

**ORIGINAL ARTICLE / PRACA ORYGINALNA**Dorota Rogala<sup>1</sup>, Aleksandra Mazur<sup>1,2</sup>, Mariola Maślińska<sup>1,2</sup>**THE COOPERATION OF A PREGNANT WOMEN WITH A PHYSICIAN AND A MIDWIFE  
AND SELECTED ASPECTS OF THE COURSE OF CHILDBIRTH**

WSPÓŁPRACA CIĘŻARNEJ Z LEKARZEM I POŁOŻNĄ A WYBRANE ASPEKTY PRZEBIEGU PORODU

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**Summary**

**Aim.** The research was mainly aimed at assessing the relation between the cooperation of pregnant women with a physician and a midwife during pregnancy and selected aspects of the course of childbirth.

**Material.** 234 women in 38th – 42nd week of low-risk pregnancy were included in this research. They gave live births, differed in age, education, marital status, place of residence, number of pregnancies, and deliveries.

**Methods.** The research was performed with the use of own survey and the data collected from the documentation of pregnancy and hospital record. The following were analysed amongst the indicators of the course of childbirth: childbirth duration time, own activity level during childbirth, the use of painkillers, trauma of genital tract sustained during

childbirth, newborn child's condition and childbirth conclusion method.

The following were analysed amongst the indicators of the cooperation with a physician and a midwife during pregnancy: the first medical consultation, the number of visits in pregnancy, observance of recommendation of staff.

**Results and conclusions.** 1. The conducted research did not prove any correlation between the cooperation of pregnant women with a physician and a midwife during pregnancy and selected aspects of the course of childbirth. 2. The women who attended the antenatal classes were more often to under medical care as soon as in the first trimester, regularly attended the appointed consultations, and followed medical recommendations.

**Streszczenie**

**Cel.** Głównym celem podjętych badań była ocena związku między współpracą ciężarnej z lekarzem i położną w okresie ciąży a wybranymi aspektami przebiegu porodu.

**Materiał.** Badaniami objęto 234 kobiety w 38-42 tygodniu ciąży o prawidłowym przebiegu, które urodziły żywy płód, różniące się między sobą wiekiem, wykształceniem, stanem cywilnym, miejscem zamieszkania, ilością ciąży i przebytych porodów.

**Metody.** Badania przeprowadzono za pomocą ankiety osobowej i zebranych danych z dokumentacji okresu ciąży i dokumentacji szpitalnej. Wśród wskaźników przebiegu porodu analizowano: czas trwania porodu, poziom aktywności własnej podczas porodu, korzystanie ze środków

przeciwbólowych, obrażenia dróg rodnych w czasie porodu, stan noworodka i sposób ukończenia porodu. Wśród wskaźników współpracy analizowano moment zgłoszenia się ciężarnej do lekarza, ilość wizyt w ciąży, przestrzeganie zaleceń personelu.

**Wyniki i wnioski.** 1. Przeprowadzone badania nie wykazały zależności między współpracą ciężarnej z lekarzem i położną w okresie ciąży a wybranymi aspektami przebiegu porodu. 2. Kobiety po przygotowaniu w szkole rodzenia częściej były pod opieką lekarza już w pierwszym trymestrze ciąży, chodziły na wyznaczone wizyty regularnie, przestrzegały zaleceń lekarskich.

**Key words:** cooperation, medical care, obstetrician, pregnant women, childbirth

**Słowa kluczowe:** współpraca, opieka medyczna, lekarz położnik, ciężarna, poród

## INTRODUCTION

Perinatal care is a multidisciplinary activity, which aims to provide medical care with health promotion and therapeutic treatments during preconception period, pregnancy, childbirth and the postpartum period, including the mother, fetus and newborn. Deaths of mothers during pregnancy, childbirth and the postpartum period together with the perinatal mortality of fetuses and newborns are the indicators of living standards and the development of civilization of society, including the quality of perinatal care. Hemorrhages, infections, gestosis and hypertension are the causes of maternal deaths and prematurity, congenital abnormalities, intrauterine infection and perinatal injuries are the causes of stillbirths and newborns' deaths. Thanks to the introduction of the Perinatal Care Improvement Programme in Poland, the perinatal mortality decreased by half [1, 2, 3].

The system principles of obstetric and neonatal care are similar in each of the European countries, however its organization differs. In order to enable comparison of the exchanged information between the countries, programs were developed allowing mutual comparison of perinatal care systems operating in different European regions and this enables to determine the optimal solutions for clinicians and health care organizers (MOSAIC programs, EuroNeoNet, OBSQUID, NEOCARE, EPIPAGE). The most comprehensive report of pregnancy and childbirth from the 25 countries of the European Union and Norway is published by the Euro-PERISTAT European Report on perinatal health (European Perinatal Health Report) [4].

Some Polish centers are involved in projects of EuroNeoNet and MOSAIC, whose task is the analysis and evaluation of each system of perinatal care, showing its positive and negative aspects, and the optimal system for the particular geographic, economic, and legislative conditions.

Although there are different models of antenatal care in the world, there is consensus that a pregnant woman should receive care already in the first trimester of pregnancy [5, 6, 7, 8, 9]. In Poland, the highest risk of commencing antenatal care late and receiving inadequate care is the most common among women under the age of 20 and after 34 years of age, unmarried, with lower education, unemployed, having fourth or subsequent child [10, 11].

Also, there is an increase in the total number of women in care, including starting care early on in pregnancy. There is also an increase of the number of visits during pregnancy [10, 11, 12]. The cross-sectional report: 'Women's Health ...' points out the gaps in preventive care of pregnant women, especially during the first trimester of pregnancy, inadequate early booking of women and limited access to specialized tests. Three-tier system of perinatal care is not fully functioning everywhere, the lifestyle of some pregnant women do not meet the healthy requirements [3].

Making the population of childbearing age aware of existence a variety of factors limiting fertility such as age, environmental factors, stimulants (nicotine, drugs, alcohol), sexually transmitted diseases, complications of abortion and dissemination of schools for prospective parents with regard to knowledge of pregnancy, childbirth and preconception health were included in the recommendations of PTG and UNFPA [13], PTG recommendations regarding antenatal care [14] and the work of Polish authors [15].

## AIM OF RESEARCH

To determining whether there is a correlation between the level of cooperation of the pregnant woman with a doctor and a midwife and selected aspects of the course of labour.

## MATERIAL

The study involved 234 women between 38 and 42 weeks of low-risk pregnancy, who gave birth to live babies in maternity wards of Multidisciplinary City Hospital, named of E. Warmiński in Bydgoszcz.

The age of respondents ranged between 17 and 46 years, with a mean equal to 28.9 years and a standard deviation of 5.1 years. Among the 234 women, the most women had higher education - 50%, at least primary / lower secondary - 5%; professional education - 10%, secondary / college - 35%. 23% of the women were unmarried, and 77% were married. The most women lived in cities - 79% and 21% in the villages. Half of the women were primigravidae - 50%, and also for 50% of the women it was second or subsequent pregnancy. Women giving birth for the first time (58.5%) predominated in the group and 41.5% of women were multiparous. 84 women (35.8%) attended regular antenatal classes.

## METHODS

The study used a questionnaire providing data on demographics, antenatal classes' attendance and contacts of pregnant women with medical personnel (The consent of the Bioethics Committee at the Medical College Nicolaus Copernicus University in Toruń).

Data about the first visit to the doctor, and the number of visits was obtained from the individual maternity notes and the data on the course of the labour came from the hospital records.

The indicators of the progress of labor were analyzed according to: the duration of labour, the level of own activity during labor (the use of ladders, mattresses, bean bags, immersion), the use of analgesics (Dolcontral, epidural), trauma to the reproductive tract during birth (episiotomy, tears of perineum and perineum mucosa), the condition of the newborn (according to the scale of Apgar and pH of the umbilical cord), mode of delivery (normal vaginal delivery, forceps, elective and emergency cesarean section).

The criteria for the division of women into two groups (good cooperation / poor cooperation) were: the timing of commencing antenatal care, the number of antenatal visits, and the attitude of women to the recommendations of the staff. The good cooperation was considered when a woman first came to the doctor not later than 10 weeks of gestation, had a minimum of 6 antenatal visits and complied with the doctor's recommendations during pregnancy. If any of these criteria were not met, the cooperation between the woman and the doctor and midwife were considered as poor. Women with low-risk pregnancy were classified in the study, thus a situation in which a woman would be able to use the outpatient care was eliminated ('high risk' pregnancy = stay in the hospital).

The absolute numbers, percentages and mean values – the arithmetic mean were used in the statistical calculations. Parametric and nonparametric significance tests were used: the parametric test for two indicators of structures also known as test for the two fractions, the Z-test based on the normal distribution, the non-parametric test of independence 'chi-square'.

The difference of  $p < 0.05$  was considered statistically significant, in opposite cases – ns (not significant).

## RESULTS

Among the 234 women, 137 women met the requirements of 'good cooperation' by the above criteria and 95 – the 'poor cooperation'. The lack of data on care for two women caused the small differences in study groups presented below.

A statistical study of the relationship between the level of cooperation of the pregnant women with the staff and selected indicators of the course of childbirth are presented in the following tables.

Table I. *Duration of labour, depending on the level of cooperation with medical personnel (N = 161 – only normal vaginal delivery and forceps delivery)*

Tabela I. *Czas trwania porodu w zależności od poziomu współpracy z personelem (N=161 – tylko poród naturalny i kleszczowy)*

		Cooperation Współpraca		z	p
		Good Dobra	Poor Zła		
Period I Okres I	n	92	69		
	Mean Średnia	299.6	265.2	1.45	0.14
	SD	187.2	136.6		
Period II Okres II	n	92	69		
	Mean Średnia	22.8	16.6	1.56	0.12
	SD	33.1	16.2		
Period III Okres III	n	91	68		
	Mean Średnia	8.51	6.93	1.48	0.14
	SD	8.78	4.40		

Z-test did not detect any difference between the average labour time in the compared groups – calculated values of z-statistics are smaller than the critical value 1.96,  $p > 0.05$ .

Table II. *Women own activity depending on the level of cooperation with medical personnel (N = 195 – only normal vaginal delivery, forceps, emergency cesarean section)*

Tabela II. *Aktywność własna pacjentek w zależności od poziomu współpracy z personelem (N=195 – tylko poród naturalny, kleszczowy, c.c. ze wskazaniami nagłymi)*

		Activity Aktywność		Total Razem
		Yes Tak	No Nie	
Cooperation Współpraca	Good Dobra	82	28	110
	Poor Zła	57	28	85
	Total Razem	139	56	195

Test 'chi-square' did not detect any dependencies:  $\chi^2=1.31 < 3.84 = \chi^2_{kr}$ ,  $p=0.25$  (ns).

Table III. The use of painkillers, depending on the level of cooperation with medical personnel ( $N = 193$  - only normal vaginal delivery, forceps, emergency cesarean section)

Tabela III. Stosowanie środków przeciwbólowych w zależności od poziomu współpracy z personelem ( $N=193$  – tylko poród naturalny, kleszczowy, c.c. ze wskazań nagłych)

		The use of painkillers Stosowanie środków p/bólowych		Total Razem
		Yes Tak	No Nie	
Cooperation Współpraca	Good Dobra	57	51	108
	Poor Zła	47	38	85
		Total Razem	104	89
				193

Test ‘chi-square’ did not detect any dependencies:

$$\chi^2=0.12<3.84=\chi^2_{kr}, p=0.73 (ns).$$

Table IV. Trauma of the genital tract, depending on the level of cooperation with medical personnel ( $N = 161$  - only normal vaginal delivery, forceps delivery)

Tabela IV. Obrażenia dróg rodnych w zależności od poziomu współpracy z personelem ( $N=161$  – tylko poród naturalny i kleszczowy)

		Trauma of the genital tract Obrażenia dróg rodnych		Total Razem
		Yes Tak	No Nie	
Cooperation Współpraca	Good Dobra	82	10	92
	Poor Zła	57	12	69
		Total Razem	139	22
				161

Test ‘chi-squared’ not detected any dependencies of the correlation:  $\chi^2=1.42<3.84=\chi^2_{kr}, p=0.23 (ns)$ .

The pH of the umbilical cord and Apgar score was used to assess the newborn condition, and it was taken into account when determining the relationship between the cooperation with the staff and the newborn condition.

Table V. pH of the umbilical cord, depending on the degree of cooperation with the medical personnel ( $N = 232$ )

Tabela V. pH z pępowiny w zależności od poziomu współpracy z personelem ( $N=232$ )

		Cooperation Współpraca	
		Good Dobra	Poor Zła
pH	n	137	95
	Mean Średnia	7.33	7.33
	SD	0.08	0.07

No difference between the mean values of pH in the compared groups.

Table VI. The Apgar score, depending on the level of cooperation with medical personnel ( $N = 229$  – no scoring of newborn under 6 points)

Tabela VI. Punktacja Apgar w zależności od poziomu współpracy z personelem ( $N=229$  – brak punktacji dzieci poniżej 6 pkt)

		Apgar score Skala Apgar					Total Razem
		6	7	8	9	10	
Cooperation Współpraca	Good Dobra	3	6	13	42	70	134
	Poor Zła	3	4	8	38	42	95
	Total Razem	6	10	21	80	112	229

Test ‘chi-squared’ not detected any dependencies of the correlation:  $\chi^2=2.21<9.49=\chi^2_{kr}, k=4, p=0.70 (ns)$ .

Table VII. Mode of delivery depending on the level of cooperation with medical personnel ( $N = 232$ )

Tabela VII. Sposób ukończenia porodu w zależności od poziomu współpracy z personelem ( $N=232$ )

		Mode of delivery Sposób ukończenia porodu				Total Razem
		Normal vaginal birth Naturalny	Forceps Kleszcze	Elective caesarean section Elektywne cesarskie	Emergency cesarean section Nagle cięcie cesarskie	
Cooperation Współpraca	Good Dobra	82	10	27	18	137
	Poor Zła	65	4	10	16	95
	Total Razem	147	14	37	34	232

Test ‘chi-squared’ not detected any dependencies of the correlation:  $\chi^2=5.02<7.81=\chi^2_{kr}, k=3, p=0.17 (ns)$ .

Finally, the results were analyzed to determine whether women taking antenatal classes were characterized by a higher level of cooperation with the staff during pregnancy than those who did not go attend any classes.

Table VIII. *Cooperation with medical personnel and participate in antenatal classes (N = 232)*

Tabela VIII. *Współpraca z personelem a uczestnictwo w szkole rodzenia (N= 232)*

		Cooperation Współpraca		Total Razem
		Good Dobra	Poor Zła	
Antenatal classes Szkola rodzenia	Yes Tak	61	23	84
	No Nie	76	72	148
	Total Razem	137	95	232

Test 'chi-square' detected the relationship between participation in antenatal classes and cooperating with the medical personnel:  $\chi^2=10.02>3.84=\chi^2_{kr}$ ,  $k=1$ ,  $p<0.002^*$ .

This result was confirmed by the test for the two structure indicators - the percentage of women who have had a good cooperation with the personnel is significantly greater in the group of women participating in the antenatal classes:  $u=3.20>1.961=u_{kr}$ ,  $p<0.002^*$ .

## DISCUSSION

Available publications concerned mainly the relationship between the level of care and its effect on pregnancy, whereas there is no research examining the effects of prenatal care on the course of the childbirth. It is indicated that visiting a doctor early and a greater number of visits can be associated with a reduced risk of IUGR, and substandard care and neglect are the major cause of maternal deaths, especially when mother is 35 years old or older or in case of stillbirth [11, 12, 16].

Although in Poland women have free access to medical care during pregnancy, a group of women decide to use of private medical services hoping for better care. However, Wdowiak's study did not show any difference in the incidence of premature births, stillbirths and perinatal deaths between patients having the private antenatal care and those who have attended clinics having contract with the National Health Fund (NFZ). There were no differences in newborns' weights between these two types of care [17]. However, Carpenter's studies have shown a positive effect, like fewer cases of IUGR babies, while using a

private care, which was particularly evident among the village residents, with primary education and at the age of 19-25 years. The author suggests that it is associated with a higher level of services received in private clinics [11].

In the world literature, there is little research on the relationship between antenatal care and childbirth course. In the Wdowiak's studies, a significant difference in Apgar scores was demonstrated; newborns of mothers having 'private medical care' were born in better condition than those of mothers receiving care from NFZ [17].

The overseas studies indicate that the health systems in the world offering the continuity of care of the same team over a pregnant woman and a woman in labour, there is less frequent use of anesthesia during childbirth, a smaller amount of episiotomies, less early arrivals to hospitals, greater satisfaction of women, with the same numbers of women having stillbirths and newborns born in similar condition [18, 19]. Hatem analyzed 11 trials involving continuous antenatal, labour and postnatal care with more than 12 thousand women and found a smaller number of episiotomies, less frequent use of analgesia during labour and less instrumental births, with the same number of cesarean sections. A greater woman self-control during childbirth was also indicated [20].

Panaretto reported that the introduction of comprehensive care among indigenous peoples of Australia, including an increased number of visits during pregnancy, significantly improved perinatal outcomes [21].

On the other hand, Villar's studies have not confirmed the negative impact of the reduction in the frequency of visits during pregnancy on the health of the mother and child. It was found, however, that women expect frequent contact with the midwife and doctor, which translates into a higher level of their satisfaction [22].

Studies presented in this paper did not show that cooperation between a pregnant woman and a doctor was reflected in the course of labour (all analyzes showed no dependence -  $p>0.05$ , ns).

However, the study have shown that women who attend antenatal classes, often were under the care of a doctor in the first trimester of pregnancy, underwent regular antenatal check-ups and strictly complied with recommendations ( $p <0.002$ ). Similar results were obtained by Ćwiek in her study [23]. According to Banaszak-Żak, 29% of pregnant women admit to be compliant with the obstetrician recommendations, 64% follow them sometimes, and 7% did not apply them at all [24]. In this study, 7.6% of women admitted that they did not follow the doctor's instructions.

## CONCLUSIONS

1. The presented study found no relationship between correlation with a doctor and a midwife during pregnancy and: the duration of labour, the level of own activity during childbirth, the use of analgesics, the genital tract traumas, the condition of the newborn, the type of delivery.

2. Women after preparation at antenatal classes were more likely to be under the care of a doctor in the first trimester of pregnancy, attended designated visits regularly, and adhered to medical recommendations.

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