

ORIGINAL RESEARCH

Socioeconomic Disparities in Maternal Health Facility Utilization at Hospital: Evidence from Indonesia's 2018 Basic Health Research

Disparidades socioeconómicas en el aprovechamiento de servicios de salud materna en hospitales: Evidencia de la Investigación Básica de Salud de Indonesia 2018

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Abstract

Maternal and neonatal mortality remain critical issues, especially in developing countries like Indonesia. This study aims to analyze socioeconomic disparities in hospital utilization for childbirth in Indonesia using data from the 2018 Indonesian Basic Health Research. The study found that socioeconomic factors significantly influence hospital utilization by pregnant women, with higher socioeconomic status associated with higher hospital utilization. Urban residence, higher education level, employment status, and health insurance ownership positively correlated with hospital utilization. These findings highlight the need for targeted interventions to improve access and utilization of maternal health facilities, particularly among vulnerable socioeconomic groups. The study contributes to the literature by providing new insights into socioeconomic disparities in hospital utilization for childbirth. This can inform policymakers and health practitioners in improving maternal health in Indonesia.

Keywords: socioeconomic, disparities, maternal, health facilities, hospital utilization

Resumen

La mortalidad materna y neonatal siguen siendo problemas críticos, especialmente en países en vías de desarrollo como Indonesia. Este estudio tiene como objetivo analizar las disparidades socioeconómicas en el aprovechamiento de la atención hospitalaria para el parto utilizando datos de la Investigación Básica de Salud en Indonesia de 2018. El estudio encontró que los factores socioeconómicos influyen significativamente sobre el acto de acceder a atención hospitalaria por parte de las mujeres embarazadas, con un mayor nivel socioeconómico asociado con una mayor utilización hospitalaria. Vivir en un entorno urbano, un nivel educativo más alto, la situación laboral y contar con un seguro de salud se correlacionaron positivamente con la utilización hospitalaria. Estos resultados ponen de relieve la necesidad de intervenciones específicas para mejorar el acceso y la utilización de servicios para la salud materna, especialmente entre grupos socioeconómicos vulnerables. La contribución de este estudio a la literatura consiste en proporcionar nuevas perspectivas sobre el papel de las disparidades socioeconómicas en la elección y uso de hospitales para el parto. Esto puede servir de información a los responsables políticos y profesionales sanitarios para la toma de decisiones que mejoren la salud materna en Indonesia.

Palabras clave: disparidades socioeconómicas, maternidad, centros de salud, utilización de hospitales



Introduction

Every year, approximately 295,000 women die globally because of pregnancy-related complications, with a large number of cases occurring in developing countries, highlighting the ongoing challenges in improving maternal healthcare services.^{1, 2} Additionally, neonatal death remains a critical issue, with 2.4 million babies passing away in the first month of their lives each year, primarily in low and lower-middle-income countries.^{3, 4} These figures indicate that efforts to enhance the quality of maternal healthcare services remain a global challenge that requires serious attention.

Indonesia continues to wrestle with significant challenges in maternal and child healthcare, as evidenced by infant mortality rate and the high maternal mortality rate compared with other developing countries. The Maternal Mortality Ratio (MMR) in Indonesia is 305 per 100,000 live births, significantly higher than the Sustainable Development Goal target, which aims to reduce the MMR to 70 per 100,000 live births by 2030.⁵ The IMR in Indonesia remains a concern, reflecting ongoing socioeconomic disparities that affect access to maternal healthcare services.⁶ Factors influencing maternal health outcomes in Indonesia include employment status, place of residence, fear of COVID-19 infection, stay-at-home policies, and redesigned antenatal care (ANC) services during the pandemic.^{7, 8} Addressing these challenges requires a comprehensive approach that considers sociodemographic factors, healthcare system capabilities, and the impact of communicable and non-communicable diseases on maternal health in Indonesia.⁹

The emerging problem statement relates to the socioeconomic disparities that affect hospital utilization among mothers giving birth in Indonesia. The 2018 Basic Health Research (Riskesdas) revealed significant gaps in access to and utilization of health facilities in various economic strata.^{10, 11}

Previous studies have also shown that socioeconomic disparities can cause differences in the quality of maternal healthcare services, which

in turn can negatively impact birth outcomes and the health of mothers and children. Factors such as health insurance coverage, geographic location, and economic status play crucial roles in determining the choice of birth attendants and the location of childbirth, impacting maternal and child health outcomes.^{12, 13, 14} Knowledge, education, and cultural beliefs significantly influence pregnant women's attitudes towards seeking healthcare services, ultimately affecting patterns of healthcare utilization.^{12, 13, 15} Identifying gaps in maternal and child healthcare in Indonesia is crucial for developing effective interventions.^{16, 17, 18, 19, 20}

This study's proposed approach analyses Riskesdas 2018 data to better understand socioeconomic disparities in hospital utilization among mothers giving birth in Indonesia. Through this approach, it is expected that key factors influencing these disparities can be identified, and appropriate solutions can be formulated to improve access and utilization of maternal health facilities, especially among economically vulnerable groups.

The novelty of this research lies in the innovation in data analysis that allows for identifying previously unrevealed patterns in socioeconomic disparities in hospital utilization among mothers giving birth. The results of this study are expected to provide a more comprehensive understanding to policymakers, health practitioners, and related stakeholders in efforts to improve maternal health in Indonesia.

Method

Study Design

The cross-sectional study used secondary data from the 2018 Indonesia Basic Health Survey. The study population includes all expectant mothers in Indonesia. The survey employed stratification techniques and multistage random sampling to produce a sample of 77,297 mothers giving birth.

Outcome Variable

The outcome variable of this study is the utilization of hospitals by mothers giving birth,

which is limited to deliveries in the last year. The survey asked respondents to recall the location of their care accurately.

Exposure Variable

The variable designated for the study is socioeconomic status. The measurement of socioeconomic status is done using something called a wealth index. The wealth index is measured by calculating the weighted average of total household expenditure recorded in the survey. These expenditures include things like food, health insurance, and housing. The study was conducted by classifying respondents into five categories. This study allows for the analysis of how socioeconomic status is related to other variables studied in this research.

Control Variables

This study utilizes four elements as control variables as part of the variable. These four criteria are type of residence, level of education, and hospital financing source. The survey divides the type of residence into urban and rural categories. Furthermore, the survey conducted adheres to the classification criteria set by the Central Bureau of Statistics for urban-rural categorization.

The study defines respondents' education based on their latest diploma attainment. The study has four education levels: none, primary, secondary, and tertiary.

This study includes nine types of occupations: students, unemployed individuals, private employees, government employees, farmers, entrepreneurs, laborers/drivers/route assistants, fishermen, and others. Health insurance ownership is divided into four categories: Government Insurance, Private Insurance, Government and Private Insurance, and Others.

Data Analysis

This study uses statistical methods such as the Chi-Square test to compare dichotomous variables at the initial stage, followed by a collinearity test

to examine the relationships between independent variables. Subsequently, binary logistic regression is used to analyze the relationship between independent variables and hospital utilization. During the analysis, IBM SPSS 24 software is used.

Ethical Approval

The National Ethics Committee approved the 2018 Basic Health Research in Indonesia (LB.02.01/2/KE.024/2018). The survey removed all respondents' identities from the dataset. Respondents have provided written consent for their participation in the study.

The authors have obtained permission to using of data (document number: 2312896EB3A96707) to this research through website: <https://layanandata.kemkes.go.id/>.

Result

Table 1 shows that there are a total of 77,297 mothers giving birth. From this number, the majority, or 69.3%, did not choose to use hospital facilities for childbirth, dominating all socioeconomic status levels except in the wealthiest category.

The majority, or 59.3%, of the mothers giving birth, are in rural areas, spanning all socioeconomic classes except the wealthiest category. Additionally, the majority, or 55.2%, of the mothers giving birth have higher education and lead all socioeconomic categories.

Furthermore, the majority, or 54.2%, of the mothers giving birth are unemployed and lead to all the socioeconomic categories. Finally, the majority, or 57.7%, of the financing for childbirth does not come from insurance and leads all socioeconomic categories.

Statistical analysis also revealed a strong relationship between hospital utilization, type of residence, level of education, type of occupation, source of childbirth financing, and the mother's socioeconomic status, with a p-value of 0.000.

Table 1. Descriptive Characteristics of Mothers Giving Birth in Indonesia

Characteristics	Socioeconomic						P-value
	Quantile 1 (Lowest)	Quantile 2 (Low)	Quantile 3 (Middle)	Quantile 4 (Tall)	Quantile 5 (Tallest)	Total	
	n=18.631	n=16.969	n=15.312	n=14.183	n=12.202	n=77.297	
Hospital Utilization							
Utilize	4,8%	5,3%	5,9%	6,6%	8,1%	30,7%	0,000
Not to utilize	19,3%	16,7%	13,9%	11,7%	7,7%	69,3%	
Type of Residence							
Urban	6,7%	7,7%	8,0%	8,0%	10,3%	40,7%	0,000
Rural	17,5%	14,3%	11,8%	10,3%	5,5%	59,3%	
Level of Education							
None	3,9%	2,5%	1,6%	1,1%	0,5%	9,6%	0,000
Primary	7,5%	5,9%	4,3%	2,9%	1,3%	21,8%	
Secondary	11,8%	12,3%	11,9%	10,9%	8,2%	55,2%	
Tertiary	0,8%	1,3%	2,0%	3,4%	5,9%	13,4%	
Type of Occupation							
Unemployed	13,2%	12,4%	11,4%	9,8%	7,3%	54,2%	0,000
Student	0,1%	0,1%	0,1%	0,1%	0,1%	0,6%	
Government Employee/Military/Police/State-Owned Enterprise/ Regional-Owned Enterprise	0,1%	0,2%	0,4%	1,0%	2,1%	3,9%	
Private Employee	0,6%	0,9%	1,1%	1,7%	2,1%	6,3%	
Entrepreneur	1,4%	1,7%	1,9%	2,0%	2,1%	9,1%	
Farmer	5,5%	3,8%	2,2%	1,3%	0,4%	13,2%	
Fisherman	0,1%	0,0%	0,0%	0,0%	0,0%	0,2%	
Labourer/Driver/Assistant Route	0,8%	0,7%	0,6%	0,5%	0,3%	2,8%	
Others	2,3%	2,1%	2,0%	1,9%	1,4%	9,7%	
Source of Childbirth Financing							
Government Insurance	9,8%	8,8%	8,3%	7,8%	6,7%	41,5%	0,000
Private Insurance	0,0%	0,1%	0,1%	0,2%	0,4%	0,8%	
Government and Private Insurance	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	
Others	14,2%	13,0%	11,4%	10,4%	8,6%	57,7%	

Table 2. The Results of Collinearity Tests Hospital Utilization by Mothers Giving Birth in Indonesia in 2018 (n=77.297)

Variable	Collinearity Statistics	
	Tolerance	VIF
Sosioeconomic Status	911	1,091
Type of Residence	913	1,095
Education	911	1,098
Source of Childbirth Financing	862	1,161
Type of Occupation	808	1,238

* Dependent Variable: hospital utilization

Table 3. The Logistic Regression Analysis Results of Hospital Utilization by Mothers Giving Birth in Indonesia in 2018 (n=77.297)

Predictor	hospital utilization by mothers giving birth			
	P-value	AOR	95% CI	
			Lower	Upper
Type of Residence	0,000	2,103	2,031	2,177
Level of Education	0,000	0,594	0,581	0,608
Type of Occupation	0,000	1,018	1,011	1,024
Source of Childbirth Financing	0,000	1,74	1,72	1,760

Table 2 displays the results of collinearity tests for the variables used in analyzing hospital utilization by mothers giving birth in Indonesia in 2018. In the table, the tolerance values range from 0.808 to 0.913. Generally, tolerance values above 0.1 are considered sufficient to avoid collinearity issues. Therefore, based on the tolerance values, these variables do not appear to have significant collinearity issues.

Furthermore, in the table, the VIF values range from 1.091 to 1.238. Generally, VIF values above 10 indicate significant collinearity, while VIF values below five are considered acceptable. The VIF values provided show no firm indication of significant collinearity among these variables.

Based on the results of the collinearity tests, it can be concluded that there are no significant collinearity issues among the variables used in the analysis of hospital utilization by mothers giving birth in Indonesia in 2018. Therefore, the regression results obtained can be interpreted with greater confidence, and their accuracy can be maintained.

Table 3 displays the logistic regression analysis results to predict hospital utilization by mothers giving birth in Indonesia in 2018. In this table, the tested predictors are type of residence, type of occupation, level of education, and source of childbirth financing.

The analysis shows that socioeconomic status significantly influences the use of hospital facilities by mothers giving birth in Indonesia. The higher someone's socioeconomic status, the more likely they are to choose hospital services when

giving birth. This could be due to better access to healthcare facilities, financial ability to afford service costs, or other factors related to individual social and economic status. The study shows that four control variables, namely type of employment, level of education, type of residence, and health insurance ownership, are correlated with the use of hospital services by mothers giving birth in Indonesia. These variables help explain the factors influencing mothers' decisions to use healthcare facilities when giving birth beyond the influence of socioeconomic status.

The Adjusted Odds Ratio (AOR) of 2.103 indicates that mothers living in certain types of residences are 2.103 times more likely to utilize hospitals for childbirth than those living in other types of residences. An AOR of 0.594 suggests that each increase in the level of education reduces the possibility of hospital utilization by mothers giving birth by 0.594 times. An AOR of 1.018 indicates that mothers with certain types of employment are 1.018 times more likely to utilize hospitals for childbirth compared to mothers with other types of employment. Lastly, an AOR of 1.74 suggests that mothers who receive childbirth financing from specific sources are 1.74 times more likely to utilize hospitals for childbirth than mothers who receive funding from other sources.

Discussion

The research results indicate that socioeconomic factors influence the utilization of hospital services by mothers giving birth in Indonesia. The better the socioeconomic status, the higher the possibility of mothers giving birth utilizing hospital services. These findings are consistent with previous

findings that show a relationship between socioeconomic factors and access to health services, including the use of hospital services by mothers giving birth.

In Bangladesh, a study revealed that pregnant women from wealthier backgrounds are 2.5 times more likely to give birth in hospitals compared to those from poorer families.²¹ This highlights a significant disparity in accessing maternal healthcare services based on wealth status. Meanwhile, a study in Nepal showed that higher income levels are associated with increased utilization of antenatal care services over 20 years.²² In sub-Saharan Africa, maternal unemployment, lower maternal education, and lower household wealth index are factors that determine the utilization of maternal healthcare services and are often associated with poor birth outcomes and malnutrition in infants.²³

A study in Nigeria found that socioeconomic and demographic factors have a significant relationship with neonatal mortality. The primary determinant is the number of ANC visits, which has been proven effective in reducing neonatal mortality rates. This emphasizes the importance of access to and utilization of maternal health services to reduce neonatal mortality.²⁴

Type of Residence

The type of residence significantly affects the utilization of hospital services by mothers giving birth.^{25, 26, 27} This study found that urban mothers tend to use hospital services more frequently than rural mothers, due to better access to skilled healthcare providers. Urban teenage mothers in India show variations in maternal care utilization based on their place of residence. Access and geographical location are crucial in the use of maternal health services. Urban mothers use hospital services more frequently than rural mothers due to better access to skilled healthcare providers.²⁸ Urban teenage mothers in India show variations in maternal care utilization based on their place of residence. Access and geographical location are crucial in the use of maternal health services.²⁹

In urban settings, patients tend to bypass the

nearest primary care facilities, opting for more distant or higher-level facilities, with a significant percentage seeking care directly at hospitals³⁰. Additionally, a Tianjin, China study highlights that urban areas have a higher demand for certain health services compared to suburban and rural areas, indicating a greater need for healthcare services in urban environments³¹. Furthermore, Fuzhou, China research emphasizes the interaction between hospital accessibility and housing prices, underlining the importance of hospital proximity in urban residential areas³².

Even in other developed countries like Australia, research findings show that mothers in rural, remote, and socio-economically disadvantaged areas are less likely to access maternal health services³³. These findings collectively support the notion that urban areas generally offer better access to healthcare facilities than rural areas, influencing healthcare-seeking behaviour.

Level of Education

Level of education also has a significant influence on hospital utilization by mothers giving birth.^{34, 35, 36, 37, 38} The research findings indicate that mothers with higher levels of education tend to utilize hospital services more frequently compared to those with lower levels of education.

Consumer awareness of hospital quality, as evidenced by online searches and mentions on social media,³⁹ can be influenced by their level of knowledge and access to information. Studies indicate a strong correlation between the quality of nursing care and the information patients receive, emphasizing the importance of information dissemination in healthcare settings.⁴⁰ Additionally, interventions aimed at improving Health Literacy in hospitals have positively impacted patient knowledge and health-related behaviours, highlighting the importance of informed decision-making in healthcare⁴¹. Furthermore, the relationship between efficiency, quality, and access in healthcare is highly complex, suggesting a potential trade-off among these factors.⁴²

Several studies in India and Nigeria using Demographic Health Surveys data found that the

chances of delivering a baby at home are higher among poor women, rural women, uneducated women, and women with higher parity.⁴³ Socio-demographic factors such as women's education level and household wealth status are the primary determinants of the utilization of maternal health services. Women who are more educated and come from wealthier households tend to use maternal health services more frequently. Socio-demographic factors are crucial in determining the utilization of maternal health services.⁴⁴

Women's education and household socioeconomic status are the most significant contributors to disparities in antenatal visits in healthcare facilities.^{45, 46} Therefore, better knowledge about the quality of healthcare and improved access to hospital information contribute to accurate decision-making and potentially better health outcomes. Universal health coverage should be considered a primary means to reduce these disparities⁴⁵

Type of Occupation

Type of Occupation also has been found to influence the utilization of hospitals by mothers giving birth.^{47, 48} This research analysis indicates that working mothers are likelier to utilize hospital services than non-working mothers. Previous studies have shown that working mothers are more inclined to utilize hospital services due to more access to healthcare facilities at the workplace, increased financial capacity to cover childbirth costs, and receiving childbirth-related information from coworkers.⁴⁹

Other studies have also highlighted that teenage mothers in Sub-Saharan Africa, where teenage pregnancy rates are high, face challenges in accessing and utilizing maternal care services due to various individual and systemic factors.⁵⁰ Additionally, mothers' work environments can influence their patterns of healthcare utilization. For example, in a study assessing the relationship between perinatal depression and infant healthcare utilization, it was found that children of mothers with perinatal depression had higher rates of hospital admission and visits to child development clinics⁵¹.

These findings suggest that the type of occupation that the mothers engage in can play a role in determining their access to and utilization of maternal care services.

Source of Childbirth Financing

Government funding for healthcare services, as well as the presence of health insurance, significantly impacts the utilization of hospital services by mothers giving birth.^{52, 53, 54, 55} Mothers who receive childbirth financing from the government or insurance are more likely to utilize hospital services than those who pay out of pocket.

Increased government involvement in health financing is associated with greater use of skilled birth attendants and cesarean sections⁵⁶. Enrollment in health insurance is linked to better access & utilization of maternal healthcare services, significantly benefiting those with lower socioeconomic status.⁵⁷

Whether public or private, the type of funding source is crucial in determining access to essential maternal health services like skilled birth attendants and cesarean operations, highlighting the importance of strategic purchasing and financing mechanisms in enhancing maternal healthcare utilization.

Conclusion

The findings of this research highlight key factors influencing hospital utilization by mothers giving birth in Indonesia. Firstly, the correlation between socioeconomic status and hospital utilization emphasizes the significant role of economic factors in accessing maternal healthcare services. Furthermore, geographic disparities between urban and rural areas, along with the influence of education level, type of occupation, and financing sources, also significantly impact hospital utilization by mothers giving birth. These findings emphasize the need for more careful and inclusive interventions to reduce disparities in maternal healthcare access and ensure that every mother has equal access to quality healthcare services. Efforts such as healthcare assistance programs for low-income families, improving healthcare infrastructure in rural areas, education and health

counseling programs, and financial support can be strategic steps towards achieving these goals.

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Declaration of Conflicting Interests

There are no conflicts of interest that could affect the research results.

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