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Short Communication

A Survey on the Type and Prevalence of Medical Interventions during Labor and Childbirth in Greek Pregnant Women

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Abstract

Background: The purpose of this study was to identify the type and prevalence of medical interventions during labor and birth in Greek pregnant women. **Methods**: We constructed a 49-item web-based questionnaire to capture demographic data, obstetric data and the medical interventions performed during the most recent childbirth of participants. The questionnaire was posted on nationwide electronic media between November 2022 to January 2023. All women who had given birth at least once were eligible for the study, and results were stratified by the timing of their last birth. **Results**: There was a total of 954 women participating in the survey, with 809 women giving birth within the last 10 years and 145 women giving birth between 10 to 20 years ago. In those that gave birth within the past 10 years, the majority had a low-risk pregnancy (78.8%) and the overall cesarean section rate was 42.8%. During labor, women were allowed to change positions and to mobilize in about half of cases, whereas the lithotomy position at birth was reported by 81.4%. Almost 2 in 3 women reported a vaginal examination every hour or even more frequently, with approximately 30% sustaining more than 5 examinations intrapartum. Oxytocin use was reported in 36.9%, epidural use in 69.6%, and episiotomy in 47.3% of women. Women who had their last birth 10–20 years ago when compared to those who gave birth within the last 10 years seem to have experienced higher rates of medical interventions during labor and birth. **Conclusions**: The survey results demonstrate the medicalization of childbirth in Greek pregnant women over the past 20 years. These findings may serve as a benchmark against which to compare and identify possible changes in future birthing practices and to determine which measures to promote normality at birth should be implemented.

Keywords: normal birth; medical interventions; medicalized births

1. Introduction

Birth has become increasingly medicalized to the point that the entire perinatal period is heavily influenced by medical procedures and processes, some of which have become so routine that they are no longer considered as an intervention such as regular vaginal examinations during labor [1,2]. The issue of birth medicalization has been the focus of scientific research for greater than 40 years now with several attempts from respective authorities and scientific societies to reshape our intrapartum clinical practices and support normality at birth [1]. The World Health Organization (WHO) in 1996 published the definition of a 'normal' birth and stated that the aim of a normal birth is a healthy mother and child with the least number of medical interventions [3]. Again, the WHO in 2018 published a report with recommendations about those intrapartum interventions that should be utilized to support the processes of normal birth and those interventions that should be refuted [4]. Nevertheless, childbirth in both developed and developing countries continues to move away from the concept of normality with the least possible level of interventions and is becoming even more medicalized [5].

Over the past decades, birth has become highly medicalized in Greece similar to most western countries. Almost all births are performed in hospital settings in both the Greek National Health Service and the private health care system [6]. Despite a 2022 legislative act introducing for the first time the foundation of birth centers, currently there are no primary health-care settings and no community midwives or midwifery-led birth units in the current Greek healthcare system. The purpose of our study was to identify the type and prevalence of medical interventions during labor and birth in Greek pregnant women with use of a web-based questionnaire.

2. Materials and Methods

We constructed a 49-item web-based questionnaire in order to capture the demographic data, obstetric data and the medical interventions performed in the most recent childbirth of Greek women. This questionnaire was initially pilot-tested among 10 participants, the results of which are not included in the current analysis. Based on the feedback from the pilot-testing, the questionnaire was considered simple and easy to complete. It required approximately 10–15 minutes to finish, and 5 items were ultimately rephrased for reasons of clarity. Following this, the web-based questionnaire as a data capture tool was approved by the Institutional Review Board of the University of Western

Macedonia in Greece (No. 10-2023/30.09.2022), and was posted on nationwide electronic media between November 2022 to January 2023. All participants agreeing to take part in the study digitally provided their informed consent in the first page of the web-based questionnaire.

All women who had given birth at least once were considered eligible for the study and the results were stratified by the timing of their last birth. In order to attain clinically meaningful results and to identify differences in clinical practices over time, the total sample was arranged in the subgroup of women who had their last birth within the past 10 years, and another subgroup of women who had their last birth within 10 to 20 years. Women who reportedly had their last birth more than 20 years ago were excluded in the final analysis.

The web-based questionnaire generated anonymized results in an excel spreadsheet. The raw data were then inspected and processed for purposes of data cleaning and coding. Quantitative variables were expressed as mean (standard deviation) and median (interquartile range) and qualitative variables were expressed as absolute frequencies. Student's *t*-test and Chi-square test were computed for the comparison of mean values. All reported p values were two-tailed and statistical significance was set at $p < 0.05$.

3. Results

Over the 3 month period of the web-based survey, 1015 women replied to the web-based questionnaire. However, 61 women were excluded from further analysis since their last birth took place more than 20 years ago. Therefore, the final total sample consisted of 954 women, of which 809 women gave birth within the last 10 years and 145 women gave birth between 10 to 20 years ago. Tables 1,2 present the demographic characteristics, obstetric data and medical interventions in the most recent birth reported from women participating in the survey.

For women who gave birth within the past 10 years, the mean age when filling in the questionnaire was 36.3 $\pm$ 5.5 years (range 21–52), while the mean age at their most recent birth was 33.2 $\pm$ 4.7 years (range 19–49). The mean time interval from their last birth was 2.7 $\pm$ 2.7 years (range 0–10 years) (Table 1). The majority held a University degree (85.6%). They experienced a low-risk pregnancy in their last birth in 78.8% of cases and the overall cesarean section rate was 42.8%. Almost half of them had given birth to one child and in 60.6% of cases, they delivered in a private hospital, whereas home-births accounted for 6.9%. Those who reported a high-risk pregnancy described risk factors such as gestational diabetes, preeclampsia, antenatal bleeding and a previous cesarean section as the most common reasons for their high-risk status. In their most recent birth, 44.2% reported a spontaneous onset of labor and 35.7% had an induced labor.

With regards to the intrapartum medical interventions received, 61.2% reported a vaginal examination every hour or even more frequent, with approximately 30.5% sustaining more than 5 examinations. During labor, women were allowed to change positions and to mobilize in 47.3% and 52.2% of cases, respectively. Low-risk women were allowed to eat and drink during labor in 20% and 40.9% of cases, respectively. Oxytocin use was reported in 36.9%, epidural use in 69.6%, and episiotomy in 47.3% of women. In the 366 (45.2%) of women with unassisted vaginal births, it was reported that 153 women (41.8%) had an episiotomy (data not shown). The overall birthing experience was described as positive in 54% of women (Table 2).

Women who had their last birth 10 to 20 years ago when compared to those who gave birth within the last 10 years, seem to have experienced higher rates of medical interventions during labor and birth. These women who delivered 10 to 20 years ago had higher rates of giving birth in the lithotomy position, had more frequent vaginal examinations, mobilized less during labor, and were allowed less freedom to change positions in labor. Moreover, even if they were low-risk they were less likely to be allowed to eat and drink during labor when compared to women who delivered within the past 10 years.

4. Discussion

We found in our survey that approximately 78% of women had a low-risk pregnancy in their last birth, while the remaining 22% who reported a high-risk pregnancy described risk factors such as gestational diabetes, preeclampsia, antenatal bleeding and previous cesarean section. It is interesting that the percentage of low-risk women has remained unchanged over the past 20 years, which may lend support to the fact that the possible changes in the pattern of medicalized births overtime cannot be attributed to having more 'high-risk' pregnancies.

We found that 61.2% of women reported a vaginal examination every hour or even more frequently during labor, while approximately 30.5% underwent more than five vaginal examinations in their labor. This is in contrast with the WHO report in 2018 and the National Institute for Health and Care Excellence (NICE) guidance since 2014, where they have made the recommendation that a vaginal examination should be performed every four hours during the first stage of labor [4,7]. Moreover, it has been reported in the literature that women receive an average number of approximately 3 vaginal examinations during labor with a maximum number of examinations as high as 7 in some cases [8].

In half the cases in our survey, women were allowed to change positions and to mobilize during labor, and 81.4% of women gave birth in the lithotomy position. The literature reports that in an undisturbed natural birth where women are given the freedom and choice to assume any position during labor, they would opt to mobilize and change their po-

Table 1. The demographic characteristics and obstetric data in the most recent birth reported from women participating in the survey (n = 954).

	Women reporting that their most recent birth was 0–10 years ago (n = 809)	Women reporting that their most recent birth was 10–20 years ago (n = 145)	*p*-value
Age at present			
Mean ± SD	36.3 ± 5.5 years	46.1 ± 4.2 years	–
Median (IQR)	36 (7) years	46 (10) years	
Range	21–52 years	35–58 years	
Age at most recent birth			
Mean ± SD	33.2 ± 4.7 years	31.7 ± 4.0 years	<0.001*
Median/IQR	33 (7) years	32 (6) years	
Range	19–49 years	19–42 years	
Years from most recent birth			
Mean ± SD	2.7 ± 2.7 years	14.3 ± 2.7 years	–
Median/IQR	2 (3) years	14 (4) years	
Range	0–10 years	11–20 years	
Higher (University) education	693 (85.6%)	101 (69.6%)	<0.001+
Parity			
1	399 (49.3%)	30 (20.7%)	<0.001+
2	329 (40.7%)	81 (55.9%)	<0.001+
≥3	81 (10%)	34 (23.4%)	<0.001+
Low-risk pregnancy	638 (78.8%)	112 (77.2%)	0.74+
Mode of delivery			
Unassisted vaginal birth	366 (45.2%)	77 (53.1%)	0.08+
Cesarean section (CS)	346 (42.8%)	58 (40.0%)	0.58+
Assisted vaginal birth (vacuum)	97 (11.9%)	10 (6.8%)	0.07+
Spontaneous onset of labor	359 (44.2%)	49 (33.7%)	0.01+
Induced labor	289 (35.7%)	60 (41.3%)	0.22+
Planned CS	162 (20.1%)	36 (24.8%)	0.22+
Place of delivery			
Public hospital	263 (32.5%)	39 (26.8%)	0.20+
Private hospital	490 (60.6%)	104 (71.7%)	0.01+
Home birth	56 (6.9%)	2 (13.7%)	0.007+
Women reporting a positive birthing experience	437 (54%)	87 (60%)	0.20+

*Student's *t*-test; +Chi-square test.

SD, standard deviation; IQR, interquartile range.

sition with an average of 7.5 position changes during labor [9]. There is evidence that ambulation and upright positions shorten the first stage of labor, reduce the cesarean section rate and lead to less epidural use [10]. Due to the clinical benefits of upright and mobile positions, WHO strongly recommends encouraging the adoption of mobility and an upright position during labor especially if they are at low-risk for complications [4]. WHO, in its 2018 report, has further put forward the recommendation that women at low-risk for complications should be given the choice for oral food and fluid intake during labor. Our survey indicated that low-risk women were allowed to eat and drink during labor in only 20% and 40.9% of cases, respectively.

Other medical interventions our survey identified were oxytocin use in 36.9%, epidural use in 69.6%, and episiotomy in 47.3% of women in our sample. The literature reports that oxytocin use in labor is globally increasing, with a recent systematic review in 2022 stating that the rates of oxytocin use exceed 30% in most countries [11]. Moreover, it has been reported that epidural analgesia is the gold-standard for pain relief in labor with approximately 30% of laboring women in the United Kingdom and 60% in the United States receiving an epidural [12]. In a study among 20 European countries investigating the time trends with regards to episiotomy rates, there were no available local data for Greece, whereas for the other countries, there was a significant variation in episiotomies ranging from 4.9% to 75% [13].

Women who gave birth 10 to 20 years ago when compared to those who gave birth within the last 10 years, had statistically significant lower rates of a spontaneous onset of labor and seem to have experienced higher rates of med-

Table 2. The medical interventions in the most recent birth reported from women participating in the questionnaire (n = 954).

	Women reporting that their most recent birth was 0–10 years ago (n = 809)	Women reporting that their most recent birth was 10–20 years ago (n = 145)	*p*-value
Birthing position			
Lithotomy position (stirrups)	377/463 (81.4%)	80/87 (91.9%)	0.01+
Alternative positions	86/463 (18.6%)	7/87 (8.1%)	0.01+
Freedom to change positions at birth	329/695 (47.3%)	28/91 (30.7%)	0.003+
Frequency of vaginal examinations			
Every $\leq$1 h	224/366 (61.2%)	57/73 (78.1%)	0.007+
Every 2 h	61/366 (16.7%)	10/73 (13.7%)	0.60+
Every 3 h	20/366 (5.5%)	3/73 (4.1%)	0.78+
Every 4 h	10/366 (2.7%)	0/73 (0%)	0.38+
Less frequent than 4 h	51/366 (13.9%)	3/73 (4.1%)	0.01+
Number of vaginal examinations			
$\leq$4	432/622 (69.5%)	79/108 (73.1%)	0.49+
5–6	94/622 (15.1%)	16/108 (14.8%)	1.00+
$\geq$7	96/622 (15.4%)	13/108 (12.1%)	0.46+
Mobilization during labor	366/699 (52.2%)	53/130 (40.7%)	0.01+
Low-risk women allowed to eat during labor	148/739 (20%)	7/105 (6.7%)	$<$0.001+
Low-risk women allowed to drink during labor	302/739 (40.9%)	36/105 (34.2%)	0.20+
Episiotomy	219/463 (47.3%)	32/87 (36.7%)	0.07+
Use of oxytocin	256/694 (36.9%)	32/129 (24.8%)	0.008+
Epidural use	563/809 (69.6%)	91/145 (62.7%)	0.11+

+Chi-square test.

ical interventions during labor and birth. The lower rates of spontaneous onset of labor are explained by the fact that more women were being induced and the higher rates of planned cesarean section in these women. Women who gave birth in the past 10 years had higher spontaneous onset of labor and less medicalized births. This finding can be explained by the slow and gradual shift in intrapartum clinical practice that has been reported in the literature with the introduction of new concepts such as the humanization of births. This concept means that healthcare professionals are expected to understand and embed humanized practice while embracing a woman-centered philosophy along with less but evidence-based interventions when supporting the physical, psychological, and emotional wellbeing of women in childbirth [4,14,15].

This web-based survey has several limitations. First, there is a recall bias due to the time interval to the last birth of the participants. This implies that the longer the time interval from the event, the less accurate is the information provided. Second, there is also a selection bias due to the unequal numbers of unmatched patients in the two cohorts studied (809 in last 10 years *vs* 145 in 10–20 years). Nevertheless, the primary objective of our survey was to present the most recent intrapartum practices in Greece over the past 10 years. The secondary comparison with women who delivered 10–20 years ago served as an additional source of information to indicate whether the medicalization of birth has continued or not and in what way.

Third, as with all web-based surveys, the study sample is not representative of the Greek population. Despite the nationwide call of our survey we had relatively small numbers of participants. This most likely reflects the inherent difficulties of web-based questionnaires as a tool of research since people have been faced with a multitude of online surveys over the past few years and this seems to discourage them from replying to more surveys. Moreover, the vast majority of women in our sample held a University degree and all had access to the internet and possessed the willingness to participate in an on-line survey. We cannot suggest our findings can be generalised to the Greek population as we have not captured the data from women with a different educational status and who cannot access the internet or do not wish to participate in on-line surveys. More women would need to be recruited in both cohorts of our survey so as to draw more definite conclusions.

Fourth, the accuracy of the data is further compromised from the fact that they are not retrieved from hospital records but they are acquired from the women's recollections.

The main strength of our survey is that despite the above limitations we have managed to provide some initial results in an area in the literature where the data on the type and magnitude of intrapartum interventions in Greek pregnant women are scarce or non-existent.

5. Conclusions

The results demonstrated the medicalization of childbirth in a sample of Greek pregnant women over the past 20 years. Despite the inherent limitations of our web-based survey, we have captured the type and prevalence of medical interventions during labor and birth, and we have presented the time trend by exploring intrapartum practices as far back as 2 decades. If we use the evidence base data provided by WHO or the NICE institute to compare with the prevalence of the medical interventions that we identified in our survey, then giving birth in Greek settings is medicalized to a great extent. These findings may serve as a reference point against which to compare and identify possible changes in future birthing practices that should be implemented to promote normality at birth.

Availability of Data and Materials

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

Author Contributions

DP and NC conceptualised and designed the research study. DP and NC performed the data collection. DP analyzed the data. Both authors contributed to editorial changes in the manuscript. Both authors read and approved the final manuscript. Both authors have participated sufficiently in the work and agreed to be accountable for all aspects of the work.

Ethics Approval and Consent to Participate

This study was approved by the Institutional Review Board of the University of Western Macedonia in Greece (No. 10-2023/30.09.2022), and all participants in the study digitally provided their informed consent to the web-based questionnaire.

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Conflict of Interest

The authors declare no conflict of interest. Dimitrios Papoutsis is serving as one of the Editorial Board members and Guest editors of this journal. We declare that Dimitrios Papoutsis had no involvement in the peer review of this article and has no access to information regarding its peer review. Full responsibility for the editorial process for this article was delegated to Michael H. Dahan.

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