

Factors Associated with the Place of Delivery among Urban Poor Societies in Indonesia

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Abstract

Background: Pregnant women in urban poor societies are vulnerable groups. Due to low financial capacity, there are obstacles to accessing delivery in an institution for poor women in urban areas. The study analyses factors associated with the delivery place among pregnant women in urban poor society in Indonesia. **Materials and Methods:** The study analyzed secondary data from the 2017 Indonesian Demographic and Health Survey (IDHS). A total of 1,562 samples were childbearing-age women (15–49 years) who gave birth in an urban poor society in Indonesia in the last 5 years. The study examined some variables, such as delivery place, age, education, employment, marital status, parity, insurance, knowledge of pregnancy danger, antenatal care (ANC), the autonomy of health, and family finance autonomy. The study employed binary logistic regression in the final stage. **Results:** The results show that age is associated with the place of delivery. The higher the education, the higher the possibility for delivery in an institution. Being employed and having partners are protective factors for women in institution delivery. The likelihood of giving birth in a medical facility decreases as more children are born alive. In addition, having health insurance, thorough ANC visits, knowledge of pregnancy danger symptoms, and health autonomy are protective factors for pregnant women having deliveries in medical facilities. On the contrary, pregnant women who rely solely on family financing have a higher chance of delivering in a medical facility. **Conclusion:** The study concluded that 10 variables were associated with pregnant women's delivery in Indonesia's urban poor society: age, education, employment, marital, parity, insurance, pregnancy danger knowledge, ANC, health autonomy, and family finance autonomy.

Keywords: Big data, maternal health, maternity care, population health, public health, urban poor

INTRODUCTION

In terms of the World Health Organization's (WHO) definition, the maternal mortality rate (MMR) is the ratio of maternal deaths during a specific period to 100,000 live births over the same period.^[1] In this decade, Indonesia continues to decline, from 3.52 to 4.17% per 100,000 live births. The highest decrease occurred in 2016. Meanwhile, MMR in 2014 was 199, down 3.86% from 2013. Then, MMR in 2015 was 192, up 3.52% from 2014. MMR in 2016 was 184, down 4.17% from 2015. Moreover, MMR in 2017 was 177 per 100,000 live births, a decrease of 3.8% from 2016.^[2] Although it tends to decline, it has not yet reached the 2015 Millennium Development Goal (MDG) of 110 deaths per 100,000 live births.^[1]

Indonesia has the 3rd highest MMR in the Association of Southeast Asian Nations (ASEAN) region after Myanmar and

Laos. Myanmar has 250 deaths, and Laos has 185 deaths per 100,000 live births. MMR in Indonesia is 1.1 times higher than in Cambodia, 1.4 times higher than in the Philippines, and 4.1 times higher than in Vietnam. Only half of the 10 ASEAN countries have exceeded the 2030 Sustainable Development Goals (SDGs) target of 70 per 100,000 live births. Brunei Darussalam had 31 deaths, Malaysia had 29 deaths, and Singapore had eight deaths per 100,000 live births. Indonesia must work harder to reach this target.^[1]

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Most of the causes of MMR are preventable. However, unfortunately, most MMR occurs in women who live in poor and developing countries. Contrarily, mortality during pregnancy, labor, or 42 days after delivery is low in countries with strong economies, advanced technology, and access to healthcare.^[3] Prenatal, postpartum, and maternal skills can lower maternal morbidity and death. In high-income countries, women have multiple antenatal care (ANC) visits, receive delivery assistance from skilled health personnel, and receive postnatal care. However, this is not true for most women in other countries.^[4] ANC is considered capable of preventing a high risk of complications in pregnancy. ANC aims to educate women to recognize signs of pregnancy complications and prevent and treat complications. Besides, ANC helps promote readiness for childbirth.^[5]

The problem is that not all pregnant women choose a place of delivery in a health facility. The ratio of women who give birth at a health facility in Indonesia is 55.2%.^[6] Over half of the countries recorded less than 70% of care in health facilities.^[7] Moreover, several significant factors with delivery at a health facility include age, education, religion, parity, perceived need, access to communication, and employment status. Besides, low financial factors, low socioeconomic status, not being rich, inadequate ANC visits, and geographical zones are predictors of deliveries outside health facilities.^[6,7]

The dominance of the urban population in Indonesia increases every year. The urban population in Indonesia in 2019 was 50.9 million, or 55.8% of the total population.^[8] The World Bank projects that 220 million Indonesians will live in big and small cities by 2045. Unfortunately, the rate of urbanization in Indonesia has not kept pace with growing development and welfare. For every 1% increase in the quality of urbanization, the rise in per capita income can only leverage 1.4% of the gross domestic product (GDP) per capita. Urbanization in Indonesia is still often seen as a burden rather than an asset that has the potential to support economic growth.^[9]

Urbanization has the potential to create new poverty. The number of poor people in Indonesia in March 2020 amounted to 26.42 million, increasing by 1.63 million compared to September 2019. This increase is as many as 1.3 million people are residents of urban areas.^[10] Studies of people experiencing poverty in urban slum areas show that some problems include poor environmental sanitation, ownership of adequate housing, and the inability to pay medical expenses. Due to low financial capacity, there are obstacles to accessing delivery places in health facilities for poor women in urban areas.^[11] Based on the background, the study analyzes factors associated with the delivery place among pregnant women in urban poor societies in Indonesia.

MATERIALS AND METHODS

Data Source

The author utilized secondary data from the 2017 Indonesian Demographic and Health Survey (IDHS). The IDHS was part

of an international Demographic and Health Surveys (DHS) program conducted by the Inner City Fund (ICF). The IDHS employed stratification and multistage random sampling to select the required samples. The analysis unit was women of childbearing age (15–49 years), whoever delivered in the last 5 years in Indonesia's urban poor society. The sample size was 1,562 respondents.^[12]

The study identified people with low incomes from the wealth index. The 2017 IDHS employed the wealth index formula to determine socioeconomic status. Furthermore, the survey employed a weighted average of a household's overall spending to calculate the wealth index. Meanwhile, the survey derived a wealth index using primary household expenditures, including health insurance, food, lodging, and other items. Furthermore, the pool divided the income index into five quintiles,^[13] and people experiencing poverty were in quintiles 1 and 2.

Dependent Variable

The place of delivery referred to the respondents' acknowledgment of maternity locations; it consists of two categories: home delivery and institution. The study defined institution delivery as maternity at healthcare centers, clinics or maternity hospitals, practices of health workers, and general hospitals.^[14]

Independent Variables

The study involved 10 independent variables in the analysis. The 10 variables include age groups, education level, employment status, marital status, parity, health insurance, knowledge of pregnancy danger, ANC, health autonomy, and family finance autonomy.

The age group comprises seven categories, namely 15–19, 20–24, 25–29, 30–34, 35–39, 40–44, and 45–49. Meanwhile, education levels consisted of primary, secondary, and higher education. Employment status comprised unemployed and employed. Marital status consists of being single (never in a union/divorced/widowed) and married/living with a partner. Parity status consists of primiparous (≤ 1), multiparous,^[2-4] and grand multiparous (> 4).

The study defined the respondents' knowledge of pregnancy danger signs from some conditions, including prolonged labor, vaginal bleeding, fever, convulsions, wrong fetal position, swollen limbs, faintness, breathlessness, tiredness, etc.,. In this variable, the respondents' knowledge consists of poor and good knowledge.^[15] Meanwhile, the study measured ANC based on the frequency of visits to ANC during pregnancy in a healthcare facility. ANC consists of < 4 and ≥ 4 visits. Although the 2016 WHO guidelines for ANC shift the recommended minimum number of ANC contacts from four to eight, the Indonesian government still uses the basic ANC model, which includes four ANC visits between 8 and 12 weeks of gestation, between 24 and 26 weeks, at 32 weeks, and between 36 and 38 weeks.^[16]

Health autonomy refers to respondents' independence in determining required health services. The autonomy of health is

about who makes decisions to meet the needs of respondents in healthcare. The autonomy of health comprises two categories: not having autonomy and having. The autonomy of family finance describes respondents' independence to allocate money to family financial resources. It consists of not having autonomy and having autonomy.

Data Analysis

In the first step, the study used Chi-square for bivariate analysis. The study employed binary logistic regression for multivariate analysis at the final stage. Moreover, the author used Statistical Package for the Social Sciences (SPSS) 26 software for all statistical analyses.

Ethical Approval

The study used secondary data from the 2017 IDHS as a materials analysis. The ICF Institutional Review Board (IRB) has examined and approved the 2017 Indonesia DHS surveys. The ICF IRB in the host country additionally reviews the standard DHS survey protocols. DHS surveys that follow the standard are categorized under the approval of the DHS-7 Program. The IRB of ICF International complied with the United States Department of Health and Human Services requirements for the "Protection of Human Subject" (45 CFR 46). Respondents signed written informed consent to participate in this study, and children's parents or guardians approved (under 16 years). Through the website <https://dhsprogram.com>, the author has received permission to utilize data for this study.

RESULTS

The result informs that 81.3% of pregnant women in urban society in Indonesia have been delivered in an institution. Table 1 shows, based on the age group, women aged 25–29 outperform both groups in the delivery place; meanwhile, primary education ruled delivery in-home according to their education level. On the other hand, secondary education rollover delivery in an institution. Furthermore, unemployed women outperform all other delivery groups based on work status.

Table 1 displays descriptive statistics on the place of delivery among pregnant women in urban poor society in Indonesia. Regarding marital status, married women are more in both delivery types. Meanwhile, based on parity, multiparous women occupied all places of delivery. On the other hand, health insurance ownership insured women more in both delivery places.

Based on the knowledge of the danger signs of pregnancy, women with poor knowledge lead the delivery at home; meanwhile, women who see the danger signs of pregnancy more in institutional delivery. According to ANC, women who make ≥ 4 ANC visits are occupied in both delivery categories. Regarding health autonomy, women who do not have health independence perform better in both forms of delivery. Finally, women without family financial support are in charge of all delivery facilities based on family financial autonomy.

Table 1: Descriptive statistic of the place of delivery among pregnant women in urban poor societies in Indonesia (n=1, 562)

Characteristics	Place of delivery				P
	Home delivery		Institution		
	%	n	%	n	
Age groups					<0.001
15–19	3.9%	14	4.5%	55	
20–24	18.5%	64	18.6%	211	
25–29	23.8%	75	24.0%	294	
30–34	23.4%	86	23.2%	292	
35–39	17.9%	70	19.1%	214	
40–44	8.4%	37	8.9%	115	
45–49	4.1%	15	1.7%	20	
Education level					<0.001
Primary	57.2%	156	38.8%	399	
Secondary	40.6%	189	57.9%	726	
Higher	2.2%	16	3.3%	76	
Employment status					<0.001
Unemployed	68.0%	221	62.7%	728	
Employed	32.0%	140	37.3%	473	
Marital status					<0.001
Single	7.0%	21	5.2%	65	
Married/Living with a partner	93.0%	340	94.8%	1136	
Parity					<0.001
Primiparous	33.4%	107	36.9%	445	
Multiparous	57.2%	200	57.8%	673	
Grand multiparous	9.4%	54	5.3%	83	
Health insurance					<0.001
Uninsured	48.3%	169	43.6%	490	
Insured	51.7%	192	56.4%	711	
Know the danger signs of pregnancy					<0.001
Poor	54.3%	217	36.2%	457	
Good	45.7%	144	63.8%	744	
ANC visits					<0.001
< 4 times	22.3%	84	7.9%	116	
≥ 4 times	77.7%	277	92.1%	1085	
The autonomy of health					<0.001
No	57.6%	220	56.0%	691	
Yes	42.4%	141	44.0%	510	
The autonomy of family finances					<0.001
No	80.1%	283	85.5%	1022	
Yes	19.9%	78	14.5%	179	

ANC=antenatal care

Table 2 shows the binary logistic regression result for finding factors related to delivery among pregnant women in Indonesia's urban poor society. Based on the age group, Table 2 informs that the 20–24 are 0.772 times less likely than the 15–19 to undertake institution delivery (95% confidence interval [CI], 0.771–0.773). The 35–39 are 1.353 times more likely to undertake institution delivery than the 15–19 (95% CI, 1.352–1.355). Moreover, the 45–49 are 0.629 times less

Table 2: Binary logistic regression of the place of delivery among pregnant women in urban poor society in Indonesia (n=1, 562)

Predictor	Institution delivery			
	P	AOR	95% CI	
			Lower bound	Upper bound
Age: 15–19 (ref.)	-	-	-	-
Age: 20–24	<0.001	0.772	0.771	0.773
Age: 25–29	<0.001	0.885	0.884	0.886
Age: 30–34	<0.001	0.931	0.931	0.932
Age: 35–39	<0.001	1.353	1.352	1.355
Age: 40–44	<0.001	1.398	1.396	1.399
Age: 45–49	<0.001	0.629	0.628	0.630
Education level: Primary (ref.)	-	-	-	-
Education level: Secondary	<0.001	1.988	1.988	1.989
Education level: Higher	<0.001	1.992	1.990	1.994
Employment: Unemployed (ref.)	-	-	-	-
Employment: Employed	<0.001	1.321	1.321	1.322
Marital: Single (ref.)	-	-	-	-
Marital: Married/Living with a partner	<0.001	1.010	1.009	1.011
Parity: Primipara (ref.)	-	-	-	-
Parity: Multiparous	<0.001	0.849	0.849	0.850
Parity: Grand multiparous	<0.001	0.623	0.622	0.623
Health insurance: No (ref.)	-	-	-	-
Health insurance: Yes	<0.001	1.214	1.214	1.214
Know the danger signs of pregnancy: No (ref.)	-	-	-	-
Know the danger signs of pregnancy: Yes	<0.001	1.794	1.794	1.795
ANC: <4 times (ref.)	-	-	-	-
ANC: ≥4 times	<0.001	3.038	3.037	3.040
The autonomy of health: No (ref.)	-	-	-	-
The autonomy of health: Yes	<0.001	1.108	1.108	1.109
The autonomy of family finances: No (ref.)	-	-	-	-
The autonomy of family finances: Yes	<0.001	0.622	0.622	0.622

Note: The goodness of fit test results with the Hosmer–Lemeshow test get a significance value of 0.661. ($P>0.05$). ANC=antenatal care, CI, = confidence interval

likely than the 15–19 to do institution delivery (95% CI, 0.628–0.630).

Secondary education is 1.988 times more likely than primary education for institution delivery (95% CI, 1.988–1.989). Meanwhile, higher education is 1.992 times more likely than primary education to do institution delivery (95% CI, 1.990–1.994).

Table 2 shows that according to employment status, the employed have a probability of 1.321 to deliver in institutions compared to the unemployed (95% CI, 1.321–1.322). Based on marital status, married women are 1.010 times more likely than single women to do institution delivery (95% CI, 1.009–1.011).

Based on parity, women with 2–4 children are 0.849 times the likelihood of primiparous women for institutional delivery (95% CI, 0.849–0.850). Meanwhile, women with >4 children have a probability of 0.623 compared to primiparous women for institution delivery (95% CI, 0.622–0.623).

Table 2 informs that insured women have a 1.214 times higher likelihood than uninsured women for institution delivery

(95% CI, 1.214–1.214). According to the knowledge of the danger signs of pregnancy, women with good knowledge about the danger signs of pregnancy are 1.794 times more likely than women who do not see the danger signs of pregnancy to perform institutional delivery (95% CI, 1.794–1.795).

Based on ANC visits during pregnancy, women who make ≥4 times ANC visits are 3.038 times more likely than women who make <4 times ANC visits for institutional delivery (95% CI, 3.037–3.040). Table 2 shows that according to health autonomy, women with an autonomy of health have 1.108 chances than women with no health autonomy to do institutional childbirth (95% CI, 1.108–1.109). Finally, based on family financing autonomy, women with the independence of family financing are 0.622 times less likely than women without autonomy of family financing for delivery in an institution (95% CI, 0.622–0.622).

DISCUSSION

There is a fundamental difference between deliveries in

healthcare institutions and deliveries at home for the admission and care of pregnant women. This difference relates to better maternal and neonatal output in healthcare institutions. Giving birth in a health facility is safe since the attendant will have sufficient medical resources to assist the mother.^[17,18]

This study found that the tendency to give birth in a home was higher in the older age group (>44 years). Several studies found that it deserves serious attention because pregnancy at an old age puts the mother at high risk. Moreover, a previous study found that pregnant women aged 40 had more chronic diseases like hypertension and needed more frequent medical treatment.^[19]

The likelihood of delivering in a facility increases with an education degree. A person's higher education raises the opportunity to learn various information, including health information. Pregnant women with good knowledge about the risks of pregnancy and childbirth will find it easier to decide to give birth in a health facility. Many previous studies also found a strong association between education level and choice of place of delivery.^[19,20]

The analysis indicates that employment is a protective factor in carrying out institution delivery. Births in an institution are more common among working mothers than nonworking mothers. Women who work in the formal sector have a higher education level than those who do not. Decisions regarding the choice of place of delivery in the working mother group are also strongly influenced by the peer group at work. A previous study reported the influence of peers in product or service selection decisions.^[21] These things become reinforcements that make working women give birth in health facilities.

Meanwhile, having a partner has a better chance in urban poor societies to deliver institutions. Women who do not have partners face several obstacles to obtaining health services.^[22] One thing in Indonesia is limited access to health facilities if the distance is relatively far due to limited mobility and no partner ready to take them. As a result, choosing the place to give birth will fall on the closest location.^[11] In addition, some cultural groups have an extreme stigma against single pregnant women, making them embarrassed to give birth in institutions.^[23]

In addition, the more children born alive, the less likely to give birth in the institution. This explanation is in line with the description regarding the age presented above. Apart from feeling that they have experience giving birth so that the birthing process is normal, they have more living children. It strengthens the mother's belief that she can give birth safely and have healthy children.^[24] The childbirth success that has been passed several times is a reinforcing factor for forming self-confidence and confidence in the success of the following delivery process, even though it is not carried out in a health facility.^[25]

Health insurance is a protective factor for pregnant women in urban poor societies to carry out institutional childbirth.

A previous study in Indonesia found that most pregnant women who do not have health insurance prefer to give birth at home.^[26] For some community groups, especially people with low education or limited knowledge about maternity services, there is a fear of the high costs of giving birth in institutions. Information about the high price of childbirth makes poor people prefer to give birth at home.^[27]

Moreover, knowing the danger signs of pregnancy is a protective factor for pregnant women in poor urban societies in Indonesia to carry out institutional delivery. The better a person's knowledge about the danger signs of pregnancy, the more she understands the risks due to an unsafe delivery. Of course, this encourages mothers to give birth at the healthcare facility.^[15]

Thus, complete ANC visits have a higher probability of delivering healthcare for pregnant women in urban poor societies in Indonesia. A previous study has also found that the higher quantity and quality of ANC services will give pregnant women good health knowledge, thus increasing maternal awareness of the importance of giving birth in institutions.^[14]

The result shows that health autonomy is a protective factor for pregnant women in urban poor societies in Indonesia to deliver institutions. Another study in Indonesia found that women with more autonomy experienced 1.7 times higher odds of using adequate ANC services.^[28] The study results on the independence aspect of pregnant women strengthen the previous research, which stated that women's autonomy positively influences women's behavior.^[29]

Finally, pregnant women with no family financing autonomy are more likely to conduct institutional delivery, and financial independence is an aspect that significantly influences purchasing decisions. Considering that the cost of giving birth, if you have to pay for it yourself, seems quite expensive for families who cannot afford it, the only best alternative to cover the cost of childbirth is through the Social Security Administration for Health Sector (BPJS Kesehatan). As a BPJS Kesehatan user, no more fees are charged to patients. The situation causes pregnant women from groups of urban poor society with no autonomy in family financing prefer to give birth at an institution so that BPJS Kesehatan can cover it.^[30]

Study Limitations

While the study provides some significant findings, it also has some limitations. First, this study is cross-sectional, so we cannot infer causal relationships between MMR and place delivery in urban society. Second, the analysis cannot be in-depth, especially on several qualitative phenomena related to local cultural factors.^[31] Third, the study results are also limited to the context of data collection (2017) and do not follow the current conditions affected by the pandemic situation.

CONCLUSIONS

Based on the findings, the study demonstrated that 10

variables had a relationship with the place of delivery for pregnant women in Indonesia's urban poor community. The 10 variables are age groups, educational attainment, employment status, married status, parity, health insurance, knowledge of pregnancy threat, ANC, health autonomy, and family financial autonomy.

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Conflicts of interest

There are no conflicts of interest.

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