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Knowledge about Physical Activity and Taking Up Physical Activity by Pregnant Women Covered by Obstetric and Gynecological Care in Selected Facilities in the Lodz Voivodeship

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Abstract

Introduction: *Pregnancy is a special time in a woman's life. Physical activity during pregnancy, after excluding possible contraindications and adjusting the appropriate form of exercise, benefits both the mother and the developing child. It is recommended that pregnant women exercise about 150 minutes per week, especially recommended disciplines are walking, swimming and aerobic exercise.*

Objective: *To assess the knowledge of pregnant women from the Lodz Voivodeship about taking up physical activity.*

Material and methodology: *Original online survey questionnaire consisting of 33 questions. The study involved 111 pregnant women. Inclusion criteria: pregnant women, aged between 20 and 40 years, residents of the Lodz Voivodeship, informed consent to participate in the study.*

Results: *Women taking physical activity before becoming pregnant accounted for 56.73% of subjects, while 63.96% of subjects were physically active during pregnancy. Pregnant women most often chose walking (33.33%), swimming (27.93%) and indoor cycling (18.02%). The most popular sources of knowledge for pregnant women were: medical staff (72.07%), Internet (41.44%) and family (30.36%).*

Conclusions: *Women who exercised before pregnancy continued to be active during pregnancy. More than half of the previously non-exercising pregnant women were inactive. Among those who exercise before pregnancy, the most common forms of physical exercise are: fitness, swimming, running and cycling. Among pregnant women walking, swimming and cycling. The most popular sources of knowledge about physical activity among pregnant women were: medical staff and the Internet. Educational activities should be carried out to promote and raise awareness of physical activity.*

Key words: *pregnant, knowledge, pregnancy, physical activity, women*

Introduction

Pregnancy is a special time in a woman's life, lasting about 280 days. Then in the female body there are many changes such as: increase in circulating blood volume, heart ejection volume, decrease in systemic vascular resistance and systolic and diastolic blood pressure [1]. These changes are designed to adapt to the needs of the developing fetus, such as providing oxygen and nutrients, removing harmful metabolic products, ensuring adequate growth rate, and preparing the woman's body for childbirth. They protect the mother from possible excessive overload of the cardiovascular system during childbirth [2]. According to the World Health Organization (WHO), exercise routinely performed by pregnant women contributes to: reducing the risk of preeclampsia, pregnancy-induced hypertension, gestational diabetes, excess weight gain, postpartum complications and postpartum depression [3, 4, 5].

The benefits of regular physical activity also include the fetus: reduced risk of complications in newborns, no adverse effect on birth weight and no increased risk of stillbirth [6]. Physical activity and training during pregnancy are associated with minimal risk and have been shown to benefit most women, but routine exercise should be modified to accommodate any anatomical and physiological changes or fetal requirements [7]. It should be remembered that the intensity and form of physical activity should be strictly adjusted to the conditions, capabilities and state of health of the midwife. Before starting any form of physical activity, a gynecologist should be consulted to rule out existing abnormalities that could constitute a contraindication. The recommended form of activity are aerobic exercises, i.e. aerobic, exercises strengthening muscle strength and stretching.

Pregnant women who have not been physically active should start with small amounts of workouts, gradually increasing the frequency, intensity and duration of workouts. Also, do not forget about the daily exercise of the pelvic floor muscles, which prevents the development of incontinence.

Due to the high risk of abdominal or pelvic injuries, do not engage in high-intensity, high-trauma physical activities. A pregnant woman's heart rate during exercise should not exceed 120 beats per minute. Non-recommended forms of activity for pregnant women include: horseback riding, skiing, roller skating, surfing, snowboarding, strenuous exercise, diving, tennis, contact sports such as boxing, judo, isometric exercises (exercises involving changing the tension but without changing the length of the muscle) of the abdomen and lower limbs. This is due to poor blood flow to the fetus [8]. As for contraindications to physical activity during pregnancy, according to the American Society of Obstetricians and Gynecologists (ACOG), absolute contraindications include hemodynamically significant heart disease, restrictive lung disease, pregnancy-induced hypertension, anterior placenta after 26 weeks of pregnancy, premature rupture of the fetal bladder, vascular and cervical insufficiency, multiple pregnancy at risk of premature birth, bleeding from the genital tract during the second or third trimester of pregnancy, earlier premature births [9]. Relative contraindications to aerobic exercise during pregnancy include severe anemia, chronic bronchitis, extreme obesity [body mass index (BMI) before pregnancy >40], extreme underweight before pregnancy (BMI <12), uncompensated hypertension, cardiac arrhythmias of unknown etiology in the mother, uncompensated type I diabetes, uncompensated thyroid disease, uncontrollable epilepsy, fetal intrauterine growth restriction, orthopedic restrictions, extremely sedentary lifestyle, and compulsive smoking [2]. According to the World Health Organization, it is recommended to exercise at least 3 times a week for 45 minutes (warm-up, exercise and stretching) [3]. Recommended forms of physical activity include aerobic exercise, walking, swimming, indoor cycling, yoga, Pilates. In accordance with this, the recommendations of the American College of Obstetricians and Gynecologists (ACOG) remain - physical activity during pregnancy should be performed 3 times a week or more [10]. Global guidelines recommend a minimum of 150 minutes of moderate-intensity physical activity (e.g., brisk walking or other activities where your heart rate increases and you can talk but not sing) for at least 3 days per week to achieve clinically significant benefits [11].

Objective

To assess the knowledge of pregnant women using obstetric and gynecological care in selected facilities in the Lodz Voivodeship on taking up physical activity, in particular on their taking up physical activity and knowledge of recommendations, benefits and contraindications.

Material and methodology: An anonymous online survey questionnaire consisting of 33 questions. Research material was collected from February to September 2021. The study involved 111 pregnant women (Table 1). Inclusion criteria: pregnant women, aged 16 to 40 years, residents of the Lodz Voivodeship, informed consent to participate in the study.

Data from the questionnaires were entered into an MS Excel spreadsheet, and then the collected empirical material was analyzed. Descriptive methods and statistical inference methods were used to develop the collected empirical material. The chi^2 independence test was used to compare the frequency of individual trait varieties in the study groups, as well as to investigate the relationship between qualitative traits. Those differences between frequencies and those correlations between traits for which the calculated value of the chi^2 test turned out to be equal to or greater than the critical value read from the tables for the corresponding number of degrees of freedom with a probability of error of $p<0.05$ were considered statistically significant.

Table 1. Characteristics of the study group

Age range of women surveyed (years)	N	%
20–24	26	23.42
25–29	47	42.34
30–34	32	28.83
35 and more	6	6.66
Place of residence	N	%
village	4	3.6
small town up to 20 thousand inhabitants	17	15.32
medium-sized city 20–100 thousand inhabitants	41	36.94
large city with more than 100 thousand inhabitants	49	44.14
Education	N	%
basic	4	3.6
secondary	28	25.23
vocational	17	15.32
higher	62	55.86
Pregnancy week before the survey	N	%
1–13 hbd	28	25.22
14–26 hbd	66	59.46
≥27 hbd	17	15.32
Number of pregnancies	N	%
1	60	54.05
2	43	38.74
3	7	6.31
4	1	0.9

Source: Own elaboration.

Results

Women engaging in physical activity before pregnancy accounted for 56.73% of all respondents, while 63.96% of respondents were physically active during pregnancy. The observed differences are statistically significant (chi^2=9. 448, $p<0.05$) (Figure 1).

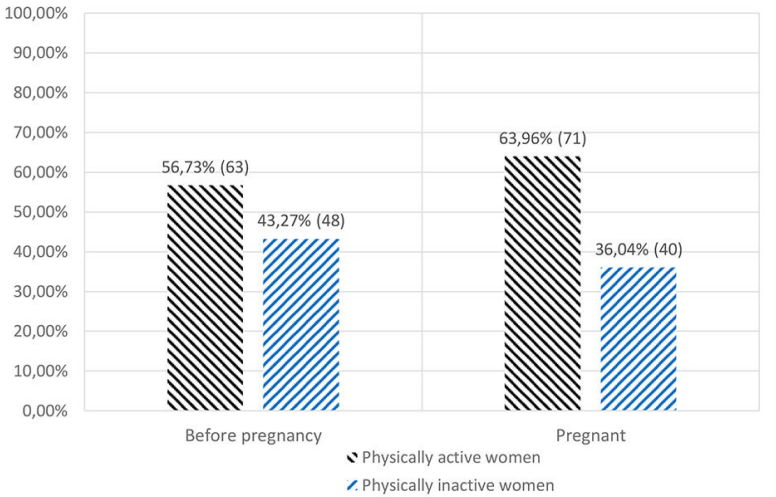

Figure 1. Physical activity by women before and during pregnancy

Among women who exercised before pregnancy, the most frequently chosen forms of physical activity were fitness (24.32%), swimming (23.42%), running (19.82%) and stationary cycling (17.12%). Strength exercises were chosen by 14.41% of respondents, and walking by 10.81%. In comparison, among pregnant women, walking (33.33%), swimming (27.93%) and stationary cycling (18.02%) were the most common forms of exercise. The observed differences were found to be statistically significant – $p<0.0001$, $chi^2=44.672$ (Table 2).

Table 2. The most frequently chosen forms of physical activity among women before and during pregnancy

Type of physical activity	Before pregnancy		Pregnant		P
	N	%	N	%	
Walk	12	10.81	37	33.33	p<0.0001 chi²=44.672
Stationary cycling	19	17.12	20	18.02	
Swimming	26	23.42	31	27.93	
Running	22	19.82	4	3.60	
Strength exercises	16	14.41	1	0.90	
Nordic walking	5	4.50	14	12.61	
Fitness	27	24.32	18	16.22	
Cleaning, household chores	0	0.00	1	0.90	
I do not exercise	46	41.44	39	35.14	

Source: Own elaboration.

Among the total number of respondents (111 people), the largest group, i.e. 98.2% (109 people), were respondents who believed that walking was the recommended form of physical activity during pregnancy. Rarely tested as a recommended form of activity during pregnancy indicated horse riding (1.8% – 2 persons). In the group of 62 women with higher education, the most frequently indicated form of activity was walking (98.4% – 61 people) and the least frequently skiing (1.6% – 1 person), none of the women with higher education indicated riding as an activity recommended for pregnant women. Among 49 women with non-higher education, almost all respondents (98%, 48 people) indicated walking as a recommended form of activity during pregnancy. The least respondents indicated skiing (2.7% – 3 people) and horseback riding (1.8% – 1 person). The observed differences turned out to be statistically insignificant – $p>0.05$ (Table 3).

The surveyed women declaring higher education (62 persons) as sports not recommended during pregnancy most often indicated: contact sports, fighting (95.2% - 59 persons) and skiing (93.6% – 58 persons). The least recommended activities were Nordic walking (21% – 13 persons) and indoor cycling

(19.4% – 12 persons). Women with non-university education (i.e. secondary, vocational or primary education – 49 people) most often also declared contact sports, fighting (95.9% – 47 people) and skiing (89.8% – 44 people). Most rarely: Nordic walking (30.6% – 15 pax) and stationary bike (28.6% – 14 pax). The observed differences turned out to be statistically insignificant – $p>0.05$ (Table 3).

Among women with higher education, most respondents (61.3% – 38 people) declared that during pregnancy one should exercise at least 3 times a week. 17.7% (11 people) felt that physical activity is not recommended at all. Among women with non-higher education, 40.8% (20 people) declared that they should exercise at least 3 times a week, and 36.7% (18 people) believed that they should not be exercised. The observed differences turned out to be statistically insignificant – $p>0.05$ (Table 3).

Among the women surveyed, the most common declared source of knowledge was medical personnel (75.8% – 47 persons with higher education and 67.4% – 33 persons with non-higher education). Women with higher education used the Internet as a source of information in 37.1% (23 persons), while among women with other education the Internet was used by 46.9% (23 persons). Respondents least used books (4.8% – 3 persons with higher education and 6.1% – 3 persons with other education). The observed differences turned out to be statistically insignificant – $p>0.05$ (Table 3).

Women with higher education who were asked to rate their knowledge of physical activity on a scale of 1 to 10, where 1 is the lowest and 10 is the highest possible score, most often gave themselves a score of 5 – 29%, 18 people. None of the women gave themselves a grade of 1 or 10. Among women with non-university education, the most frequently awarded grade was 5 – 36.7%, 18 people. None of the women gave themselves a grade of 10. 1 person (2%) gave themselves a rating of 1. The observed differences turned out to be statistically insignificant – $p>0.05$ (Table 3).

Table 3. Pregnant women's knowledge about physical activity during pregnancy

Sports recommended during pregnancy in the opinion of respondents	Higher education		Primary, secondary and vocational education		Total		p
	N	%	N	%	N	%	
Walk	61	98.4	48	98	109	98.2	p>0.05
Swimming	43	69.4	33	67.4	76	68.5	
Nordic walking	37	59.7	19	38.8	56	50.4	
Pilates	38	61.3	17	34.7	55	49.5	
Yoga	37	59.7	20	40.8	57	51.3	
Stationary cycling	42	67.7	27	55.1	69	62.2	
Aqua aerobic	39	62.9	18	36.7	57	51.3	
Isometric exercises	11	17.7	10	20.4	21	18.9	
Strength exercises	10	16.1	7	14.3	17	15.3	
Horseback riding	0	0	2	4.1	2	1.8	
Skiing	1	1.6	2	4.1	3	2.7	
Sports not recommended during pregnancy in the opinion of respondents	Higher education		Primary, secondary and vocational education		Total		p
	N	%	N	%	N	%	
Contact Sports, Fighting	59	95.2	47	95.9	106	95.5	p>0.05
Skiing	58	93.6	44	89.8	102	91.9	
Horseback riding	54	87.1	38	77.6	92	82.9	
Strenght excercises	39	62.9	32	65.3	71	64.0	
Isometric exercises	36	58.1	25	51.0	61	55.0	
Surfing	53	85.5	40	81.6	93	83.8	
Pilates	18	29.0	20	40.8	38	34.2	
Nordic walking	13	21.0	15	30.6	28	25.2	
Stationary cycling	12	19.4	14	28.6	26	23.4	

Recommended frequency of physical activity according to respondents	Higher education		Primary, secondary and vocational education		Total		p
	N	%	N	%	N	%	
Not recommended	11	17.7	18	36.7	29	26.1	p>0.05
1 time a week	3	4.8	4	8.2	7	6.3	
2 times a week	10	16.1	7	14.3	17	15.3	
3 times a week or more	38	61.3	20	40.8	58	52.3	
Sources of knowledge about physical activity	Higher education		Primary, secondary and vocational education		Total		p
	N	%	N	%	N	%	
Medical staff	47	75.8	33	67.4	80	72.1	p>0.05
Internet	23	37.1	23	46.9	46	41.4	
Family and friends	20	32.3	14	28.6	34	30.6	
Books	3	4.8	3	6.1	6	5.5	
Pregnant women's self-assessment of physical activity knowledge on a scale from 1 to 10, where 1 is the lowest, 10 is the highest possible	Higher education		Primary, secondary and vocational education		Total		p
	N	%	N	%	N	%	
1	0	0	1	2	1	0.9	p>0.05
2	1	1.6	2	4.1	3	2.7	
3	4	6.5	5	10.2	9	8.1	
4	10	16.1	9	18.4	19	17.1	
5	18	29	18	36.7	36	32.4	
6	12	19.4	4	8.2	16	14.4	
7	10	16.1	6	12.3	16	14.4	
8	5	8.1	1	2	6	5.5	
9	2	3.2	3	6.1	5	4.5	
10	0	0	0	0	0	0	

Source: Own elaboration.

Discussion

This study analyses physical activity and knowledge about it among pregnant women using obstetric and gynecological care in the Lodz Voivodeship. According to the results of the study covered by this article, about one in three pregnant women is still not physically active. A study of pregnant women in the third trimester in the UK showed that some of the respondents were actually discouraged from physical activity by the public [12]. The Polish Stem Cell Bank has also noticed this problem, that there are many women in society who are unnecessarily resistant to physical activity during pregnancy. It is safe with the exclusion of possible contraindications and the selection of appropriate exercises [13]. In addition to the well-known benefits for the mother such as reduction of cardiovascular risk (reduction of obesity, reduction of blood pressure, increase of glucose tolerance, improvement of lipid profile, etc.), physical activity also contributes to the prevention of the development of tumors (among others breast, uterus, colon), increase of bone mineral density (prevention of osteoporosis) numerous studies also indicate that the level of stress and anxiety is reduced and the development of postpartum depression is prevented in exercise mothers [14]. In terms of improving glucose tolerance, six randomized trials and one high quality clinical-control observational study showed a positive association between exercise and control of gestational diabetes. Resistance, aerobic exercise or a combination thereof are effective in controlling glucose, HbcA1 and insulin levels [15]. 38.74% of the women studied in this study did exercise 2-3 times a week. A study conducted by A. Wojtyła and colleagues on physical activity of women of childbearing age and during pregnancy among 3280 pregnant women from 382 Polish hospitals showed that 55.87% of respondents did not exercise during pregnancy, 15.09% of respondents did exercise more than 3 times a week for at least 30 minutes, and 10% did exercise 3 times a week for less than 30 minutes [16]. Another study conducted in Ottawa by Z. Ferraro and colleagues showed that 53% of respondents engaged in physical activity during pregnancy [17]. In a Polish study conducted by M. Krahel et al., the most frequently undertaken physical activity was walking (54.9%). The effort lasted 20–30 minutes for 45.5% of respondents. Women taking physical activity during pregnancy performed it most often 1–2 times a week (30.0%), and activity

3–4 times a week – 7.0% of women [18]. The most common sources of knowledge about physical activity during pregnancy were health professionals (72.07%), the Internet (41.44%) and family (30.63%). For comparison, in another Polish study conducted by D. Torbé et al., which included 100 women in the third trimester of pregnancy, only 2% of respondents indicated a doctor as a source of knowledge [19]. In the aforementioned study by Z. Ferraro, the most popular sources of knowledge were: books (62.4%), family doctor (51.6%), Internet, obstetrician/gynecologist, family, friends, personal trainer [17]. In this study, 98.20% of women surveyed said that walking is a safe form of exercise during pregnancy. 70.27% of respondents recommended swimming. Indoor cycling (57.66%), Nordic walking (51.35%), yoga (49.55%), Pilates (45.95%) and aqua aerobic (39.64%) were also recommended for pregnant women. Differences in the knowledge of women with higher education and those with non-higher education (primary, secondary, vocational) were not significant. In a study by D. Duncombe et al., pregnant women reported walking as the safest form of activity (90%) [20].

Conclusions

Women using gynecological and obstetric care in the Lodz Voivodeship, physically active before pregnancy continued to exercise during pregnancy. More than half of women who had never exercised before were also not physically active during pregnancy.

Among women exercising before pregnancy, the most common forms of physical exercise are: fitness, swimming, running and cycling. Among the pregnant walking, swimming and cycling.

Respondents had knowledge of contraindications to physical activity and its non-recommended forms. This knowledge was independent of the education of the studied women.

The most popular sources of knowledge about physical activity among pregnant women were: medical staff and the Internet, regardless of educational background.

Educational activities should be carried out to promote physical activity and increase the knowledge of pregnant women about it.

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Impact of Organisational and Legal Changes in the Healthcare System in Poland on Satisfaction of Patients of the Regional Multi-Specialist Center for Oncology and Traumatology of the Nicolaus Copernicus Memorial Hospital in Lodz on the Basis of Selected Elements of Healthcare

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Abstract

Introduction: *In 2017, an amendment to the Act on Healthcare Services Financed from Public Funds of 23 March 2017 introduced a system of basic hospital provision of healthcare services, the so-called 'hospital network'.*

Aims: *The main aim of the study was to find out the impact of organisational and legal changes to the healthcare system in Poland in the form of an amendment to the Act on Healthcare Services Financed from Public Funds of 23 March 2017 on patient satisfaction with selected elements of healthcare.*

Material and methods: *The study was conducted in two stages: before and after the introduction of the amendment. The study covered 847 patients in stage I and 723 patients in stage II in several randomly selected wards of the Regional Multi-Specialist Center for Oncology and Traumatology of the Nicolaus Copernicus Memorial Hospital in Lodz. Descriptive and inferential statistics were used in the data analysis.*

Results: *The majority of the surveyed patients had no opinion on the impact of the amended Act on the quality of provided services. Similar results were obtained when analysing the patients' assessment of reduction of queues to a specialist doctor. A large group of respondents claimed that the amendment to the Act would not reduce queues for hospital treatment. While assessing the current healthcare system, both before and after the amendment to the Act, patients most often gave a rating of 4 (45.2% and 47.2%), while about one third of patients gave a rating of 3 (30.8% and 33.7%). Patients gave the highest rating for the performance of doctors as well as of nursing and auxiliary staff.*

Conclusions: *Introduction of the amendment to the Act on Healthcare Services Financed from Public Funds has not affected the overall level of patient satisfaction with healthcare.*

Key words: *patients, quality of care, healthcare, patient satisfaction, healthcare system*

Introduction

The changing economic, social and cultural situation in Poland has changed the perception of customers by service providers. A satisfied customer has become a basis for functioning of enterprises, including healthcare institutions. The patient/customer has become aware of his/her rights, more demanding, expecting the highest possible standard for products and services [1, 2].

The aim of this study was to determine the impact of the amendment to the Act on Healthcare Services Financed from Public Funds on patient satisfaction with healthcare with consideration given to challenges that result from an increasing importance of analyses on patient satisfaction in healthcare quality management.

In the Polish healthcare system, the first hospital network was established under the Act of 28 October 1948 on Social Health Care Units and Planned Economy in Health Service. In accordance with its provisions, which took the medical profile and geographic coverage into account, district, voivodship and clinical hospitals were distinguished. They were healthcare institutions maintained by the state budget. Article 15 of the abovementioned Act explicitly used the term 'network', which defined the plan for distribution of health establishments. Their financing scheme was based on the economic plan for healthcare services [3].

The first attempt to introduce a network of hospitals after the system transformation was made in 1997. It was assumed that the national hospital network would function after restructuring of the healthcare sector. The changes were supposed to involve limitation of discretionary management of inpatient care resources, creation of a network of hospitals that would meet actual demand for medical services, particularly an increase in the number of long-term care and nursing care beds. The fundamental aim of this network of hospitals was to create right prerequisites for reasonable management of financial resources that were incurred in the operation of inpatient care, as well as more efficient use of already existing resources [4].

The hospital network project was included in the amendment to the Act of 6 February 1997 on National Health Insurance. On the basis of this

amendment, the Minister of Health was given powers to define the national network of hospital and wards. Their reference level was to be determined depending on the type of health services provided in the individual hospitals.

The Act, known as the Hospital Network Act, implemented a new legal system providing access to basic hospital healthcare services, called the 'security system'. It constitutes the basic form of securing access to all healthcare services within hospital treatment [5]. The hospital security system introduced by the Act should ensure correlated access to healthcare services within hospital treatment, access to highly specialised services, as well as outpatient specialised care which will be provided in hospital outpatient clinics, within drug programmes, therapeutic rehabilitation, drugs in chemotherapy, and after-hours healthcare provision.

Finally, in 2017, work on the amendment to the Act on Healthcare Services Financed from Public Funds came to an end and by virtue of the amendment, a system of secured access to all basic healthcare services within hospital treatment, the so-called 'hospital network', was introduced in Poland. The Act introduced six levels of basic healthcare services provided within hospital treatment [6]:

- first-level hospitals,
- second-level hospitals,
- third-level hospitals,
- oncological and pulmonology hospitals,
- paediatric hospitals,
- national hospitals,
- centres providing medical services.

System solution of the 'hospital network' clearly defines the scope of state regulation and domain and subject areas, as well as the range of health services that are provided on the basis of competitive bids [7].

From the point of view of availability of health services to patients as well as functioning of universal health coverage, the so-called 'hospital network' represents the biggest and most profound change to this system, as it fundamentally changes the systemic, central as well as local decisive bodies that

are responsible for establishing contracts and subsequent financial settlements of contracted health services.

In 2017, 594 healthcare facilities were included into the hospital network, comprising 516 public hospitals which have 145,000 beds. 355 hospitals (16 public healthcare facilities) were excluded from the network. First-level hospitals included 283 establishments. Second-level hospitals, which provide more complex services, included 96 establishments, and the third-level multi-profile specialist hospitals included 96 and 62 establishments, respectively. Besides the hospital network includes 20 oncology, 13 paediatric and 30 pulmonology hospitals as well as 90 national facilities (healthcare institutes and university teaching hospitals) [8].

The regulator assumed that the system of providing access to basic hospital healthcare services, introduced by the Act should ensure correlated access to services within hospital treatment, highly specialised services, as well as outpatient specialised care which will be provided in hospital outpatient clinics, within drug programmes, therapeutic rehabilitation, drugs in chemotherapy, and after-hours healthcare provision.

A change in patients' expectations is increasingly evident in medical services. The level of satisfaction with received healthcare services depends on how efficiently the patient's expectations have been met [9, 10, 11]. The level of satisfaction of medical staff performance is closely related to the quality of the provided services, and thus increases patient safety and their level of satisfaction with healthcare.

While examining and analysing patient satisfaction regarding the quality of medical services, it is important to define the concept of patient satisfaction and what is important to the patient in medical care [12, 13, 14, 15]. According to the definition adopted by the American Nurses Association, patient satisfaction is closely related to the patient's or their family's opinion on the provided care [16]. Gaweł et al. define patient satisfaction as "complete satisfaction of needs or desires" [17]. Pascoe views the concept as a comparative process that involves the patient's cognitive sphere and their emotional response to important aspects of their experience that relate to the structure, process and effect of care [18]. A review of the cited

definitions allows us to conclude that patient satisfaction is the resultant of patients' expectations regarding the quality of care they receive and their personal experience [19, 20].

Aim

The main aim of the study was to find out the impact of organisational and legal changes to the healthcare system in Poland in the form of an amendment to the Act on Healthcare Services Financed from Public Funds of 23 March 2017 on patient satisfaction with selected elements of healthcare.

Material and methods

The Regional Multi-Specialist Center for Oncology and Traumatology of the Nicolaus Copernicus Memorial Hospital in Lodz is one of 8 hospitals in Poland with the largest budget. After the Act on Healthcare Services Financed from Public Funds became effective, the hospital was qualified to the basic level of health protection as a third-level hospital. It has 33 wards (873 beds), 43 specialist clinics and a modern diagnostic department. In 2017, more than 80,000 patients were hospitalised and above 12,000 operations were performed. The hospital employs more than 2,200 people.

The survey was carried out in two stages. The first stage of the study was conducted in the period from 15 May to 30 June 2017, i.e. before the introduction of the amendment to the Act on Healthcare Services Financed from Public Funds, whereas its second stage was conducted between 1 and 30 April 2018, i.e. six months after the introduction of the amendment to the above Act.

In the first and second stages, the study included all hospitalised patients in 7 randomly selected wards of the Regional Multi-Specialist Center for Oncology and Traumatology of the Nicolaus Copernicus Memorial Hospital in Lodz. Two anonymous questionnaires were used to collect empirical material, intended to be filled in by the respondents themselves.

A questionnaire consisting of 58 questions was used to assess patient satisfaction. The questionnaire was prepared on the basis of a questionnaire used to survey patient satisfaction with medical care in other medical centres [21]. The questions included into five thematic domains:

- → domain 1 – impact of the amended Act on the functioning of the healthcare system,
- → domain 2 – assessment of doctors' performance,
- → domain 3 – assessment of performance of nursing and auxiliary staff,
- → domain 4 – assessment of the organisation of staff performance and the information given to the patient,
- → domain 5 – assessment of housing and catering conditions.

The questionnaire also included questions about socio-demographic data and questions about patients' social and living conditions. Patients were given the questionnaire upon admission to the ward and they were requested to complete and return it on the day of discharge from hospital. At the end of hospitalisation, patients dropped the completed questionnaires into special boxes placed in each of the wards included in the study.

During the first stage of the study, a total of 1172 patients were hospitalised in the selected wards during the analysed period. The completed questionnaires were handed in by 847 respondents, which accounted for 72.3% of the hospitalised patients. In contrast, in the second stage of the survey, in the analysed period, a total of 907 patients were hospitalised in the selected wards. Completed questionnaires were returned by 723 respondents, which accounted for 79.7% of the hospitalised patients.

Data from all questionnaires collected during the study period were entered into a Microsoft Excel spreadsheet. Once the database was created, a random check of 5% of records was carried out to confirm that the entered data are complete and meet quality standards.

Descriptive methods and statistical inference methods were used to process the collected data. In the process of statistical processing of the collected empirical material, the author calculated the range (minimum-maximum) of quantitative characteristics, their average values (arithmetic means and medians) and measures of internal variation (standard deviations).

The multivariate analysis of variance (ANOVA) was used for a statistical analysis of collected empirical material. The structure of the groups according to the analysed variables was described using structure indices (%). The $\chi 2$ test was used to examine a relationship between the analysed variables. Due to the size of the groups in individual analyses, the test with Yates' correction was appropriately modified, p=0.05 was adopted as statistically significant. A statistical analysis was carried out using the Statistica 10.0 programme.

The Director of the Regional Multi-Specialist Center for Oncology and Traumatology of the Nicolaus Copernicus Memorial Hospital in Lodz gave his consent for the study to be conducted. The study also received a positive assessment from the Bioethics Committee of the Medical University of Lodz – resolution no. NRR/216/17/KE.

Results

Patient characteristics

Among the patients surveyed in both the stages, women outnumbered men (60.8% vs 39.2% in stage I and 63.8% vs 36.2% in stage II) (p>0.05).

In stage II of the study, the proportion of residents of large cities decreased (from 51.5% to 35.3%), while the proportion of rural residents increased (from 15.6% to 28.7%) (p>0.05).

In both stages of the study, the age structure of the respondents did not differ statistically significantly – people aged 60–69 years prevailed (34.4% in stage I and 31.8% in stage II), while the second largest group was made up of respondents aged 50–59 years (20.3% and 23%, respectively) (p>0.05).

Besides, in both stages, married patients made up a vast majority of respondents (58.9% in stage I and 59.4% in stage II) (p>0.05).

Half of the patients in both stages of the study had secondary education. 25.5% of patients in stage I and 22.3% of patients in stage II had elementary education, whereas university education was confirmed by 23.3% and 27.6% of the respondents, respectively (p>0.05).

In the survey conducted before the amendment to the Act, the group of pensioners (43.8%) outnumbered the group of persons employed within an employment contract (39.4%), while in the survey conducted after the amendment to the Act, patients employed on the basis of an employment contract (46%) made up the largest group, whereas pensioners made up the second largest group (36.7%) (p=0.42).

Approximately 45% of the patients surveyed in both stages of the study described their housing conditions as good, while about one-third claimed the conditions are average (35.8% and 33.4%, respectively) (p>0.05).

The largest group of surveyed patients in both stages of the study were those living in multi-family buildings (61.2% and 57.0%, respectively), while 37.2% of patients surveyed before the amendment and 41.7% surveyed after the amendment declared they lived in houses (p>0.05).

Correspondingly, 36.5% and 38.9% were hospitalised for the first time, while 37.8% and 34.7% were in hospital for the third or subsequent time (p>0.05).

When asked why they had chosen this hospital, the largest group of patients, representing 59.3% before the amendment and 61.3% after the amendment declared that they wanted to be treated in this hospital. For slightly more than 20% of the respondents (22.8% and 20.8%, respectively), the convenient location was the reason for their hospitalisation in a particular place, while 17.9% of respondents in both stages of the survey declared that they had no other choice (p>0.05).

In response to the question on the mode of admission to hospital, referral letters from a doctor predominated (66.6% and 73.2%, respectively). 17.9% of patients surveyed before the amendment and 14.9% after the amendment were brought to hospital by ambulance, while 15.5% before the amendment and 11.9% after the amendment presented to hospital themselves (p>0.05) (Table 1).

Table 1. Characteristics of patients before and after the amendment to the Act

Variable	Patients			
	Before the amendment to the Act		After the amendment to the Act	
Age	N	%	N	%
<30	42	5.45%	37	5.97%
30–39	68	8.83%	65	10.48%
40–49	108	14.03%	97	15.65%
50–59	156	20.26%	143	23.06%
60–69	265	34.42%	197	31.77%
70–79	98	12.73%	65	10.48%
>=80	33	4.29%	16	2.58%
Gender	**N**	**%**	**N**	**%**
Female	515	60.80%	439	63.81%
Male	332	39.20%	249	36.19%
Place of residence	**N**	**%**	**N**	**%**
Village	132	15.57%	184	28.71%
Small town	125	14.74%	98	15.29%
Medium-sized town	154	18.16%	133	20.75%
Big city	437	51.53%	226	35.26%
Marital status	**N**	**%**	**N**	**%**
Single	94	11.30%	84	11.91%
Married	490	58.89%	419	59.43%
Divorced	117	14.06%	89	12.62%
Widowed	131	15.75%	113	16.03%
Education	**N**	**%**	**N**	**%**
Elementary/vocational	213	25.48%	158	22.35%
Secondary	420	50.24%	354	50.07%
University	203	24.28%	195	27.58%
Type of employment	**N**	**%**	**N**	**%**
Unemployed	47	5.70%	35	4.99%
Temporary employment	46	5.58%	48	6.84%
Permanent employment	325	39.39%	323	46.01%
Farmer	36	4.36%	25	3.56%
Pensioner	361	43.76%	258	36.75%
Student	10	1.21%	13	1.85%
Living conditions	**N**	**%**	**N**	**%**
Very poor	5	0.60%	9	1.27%
Poor	26	3.11%	16	2.25%
Average	299	35.77%	237	33.38%

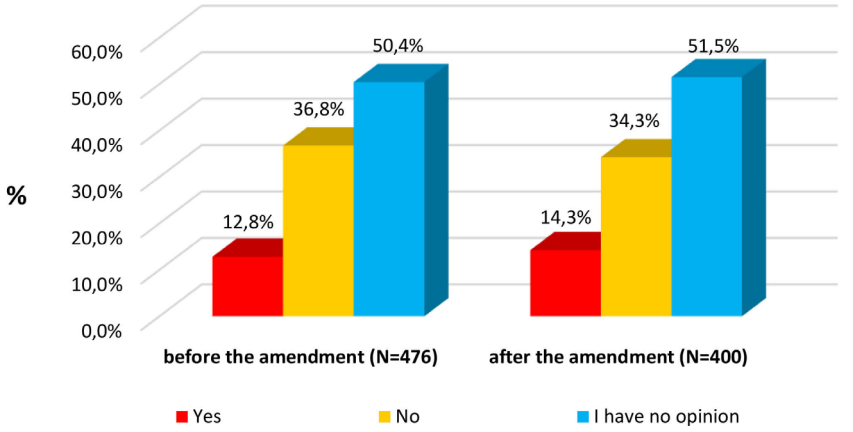
Good	380	45.45%	326	45.92%
Very good	126	15.07%	122	17.18%
Housing conditions	**N**	**%**	**N**	**%**
Lack of flat	13	1.57%	9	1.27%
Multi-family building	507	61.23%	405	57.04%
House	308	37.20%	296	41.69%
Number of hospitalisations	**N**	**%**	**N**	**%**
First hospitalisation	307	36.46%	279	38.91%
Second hospitalisation	216	25.65%	189	26.36%
Third and subsequent hospitalisations	319	37.89%	249	34.73%
Reason for the choice of particular hospital	**N**	**%**	**N**	**%**
I did have no choice	147	17.90%	125	17.86%
I wanted to be treated in this particular hospital	487	59.32%	429	61.29%
The hospital is located close to my place	187	22.78%	146	20.86%
Mode of admission to hospital	**N**	**%**	**N**	**%**
Brought by ambulance	142	17.88%	102	14.85%
Presented themselves	123	15.49%	82	11.94%
Referral letter from a doctor	529	66.62%	503	73.22%

Source: The author's own analysis.

Patients' views on the changes resulting from the introduction of the so-called 'hospital network'

The surveyed patients assessed the impact of the amended Act on improving the functioning of the healthcare system. In both stages of the survey, more than half of the patients (50.4% and 51.5%, respectively) said they had no opinion on this issue. An affirmative answer was given by 12.8% of the respondents before the amendment and 14.3% after the amendment, while a negative answer was given by 36.8% and 34.3%, respectively. The differences were statistically insignificant – $p>0.05$ (Figure 1).

Figure 1. Patients' assessment of the impact of the amended Act on improving the functioning of the healthcare system

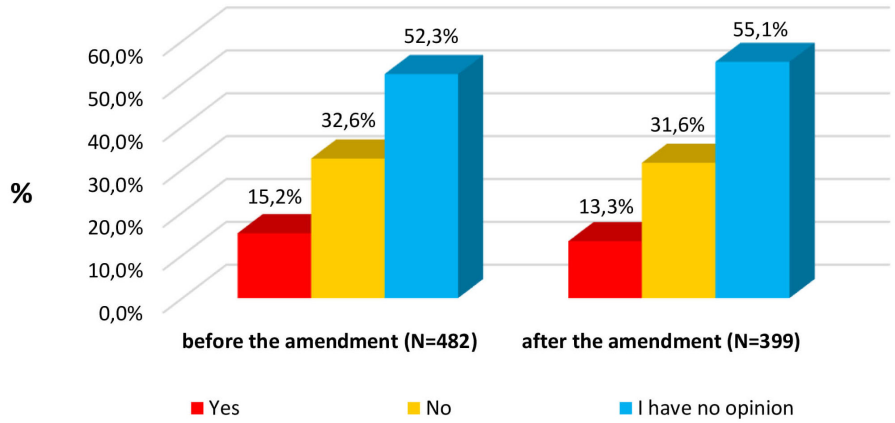


$chi^2=0.77$; $p>0.05$

Source: The author's own analysis.

More than half of the respondents in both stages of the survey (52.3% and 55.1%) had no opinion on the impact of the amended Act on the quality of provided services. 15.2% of the respondents before the amendment and 13.3% after the amendment thought that the Act had influenced the quality of services, while 32.6% and 31.6% did not feel such influence. The noted differences were statistically insignificant – $p>0.05$ (Figure 2).

Figure 2. Patients' assessment of the impact of the amended Act on improving the quality of provided services

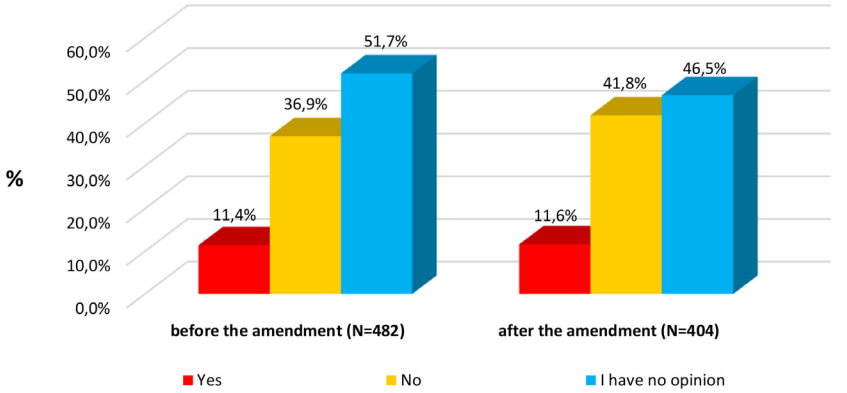


$chi^2=0.93$; $p>0.05$

Source: The author's own analysis.

More than 10% of the respondents before the amendment and 11.6% after the amendment believed that the Act would reduce queues to a specialist, while 36.9% and 41.8% of the surveyed patients believed that the Act would not have such impact. The majority of respondents (51.7% and 46.5%) declared no opinion on this issue. The differences were statistically insignificant – $p>0.05$ (Figure 3).

Figure 3. Patients' assessment of the impact of the amended Act on increasing availability of a specialist before and after the amendment to the Act

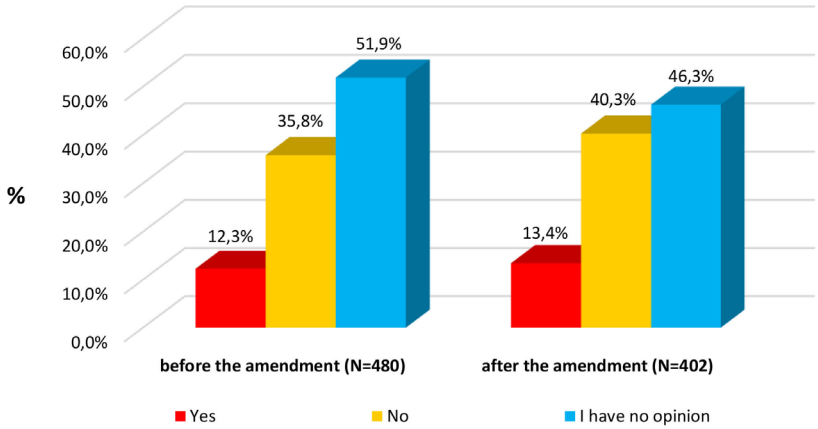


$chi^2=2.53$; $p>0.05$

Source: The author's own analysis.

12.3% of patients before the amendment and 13.4% after the amendment thought that the queues for hospital treatment would decrease thanks to the Act, while 35.8 % and 40.3 %, respectively thought that the Act would not reduce queues. Approximately half of the respondents (51.9% and 46.3%, respectively) had no opinion on this issue. The differences were statistically insignificant – $p>0.05$ (Figure 4).

Figure 4. Patients' assessment of the impact of the amended Act on increasing access to hospital treatment before and after the amendment of the Act

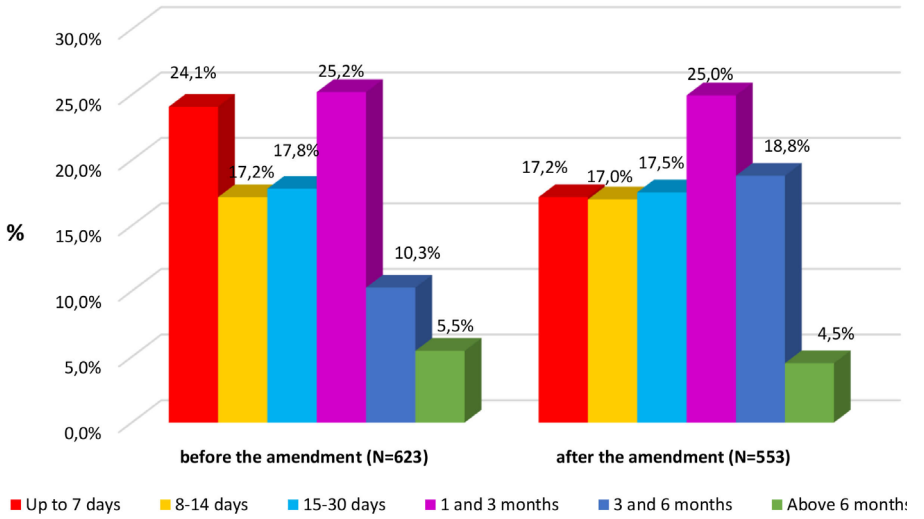


$chi^2=2.77;\ p>0.05$

Source: The author's own analysis.

The patients who had been admitted to hospital upon producing a referral letter from a doctor were asked how long they had waited after they had reported to hospital with their referral letter. One in four respondents in both stages of the survey (25.2% and 25.0%, respectively) claimed that the waiting time was between 1 and 3 months. The proportion of those waiting up to 7 days decreased (from 24.1% to 17.2%), while the proportion of those waiting between 3 and 6 months increased (from 10.3% to 18.8%). The observed differences proved to be statistically significant – $p<0.05$ (Figure 5).

Figure 5. Patients' assessment of the waiting time for admission to hospital, from the moment of presenting to hospital with a referral letter, before and after the amendment to the Act

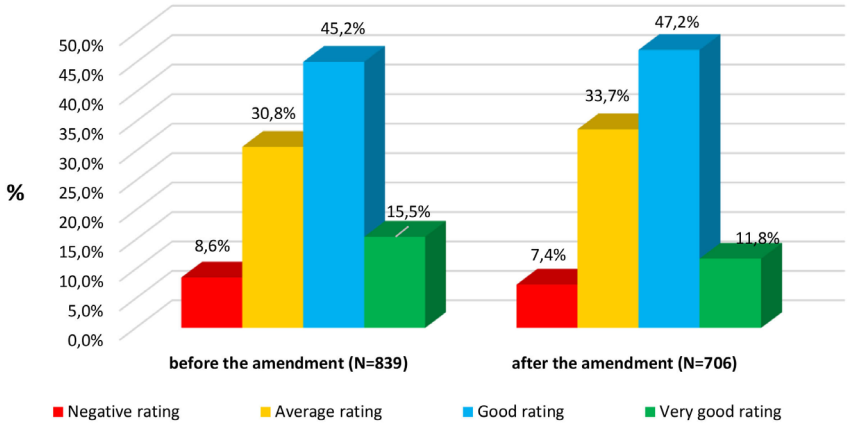


chi^2=22.16; p=0.0005

Source: The author's own analysis.

In the following section, patients' opinions on the functioning of the healthcare system and availability of specialist doctors and hospital treatment were analysed. While assessing the current healthcare system, both before and after the amendment to the Act, patients most often gave a rating of 4 (45.2% and 47.2%), while about one third of patients gave a rating of 3 (30.8% and 33.7%). The differences in the ratings before and after the amendment to the Act were statistically insignificant (p>0.05) (Figure 6).

Figure 6. Patient' assessment of the functioning of the healthcare system before and after the amendment to the Act

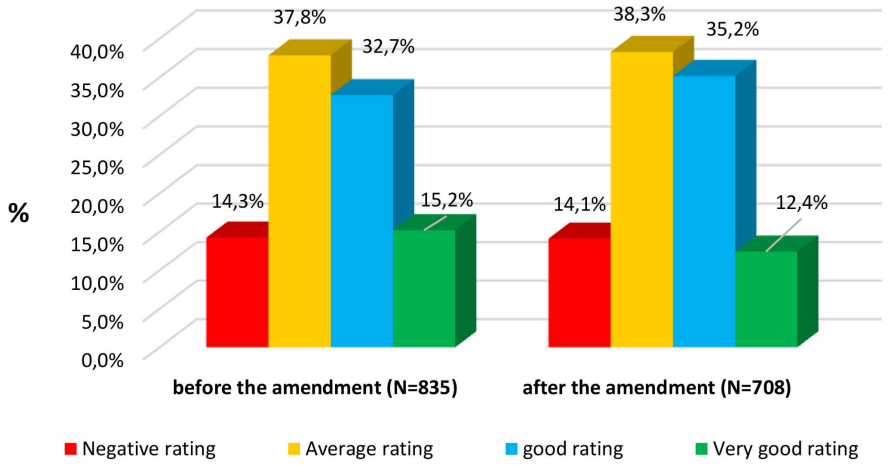


$chi^2=5.97$; $p>0.05$

Source: The author's own analysis.

Patients' opinions on availability of a specialist doctor were mostly average (37.8% before and 38.3% after the amendment) and good (32.7% and 35.2%, respectively). The observed differences proved to be statistically insignificant – $p>0.05$ (Figure 7).

Figure 7. Patients' assessment of availability of a specialist doctor before and after the amendment to the Act

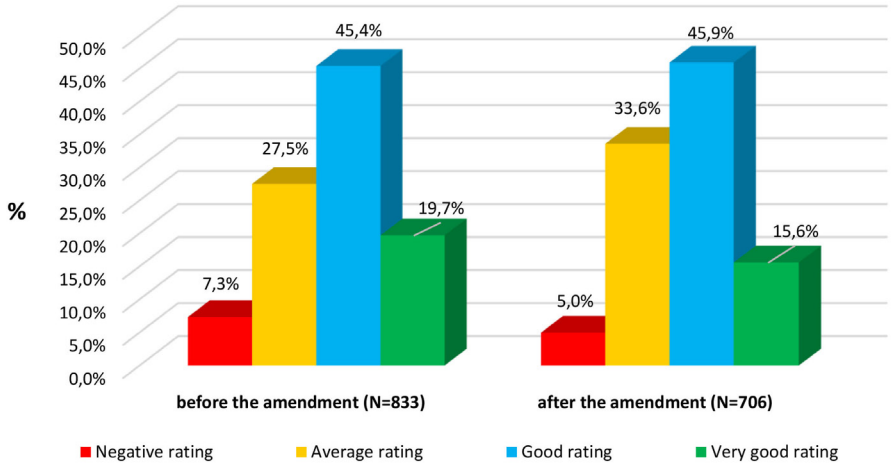


$chi^2=2.84$; $p>0.05$

Source: The author's own analysis.

More than 45% of patients in both stages of the survey (45.4% and 45.9%) gave a good rating in the availability of hospital treatment category. The percentage of those giving an average rating increased (from 27.5% to 33.6%), while the percentage of those giving a very good rating and a rating of 2 decreased (from 19.7% to 15.6% and from 7.3% to 5.0%, respectively). The differences proved to be statistically significant – $p<0.05$ (Figure 8).

Figure 8. Patients' assessment of availability of hospital treatment before and after the amendment to the Act



$chi^2=12.6$; $p=0.0135$

Source: The author's own analysis.

The multivariate ANOVA model was used to analyse the impact of the amendment to the Act on the change in patients' assessment of hospital management. The analysis showed that in all domains, the assessment of the functioning of the Emergency Room was similar in the group of people completing the survey before and after the amendment to the Act.

While assessing the Emergency Room both before and after the amendment to the Act, patients gave the highest rating to domain 2, i.e. assessment of doctors' performance. The average rating of patients in this domain before the amendment was 4.44, while after the amendment it was 4.38. The average difference was -0.06 ($p<0.05$).

Average ratings above 4 also applied to domain 3, i.e. assessment of performance of nursing and auxiliary staff (4.38 before the amendment and 4.36 after the amendment), and domain 5, i.e. assessment of housing and catering conditions (4.31 before the amendment and 4.27 after amendment). In both of these domains, there was a small, non-significant decrease in average scores of -0.02 and -0.04, respectively. In domain 4, regarding assessment of the organisation of

staff performance and the information given to the patient, the average rating before the amendment was 3.92, while after the amendment – 3.87. The small decrease in the average rating of -0.05 was statistically in significant (Table 2).

Table 2. Comparison of the average rating of the Emergency Room in each domain and the global rating before and after the introduction of the so-called 'network of hospitals'

	Average rating before introduction of the amendment to the Act[1]	Average rating after introduction of the amendment to the Act[1]	Average rating diffference[2]	95% confidence interval	
domain 1	4.44	4.38	-0.06	-0.12	-0.01
domain 2	4.38	4.36	-0.02	-0.09	0.03
domain 3	3.92	3.87	-0.05	-0.14	0.04
domain 4	4.31	4.27	-0.04	-0.11	0.03
In total	4.34	4.29	-0.04	-0.10	0.01

[1] values were estimated taking into account the co-variates differentiating the study populations in the model before and after the amendment

[2] values were estimated after taking into account correction for multiple comparisons of all domains

domain 1 – impact of the amended Act on the functioning of the healthcare system,

domain 2 – assessment of doctors' performance,

domain 3 – assessment of performance of nursing and auxiliary staff,

domain 4 – assessment of the organisation of staff performance and the information given to the patient

Source: The author's own analysis.

In the assessment of hospital wards both before and after the amendment, the highest average scores were observed in domain 3, i.e. assessment of performance of nursing and auxiliary staff. The average score in this domain was 4.55 before the amendment and 4.56 after the amendment. The difference of 0.01 was statistically insignificant. The second highest average score noted in patients' ratings regarded domain 2, which included assessment of

doctors' performance. The average rating of doctors' performance was 4.51 before the amendment and 4.46 after the amendment to the Act. The average decrease in ratings was -0.05 and the value was statistically insignificant. Domain 4 comprised questions on assessment of the organisation of staff performance and the information given to the patient. In this domain, the average patient rating was 4.37 before the amendment and 4.36 after the amendment, and the difference of -0.01 was statistically insignificant. Ratings above 4 also applied to accommodation and catering conditions. Before the amendment, patients gave the average rating of 4.24 in this domain, while after the amendment it was 4.23. The difference between the ratings was -0.01 and was statistically insignificant (Table 3).

Table 3. Comparison of the average rating of hospital wards in each domain and the global rating before and after the introduction of the so-called 'hospital network'

	Average rating before introduction of the amendment to the Act[1]	Average rating after introduction of the amendment to the Act[1]	Average rating difference[1]	95% confidence interval	
domain 1	4.51	4.46	-0.05	-0.11	-0.01
domain 2	4.55	4.56	0.01	-0.2	0.09
domain 3	4.37	4.36	-0.01	-0.09	0.02
domain 4	4.24	4.23	-0.01	-0.09	0.03
In total	4.39	4.37	-0.02	-0.09	0.03

[1] values were estimated taking into account the co-variates differentiating the study populations in the model before and after the amendment

[2] values were estimated after taking into account correction for multiple comparisons of all domains

domain 1 – impact of the amended Act on the functioning of the healthcare system,

domain 2 – assessment of doctors' performance,

domain 3 – assessment of performance of nursing and auxiliary staff,

domain 4 – assessment of the organisation of staff performance and the information given to the patient

Source: The author's own analysis.

Discussion

The amendment to the Act on Healthcare Services Financed from Public Funds of 23 March 2017 introduced a number of significant changes in the organisation and financing of the healthcare system in Poland. The aim of the introduction of the system of basic hospital provision of healthcare services was to improve patients' access to specialist services, in particular by ensuring comprehensiveness and coordination of outpatient, inpatient and rehabilitation services.

It should be emphasised that ratings regarding the functioning of the healthcare system both before and after the introduction of new regulations were in the opinion of about 40% of patients negative or average, and more than half of them gave equal ratings regarding the availability of specialists in both stages of the survey. Furthermore, the proportion of patients rating the availability of hospital care positively decreased after the change in legislation (65% vs 61%). The situation in which the proposed changes are not assessed as potentially beneficial for patients may indicate a low level of public confidence in the legislator.

While assessing the Emergency Room, both before and after the amendments to the Act, respondents awarded the highest rating to doctors' performance. The average rating in this domain before the amendment was 4.44, while after the amendment it was 4.38. The ratings regarding performance of nursing and auxiliary staff were good (4.38 before the amendment and 4.36 after the amendment); housing and catering conditions were rated similarly (4.31 before the amendment and 4.27 after the amendment). Patients gave the worst ratings to organisation of staff performance and the information given to the patient. However, the ratings were still good, with an average value of 3.92 before the amendment and 3.87 after the amendment to the Act.

While assessing hospital wards both before and after the amendment, the highest average ratings were given to performance of nursing and auxiliary staff. The average rating in this domain was 4.55 before the amendment and 4.56 after the amendment. The second highest rating was awarded for doctors' performance. The patients rated this domain on average by

awarding the value of 4.51 before the amendment and 4.46 after the amendment. They rated organisation of staff performance and the information given to the patient most negatively. However, the ratings were still high. In this domain, the average rating was 4.37 before the amendment and 4.36 after the amendment.

In contrast to surveys carried out in other healthcare establishments in the Lodz voivodship, the overall assessment of the Emergency Department was lower compared to the overall assessment of hospital wards [19, 21, 22, 29]. A higher level of patient satisfaction with care in hospital wards compared with services received in the hospital Emergency Room may be due to the fact that patients associate the health outcome mainly with the performance of the ward personnel. When admitted to hospital, patients are likely to experience higher levels of stress, have to sign a number of documents, and feel the time pressure of dealing with a large number of people. All these may contribute to lower levels of satisfaction with care in the Emergency Room.

Due to the clinical nature of hospital departments, medical students are also involved in the provision of healthcare, which is undoubtedly a considerable factor. Presence of students and the patient-student relationship definitely influence patients' perceptions of various elements that then make up the overall assessment of satisfaction with medical care. Studies conducted in medical centres around the world reveal that presence of students during usual daily clinical practice can positively influence patients' satisfaction with medical care. To a large extent, this effect depends on adequate preparation of the patient for the presence of students and adequate involvement of the doctor in the process of providing healthcare services. Experience of patients which they gained beforehand while receiving care in clinical settings is also an important element [23, 24, 25].

It should be noted that the lack of changes in the level of satisfaction of patients receiving hospital medical care before and after the introduction of the 'hospital network' may be related to the short time between the amendment to the Act and the day the second stage of the survey was conducted. Within the period of six months following the introduction of the new legislation, the hospital was under organisational transformation which involved adaptation

to the new requirements of the implemented amendment to the Act. The introduction of major changes associated with the 'hospital network' undoubtedly caused chaos in the organisation of work and destabilised, to a greater or lesser extent, its functioning. This situation posed a potential risk of decreasing patient satisfaction with the care offered by the hospital. The lack of changes in patients' opinion on the functioning of the health establishment should be undoubtedly considered a success. Keeping a constant level of patient satisfaction with offered services in the changing legal and organisational realities of the healthcare system was undoubtedly a major challenge for the hospital management and medical and administrative personnel.

Results of studies confirm that patient satisfaction is very much dependent on overall nursing care [26, 27]. This vital importance of the patient nursing process is contributed by various elements. Nurses spend most time with patients. They are responsible for assisting with nursing activities, provide psychological support and perform a lot of medical procedures. All these nursing tasks are highly valued and they rank very high in the hierarchy of determinants of patient satisfaction. Patients expect that nurses will be responsive to their requests and needs, empathic, will respect all rights, will be patient and understanding towards them and their families, and will efficiently perform medical and nursing duties [28].

Regular assessment of patient satisfaction with care offered by a medical facility is an important source of information on the effectiveness of managing the hospital by managerial staff and facilitates selection of proper decisions by hospital personnel. Involving staff in the process of implementing solutions aiming at improving patient satisfaction with care helps to improve the quality of services.

Conclusions

1. The introduction of organisational and legal changes under amendments to the Act on Healthcare Services Financed from Public Funds did not affect the overall level of patient satisfaction with healthcare in the study group.

2. The level of patient satisfaction with care in the Emergency Room and hospital wards both before and after the amendment to the Act was satisfactory.
3. In order to improve the level of patient satisfaction with care in the Emergency Room, particular attention should be paid to needs of the least satisfied patients, i.e. the elderly and those who came to a particular hospital without making a decision regarding the choice of health establishment, as well as those who had previously received care in this particular hospital.
4. Both before and after the amendment to the Act, the majority of patients had no opinion or were convinced that the changes associated with the amendment to the Act would not affect the functioning of selected elements of the healthcare system.
5. Introduction of significant organisational changes in the healthcare system requires the legislator and persons in charge of healthcare establishments to implement logistic solutions.

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Legal Conditions of Patients' Access to Medical Records in Poland

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Abstract

The flow of information contained in medical records can be controlled by implementing appropriate legal and technical procedures and the hospital is protected against costs associated with the loss or release of medical records to unauthorised persons.

The aim of the article is to analyse the legislative and organisational regulations defining the scope of obligations of healthcare system entities to keep medical records, as well as the effectiveness of tools ensuring the protection of patients' rights with regard to medical records produced as a result of health care services provided to them.

An analysis of the legal state of affairs was carried out (October 2021) regarding the patient's rights to medical records and access to them, an analysis of the personal and material scope of the right to medical records, including the right to patient privacy and confidentiality in terms of medical records.

The analysis of the legal situation regarding medical records and the patient's right to them concerned the applicable rules regarding access to records during the patient's life and after death, also in the context of persons authorised by the patient. The results of the analysis dealt with the forms in which the records were made available to persons and entities authorised by the legislation, as well as the consequences of violating patient's rights to medical records.

The results of the analyses made it possible to formulate the following conclusions: the issue of the implementation of the right to documentation is very important and constitutes a fundamental right of the patient. The policy of ensuring access to medical records to authorised entities is an important element of the functioning of a healthcare entity. All participants in the system are obliged to exercise due diligence in respecting the rights and obligations imposed, to ensure security during the processing of medical records kept on various information carriers – paper, electronic, portable carriers. Budgetary resources should

be provided to continue investing in the development of central IT systems that allow for the secure collection of relevant information from medical events and ensure access to it at an appropriate level of security.

Key words: *patient rights, medical records, access to medical records*

Introduction

The issue of the exercise of the right of access to medical records is very important and constitutes a fundamental right of the patient. This right is also linked to the exercise of other rights, such as the right to information, to health services or to be able to make an informed decision about further treatment. The right of access to records must be exercised in such a way that the patient's privacy and intimacy are guaranteed. Any infringement of the patient's right to medical records in terms of restricting the possibility of obtaining them or unduly easing the rules for their release may result in a misuse of the other rights mentioned.

The protection of the patient's intimacy and the secrecy of their medical data is one of the fundamental elements in creating and maintaining trust between the patient and the doctor, which in turn is the foundation of the mutual relationship between these entities that determines the safety and effectiveness of the treatment process and affects the health security of society as a whole.

Material and methods

When discussing the patient's rights to medical records and access to them, it was necessary to analyse the laws and regulations in this area. The concept of patient's rights is based on the model presented in 1994 by the WHO – Model of the Declaration of the Promotion of Patients' Rights and in the European Charter of Patients' Rights. In Polish legislation, patient's rights are guaranteed in:

1. Constitution of the Republic of Poland of 2 April 1997,
2. ratified international agreements:
    1) the 1984 Charter on the Rights of Patients at the initiative of the European Parliament,
    2) Declaration of the Promotion of Patients' Rights in Europe, 1994,
    3) European Charter of Patients' Rights,

   4) International Covenant on Civil and Political Rights of 19 December 1966 [1],
   5) Convention for the Protection of Human Rights and Fundamental Freedoms 1950 (ratified by Poland on 02 October 1992) [2],
3. Act of 6 November 2008 on Patient's Rights and Patient's Rights Ombudsman (Act on Patient's Rights),
4. implementing regulations.

The aim of the concept of patient's rights is to protect the autonomy, i.e. the freedom of the patient from interference by other actors defined as the negative aspect, and the right to demand the rightful conditions for the realisation of these rights (positive aspect). Two categories of patient's rights are traditionally identified in health policy:

1. rights of a social nature (patient-state/public authority relationship),
2. rights of a subject-related nature (individual rights of the patient).

The catalogue of patient's rights is extensive and includes, among others:

Patient's right to information:

1. the patient over the age of 16 and the legal representative of each patient has the right to be informed about their state of health, the diagnosis, and the proposed and possible methods of diagnosis and treatment foreseeable, as well as the results of the treatment and the further prognosis,
2. the patient has the right to present their own opinion to the doctor on the information they have obtained,
3. the right to receive information about the care and nursing treatments to which the patients are subjected,
4. the right to be informed of their rights in writing – information should be displayed at the place where the medical service is provided,
5. the right to information on preventive health programmes that are publicly funded [3].

Patient's right to confidentiality of information that concerns them:

1. the right to maintain the confidentiality of information relating to them which has been obtained in connection with the exercise of the medical profession,
2. medical professionals who provide health services are obliged to maintain confidentiality even after the death of the patient [4].

Patient's right to affirm consent to health services:

1. the right to consent or refuse to consent to specific health services after being informed,
2. consent or objection may be formulated either orally or by specific behaviour which establishes in unequivocal terms the will to submit to the acts proposed by the doctor or the absence of such will [5].

The right to respect for the intimacy and dignity of the patient:

1. the patient has the right to particular respect for their privacy and dignity during the provision of health services,
2. this right includes the right to die in peace and with dignity. A patient who is in a terminal state has the right to services that provide relief of pain and other suffering [6].

Patient's right to medical records:

1. the right of access to medical records which relate to their state of health and in respect of the health services provided to them,
2. medical records should include: patient's name, surname and forename, date of birth, sex, address, PESEL number, name of the health care provider, description of the patient's condition and the services provided, date of preparation of the document,
3. an entity that has provided benefits shall also make medical records available to: other entities providing benefits, if such records are necessary for the continuity of health services, public authorities, as well as the National Health Fund, the minister in charge of health, as well as courts, prosecutors, court-appointed physicians and ombudsmen of professional

responsibility, authorities and institutions authorised by separate acts, disability authorities, teams adjudicating on disability, entities that keep registers of medical services, insurance companies,

4. the healthcare provider is obliged to keep medical records for 20 years, with the exception of medical records in the case of death of a patient as a result of injury or poisoning – 30 years, X-rays – 10 years, referrals for examinations – 5 years, medical records of children under 2 years of age – for 22 years [7].

Results

Running, storing and providing access to medical records are a legally required element of conducting medical activity. The definition of medical records is contained in the provision of Article 2(1)(1) of the Medical Activity Act, which indicates that medical records are the records referred to in the provisions of the Act on Patient's Rights.

There is no legal definition of medical records in Poland. It is important to distinguish between the definition of a document and the definition of a medical record, which is understood as "a chronologically ordered collection of data concerning a patient's health and illness and the health services provided to the patient". Medical records are crucial in terms of maintaining continuity of treatment and improving the quality of health services provided [8]. The patient has legally guaranteed access to their medical records and may also authorise other persons to do so. The above-described issues are regulated by the provisions on the patient's right to medical records contained in Chapter 7 of the Act on Patient's Rights and are also analysed in this article.

Article 25 of the Act on Patient's Rights indicates the content of medical records:

1. identification of the patient, allowing to determine their identity:
   a) surname and forename(s),
   b) date of birth,
   c) gender designation,
   d) address of residence,

e) the PESEL number, if one has been assigned, in the case of a newborn child, the PESEL number of the mother, and in the case of persons who have not been assigned a PESEL number, the type and number of their identity document,
f) where the patient is a minor, totally incapacitated or incapable of giving informed consent, the surname and forename(s) of the legal representative and the address of their residence.

2. identification of the healthcare provider indicating the organisational unit where the healthcare services were provided,
3. a description of the patient's state of health or of the health services provided to the patient,
4. date of preparing the document.

The patient's right to medical records is exercised by the healthcare entity on the principles indicated in the Act on Patient's Rights through the obligation to keep, store and make such records available. In accordance with Article 23 of the Act on Patient's Rights, the patient has the right to access the data contained in the medical records in the area of two categories: data on the patient's health condition – information on the diagnosis made, results of tests performed, diagnosis made, data on health services provided. The patient has the right of access to individual and collective records kept in the healthcare unit. In the latter situation, this right may not infringe on the right to privacy of other patients, and access consists in making extracts from the collective documentation concerning the patient making the request (the Supreme Administrative Court of the Republic of Poland in its judgment of 19 May 2003) [9].

The catalogue of persons and entities that can obtain access to a patient's medical records includes two main groups:

1. the patient, the patient's legal representative and the person authorised by the patient,
2. entities indicated in Article 26(3) of the Act on Patient's Rights, among others, entities providing healthcare services, if the documentation is necessary to ensure continuity of healthcare services, disability

authorities and disability assessment commissions in connection with their proceedings, or insurance companies (with the patient's consent).

The way in which medical records are made available depends on whether they are electronic records or other records in electronic or paper form [10]. Electronic medical records are made available via the P1 Platform in accordance with the regulations related. The sharing of other medical records is carried out according to the rules described primarily in the Act on Patient's Rights and complementarily in the Regulation on Medical Records [11]. According to this Regulation, the following rules for making medical records available are possible:

1. the obligation to make records available with integrity, confidentiality and authenticity without undue delay,
2. where the records are made available in hard copy printout, a person authorised by the originating body shall certify that the printout is in conformity with the records and shall sign it with their forename, surname, position and signature,
3. where paper records are made available by issuing an original against acknowledgement of receipt and subject to return after use, at the request of public authorities or ordinary courts, and where delay in releasing the records could cause a risk to the patient's life or health, the record keeper must retain a copy of the records issued,
4. where it is not possible to grant access to the records, the refusal shall be communicated in electronic or paper form, as requested by the competent authority or body. A statement of the reasons for refusal shall be required in each case.

After the death of a patient, medical records may be made available to the person authorised by the patient during their lifetime or to the person who was the patient's legal representative at the time of death [12]. Medical records after the death of a patient are also made available to a close person. A close person within the meaning of the Act on Patient's Rights is: a spouse,

a relative up to the second degree, a statutory representative, a person in cohabitation or a person designated by the patient. In the event of reasonable doubt as to whether the person requesting or opposing access to the records is in fact a person close to the patient, then the medical professional acting on behalf of the medical entity to which access to the records has been requested has the right to apply to the court to authorise access to the medical records.

However, a healthcare provider will not be entitled to release medical records after the death of a patient to a relative if:

1. the release is opposed by another relative – in the event of a dispute between relatives over the release of medical records, the release is also authorised by the court on the application of the relative or medical professional;
2. access was objected to by the patient during their lifetime – where the patient during their lifetime objected to their medical records being made available to their relatives after their death, then, in special cases, on application by the relatives, the court may, in non-trial proceedings, authorise the release of the records and determine the extent of their release, but only on condition that the release is necessary in order for the relatives to claim compensation or damages, on account of the patient's death, or for the protection of life or health.

The right to inspect medical records may be exercised either by the patients themselves or through persons to whom they have given authorisation. The legislation does not reserve any particular form for the effectiveness of the authorisation. The exercise of the right to inspect medical records does not constitute a legal act, and therefore the granting of 'authorisation to inspect medical records' by a patient to another person is not the granting of a power of attorney within the meaning of Article 95 of the Civil Code. Therefore, authorisation to inspect medical records may be granted by a patient to any person, including a person who does not have full legal capacity [13].

The forms of making medical records available have been specified in the Act on Patient's Rights, and the catalogue of forms of making them available

is enumerative. Additionally, if the documentation is maintained in paper form, making scans of this documentation available in accordance with the principles specified in points 4. and 5. depends on introducing such a possibility in the organisational regulations of a given entity. Pursuant to Article 27 of the Act on Patient's Rights, medical records are made available:

1. to be inspected, including in healthcare databases, either at the place where the healthcare services are provided, with the exception of emergency medical treatment, or at the premises of the healthcare provider, with provision for the patient or other authorised bodies or entities to take notes or photographs, by making an extract, copy or printout thereof,
2. by handing over the original against acknowledgement of receipt and subject to return after use, at the request of public authorities or ordinary courts, and where delay in handing over the records could endanger the life or health of the patient,
3. by electronic means of communication,
4. on a digital data carrier.

The original documentation shall be issued only at the clear request of the authorised authority or body. The patient may request the original of the individual internal records and the collective records only to the extent of the entries concerning themselves [14]. The obligation to return medical records after their use is not precisely defined, which is justified, as the legislator could not foresee in advance, for example, what kind of proceedings the authorised body would have to deal with for the entity conducting the treatment activity [15].

Discussion

The patient's right to medical records remains one of the most frequently violated patient's rights, and the number of investigations into this matter continues to increase. The Patient's Rights Ombudsman's report on compliance with patient's rights between 1 January and 31 December 2020 indicated

that the number of identified violations of this right increased by 45% compared to 2019, with the previous year also showing a significant increase. Therefore, in both years, the degree of non-compliance with this right was assessed to have a medium level [16].

The most common breach of this right took the form of:

1. incorrect medical record keeping;
2. deficiencies in the storage of medical records;
3. inadequate application of the provisions of the Act relating to access to medical records, in particular with regard to the submission of requests for medical records by authorised persons, including the form of such requests;
4. the processing time for requests for medical records [17].

Article 4(1) of the Act on Patient's Rights provides that in the case of a culpable violation of a patient's rights, the court may award the injured party an appropriate sum as monetary compensation for the harm suffered on the basis of Article 448 of the Civil Code. However, paragraph 3 of this provision indicates a catalogue of patient's rights, the culpable violation of which does not give the patient the right to claim compensation. This limitation concerns: the patient's right to keep valuables in the depository of the healthcare provider, the right to information about the type and scope of health services provided by the providers of these health services, the right to report adverse reactions to medical products and the right of access to medical records concerning the patient's health [18].

The right to medical records and access to them has a significant impact on patient satisfaction. Successfully treating a patient is not enough to gain the patient's trust. The patient's opinions and feelings are extremely varied and often change. Learning about patients' opinions makes it possible to detect shortcomings and thus strive to continuously improve the quality of services provided in a medical facility [19].

Nowadays, diagnosing and treating a patient correctly may not be enough, and gaining the patient's trust is of particular importance. The quality of services and its role continues to grow, due to increasing standardisation,

but also to the increasingly observed and important individual approach to the patient, as well as increasing patient demands [20].

After using a medical service, the patient can assess the medical service, which has its own particular characteristics, one of the most relevant and significant being the psychological complexity of the process occurring in the medical facility, as well as the stress accompanying the patient [21]. An important feature is the interaction between the patient and the medical staff. Consequently, the attitude and behaviour of the medical staff towards the patient is extremely important [22].

Conclusions – recommendations

The issues concerning the processing of medical records, the obligations of public authorities, the National Health Fund and healthcare providers, as well as medical professionals presented in the article, allow to draw the conclusion that the problem of exercising the right to medical records is important and forms a part of the fundamental rights of the patient.

The right of access to medical records is closely linked to the respect of other rights, including the right to information, the right to health services or the right to make an informed decision about further treatment. It should be noted that the right of access to medical records should be exercised in such a way as to ensure patients' sense of privacy and intimacy. Violation of a patient's right to medical records, whether by limiting the possibility to obtain them or by unduly easing the rules on their release, may also result in a misappropriation of the other rights listed.

Another conclusion from the analysis of the legal regulation of medical records and access to them is that the right to privacy may be limited by the right to disclosure of medical data. It is incumbent on the legislator to ensure that those entitled (the patient and/or persons authorised by the patient) are able to exercise their right to access medical records. In this way, through the negative as well as the positive aspect of the obligations, the fullest possible respect of the patient's rights, including the right to medical records, should be sought while ensuring the right to privacy. This is particularly relevant in

the context of medical records, which should be kept, collected and made available in accordance with the terms of the law. which prescribes respect for the patient's right to privacy. One of the key elements in building and maintaining trust between the patient and the doctor is the protection of the patient's intimacy and therefore the confidentiality of their medical data, which is the foundation of the interaction between these entities, conditioning the safety and effectiveness of the treatment process. This also has implications for the health security of society as a whole.

Legal regulations on ensuring access to medical records to authorised entities constitute an important element of the functioning of a healthcare entity and should be treated with due attention. They should primarily concern the establishment of a safe, and at the same time free from excessive and unsupported by law, manner of exercising these rights. Taking into account the essence and subject matter of the processed information, its importance for effective diagnostic and therapeutic decision-making, the participants of the system should exercise due diligence in respecting the imposed rights and obligations, ensuring security during the processing of medical records kept on various information carriers – paper, electronic, portable carriers.

The legally defined right to medical records and access to them also has an impact, which is not often emphasised, on the patient's sense of satisfaction and thus also on quality management in medical facilities.

The strategic objective should be to ensure that budgetary resources are invested in the further development of central IT systems that enable the secure collection of medical event information and provide access to it at an appropriate level of security.

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Impact of the COVID-19 Pandemic on Health Behaviors Students of the Calisia University in Kalisz

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Abstract

The onset and rapid spread of the SARS-CoV-2 coronavirus in 2019 was the reason why WHO announced a number of restrictions related to population movement, gathering, limiting access to cultural, recreational, and sports facilities. Most schools and universities moved to a hybrid or fully remote mode of teaching. Studies show that regulations aimed at reducing the spread of SARS-CoV-2, including home isolation, negatively affected students' mental state, motivation to work and study. The purpose of this study is to assess the health behaviors of Calisia University students during the COVID-19 pandemic.

Methods: *A questionnaire comprising 16 questions was developed. The questionnaire was introduced into the Survey Monkey electronic survey system with a note explaining the purpose of the study. On June 22, 2022, a link to the questionnaire was e-mailed to all students (n=1,425) of the Calisia University. A reminder was sent to the students two weeks later.*

Results: *On the basis of our study, it was found that the COVID-19 pandemic had a significant impact on the students of the Calisia University. Some of the students suffered from the disease, which consequently affected their physical condition. During the pandemic, no significant increase in anti-health behaviors, such as smoking cigarettes or drinking excessive amounts of alcohol, was observed in the students. For most of the respondents, the COVID-19 pandemic had a significant impact on their mental state. In addition, the pandemic had an adverse effect on the economic situation of the surveyed students.*

Conclusions: *No significant increase in anti-health behavior was observed in students during the pandemic. Respondents claimed that the COVID-19 pandemic had a significant impact on their mental state and definitely worsened their economic situation.*

Key words: *Covid-19 pandemic, students, health behaviors*

Introduction

The onset and rapid spread of the SARS-CoV-2 coronavirus in 2019 was the reason why WHO announced a number of restrictions concerning population movement, gathering, limiting access to cultural, recreational, and sports facilities. Most schools and universities moved to a hybrid or fully remote mode of teaching. Studies show that the regulations aimed at reducing the spread of SARS-CoV-2 including home isolation, negatively affected students' mental state, motivation to work and study [1]. An increase in stress and anxiety due to the COVID-19 pandemic was observed in about 60% of respondents from France, Spain, and Poland [2–4]. In a multicenter study conducted in Germany it was found that for 40–60% of students at the time reported the level of psychological stress, as well as feelings of loneliness and anxiety about the future increased [5–7]. According to the results of an online survey of Turkish students, 38% of respondents were anxious about the pandemic situation [8]. Similarly, a quarter of students coming from China were afraid of the situation associated with the SARS-CoV-2 outbreak [9]. It has also been proven in the literature that perceptions of the pandemic situation are gender-dependent. Female students show greater vulnerability to stress and increased mental health symptoms [5, 10, 11].

Psychological and emotional stresses such as anxiety, depression, boredom, and loneliness, resulting from the situation, may lead to changes in some lifestyle elements among students, including alcohol consumption or smoking [12–15]. The legality and availability of alcohol and tobacco appear to play an important role in the unusual situation of seclusion. Therefore, some adolescents resorted to nicotine or alcohol as a way to cope with the psychological discomfort and negative feelings associated with the COVID-19 situation [12–16]. However, taking stimulants during pandemic-induced social isolation is a multifaceted problem. It can intentionally violate by restricting movement and meeting with peers, engaging in risky consumption alone, increasing substance use with family members, and finally using social networks to consume stimulants with peers

simultaneously [15, 17, 18]. The observed changes in smoking and alcohol consumption during the SARS-CoV-2 pandemic also show the influence of parental control and the role of socialization on the likelihood of engaging in risky behavior. This fact is raised in some studies, which showed that seclusion forced adolescents to spend time mostly with their parents rather than with peers, which may have increased parental supervision and interfered with the adolescents' access to substances, leading to lower consumption [13, 15, 17, 19, 20].

The aim of the study

The purpose of this study is to assess the health behaviors of Calcasieu University students during the COVID-19 pandemic.

Materials and Methods

Questionnaire

A questionnaire comprising 16 questions was developed (Table 1). The first three questions aimed to collect basic characteristics (age, gender, study semester) of the respondents. Questions 4 and 5 investigated the vaccination and infection history of the responding students. Questions 6 to 11 evaluated the impact of the Covid-19 pandemic on general and mental health, as well as on smoking and alcohol consumption. Questions 12 and 13 focused on study progress and students' motivation to study. Questions 14 aimed at evaluating the impact of Covid-19 pandemic on the financial situation of the students. Questions 15 and 16 allowed the students to freely express their positive and negative associations related to the Covid-19 pandemic. For all questions, with the exceptions of questions 1, 3, 15 and 16, the respondents had to choose from a set of predefined answers. In questions 1 and 3 a numeric answer was required, while in questions 15 and 16 free text responses were to be provided. Questionnaire testing showed that providing the answers in the questionnaire took between 3 to 10 minutes.

Survey

The questionnaire was introduced into the Survey Monkey electronic survey system with a note explaining the purpose of the study. On June 22, 2022, the link to the questionnaire was e-mailed to all students (n=1,425) of the Calisia University. A reminder was sent to the students two weeks later. The responses to the questionnaire were stored at SurveyMonkey.com in an encrypted electronic data format. SurveyMonkey does not collect such data as names, e-mail addresses, or IP addresses; therefore, the anonymity of responses was maintained, and the identity of the participants remained unknown even to the investigators. Survey Monkey application generates summary statistics and charts.

Table 1. Survey questions

Number	Question	Answer
Q1	How old are you?	Field for numeric input
Q2	What is your gender?	• Male, • Female, • Other
Q3	What semester are you studying?	Field for numeric input
Q4	Have you been vaccinated against Covid-19?	• Yes, normal vaccination • Yes, normal vaccination and booster shot • No
Q5	Have you become infected by Covid-19?	• No • Yes, once • Yes, more than once
Q6	What impact did the Covid-19 pandemic have on your general health situation?	• I have been ill more often • No change compared to non-pandemic times • I have been ill less often (e.g., less colds, less flus)
Q7	What impact did the Covid-19 pandemic have on your mental health (stress level)?	• I was very stressed • I was stressed • I had a normal level of stress • I was less stressed • I was very much less stressed

Number	Question	Answer
Q8	Do you smoke?	• No • Yes, occasionally • Yes, regularly • Yes, i am a heavy smoker
Q9	Has your smoking increased during the pandemic?	• No • Yes
Q10	Do you consume alcohol?	• No • Yes, occasionally • Yes, regularly
Q11	Has your alcohol consumption increased during the pandemic?	• No • Yes
Q12	What impact did the Covid-19 pandemic have on the progress of your studies?	• I will finish my studies earlier • No impact on the progress of my studies • I will finish my studies later
Q13	What impact did the Covid-19 pandemic have on your motivation to study?	• I am less motivated • No impact on my motivation • I am more motivated
Q14	What impact did the Covid-19 pandemic have on your financial situation?	• Negative Impact • No Impact • Positive Impact
Q15	Please state your top three negative associations with the Covid-19 pandemic	Open text field
Q16	Please state your top three positive associations with the Covid-19 pandemic	Open text field

Results

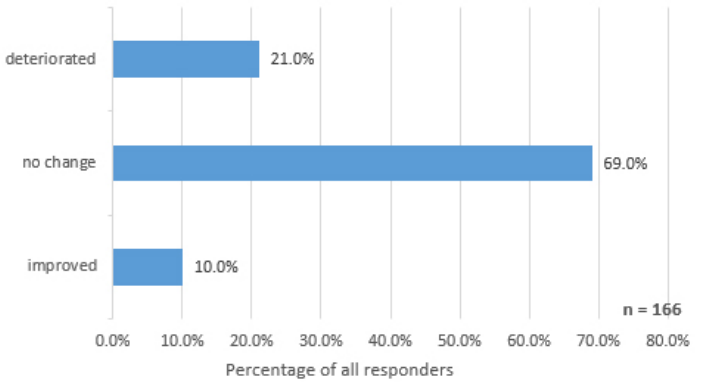
Until the end of July 2022, the answers from a total of 166 students (respondent rate 11.6%) were collected. The characteristics of the responding students have been summarized in Table 2.

Table 2. Characteristics of responding students

Characteristic	Number of responses (% of respondents)
Age	
• <20	4 (2.4%)
• 20–29	126 (75.9%)
• 30–39	14 (8.4%)
• 40–49	13 (7.8%)
• ≥50	8 (4.8%)
• no answer	1 (0.6%)
Gender	
• female	115 (69.3%)
• male	51 (30.7%)
Study semester	
• 1–3	71 (42.8%)
• 3–4	68 (41.0%)
• 5–6	16 (9.6%)
• >6	7 (4.2%)
• no answer	4 (2.4%)
Vaccination status	
• no vaccination	56 (33.7%)
• basic vaccination	52 (31.3%)
• basic + booster vaccination	57 (34.3%)
• no answer	1 (0.6%)
Covid-19 infection	
• no	96 (57.8%)
• yes, once	53 (31.9%)
• yes, more than once	17 (10.2%)

As far as changes to the respondents' general health situation is concerned, 69% of them stated that there was no change at all (Figure 1). Slightly above one fifth (21%) declared there was a deterioration of their general health, while 10% claimed that their general health situation improved during the Covid-19 pandemic.

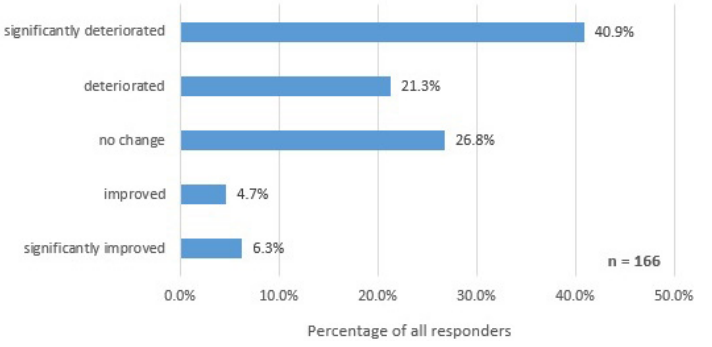
Figure 1. Impact of Covid-19 pandemic on general health



Source: Own elaboration.

When asked about changes of their mental health, nearly two thirds (62.2%) of the respondents declared that it either deteriorated (21.3%) or significantly deteriorated (40.9%) (Figure 2). Only 11% of the respondents perceived an improvement of their mental health status (4.7% claimed that it improved, and 6.3% that it significantly improved).

Figure 2. Impact of Covid-19 pandemic on mental health/stress level

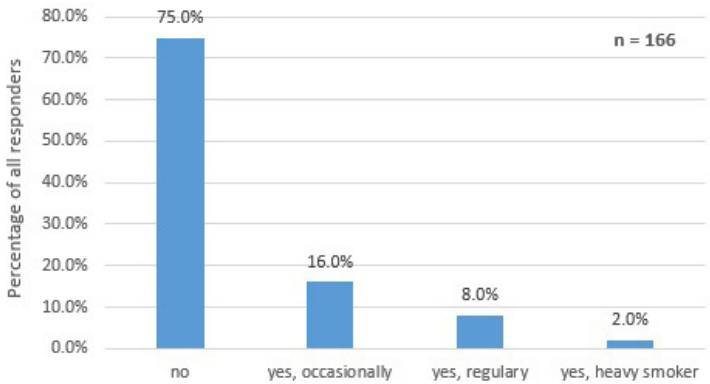


Source: Own elaboration.

When evaluating their smoking behavior, 75% of the respondents stated that they do not smoke, 16% claimed they are occasional smokers, 8% smoke

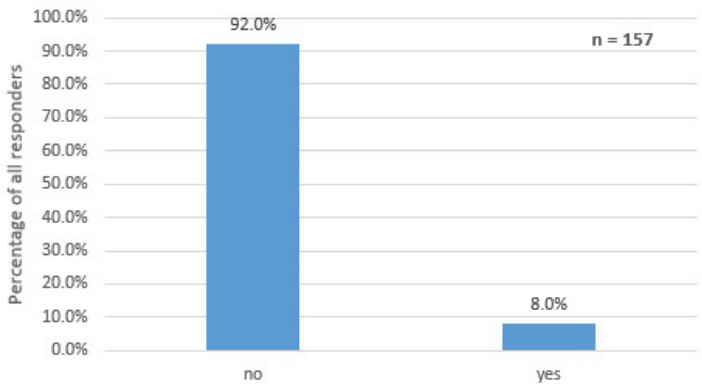
regularly, and 2% of them are heavy smokers (Figure 3a). The significant majority of respondents (92%) declared that the Covid-19 pandemic had not resulted in the increase of their consumption of smoking products (Figure 3b). However, nine respondents (5.4%) skipped answering this question.

Figure 3a. Smoking behavior



Source: Own elaboration.

Figure 3b. Increase of smoking due to Covid-19 pandemic

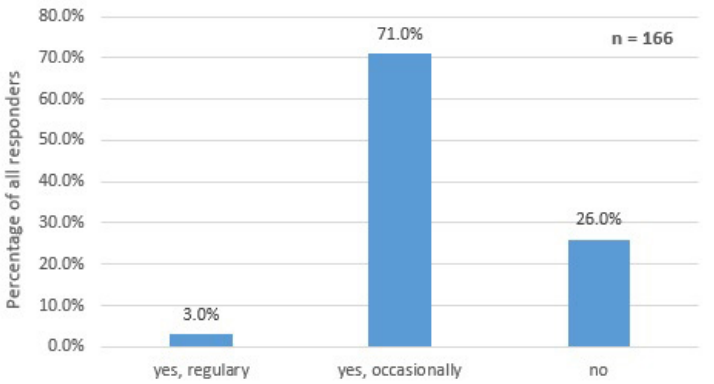


Source: Own elaboration.

26% of the respondents declared that they do not consume alcohol at all, while 71% claimed that they occasionally drink alcohol. 3% of the

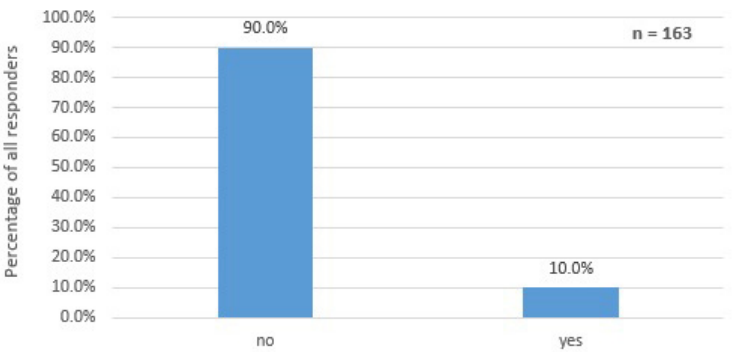
respondents consider themselves regular alcohol drinkers (Figure 4a). 90% of the respondents declared that the Covid-19 pandemic had not increased their consumption of alcohol (Figure 4b). Three respondents (1.8%) provided no answer this question.

Figure 4a. Drinking behavior



Source: Own elaboration.

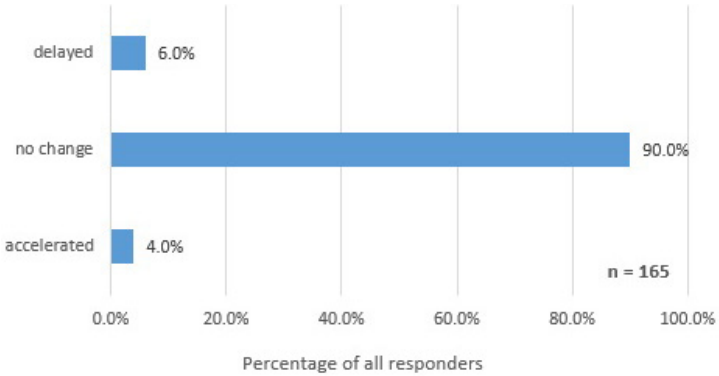
Figure 4b. Impact of Covid-19 pandemic on drinking



Source: Own elaboration.

When asked about the impact of the Covid-19 pandemic on their study progress, 90% of the respondents expect no change (Figure 5). 6% of them believe that the pandemic will delay their studies, while 4% expect an acceleration.

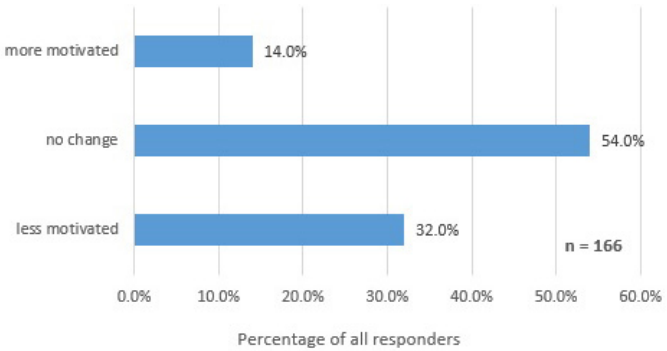
Figure 5. Impact of Covid-19 pandemic on study progress



Source: Own elaboration.

The motivation to study improved in 14 out of all the respondents, and it became reduced in 32% of them (Figure 6). Slightly more than half (54%) of the respondents (54%) declare that their motivation to study had not been changed by the pandemic.

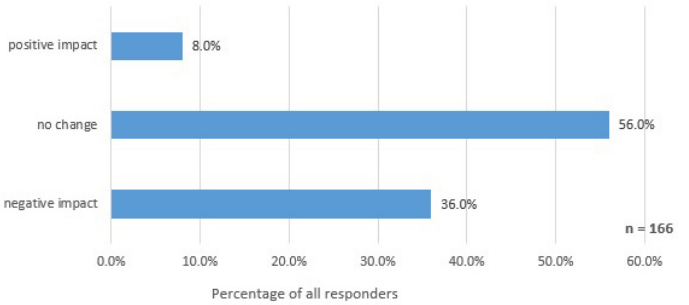
Figure 6. Impact of Covid-19 pandemic on motivation to study



Source: Own elaboration.

36% of all the respondents claim that the Covid-19 pandemic has resulted in a deterioration of their financial situation, while only 8% claim that their financial situation has improved (Figure 7).

Figure 7. Impact of Covid-19 pandemic on financial situation of students.



Source: Own elaboration.

Answers to the question on what students hated the most about the Covid-19 pandemic were used to create a word cloud (Figure 8). The top 10 words most frequently occurring in the answers were: 'isolation,' 'people,' 'mask,''lack,''fear,''stress,''restrictions,''possibilities,''loneliness.' and 'lockdown'.

Figure 8. Negative associations with the Covid-19 pandemic

Source: Own elaboration.

Answers to the question on what students loved the most about the Covid-19 pandemic were also used to create a word cloud (Figure 9). The top 10 words most frequently occurring in the answers were: 'time,' 'home,' 'family,' 'people,' 'distance learning,' 'remote learning,' 'remote class,' 'possibility,' 'free time,' and 'remote work'.

Figure 9. Positive associations with the Covid-19 pandemic

Source: Own elaboration.

Discussion

The self-studies undertaken can help evaluate interventions and develop prevention programs to improve the health behavior of adolescents. Knowledge of how the SARS-CoV-2 pandemic has affected smoking and drinking patterns provides public authorities with useful data to adjust prevention and health promotion efforts to better target the needs of young people [21–24].

Open-access studies and results of the research on COVID-19 can be found everywhere, and they address not only the infection itself, but also the impact on society and interpersonal relationships. Isolation has had

a huge impact on the psyche of the society [25–28]. Uncertainty, stress, restrictions on social contact, isolation, fear for one's own health and the health of those closest to one's loved ones, and even thoughts of loss of income are all very traumatic experiences. Relationships with others are very important for all people, as they help better cope with stress, prevent depression and other mental disorders [29–32]. Having friends, family and spending time with each other makes people feel happier and healthier. Being at peace with their self, when they do not have to pretend to be someone else, someone they are not, they can form lasting and healthy relationships with others, which is good for mental health. The pandemic has cut these relationships loose, and introduced physical and mental distance. Even when relationships with other people are maintained, they are often limited to 'likes' on social media, which are used to create an idealized self-image. This in no way streamlines building relationships, growing close to each other, or getting support, and it neither increases people's willingness to help others. The way of functioning has also changed, as society mostly started to – and still continues to – work remotely, and life has mostly moved to the Internet. Moreover, it will stay that way, as it is not only the younger generation that is addicted to cell phones or computers, and contact through social networks is proving more convenient than meeting in the real world. People have also distanced themselves from those around them by greeting each other without shaking hands or talking at a distance [33–36]. A total of 166 students of the Calisia University participated in the survey. The survey comprised 16 questions and it could be filled out online, using the Survey Monkey survey system, where the purpose of the survey was also explained. The largest number of respondents were people between 20 to 29 years old (126 people – 75.9%). The majority were women (115 people – 69.3%). Importantly, 53 respondents (31.9%) had been infected with the virus once, and 17 respondents (10.2%) had struggled with the virus more than once.

Dr Amy Dawel of the Australian National University of Canberra conducted the study in which it was found that an increase in the deterioration of people's mental health was associated with disruption of daily mirth and

social and work life, in addition to financial uncertainty. The greatest impact of the pandemic was felt by people who were infected and/or hospitalized, and also the caregivers of these people felt the effects of the pandemic. The most interesting fact, however, is that according to Dr Amy Dawel those who encountered the disease did not complain of a deterioration in their mental health, and there was no negative impact on their well-being. Based on the study, it can be concluded that the COVID-19 pandemic did not result in the increase of the consumption of tobacco products (90%), and that alcohol consumption neither increased (90%) during the pandemic [37, 38]. The preliminary report of the scientific study conducted by Dr Margaret Dragan shows that many people struggle with the symptoms of psychopathology, constant anxiety, lowered mood and chronic feelings of tension. The presence of these symptoms promotes negative thinking. Based on the survey, it can be concluded that motivation to learn during the pandemic did not decrease (54%) [39]. A person's attitudes towards health reveal beliefs and attitudes towards values related to one's own health, but also to the health of others. In the literature on public health, health psychology, sociology and health promotion, studies and research on attitudes toward health are very selective. The most extensive coverage of this topic has been provided by Maciej Demel. He is the founder of Polish health pedagogy, and in his books he has described attitudes towards one's own health and that of others. According to the author, the picture of a holistic and mature attitude to health consists primarily in a rational and emotionally balanced attitude to disease, but also to disability and death, and a sense of responsibility for health and shared responsibility for public health, in addition to a willingness and ability to rush to the aid of others [40]. The attitudes described by the author included the attitudes of, among other things, brutality, onlookers, Samaritans and desensitization, which relate to the health and illnesses of others. The attitudes of people to health and disease presented by M. Demel range from irrationally over-sensitive to reckless, exaggerating their condition. The attitudes of drug addiction, hysteria, hypochondria, carcinophobia, and even terrorism have also been described by the author. The survey shows that the overall health situation of respondents did not change (69%), and only a small

group (21%) declared there was a threat to their overall health, and there were also respondents (10%) whose health situation improved [40]. Personal resources are required to maintain an adequate mental, physical and social condition. Therefore, it is necessary to develop appropriate mechanisms to help adapt to the changing environment. It also turns out to be important to take care of the physical and mental potential that allows the development of human activity. These mechanisms are a kind of expression of balance and harmony of physical, mental and social aspects of a person. Socio-economic factors have the greatest impact on the maintenance of person's well-being in today's world. The factors include: income, social status, education level, social support. Lifestyle, which may or may not be conducive to health, also depends on the above listed factors [41, 42]. However, in order for lifestyle to be conducive, it must be health-promoting in nature. In this regard, it can be said that low levels of education and poverty are the cause of a kind of health inequality. Studies show that people with low socio-health status have poorer health, engage in risky behavior much more often, and have more difficult access to health care institutions and facilities. Also, a significant role is played by social support, which is considered a significant factor in shaping positive health behavior and counteracting the pathogenic impact of potential stressors [43, 44].

Conclusion

Based on the study, it can be indisputably concluded that the COVID-19 pandemic had a significant impact on the students of the Calisia University. Some of the students were affected by the disease, which, consequently, impacted their physical condition. No significant increase in anti-health behavior was observed in students during the pandemic. Respondents claimed that the COVID-19 pandemic had a significant influence on their mental state and definitely worsened their economic conditions.

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