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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).

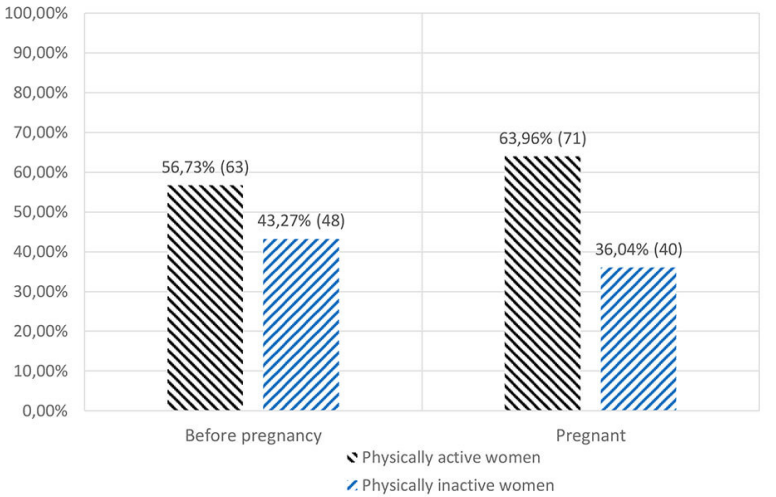

Figure 1. Physical activity by women before and during pregnancy

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 chi^2=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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