Is Parity a Predictor of Neonatal Death in Indonesia? Analysis of the 2017 Indonesia Demographic and Health Survey

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Abstract

One factor that is thought to have a close relationship with neonatal deaths is parity. This is a problem for Indonesia which has the cultural characteristics of a large number of children is something positive. The study used the 2017 IDHS data. With stratification and multistage random sampling, 36,548 women aged 15-49 years with live births in the last 5 years were sampled. The final analyzed using a Binary Logistic Regression test. Multiparous women in Indonesia have a higher percentage of neonatal deaths than multiparous women. But the difference in parity between primiparous and multiparous was found not to be a predictor of neonatal death in Indonesia. Three other variables were found to be proven, predictors. Women who were not employed were 0.576 times more likely than women employed for neonatal death (OR 0.576; 95% CI 0.407-0.814). Women who did antenatal care ≥4 times were 2.332 times more likely than women who had ANC <4 times to experience neonatal death (OR 2.332; 95% CI 1.519-3.578). Women who did not experience a complication during delivery were 0.457 times more likely than women who had a complication during delivery for neonatal death (OR 0.457; 95% CI 0.317-0.659). The study concluded that parity was not a predictor of neonatal death in Indonesia. Other variables that were proven to be predictors are employment status, antenatal care, and complications during pregnancy.

Keywords: *neonatal death, mother and child health, parity.*

Background

The neonatal period, or the first twenty-eight days of life, is the most vulnerable time for a child's survival. Data collected by WHO from various countries found that in 2018, 47% of all under-five deaths occurred in the neonatal period[1]. Unicef 2018 data recorded a global average of neonatal mortality of 18 deaths per 1,000 live births[2].

Neonatal mortality is an important indicator that reflects the quality of newborn, prenatal, intrapartum and neonatal care. Early neonatal mortality is more closely related to factors related to pregnancy and maternal health, whereas late neonatal mortality is more related to factors in the newborn environment[2].

The majority of neonatal deaths are concentrated on the first day and week, with around 1 million dying on the first day and almost one million dying within the next six days. Current trends, more than 60 countries will lose the opportunity to achieve the SDG target to reduce neonatal deaths to as low as 12 deaths per 1000 live births by 2030. About half of them will still not reach the target until 2050. These countries carry about 80% of the neonatal mortality burden in 2016[1].

Neonatal mortality in Indonesia is still high. The results of the 2017 Indonesia Demographic and Health Survey report show 15 neonatal per 1000 live births. This figure is higher than the figures achieved by the countries in the region[3].

One factor that is thought to have a close relationship with neonatal deaths is parity[4]. Such a situation is a problem for a country like Indonesia, which has a culture with a large number of children with cultural characteristics which is positive[5]. It is important to prove

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statistically that parity is a predictor of neonatal deaths in Indonesia, to focus more on efforts to prevent neonatal deaths based on parity. Based on the background, this study is aimed at analyzing parity as a predictor of neonatal death in Indonesia.

Materials and Method

This study used data from the 2017 Indonesian Demographic Data Survey (IDHS) as analysis material. The 2017 IDHS sample was determined through stratification and multistage random sampling. The unit of analysis in this study was women in childbearing aged, 15-49 years old, who had given birth in the last 5 years. A number of 36,548 women were sampled.

The 2017 IDHS has passed ethical tests from the National Institute for Health Research and Development of the Indonesian Ministry of Health. The respondents' identities have all been deleted from the dataset. Respondents have provided written approval for their involvement in the study. The use of the 2017 IDHS data for this study has received permission from ICF International through its website: https://dhsprogram.com/data/new-user-registration.cfm.

Parity is the number of living children whose births are born to a woman. In this study parity was divided into two, namely primiparous (<2 children), and multiparous (≥2 children). Socioeconomic was the wealth status of respondents compiled based on the index of goods ownership quintile stated by the respondent. The five categories were the poorest (quintile 1), poorer (quintile 2), middle (quintile 3), richer (quintile 4), and richest (quintile 5). Complications during pregnancy were the respondent's acknowledgment of complications experienced during pregnancy until delivery. These problems consist of: prolonged labor, vaginal bleeding, fever, convulsions, baby in the wrong position, swollen limbs, faint, breathlessness, tiredness, and others. Problems during delivery were the respondent's acknowledgment of problems experienced during childbirth[3].

Variables analyzed included: parity, age groups, educational level, wealth status, employment status, place of residence, antenatal care, complication during pregnancy, a problem during delivery, childbirth assistance, and place of delivery. Statistical analysis using chi-square was carried out to select the variables. Estimates were performed using Binary Logistic Regression because of the nature of the dependent variable. All statistical analyses were carried out using SPSS 19 software.

Findings

Table 1 was a descriptive statistic of neonatal death and related variables in Indonesia. Table 1 showed that multiparous women have higher neonatal deaths than primiparous women.

Tabel 1. Descriptive Statistics of Neonatal Death in Indonesia (n=36,548)

Variables	The Parity				P
	Primiparous		Multiparous		
	n	%	n	%	
Neonatal Death					*<0.001
No	4715	99.14%	31027	97.59%	
Yes	41	0.86%	765	2.41%	
Age groups					*<0.001
15-19 yo.	390	8.20%	53	0.17%	
20-24 yo.	1820	38.27%	1285	4.04%	
25-29 yo	1668	35.07%	5108	16.07%	
30-34 yo.	605	12.72%	9141	28.75%	
35-39 yo.	189	3.97%	9562	30.08%	
40-44 yo.	71	1.49%	5283	16.62%	
45-49 yo. (ref.)	13	0.27%	1360	4.28%	

Cont... **Tabel 1. Descriptive Statistics of Neonatal Death in Indonesia (n=36,548)**

Educational level					*<0.001
No education (ref.)	19	0.40%	809	2.54%	
Primary	717	15.08%	10605	33.36%	
Secondary	2933	61.67%	16276	51.20%	
Higher	1087	22.86%	4102	12.90%	
Wealth status					*<0.001
Poorest (ref.)	1115	23.44%	10177	32.01%	
Poorer	966	20.31%	6149	19.34%	
Middle	958	20.14%	5462	17.18%	
Richer	904	19.01%	5062	15.92%	
Richest	813	17.09%	4942	15.54%	
Employment status					*<0.001
No employed	2645	55.65%	15815	49.78%	
Employed (ref.)	2108	44.35%	15953	50.22%	
Place of Residence					*<0.001
Urban	2399	50.44%	14866	46.76%	
Rural (ref.)	2357	49.56%	16926	53.24%	
Antenatal care					*<0.001
≥ 4 times	459	9.65%	22552	70.94%	
< 4 times (ref.)	4297	90.35%	9240	29.06%	
Complication during pregnancy					*0.025
No	3803	81.59%	3803	83.09%	
Yes (ref.)	858	18.41%	858	16.91%	
Problems during delivery					*0.002
No	3	0.06%	2	0.01%	
Yes (ref.)	4753	99.94%	31790	99.99%	
Childbirth assistance					*<0.001
Non health worker (ref.)	312	6.56%	20342	63.98%	
Health worker	4444	93.44%	11450	36.02%	
Place of delivery					*< 0.001
Non Healthcare facility (ref.)	935	19.66%	22509	70.80%	
Healthcare facility	3821	80.34%	9283	29.20%	

Note: *significant at level 95%

Table 1 shows that multiparous women have a higher neonatal death than multiparous women. Statistical test results show that there are significant differences between the two. Table 1 shows that all variables to be tested as predictors proved to be significant, and could be continued to the next stage.

Table 2 describes the results of the binary logistic regression test for neonatal death in Indonesia. The results of his analysis show that although primiparous women have lower odds ratios than multiparous women, the difference in parity between primiparous and multiparous is not a predictor of neonatal death in

Indonesia. The results of this study are different from other studies, which found that parity is one of the determinants of neonatal mortality[6,7,8].

Tabel 2. The Result of Binary Logistic Regression of Neonatal Death in Indonesia (n=36,548)

The Predictors	The Neonatal Death			
	Sig.	OR	CI (95%)	
			The Lower Bound	The Upper Bound
Parity: Primipara	0.067	0.621	0.374	1.033
Age group: 15-19 yo.	0.165	2.529	0.683	9.367
Age group: 20-24 yo.	0.766	0.839	0.265	2.659
Age group: 25-29 yo	0.582	0.740	0.253	2.162
Age group: 30-34 yo.	0.522	0.708	0.247	2.036
Age group: 35-39 yo.	0.622	0.766	0.266	2.206
Age group: 40-44 yo.	0.595	1.338	0.457	3.915
Educational level: Primary	0.488	0.688	0.239	1.979
Educational level: Secondary	0.416	0.641	0.220	1.871
Educational level: Higher	0.203	0.465	0.143	1.510
Wealth status: Poorer	0.073	0.614	0.360	1.046
Wealth status: Middle	0.109	0.629	0.356	1.109
Wealth status: Richer	0.822	1.063	0.624	1.812
Wealth status: Richest	0.317	0.719	0.377	1.372
Employment status: No employed	*0.002	0.576	0.407	0.814
Type of Residence: Urban	0.427	1.170	0.794	1.724
Antenatal care: ≥ 4 times	*0.000	2.332	1.519	3.578
Complication during pregnancy: No	*0.000	0.457	0.317	0.659
Problems during delivery: No	0.999	0.000	0.000	0.000
Childbirth assistance:Health worker	0.113	0.608	0.329	1.126
Place of delivery: Healthcare facility	0.685	1.110	0.671	1.837

Note: *Significant at level 95%

Table 2 shows that there are three significant variables as predictors of neonatal death in Indonesia. The three variables are employment status, antenatal care, and complication during pregnancy.

Table 2 shows that women who were not employed had a probability of 0.576 times compared to women employed for neonatal death (OR 0.576; 95% CI 0.407-0.814). This means that employed women have a higher chance of having neonatal death than those who are not employed. A study in Ethiopia found similar results. Employment status was found along with other demographic factors that contributed to neonatal mortality[9].

Paradoxically, it was found that women who did antenatal care ≥4 times were 2.332 times more likely than women who did ANC <4 times to experience neonatal death (OR 2.332; 95% CI 1.519-3.578). Research in Nigeria and Southern Ethiopia shows different results. Verbal/social autopsy results show that lack of antenatal care has proven to be a factor affecting mortality in both countries[10,11]. The analysis results in this study also contradict the results of research in Brazil which found that an early diagnosis during pregnancy that was performed during antenatal care can prevent infant mortality. It is predicted that 35.3% of infant deaths can be prevented by early diagnosis[12].

The paradoxical research results as in this study were also found in a study in Ethiopia. Analysis in Ethiopia found that childbirth performed at home actually has a better chance and protects the infant from death[13].

Table 2 shows that women who did not experience a complication during delivery were 0.457 times more likely than women who had a complication during delivery for neonatal death (OR 0.457; 95% CI 0.317-0.659). This means that women who have a complication during delivery have a higher chance of having neonatal death than those who do not have a complication during delivery. This result is in line with research in China and the United States[14,15]. Several studies recommend strengthening early identification of obstetric complications and immediate interventions to prevent neonatal death[11,12].

The results of this analysis indicate the possibility that although women in Indonesia perform antenatal care more frequently, experience complications during pregnancy, they may have a higher chance of experiencing neonatal death. Another possibility is the availability of health services which are still uneven in some parts of Indonesia[16]. The geographical condition of Indonesia, which has more than 16 thousand, could also be another factor affecting neonatal death[17,18], including the still thick local cultural customs that make Indonesian women choose to give birth at a traditional birth attendant[19,20].

Conclusions

Based on the results of the study it can be concluded that parity was not a predictor of neonatal death in Indonesia. Other variables that were proven to be predictors were employment status, antenatal care, and complications during pregnancy.

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