



Research Article

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# Demographic Characteristic of Pregnant Women on Premature Rupture of Membrane Cases in Tertiary Referral Hospital

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## Abstract

**Background:** Premature rupture of membranes (PROM) can occur due to many etiologies, ranging from physiological weakening of the membrane to intraamniotic infection, especially in early pregnancy. PROM could lead to uterine infection which contribute to the maternal and neonatal mortality. This descriptive observational study aims to report demographic characteristics of PROM in a tertiary referral hospital.

**Methods:** We conducted a cross-sectional study with a descriptive observational approach during a period of 1 year. Sample was obtained using purposive sampling from medical records, univariate analysis was conducted.

**Result:** A total of 80 patients were analysed. An average age of patients when diagnosed with PROM was  $29.4541 \pm 6.559$  with the youngest age being 16.6 years and the oldest being 43.65 years. The patient's last formal education was dominated by graduates who attended high school/equivalent (48.8%). For their spouses, the last formal education was also dominated by high school graduates/equivalent (72.5%). Meanwhile, the type of jobs for their spouses is dominated by private employees (52.5%). Most of the patients are from East Jakarta City (27%). As many as 63.7% of new patients had their first pregnancy and 46% of patients had never had a history of parity before. The great majority of patients also experienced PROM for the first time (96.3%).

**Conclusion:** Patients in this study had following characteristics; high school graduates/equivalent and not working. Mostly residing in East Jakarta. Most of them are nullipara and had no history of PROM.

**Keywords:** Demographic characteristic; Pregnant Women; PROM

## Introduction

Premature rupture of membranes or usually abbreviated to PROM is defined as the rupture of the amniotic membrane before the onset of labor. PROM that occurs when the pregnancy has not reached the age of 37 weeks is called premature PROM [1-3]. PROM cases have a prevalence of 5-10% of all pregnancies [1-3]. PROM can occur due to many etiologies, ranging from physiological weakening of the membrane to intraamniotic infection, especially in early pregnancy, there is also many other risk factor such as, incompetent and short cervix, fetal malpresentation, age more

than 35 years at the time of the pregnancy, multigravida, history of previous PROM, smoking, low socio-economic status, antepartum bleeding, micronutrient and/or macronutrient deficiencies, excess uterine tension, maternal fatigue, trauma from sexual intercourse, internal check-up, and amniocentesis procedure [2,4]. PROM could lead to uterine infection which contribute to the maternal mortality rate of 10-20%. PROM also could cause respiratory distress syndrome, prematurity, and sepsis that could lead to the death of the baby at the rate of 1-2%, especially in the conservatively treated cases [3,5].



This study aims to obtain the latest data regarding demographic characteristics of PROM patients in tertiary referral hospital. which include age, formal education, family income, history of previous births, and previous history of PROM to study them further to have a better understanding regarding prevention and diagnosis of PROM.

### Methods Research Design

A cross sectional study was conducted with a descriptive observational approach at Cipto Mangunkusumo General Hospital (RSCM) for 1 year (August 2021 to December 2021).

### Data Source and Sample

Inclusion criteria include all pregnant women who gave birth at RSCM diagnosed with PROM during the year of 2021.

### Sample Size

The formula of the minimum sample size calculation from calculator.net<sup>24</sup> with 95% confidence interval<sup>6</sup> revealed a minimum sample of 70 patients.

### Data Collecting Method

Data were collected from the medical records of the RSCM in accordance with a purposive sampling technique where out of the 434 samples available, 150 samples were selected by the medical record staff and then the authors randomly inputted 80 samples into the study.

### Data Analysis

The data is presented in descriptive form with numerical data presented in mean and median and categorical data presented in percentage form and then analyzed univariately with SPSS 26.

### Research Ethic

This research upholds ethical values and human rights. This study used medical record data from morning patient reports from the Obgyn Department of the RSCM and received approval from the Research Ethics Committee of the Faculty of Medicine, University of Indonesia with ethical approval number KET-366/UN2.F1/ETIK/PPM.00.02/2022.

## Result

**Table 1:** Demographic characteristic of PROM patients.

Variable	Category	Frequency N=80	Percentage (%)		
Last Formal Patient	Primary school or equivalent	2	2.5		
Education					
Junior high school or equivalent	8	10			
High school or equivalent	39	48.8			
College	15	18.8			
No data	16	20			
Spouse	Primary school or equivalent	0	0		
Junior high school or equivalent	7	8.8			
High school or equivalent	51	63.7			
College	20	25			
No data	2	2.5			
Job Patient	Civil servant	1	1.3		
Private sector employee	22	27.5	Freelancer	1	
Health workers	1	1.3			
Entrepreneur	2	2.5			
None	50	62.5			
No data	3	3.8			
Spouse	Civil servant	4	5		
Private sector employee	42	52.5			
Freelancer	6	7.5			
Entrepreneur	16	20			
No data	12	15			

Residence (City)	Bekasi	5	6.3			
Bogor	3	8				
Depok	1	1.3				
South Jakarta	2	2.5				
Central Jakarta	14	17.5				
South Jakarta	17	21.3				
East Jakarta	27	33.8				
North Jakarta	5	6.3				
Tangerang	4	5				
Outside Jabodetabek*	2	2.5				
* Outside Jabodetabek area: Karawang, Subang, and Batang						
	N	Minimum	Maximum	Mean	Median	Standard Deviation
Age	80	16	43.65	29.4541	28.84	6.55896

Of the 80 study subjects, it was found that the average age of patients when diagnosed with PROM was  $29.4541 \pm 6.559$  and the median was 28.84 years, with the youngest age being 16.6 years and the oldest being 43.65 years. The patient's last formal education was dominated by graduates who attended high school/ equivalent (48.8%). As many as 62.5% of patients are not working. For their spouses, the last formal education was also dominated by high school graduates/equivalent (72.5%). Meanwhile, the

type of jobs for their spouses is dominated by private employees (52.5%). Regarding the address of residence, most of them came from Jakarta with the largest distribution in East Jakarta City (27%). As many as 63.7% of new patients had their first pregnancy and 46% of patients had never had a history of parity before. The great majority of patients also experienced PROM for the first time (96.3%) (Table 1 & 2).

**Table 2:** History of Obstetrics and Gynecology of PROM Patients.

Variable	Category	Frequency N=80	Percentage (%)
Gravidity	Primigravida	29	36.3
	Multigravida	51	63.7
Parity	Nullipara	37	46.3
	Primipara	28	35
	Multipara	15	18
Previous PROM	None	77	96.3
	Yes	2	2.5
	No Data	1	1.3

## Discussion

Age is often associated with the incidence of PROM where patients over 35 years of age are associated with reduced elasticity and density of collagen in the uterus [4,7]. However, in this study, PROM patients were dominated by patients of reproductive age

20-35 years (72.5%), followed by patients aged >35 years (23.8%). The results of this study are in line with studies conducted in Bangladesh which reported findings that the majority of PROM patients were aged between 20-30 years by 66% and previous studies at RSCM which reported 76% of patients were between the ages of 20 and 35 [1,8].

The last formal education taken by patients and their partners can be related to their awareness in maintaining the health of themselves and their families, especially that related to pregnancy, including awareness of the importance of carrying out routine medical examinations during pregnancy [4]. In this study, it was found that the majority of PROM patients had no more than high school education with a total percentage of 58.8%, followed by patients who attended university with a percentage of 18.8%. The same pattern was also seen in their partners with the majority having no more than high school formal education (72.5%) and the rest attending tertiary education (25%). This finding is in line with research in Manado, Balaraja, and Kediri [9-11]. On the other hand, there are contrasting findings in research conducted in Brazil where only a small proportion have not completed undergraduate education. This may be due to the research being conducted at a tertiary hospital that prioritizes subspecialty services [12].

The type of jobs could also be associated with a person's economic status which is widely mentioned as one of the PROM risk factors. Based on research conducted in the United States, it was found that one's job prestige has an association with good personal health in both men and women [13,14]. In this study the majority of patients diagnosed with PROM admitted that they did not work in any jobs during pregnancy (62.5%), followed by private employees (27.5%). This result is in line with studies conducted in Manado and Bangladesh. As for the partners themselves, the type of jobs is dominated by private employees as well (52.5%) followed by entrepreneurs (20%).

Similar to the type of jobs, residential address is also often associated with a person's economic status. In this study, the largest and smallest number of PROM patients came from East Jakarta (33.8%) and outside Jakarta (2.5%). It was found that the majority of patients with PROM actually occupy areas with a per capita GRDP higher than the national average per capita GDP in 2021, namely IDR 62.2 million (83.2%) [15]. This may be due because GRDP cannot reflect on an average basis the real income of each person because of income inequality among residents. In addition to that, these results may also only describe the location of RSCM (Salemba, Central Jakarta) which is closer to reach from that area.

Multigravida and multipara are both frequently associated with the risk of PROM due to overdistended uterus, incompetent and damaged cervix due to previous delivery, and increased risk of infection due to this damage [4,16,17]. In this study itself, most patients with PROM were found to have a history of previous pregnancy of 63.7%, followed by those who were pregnant for the first time by 36.3%. This finding is quite in line with a study in Bangladesh which reported that the majority of PROM patients (62%) had a history of previous pregnancy. In the history of parity alone, it was found that multiparous PROM patients only contributed 18% of the data, followed by primiparous PROM patients (35%),

and the majority had no history of previous childbirth (46.3%). This finding is not in line with a study conducted in Tigray, Ethiopia, where a history of parity in the sample of PROM patients in that study tended to have a more even distribution, although patients who had never had a history of parity before had the smallest percentage (31.2%). However, when combined, the subjects with a history of parturition in this study remained the majority (53%) in line with the study in Ethiopia (67.5%) [5].

In this study, the majority of patients did not have a history of PROM with a percentage of 96.3%, while those with a history of PROM had a very small percentage of 2.5%. This finding is in stark contrast to other studies conducted in Indonesia, such as in Asahan, North Sumatra [18]. This difference in findings may be due to the many other factors that can cause PROM. PROM itself has a multifactorial etiology so that each patient may have a different cause, not limited to a previous history of PROM [19]. In addition, previous history of PROM can only be found in multigravida patients, resulting in the limited distribution to this group of patients.

## Conclusion

Demographic characteristics of the majority of PROM patients in this study had the following characteristics: high school graduate/equivalent (48.8%), not working (62.5%), residing in East Jakarta City (27%), multigravida (63.7%), nullipara (46.3%), and had no history of previous PROM (96.3%).

## References

- Ocviyanti D, Wahono WT (2018) Risk Factors for Neonatal Sepsis in Pregnant Women with Premature Rupture of the Membrane. *J Pregnancy* 1-6.
- Practice Bulletin No. 172 Summary: Premature Rupture of Membranes. *Obstet Gynecol* 128(4): 934-936.
- Abrar NM, Handono B, Triyanti GI (2017) Karakteristik Luaran Kehamilan Dengan Ketuban Pecah Dini Di Rsup Dr. Hasan Sadikin Periode Tahun 2013-2015. *J Sist Kesehatan* 2(4): 12499.
- Maryuni, Kurniasih D (2017) Risk Factors of Premature Rupture of Membrane. *Kesmas Natl Public Heal J* 11(3): 133-137.
- Assefa NE, Berhe H, Girma F, Berhe K, Berhe YZ, et al. (2018) Risk factors of premature rupture of membranes in public hospitals at Mekele city, Tigray, a case control study. *11 Medical and Health Sciences* 1117 *Public Health and Health Services* 1114 *Medical and Health Sciences* 1114 *Paediatrics and Reproductive Medicine. BMC Pregnancy Childbirth* 18(1): 1-7.
- <https://www.calculator.net/sample-size-calculator.html?type=1&cl=95&ci=5&pp=5&ps=1440&x=88&y=32>
- Zakirah SC, Eyanoe PC, Azali CN, Wiwoko B (2020) Premature Rupture of Membrane Outcome Determinants in Reproductive Age Women. *J Matern Child Heal* 05(04): 376-389.
- Dr Anuradha Chakravartty, Dr Plabon Basu, Dr SM Tushar Alom, Dr Farah Anjum (2018) Sonia Sociodemographic Profile and Outcome of Preterm Premature Rupture of Membranes. *J Med Sci Clin Res* 6(8): 514-521.
- Nugrahani R Rosi (2019) Faktor Yang Mempengaruhi Ketuban Pecah Dini. *J Nusant Med* 3(2): 52-66.

10. Syarwani TI, Tendean HMM, Wantania JJE (2020) Gambaran Kejadian Ketuban Pecah Dini (PROM) di RSUP Prof. Dr. R.D. Kandou Manado Tahun 2018. *Med Scope J* 1(2): 24-29.
11. Setyaningsih PH (2019) Gambaran Karakteristik Ibu Bersalin Dengan Ketuban Pecah Dini Di Rumah Sakit Umum Daerah Balaraja Tangerang. *Edu Dharma J J Penelit dan Pengabd Masy* 3(1): 32.
12. (2016) Creasy RK, et al. *Creasy & Resnik's Maternal- Fetal Medicine: Principles and Practice*, 6th edition. In: Elsevier. 7<sup>th</sup> edition. Elsevier.
13. Fujishiro K, Xu J, Gong F. What does "occupation" represent as an indicator of socioeconomic status?: Exploring occupational prestige and health. *Soc Sci Med*. 2010;71(12): 2100-2107.
14. Galletta MAK, Bittar RE, Agra I, Guerra ECL, Francisco RPV, et al. (2019) Epidemiological profile of patients with preterm premature rupture of membranes at a tertiary hospital in São Paulo, Brazil. *Clinics* 74: 1-12.
15. Badan Pusat Statistik (2022) *Ekonomi Indonesia Triwulan IV 2021* Tumbuh 5,02 Persen (yon-y).
16. Panjaitan IM, Tarigan AM (2018) Hubungan karakteristik ibu bersalin dengan ketuban pecah dini di rumah sakit martha friska. *J Bidan Komunitas* 1(2): 67.
17. Sudarto, Tunut T (2016) Risiko Terjadinya Ketuban Pecah Dini Pada Ibu Hamil Dengan Infeksi Menular Seksual. *J Vokasi Kesehat* 2(2): 126-131.
18. Safari FRN (2017) Faktor-Faktor yang Berhubungan dengan Kejadian Ketuban Pecah Dini di Rumah Sakit Umum H. Abdul Manan Simatupang Tahun 2016. *Wahana Inov* 6(2):149-156.
19. Enjamo M, Deribew A, Semagn S, Mareg M (2022) Determinants of Premature Rupture of Membrane (PROM) Among Pregnant Women in Southern Ethiopia: A Case-Control Study. *Int J Womens Health* 14: 455-466.