

Pro-health behaviors of women in given trimesters of pregnancy – a preliminary study

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SUMMARY

Aim. The assessment of the influence of women's pro-health behaviors on the course of pregnancy and labor.

Materials and methods. The pilot study was conducted in a group 20 pregnant women, where the pregnancy was normal and uneventful. The subjects included 10 women who regularly, twice a week, participated in classes with a physiotherapist throughout pregnancy. The control group consisted of physically inactive women. The study was based on our own survey questionnaire and the standardized Pregnancy Physical Activity Questionnaire (PPAQ).

Results. In the physically active women, the weight gain was 13.2 kg (± 1.2 kg), and in the women who remained inactive, it reached 19.7 kg (± 1.4 kg). Lower back pain was noted in all the women in the control group and in 50% of the subjects. In the studied group, 100% of the women had a spontaneous delivery, with episiotomy performed in 30% of the cases, whereas 60% of the controls had a Caesarean section.

Conclusions. Prenatal physical activity supervised by a physiotherapist and individually tailored to suit the abilities of a pregnant woman and adjusted to the week of gestation, women's physical condition, intensity of physical activity before pregnancy, and general well-being significantly contribute to the health of both the mother and fetus.

Key words: pregnancy; pro-health behaviors; physical activity

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INTRODUCTION

Appropriate pro-health behaviors during pregnancy are necessary for its normal and uneventful course. Prior to conception, physical activity, proper diet and supplementation of vitamins, micro- and macroelements should be essential components of education and women's health promotion. When pregnant, a woman should absolutely abstain from drinking alcohol, smoking tobacco or taking psychoactive substances. Early beginning of prenatal care and taking part in antenatal classes are additional means of effectively eliminating the risk of potential pregnancy complications [1,6].

Physical activity in pregnancy (prenatal exercise, kinesistimulation) is one of the most important elements of pro-health behaviors. It positively affects both maternal and fetal health. Comprehensive care, which provides a woman with detailed information on safe exercise in pregnancy, prepares her for the labor effort, and allows quick recovery following childbirth. In addition, collaboration between a doctor, midwife and physiotherapist ensures the sense of safety in pregnancy and labor [1,8].

AIM

The objective of the research was to assess the influence of regular, personalized physical activity guided by a physiotherapist on the course of pregnancy, labor and postpartum recovery, and to evaluate the women's awareness of pro-health behaviors and comprehensive prenatal care.

MATERIAL AND METHODS

Our research project was conducted in a group of 20 women with normal pregnancy. The studied group included 10 women at the age of 18–40 who were physically active (minimum 6 months before pregnancy and during pregnancy, at the frequency ≥ 3 h per week), and with BMI ranging from 19.8 to 26 kg/m². The exclusion criteria were the lack of the informed consent or its withdrawal as the study was in progress, not observing the planned dates and exercise schedule, weight gain of more than 16 kg during pregnancy, professional training (> 8 h/week), the occurrence of systemic disorders, feeling unwell during exercise, and pregnancy concomitant diseases. The control group comprised 10 women aged 18–40 who were physically inactive (< 2 h/week), with BMI ranging from 19.8 to 26 kg/m². Women were excluded from the study if they gave no informed consent or withdrew it as the study was in progress, or had systemic disorders and pregnancy concomitant diseases. Eighty percent of the subjects were multiparas (7 in the second pregnancy, 1 in the third pregnancy); in the control group, 70% of the women were multiparas (6 in the second pregnancy, 1 in the third pregnancy). Participation in the study was fully voluntary. The research was conducted after obtaining the approval of the Ethics Committee of the Medical University of Silesia in Katowice No KNW/0022/KBI/88/17 as well as consent from every participant and each respective obstetrician managing the pregnancy.

The study was based on our own survey questionnaire, which included questions about the course of pregnancy, labor, possible pregnancy complaints, physical activity (its form, duration, intensity), psychophysical well-being, and other pro-health behaviors during pregnancy, as well as the Pregnancy Physical Activity Questionnaire (PPAQ) to assess activity of the pregnant women. The PPAQ concerned household routines, care for children, professional career, sports and physical exercise, commuting to work, and occupations that did not demand motor activity.

The classes took place twice a week throughout pregnancy, and their intensity was moderate and individually adjusted to every participant. The therapist made a detailed assessment of every studied individual, took her history, evaluated her locomotor system and her previous physical activity. This allowed us to prepare an individual course of exercise, adju-

sted to the abilities and possible limitations of the pregnant women. Each session consisted of a general-fitness warm-up, which lasted 10 minutes, and the main, proper workout lasting 40 minutes. The most important elements of the main part included the activation and control of deep muscles (primarily the transversus abdominis), strengthening particular muscle groups in the preparation for labor and baby care (the muscles of the shoulder girdle, quadriceps femoris, soleus, triceps surae, the back muscles and the gluteals), exercises mobilizing and decompressing the pelvis and hip joints, exercises correcting the body posture, and also antithrombotic and antiedematous exercises. The final part, lasting 10 minutes, consisted in static stretching (of the pectoral muscles, hamstrings, biceps femoris, hip adductors and iliopsoas), respiratory exercises (mostly with the costal breathing pattern), and relaxation exercises.

Moreover, we introduced working with a mirror and the Stabilizer Pressure BioFeedback, which gave the participants a chance to self-control and check the precision of their performance. Detailed instruction from the physiotherapist ensured the right training technique. During the sessions, the participants used Swiss balls, light dumbbells of 0.5 kg and resistance stretch bands.

The women who took part in the classes had their arterial blood pressure monitored (before and after training), and their pulse measured. Before every session, they were asked several questions about their psychophysical well-being over the last week. The classes were conducted in accordance with the rules of regularity, the ability to do exercises correctly, the awareness of the purpose, and personalized choice of exercises with regard to each pregnant woman's ability. The exercises were selected based on the talk test, in which exercises are performed as long as it is possible to speak while doing them. The positions assumed during the workout included mainly the lying lateral position, standing, sitting on a ball, sitting with the back support, kneeling on all fours, lying and reclining. Attention was focused on not increasing the abdominal pressure and thus eliminating the rectus abdominis exercises; instead, we concentrated on the transversus abdominis, which plays a role in stabilizing the pelvis.

In accordance with the recommendations of the American College of Obstetricians and Gynecologists, care was taken to ensure proper hydration, avoid overheating, and adjust exercises to individual needs and abilities.

RESULTS

The morphological features are demonstrated in Table 1.

The greatest benefit of physical activity for the subjects was their preparation for labor and mood improvement (Fig.1.).

The forms of physical activity selected by the pregnant women in individual trimesters of pregnancy are presented in Figure 2.

Figure 3 demonstrates the occurrence of pregnancy complaints in the groups of active and inactive pregnant women.

In the physically active women, the average weight gain was 13.2 kg (± 1.2 kg), while in the inactive women it amounted to the average of 19.7kg (± 1.4 kg). Ninety percent of the women from the studied group consulted a nutritionist. In the control group, only one person consulted a nutritionist due to anemia in the 2nd trimester. All the women, both the subjects and controls, abstained from alcohol and cigarettes.

Lower back pain, or lumbago, is a common complaint of pregnancy. In the control group,

lower back pain occurred in all the women, and in the subjects, in 50% of the cases. The women who regularly exercised indicated the transversus abdominis activation and kinesiology taping as the most effective strategies of pain relief.

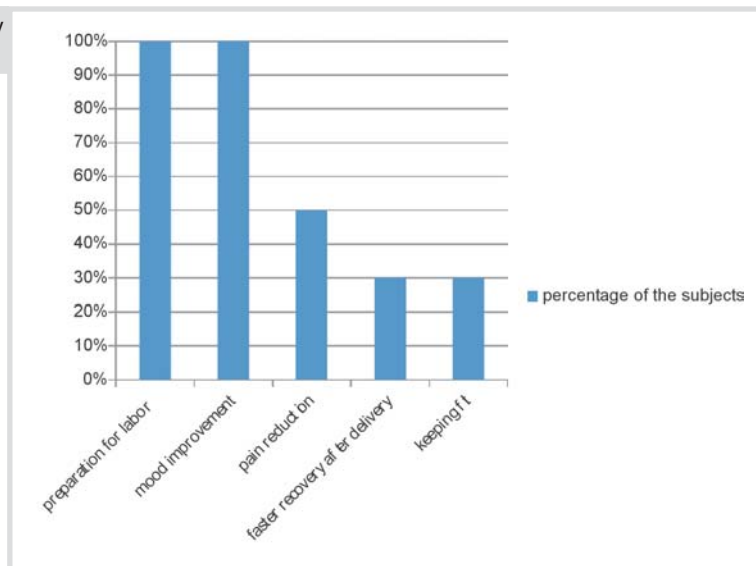
In the studied group, 100% of the women had a spontaneous delivery, with episiotomy in 30% of the cases, and rated labor effort as 5–6 points on a 0–10 scale. None of the studied women had drugs applied during labor. In the control group, 40% of the women had a spontaneous delivery with episiotomy and pharmacological support in all cases, and labor effort was rated as 9–10 points on a 0–10 scale. The majority of women (60%) from the control group had a Caesarean section. Labor duration in the physically active women was 2–3 hours shorter compared to the women from the control group.

Diastasis recti abdominis occurred in 30% of the subjects and 60% of the controls. The methods that the studied group representatives found effective in this respect included perso-

Tab. 1. Characteristics of the subjects and controls

Variable	Group	N	X	Me	Min	Max	SD
Age [years]	Subjects	10	27,7	28	22	32	3,3
	Controls	10	30,2	30	25	35	2,9
Body weight [kg]	Subjects	10	58,4	59	53	63	3,2
	Controls	10	56,7	55	53	64	3,9
Height [cm]	Subjects	10	170	170	162	178	4,6
	Controls	10	168	166,5	162	178	5,6
BMI [kg/m ²]	Subjects	10	20,19478	20,18612	19,84127	20,76125	0,307868
	Controls	10	20,06824	20,00863	19,83471	20,57613	0,225348

Fig. 1. Benefits of physical activity in the studied group



nal therapeutic training with the physiotherapist during pregnancy.

DISCUSSION

Most international medical societies recommend physical activity during normal pregnancy. When it comes to the research on physical activity in pregnant women, the literature abounds in many different methodological approaches. In her study, Sass [9] emphasizes the importance of conducting prospective studies assessing pro-health behaviors of pregnant women by means of objective research methods. In the literature, there is no data concerning physical activity during complicated pregnancy. The scientific research draws attention to the passive approach of pregnant women to their lifestyle during pregnancy, which has been confirmed by the present study [7,9].

The Royal College of Obstetricians and Gynaecologists suggests starting exercise with 15 minutes 3 times a week, and proceeding to

30 minutes every day. Physically active women are advised to continue their workout, possibly with controlling its intensity and frequency [10,11].

In the light of the literature, the best tool designed to subjectively evaluate physical activity is the Pregnancy Physical Activity Questionnaire (PPAQ). It enables complete assessment of physical activity in different spheres of daily life [12].

Over the recent years, pregnant women have been offered a definitely wider range of physical activity forms. The American College of Obstetricians and Gynecologists 2015 (confirmed in 2017) does not only approve of swimming, strolling, moderate aerobics, stationary cycling, yoga and Pilates, but also accepts running and strength training, obviously after consulting it with a doctor, as long as it is not a new form of physical activity for a pregnant woman. According to the present study, swimming and taking strolls are the most popular activities, yet the woman who had trained run-

Fig. 2. Choice of activity in individual trimesters of pregnancy in the studied group

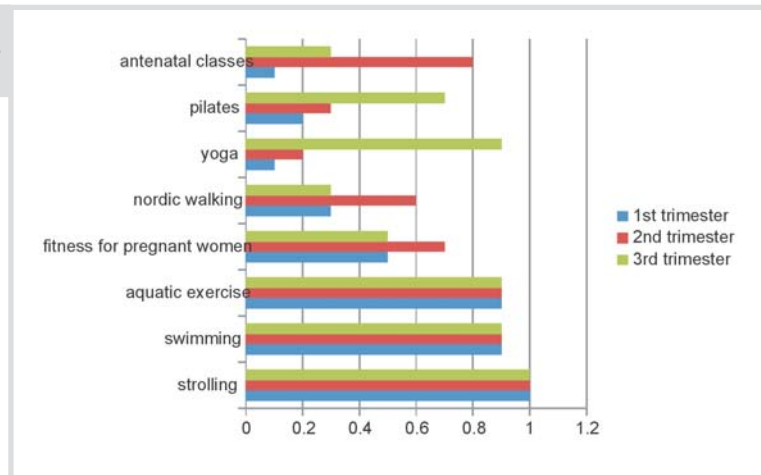
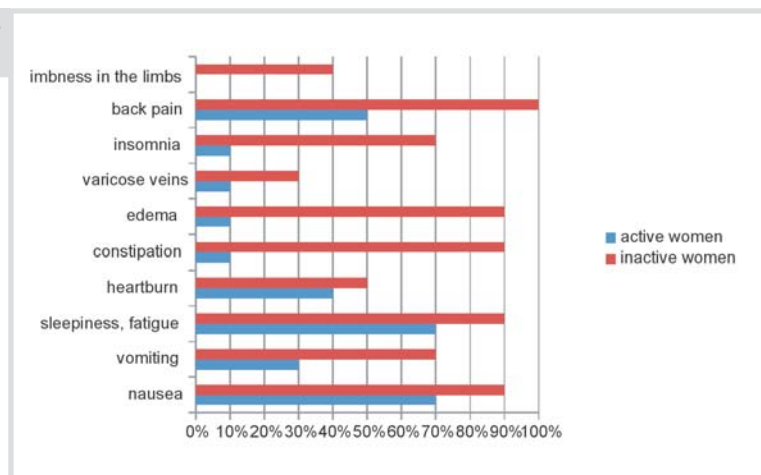


Fig. 3. Pregnancy complaints in the subjects and controls



ning before pregnancy could continue doing so, only with modification of the workout intensity. However, the American College of Sports Medicine 2014 discourages women from undertaking strength training. The broadly understood physical activity for pregnant women needs to be put on more systematic grounds [13,14].

Complaints of pregnancy (vomiting, nausea, fatigue, heartburn, constipation, insomnia, edema, varicose veins or lower back pain) are frequently reasons why women cease to perform exercises. In the light of the literature, physical activity is one of the means of reducing the adverse symptoms [15]. Our study confirms this relationship; the inactive women complained of the pregnancy symptoms more frequently.

The Polish Society of Gynecologists and Obstetricians recommends that women with the correct body mass before pregnancy (BMI 19.8–26 kg/m²) should gain 11.5–16 kg in the course of pregnancy. The literature data notes that inactive women put on weight 5 kg more [16,17]. This has been confirmed by the findings of our research.

The mechanism of the lumbo-pelvic-hip complex stability is disturbed during pregnancy, causing excessive myofascial tension in this area. The center of gravity moves forward, the abdominal muscles are stretched, the back muscles get weaker, and the body mass increases, all of which contribute to the occurrence of lower back pain in pregnant women. The ability to correctly activate the transversus abdominis and making it an automatic reaction in all activities of daily living is an excellent tool for minimizing spine overload. Another important element is the right function of the diaphragm, which is responsible, among others, for maintaining the right pressure in the abdominal cavity. In her research, Rogala draws attention to the fact that common activities, such as walking or swimming, do not eliminate lower back pain in pregnant women when performed once a week [18]. The problem seems to lie in the wrong exercise form and frequency. The author confirms that exercise supervised by a physiotherapist brought about mood improvement in 72% of the studied individuals, a fact also reflected in our own research [18–21].

An essential point in prenatal training is exercises of the pelvic floor muscles. Prenatal training primarily involves coordinating the activation of the pelvic floor musculature with breathing, the right body posture, and tension of other deep muscles, such as the transversus

abdominis. However, it is worth emphasizing that the pelvic floor training during pregnancy mostly involves learning how to release and relax these muscles. The literature often draws attention to the matter of proper education of women on how to activate the pelvic floor. The available literature also describes the three-step activation of the pelvic floor muscles, which makes it possible to tense particular muscle fibers in order to obtain the fullest possible engagement of all its layers [22].

Regular physical activity has a significant impact on the very course of pregnancy, full term delivery, spontaneous delivery, shortening labor by 2–3 hours, lower levels of anxiety and stress before labor, and shorter hospitalization, which we also noted in our study in the group of physically active women. In the group of inactive women, there was a considerable number of pregnancies terminated by a Caesarean section [23–29].

Diastasis recti abdominis (DRA) is a functional and structural disorder occurring in the area of the front abdominal wall. Due to the changes that pregnancy causes to the structure of muscles and fascia, pregnant women are predisposed to the occurrence of this dysfunction. This correlation has also been noted in the present study. It is worth noting that this disorder does not only affect the rectus abdominis muscle, but also the breathing pattern and body posture. Diastasis recti occurs in every pregnant woman, usually after the 35th week of gestation, and most of them completely recover within one year after delivery. There are a lot of therapeutic methods capable of minimizing the risk of significant diastasis recti. One of them is kinesiology taping [22,30]. In our research project, the studied women used the method of kinesiology taping as prevention of diastasis recti abdominis.

CONCLUSIONS

1. Physical activity in pregnancy positively affects its course, labor, and recovery after delivery.
2. Physical activity during pregnancy, supervised by a physiotherapist and tailored to suit individual abilities of a pregnant woman, is an essential element of maintaining maternal and fetal health.
3. Complex care provided by an obstetrician, midwife, and physiotherapist is indicated in educational programs for pregnant women.

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