



ORIGINAL ARTICLE

## Preterm premature rupture of the fetal membranes: association with sociodemographic factors and maternal genitourinary infections ☆,☆☆

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### KEYWORDS

Premature rupture of fetal membranes;  
Premature;  
Social conditions;  
Maternal age;  
Female urogenital disorders

### Abstract

**Objective:** this study aimed to investigate the incidence of premature rupture of fetal membranes in preterm singleton pregnancies and its association with sociodemographic factors and maternal self-reported genitourinary infections.

**Methods:** this was a population-based cross-sectional study, which included all mothers of newborns of singleton deliveries that occurred in 2010, with birth weight  $\geq 500$  grams, who resided in the city of Rio Grande. Women were interviewed in the two maternity hospitals. Cases were women who had lost amniotic fluid before hospitalization and whose gestational age was less than 37 weeks. Statistical analysis was performed by levels to control for confounding factors using Poisson regression.

**Results:** of the 2,244 women eligible for the study, 3.1% had preterm premature rupture of fetal membranes, which was more frequent, after adjustment, in women of lower socioeconomic status, (prevalence ratio [PR] = 1.94), with lower level of schooling (PR = 2.43), age > 29 years (PR = 2.49), and smokers (PR = 2.04). It was also associated with threatened miscarriage (PR = 1.68) and preterm labor, (PR = 3.40). There was no association with maternal urinary tract infection or presence of genital discharge.

**Conclusions:** the outcome was more common in puerperal women with lower level of schooling, lower socioeconomic status, older, and smokers, as well as those with a history of threatened miscarriage and premature labor. These factors should be considered in the prevention, diagnosis, and therapy approach.

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☆☆ Study conducted at Faculdade de Medicina of the Universidade Federal do Rio Grande

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**PALAVRAS-CHAVE**

Ruptura prematura de membranas fetais; Prematuro; Condições sociais; Idade materna; Doenças urogenitais femininas

## Ruptura prematura das membranas fetais pré-termo: associação com fatores sociodemográficos e infecções geniturinárias maternas

**Resumo**

**Objetivo:** o objetivo deste estudo foi verificar a ocorrência da ruptura prematura das membranas fetais pré-termo em gestações únicas e sua associação com fatores sociodemográficos maternos e infecções geniturinárias autorreferidas.

**Métodos:** estudo transversal de base populacional onde foram incluídas todas as mães dos recém-nascidos dos partos únicos ocorridos no ano de 2010, com peso ao nascer igual ou superior a 500 gramas, residentes no município. As puérperas foram entrevistadas nas duas maternidades da cidade. Foram considerados casos as gestantes que perderam líquido amniótico antes da internação hospitalar e cujo tempo de gestação fosse inferior a 37 semanas. Foi realizada análise estatística por níveis, para controle de fatores de confusão por meio da regressão de Poisson.

**Resultados:** das 2.244 mulheres elegíveis para o estudo, 3,1% apresentaram ruptura prematura das membranas fetais pré-termo, a qual foi mais frequente, após ajuste, nas mulheres de menor nível econômico, razão de prevalência (RP) de 1,94, menor escolaridade, RP de 2,43, com idade superior a 29 anos, RP de 2,49 e tabagistas, RP de 2,04. Também esteve relacionada com ameaça de aborto, RP de 1,68, e de trabalho de parto pré-termo, RP de 3,40. Não houve associação com infecção urinária materna ou presença de corrimento genital.

**Conclusões:** o desfecho foi mais frequente nas puérperas com menor escolaridade, mais pobres, mais velhas e tabagistas, assim como naquelas com histórico de ameaça de abortamento e trabalho de parto prematuro. Estes fatores devem ser considerados na sua abordagem preventiva, diagnóstica e terapêutica.

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**Introduction**

Preterm premature rupture of fetal membranes (PPROM) is defined as loss of amniotic fluid before the onset of labor in pregnancies of less than 37 weeks.<sup>1</sup> This condition occurs in approximately 3% of pregnancies.<sup>2</sup>

PPROM is associated with maternal and fetal pathologies, contributing to the birth of premature infants.<sup>3</sup> The longer the time elapsed between rupture and delivery, the greater the chance of infection for both mother and fetus.<sup>4</sup>

The most common cause of PPRM is spontaneous, which has a multifactorial etiology. It may be related to a structural defect in the membranes due to collagen deficiency or malformation, to the weakening of the membranes due to enzymatic destruction in inflammatory or infectious processes, and to sac exposure due to isthmus-cervix incompetence. PPRM risk is increased if the mother has had previous occurrence of PPRM and low body mass index.<sup>5</sup> Its occurrence is also related to mechanical factors, such as twin pregnancies, due to distended uterine volume.<sup>6</sup> There is a hypothesis of the association between PPRM and genitourinary infections, but there is no consensus in this regard.

The available studies on PPRM in developed countries are case-control, and do not consider factors such as level of schooling and maternal age.<sup>7-9</sup> These factors are important when observing the increase in the number of infants born prematurely.<sup>10</sup>

The association between prematurity and PPRM indicates the need to investigate its occurrence in singleton pregnancies and its association with maternal socioeconomic factors and self-reported genitourinary infections, and

thus, to develop hypotheses for its occurrence and direct measures of disease prevention.

**Methods**

This was a population-based cross-sectional study. The sample included all mothers of newborns of singleton deliveries in 2010, with birth weight  $\geq 500$  g, whose mothers resided in Rio Grande, Brazil, and signed an informed consent. Mothers who did not live in Rio Grande, multiparous women, and those who refused to participate in the study were excluded.

Data were collected through a single, pre-coded, semi-open questionnaire by interviewers in the two maternity hospitals of the city during hospitalization in the first 72 hours after birth. The signs and symptoms present prior to hospitalization, such as loss of fluid, blood, or uterine contractions, were retrospectively evaluated. The occurrence of all maternal diseases that occurred during pregnancy and those prior to pregnancy, as well as data on sociodemographic status, were investigated.

PPROM was considered when the women had shown loss of amniotic fluid before hospitalization and had gestational age  $< 37$  weeks. The gestational age variable was assessed based on the last menstrual period. When the date of last menstrual period was not recalled, the gestational age estimated by ultrasonography performed between the fifth and 20th week of pregnancy was used, followed by the method of Capurro<sup>11</sup> performed by the

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