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Original Research

Current Experience with Obstetrical Events: Characteristics and the Effects of Nocturnal Periods

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Abstract

Background: The object is to analyze the influence of the nocturnal period and lunar phases on the frequency of obstetrical events in pregnant women. **Methods**: This was a retrospective, transversal observational study of 1409 births in a hospital from northwest Spain (α = 0.05; precision = $\pm$2.65%). A review of patients' clinical records was performed recording the following data: labor onset type, date of last menstrual period, parity, gestational age, duration of pre-labor and labor, type of delivery, the hour, work shift, and lunar phase pattern of events. Statistical evaluation included descriptive and inferential analysis. **Results**: Labor was spontaneous in 58.3% of all cases; spontaneous deliveries accounted for 54.2% of the total and 19.2% were instrumental. In the cases of spontaneous labor onset, 48.5% began during the nocturnal period. The early labor phase was less than 6 hours in 62.7% of cases (44.8% during the full moon phase). During the nocturnal period, rupture of membranes and dilation periods of less than 3 hours were more common, with 32% of spontaneous membrane rupture occurring during a full moon. A significant dependence was observed between the labor type and nocturnal period, as 40.8% of all spontaneous births, 36.2% of instrumental births and 46.9% of emergency cesarean sections occurred during the night shift. Furthermore, 66.3% of precipitous deliveries (<3 hours) took place during this period. **Conclusions**: The nocturnal period is related to a higher number of spontaneous rupture of the membranes, non-intervention in the onset of labor, shorter early labor phases, faster deliveries, spontaneous births and emergency caesarean sections. A higher frequency of spontaneous rupture of the membranes, a full labor, early labor phases of less than 3 hours and emergency caesarean sections was observed during full moon phases.

Keywords: pregnancy outcomes; obstetrical deliveries; circadian rhythm

1. Introduction

From conception to delivery, the hormone progesterone prevents uterine contractility. When fetal maturity is reached, the myometrium gets stimulated and initiates the contractions that will culminate in the birth. It is not known what are the exact the reasons for the birth being triggered; there is no single factor responsible for the onset of labor but it appears to be multiple events [1].

Events related to pregnancy, such as conception and spontaneous rupture of the membranes or delivery have certain associated physiological factors that occur. However, both the general population and health care professionals believe in the existence of other influential factors such as time of day, season and moon stages. Therefore, a recurring issue for debate is whether obstetrical events, such as the spontaneous rupture of membranes (SROM) or birth follows a specific nocturnal pattern [1–6].

The hypothesis posited in published research is that such events show a higher incidence rate at night, as proved by an increase during this time in certain events: spontaneous early onset of labor [1,7,8], number of deliveries [2,4–6,9–12] and premature rupture of membranes [7,13–17].

A temporal pattern would have a biological explanation, as uterine activity is synchronized with cycles of light and darkness. This is due to the action of melatonin, which is secreted in the absence of light, activating oxytocin and noradrenaline, hormones that influence the onset of labor.

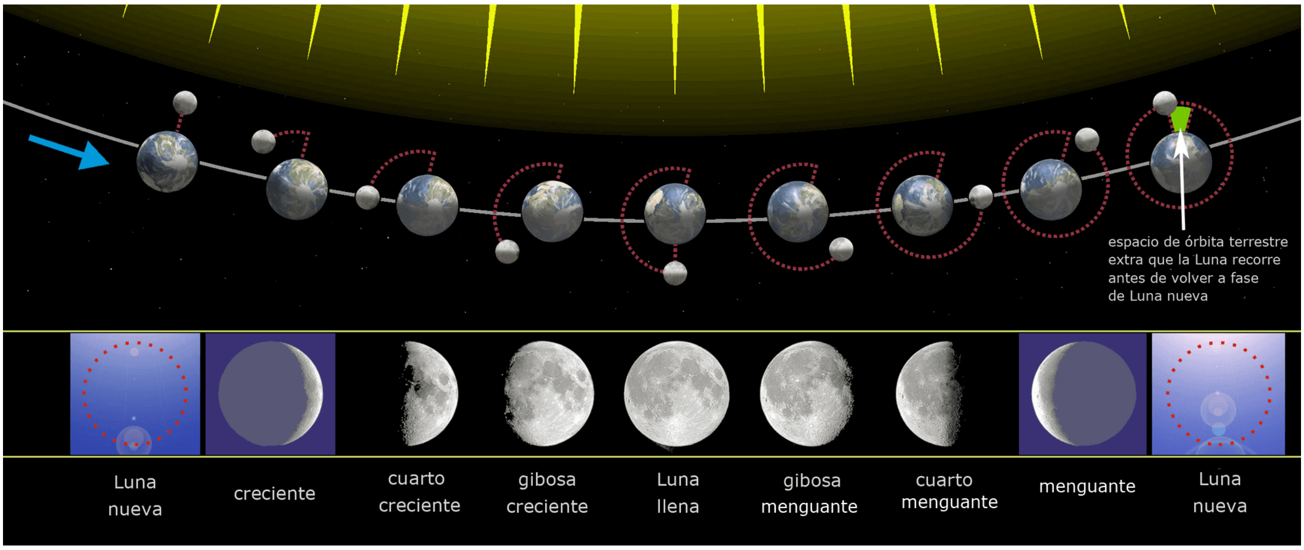

Fig. 1. The phases of the moon. Credit: https://www.astromia.com/tierraluna/fotos/fasesluna3.jpg.

It might therefore be concluded that births would normally take place at night, and that contractions are more efficient during this time [3–9].

During pregnancy, the placenta produces corticotropin-releasing hormone (CRH), leading to increased cortisol production. This elevates the level of free cortisol in the bloodstream, creating a positive feedback loop, especially from the 25th week of gestation until birth. Additionally, CRH enhances the production of placental estrogen, which is crucial for the synthesis of oxytocin, a key hormone for inducing uterine contractions [18,19]. Normally, cortisol secretion follows a circadian rhythm, peaking in the morning (07:00–08:00 a.m.) and dipping at night (02:00–04:00 a.m.), as this is vital for the hypothalamic-pituitary-adrenal (HPA) axis functioning [20]. The circadian nature of cortisol may explain why nighttime tends to be more favorable for childbirth in terms of frequency and duration.

The hypothesis that the moon exerts an influence on obstetrical patterns is commonly held, with published studies pointing to a significant increase in spontaneous labor during the full moon [6,21,22]. One report noted a relationship between spontaneous deliveries, especially in cases of multipara and multiple gestations with the first and second days following a full moon [23]. Other authors have studied the higher numbers of births at the waxing crescent to first quarter moon [24] or between the third quarter and the new moon [25] as well as lunar effects on deliveries with complications [26]. Overall, these studies have failed to establish a significant relationship between lunar cycles and delivery frequencies [7,27–36].

The object of this study is to update, contrast and add to the information available regarding the influence of the nocturnal period and lunar phases on the frequency of obstetrical events.

2. Materials and Methods

2.1 Study Design

A retrospective transversal observational study was conducted, including all patients that gave birth at the Lucus Augusti Hospital in Lugo (HULA) between 1 January and 31 December, 2014 and who agreed to take part in the study. This is the hospital of reference for a region in the northwest of Spain of approximately 355,000 inhabitants.

2.2 Selection Criteria

Included were women who gave birth at the Lucus Augusti Hospital during the study period and who attended the same hospital for their antenatal appointments, or provided antenatal monitoring reports in cases where the appointments were held elsewhere.

2.3 Sample Definition

The sample size of 1420 women makes it possible to estimate the parameters of interest with a confidence of 95% ($\alpha = 0.05$) and a precision of $\pm 2.65\%$, based on a 3% information loss estimation.

The final number of women studied was 1409, as 11 were excluded due either to insufficient monitoring during their pregnancy or their decision not to take part.

2.4 Data Collection

Data was collected from the patients clinical records, which were accessible in both paper and digital formats. Exclusion was limited solely to records with incomplete information. Consequently, this led to the inclusion of 1409 births in the study, with 11 cases being excluded.

2.5 Measurements

A questionnaire was designed to collect information from the patients' clinical records regarding sociodemographic, obstetric-gynecological characteristics, labor and

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Table 1. Description of the sample studied, characteristics of the patients and registered deliveries.

		Mean ± SD	Median	Range
Age (years)		32.8 ± 5.6	34.0	14.0–50.0
Gestational week (GW)		39.1 ± 2.0	39.0	22.0–41.0
		n	%	95% CI
Gestational week (categories)	<24 GW	2	0.1	0.0–0.5
	24–31 GW	17	1.2	0.6–1.8
	32–37 GW	84	6.0	4.7–7.2
	Full term	1306	92.7	91.3–94.1
Gestation type	Spontaneous	1326	94.1	92.8–95.4
	Artificial	83	5.9	4.6–7.2
Parity (excluding abortions)	Primipara	861	61.1	58.5–63.7
	Multipara	548	38.9	36.3–41.5
Onset of labor	Spontaneous	822	58.3	55.7–60.9
	Induced	487	34.6	32.0–37.1
	Planned cesarean	100	7.1	5.7–8.5
End of delivery	Spontaneous	763	54.2	51.5–56.8
	Instrumental	271	19.2	17.1–21.3
	Cesarean	375	26.6	24.3–29.0

SD, standard deviation; 95% CI, 95% confidence interval.

delivery variables. The following were recorded: labor onset type, date of the last menstrual period, parity and gestational age, as well as variables related to labor, the duration of early labor and delivery, labor onset type (spontaneous or induced) and type of delivery (spontaneous, instrumental or cesarean). The expected date of delivery was calculated from the date of the last menstrual period and confirmed by ultrasonography.

In order to study the time periods, the date and time of each obstetrical event was recorded, the work shift in which the event took place, the precise lunar phase (Spanish National Geographical Institute) ±3 days (as it is from this time that the following lunar phase commences) (Fig. 1, https://www.astromia.com/).

2.6 Data Analysis and Processing

A descriptive and inferential analysis was performed.

All the variables included in the study were described. The continuous variables were expressed as mean ± standard deviation (SD), median and range. Categorical variables were expressed as absolute and percentage values with an estimated confidence interval of 95%. The Kolmogorov-Smirnov test was used to assess normality.

The possible association between the variables related to onset of labor, rupture of membrane and delivery as well as time variables was checked using Chi-squared or Fisher's Exact test.

Information regarding the time that events of interest occurred was available for the entire patient cohort. To ensure maximum clarity regarding possible variations in frequencies, adjusted curves were included based on smooth models (cubic smoothing splines).

2.7 Ethical and Legal Considerations

The study was approved by the Galician Clinical Research Ethics Committee (2015/258).

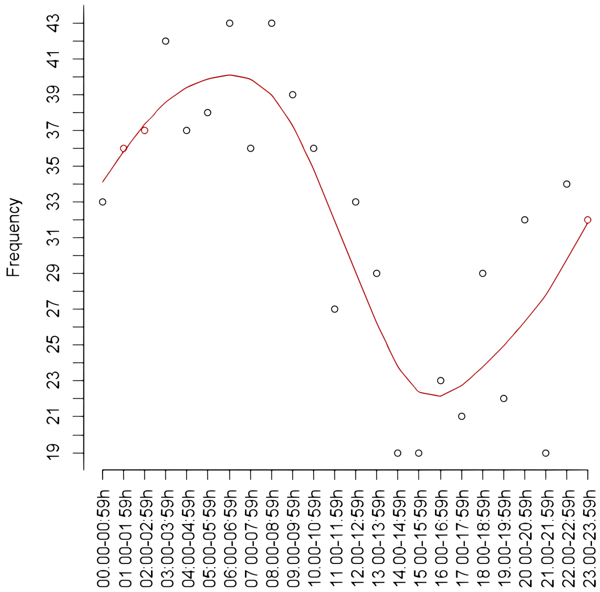

Fig. 2. Estimated curve for onset of labor (spontaneous) by time period.

Table 2. Early labor duration by delivery type, related to the lunar phase and shifts.

	Early labor duration					
	<3 hours	3–6 hours	7–12 hours	13–24 hours	>24 hours	
By labor onset type	n (%)	n (%)	n (%)	n (%)	n (%)	*p*
All deliveries (except planned cesarean sections)	298 (23.9)	273 (20.9)	239 (19.2)	224 (18.0)	213 (17.1)	
Spontaneous onset deliveries	283 (36.1)	209 (26.6)	142 (18.1)	109 (13.9)	42 (5.4)	<0.001
Induced deliveries	15 (3.2)	64 (13.9)	97 (21.0)	115 (24.9)	171 (37.0)	
Early labor duration (except planned cesarean sections)	<3 hours	3–6 hours	7–12 hours	13–24 hours	>24 hours	*p*
	n (%)	n (%)	n (%)	n (%)	n (%)	
By lunar phase (exact)						
Waxing moon	8 (22.9)	9 (22.5)	11 (33.3)	8 (25.0)	5 (16.1)	0.492
Full moon	9 (25.7)	8 (20.0)	8 (24.2)	13 (40.6)	10 (32.3)	
Waning moon	6 (17.1)	13 (32.5)	7 (21.2)	3 (9.4)	8 (25.8)	
New moon	12 (34.3)	10 (25.0)	7 (21.2)	8 (25.0)	8 (25.8)	
By lunar phase (±3 days)						
Waxing moon	73 (25.9)	77 (30.3)	65 (29.0)	62 (30.4)	41 (21.0)	0.364
Full moon	72 (25.5)	70 (27.6)	55 (24.6)	52 (25.5)	59 (30.3)	
Waning moon	60 (21.3)	55 (21.7)	58 (25.9)	49 (24.0)	52 (26.7)	
New moon	77 (27.3)	52 (20.5)	46 (20.5)	41 (20.1)	43 (22.1)	
By work shift						
Morning	88 (29.5)	88 (26.7)	39 (16.3)	78 (34.8)	37 (17.4)	<0.001
Afternoon/evening	77 (25.8)	88 (32.2)	86 (36.0)	58 (25.9)	98 (46.0)	
Night	133 (44.6)	97 (35.5)	114 (47.7)	88 (39.3)	78 (36.6)	

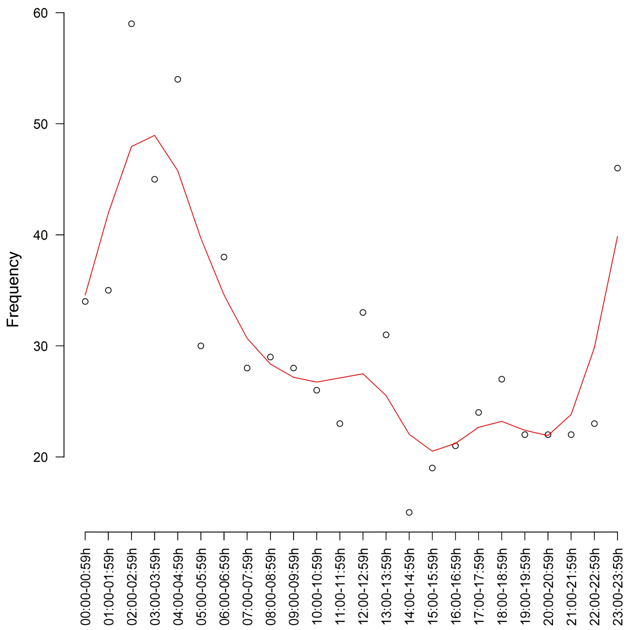

Fig. 3. Estimated curve for spontaneous membrane rupture by time period.

3. Results

A total of 1409 births were recorded at the Lucus Augusti University Hospital; 1326 (94.1%) of which were spontaneous pregnancies. The mean age of the women included in the study was 32.8 ± 5.6 years, with a median value of 34.0 years (range: 14.0–50.0), with 861 (61.1%) primiparous women and 548 (58.3%) multiparous women. The mean number of gestational weeks in the deliveries recorded was 39.1 ± 2.0 weeks (median = 39.0 weeks). As 92.7% of the deliveries were full term (Table 1).

Regarding labor onset type, 822 (58.3%) were spontaneous, 487 (34.6%) were induced and 100 (7.1%) were programmed cesarean sections. Of the total number of induced deliveries, a review of the causes revealed that the most frequent reason was post-term pregnancy (33.4%), followed by spontaneous membrane rupture (30.3%) (Table 1).

The labor outcome analysis revealed that there were 763 spontaneous births (54.2%), 271 instrumental deliveries (19.2%) and 375 cesarean sections (26.6%) (Table 1). The most frequent cause for the cesarean section was being planned (25.4%); 22.5% were carried out due to concern for fetal wellbeing and 19.8% were attributable to prolonged labor.

The reasons why pregnant women attended the accident and emergency department and later admitted to hospital were also analyzed, with 40.9% of the cases attributable to the onset of contractions, suspected rupture of membrane (ROM) (28.9%) and being at term (24.0%).

3.1 Onset of Labour

A total of 822 events were spontaneous births. In this sub-sample the frequency was analyzed in accordance with the time of onset of labor. In the case of induced deliveries, the timing was affected by external factors and they were excluded for the purpose of this analysis. The most frequent time interval in which most women began labor was the first 12 hours of the day. Specifically, 6:00–6:59 a.m. and 8:00–

Table 3. Relationship between duration of labor, moon phases and work shift.

Spontaneous or induced onset of labour	Precipitate (<3 hrs)	Intermediate (3–24 hrs)	Prolonged (>24 hrs)	p
	n (%)	n (%)	n (%)	
By lunar phase (exact)				
Waxing moon	2 (14.3)	28 (28.9)	9 (27.3)	0.299
Full moon	2 (14.3)	28 (28.9)	6 (18.2)	
Waning moon	4 (28.6)	21 (21.6)	6 (18.2)	
New moon	6 (42.9)	20 (20.6)	12 (36.4)	
By lunar phase (±3 days)				
Waxing moon	17 (18.1)	206 (30.7)	53 (24.9)	0.018
Full moon	28 (29.8)	177 (26.4)	48 (22.5)	
Waning moon	19 (20.2)	151 (22.5)	59 (27.7)	
New moon	30 (31.9)	136 (20.3)	53 (24.9)	
By work shift				
Morning	15 (15.0)	211 (29.3)	66 (28.3)	<0.001
Afternoon/evening	24 (24.0)	223 (30.9)	93 (39.9)	
Night	61 (61.0)	287 (39.8)	74 (31.8)	
Spontaneous onset of labor	**Precipitous (<3 hrs)**	**Intermediate (3–24 hrs)**	**Prolonged (>24 hrs)**	**p**
	n (%)	n (%)	n (%)	
By lunar phase (exact)				
Waxing moon	2 (14.3)	21 (32.3)	2 (25.0)	0.020
Full moon	2 (14.3)	18 (27.7)	0 (0.0)	
Waning moon	4 (28.6)	10 (15.4)	0 (0.0)	
New moon	6 (42.9)	16 (24.6)	6 (75.0)	
By lunar phase (±3 days)				
Waxing moon	16 (17.8)	151 (30.6)	22 (30.6)	0.020
Full moon	26 (28.9)	126 (25.5)	11 (15.3)	
Waning moon	18 (20.0)	117 (23.7)	19 (26.4)	
New moon	30 (33.3)	100 (20.2)	20 (27.8)	
By work shift				
Morning	14 (14.7)	188 (35.1)	33 (42.9)	<0.001
Afternoon/evening	20 (21.1)	143 (26.7)	21 (27.3)	
Night	61 (64.2)	204 (38.1)	23 (29.9)	

8:59 a.m. accounted for 5.7% of the cases respectively. In contrast, the lowest rate was detected between 2:00 p.m.–2:59 p.m., 3:00 p.m.–3:59 p.m. and 9:00 p.m. and 9:59 p.m. (2.5%). The frequency of cases is represented in Fig. 2, using the cubic spline as a smoothing function.

Studying the relationship between the onset of labor and personnel work shift intervals, it was observed that the highest percentage of women entering labor occurred during the night shift (48.5%), compared with 21.7% during the afternoon/evening shift and 29.8% during the morning.

Considering the moon phase at the time of labor, it was observed that, 32.4% of all cases occurred during a new moon, followed by 25.5% during the full moon phase, 24.5% with a waxing moon and 17.6% during the waning moon. In terms of the lunar effect with an interval of ±3 days, the data are as follows: 28.5% in waxing moon, 25.1% during full moon, 23.5% during waning moon and the remaining 22.9% during the new moon phase.

3.2 Early Labor

Early labor is the time until the cervix is soft, effaced, mid-position and dilated 3 cm. Excluding the planned cesarean sections, the duration of the early labor phase was equal to or less than 6 hours for 44.8% of the women included in the study. However, if the analysis is limited to those women who began labor spontaneously, the figure rises to 62.7%.

In this sub-sample (excluding planned cesarean sections), the relationship between the duration of early labor and the exact lunar phase during labor was studied. No significant association was found, although for 34.3% of patients with labor less than 3 hours, delivery occurred during the full moon phase. Similar results were obtained when the influence of the moon over a period of ±3 days was analyzed.

The analysis of the duration of early labor and working shifts at the time of delivery revealed a significant association (Table 2).

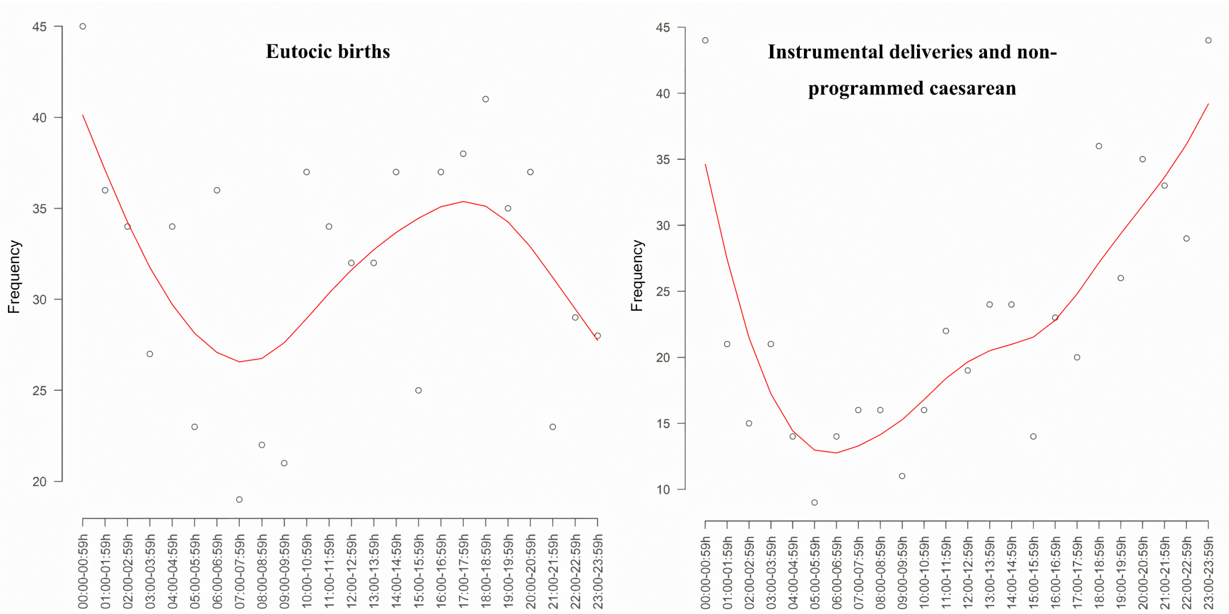

Fig. 4. Daily distribution of delivery (spontaneous deliveries and instrumental deliveries or emergency caesarean).

3.3 Membrane Rupture

Spontaneous rupture of membranes occurred in 752 women (53.9%). Premature rupture (prior to the onset of labor) accounted for 73.1% of the cases, with 14.5% taking place early (during labor) and 12.4% at the time of delivery (during the expulsion phase).

An analysis was performed of the time periods in which spontaneous membrane rupture occurred. On superimposing a curve adjusted using cubic smoothing splines, it was noted that event frequency peaked between 11:00 p.m. and 5:00 a.m. (Fig. 3).

The analysis by work shift revealed that 53.3% of spontaneous ruptures of membrane occurred during night shifts, followed by 25.2% which took place during morning shifts, and 21.5% during the afternoon/evening shifts.

Regarding the lunar phase at the time of spontaneous membrane rupture, 32% of cases occurred during a full moon, followed by 26% during the waxing moon phase, 21% with a waning moon and 21% during the new moon. In terms of the lunar effect in an interval of ±3 days, the data are as follows: 29.7% in waxing moon cases, 26.2% during full moon, 24.9% during waning moon and the remaining 19.2% during the new moon phase.

3.4 The Active Phase of Labor

The sample of women experiencing spontaneous or induced onset of labor, excluding planned cesarean sections (n = 1309) were used to calculate the total time from the onset of contractions until birth. The mean time was 16.2 ± 15.8 hours. A statistically significant difference was noted for the onset type: spontaneous-onset births had a mean duration of 12.4 ± 14.5 hours (median = 10.0 hours) versus induced labor with a mean time of 23.9 ± 15.5 hours (median = 22.0 hours).

Precipitous labor has been defined as delivery within less than 3 h after the onset of contractions. 31.9% of precipitous births occurred on a new moon and 29.8% on a full moon. We noted that 61.0% were on night shift.

The distribution of births of primiparous and multiparous women is homogeneous in the four phases of the moon. It is noteworthy that under the effect of the moon ±3 days, 28.4% of primiparous women give birth during the crescent moon. The highest percentage of multiparous women gave birth during the full moon (28.5%).

A closer analysis of spontaneous births, relating this time with work shifts, revealed that the fastest deliveries took place during the night (64.2%), while prolonged labor is prevalent during the morning shift (42.9%) (Table 3).

Temporal distribution of the time of birth was also studied. In the case of spontaneous births, events peaked between 0:00 a.m. and 00:59 a.m. (5.9%), while the minimum was found in the period between 07:00 a.m. and 07:59 (2.5%). In the case of instrumental deliveries and emergency cesarean sections, the fitted curve shows an increasing trend between 05:00 a.m. and 11:59 p.m. (Fig. 4).

The description by work shifts showed a significant dependence between delivery type and shift: 40.8% of spontaneous births, 36.2% of instrumental deliveries and 46.9% of non-planned cesarean sections occurred during the night shift (Table 4).

Calculations regarding birth distribution by exact lunar phase revealed that 28.6% took place during the full moon phase and 25.7% during the new moon. Only 23.4% and 22% occurred during the waxing and waning periods, respectively. We were unable to establish a significant association between birth type and the exact lunar phase (Table 4).

Table 4. Birth type distribution (spontaneous, instrumental, non-planned cesarean) by time, work shift and lunar phase (exact and ±3 days).

	Spontaneous births	Instrumental births	Non-planned cesarean sections	
Exact phase	n (%)	n (%)	n (%)	*p*
Waxing moon	30 (27.8)	9 (25.7)	2 (6.3)	0.131
Full moon	27 (25.0)	8 (22.9)	15 (46.9)	
Waning moon	23 (21.3)	9 (25.7)	7 (21.9)	
New moon	28 (25.9)	9 (25.7)	8 (25.0)	
Phase ±3 days				
Waxing moon	200 (28.3)	66 (26.1)	69 (26.8)	0.731
Full moon	188 (26.6)	62 (24.5)	73 (28.4)	
Waning moon	159 (22.5)	67 (26.5)	65 (25.3)	
New moon	160 (22.6)	58 (22.9)	50 (19.5)	
Shift				
Morning	215 (28.2)	73 (26.9)	59 (21.5)	0.048
Afternoon/evening	236 (31.0)	100 (36.9)	87 (31.6)	
Night	311 (40.8)	98 (36.2)	129 (46.9)	

Considering the lunar effect in an interval of ±3 days, it was noted that 27.5% occurred during the waxing moon phase, 26.6% during the full moon, 23.9% during the waning moon phase and the remaining 22% during the new moon. No significant association was established between birth type and the influence of the moon (Table 4).

4. Discussion

The patients included in this study were representative of the general population of women that gave birth. The characteristics of these patients and the results obtained in relation to clinical variables and the influence of the nocturnal period on the frequency of obstetrical events are consistent with the published literature.

The involvement of cortisol in triggering labor under natural conditions and its circadian rhythmicity could be a reasonable cause that responds to the results obtained in this study, which reflect that the nocturnal period is more favourable for births in terms of onset, duration and outcome. The analysis of the patient cohort revealed that the onset of labor is favored by the hours of darkness, thereby confirming the conclusions of other authors [1,7,8]. However, an article published in 2012 [31] analyzing spontaneous labor admissions, confirmed that peak times were between 7:00 a.m. and 1:00 p.m. Other researchers have failed to establish a circadian rhythm for onset of labor [7,13].

As for the duration of early labor, the results showed that this is fastest during the nocturnal period and full moon phase, and longest during the morning hours and new moon phase. After reviewing the available literature, no results were found to refute these findings. As for the total duration of labor, it can be confirmed that rapid births occur mostly at night [2].

Regarding premature rupture of membranes, it was found that the highest percentage of events take place at night, in line with the results described in various publications [10,13–16].

In terms of the lunar phase, our research showed that spontaneous rupture of the membranes is most frequent during the full moon phase, although no significant association was established. Similar results were found in the literature reviewed, although data regarding the connection with the number of births were available [6,22,23,25–27,29].

The highest number of spontaneous onset births, including spontaneous and instrumental deliveries and emergency cesarean sections, takes place at night. These findings are in line with those of several experts [2,10,12]. Other researchers reached various conclusions, and this group included authors [12] who determined that non-induced deliveries and those taking place outside the hospital environment are more frequent at night, while cesarean sections and induced births occur mostly during the daytime. Others [3] found that most low intervention deliveries among the immigrant population take place at night, while in the case of the general population, many births occur during daytime. Some researchers [11] posit that all births preferentially take place during the day, except for those associated with multiparas, when the most frequent time period is between 3:00 a.m. and 9:00 a.m. These results do not contradict those presented in this article, which determined that spontaneous onset and low intervention births display nocturnal patterns. Finally, several studies point to an increase in the number of daytime births [16,17].

In terms of the connection between the number of births and lunar phase, this study detected a sharp spike in the number of emergency cesarean sections during the full moon, approximately twice the number in comparison with the following lunar phase. However, these results are not statistically significant, as no other literature was found that supported these results. Most research has failed to detect differences between lunar cycles and the total number of births [27,29,32–36]. Nevertheless, a few published papers [25] refer to the fact that spontaneous full-term births among multiparous and women with a multi gestation increases between days one and two following a full moon. Other research [22] has also detected an increase in spontaneous births during the full moon phase, although there are results concluding that the increase occurred during the waning moon and new moon phases [26].

In terms of the limitations of our research, it is possible that the incorrect transcription of certain details may occur, attributable to the fact that the clinical histories are recorded by various medical professionals, despite all possible efforts to minimize such errors by comparing and contrasting each patient's details.

5. Conclusions

Despite the limitations and the cautious interpretation of the results obtained, our research allows us to draw a series of general conclusions. The data allow us to conclude that the nocturnal period is most favorable for births as during this period the onset of labor is most frequent, deliveries are faster, spontaneous rupture of membrane more frequent, with the majority of births taking place at this time. Consequently, questions could be raised regarding the organization of delivery room staff, as the number of professionals on duty is lower at night than during the day. An innovative aspect of our research is that it includes the duration of early labor and the entire process to birth, related to the circadian rhythm and the relationship between the full moon phase and the increase in the number of emergency cesarean sections, issues of interest for future research.

6. Authors' Suggestions

Considering that night time sees a higher proportion of spontaneous labor onset, shorter labor duration, and a greater frequency of spontaneous membrane rupture, along with most precipitous and spontaneous births and urgent cesarean sections, it appears the workload during night shift is likely more substantial than during morning and afternoon shifts. Therefore, increasing staffing during the night might be a reasonable response, especially for healthcare personnel as they are typically more concentrated in the morning, often due to scheduled activities and economic factors.

These findings highlight the need to retrain obstetric personnel in the evolutionary aspects of pregnancy and childbirth, both in educational curricula and in planning activities for decision-making. This retraining should aim to shift motivations and attitudes among professionals and expectant mothers alike.

The inherent benefits of night time labor, which is evolutionarily more efficient, are often negated by unnecessary hospital policies and procedures that convert this natural nocturnal pattern into a daytime one. This shift can lead to an increased rate of dystosia, as well as births and complications stemming from excessive interventions, such as reduced rates of exclusive breastfeeding, issues in the mother-newborn bonding, adaptation and psychosocial support challenges, and an uptick in premature or low birth weight births.

Given these considerations, the rate of night births could be viewed as a positive indicator of perinatal health, suggesting a need for adjustments in hospital practices and staffing to better align with natural labor patterns.

Availability of Data and Materials

All data points generated or analyzed during this study are included in this article.

Author Contributions

RNA and NLC designed the research study. LPM performed the research. TSP and SPD provided help and advice on statistical calculations. SBL analyzed the data. SBL and LPM wrote the manuscript. All authors contributed to editorial changes in the manuscript. All authors read and approved the final manuscript.

Ethics Approval and Consent to Participate

The study was approved by the Galician Clinical Research Ethics Committee (2015/258). Obtaining informed consent from the pregnant women participating in this work was not necessary since it is a retrospective study based on the review of clinical records and whose rights are safeguarded by the authorization of the ethics committee.

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Conflict of Interest

The authors declare no conflict of interest.

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