

## Characteristics of ambulance intervention for female patients in perinatal period.



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### ABSTRACT

**INTRODUCTION:** In pre-hospital conditions, the diagnosis of patients in the perinatal period is very limited. Emergency ambulance calls to pregnant women should only apply to emergency situations related to the risk of maternal and / or foetal life. The aim of the work is to draw a patient's profile in the perinatal period, to which the intervention team undertakes medical emergency.

**MATERIAL AND METHODS:** The study group consisted of 119 calls in 2018 selected from 12854 ambulance interventions in the operational area of central Poland. Data was obtained from medical records. The analysis was carried out using the Statisticaver program. 13.1. The threshold of  $\alpha=0.05$  was considered as the level of significance, however, significant results at the level of  $0.05 < p < 0.10$  were considered significant at the level of statistical tendency.

**RESULTS:** The median age in the group was 27 years (SD±8 years). The vast majority of cases (67.23%) were women without labor. The delivery was diagnosed in 27.73% of patients. The average pregnancy time was 27.5 weeks (SD±22). Most often, patients were intervened in the place of residence (84.87%), and the least frequently at work (2.52%). The increase in the number of calls was recorded in November and December. The most common reasons for the calls were childbirth and abdominal pain. The burden of medical history was found in 16 patients. Life parameters including the state of consciousness, respiratory and circulatory system were in the majority in the norm.

**CONCLUSIONS:** Emergency ambulance interventions for pregnant women are a low percentage of all calls and usually involve pain and bleeding from the genital tract. In most cases, the examined patients are in the third trimester of pregnancy, and their condition can be described as stable. Calls are usually made in the winter season, and the place of the event is the patient's own home. Further research, directed at the educational needs of pregnant women, is recommended.

**KEY WORDS:** childbirth, pregnancy, perinatal period, ambulance, emergency medical service.

## INTRODUCTION

The perinatal period is most often defined as the time covering the last trimester of pregnancy until the seventh day of life of a new-born. There are a number of complications and health risks that may occur at this time. The riskiest time for the foetus is in the first trimester of pregnancy. The closer to conception, the risk of foetal damage increases during its exposure to teratogenic factors [1].

The lifestyle of a woman and used drugs significantly increase the risk of complications. In women smoking large amounts of cigarettes, the risk of premature placental abruption increases by up to 65%, and the leading placenta up to 90% [2]. Drinking alcohol impairs the transport of amino acids and glucose in the placenta, which can lead to placental insufficiency and then even cause foetal death. In the case of taking some drugs, a pregnancy poisoning may occur, which in extreme cases may end with an eclampsia, which in turn may end with a permanent coma [3].

In addition to complications during pregnancy, the reason for calling an ambulance service may be the very fact of starting childbirth. The onset of labour is recognized due to uterine contractions. Sometimes, for a few days, or even several weeks earlier, there may be predicative spasms, which often subside after sedatives or spazmolitics [4]. In case of doubts whether spasms are laborious contractions, it is important to observe the patient for 2 hours and cardiotocography (CTG) [5]. It is best to do a *per vaginam* test to assess the cervix.

Many specialistic gynaecological examinations cannot be performed in an ambulance, therefore a patient requiring diagnosis and observation should go to the appropriate hospital or clinic. Admission of a child in casual (out-of-hospital) conditions exposes both the woman and the foetus to the risk of injuries and infections [6]. Therefore, calling the ambulance service is justified above all in an emergency situation that prevents a woman from her own transport to a diagnostic and therapeutic facility. The aim of the study is to analyse the calls of medical emergency teams to women in the perinatal period and to determine the characteristics of the symptoms occurring at that time.

## MATERIAL AND METHODS

The research group consisted of 119 patients, referred to the hospital in the perinatal period in 2018. The clinical profile of the patient was outlined on the basis of medical data contained in the rescue documentation "RM-MEDITRANS" in Siedlce, Poland. The total number of ambulance interventions in the analysed year was 12,854, of which 119 cases met the inclusion criterion. The approval of the Bioethics Committee (No. 3/2019) was obtained.

### Statistical elaboration

Statistical analysis were performed using the Statistica program. 13.1. (Statsoft, Inc., Tulsa, USA). It was used to analyse basic descriptive statistics and compare variables (U Mann Whitney test). The classical threshold of  $\alpha = 0.05$  was considered the level of significance, however, the results at the level of  $0.05 < p < 0.10$  were considered significant at the level of statistical tendency. Normal distribution testing was carried out using the Kolmogorov-Smirnov test.

## RESULTS

### Characteristics of calls

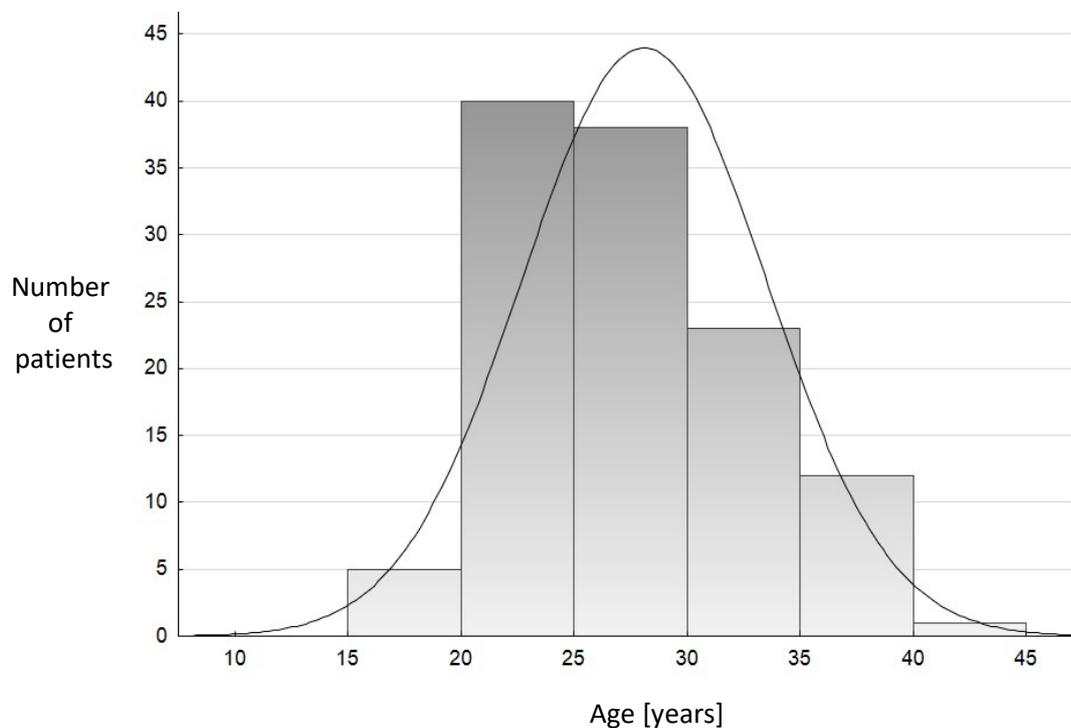
The median age in the group was 27 years ( $SD \pm 8$  years), as shown in Figure 1. Women in the period before childbirth were 67.23% ( $n = 80$ ) cases, the patient during delivery: 27.73% ( $n = 33$ ), and after delivery: 5.04% ( $n = 6$ ) cases. The average pregnancy time was 27.5 weeks ( $SD \pm 22$ ). Most often, patients were intervened in the place of residence (84.87%), and the least frequently at work (2.52%). A detailed list of call points is shown in Figure 2. Most calls were recorded in November (14.29%) and December (14.29%), and the lowest in August (4.20%). The main cause of the emergency call was the beginning of childbirth (29%) and abdominal pain (26%). Other password calls are given in Table 1.

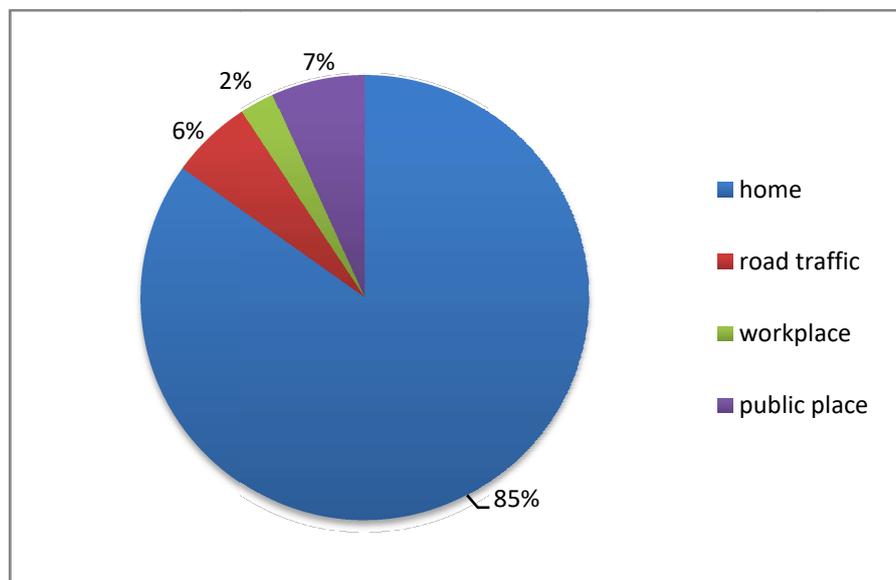
<b>The main reason for the call</b>	<b>N</b>	<b>N<sub>0</sub></b>	<b>%</b>
<i>Childbirth</i>	119	35	29
<i>Abdominal pain</i>	119	31	26
<i>Other (including: epilepsy, sciatica, kidney pain and others)</i>	119	14	12
<i>Bleeding from the genital tract</i>	119	13	11
<i>Vomiting</i>	119	10	8
<i>Syncope / fainting</i>	119	7	6
<i>Traffic accident</i>	119	6	5
<i>Mental disorders</i>	119	3	3

(N-number of important observations; N<sub>0</sub>-number of observations that meet the criterion)

**Table 1.** Reasons for calls for ambulance services

**Figure 1.** Distribution of the age of the study group.



**Figure 2.** Places of emergency ambulance calls to patients in the perinatal period

### Clinical condition

The staff of the emergency medical team each time performed a physical examination of the patients, recording the following symptoms:

- *Abnormal heart tones*: n = 58 (48.74%);
- *Reduced skin moisture*: n = 51 (42.86%);
- *Departure of amniotic fluid*: n = 30 (25.21%);
- *Systolic function*: n = 29 (24.37%);
- *Palpation changes in the abdominal cavity (e.g. peritoneal symptoms)*: n = 23 (19.33%);
- *Abnormal skin appearance (e.g. erythema)*: n = 12 (10.08%);
- *Incorrect psycho-motor assessment (e.g. agitation)*: n = 3 (2.52%);
- *Reduced skin temperature*: n = 1 (0.84%).

Variable	N	M	Mdn	Min	Maks	SD	Sk	Kurt	K-S	P
Age	119	28,10	27,00	16,00	44,00	5,40	0,50	-0,23	0,97	<b>0,008</b>
Glasgow Coma Scale (GCS)	119	14,98	15,00	14,00	15,00	0,13	-7,61	56,93	0,11	<b>&lt;0,001</b>
Respiratory rate (RR)	119	15,13	14,00	12,00	25,00	2,58	0,95	1,49	0,89	<b>&lt;0,001</b>
Saturation (SpO2) [%]	119	97,75	98,00	80,00	100,00	1,95	-6,62	58,47	0,47	<b>&lt;0,001</b>
Blood pressure Systoli (BPS)	117	124,15	125,00	90,00	180,00	14,27	0,26	1,57	0,95	<b>&lt;0,001</b>
Blood pressure Diastoli (BPD)	117	78,19	80,00	50,00	100,00	9,63	-0,29	0,40	0,91	<b>&lt;0,001</b>
Heart rate (HR)	119	92,29	90,00	70,00	145,00	16,66	1,01	0,67	0,92	<b>&lt;0,001</b>

*N* - number of important observations; *M* - medium; *Mdn* - median; *SD* - standard deviation; *Sk.* - skewness; *Kurt.* - kurtosis; *Min* and *Max* - the lowest and highest value of the distribution; *K-S* - Kolmogorov Smirnov test result; *p* - significance

**Table 2.** Life parameters with the determination of the normality of the distribution of variables

In three cases, the smell of alcohol from the patient's mouth was noticeable. Chronic diseases were found in a history of 16 women, while pregnancy diseases were found in only two cases. Abnormal pregnancy (e.g. endangered pregnancies) were diagnosed in three patients earlier. Life parameters including the state of consciousness, respiratory and circulatory systems are provided in Table 2, while determining the normality of the distribution of variables.

In order to show possible differences in vital signs between women who have already given birth and women who have not given birth yet, a series of U Mann-Whitney tests were performed. A statistically significant result ( $Z = -2.29$ ,  $p = 0.02$ ) was obtained only for the RR (respiratory rate) parameter.

## DISCUSSION

Calling an ambulance service to a woman in the perinatal period is a small percentage of all interventions (0.93% in the conducted study). Over two-thirds of calls (71%) are other health problems. Only 29% of calls are for beginning childbirth. The task of the medical staff is then to assess the patient in order to decide whether to transport or take a physiological delivery at the scene [7]. However, even when childbirth occurs without complications, it is a big challenge for the emergency team performing activities at the scene or in an ambulance.

According to the study, emergency and ambulance personnel are required to examine and assess the patient in the antenatal or postpartum period. Ailments such as: abdominal pain, sudden illness or bleeding from the genital tract usually require diagnostics and hospital observation. Limited possibilities at the ambulance level make it impossible to perform specialized gynaecological procedures. The main causes of haemorrhage in pregnant women are: premature detachment of the placenta, placenta previa, uterine atony or uterine proliferation [8]. A woman in these cases must be brought as soon as possible to a hospital with a obstetric-gynaecological ward. The role of the ambulance is to protect the pregnant woman during transport, together with the monitoring of vital functions.

The condition of patients in the test group is usually stable, and vital parameters remain in the norm without distinction as to whether the childbirth activity has begun or not. Only 15% of interventions concerned places that were not the patient's own home. The winter period is conducive to an increase in the number of calls, which can be explained by more difficult weather conditions that reduce the incidence of self-employment of women to a specialist. Consideration should be given to modifying educational programs that prepare pregnant women and their families in emergencies so that they can recognize, react and know when to seek medical help.

## CONCLUSIONS

The profile of the patient in the perinatal period, who has been reached by the ambulance service, allows to define such a woman as follows: age 27, person without chronic diseases, in a stable state, reporting other health problems (e.g. abdominal pain) that occur in the third trimester of pregnancy. Childbirth accounts for only 29% of cases. Calls are usually made in the winter season, and the place of the event is the patient's own home. Further research is recommended, focused on the educational needs of pregnant women.

## Disclosure statement

No potential conflict of interest was reported by the author's.

## REFERENCES

- [1] Bręborowicz GH. Ginekologia i położnictwo. PZWL, Warszawa 2005.
- [2] Gałecki P, Pilecki M, Rymaszewska J, Szulc A, Sidorowicz S, Wciórka J. Kryteria diagnostyczne zaburzeń psychicznych (Wydanie Piąte). DSM-5. EDRA Urban & Partner, Wrocław 2018.
- [3] Stahl SM. Podstawy psychofarmakologii - teoria i praktyka. Via Medica, Gdańsk 2010.
- [4] Czajkowski K, Szymański W (red.). Rudolfa Klimka położnictwo. RK, Kraków 2006.
- [5] Grivell RM, Alfirevic Z, Gyte GM, Devane D. Antenatal cardiotocography for fetal assessment. Cochrane Database Syst Rev. 2010;(1):CD007863.  
doi: <https://dx.doi.org/10.1002/14651858.CD007863.pub2>
- [6] Campbell OM, Calvert C, Testa A, Strehlow M, Benova L, Keyes E, et al. The scale, scope, coverage, and capability of childbirth care. Lancet. 2016; 388(10056):2193-2208.  
doi: [https://dx.doi.org/10.1016/S0140-6736\(16\)31528-8](https://dx.doi.org/10.1016/S0140-6736(16)31528-8)
- [7] Shellie CJ. Obstetric and Gynecologic Emergencies: A Review of Indications and Interventional Techniques. Semin Intervent Radiol. 2008; 25(4): 337–346  
doi: <https://dx.doi.org/10.1055/s-0028-1102992>
- [8] Nowacka E, Świątek – Zdziernicka M, Jarzębski R. Stany zagrożenia życia w położnictwie. Anestezjologia Intensywna Terapia 2004; 4: 286-292.