

## Etiology of Preterm Birth in Relizane Region (West of Algeria)

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### Abstract

**Introduction:** Preterm deliveries are those that occur at less than 37 weeks gestational age. Preterm birth is a major determinant of neonatal mortality and morbidity and has long-term adverse consequences for health. This study was done to estimate the incidence of preterm labor and to investigate its causes in a university hospital center of Relizane (west ALGERIA).

**Methods:** A cross sectional study was conducted in rural area Oued rhioue (Relizane, west Algeria) among all patients who delivered during study period. Data was collected by interview technique and analyzed by appropriate statistical methods.

**Results:** A total of 3000 deliveries occurred during study period from which 278 were premature birth; the incidence of preterm delivery in the study was (9.26%). Considering the total series, the risk of preterm birth was above unity in hypertensive women (33%), (44%) women had preterm premature rupture of the fetal membranes. Parity, gestity and gestational age were associated with preterm delivery. The relationship was statistically significant ( $P < 0.005$ ). However maternal age and pregnancy interval were not associated with preterm delivery.

**Conclusion:** In our study we found that 9.26% of births were preterm. This number is higher compared to developed countries, especially in Algeria; incur the highest burden in terms of absolute numbers. This is why we need a better understanding of the different causes of preterm birth, and better evaluation of its incidence to be able to improve the obstetric and neonatal care and thus reduce the percentage of preterm birth.

**Keywords:** Incidence of preterm birth; Determinants of preterm birth; West Algeria

### Introduction

Preterm birth is childbirth that occurs at less than 37 weeks, or if counted in days, less than 259 gestational days, and preterm birth is one of the causes of neonatal mortality and morbidity, it also has some long-term effect on health [1,2], it is estimated that 28% of neonatal deaths are related to preterm birth [3]. Although most preterm babies survive, they are at increased risk of neurodevelopment impairments and respiratory and gastrointestinal complications [4].

Some of the health problems that preterm babies can suffer from varies from learning disabilities to cerebral palsy or even some respiratory illnesses, and some of the health's problems related to preterm birth go even beyond the period of childhood and affect the person in his adult life [5,6].

The rate of preterm birth is not only rising in developing countries, but also in industrialized countries, and that in spite of the fact that we now have more knowledge about its risk factors and some of the different ways to reduce it [7]. Some of the factors that we already know are linked to preterm labor are the use of infertility treatments, some environmental exposure, the behavioral choice of mother or her socioeconomic levels [8].

A better understanding of the risk factors associated with preterm deliveries is important for effective prevention. Therefore this study was conducted to estimate the incidence of preterm deliveries and to identify the factors associated with it.

### Methods

We did a retrospective study using the archived records of 3000 deliveries that occurred in the maternity of Oued rhioue (Relizane,

west Algeria), for a period of 24 months from 1 January 2011 to 31 December 2012.

To perform the study, we used a questionnaire and we collected the following data: The characteristics of mothers: (maternal age, gestational age, Gravidity, parity, birth interval, abortions). The obstetric medical factors: (pathology observed during pregnancy). The characteristics of newborns: (weight, sex, Apgar score, prematurity).

Statistical data analysis was performed using the software (Statview 1997). The value of  $p < 0.05$  was considered significant. Measuring the association between prematurity and risk factors is performed according to a logistic regression model. The statistical methods used are the ANOVA test, the coefficients of correlation (correlation matrix). Means were compared using Student's *t* test. The results are given in the form of tables and histograms.

### Results

In the study period there were 3000 births including 278 preterm deliveries representing a prevalence of 9.26% (Figure 1).

Data analysis showed a slight male predominance with 1537 preterm boys (51.19%) versus 1465 preterm girls (48.80%).

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Concerning the relationship between prematurity and maternal factors, our study shows that maternal age did not influence preterm deliveries. There were no established statistically significant relationship between the different age groups and prematurity (Table 1).

In our study, Premature rupture of membranes (PROM) affected a large percentage 42.72% in our sample, 33.33% of women had hypertension during pregnancy, while few women had a dystocia 9.39%, 7.51% had anemia and diabetes were found in 7.04% of women (Figure 2).

Our result show that preterm deliveries increases gradually as parity increases. We found that there is a significant difference between the two groups (term and preterm) depending on the parity (P=0.0028) (Table 1).

There was no relationship between preterm deliveries and the interval between births, as well as statistical tests do not show a statistically significant difference, (P=0.0593).

A clear correlation was noted between the weight of the newborn and (parity, gravidity, birth interval), respectively (R=0.201, R=0.292, R=0.191, R=0.135). Also a strong correlation was noted between weight and gestational age (R=0.450), (Figure 3).

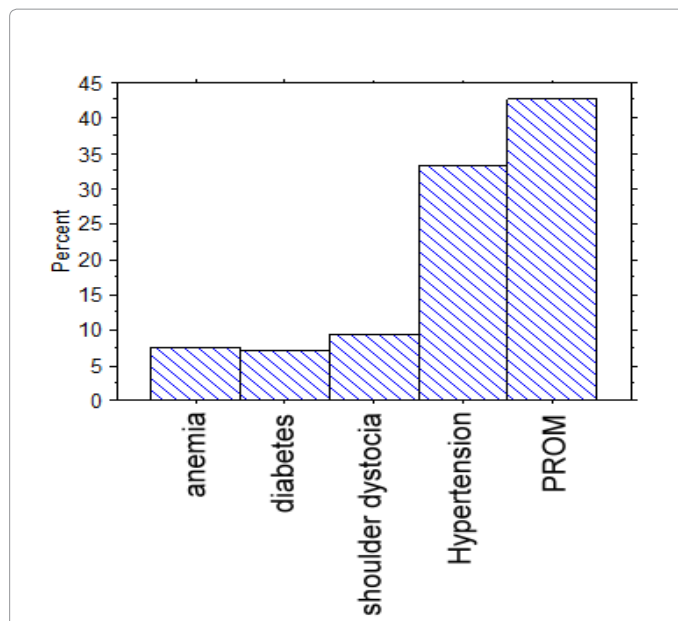


Figure 2: Risk factors for preterm births (medical risk).

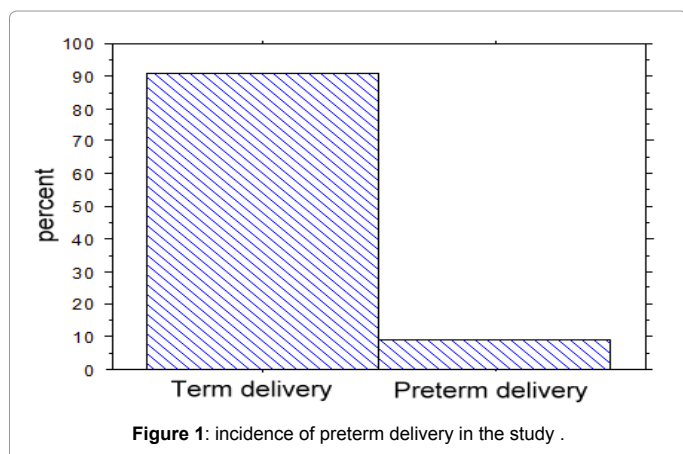


Figure 1: incidence of preterm delivery in the study .

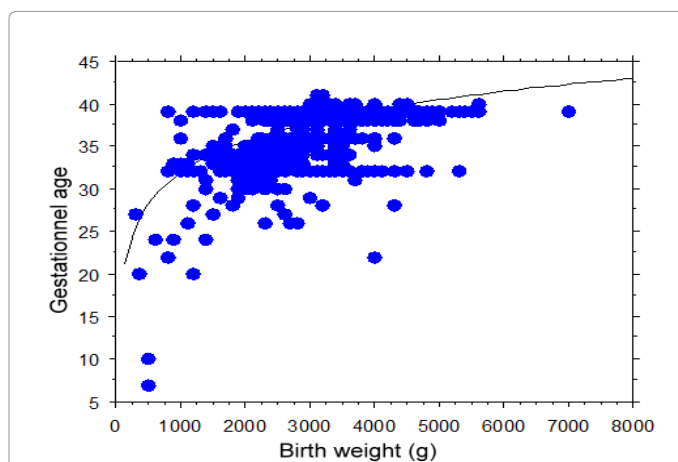


Figure 3: Correlation between gestational age and birth weight.

Maternal and birth factors	Means	%	P	
Maternal Age (years)	<20 years	37.929 ± 3.092	1,86	0,1503
	20-34 years	38.346 ± 1.931	73,61	0,2633
	≥ 35 years	38.261 ± 2.610	24,51	0,3523
Gestational Age (Week)	Preterm birth	32.615 ± 3.423	9,26	<0.0001
	Term deliveries	38.899 ± 0.459	90,74	
Interpregnancy interval (years)	Preterm birth	1.683 ± 1.854	9,26	0.0593
	Term deliveries	1.898 ± 1.804	90,74	
Gestity	Preterm birth	2.317 ± 1.674	9,26	0,0044
	Term deliveries	2.609 ± 1.627	90,74	
Parity	Preterm birth	1.176 ± 0.90	9,26	0.0028
	Term deliveries	1.459 ± 0.29	90,74	
Etiology of preterm	Anemia	36.750 ± 3.110	41.18	0.3978
	Hypertension	37.986 ± 2.945	29.41	0.3034
	Diabetes	38.400 ± 2.683	27.94	0.6725
	PROM	37.374 ± 2.775	1.47	0.8589

Table 1: Maternal anthropometric and obstetric factors.

## Discussion

In our study the rate of preterm birth was 9.26%, this number is close to the incidence of preterm labor reported in developing countries 9-16% [9], it is still higher to that found in Europe and other developed countries, where reported rates are generally 5-9% [10,11]. However it's lower to those found in India 15% and Nigeria 12% [12,13].

Our results note that maternal age did not affect prematurity, however some studies have shown an excess risk of preterm birth among older women [14,15]. In historical cohort study were all birth in Quebec and Denmark were analyzed from 1981 to 2008, over the entire study period women aged 40 years or older in both Denmark and Quebec had the highest risk of Preterm deliveries relative to women aged 25 to 29 years [16]. What is consistent across the different studies is that older maternal age is associated with an increased prevalence of preexisting chronic diseases, medical problems during pregnancy, as well as antepartum and labor complications [17].

In our study, we found that there is a relationship between prematurity and parity which is consistent with some studies [18-20] that described an excess risk of preterm birth among primiparous women. In contrast, Astolfi et al found no differential effect of parity on the risk of preterm birth among older mothers in Italy [21].

Regarding the birth interval, the statistical tests show that there is no relationship between prematurity and the Interpregnancy interval, but several studies have shown that women with a very short interval between pregnancies are at increased risk of complications such as preterm birth [22-24].

In our study 42.72% of preterm labor were caused by preterm premature rupture of the membranes (PPROM) this results is consistent to some the general result where About 30–35% of preterm births are indicated, 40–45% follow spontaneous preterm labor, and 25-30% follow PPROM [8,25].

## Conclusion

In our study period we recorded 3000 deliveries from which 278 were preterm (9.26%), this number is the average reported in developing countries (9-16%). Preterm birth is an important prenatal health problem across the globe especially in developing countries like Algeria. This is why we need a better understanding of the different causes of preterm birth, and better evaluation of its incidence to be able to improve the obstetric and neonatal care, and thus reduce the percentage of preterm birth.

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