczenie

Wprowadzenie. Nowotwory są drugą najczęstszą przyczyną zachorowalności i umieralności w Polsce, a rak piersi jest najczęstszym nowotworem złośliwym występującym w populacji Polek. Celem pracy jest analiza zadowolenia z życia u kobiet po mastektomii.
Materiał i metody. Badaniem pilotażowym objęto kobiety z rakiem piersi po mastektomii oraz kobiety w dobrym stanie zdrowia.
Wyniki. Na podstawie przeprowadzonych badań można stwierdzić, że kobiety po mastektomii mają podobny poziom zadowolenia z życia, co kobiety zdrowe. Istotne statystycznie różnice uzyskano tylko w niektórych podskalach związanych z czasem wolnym, miejscem zamieszkania i stosunkiem do własnych dzieci.
Wnioski. Potrzebne są bardziej szczegółowe badania, aby wyjaśnić pewne subtelne różnice w satysfakcji życiowej kobiet po mastektomii i u zdrowych kobiet.

Słowa kluczowe: rak piersi, mastektomia, zadowolenie z życia

Introduction

Breast cancer is one of the commonest malignant neoplasms in women in Poland. It accounts for approximately 25% of all cancer morbidities and 14% of cancer-caused deaths [1]. Epidemiological data indicates that about 1.5 million women across the world are diagnosed with breast cancer every year, of which 400,000 die as a result of the disease. Breast cancer is the commonest malignant neoplasm in female populations in highly developed countries such as the US, Canada, Australia and Western Europe. The lowest number of breast cancer incidents

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are recorded in South-Eastern Asia and Africa. Although it is one of the most common cancer types in women, it rarely occurs in men [2].

Increasing cases of breast cancer are being observed in Poland, with a more than two-fold increase breast cancer-related morbidity during the last 30 years. The greatest morbidity risk is identified within menopause- and post-menopausal women [3]. The majority of deaths caused by malignancies occur in people aged over 50 years (National Cancer Register). The estimated data suggest that the incidence of breast cancer will exceed 21,000 cases per year during the upcoming 15 years [1].

A long-term programme has been introduced in Poland, aimed at managing cancer. It was called "The National Programme for Combating Neoplastic Diseases, 2016-2024", and was supervised and executed by a respective health minister and financed from a state budget [4].

Amongst the most significant causes of breast cancer are age, hormones, genetics and diet [1, 3, 5]. Over the age of 35, the frequency of breast cancer increases rapidly. Studies reveal that in women subjected to prophylactic screening mammography tests, the risk decreases in approximately one-third of patients [6]. The advancement in civilisation allows for developing new and increasingly efficient methods of combating cancer diseases.

One of the oldest methods for treating breast cancer is surgical. Mastectomy (breast removal) leaves women having to re-adapt to a new situation and re-evaluate life satisfaction. After breast removal, some women feel an extensive sense of disability caused by a negative attitude from their spouse. This impedes a women's adaptation to the disease, self-acceptance and return to normal life [7, 8].

It has been observed that young and married women with children are relatively less concentrated on their altered physical appearance and more concentrated on regaining health and general physical fitness. According to some authors [9], young and single women are more concerned about their body image and loss of feminine attributes. A role is also played by the importance perceived by patients of their physical appearance before the disease.

Breast removal does not preclude sexual activity if both partners are willing. It must be stressed, however, that post-surgical scars may induce negative reactions from partners. With time, partners usually adapt to this new situation, but woman's behaviour is also important in such circumstances [8]. The range and intensity of social activities undertaken by a woman after mastectomy are determined by her natural needs as well as her physical and mental health [8]. For women after mastectomy, social activity is not only a cultural pastime, but also an important component of social belonging and general life satisfaction.

The aim of the paper is to assess the life satisfaction levels in women after mastectomy, compared to women in a control group who do not have breast cancer.

Material and methods

The study group comprised of women with breast cancer, and the control group included women without breast cancer who declared a good health. The study in the first group was conducted following surgical treatment; the women were associated in Amazons clubs (women after mastectomy) in the Świętokrzyskie region. Women from the control group were residents from the same region. In total, 80 questionnaire sets were distributed. Since numerous questions were replied to incompletely (in particular from the study group), only 60 full sets that met the completeness and correctness criteria were included in the final analysis of this pilot study. Out of those 60 sets, 30 were obtained from the study group (women with breast cancer), and 30 from the control group (healthy women between 30-60 years-old). The average ages in both groups were similar: 47.6 ± 9.93 years-old for the study group, and 43.8 ± 9.57 years-old for the control group.

The respondents were selected randomly and voluntarily, and remained anonymous. Personal details as well as the social and demographic data recorded from the respondents included information about their age, marital status, place of residence, social and professional status, education level, attitudes towards religion, and satisfaction towards their marital status and residence.

The results indicate that marital status was not a differentiating element between groups, with the majority of married women (85%), divorced (6.7%) and widowed (6.7%) respondents.

The data reveals that the majority of study group respondents live in towns, including 46.7% in medium-sized towns. Similar numbers apply to the control group, where 43.3% live in medium-sized towns. In contrast, 33.3% of respondents from the study group live in large cities, whereas the 33.3% of respondents from the control group live in villages. Statistical analysis of data revealed that the examined variable does not differentiate the analysed groups ($\chi^2 = 12.73$, df = 3, $p \leq 0.05$).

The results of the study indicate that in terms of education level, most women attained higher level of education (63.3% in the study group vs. 36.6% in the control group). The number of women with primary, secondary and

vocational levels of education were similar in both groups (results not shown). The results also indicate that both groups demonstrate similar religious views, with 73.3% and 93.3% believers in the study group and the control group, respectively (results not shown). Only one person refused to provide her answer on this matter.

The data suggests that more than half of participants both in the study and control groups (53.3% and 56.7%, respectively) deem their residential status as satisfactory, and more than 30% of respondents from both groups perceive their residential status as very good. The results indicate that this variable does not introduce a statistically relevant differentiation between the groups ($\chi^2 = 0.73$, df = 1, $p \leq 0.05$). The majority of women surveyed in the study (76.7%) and in the control groups (66.7%) viewed their material status as either very good or satisfactory. In this study, we used the Life Satisfaction Questionnaire, originally developed in 1998 by Fahrenberg, Myrek, Schumacher and Brahler.

The questionnaire comprised 10 scales: 1) health – demonstrates satisfaction with general somatic health, mood, mental agility, immunity to disease; and how frequently an individual experiences pain and illness; 2) job and profession – this scale comprises satisfaction with their professional status at the workplace, certainty about future career, achievements at work, possible promotions, atmosphere at the workplace, scale of duties and requirements at work, as well as diversity provided by one's profession; 3) financial situation – expresses satisfaction with their standard of living, security of one's financial situation, future earnings, opportunities that may be provided to one's family as a result of their financial status, as well as financial security at an older age; 4) leisure time – involves satisfaction with the number of days off per year, free time in the afternoons and at weekends, the quality of leisure during free time, the amount of time spent with family and the variety of leisure time activities; 5) marriage and partnership – this scale comprises satisfaction with marriage or partnerships, their common activities together, satisfaction with partner's honesty, consideration, gentleness and support provided and their readiness to help; 6) parenting attitude (towards their own children) – applies to satisfaction with living with children, taking part in their school and professional successes, the joy given by children, the effort given to looking after their children, their ability to influence them, the respect received by their children and common activities shared; 7) personal satisfaction – this scale comprises satisfaction with their own skills, the way respondents spent their lives, physical appearance, confidence, their uniqueness, vitality and entering into relations with people; 8) sexuality – expresses satisfaction with physical attractiveness, sexual activity, frequency of sexual intercourse with a partner, with own sexual reactions, with the ability to have honest conversations about sexual issues, as well as sexual consistence between the respondent and her partner; 9) friends, colleagues, relatives – this scale involves satisfaction with one's circle of friends and acquaintances, contact with relatives and neighbours, help and support provided by friends and colleagues, their activity in associations, organisations and engaging in social relations and frequency of spending time with people; 10) residence – this involves satisfaction with the size, standard and status of one's residence, the expenses required to maintain it, their location, connections provided by public transport and noise level.

Results

Based on the Life Satisfaction Questionnaire, it was found that in the "leisure time" subscale, the average results for women with cancer was 36.06, whereas for the control group was 31.26, which was statistically significant ($P<0.05$ (Table 1)).

Table 1. Independent trials testing significance of differences between averages

Life Satisfaction Questionnaire	Study group		Control group		F-statistics	P-value
	Mean	S.D.	Mean	S.D.		
Health	30.20	7.53	35.60	7.36	1.02	0.316
Job and profession	36.20	6.24	35.63	6.50	0.06	0.809
Financial situation	28.96	8.42	29.46	8.68	0.38	0.540
Leisure time	36.06	4.66	31.26	7.67	6.97	**0.010**
Marriage / relationships	37.63	7.49	36.90	8.66	0.04	0.838
Parenting attitude	39.56	6.67	41.73	3.85	5.48	**0.022**
Personal satisfaction	36.50	5.45	36.60	7.33	2.66	0.108
Sexuality	31.86	9.16	33.23	8.47	0.70	0.406
Friends, colleagues, relatives	36.50	3.90	35.26	7.09	2.23	0.140
Residence	34.13	7.62	35.33	5.27	4.39	**0.040**
General life satisfaction	347.63	45.84	351.03	50.54	0.01	0.926

This indicates statistical differences between the satisfaction with the personal leisure time demonstrated by women with breast cancer and those who are disease-free. The latter group are more satisfied with their leisure time and how they spend it (Table 1). There were statistically significant differences between the average results in the parental attitude towards their own children subscale (P<0.05). Women in the study group were less happy with their children, with the effort made to raise them and with the perceived respect their children show to them than the women from the control group (Table 1). Women with breast cancer are less happy with their residence, its location and the expenses required to maintain it (P<0.05), than the women from the control group (Table 1). The above data reveals that positive correlations may be found in healthy women between satisfaction with health and specific subscales. The strongest correlation (r = 0.795, P<0.001) occurs between satisfaction with health and general life satisfaction (Table 2). This may indicate that satisfaction with one's health in the control group may have an impact upon their general life satisfaction.

Table 2. The Pearson's r correlation between the "life satisfaction" subscale and particular subscales of the Life Satisfaction Questionnaire

Life Satisfaction Questionnaire	Health			
	Study group		Control group	
	r	P-value	r	P-value
Health	0.026	0.890	0.644	0.000
Job and profession	0.239	0.203	0.450	0.013
Financial situation	-0.183	0.333	0.539	0.002
Leisure time	0.278	0.137	0.494	0.006
Marriage / relationships	0.005	0.788	0.461	0.010
Parenting attitude	0.456	0.011	0.635	0.000
Personal satisfaction	0.543	0.002	0.550	0.002
Sexuality	-0.111	0.558	0.551	0.002
Friends, colleagues, relatives	0.153	0.419	0.251	0.180
Residence	0.425	0.019	0.795	0.000

Satisfaction with health also correlates positively with general life satisfaction in women with breast cancer (r = 0.425, P<0.05), however this is a moderate correlation and not as strong as that of the control group (Table 2). In the group of women with breast cancer, there is a high positive correlation between general life satisfaction (r = 0.837, P<0.001) and satisfaction with their marriage or relationship (Table 3). This may be defined as a successful marriage (relationship), receiving support and a sense of safety provided by their partner as a source of satisfaction for women with breast cancer. A positive correlation is also noted between these variables in women from the control group, but not as strong as the study group (r = 0.680, P<0.001).

Table 3. The Pearson's r correlation between the general life satisfaction and particular subscales of the Life Satisfaction Questionnaire

Life Satisfaction Questionnaire	General life satisfaction			
	Study group		Control group	
	r	P-value	r	P-value
Health	0.566	0.001	0.681	0.000
Job and profession	0.812	0.000	0.677	0.000
Financial situation	0.398	0.029	0.737	0.000
Leisure time	0.837	0.000	0.680	0.000
Marriage / relationships	0.700	0.000	0.566	0.000
Parenting attitude	0.836	0.000	0.849	0.001
Personal satisfaction	0.772	0.000	0.787	0.000
Sexuality	0.409	0.025	0.766	0.000
Friends, colleagues, relatives	0.817	0.000	0.443	0.000
Residence	0.425	0.019	0.795	0.014

The general life satisfaction in women from the control group is strongly and positively influenced by being satisfied with oneself (r = 0.836, P<0.001), satisfaction with their residence (r = 0.817, P<0.001), satisfaction with financial status (r = 0.812, P<0.001) and satisfaction with sexuality (r = 0.772, P<0.001). Hence women

with breast cancer are satisfied with life if they have decent residential and financial statuses, are happy with their skills, the way they spend their life, their physical appearance and that they trust themselves. It seems that a positive perception of one's life by these women is significantly influenced by their physicality, attractiveness, sexual activity and frequent intimate intercourse. This appears fair considering the very nature of their disease. If breast cancer does not impede a women's physical appearance, attractiveness or ability to engage in sexual activity, then such women are satisfied with their lives. In the group of healthy women, there is a positive strong correlation between life satisfaction and being happy about oneself ($r = 0.849$, $P<0.001$), satisfaction with one's health ($r = 0.795$, $P<0.001$), satisfaction with one's sexuality ($r = 0.787$, $P<0.001$), satisfaction with their contact with friends and relatives ($r = 0.766$, $P<0.001$), and satisfaction with one's leisure time ($r = 0.737$, $P<0.001$). There are noticeable differences between the variables which strongly influence general life satisfaction in women with breast cancer and healthy women. For instance, there is a weak positive correlation between the "leisure time" variable and general life satisfaction ($r = 0.398$, $P<0.05$) in the study group, whereas in healthy women, this variable is a strong predictor of general life satisfaction.

Discussion

The results presented in this study show there are no statistically relevant differences between general life satisfaction levels in women with breast cancer and that in healthy women. Some statistically relevant differences may be found in specific subscales, such as leisure time, parenting attitude or place of residence. Women with breast cancer are more satisfied with their leisure time and the way they spend it, but less satisfied than healthy women with their relations with children, the support received from them, their children's school achievements and how their children are influenced by them. Women after mastectomy are also less happy about their residence, including the expenses incurred to maintain it, location, noise pollution level and living standard.

Cancer is often a source of heavy stress to any individual experiencing it, thus influencing their entire functioning and integrity [10, 11]. During chemotherapy, quality of life in patients with breast cancer deteriorates [12]. A higher subjective sense of the disease correlated with lower general level of life quality [13].

Various studies demonstrate that symptoms of depression are common in patients with cancer [11, 15, 16]. This is why a multi-faceted social support is an essential factor in facilitating acceptance of the disease and positive adaptation to a difficult condition, thereby influencing life satisfaction [17]. The latter may be defined as a subjective experience of well-being by an individual [18].

Based on this study, it may be stated that both women after breast removal and healthy controls demonstrate a similar general life satisfaction level. Only some of the subscales have shown statistically relevant differences (Table 3). The respondents from both groups are least happy about their financial situations, their properties, income, life standards and financial security for the future. As presented in the subject-matter literature, the patients receiving support in Amazon Clubs are generally able to accept the disease better than women who are not associated with such clubs [19]. The selection of the study group (only those who received such support) may have resulted in the similarities between life satisfaction levels in sick and healthy women. Also important is the time passed since the mastectomy – at least five years, which may cause the differences between the test and the control groups to be non-significant.

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PART II. PHYSICAL ACTIVITY OF SOCIAL AND PROFESSIONAL GROUPS
DZIAŁ II. AKTYWNOŚĆ FIZYCZNA GRUP SPOŁECZNYCH I ZAWODOWYCH

ECONOMIC CORRELATES OF PHYSICAL ACTIVITY IN ADULTS

EKONOMICZNE KORELATY AKTYWNOŚCI FIZYCZNEJ OSÓB DOROSŁYCH

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Wkład autorów:
A. Study design/planning
zaplanowanie badań
B. Data collection/entry
zebranie danych
C. Data analysis/statistics
dane – analiza i statystyki
D. Data interpretation
interpretacja danych
E. Preparation of manuscript
przygotowanie artykułu
F. Literature analysis/search
wyszukiwanie i analiza literatury
G. Funds collection
zebranie funduszy

Summary

Background. Physical activity plays an immensely significant role in the prevention and treatment of diseases that often lead to premature death. The aim of this study was to examine the relationships between physical activity of adults and determinants of their financial situation such as steady income, per capita income, savings, and indebtedness.
Material and methods. The study was carried out between 2014 and 2015 in Wrocław, Poland on a group of 4332 residents aged 18 to 64 years. The respondents' habitual physical activity levels and income status were assessed with the International Physical Activity Questionnaire Short Form (IPAQ-SF) and the author's own Socio-Economic Status of Working Age People Questionnaire (S-ESQ), respectively.
Results. There are positive correlations between physical activity level and socio-economic status. Steady income and per capita income are two determinants of differences in physical activity in individuals over 44 years of age. The highest level of physical activity was noted in adults with a steady income of more than USD 542 per month. Respondents with savings were also more physically active than their counterparts without savings. Finally, Wrocław residents who were without debts and who were aged 18-44 years were more physically active than were financially indebted residents.
Conclusions. Actions should be undertaken to enhance physical activity of those adults remaining in a poor socio-economic situation.

Keywords: adults, physical activity, income status

Streszczenie

Wprowadzenie. Aktywność fizyczna odgrywa istotną rolę w profilaktyce i terapii chorób, które są często przyczyną przedwczesnych zgonów. Celem pracy jest identyfikacja związków zachodzących między poziomem aktywności fizycznej a takimi aspektami sytuacji materialnej, jak: występowanie stałego źródła dochodów, wysokość dochodów na osobę oraz posiadanie oszczędności i zadłużenia u osób dorosłych.
Materiał i metody. Badania przeprowadzono w 2014 i 2015 roku we Wrocławiu (Polska). Materiał badań liczył 4332 osoby w wieku od 18 do 64 lat. Poziom nawykowej aktywności fizycznej i sytuację materialną badanych oceniono za pomocą Międzynarodowego Kwestionariusza Aktywności Fizycznej w wersji krótkiej oraz Kwestionariusza Statusu Społeczno-Ekonomicznego Osób Dorosłych.
Wyniki. Występują dodatnie korelacje między poziomem aktywności fizycznej a statusem społeczno-ekonomicznym. Stały dochód oraz jego wysokość na osobę to czynniki różnicujące aktywność fizyczną badanych w wieku powyżej 44 lat. Najwyższym poziomem aktywności fizycznej cechowały się osoby o stałych dochodach w wysokości powyżej 542 dolarów miesięcznie. Badani posiadający oszczędności cechowali się wyższym poziomem aktywności fizycznej od osób ich nieposiadających. Niezadłużeni wrocławianie w wieku od 18 do 44 lat byli bardziej aktywni fizycznie od osób posiadających długi.
Wnioski. Należy podjąć działania zmierzające do zwiększenia aktywności fizycznej osób znajdujących się w niekorzystnej sytuacji materialnej.

Słowa kluczowe: osoby dorosłe, aktywność fizyczna, czynniki ekonomiczne

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Introduction

Several studies have confirmed the significant role of physical activity in the prevention and treatment of diseases that often lead to premature death [1, 2, 3]. Positive correlations between physical activity and physical performance and fitness have also been proven [4]. Undertaking physical activity of the proper frequency, volume, and intensity has beneficial effects on both the mental health [5] and overall quality of life of adults [6, 7, 8].

According to Sallis et al. [9], physical activity can by determined by a number of factors, including one's socio-economic status. Chung et al. [10], Kim and So [11], and Biernat [12] have noted that people with higher incomes are more physically active than those with lower incomes. Research carried out on groups of manual workers in Brazil [13] and China [14] revealed the highest physical activity levels among people with the highest and the lowest incomes. On the other hand, Van Stralen [15] found that economic status was not significantly correlated with the amount of physical activity undertaken.

Earlier studies have in fact reached divergent conclusions. Moreover, the socio-economic status of study participants has been investigated only in relation to income per capita, without considering other significant determinants of income status such as steady income, money savings, or indebtedness. The aim of the present study was to examine relationships between physical activity levels and such determinants of financial situation as steady income, per capita income, savings, and indebtedness in adult residents of the city of Wrocław, Poland.

Material and methods

This study took place between 2014 and 2015 in Wrocław, Poland. The research project was approved by the Commission of Bioethics of the University of Physical Education in Wrocław. The research sample consisted of 4332 people aged 18-64 years. The sample selection was random, using a three-level stratification. The division of respondents into age groups was based on the classification of the Polish Central Statistical Office of working age into the so-called mobile age (18-44 years) and immobile age (45-65 years). The respondents' income category was defined in consideration of the social minimum level and average gross income per capita in a one-person household. Almost 81% of the studied residents had a steady income. For 45%, the average monthly income per capita was from USD 271 to 542; for 28% - below USD 271; and for 27% - above USD 542. About 46% of respondents had money savings, and 49% were in debt. Statistically significant differences in income status variables were found between subjects aged over and under 44 years (Table 1).

Table 1. The number and percentage of participants in groups according to their age and selected variables of income status

Variable	Category	total n = 4332		under 44 years n = 2593		over 44 years n = 1739		χ^2	p
		n	%	n	%	n	%		
Steady income	Yes	3494	80.7	2017	77.8	1477	84.9	34.08	< 0.001
	No	838	19.3	576	22.2	262	15.1		
Per capita income	below USD 271	1214	28.0	746	28.8	468	26.9	2.12	≥ 0.05
	USD 271-542	1957	45.2	1167	45.0	790	45.4		
	above USD 542	1161	26.8	680	26.2	481	27.7		
Savings	Yes	2009	46.4	1210	46.7	799	45.9	0.22	≥ 0.05
	No	2323	53.6	1383	53.3	940	54.1		
Indebtedness	Yes	2107	48.6	1127	43.5	980	56.4	69.24	< 0.001
	No	2225	51.4	1466	56.5	759	43.6		

Notes: χ^2 – chi-squared independence test, *p* – chi-squared independence test probability value

The study used an auditorium survey. Respondents' habitual physical activity and income status were assessed with the use of the International Physical Activity Questionnaire Short Form (IPAQ-SF) [16] and the author's own Socio-Economic Status of Working Age People Questionnaire (S-ESQ).

The data from IPAQ-SF were used to determine respondents' energy expenditure on physical activity (EEPA) expressed in MET-min/week, calculated following the Guidelines for Data Processing and Analysis of the International Physical Activity Questionnaire as a total of physical activities at three intensity levels performed by respondents on a weekly basis [16].

The S-ESQ was used to determine four income status variables: steady income (YES, NO), per capita income in a household (< USD 271, USD 271-542, > USD 543), having savings (YES, NO), and indebtedness (YES, NO).

For each independent variable, the size (n) and ratios (%) for the age groups and the whole study group were estimated. Differences in the financial status of Wrocław residents in regard to their age were verified with Pearson's chi-squared test of independence (χ^2). As for the EEPA (dependent variable), arithmetic means were calculated for the total group, age groups, and groups according to particular variables of income status. Relationships between residents' physical activity levels and income status were verified with the one-factor ANOVA test (F), and multiple regression analysis, separately for residents over and under 44 years. The levels of statistical significance were set at $\alpha < 0.05$ and $\alpha < 0.001$. All statistical calculations were made with the use of Statistica 13.1 (Dell Inc.).

Results

The analysis of mean values of the EEPA index in groups according to the variable of having a steady income revealed significant differences between individuals with and without a steady income in the group above 44 years of age ($F = 36.1$, $p < 0.001$). The mean EEPA in individuals with a steady income amounted to 2841 MET-min/week, and in individuals without a steady income – to 1768 MET-min/week. Among the Wrocław residents aged above 44 years, the mean EEPA values differed significantly between groups according to income per capita ($F = 10.4$, $p < 0.001$). The highest level of physical activity (3197 MET-min/week) was found among residents with income over USD 542 per month, and the lowest (2267 MET-min/week) among residents with income below USD 271. Also the highest EEPA was found in residents under 44 years of age (3074 MET-min/week) and over 44 years of age (2972 MET-min/week) who had money savings. The levels of physical activity among these residents were significantly higher ($p < 0.001$ – residents under 44 years of age; $p < 0.05$ – residents over 44 years of age) than levels in residents without money savings (2485 MET-min/week in residents under 44 years of age; 2431 MET-min/week in residents over 44 years of age). The F-distribution value ($F = 41.8$) and $p < 0.001$ showed that physical activity levels were also significantly different among indebted respondents under 44 years. The mean EEPA (3011 MET-min/week) of residents with no debt was higher than for residents with debt (2433 MET-min/week) (Figure 1).

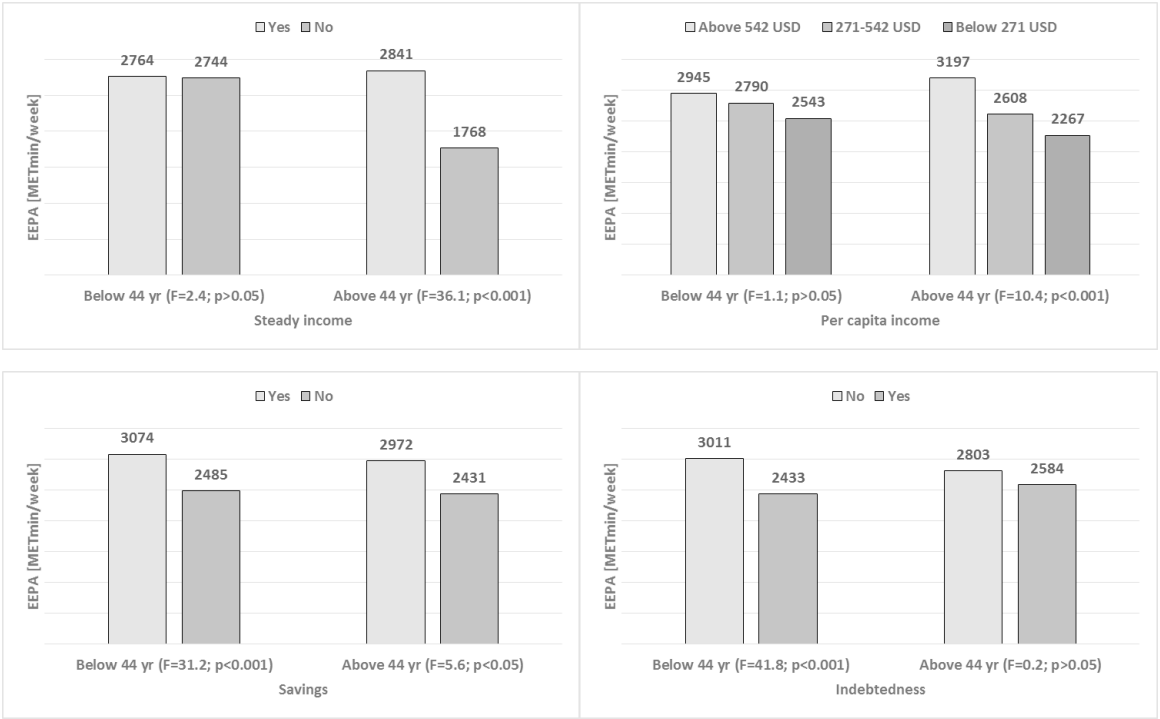

Figure 1. Differences in physical activity levels in groups of respondents according to age and income status variables

Table 2 shows multiple regression models illustrating relationships between EEPA (dependent variable) and the income status of adult Wrocław residents (independent variables). Significant correlations were found between physical activity levels, money savings, and indebtedness ($p < 0.001$) among residents under 44 years of age. The level of total physical activity was the highest in individuals with money savings and without indebtedness (Table 2).

Table 2. Respondents' physical activity levels and income status variables

Variable	Category	under 44 years				over 44 years			
		β	SE	t	p	β	SE	t	p
	Intercept	2786.4	44.9	62.05	< 0.001	2425.1	67.7	35.82	< 0.001
Steady income [a]	Yes	-69.8	44.6	-1.56	≥ 0.05	409.3	68.1	6.01	< 0.001
Per capita income [b]	below USD 271-542	-9.8	48.1	-0.20	≥ 0.05	-116.3	61.7	-1.89	≥ 0.05
	above USD 542	86.4	59.1	1.46	≥ 0.05	337.6	74.0	4.56	< 0.001
Savings [c]	Yes	229.1	41.0	5.59	< 0.001	120.0	50.5	2.38	< 0.05
Indebtedness [d]	No	239.2	37.0	6.47	< 0.001	23.0	47.5	0.48	≥ 0.05

Notes: [a] The reference category for having a steady income is NO, [b] The reference category for per capita income is below 271 USD, [c] The reference category for having savings is NO, [d] The reference category for indebtedness is YES
Abbreviations: **β** – assessment value of model parameters, SE –standard error **β**, t – parameter significance, *p* – probability value

In the group of residents over 44 years of age, statistically significant correlations were found between physical activity and having a steady income ($p < 0.001$), having a monthly income per capita of above USD 542 ($p < 0.001$), and having savings ($p < 0.05$). Respondents with a steady income were more physically active than those without one, and respondents with the highest per capita income were more physically active that respondents with medium and low per capita income. Among the Wrocław residents above 44 years of age, having savings was correlated with a higher level of physical activity (Table 2).

Discussion

This study reveals positive correlations between physical activity levels and income status of adult residents of Wrocław. Steady income and per capita income are significant differentiating factors of physical activity of respondents aged over 44 years. The highest physical activity levels were found in individuals with a steady income above USD 542 per month. Wrocław residents with money savings, regardless of their age, were more physically active than their counterparts without savings. In the group of Wrocław residents under 44 years of age, respondents with debts reported a lower level of physical activity than did their debt-free counterparts.

Having a steady income has not been previously studied as a determinant of physical activity level. In the present study, such correlations were only found in Wrocław residents over 44 years. Residents with a steady income usually work full time in their profession. Previous researchers have proven a significant contribution of physical activity related to the performance of professional chores and to commuting to total physical activity [17]. Higher physical activity levels have also been found in working individuals than in the unemployed [18].

The level of physical activity of Wrocław residents aged over 44 years in this study also differed significantly in terms of per capita income, especially among individuals with the highest income. Higher physical activity levels along increasing income per capita were also found by Choi et al. [19], Kim and So [11], and Kari et al. [20]; and among a Polish population by Biernat [12], Biernat and Piątkowska [21], Pocztarska and Bergier [22], and Puciato [23]. Correlations between physical activity and the highest income status were investigated by Chung et al. [10]. High incomes allow for purchasing various goods and services directly (e.g. gym subscriptions) or indirectly (e.g. transportation to and from gym facilities). Also, individuals of high-income status have been shown to use their leisure time rationally, i.e. mostly actively, due to it being a limited resource [24].

Interestingly, this study did not reveal significant correlations between steady income and income per capita and physical activity levels in respondents aged 18-44 years. The dynamic socio-cultural transformations that younger generations of Poles especially are so much subjected to have not made steady employment as valuable as it has been for the older generations. People below the age of 44 very often work part-time or occasional jobs, both of which make their activities more flexible. Income level usually increases with age. Additionally, for young people satisfaction from work can also come from pursuing their own interests, self-fulfillment opportunities, and leisure resources [25].

Regardless of Wrocław residents' age, their physical activity level was significantly affected by the fact of having savings. Money savings are complement to one's income and an important co-determinant of household status. The relationships of adults' physical activity with savings is analogous to those with income per capita. Moreover, according to the National Bank of Poland [26], the saving rate at the end of 2015, calculated as gross saving divided by gross disposable income, was only 1.6%. In terms of savings, Poland ranked 39th in the world, and having greater savings was characteristic of not only citizens of the wealthiest countries, but also of countries with a similar level of socio-economic development to Poland, i.e. Portugal, Greece, Hungary, Czech

Republic, or Bulgaria. It can be thus concluded that in the Polish economic reality having savings remains the preserve of a rather narrow group of wealthy individuals whose levels of physical activity are the highest.

The last variable contributing to the economic situation of Wrocław residents in this study was indebtedness, which significantly affected physical activity differences in respondents under 44 years. At the end of 2015, the financial liabilities of Polish households amounted to USD 170.2 bilion (USD 4428.7 per capita) [26], which meant that about 31.5% of Poles had debts. For about 33% of indebted Poles, their debts exceeded their annual household income. Debt payments always erode current income and can contribute to the deterioration of a household's social functioning [27]. They are often associated with the necessity of taking extra jobs, which further constrain leisure time. The most common forms of debt are real estate mortgages, home renovation loans, or consumer durables loans. It must be stressed that in Poland these liabilities are usually incurred by young people at the start of their professional career or family life. This explains why indebtedness was an income status index significantly affecting the level of physical activity in the younger age group under study.

Since the physical activity of adults is highly significant for their proper social and individual functioning [28-31], it is necessary to undertake effective actions regarding individuals prone to hypokinesia, i.e. people without a steady income, low income, no money savings, and debt. Programs aimed at improving physical activity levels should be initiated by these individuals as well as companies, local authorities, or government institutions.

Conclusions

Positive correlations are found between physical activity and the socio-economic status of a working-age population from Wrocław, Poland. The study of physical activity has a number of significant and broad practical implications for public health. It is necessary to seek new and effective remedial programs regarding hypokinesia. The results show that individuals prone to hypokinesia are people with low income, with no money savings, and with debts. More physical activity, and thus, better health status and quality of life, can greatly contribute to higher work efficacy of working-age people and significantly improve the output of business companies and national economies.

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PART III. OTHER
DZIAŁ III. RÓŻNE

THE ROLE OF MICROBIOTA IN THE DEVELOPMENT OF ALLERGIC DISEASES

ROLA MIKROBIOTY W ROZWOJU CHORÓB ALERGICZNYCH

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Authors' contribution
Wkład autorów:
A. Study design/planning
zaplanowanie badań
B. Data collection/entry
zebranie danych
C. Data analysis/statistics
dane – analiza i statystyki
D. Data interpretation
interpretacja danych
E. Preparation of manuscript
przygotowanie artykułu
F. Literature analysis/search
wyszukiwanie i analiza literatury
G. Funds collection
zebranie funduszy

Summary

Scientific progress, industrial development, urbanization, and the "sterile" way of life have a significant negative side, namely, the sustained growth of allergic diseases. The "hygienic theory" is used to explain the unceasing increase in the incidence of allergies in the population. At the same time, an important link in the development of allergic diseases is the microbiological environment and our own microbiota. In our literature review we gathered new data on the pathogenetic relationships between the violation of the quantitative and qualitative composition of our microbiocenosis and the development of allergic diseases. The basic mechanisms by which microbiota influence the development of an allergic process have been established, in particular: influence on T-cell immunity, synthesis of cytokines, etc. In this review, particular attention is paid to factors that lead to microbiocenosis and contribute to the development of allergies. Among them it is worth to highlight inappropriate nutrition, "sterile" style of life, widespread using of antiseptics and antibiotics, etc. Therefore, the most important step in the prevention of allergic diseases is the modification of lifestyle, breastfeeding of children, frequent staying in the open air and contact with nature, rational use of antiseptics and antibiotics.

Keywords: microbiota, microbiome, allergic diseases, hygienic theory

Streszczenie

Negatywnym aspektem postępu naukowego, rozwoju przemysłowego, urbanizacji i „sterylnego" stylu życia jest stały wzrost zachorowań na choroby alergiczne. Zależność tę wyjaśnia tzw. „teoria higieniczna", tłumacząca nieprzerwany wzrost liczby alergii wśród społeczeństwa. Równie istotnym czynnikiem w rozwoju chorób alergicznych jest środowisko mikrobiologiczne i nasza własna mikrobiota. W tym artykule staraliśmy się zebrać nowe dane na temat zależności patogenetycznych, pomiędzy naruszeniem ilościowego i jakościowego składu naszej mikrobiocenozy, a rozwojem chorób alergicznych. Podstawowe mechanizmy wpływu mikrobioty oraz procesu powstawania alergii zostały już ustalone, są to przede wszystkim: wpływ komórek T na odporność, synteza cytokin, itp. Obecnie, szczególną uwagę poświęca się czynnikom, które prowadzą do powstawania mikrobiocenoz i przyczyniają się do rozwoju alergii. Należą do nich m.in. niewłaściwe odżywianie, „sterylny" styl życia, częste stosowanie środków antyseptycznych i antybiotyków. Z tego powodu najważniejszym krokiem w profilaktyce chorób alergicznych jest zmiana stylu życia, karmienie dzieci piersią, częste przebywanie na świeżym powietrzu, kontakt z naturą i rozsądne stosowanie środków antyseptycznych i antybiotyków.

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Słowa kluczowe: mikrobiota, mikrobiom, choroby alergiczne, teoria higieniczna

Introduction

Allergic diseases form a genetically heterogeneous group of chronic, immune-dependent diseases [1, 2]. Over the last few decades, allergic diseases have become one of the main health problems of the modernized world. The prevalence of atopic dermatitis, food allergy, and asthma has increased dramatically, especially in western societies. It is estimated that between 20% and 30% of people living in western countries suffer from at least one form of allergic diseases [3, 4, 5, 6]. They are more common among children than adults. Almost 700 million people suffer from allergic respiratory diseases worldwide, namely bronchial asthma and allergic rhinitis [1, 7]. According to recent reports, in the United States there are 15 million children and adults with food allergies

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[8, 9, 10]. The prevalence of allergic diseases has increased over the last few decades, but at different rates in different regions of the world [1, 11]. At present, bronchial asthma is considered the most common chronic non-infectious disease among children [11]. In some industrialized countries, the prevalence of asthma is close to 35-40%, while in other regions it is less than 5% [1, 12, 13]. In addition, the prevalence of asthma is increasing in many low and middle income countries [1, 3, 5, 6, 14, 15].

It is interesting that the number of children and adults suffering from allergic diseases is almost twice as high in cities as in villages. Many researchers combine this fact with the so-called "hygienic hypothesis," according to which an avalanche-like increase in the incidence of allergic diseases is observed predominantly in highly developed countries, and this is due to a decrease in the effects of antigens found in the environment, the widespread use of antibiotics, the use of chemical additives in production, nutrition, and a very "sterile" lifestyle [6, 16, 17]. Indeed, an increase in the incidence of allergic diseases in industrialized countries has coincided with a widespread distribution of vaccines, the use of antibiotics, a decrease in the size of the family, and the improvement of household amenities [14, 16].

The negative impact of allergic diseases is huge both on sick people and their families and society. They negatively affect the quality of life, are a significant psychological burden for the family, and increase comorbidities and the risk of death [1, 3, 18, 19]. In addition, the economic burden of these diseases is extremely high [1, 7, 20, 21].

According to the "hygienic theory", the less people are exposed to parasites and microbes, the more this leads to excessive reactivity of the immune system and the development of allergic diseases [17]. Consequently, the impact of microorganisms on the environment and the state of our own microbiome is an important factor that can affect the development of allergic diseases. This is the subject of our review of literature.

Human microbiota

The term "microbiome" was proposed in 2001 by the Nobel Prize winner Joshua Lederberg to describe the ecosystem of symbiotic and pathogenic microorganisms inhabiting the human body. Lederberg believed that microorganisms in the human body play an important role in health and development of diseases [22, 23, 24].

Recent studies using molecular genetic techniques (sequencing of 16S genes of ribosomal RNA of amplified bacterial nucleic acids derived from feces or biopsy of the intestinal mucosa) demonstrated an incredible complexity of human intestinal microbiota consisting of more than 1000 phylotypes, 80% of which still have not been cultivated [25, 26]. Adults contain about 100 billion bacteria only in the intestines, and the microbiome occupies approximately 90% of the cells in the human body [28]. The human genome consists of about 21,000 genes encoding proteins [29], and microbiota can contain about three million genes [22, 27, 30], which is 100 times greater than the human genome [24, 31, 32]. It is believed that the human microbiota is as unique as the fingerprints of a person [27].

The microbiome (microbiota) of a human is a set of microbiocenoses that colonize all surfaces of the human body, including the skin, respiratory system, gastrointestinal tract and genitourinary system [34, 35].

The microbiome can be considered a "new system organ" since its contribution to human health and disease development was discovered by researchers 20 years ago [22, 25, 33].

The same microorganisms do not occur in all parts of the body. The source of nutrients, humidity conditions, and presence or absence of oxygen affect the nature of microorganisms that can multiply in one or another area. Therefore, the microbiota of the skin, oral cavity, vagina, intestines and others are isolated [27]. The largest part (about 60%) of the microflora inhabits different regions of the gastrointestinal tract, approximately 15-16% is accounted for by the oropharynx. The urogenital tract, except the vaginal section, is inhabited rather weakly. Other microorganisms are accounted for by the skin [36]. In the digestive tract, there are more than 500 different types of microorganisms with the biomass of 2.53 kg [36]. Together, the macroorganism and the microflora constitute a single ecological system that is in a state of homeostasis or eubiosis [36, 37].

The composition and functions of the human intestinal microbiome develop during the first years of life [22]. Despite the widespread belief that the fetal gastrointestinal tract is sterile, recent studies have shown that preterm infants have many contacts with bacteria contained in the amniotic fluid, even if there has been no rupture of membranes or chorioamnionitis before [41, 42]. At birth, children are in contact with the bacterial flora of the vagina and the mother's anus [41]. Despite this, the microbiota of the child's intestines is finally formed after birth [3, 8, 27, 32, 35].

After birth, the newborn's intestine is temporarily dominated by *Enterobacteriaceae* and *Staphylococcus* [17, 43]. The establishment of stable intestinal microbiota is generally accompanied by two major transitions in childhood. The first transition occurs shortly after birth, during lactation, and leads to predominance of bifidobacteria and some lactic acid bacteria in the intestines [1, 17, 44].

The second transition occurs when weaning a child from breastfeeding or with the introduction of solid foods (complementary feeding) [17, 44, 45, 46, 47]. With the decrease in the amount of oxygen in the intestines, anaerobes of the *Bacteroides* and *Clostridium* genera appear [35]. The Bifidobacterium flora is gradually replaced by the adult-type microorganisms and is mainly represented by bacteria of the *Bacteroides*, *Prevotella*, *Ruminococcus*, *Clostridium,* and *Veillonella* genera, which colonize the intestines of the child [49]. In the end, in approximately three years, a typical intestinal microbiota, which is typical for adults [1, 17, 31, 39, 40, 42, 49], is established.

In elderly people, there is another change in the composition and number of microorganisms. There is a significant reduction in the number of *Bacteroides* and *Bifidobacterium;* thus, *Clostridium*, *Eubacterium*, and *Fusobacterium* begin to dominate. The result is an increase in the pH of the intestinal contents to about 7.0-7.5, which may be a cause of diseases of the digestive system in the elderly people [32, 40].

It is important to note that the intestinal microbiotas are distinct among people living in developed and underdeveloped countries, also among urban and rural residents [17].

The microbiota controls numerous metabolic functions, many of which have still not been recognized [34, 50]. Normal microflora performs a number of important functions to ensure the full functioning of the human body, namely: trophic, protective, metabolic, vitamin-forming, endocrine, anti-mutagenic and anti-carcinogenic functions in addition to effects on brain function and behavioral reactions [16, 25, 32, 36, 38, 40, 52, 53, 54].

Importantly, the immunogenic function of microbiota include the following:

- constant interaction with the immune system of the intestine, regulation of the immune response, and the formation of immunological tolerance;
- secretion of proinflammatory cytokines [16, 36, 39, 52, 53];
- regulate the balance between Th-1 and Th-2 cell activity [22, 56, 57].

Additionally, microbiota is the largest source of antigenic stimuli, which contributes to the development of postnatal immunity due to the maturation of the gastrointestinal-associated lymphoid tissue (GALT) [3, 15, 54, 55].

Consequently, the human microbiome is a complex system that is capable of influencing the human body through communication with many organs and systems, synthesizing a large number of biologically active compounds, and controlling the release of substances with other organs [38].

Relationship of microbiota and allergic processes

As it has been noted earlier, intestinal microbiota plays a decisive role in the regulation of the immune system [1]. The intestinal epithelium expresses a variety of pathogen recognition receptors, including Toll-like receptors (TLR) and nucleotide-binding oligomerization domain receptors that activate the immune response against pathogenic microorganisms [1, 16]. In particular, microbiota closely contact the immune system of the intestine through the system of 11 TLRs, each of which recognizes a certain microbial molecular structure [38]. In this case, the immune system is capable of recognizing pathogenic bacteria and intestinal commensals, reacting to pathogens, but at the same time remaining tolerant to commensals. These mechanisms are quite complex and include intestinal epithelial cells, TLRs, dendritic cells, and T-regulatory (T_{reg}) cells [1, 58].

In a healthy state, microbiota have some mucus-like taxons that regulate the production of IL-22, which stimulates the formation of the protective mucous layer by the mucous membrane of the intestines. This barrier is protective and reduces the ability of food allergens to cross the epithelial barrier and enter the microcirculation system. After activation by allergens, epithelial cells secrete cytokines, including TSLP, IL-33 and IL-25, which activate dendritic cells and ILC2 to promote the formation of Th2 cells [59].

T-helper (Th)-2 cells are characterized by the production of IL-4, IL-5, IL-9, IL-13, and the production of allergen-specific IgE that promotes the development and maintenance of an allergic inflammatory process, while Th1-cells produce TNFα and IFNγ, which promote modulation of cell-mediated immunity [1, 22, 58, 60].

In the classical paradigm, the induction of Th2 cytokine reactions also acts to inhibit Th1 activity (typically via IFN-γ), which helps maintain an allergic phenotype. The stability of this Th1/Th2 balance is also regulated at the gene level through the functions of the transcription factors GATA-3 (Th2) and T-bet (Th1) [3, 31, 39].

Bacterial colonization of the intestine affects the differentiation of precursor T-cells in Treg-cells or different types of Th-cells such as Th1, Th2 and Th17 [61]. Treg-cells suppress the differentiation of precursor T-cells into Th-cells [61] and have various anti-inflammatory effects, including inhibition of inflammatory activity of mast cells, basophils and eosinophils, suppression of IgE synthesis, and IgG4 induction [17, 62].

Numerous studies indicate the importance of the balance of T-helpers (Th1, Th2, Th17, regulatory T-cells) as the main factor in the development of allergic diseases [16, 22]. The physiological microbiota leads to the

differentiation of Tregs and the release of IL-10, which play a key role in maintaining the Th1/Th2 balance [24]. In this case, when the normal state of the microbiota is violated, Tregs contribute to the promotion of the Th2 lineage [63]. These cells produce cytokines such as IL-4, IL-5, IL-9 and IL-13, which regulate both the activation of B-cells and the synthesis of IgE, as well as the migration of the activated eosinophils, mast cells, and CD4 + T-cells to the site of affection. This leads to the development of allergic diseases [8, 14, 36, 43, 64].

A number of intestinal bacteria, including *lactic bacteria, bifidobacteria, bacteroides, clostridia and streptococci* [65], as well as bacterial metabolites such as butyric acid and propionic acid [15, 66, 67], polysaccharide A (produced by *Bacteroides fragilis*) are capable of inducing Treg-cells (more precisely, their peripheral type of pTreg) in various experimental models in mice or cell culture [15, 67, 68]. Clinical studies have also shown that probiotic bacteria reduce the formation of Th2 cytokines [69].

The development of allergies in children is associated with a decrease in the level of lactobacilli and bifidobacteria [35]. These bacteria have strong anti-inflammatory properties [70], which are not limited to induction of iTreg IL-10, since the introduction of lactobacilli in mice, carrying defective IL-10 gene still causes inhibition of intestinal inflammation [70]. Their activity is mediated by dendritic cells that secrete IL-10 and TGF-β, which stimulate the formation of iTreg, and also inhibit Th1, Th2 and Th17-dependent response [35].

Consequently, as evidenced by a large number of studies, there is a link between the intestinal microbiology and the emergence of allergy [5, 17, 34]. It has been shown that in patients suffering from allergic diseases (asthma, atopic dermatitis, food allergy) there is an imbalance in the microbiome: disbacteriosis of respiratory system, skin and digestive system [71].

Intestinal microbiota and allergy

During the last 15 years, numerous epidemiological studies have been done on the relationship between the microbiotic composition of the intestines and the risk of developing an allergy. The vast majority of these studies indicate that the change in the microbiome in childhood is associated with allergic sensitization and allergic manifestations, especially atopic dermatitis [16, 42].

The first study, devoted to the study of the hypothesis that allergic disease is associated with aberrant microbiota in childhood, was carried out in Sweden in the 1990s [39, 72]. Then, Bjorgsten et al. [72] investigated differences in the microbial composition of the intestine between allergic and non-allergic children, as well as between children living in Sweden and Estonia. After that, a number of epidemiological studies revealed differences in the microbial composition of the intestine between allergic and non-allergic children, although the differences were not always consistent. Indeed, allergic infants were more often colonized by bacteria of the *Bacteroides* genus and rarely colonized by *Acinetobacter* and *Clostridium* bacteria [17].

After that, a large number of studies were conducted. Thus, it has been established that atopic children have lower rates of *lactic bacteria, bifidobacteria and bacterial strains* [73]. Systematic review of Melli et al. [74] on the role of intestinal microbiota and allergic diseases among children has shown that in children with intestinal allergy, more bacteria such as *B. fragilis, E. coli, Clostridium difficile, Bifidobacterium catenulatum and B. bifidum*, as well as smaller amounts of *B. adolescentis, B. bifidum and lactobacilli* have beeen found [1]. In their study Ling et al. [75] reported a decrease in *Bacteroidetes* and an increase in the percentage of *Firmicutes* (including *Clostridiaciae*) in 5-month-old children with food allergies [39].

As it has been noted by Kalliomaki et al., in atopic patients' intestines there are more clostridia and less bifidobacteria than in non-atopic people, which has led to a decrease in the ratio between bifidobacteria and clostridia [15, 16, 76].

The reduced prevalence of bifidobacteria in children with allergies [78] has not been confirmed in all studies [16, 78, 79]. Some authors report that the limited diversity of bifidobacteria is associated with allergy [80], but again it has not been confirmed in other studies [15, 16]. However, it became clear that the properties of intestinal bifidobacteria primarily depend on strains, especially in immuno-stimulating properties [15, 81]. The change in the species composition of bifidobacteria during allergies is indicated by a large number of researchers [75, 82, 83]. Ouwehand et al. [82] revealed a higher prevalence of *Bifidobacterium adolescentis*, but the lower one of *Bifidobacterium bifidum* in children with eczema or atopic eczema compared with healthy children [14].

C. difficile was associated with all atopic symptoms and sensitization [15]. Colonization of faeces at the age of 3 weeks with *Clostridium coccoides subcluster XIVa* bacteria is described as an early indicator of possible asthma in further life [15, 84]. *Bacteroidaceae* is also associated with the development of allergies, although, as for clostridia and bifidobacteria, the results are contradictory [15]. Fujimura et al. indicate that children with a high risk of atopic dermatitis and asthma show a decrease in the relative number of such bacteria as *Bifidobacterium, Akkermansia and Faecalibacterium*, against the relatively high number of individual fungi such

as *Candida* and *Rhodotorula* [17, 85]. The study of gastrointestinal microbiota in children with food allergy to milk proteins showed more bacteria of the *Lactobacillus* genus and fewer enterobacteriaceae and bifidobacteria in microbiological cultures, as well as more *Clostridium* bacteria [71].

However, presently there are no definite bacterial taxons or separate microbiota subgroups that are always associated with allergic diseases [39, 42]. Taking this into account, some studies have shown that early diversity of intestinal microbiotia may be more important than the presence or absence of specific taxons [86, 87, 88]. Several prospective studies have shown that the decline in microbial diversity precedes the development of eczema [86, 88, 89], allergic rhinitis [87], and asthma [39, 86], but not atopic dermatitis [42].

Microbiota of the respiratory tract and allergy

For many years, there has been an assumption that microflora plays a key role in the development of asthma. The bronchial epithelium has a characteristic microbiome, distinct from healthy people and asthmatics [5]. In studies performed with the help of traditional methods (microbiological cultures), an increased number of atypical bacteria, especially *Chlamydophila* and *Mycoplasma* in sputum and fluid after bronchoalveolar lavage in patients with asthma, was detected in comparison to the control group. While studying the lower respiratory tract of patients with asthma, the dominance of proteobacteria, in particular *Haemophilus, Moraxella, Neisseria* and *Streptococcus* was found. During active inflammation with asthma, there has been a loss of species diversity of the microflora and an increase in the number of proteobacteria, whereas with hormone resistant asthma, *streptococcus* and *M. catarrhalis* have been prevalent in sputum [71].

In addition, the lungs of adults with asthma contain far more bacteria than the lungs of people without asthma. In addition, individuals with severe forms of bronchial asthma have a greater bacterial diversity than patients with moderate asthma [5, 22].

Microbiota of skin and allergy

A characteristic feature of the skin microbiome in patients suffering from atopic dermatitis is the domination of *Staphylococcus aureus* [37, 73, 90]. In this case, the harmful effects are probably mediated through the development of factors of staphylococcal virulence, including superantigens that stimulate type 2 immune responses and reduce the activity of regulatory T-cells: cytolysins, serine proteases, and lipases that damage the skin barrier. The colonization of *S. aureus* occurs as a result of dysfunction of the skin barrier (for example, reduction of the expression of filaggrin) and increased expression of IL-4 and IL-13. These disorders can occur as a result of genetic and immune reactions caused by allergens or mechanical damage [37].

The aggravation of allergic diseases is characterized by an increased number of pathogenic *S. aureus* (which leads to a general decrease in microbial diversity). In mice, the δ-toxin secretion of *S. aureus* induces degranulation of mast cells and exacerbates allergic sensitization to the antigen model applied to the skin [17]. In patients with atopic dermatitis, there is a decrease in the microbial diversity of the skin during the exacerbation of the disease [17, 71].

Risk factors for the development of allergy, associated with microbiota

Studies of the links between changes in microbiota composition and a sharp increase in the prevalence of allergy as the "hygiene hypothesis" proposed by D.P. Strachan in 80's, began with clinical observations [5, 91]. Thus, epidemiological studies have shown a link between lower incidence of allergies in many families and children, who are brought up in rural areas, especially in early childhood [73, 92]. There was a reduced risk of allergic diseases in the presence of some individual factors, including the lack of antibiotic therapy in childhood, exclusive breastfeeding during the first 4 months of life, vaginal birth, and the presence of domestic animals [71]. Today, the reduction of microbial effects (and the growth of allergic conditions) is also associated with improved hygiene [3].

Changes in the microbial environment of a person are more often associated with a change in lifestyle during the last 15-20 years [16, 93]. The increasing prevalence of allergic events, such as asthma or atopic dermatitis, is actually a result of low levels of bacterial exposure during childhood. In some way, children are deprived of immunological stimuli. To a certain extent, this is due to the fact that the inhabitants of the civilized countries spend almost 90% of their time in a built environment, with about 70% of the time spent in their apartments or houses and are less outdoors [94]. In fact, it means leaving the environment, in which the microbiome of a person should develop. In particular, it has been shown that in the United States, children who are raised in an internal (home) environment are more likely to suffer from asthma and atopy [15, 95].

A particularly interesting topic is the relationship between the increased prevalence of allergic diseases and the increased hygiene of life in the 21st century. The increase of the sterility of our environment, the widespread use of antiseptics and antibiotics (for treatment, at home, consuming with food) and the simultaneous migration of people from villages to cities significantly reduced human contact with the microbiological world. As a result, our immune system in search of new "opponents" began to actively react to substantially harmless particles of food or pollen [37, 53].

Further evidence of the role of microorganisms in the development of allergic diseases stems from the independent study of microbial exposure associated with pet owners. The influence of dogs and, to a lesser extent, cats in childhood, protects against the development of allergic diseases [96]. Fujimura et al. (2010) showed that bacterial communities in household dust from homes, where dogs or cats were present, were significantly richer and more diverse than those, who did not have domestic animals and, according to the author, most of the bacterial taxons from the environment were found in the microbiome of the man's intestinal [15, 97]. This is confirmed by studies, which in particular indicate a reduction in the prevalence of asthma and other allergic diseases in children living on the farm [39, 98, 99, 100]. Most researchers attribute this to the fact that children on farms and in the countryside are exposed to more diverse microflora than children, who do not live on farms [14, 22, 101].

It has also been established that the effect on the skin of gram-negative *gamma proteobacteria*, common in the soil and on plants such as *Acinetobacter*, is associated with a decrease in the risk of atopy developing in teenagers [102].

In parallel with this, excessively harsh hygiene practices of a mother and disturbed vaginal flora leads to a weak colonization of the birth canal with lactic bacteria [72]. It should also be noted that the consumption of sterile industrial products by the mother reduces the production of lactic acid by bacteria. Thus, too harsh hygiene during labour, as well as disturbed vaginal flora with a decrease in the proportion of lactic bacteria leads to an increase in the prevalence of atopy in children, as shown by studies made in Sweden and Estonia [72].

As it has been already mentioned, microbial colonization of the intestine usually begins at birth, and this process primarily affects the maternal microbiota of the birth canal and the way of the childbirth (Caesarean section or delivery via natural way). During natural births, newborns are in contact with the bacterial flora of the vagina and the anus of the mother. The sterile environment in which the baby is found during Caesarean section disturbs the colonization described above [41]. After Cesarean section the colonization of the intestine occurs with delay and the composition of microbiota changes [24]. Thus, the microbiome of 1-month-old children, who were born via Cesarean section, contains more *Clostridium spp., Klebsiella spp., Enterobacteriaceae, Bacteroides spp., Bifidobacterium spp.* and *Escherichia coli* [1, 6, 103, 105]. This effect lasts more than 6 months in newborns and greatly increases the risk of atopy, asthma, and allergic rhinitis [1, 104, 105]. This is confirmed by numerous studies, which report that children born via Caesarean section are more likely to develop asthma and atopy, allergic rhinitis, and food allergies [17, 31, 104, 106].

The method of feeding a newborn child also influences the formation of microflora of the gastrointestinal tract of children. Breastfed infants develop flora, which is dominated by bifidobacteria and lactobacilli that make up 60-91% of the intestinal microflora [107], while artificial feeding contributes to the development of C. perfringens. This is due to the composition and properties of breast milk, which contains a high concentration of lactose and casein, has a low content of calcium phosphate, and therefore reduces the buffer capacity. It was shown that a decrease in pH in the intestinal lumen inhibits the growth of bacteroids, clostridia and *E. coli*, but does not affect bifidobacteria [6]. Bifidobacteria, producing acetic and lactic acids, inhibit the growth of pathogenic strains, in particular *E. coli* and *Clostridium* [6, 32].

In addition, breast milk contains many factors that modulate and promote the development of the immune system in childhood, including immunoglobulins such as IgA and IgG, antimicrobial compounds such as lysozyme and lactoferrin, cytokines such as TGF-β and interleukin 10 (IL- 10), and lymphocytes. In particular, cytokines, such as IL-10 and TGF-β, in breast milk contribute to the tolerance of the host immune system to the intestinal bacteria and contribute to the development of IL-10 by the child [17, 108].

Furthermore, recent studies have shown that breast milk is not sterile. It contains up to 600 different types of bacteria [109]. These are mainly bacteria such as *Lactobacillus, Streptococcus, Enterococcus, Lactococcus, and Weissella*, as well as some species of *Bifidobacterium* [17, 110]. Children who have been breastfed for at least 4 months have a reduced risk of developing asthma [111].

The use of antibiotics at an early age has profound implications for the development of intestinal microbiota. The use of antibiotics in infants changes the composition of intestinal microbiota in relation to a large number of proteobacteria and a low prevalence of actinobacteria populations [112], reduces the overall diversity of microbiota in a child, and promotes the formation of antibiotic resistant strains of bacteria [17, 113].

In addition, it has been noted that taking antibiotics during the first month of life is linked to decreases in the number of anaerobic bacteria (*Bifidobacterium, Bacteroides*) in relation to enterococci, enterobacteria and coagulase-negative staphylococci [24, 114]. *Clostridium difficile* infection is one of the possible complications of antibiotic therapy. Thus, the longer the antibiotic therapy and the wider spectrum of the drug, the greater the risk of infection with *C. difficile* [27].

According to some epidemiological studies, the use of antibiotics at an early age increases the sensitization of the organism [115], increases the risk of developing allergic diseases, such as asthma, atopic dermatitis, and allergic reactions to cow's milk [116]. An alternative system using antibacterial agents can be inhaled antibiotics in inflammatory respiratory diseases [117, 118].

Conclusions

A review of scientific studies indicates the association between the allergic diseases and the state of microbiota. This connection is realized due to the ability of the microflora to affect the activity of the T-cell arm of immunity, the formation of interleukins and other cytokines, interaction with the receptors of the intestinal epithelium, and recognition of antigens. Accordingly, a violation of the quantitative and qualitative composition of microbiota can increase the risk of hypersensitization and allergic diseases. Violation of microbiocenosis can be caused by many factors, in particular: the birth of children via Cesarean section, inappropriate feeding, a "sterile" way of life, wide use of antiseptics and antibiotics, etc. All these factors can lead to the violation of the quantitative and qualitative composition of microbiota and, accordingly, to the increased risk of developing allergic diseases. The most important steps in the prevention of allergic diseases is modification of lifestyle, breastfeeding of children, frequent exposure to the fresh air and contact with nature, and rational use of drugs. In our opinion, these recommendations are basic, without which successful prevention and treatment of allergic diseases is impossible.

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BURNOUT IN THE ANAESTHESIOLOGISTS OF WESTERN UKRAINE AND ITS POSSIBLE CAUSATIVE FACTORS

WYPALENIE ZAWODOWE WŚRÓD ANESTEZJOLOGÓW ZACHODNIEJ UKRAINY I POTENCJALNE CZYNNIKI PRZYCZYNIAJĄCE SIĘ DO POWSTAWANIA TEGO ZJAWISKA

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Wkład autorów:
A. Study design/planning
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B. Data collection/entry
zebranie danych
C. Data analysis/statistics
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D. Data interpretation
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Summary

Background. The paper deals with the problem of burnout among the anaesthesiologists of the Western Ukraine region and its causative factors. Burnout is characterized by mental and physical exhaustion owing to prolonged emotional stress.
Material and methods. 105 anaesthesiologists were questioned as to the causes of job-related stress and their personal attitude to the job based on the Maslach Burnout Questionnaire. Questionnaire survey findings were compared in relation to the doctors' practical experience.
Results. Burnout symptoms were found to occur in 82% of anaesthesiologists with practical experience less than 5 years, and in 84% of doctors with practical experience above 20 years. These groups revealed high values of emotional burnout on the Maslach scale. Anaesthesiologists with 5-20 years of work experience revealed moderate levels of emotional burnout. High level of depersonalization was found in those with 5-20 years of work experience. For doctors who had less than 5 years and more than 20 years of work experience, depersonalization level was moderate.
Conclusions. The group of anaesthesiologists with more than 20 years of work experience had the highest values of professional relationship reduction. The lowest value of this component of burnout was found in the young doctors with work experience of less than 5 years. About 80% of the doctors pointed out working intensity and insufficient salary as the main causes of work-related stress.

Keywords: burnout syndrome, depersonalization

Streszczenie

Wprowadzenie. Artykuł przedstawia problem wypalenia zawodowego wśród anestezjologów zachodniej Ukrainy oraz czynniki przyczyniające się do powstawania tego zjawiska. Zespół wypalenia zawodowego charakteryzuje się fizycznym i psychicznym wyczerpaniem wskutek chronicznego napięcia emocjonalnego.
Materiał i metody. W badaniu wzięło udział 105 anestezjologów, którzy odpowiadali na pytania dotyczące stresu związanego z pracą oraz ich postawy wobec pracy z wykorzystaniem kwestionariusza wypalenia zawodowego Christiny Maslach (MBI). Wyniki badań porównano w oparciu o doświadczenie zawodowe lekarzy.
Wyniki. Objawy zespołu wypalenia zawodowego rozpoznano u 82% anestezjologów pracujących w zawodzie krócej niż 5 lat oraz u 84% lekarzy tej specjalności z ponad dwudziestoletnim stażem pracy. Obie grupy cechował wysoki poziom wyczerpania emocjonalnego zgodnie z wynikami na skali MBI (Maslach Burnout Inventory). Anestezjolodzy ze stażem pracy od 5 do 20 lat wykazują umiarkowany poziom wyczerpania emocjonalnego. Wysoki poziom depersonalizacji stwierdzono u lekarzy ze stażem pracy od 5 do 20 lat, natomiast pracujących w zawodzie krócej niż 5 lat oraz dłużej niż 20 lat cechuje umiarkowany poziom depersonalizacji.
Wnioski. Grupę anestezjologów z ponad dwudziestoletnim stażem pracy cechuje najbardziej obniżone zadowolenie z osiągnięć zawodowych. Z kolei ci, którzy pracują w zawodzie najkrócej, mniej niż 5 lat, są najbardziej zadowoleni ze swoich zawodowych osiągnięć. Około 80% anestezjologów jako główne przyczyny stresu zawodowego wskazuje zbyt dużą intensywność pracy oraz zbyt niskie zarobki.

Słowa kluczowe: zespół wypalenia zawodowego, depersonalizacja

Tables: 3
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Introduction

The Psychiatry Congress in Berlin, 2017 highlighted that work-related stress is a critical problem in the medical field [1]. Declining health due to occupational stress is observed roughly in a third of European Council medical employees, costing an average of 3-4% of European Council countries' gross national income [2].

Professional and emotional burnout is the most common manifestation of occupational stress, occurring in 30-48% of medics, and essentially affecting their personal and professional adaptation as well as working self-efficacy [3]. Burnout syndrome has been singled out in the X International Classification of Diseases as a separate diagnostic taxon – Z73 (problems of life management). The term Burnout Syndrome was introduced by an American psychiatrist H.J. Freudenberg in 1974. It characterizes the emotional state of those who communicate intensively in a stressful climate [4]. Extensive research on the phenomenon of burnout had been conducted by Christine Maslach and Susan Jackson [5].

This current study focuses on the assessment of the degree of burnout in the anaesthesiologists of three large hospitals in Ternopil, Ukraine.

Material and methods

105 anaesthesiologists were divided into 3 age groups depending on their work experience on a speciality: Group 1 – work experience less than 5 years (38 persons); Group 2 – work experience 5-20 years (42 persons); Group 3 – work experience above 20 years (29 persons).

The Maslach burnout questionnaire [6] was used for the calculation of the values of 3 scales: Emotional burnout, Depersonalization, and Reduction of professional achievements. The questionnaire comprises 22 points and pertains to work-related feelings and emotional experiences. Manifestation degree of each statement is assessed on a six-point scale depending on the occurrence, 0 standing for the lack of sensation described; 1 point – for "very seldom"; 2 points – for "seldom"; 3 points – "at times"; 4 points – "often"; 5 points – "very often"; 6 points – "every day".

In addition, the participants completed a questionnaire of five questions concerning the cause of probable job-related stress (see Table 1).

During the statistical processing of the material obtained after the questionnaire by the Maslach scale, the average arithmetic values (M) and the arithmetic mean (m) were calculated.

Table 1. Questionnaire survey of anaesthesiologists as to the causes of job-related stress

Question	Relative number of participants (%) who gave positive answers		
	Work experience		
	Less than 5 years (n=38)	5-20 years (n=42)	Above 20 years (n=29)
The factor ranking first among the causes of job-related stress:			
– Excessive work intensity	78.90	80.95	58.62
– Overtime work	2.63	4.76	20.68
– Enormous occupational responsibility	7.89	9.52	20.68
– Disparity in one's capabilities and occupational load	10.53	4.76	20.68
Do you regard your speciality as prestigious?	81.58	66.66	20.68
Are you satisfied with your salary?	22.11	30.95	30.68
Are you financially insecure?	71.05	37.14	34.82
Would you like to change your profession?	57.89	38.09	82.75

Results

To interpret findings, it is necessary to give the values of points which characterize the intensity of burnout syndrome subscales (Table 2) within the study sample.

Table 2. Values of points which characterize the intensity of burnout syndrome subscales

Subscale	Low level	Medium level	High level	Maximum
Emotional burnout (mean – 19.73)	0-15	16-24	25 and more	54
Depersonalization (mean – 7.78)	0-5	6-10	11 and more	30
Reduction of professionalism (mean – 32.93)	37 and more	31-36	30 and more	48

Emotional burnout reveals itself in reduced emotional tone, psychotic exhaustion and affective liability, as well as in the loss of interest and positive emotions towards the people around, satiety of work and overall life dissatisfaction.

High values of emotional burnout on the Maslach scale were noted in 2 groups of anaesthesiologists: with less than 5 years practical experience and above 20 years. Those with the work experience within the 5-20 years group revealed a medium level of emotional burnout (Table 3).

In the context of burnout, depersonalization provides for the formation of specific, destructive relations with the people around. Depersonalization involved emotional detachment and indifference, a formal approach to one's professional duties without personal involvement and empathy, and in some cases, negativistic and cynical attitudes towards patients. Behaviourally, depersonalization is manifested in arrogance, use of professional slang, humour, and labelling. High depersonalization level was found in young medics with work experience within 5-20 years; in those with more than 20 years of work experience, depersonalization level was medium.

Table 3. Average scores on factors of Burnout Scale as a function of work experience

Constituent of burnout syndrome	Average scores for anaesthesiologists according to the burnout syndrome factors on the Maslach scale		
	Work experience of participants		
	Less than 5 years (n=38)	5-20 years (n=42)	Above 20 years (n=29)
Emotional burnout	28.0±2.6	17.1±1.5	27.2±2.3
Depersonalization	7.1±0.6	12.4±1.1	10.0±1.1
Reduction of professional achievements	36.2±2.9	31.0±2.8	28.2±2.6

Reduction of professional achievements reflects the degree of medics' personal and professional satisfaction. High values indicate the tendency to hold a negative assessment of one's competence and productivity leading to reduced professional motivation and an enhancement of a negativistic approach to one's duties, isolation from work colleagues, and detachment and avoidance of work, both psychologically and physically. The doctors with the work experience above 20 years revealed the highest values of professional achievements reduction, whereas the medics with the work experience less than 5 years showed the lowest values.

Additional information was obtained to reveal the causes of burnout in the sample of medics; 76% of them identified high work intensity as the cause of occupational stress and 12% identified the disparity in their capabilities and occupational intensity as being a source of stress. As for the latter, the number of anaesthesiologists with more than 20 years of work experience was 4.23 and 1.96 times higher than the number of medics with 5-20 years of work experience and less than 5 years, respectively. With regard to prestige, the number of anaesthesiologists with more than 20 years of work experience who considered their work prestigious was 3.22 times less the amount of those with 5-20 years of experience and 3.94 times less the number of medics with less than 5 years of work experience.

Discussion

The findings from this study show that being insufficiently compensated, both morally and financially, were two of the main external stress factors in this sample of anaesthesiologists. Among the medics who had more than twenty years of work experience, the number of those who were satisfied with their salary was 1.38 times the number of anaesthesiologists with less than 5 years of work experience. The number of medics who would like to change their occupation is significant – 82.75% among the doctors with more than 20 years of work experience. The work specifications of anaesthesiologists include: need for prompt and responsible decision-making, performance of aggressive manipulations fraught with fatal complications, keeping calm in critical

clinical situations, intensity of daily working schedule, working in conditions of uncertainty and excessive intensity, handling extremely serious cases, insufficient diagnostic and therapeutic resources alongside with uncertain financial circumstances [7]. In fact, the medic is constantly subjected to psychological traumatic experience including responsibility for the life and health of patients, pressure on the part of patients, their relatives, as well as of colleagues and authorities, and increasing requirements to demonstrate professional competence. This is fraught with physical and mental maladjustment, enhanced social tension and, as a result, declining health [8]. Extreme working conditions also impose stringent requirements on the psychological health status of anaesthesiologists and require the ability to deal with anxiety and depression, high stress immunity, having sufficient social adaptation, and showing the ability to resist occupational burnout [9].

Thus, the following specific occupational stress factors in anaesthesiologists include [9]:

1. responsibility for the life and health of patients,
2. changing situation and need for prompt decision-making (especially in the departments of anaesthesiology and intensive therapy),
3. duration of negative emotions including anguish, pain, despair, etc.,
4. need to maintain high attention focusing and self-control, irrespective of the situation and physiological conditions,
5. irregular working schedule with night and daily shifts,
6. immediate danger from specific patients (criminals, drug addicts, aggressive persons).

These factors are aggravated by unfavourable working conditions [10]:

1. long-term stay (2-12 hours and more) in a confined space (e.g. operating room),
2. long-term stay in a static condition or forced posture,
3. handling psychoactive agents, anaesthetics,
4. risk of contracting infectious diseases,
5. handling medical equipment and instruments.

The high level of emotional burnout observed in this sample of anaesthesiologists is known to be a risk factor of the development of various maladjustment forms at the somatic, behavioural (deviant, addictive behaviour), and psychopathologic level (neuroses, reactive states) [11].

Socio-psychological factors of the anaesthesiologists' work process contribute to the development of chronic stress, underlying professional maladjustment syndrome [12].

Occupational burnout often occurs due to contradictions in professional strategy and tactics, as well as to excessive and unrealizable demands from institutions including the constant burden of liability (material, professional, legal), and an ineffective performance management system.

In similar research conducted in Russia, Netesin and colleagues (2017) found occupational overload in 59% of anaesthesiologists [13]. In the same study, 63% of medics considered their speciality prestigious, though 91.7% were not satisfied with their compensation package. In Russia only 30% of anaesthesiologists work until their retirement age [15].

According to Maslach [5], burnout is equated with extreme distress and with the 3rd degree of general maladjustment syndrome – exhaustion phase. It is important for anaesthesiologists to show consideration to patients; however, medics experience depersonalization which can lead to a lack of consideration so this is an education issue for the profession. If medics are suffering depersonalization, they can also dehumanize patients leading to less than adequate care. This study shows that this trend can lead to serious problems in the health care management profession. A needy medic can hardly be expected to perform his duties properly. Ukraine is one of a few post-Soviet states with no insurance medicine. As a consequence, the salary of Ukrainian doctors is much lower compared with that of their colleagues in the neighbouring countries.

In summary, it can be said that burnout syndrome in anaesthesiologists develops due to two main factors: high work intensity and low financial interest. Failure to solve the problem results in the impaired health status of medics and in poor work performance. The problem requires a prompt solution primarily through reorganization of the public health system in Ukraine.

Conclusions

1. High values of emotional burnout on the Maslach scale were revealed in 2 groups of anaesthesiologists: those with the work experience less than 5 years and above 20 years. The medics with 5-20 years of work experience revealed medium burnout.
2. High levels of depersonalization were found in the doctors with 5-20 years of work experience. The medics with less than 5 years and more than 20 years of work experience revealed a medium level of depersonalization.

3. The highest values of the reduction of professional relations were revealed in the group with more than 20 years of work experience and the lowest values being found in the medics with less than 5 years of work experience.
4. High work intensity and inadequate compensation were the major cause of job-related stress among 80% of medics.
5. The highest occurrence of professional burnout syndrome among the sample of anaesthesiologists was found in those with less than 5 years and more than 20 years of work experience.

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MIGRATION FROM NORTHERN SIBERIA REGIONS: PSYCHOPHYSIOLOGICAL ADAPTATION OF CHILDREN

MIGRACJA Z REGIONÓW PÓŁNOCNYCH SYBERII: ADAPTACJA PSYCHOFIZJOLOGICZNA DZIECI

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Wkład autorów:
A. Study design/planning
zaplanowanie badań
B. Data collection/entry
zebranie danych
C. Data analysis/statistics
dane – analiza i statystyki
D. Data interpretation
interpretacja danych
E. Preparation of manuscript
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F. Literature analysis/search
wyszukiwanie i analiza literatury
G. Funds collection
zebranie funduszy

Summary

Background. This article presents results of research about psychophysiological adaptation of children who migrated from the northern to the southern regions of Siberia. The purpose of this study was to create measures that can be used to promote health among migrants. **Material and methods.** We examined 157 children between the ages of 11-16. Roughly half (n=74) were child migrants, and the remainder (n=83) were children who lived constantly in region of southern Siberia. Psychophysiological adaptation was assessed by methods of Eysenck, Rogov, Belokon and Kuberger. **Results.** Assessment of parameters allowed us to reveal multidirectional results in groups of children. The questionnaire developed by Eysenck showed the predominance of the extroverted type of personality among patients, but emotional instability was more often recorded among child migrants (p=0.0007). Child migrants took significantly longer to complete psychological tests, including tests of attention (p=0.0042) and verbal logical thinking (p<0.001). Vegetative homeostasis was characterized by a higher level of sympathetic tonic initial vegetative tone (p=0.0172), hyper sympathetic tonic variant of vegetative reactivity (p=0.0377), and an altered type of hemodynamic reaction to the clino-orthostatic test (50% of cases). **Conclusions.** The high frequency of emotional instability, slower speed of logical thinking possesses, and sympathetic tonic orientation of vegetative homeostasis parameters are distinctive features of child migrants. Children with deviations in psychophysiological parameters are at high risk of developing psychosomatic pathology. Therefore, preventive measures are necessary to help promote health among child migrants.

Keywords: child, Siberia, migration, adaptation

Streszczenie

Wprowadzenie. W artykule przedstawiono wyniki badań dotyczących adaptacji psychofizjologicznej dzieci migrujących z północnych do południowych regionów Syberii. Celem pracy było wypracowanie metod i środków, które można wykorzystać na rzecz promocji zdrowia wśród migrantów. **Materiał i metody.** Zbadano 157 dzieci w wieku 11-16 lat: dzieci migrantów (n=74) i dzieci, które stale mieszkały w regionie południowej Syberii (n=83). Adaptację psychofizjologiczną oceniano za pomocą metod opracowanych przez przez Eysencka, Rogova, Belokon i Kubergera. **Wyniki.** Ocena wielu parametrów pozwoliła na ujawnienie wielokierunkowych wyników w grupach dzieci. Dane z kwestionariusza Eysencka wykazały przewagę ekstrawertycznego typu osobowości wśród dzieci obu grup, ale niestabilność emocjonalną częściej odnotowywano wśród dzieci migrantów (p=0,0007). Migranci spędzali znacznie więcej czasu na wykonywaniu testów psychologicznych: ilościowy wskaźnik uwagi (p=0,0042) i logiczne myślenie werbalne (p<0,001). Wegetatywna homeostaza charakteryzowała się wyższym poziomem wegetatywnego tonicznego napięcia początkowego (p=0,0172), hipersympatycznym wariantem tonicznej reaktywności wegetatywnej (p=0,0377), zmienionym typem reakcji hemodynamicznej na test ortostatyczny (50% przypadków). **Wnioski.** Wysoka częstotliwość niestabilności emocjonalnej, niski poziom prędkości myślenia logicznego, sympatyczna toniczna orientacja wegetatywnych parametrów homeostazy są charakterystycznymi cechami psychofizjologicznymi dzieci migrantów. Dzieci z odchyleniami parametrów psychofizjologicznych posiadają wysokie ryzyko rozwoju zaburzeń psychosomatycznych i dlatego konieczne jest wprowadzenie metod i środków profilaktycznych na rzecz promocji zdrowia.

Słowa kluczowe: dziecko, Syberia, migracja, adaptacja

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Introduction

Migration is a universal phenomenon that has existed since the time that people appeared on the Earth. People move from one place to another for different reasons, but the goal or the main reason is to improve their living conditions. Migration is also a social phenomenon that influences the life and health and individuals. Migration includes certain stages, hence, this is a process. In many cases, lack of readiness and/or difficulties with adapting to a new environment can lead to distress among migrants. Moreover, migration has a subsequent negative effect on psycho-physiological aspects of the well-being of the affected population. Hence, here we aim to summarize published studies on migration and its influence on the psycho-physiological aspects of adaptation among migrants [1].

Adaptation is a process of change wherein an organism or species becomes more suitable for the surrounding environment [2]. The term adaptation refers to the adaptation of an individual to new conditions. The biological meaning of adaptation is to establish and maintain a homeostasis that allows an individual to exist in a particular environment with its geographic and ecological characteristics. The popular view on adaptation belongs to the form of a function that evolved through natural selection for a particular function to preserve and maintain homeostasis [2]. The process of adaptation is based on genetic differences between people who have begun to adapt to greater success in a specific environment context. Genetic markers of adaptation to climatic conditions have been identified; in particular, specific genetic variations have been associated with adaptation to cold, particularly in genes that control thermoregulation in the human body [3, 4]. Several studies have shown functional single nucleotide polymorphisms (SNPs) involved in adaptation to environmental conditions [5].

At present, a significant number of northerners move to more favorable territories to live each year, including the southern part of Siberia. This migration undoubtedly affects individuals' level of adaptation and the state of health in general [6, 7]. The living conditions in different latitudes of Siberia vary greatly due to the severity of climatic and geographical parameters, nutrition, and physical activity. These factors create prerequisites for changes in all regulatory systems, including the autonomic nervous system, with the possibility of causing autonomic dysfunction, primary headache, and other diseases of dysregulation [8-11]. In general, the cycle of adaptive adjustment in humans lasts 2-3 years in a new ecological zone with subextremal conditions [12, 13]. Some scientists have described one possible variant for adaptation wherein a person cannot adapt to new life conditions. This state has been described as 'unfinished' adaptation [13].

Unfinished adaptation is associated with dysregulation of both inter- and intra-system interactions that last for months and even years. These processes may include corticosteroid levels, anxiety, and excessive fatigue. Unfinished adaptation is a key factor contributing to risk of neurotic disease and psychosomatic pathology in this context [14]. The main condition for completing the process of adaptation in the body to the effects of an external factor is the return of the homeostatic parameters to the initial level, or stabilization at a new level [13, 14].

Adaptation of a child's body to a new habitat has some differences in comparison to adaptation in adults. In particular, hormonal changes activate receptors across a large number of organs and tissues, which in turn, lead to a generalization of the child's reaction to any new effect [15, 16].

Isaeva, Chernikov, and Bayevsky assert that the circulatory system is a very sensitive indicator of adaptive reactions of the whole organism [17]. Variability in heart rhythm is considered to be the result of the influence of nervous, humoral, and hormonal mechanisms of regulation on the circulatory system. The cardiovascular system is therefore one of the most convenient models, and is widely studied by scientists from the point of view of adaptation processes at the level of the whole organism [18-20]. Organisms become able to perform targeted, specific, well-differentiated reactions during adaptation by the end of the primary school period. After that time, the adaptive response no longer becomes generalized, but rather, is aimed at solving a specific task of adaptation. Adaptation processes temporarily lose their effectiveness and again become less specific during puberty. However, the adolescent's body acquires a level of adaptive capacity by the end of puberty that is similar to that of adults [21].

Any force that requires an adaptive reaction of the organism activates its functional systems to the level of its reserve capabilities. The reserve capacity zone is significantly limited in children, and these reserves may not be sufficient for solving tasks that the organism faces that are required adaptation. Children tend to fall into a state of inadaptation, even under conditions of moderate functional load. Therefore, the problem of the stability of adaptive changes and the balance of the functioning of body systems becomes urgent after the arrival of migrant children from the north to the southern regions of Siberia. However, a comprehensive review of what we currently know about the relationship between migration from the north and the psychophysiological aspects of the adaptation of migrant children has not been undertaken.

Aim of the study

The aim of the study was to assess the psychophysiological characteristics of adaptation among child migrants from the northern to the southern regions of Siberia.

Material and methods

The study was conducted between the years of 2014 and 2017. We examined 157 children (69 boys and 88 girls), ranging in age from 11 to 16 years. Seventy-four of the 157 were children from the northern regions (main group) and 83 were constant residents of the southern regions of Siberia (comparison group). Participants were included in the study after providing written informed consent. Using a physical examination of children, parameters of physical development were consistent with age.

A standard neurological examination was performed, consistent with procedures outlined in [22]. In particular, we utilized a questionnaire developed by Eysenck, which was adapted for children. Brain functioning was assessed via psychodiagnostic tests for children, using the (1) exclusion of concepts test, which evaluates verbal-logical thinking, and (2) the reproduction of figures task, which examines attention. Consistent with Rogov [23], we recorded the number of correct answers and the time in seconds taken to complete the tasks. Next, we performed cardiointervalography via a clinoorthostatic test developed by Belokon & Kuberger [24]. This test provides prognostic information about the functional state and features of adaptive responses of the whole organism. We focused on the following cardiointervalography parameters: mode, amplitude mode, variation range, stress index of regulatory systems at rest, initial vegetative tone, vegetative reactivity, and vegetative maintenance of activity. Vegetative reactivity was determined by the dynamics of stress index of regulatory systems in response to the transition from the horizontal position to the vertical position, as well as, evaluating it as normal, hypersympathicotonic, and asympathetic. Vegetative maintenance of activity was assessed by the dynamics of arterial pressure and heart rate within 10 minutes after a clinoortostatic test. Children who showed an adequate response to hemodynamics during the clinoorthostatic test were assigned the normal variant of vegetative reactivity.

Vegetative reactivity was determined by the dynamics of stress index of regulatory systems in response to the transition from the horizontal position to the vertical position, evaluating it as normal, hypersympathicotonic and asympathetic. Vegetative maintenance of activity was assessed by the dynamics of arterial pressure and heart rate within 10 minutes after a clinoortostatic test with the release of excess (hypersympathicotonic) and inadequate (asymptoticotonic). Children which gave an adequate response to hemodynamics at clinoorthostatic test belonged to the normal variant.

Data analysis was carried out using nonparametric tests [25] in the statistical program STATISTICA 6.0 (StatSoft Inc.USA). Mann-Whitney U tests were applied to quantitative data (in points), which are presented in the form of Me – median, 25–75‰. Qualitative variables were tested using a chi-square test, with the Yeats amendment. Qualitative data are presented in the form of absolute and relative percentage, with a 95% confidence interval. Results were considered statistically significant at a significance value of $p<0.05$. This research was examined and approved by the Research Ethics Committee of the Science-Research Institute of Medical Problems of the North Russian Academy of Sciences (Siberian Branch; Krasnoyarsk, Russia).

Results

The results of a comparative study of psychoemotional aspects in children by G.Yu. Eysenck

Results of the Eysenck scale are shown in Table 1. Results of the Eysenck introversion/extraversion personality scale revealed a predominance of the extroverted type among all examined children (over 60%, $p_{1-2}<0.001$; $p_{3-4}=0.0004$, Table 1). Overall, level of extraversion was in the moderate range (i.e., 14-15 points). Extroverted children are characterized by the following personality traits: cheerfulness, optimism, activity, contact, and individuality. Introverted personality type was found in 1/3 of all tested children, and level of introversion was in the moderate range (i.e., 9-10 points). Introverted children have the following personality features: restraint, and tendency for introspection and inner experiences. Level of emotional stress (as measured by the neuroticism-emotional stability scale) was evaluated in accord with Eysenck scale [26].

Among child migrants, emotional instability exceeded the upper limits and corresponded with levels of 'very high' emotional instability (19-20 points). In the comparison group, in contrast, emotional instability remained in the 'high' range (16-17 points). Among migrants, increased personal anxiety corresponded with a feeling

of uncertainty, mood swings, and a tendency to delay emotions. Only 1/3 of child migrants met criteria for emotional stability, whereas 65% of children who lived constantly in southern Siberia met criteria for emotional stability. Level of neuroticism was in the 'average' of emotional stability (i.e., 11-14 points). Taken together, the psychoemotional state of child migrants from northern regions was characterized by emotional instability that reached a neurotic level. There were no gender differences.

Table 1. Indicators of the intra – extraversion personality type and level of emotional stress (neuroticism – emotional stability) as measured using the Eysenck questionnaire among child migrants from northern Siberia during an adaption period, and comparison children

Indicators	Extraversion-introversion				Neuroticism-emotional stability			
	Child migrants (n=74)		Comparison children (n=83)		Child migrants (n=74)		Comparison children (n=83)	
	Extroverts	Introverts	Extroverts	Introverts	Emotionally stable	Emotionally unstable	Emotionally stable	Emotionally unstable
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
abs. number	51	23	53	30	28	46	54	29
%	68.9	31.1	63.8	36.2	37.8	62.2	65.1	34.9
%, CI	57.64-78.37	21.73-42.41	53.08-73.37	26.62-46.91	27.63-49.26	50.73-72.36	54.30-74.48	25.55-45.69
chi^2	21.19 12.75				8.76 15.06 11.55			
p (chi^2)	p_{1-2}< 0.001; p_{3-4}=0.0004				p_{5-6}=0.0035; P_{7-8}=0.0031; P_{6-8}=0.0007			

CI – confidence interval (95%)

The results of a comparative study of psychodiagnostic tests in children by E.N. Rogov

Indicators of higher cerebral functioning were estimated via test scores of attention volume and verbal-logical thinking by Rogov [23]. Psychological examination revealed a high level of task performance for all children. Only children who showed interested in the study and attentively to the assignments were included. No more than two mistakes were allowed while performing tasks. Mental activity among child migrants was characterized by a slower rate of completing certain tasks in comparison with the control group. Child migrants showed a significant increase in the time index for the amount of attention (child migrants: Me=18 s, 25 ‰ -75 ‰ = 15-20 s; comparison children: Me=15 s, 25 ‰ -75 ‰ =15-19 s, p_{chi2}=0.0042) and verbal-logical thinking (child migrants: Me=50 s, 25 ‰ -75 ‰ = 40-55 s; comparison children: Me=42 s, 25 ‰ -75 ‰ =35-50 s, p_{chi2} <0.001).

Formation of adaptive reactions to a new habitat in children was due to vegetative regulation of somatic functions, and in particular, cardiac activity [24]. Collection of indicators from child migrants made it possible to form groups of children depending on their initial vegetative tone (Table 2). The largest group was children with eutonia, which reflects the optimal ratio of the sympathetic and parasympathetic nervous systems (i.e., normal stress index; 30-90 conventional units). This is typical for a satisfactory adaptation of the organism to a new habitat. Comparative analysis revealed a tendency for lower eutonia (p_{2-5}=0.0551) and a significant increase in sympathicotonia (p_{3-6}=0.0172) in the group of child migrants compared to the control group. These results correspond with tension within regulatory mechanisms, and incomplete adaptation [17, 21].

Table 2. Distribution of children according to the indices of initial vegetative tone

Indicators	Child migrants, n= 74			Comparison children, n= 83		
	Vagotonia	Eutonia	Sympaticotonia	Vagotonia	Eutonia	Sympaticotonia
	[1]	[2]	[3]	[4]	[5]	[6]
abs. number	17	37	20	20	53	10
%	22.9	50.0	27.1	24.1	63.8	12.1
CI, %	14.88-33.79	38.86-61.13	18.24-38.13	16.18-34.34	53.08-73.37	6.72-20.80
chi^2	3.07 5.68					
p (chi^2)	p_{2-5}=0.0551; p_{3-6}=0.0172					

CI – confidence interval (95%)

The results of a comparative study of physiological parameters of adaptation on cardiac rhythm by the method of cardiointervalography with a clinoortostatic probe in children by M. Belokon, N.A. Kuberger

Rhythm of the heart is a sensitive indicator of adaptive responses of the organism to the habitat [24]. The analyzed indicators of cardiointervalography in child migrants and children of the comparison group are given in Table 3.

Table 3. Indicators of cardiointervalography among child migrants and comparison children by M. Belokon, N.A. Kuberger

Indicators*		Child migrants (n=74)	Comparison children (n=83)	Statistical significance by Mann-Whitney (p)
Mo, s	Me	0.72	0.72	
	25%-75%	0.64-0.74	0.68-0.78	
DX, s	Me	0.25	0.28	p=0.0073
	25%-75%	0.20-0.30	0.24-0.34	
AMo, %	Me	26.00	22.00	p<0.001
	25%-75%	23.00-34.00	17.50-24.00	
IS1, conv. units	Me	65.00	50,00	p<0.001
	25%-75%	47.00-92.00	35.50-64.00	

* Mo – mode, DX – variation range, AMo – amplitude mode, IS1 – stress index of regulatory systems at rest

Child migrants showed an increase in sympathetic effects on the heart rhythm, as measured amplitude mode (p <0.001) on the background of a decrease in the influence of the parasympathetic link on the variation range (p=0.0073). Dysregulation of the autonomic nervous system was further reflected in an increase in the stress index (p<0.001) in migrants relative to comparison children. These results are consistent with previous studies [18, 19].

Evaluation of initial vegetative tone in children may be more informative than assessing indices of vegetative reactivity. Vegetative reactivity characterizes the direction and degree of changes in the functioning of the autonomic nervous system at the moment of the organism's transition from one state to another. Variants of vegetative reactivity in child migrants and comparison children are depicted in Table 4.

Table 4. Variants of vegetative reactivity among child migrants and comparison children

Indicators	Child migrants (n=74)			Comparison children (n=83)		
	Normal	Asympaticotonic	Gipersympaticotonic	Normal	Asympaticotonic	Gipersympaticotonic
	[1]	[2]	[3]	[4]	[5]	[6]
abs. number	36	14	24	43	25	15
%	48.6	19.0	32.4	51.8	30.1	18.1
CI, %	37.58-59.84	11.64-29.33	22.86-43.77	41.19-62.25	21.31-40.40	11.29-27.73
chi^2	4.32					
p (chi^2)	p_{3-6}=0.0377					

CI – confidence interval (95%)

Heterogeneity of adaptive reactions to the load was revealed in all examined children with different initial vegetative tone. The normal (i.e., sympathicotonic) variant of reactivity was determined in half (50%) of all examined children. Migrant children were more likely to show hypersympaticotonic orientation of the cardiovascular system than comparison children (p_{3-6}=0.0377), which indicates the tension of the adaptive-compensatory mechanisms of cardiac regulation [21].

Vegetative maintenance of hemodynamics activity on the clinoortostatic test was assessed. A normal response was found in more than half of all children surveyed (among child migrants: 51.4% [n=38], among comparison: 60.2% [n=50].

The excess reaction was primarily hypersympathicotonic (child migrants: 6.7% (n=5); comparison children: 7.2% (n=6). An insufficient reaction was indicated by an initially insufficient inclusion of the sympathetic link in orthostasis, and was represented by various variants. In particular, the asympathicotonic variant was found in 14.5% of child migrants (n=12) and 9.4% of children (n =7). Other variants were found in single cases only.

Discussion

Probably, the characteristic of mental activity is due to the emotional state of child, in particular, the higher frequency of emotional instability that affects the pace of thought processes and is consistent with the literature data [26, 27].

Given the continuous dynamic demographic changes due to intensive migration, it is necessary to understand more fully how migrants adapt to their new habitat. However, at least for domestic migration (as opposed to international), it appears that more people migrate to locations with warmer climates than cooler ones. For example, migration in the United States is generally towards the "Sun Belt" and not the "Frost Belt" [28].

A review of relevant local and international literature was conducted. The literature reports many problems of human adaptation in new habitat, especially among children from northern regions [8, 17]. The gaps in psychophysiological adaptation identified in the literature are of particular importance to adaptation in children.

Various adaptation variants were found. A balanced state of homeostatic systems at the level of the whole organism was found in 50% of child migrants and the majority of child residents. Emotional stability is characterized by an optimal state of higher cerebral functions, higher frequency of normal vegetative reactivity, and a normal type of hemodynamic response. These patterns correspond with a variant of satisfactory adaptation according to Bayevsky [17].

Child migrants showed a predominance of emotional instability and at a very high level (19-20 points) and took longer to complete the psychological tests (i.e., attention, verbal thinking). These results may be driven by the emotional state of child migrants; in particular, by a higher frequency of emotional instability which affects the pace of thought processes [25, 27]. Similar results of psychoticism were noticed by other authors [29].

Formation of adaptive reactions depends on the state of central and peripheral links of the higher nervous system, which determines the nature of emotional responses and the behavior of the individual. Responses and behavior, in turn, provide a level of variability in vegetative-visceral functions as a result of the constant interaction between the organism and the new habitat [1, 24].

Vegetative homeostasis of child migrants was characterized by a higher level of sympathetic initial vegetative tone, a hypersympathicotonic variant of vegetative reactivity, and an altered hemodynamic response during a clinoortostatic test. Formation of adaptive reactions in children is due to the activity of the autonomic nervous system in new habitat conditions. Maintaining a certain level of vegetative tone is one of the critical factors that determines the integral state of somatic functions. Parameters of vegetative homeostasis reflect the interaction of the control elements of the circulatory system, which makes it possible to assess the state and degree of tension of the regulatory mechanisms of the whole organism [18, 19, 24, 30].

Data in the present study corresponded with unfinished adaptation that occurred within 3 years of moving to the new territory. Thus here, unfinished adaptation was a factor in the development of psychosomatic pathology in children (i.e., autonomic dysfunction syndrome).

This report shows how children undergo psychophysiological adaptation when migrating from northern to southern Siberia. In all cases, children receive priority attention: the Convention on the Rights of the Child provides a legal framework. When planning adaptation, doctors give advice on the time of movement and the prevention of diseases, which is an accepted international practice [31, 32]. However, the Commission on Climate Change and Development insists that "approaches to adaptation should recognize the highly differentiated nature of adaptive capacity across households, ages, geographic locations, gender, and ethnicity and not prescribe 'one-size-fits all' solutions" [32].

This study does not cover all aspects of the problem regarding the adaptation of child migrants from northern Siberia. Nevertheless, increasing knowledge of the psychophysiological factors of adaptation will help to find new solutions for improving adaptation and preventing diseases of dysregulation.

Conclusions

The present study confirmed the existence of different variants of adaptive possibilities in child migrants. We found child migrants showed a higher incidence of emotional instability, lower rate of thought processes, and demonstrated a sympathicotonic orientation of the vegetative homeostasis parameters. Children with deviations of psychophysiological parameters are at high risk of developing psychosomatic pathology. Thus, it is necessary to introduce preventive measures for health promotion among at-risk children.

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"Health Problems of Civilization" to czasopismo naukowe, które jest kontynuacją czasopisma "Human and Health" (ISSN 2082-7288). Czasopismo to wydawane jest wyłącznie w języku angielskim i dotyczy różnych grup tematycznych, takich jak: biomedyczne aspekty zdrowia, współczesne choroby, aktywność fizyczna, otyłość, zachowania prozdrowotne. Wśród autorów poszczególnych artykułów znajdują się uznani specjaliści w zakresu nauk medycznych oraz nauk o kulturze fizycznej.

Misją czasopisma jest promowanie wiedzy w zakresie różnych problemów zdrowotnych człowieka w świetle szybko postępujących zmian życia współczesnego, spowodowanego rozwojem cywilizacyjnym, industrializacją, urbanizacją oraz zmianami środowiska naturalnego. Artykuły należy przesyłać do Redakcji czasopisma za pomocą http://www.editorialsystem.com/hpc/login/.

Przed rozpoczęciem procesu przygotowania pracy do publikacji autor/ autorzy przesłanych artykułów zobowiązani są do wniesienia bezzwrotnej opłaty w wysokości 150 zł brutto. W przypadku przesłania do Redakcji artykułu w j. polskim, Redakcja nie ponosi kosztów tłumaczenia artykułu na język angielski. Opłata za tłumaczenie wynosi 45 zł brutto za stronę obliczeniową, tj. 1800 znaków ze spacjami. W przypadku gdy Redakcja otrzyma artykuł w j. angielskim i będzie wymagał on korekty językowej (po weryfikacji Redaktora Językowego), Redakcja prześle artykuł do korekty; koszt korekty pokrywany jest przez autorów. Opłata za korektę językową wynosi 30 zł brutto za stronę obliczeniową, tj. 1800 znaków ze spacjami. Tłumaczenie/weryfikacja będzie wykonywane przez aktualnie współpracującego z Redakcją tłumacza, artykuł zostanie przekazany do tłumaczenia/korekty za pośrednictwem Redakcji po pozytywnej recenzji i ostatecznym zaakceptowaniu artykułu do publikacji. Po otrzymaniu od Redakcji informacji o zaakceptowaniu artykułu i ostatecznej kwocie tłumaczenia/korekty, Autor zobowiązany jest do przelania podanej kwoty na konto Państwowej Szkoły Wyższej im. Papieża Jana Pawła II w Białej Podlaskiej: Santander Bank Polska S.A., 45 1500 1331 1213 3001 7949 0000. Obowiązkiem Autora jest również dostarczenie do Redakcji potwierdzenia dokonania wpłaty (np. w formie elektronicznej na adres mailowy).

Wymagania etyczne

W przypadku opisywania eksperymentów przeprowadzanych na ludziach autorzy wskazują, czy zastosowane procedury były zgodne z Deklaracją Helsińską z roku 1975, uaktualnioną w 2000 roku (dotyczącą zasad etyki dla społeczności medycznej oraz zakazu ujawniania nazwiska pacjenta, inicjałów lub numeru ewidencyjnego szpitala) oraz ze standardami etycznymi komisji ds. eksperymentów na ludziach (instytucjonalnej i państwowej). Autorzy prezentujący studia przypadków są zobowiązani do nieujawniania danych osobowych pacjentów. Odnośnie do zdjęć, w przypadku wątpliwości, czy dane zdjęcie odpowiednio zabezpiecza anonimowość pacjenta, wymagana jest zgoda pacjenta na publikację danego zdjęcia.

Konflikt interesów

Oczekujemy od autorów opisania źródeł finansowania badań, roli potencjalnego sponsora w planowaniu, wykonywaniu i analizie badań oraz wpływu, jaki organizacja finansująca mogła mieć na zawartość artykułu. Pozostałe relacje (takie jak zatrudnienie, konsultacje, posiadanie akcji, honorarium, płatne zaświadczenia eksperckie), które mogą być potencjalnie źródłami konfliktu interesów w związku z dostarczonym artykułem, należy ujawnić.

Ghostwriting, guest authorship i zasady dotyczące plagiatu

„Health Problems of Civilization" stosuje procedury, które zapobiegają wystąpieniu zjawisk „ghostwriting", „guest authorship" oraz plagiatu. Każda praca zgłoszona do czasopisma jest sprawdzana za pomocą programu antyplagiatowego.

Przygotowanie manuskryptów

Artykuł należy przygotować w j. angielskim; manuskrypt powinien być komunikatywny, przejrzysty i spójny, a także utrzymywać klasyczny wygląd edycyjny.

Wygląd pracy

Teksty przesłanych artykułów nie powinny przekraczać:

- w oryginalnych artykułach naukowych i artykułach przeglądowych, 4400 słów, łącznie z tabelami i bibliografią – ok. 20 stron, napisanych komputerowo, z podwójnym odstępem, z czcionką 11 pkt i 30 pozycjami literatury,
- w studiach przypadków, 1000 słów, łącznie z tabelami i bibliografią – ok. 7 stron, napisanych komputerowo, z podwójnym odstępem, z czcionką 11 pkt i z 10 pozycjami literatury;
- w artykułach od redakcji, 1500 słów wyłączając spis literatury – ok. 10 stron, z podwójnym odstępem, z czcionką 11 punktów, 15 pozycjami literatury, bez streszczenia i słów kluczowych; tabele i ryciny mogą być dołączone, artykuł może zawierać podział na sekcje;
- w recenzjach książek – 750 słów, bez podziału na sekcje, bez słów kluczowych i streszczenia.

Artykuły przekraczające wymaganą długość lub liczbę pozycji literatury będą przedstawiane do indywidualnej decyzji Redaktora Naczelnego.

Oryginalne artykuły naukowe powinny zawierać następujące elementy:

- tytuł (w j. polskim i j. angielskim),
- słowa kluczowe (z Medical Subject Headings [MeSH], katalog Index Medicus; w j. polskim i j. angielskim),
- streszczenie (150-250 słów, w j. polskim i j. angielskim, podzielone na części: Wstęp, Materiał i metody, Wyniki, Wnioski),
- wprowadzenie,
- materiał i metody,
- wyniki,
- dyskusja,
- wnioski,
- ujawnienia i uznania,
- bibliografia.

Studia przypadków powinny zawierać następujące elementy:

- tytuł (w j. polskim i j. angielskim),
- słowa kluczowe (z Medical Subject Headings [MeSH], katalog Index Medicus; w j. polskim i j. angielskim),
- streszczenie (150-200 słów, w j. polskim i w j. angielskim, podzielone na części: Wstęp, Materiał i metody, Wyniki, Wnioski),
- wstęp,
- opis przypadku,
- wnioski,
- bibliografia.

Artykuły przeglądowe powinny zawierać następujące elementy:

- tytuł (w j. polskim i j. angielskim)
- słowa kluczowe (z Medical Subject Headings [MeSH], katalog Index Medicus; w j. polskim i j. angielskim)
- streszczenie (150-250 słów, w j. polskim i j. angielskim)
- wstęp
- cel pracy
- krótki opis stanu wiedzy
- wnioski
- bibliografia

Tabele

Tabele powinny być ponumerowane zgodnie z ich kolejnością w tekście. Tekst powinien zawierać odniesienia do tabel.

Każda tabela powinna być przesłana w osobnym pliku.

Ilustracje

Każda rycina powinna być wysłana w osobnym pliku. Ryciny najlepiej przesłać w formacie TIF lub EPS. Format JPG jest także dozwolony.

Wszystkie ryciny, zarówno fotografie, wykresy, jak i diagramy, powinny być ponumerowane kolejno, zgodnie z pojawieniem się w tekście. Autor/autorzy powinni wskazać w tekście głównym, w którym miejscu należy umieścić daną tabelę czy rycinę.

Cytaty i bibliografia

Pozycje literatury powinny być cytowane w nawiasach kwadratowych w kolejności cytowania.

Bibliografia powinna być ułożona w kolejności cytowania w tekście. Jeżeli liczba autorów przekracza 6, po 6 nazwisku należy dopisać „et al.". Jeżeli praca posiada numer DOI, należy podać go w formie pełnego linku na końcu opisu bibliograficznego, np.:

Adamowicz K. Association between Body Mass Index and gastric cancer in Pomeranian men and women. Health Prob Civil. 2018; 12(4): 231-237. https://doi.org/10.5114/hpc.2018.76517

Cytowanie czasopisma:
Tomao P, Ciceroni L, D'Ovidio MC, De Rosa M, Vonesch N, Iavicoli S, et al. Prevalence and incidence of antibodies to Borrelia burgdorferi and to tick-borne encephalitis virus in agricultural and forestry workers from Tuscany, Italy. Eur J Clin Microbiol Infect Dis. 2005; 24(7): 457–463. https://doi.org/10.1007/s10096-005-1348-0

Czasopismo – suplement:
Kalman M, Inchley J, Sigmundova D, Iannotti RJ, Tynjälä JA, Hamrik Z, et al. Secular trends in moderate-to-vigorous physical activity in 32 countries from 2002 to 2010: a cross-national perspective. The European Journal of Public Health. 2015; 25(Suppl. 2): 37-40.

Tom czasopisma z numerem części:
Abend SM, Kulish N. The psychoanalytic method from an epistemological viewpoint. Int J Psychoanal. 2002; 83(Pt 2): 491-5.

Cytat z czasopisma online:
Zhang M, Holman CD, Price SD, Sanfilippo FM, Preen DB, Bulsara MK. Comorbidity and repeat admission to hospital for adverse drug reactions in older adults: retrospective cohort study. BMJ. 2009 Jan 7; 338: a2752. https://doi.org/10.1136/bmj.a2752

Publikacja elektroniczna przed drukowaną:
Yu WM, Hawley TS, Hawley RG, Qu CK. Immortalization of yolk sac-derived precursor cells. Blood. 2002 Nov 15; 100(10): 3828-31. Epub 2002 Jul 5.

Książka:
Biddle SJ, Mutrie N. Psychology of physical activity: determinants, well-being, and interventions. 2th edition. London: Routledge; 2008.

Rozdział z książki:
Hung Chih Yu A. Exploring motivation for leisure-based physical activity: a case study of college students. In: Burns R, Robinson K., editors. Proceedings of the 2006 Northeastern Recreation Research Symposium. Newtown Square: Department of Agriculture, Forest Service, Northern Research Station; 2006. p. 342-349.

Zapowiedzi/w druku:
Tian D, Araki H, Stahl E, Bergelson J, Kreitman M. Signature of balancing selection in Arabidopsis. Proc Natl Acad Sci U S A. Forthcoming 2002.

Materiały opublikowane online nieposiadające numeru DOI:
Abood S. Quality improvement initiative in nursing homes: the ANA acts in an advisory role. Am J Nurs [Internet]. 2002 Jun [cited 2002 Aug 12]; 102(6): [about 1 p.]. Available from: http://www.nursingworld.org/AJN/2002/june/Wawatch.htmArticle

Materiały opublikowane w języku innym niż angielski:
Wielkoszyński T. [Modified, spectrophotometric method of silicon determination in biological material]. Diagn Lab. 2000; 36(3): 377–385 (in Polish).

Proces recenzji

Zarejestrowane manuskrypty są przesyłane do 2-3 niezależnych ekspertów do oceny naukowej. Przesłane artykuły są akceptowane do publikacji po otrzymaniu pozytywnej opinii niezależnych recenzentów. „Health Problems of Civilization" prowadzi proces recenzji „double-blind", w którym autorzy nie znają tożsamości recenzentów, a recenzenci – tożsamości autorów. Proces oceny zajmuje zazwyczaj 2-4 miesiące.

Obowiązki i odpowiedzialność autorów

Autor jest zobowiązany do przygotowania i przesłania artykułu zgodnie z wymogami ustanowionymi przez redakcję czasopisma. Ponadto, autor powinien dołączyć oświadczenie, które zawiera: oświadczenie o oryginalności artykułu (artykuł niepublikowany dotąd nigdzie indziej), integralność praw autorskich innych osób, brak konfliktu interesów, jak również zgodę na publikację artykułu w czasopiśmie. Autorzy są obowiązani do ujawnienia wszelkich finansowych lub osobowych powiązań, które mogą spowodować stronniczość w odniesieniu do ich pracy.

Obowiązki i odpowiedzialność recenzentów

Artykuły są wybierane do publikacji w drodze systemu podwójnej ślepej selekcji i publikowane w trybie open access. Recenzenci obowiązani są do oceny artykułu poprzez panel redakcyjny, bazując na przygotowanych pytaniach. Recenzent ma również możliwość przesyłania oddzielnych komentarzy umieszczonych w tekście artykułu.

Obowiązki i odpowiedzialność redaktorów

Redaktorzy decydują, które artykuły powinny być zaakceptowane do publikacji. Redaktorzy wypełniają swoje obowiązki w sposób wyważony, obiektywny i sprawiedliwy, unikając dyskryminacji ze względu na płeć, orientację, religijne bądź polityczne poglądy, pochodzenie etniczne lub geograficzne autorów.

Adres do korespondencji

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