

## Effect of Community Education on Community Knowledge of Premature Rupture of Membranes

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### Abstract

Premature rupture of membranes (PROM) is still a health problem with a reasonably high incidence among pregnant women in Indonesia. The PROM is defined as the rupture of membranes before signs of labor are observed. Better knowledge on the causes, signs, symptoms, and complications of PROM is believed to help in reducing maternal and infant mortality caused by PROM. This was a cross-sectional, analytic observational study conducted in Cipacing Village, Sumedang, West Java, Indonesia during the period of June–July 2022. Community education was held to give better knowledge about PROM for women with an obstetric and gynecology specialist and fetomaternal consultant as the resource person. Total sampling was obtained from 62 women. Data were collection using pre-test and post-tests before and after the education session. The mean pre-test score was 6.48, while the mean post-test score was 7.96. A dependent T-test was used to determine the relationship between scores before and after the community education with a p-value of 0.0001. There was a significant increase in knowledge about PROM after the education session compared to before the session. This means community education is effective and impactful to increase the level of knowledge about PROM among women.

**Keywords:** Community education, group education, knowledge, PROM

### Introduction

Maternal mortality rate (MMR) is one indicator used to see women's health status in an area. This indicator can assess maternal health programs and the degree of public health because of their sensitivity to improving health services in terms of accessibility and quality. The decline in MMR in Indonesia occurred from 1991 to 2007, from 390 to 228. However, the 2012 Indonesian Demographic and Health Survey (SDKI) showed a significant increase in MMR, 359 maternal deaths per 100,000 live births. MMR again showed a decline to 305 maternal deaths per 100,000 live births based on the 2015 Intercensus Population Survey (SUPAS) result.<sup>1</sup>

According to the World Health Organization (WHO), around 830 women worldwide die from complications during pregnancy and childbirth.

Approximately 99% of all maternal deaths occur in developing countries. The number of maternal deaths worldwide in 2018 was 303,000 people, and the number of maternal deaths due to pregnancy and childbirth complications worldwide was 216. One of the causes is caused by premature rupture of membranes.<sup>2,3</sup>

Premature rupture of membranes (PROM) is still a health problem in Indonesia, with a reasonably high incidence and mortality rate; premature rupture of membranes is close to 10% of all deliveries. At less than 34 weeks of gestation, it is around 4%. Meanwhile, according to Fadli, the incidence of PROM in Indonesia was 35.70% -55.30% of 17,665 births.<sup>1</sup> Premature rupture of membranes (PROM) is defined as rupture of the membranes before signs of labor. This can occur in pregnancy at term or in preterm pregnancy. PROM is the most significant cause of early labor with various consequences.<sup>4,5</sup> PROM is a state of rupture of the membranes before delivery. If PROM occurs before 37 weeks of gestation, it is referred to as premature rupture of membranes in preterm pregnancy or Preterm Premature Rupture of Membranes (PPROM).<sup>6</sup>

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Better knowledge about PROM’s causes, signs, symptoms, and complications will go one step further in reducing maternal and infant mortality.<sup>7</sup>

This study aimed to determine the relationship between the level of knowledge before and after community education in terms of pre-test and post-test scores.

**Methods**

This research was a cross-sectional, analytic observational study conducted in Cipacing Village, Sumedang, West Java, from June to July 2022. This study obtained Ethical approval from The Health Research Ethics Committee of Dr. Hasan Sadikin General Hospital Bandung with the number LB.02.01/X.6.5/448/2022. The research subjects were all women who attended the community education about PROM at the Cipacing Village Office on July 18th, 2022. All of them had various professions and backgrounds in the productive age range of 20-36 years old. The event was held in a sports hall within the village office. The media used were interactive PowerPoint presentations, flyers, and posters. The subjects were first asked to do the pre-test before listening to the PROM explanation. They can then ask questions to the speaker regarding the topics. The study obtained a total sampling of 62 women. The inclusion criteria were that subjects completed the pre-test, attended community education, and completed the post-test. This study’s exclusion criteria were subjects

who did not meet the test. The scores were then categorized as high, adequate, and low levels of knowledge about PROM.

This study analyzed the research data with Statistical Package for the Social Sciences (SPSS) version 26 for Mac, where the data were divided into univariate and bivariate data. Univariate data showed the respondents’ distribution based on age and level of knowledge. Bivariate data showed the respondents’ distribution based on the relationship between the level of knowledge before and after community education in terms of pre-test and post-test. The Shapiro-Wilk test was used to measure the data normality. The dependent T-test and Fisher exact test were used to analyze the bivariate data. The data were presented in tables.

**Results**

This research was a cross-sectional, analytic observational study conducted in Cipacing Village, Sumedang, West Java. The research subjects were all women who attended the community education about PROM at the Cipacing Village Office. The study obtained a total sampling of sixty-two women. The inclusion criteria were that subjects completed the pre-test, attended the massive counseling, and completed the post-test. This study’s exclusion criteria were subjects who did not meet the test.

Table 1 presents subjects’ characteristics based on age, pre-test score, post-test score, and level of knowledge. The mean pre-test score is 6.48, while the mean post-test score is 7.96. Table 1 shows that most respondents have adequate knowledge about the premature rupture of membranes (46.8%). The test scores determine the level of knowledge. A value below 55% is declared low, between 55% and 76% is declared adequate, and over 76% is declared high.

The Shapiro-Wilk test was done to see the normality of the data, and the result showed a normal distribution in age, pre-test, and post-test scores. Therefore, a Fisher exact test was used to determine the relationship between age and level of knowledge. Table 2 shows that age and level of knowledge have no significant relationship. This means age does not affect the level of knowledge about PROM.

The effect of massive counseling in this study can be seen from the difference in test scores before and after implementing the massive counseling intervention. A dependent T-test was used to determine the relationship between

**Table 1 Subjects Characteristics**

Variables	Frequency	
	n=62	%
Age (years)		
<20	13	21.0
20-35	24	38.7
>35	25	40.3
Mean±SD	33.1±14.4	
Pre-test Score		
Mean±SD	6.48±1.45	
Post-test Score		
Mean±SD	7.96±0.92	
Level of knowledge		
Low	14	22.6
Adequate	29	46.8
High	19	30.6

**Table 2 Relationship between Age and Level of Knowledge**

Variables	Level of knowledge						p value
	Low		Adequate		High		
	n	%	n	%	n	%	
Age (years)							
<20	4	6.45	7	11.29	2	3.22	0.415
20-35	6	9.67	10	16.12	6	9.67	
>35	4	6.45	12	19.35	11	17.74	

**Table 3 Pre-Test and Post-Test Score Distribution**

		p value
Pre-test Score		0.0001*
Median	7.00	
Min-Max	1.00-9.00	
Mean±SD	6.48±1.45	
Post-test Score		
Median	8.00	
Min-Max	6.00-10.00	
Mean±SD	7.96±0.92	

\*p value significant

scores before and after the massive counseling with p-value = 0.0001. Table 3 shows a significant difference between the pre-test and post-test scores. This means the massive counseling is effective and impactful towards the level of knowledge about PROM.

At the time of the post-test, most subjects experienced an increase in scores, namely as many as 49 people (79%). Subjects whose scores were fixed were 10 people (16.1%), and those whose scores were decreased were 3 people (4.8%).

The N-gain score is then carried out to determine the effectiveness of a method or treatment. The results obtained are 0.36, which is in the moderate category, so it can be interpreted that the massive counseling method is quite effective ( $0.3 \leq g \leq 0.7$ ) in increasing knowledge about PROM.

**Table 4 Distribution f Score Elevation**

Score	n	%
Increase	49	79
Stagnant	10	16.1
Decrease	3	4.8

### Discussion

Knowledge is an abstract concept without any reference to the tangible world.<sup>8</sup> However, knowledge could be interpreted as human sensing or knowing about an object through the five senses. Sensing occurs through the five human senses, namely the senses of sight, hearing, smell, taste, and touch.<sup>9</sup> According to Dale, the capture of knowledge imparted through the sense of sight is 75-87%, through the sense of hearing is 13%, and 12% from other senses. The more senses are involved in capturing messages, the easier the message can be received by educational targets.<sup>10</sup> In this study, community education can obtain subject knowledge through the senses of sight and hearing using interactive presentation media. Other studies using the same media show significant differences in knowledge scores on subjects before and after being given the education.<sup>11</sup> There was a significant increase in dental and oral health knowledge scores before and after being given counseling with media presentations.<sup>12</sup> Poster media is also effective as an educational medium because it helps stimulate the sense of sight. In addition, the visual aspects of poster images also make it easier to receive information or educational materials.<sup>9</sup>

There is a significant difference in average PROM knowledge before and after the intervention. The existence of respondents who did not experience an increase in knowledge or even experienced a decrease in score could be caused by several things. The decrease in the knowledge score can be caused by the need for more concentration of respondents in participating in the research process, filling out the pre-test and post-test questionnaires, and participating in community education. This may be because the education was carried out at the Village Office Sports Hall, so the voices tended to resonate. Conditions of the event that could be more conducive can reduce the focus and

enthusiasm of respondents to discuss and listen to educational material. To assess the effect of education, knowing how significant the effect is on knowledge is necessary.

Educational effectiveness is the success of education as measured by the increase in the value of the respondent's knowledge after education. Effectiveness is used to assess the level of program success and target achievement and compare the effectiveness of several programs.<sup>13,14</sup>

In this study, what is meant by results in effectiveness is the number of respondents who experience an increase in knowledge. The number of respondents who experienced an increase in knowledge was 49 (79%). Based on the calculation of the N-gain score formula, the result is 0.36, which is in the moderate category, so it can be interpreted that the community education method is quite effective ( $0.3 \leq g \leq 0.7$ ) in increasing knowledge about PROM.

There is a significant difference in knowledge about PROM between before and after counseling with  $p\text{-value}=0.0001$  with an N-gain score of 0.36. It is better to conduct research with a quasi-experimental design using a control group for future studies.

In conclusion, community education is effective and impactful toward the level of knowledge about PROM.

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