Understanding Neonatal Death in Urban Area in Indonesia

Agung Dwi Laksono[1], Ratna Dwi Wulandari[2]

[1]National Institute of Health Research and Development, The Ministry of Health, The Republic of Indonesia, Jl. Percetakan Negara 29, Jakarta, Indonesia, [2]Faculty of Public Health, Universitas Airlangga Surabaya, Indonesia, Campus C Mulyosari Surabaya, Indonesia

Abstract

Data collected by WHO from various countries found that in 2018, 47% of all under-five deaths occurred in the neonatal period. The study aimed to analyze variables related to neonatal death in urban Indonesia. The analysis utilizes secondary data from the 2017 Indonesia Demographic and Health Survey. With stratification and multistage random sampling, 17,265 women aged 15-49 years in urban areas with live births in the last 5 years were sampled. Data were analyzed using a Binary Logistic Regression test. The analysis found that the richest women were 0.602 times more likely to experience neonatal death than the poorest women in urban areas(OR 0.602; 95% CI 0.409-0.886). Primiparous women were 0.526 times more likely to experience neonatal death than grand-multiparous women in urban areas of Indonesia(OR 0.526; 95% CI 0.307-0.903). Multiparous women were 0.636 times more likely to experience neonatal death than grand-multiparous women in urban areas in Indonesia(OR 0.636; 95% CI 0.492-0.822). Women who have antental care visits ≥ 4 times have a 0.237 chance of experiencing neonatal death compared to women who have antental care visits <4 times in urban areas in Indonesia(OR 0.237; 95% CI 0.163-0.334). It was concluded that there are 3 variables that affect neonatal death in urban area in Indonesia, namely wealth status, parity, and antenatal care.

Keywords: *Neonatal death, maternal health, pregnancy,urban.*

Introduction

The neonatal mortality record in Indonesia in 2017 shows poor achievement. At the world level, Indonesia ranks eighth highest[1]. Information from the 2017 Indonesia Demographic and Health Survey (IDHS) notes that neonatal deaths in Indonesia are in the range of 15 deaths per 1,000 live births[2].

Neonatal deaths according to WHO are those among live births during the first 28 days of life[3]. Neonatal deaths are further divided into early neonatal deaths (deaths between 0 and 7 complete days) and late neonatal deaths (deaths after 7 days to 28 days of complete birth)[1]. Neonatal mortality is one important indicator to describe the quality of newborn care, prenatal care, intrapartum, and neonatal care. In general, early neonatal deaths are related to matters relating to pregnancy and maternal health, whereas advanced neonatal deaths are related to matters surrounding newborns[4].

Globally, UNICEF released neonatal mortality data at around 18 deaths per 1,000 live births[5]. While WHO released a statement that 47% of deaths that occur in infants often take place in the perinatal period[4]. This information shows that the neonatal period, the first twenty-eight days of life, is the most vulnerable time for a child's survival.

Several recent studies have found that in Indonesia community access to health services in urban areas tends to be better than people living in rural areas[6,7]. Even

Corresponding Author:
Ratna Dwi Wulandari
National Institute of Health Research and Development, The Ministry of Health, The Republic of Indonesia, Jl. Percetakan Negara 29, Jakarta, Indonesia
e-mail: ratna-d-w@fkm.unair.ac.id

though they have better access to health, it does not mean that people who live in urban areas have no problems. Access to health services is still low, especially for the poor[8,9].

Based on this background, this study is intended to analyze variables related to neonatal death in urban areas in Indonesia. The results of this study are crucial for health policymakers to understand the factors that can affect neonatal death so that they have the right steps to accelerate the reduction in neonatal death.

Materials and Method

Data Source: Secondary data from the 2017 Indonesian Demographic Data Survey (IDHS) was used as an analysis material in this study. The IDHS was part of the international Demographic and Health Survey (DHS) program conducted by the Inner City Fund (ICF). The 2017 IDHS sample was determined through stratification and multistage random sampling. The unit of analysis in this study was women aged 15-49 years old who had given birth in the last 5 years in the urban area in Indonesia. The sample size of the 2017 IDHS used in this analysis was 17,265 women.

Data Analysis: The dependent variable in this study was neonatal death. Neonatal death is the death of the first month after birth (0-28 days). The independent variables analyzed in this study include age group, education level, wealth status, employment status, parity, antenatal care, and childbirth assistance. Statistical analysis using chi-square was carried out for all dichotomous variables. Estimates were performed using Binary Logistic Regression because of the nature of the dependent variable. All statistical analyses were carried out using SPSS 22 software.

Findings: Table 1 is a descriptive statistics of neonatal death in urban areas in Indonesia. It is seen that in both categories (experiencing neonatal death or not) is dominated by women in the age group of 35-39 years old. Chi-square test results showed that there was no relationship between age groups with neonatal death.

Table 1 shows that in both categories (experiencing neonatal death or not) were dominated by women with secondary education levels. In the wealth status variable, women who experienced neonatal death were dominated by those who had wealth status richer, while those who did not experience neonatal beat were dominated by richest women.

Table 1. Descriptive Statistics of Neonatal Death and Related Variabel in Urban Indonesia (n=17,265)

Variables	Neonatal Death				P
	No		Yes		
	n	%	n	%	
Age Groups					0.542
15-19 years old	172	1.0%	6	1.7%	
20-24 years old	1257	7.4%	29	8.2%	
25-29 years old	3090	18.3%	54	15.3%	
30-34 years old	4613	27.3%	92	26.0%	
35-39 years old	4751	28.1%	101	28.5%	
40-44 years old	2485	14.7%	60	16.9%	
45-49 years old.	543	3.2%	12	3.4%	
Educational level					***<0.001
No education (ref.)	121	0.7%	7	2.0%	
Primary	3450	20.4%	99	28.0%	
Secondary	10137	59.9%	196	55.4%	
Higher	3203	18.9%	52	14.7%	
Wealth status					***<0.001
Poorest (ref.)	1865	11.0%	63	17.8%	
Poorer	2794	16.5%	61	17.2%	
Middle	3563	21.1%	72	20.3%	

Variables	Neonatal Death				P
	No		Yes		
	n	%	n	%	
Richer	4013	23.7%	89	25.1%	
Richest	4676	27.7%	69	19.5%	
Employment status					0.526
Not employed	8691	51.4%	176	49.7%	
Employed	8211	48.6%	178	50.3%	
Parity					***<0.001
Primiparous	2378	14.1%	21	5.9%	
Multiparous	12123	71.7%	238	67.2%	
Grand-multiparous(ref.)	2410	14.3%	95	26.8%	
Antenatal care					***<0.001
< 4 (ref.)	10027	59.3%	294	83.1%	
≥ 4	6884	40.7%	60	16.9%	
Childbirth Assistance					***<0.001
Non Health Worker (ref.)	8692	51.4%	234	66.1%	
Health Worker	8219	48.6%	120	33.9%	

Note: *p < 0.05; **p < 0.01; ***p < 0.001.

Table 1 informs that employment status is not related to neonatal death. Based on the parity variable, both categories (experiencing neonatal death or not) are dominated by multiparous women. Based on antenatal care frequency, both categories (experiencing neonatal death or not) are dominated by women who make antenatal care visits ≥ 4 times. While in the childbirth assistance variable, both categories (experiencing neonatal death or not) were dominated by women who were assisted by non-health workers.

Table 2. The Result of Binary Logistic Regression of Neonatal Death in Urban Area Indonesia (n=17,265)

The Predictors	The Neonatal Death			
	Sig.	OR	CI (95%)	
			The Lower Bound	The Upper Bound
Educational level: No education	-	-	-	-
Educational level:Primary	0.289	0.650	0.293	1.442
Educational level:Secondary	0.115	0.528	0.239	1.167
Educational level:Higher	0.136	0.528	0.228	1.224
Wealth status: Poorest	-	-	-	-
Wealth status: Poorer	0.138	0.759	0.527	1.093
Wealth status: Middle	0.138	0.763	0.534	1.091
Wealth status: Richer	0.550	0.899	0.633	1.276
Wealth status: Richest	*0.010	0.602	0.409	0.886
Parity: Primiparous	*0.020	0.526	0.307	0.903
Parity: Multiparous	**0.001	0.636	0.492	0.822
Parity: Grand-multiparous(ref.)	-	-	-	-
Antenatal care: < 4 time	-	-	-	-
Antenatal care: ≥ 4 times	***<0.001	0.237	0.163	0.343
Childbirth assistance: Non-health worker	-	-	-	-
Childbirth assistance: Health worker	0.548	0.796	0.378	1.675

Note: *p < 0.05; **p < 0.01; ***p < 0.001.

Table 2 is the result of the binary logistic regression test that describes the variables associated with neonatal death in urban areas in Indonesia. As a reference, the chosen category is "not experiencing neonatal death". Table 2 shows that the richest women were 0.602 times more likely to experience neonatal death than the poorest women in urban areas in Indonesia (OR 0.602; 95% CI 0.409-0.886).

The results of this analysis inform that good wealth status reduces the risk of experiencing neonatal death. People who have better wealth status have more health service choices. Access to health services is no longer constrained by the issue of costs[10,11].

Table 2 informs that primiparous women are 0.526 times more likely to experience neonatal death than grand-multiparous women in urban areas in Indonesia (OR 0.526; 95% CI 0.307-0.903). Multiparous women are 0.636 times more likely to experience neonatal death than grand-multiparous women in urban areas in Indonesia (OR 0.636; 95% CI 0.492-0.822).

This information shows that the more children a woman are born in urban areas, the higher the likelihood of experiencing neonatal death. This finding is in line with the results of research with similar subjects conducted in Iraq. The more children are born, the greater the chance for complications for the mother[12]. Another study in Nigeria found that grand-multiparous women are risk factors for antenatal anemia, fetal macrosomia, perinatal mortality, and primary postpartum hemorrhage[13].This information reinforces that multiparity is a risk factor for neonatal death.

Table 2 shows that women who had antenatal care visits ≥ 4 times were 0.237 times more likely to experience neonatal death than women who had antenatal care visits <4 times in urban areas in Indonesia (OR 0.237; 95% CI 0.163-0.334). This information shows that antenatal care visits ≥ 4 times are positive determinants for reducing the risk of neonatal death.

In the group of multiparous women, inadequate antenatal care can increase the risk of perinatal complications in grand-multiparous women[14]. Performing a complete or more frequent antenatal care can increase the possibility of early detection of danger signs of pregnancy so that possible complications can be identified early. Thus the incidence of neonatal death can be prevented[15,16,17].

In the Indonesian context, another study found that grand-multiparous and poor women had a lower probability of antenatal care compared to primiparous and wealthy women[18]. These findings are in line, and further, strengthen the results of the analysis in this study.

Based on the results of the research analysis, it is necessary to have a structured policy to reduce neonatal death in urban area in Indonesia. The government needs to issue a policy to strengthen the early detection of obstetric complications in[19,20], and redistribute health financing to more appropriate targets[21]. With the main target in poor and grand-multiparous women. This step needs to be done as a way to prevent neonatal death in urban area.

Conclusions

Based on the research findings it can be concluded that there are 3 variables that affect neonatal death in urban areas in Indonesia. The three variables are wealth status, parity, and antenatal care.

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Ethical Clearance: 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

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