

The Influence of Individual Characteristics, Distance, Cost, and Tangibles on Decisions to Choose a Place of Birth

Feby Bantoyot¹, Erliany Syaodih², Nining Handayani³

^{1,2,3}Adhirajasa Reswara Sanjaya University, Indonesia

ARTICLE INFO

Article history:

Received Jun 9, 2025

Revised Jun 18, 2025

Accepted Jun 14, 2025

Keywords:

Bonebakal Health Center
Decision on the place of delivery

Distance

Individual characteristics

Tangible

ABSTRACT

Quality and affordable delivery services are key to reducing maternal and infant mortality rates. This study aims to analyze the influence of individual characteristics, distance, cost, and tangible quality on mothers' decisions regarding the choice of delivery location at the Bonebakal Health Center in Central Sulawesi. The study employed a quantitative approach with a cross-sectional design, involving 35 pregnant women as respondents who were selected purposively. Data analysis was carried out using the chi-square test and multiple logistic regression. The results showed that age, education, distance, and tangible quality had a significant influence on the decision to choose a place of delivery ($p < 0.05$). Tangible was the most dominant factor with an OR value of 5.783. In contrast, occupation, income, and cost did not have a significant effect in the final model. The regression model was proven valid and explained 74.5% of the variation in decisions (Nagelkerke $R^2 = 0.745$). These results highlight the importance of enhancing the physical quality of delivery facilities and education tailored to maternal characteristics, in order to support the selection of a safe and standardized place of delivery.

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Corresponding Author:

Feby Bantoyot,
Adhirajasa Reswara Sanjaya University,
International School Road No. 1-2, Antapani, Bandung, West Java, 40282, Indonesia.
Email: febybantoyot@gmail.com

1. INTRODUCTION

Maternal health services are a fundamental aspect of the public health system because they directly affect the safety of mothers and babies born. The availability of access to safe and quality delivery services is the primary key to reducing maternal and neonatal mortality rates (Bangki et al., 2023; Nurizka et al., 2021). WHO (2020) Stated that the quality of delivery services plays a significant role in determining the outcome of pregnancy. Optimal services not only save lives but also improve the overall quality of life of mothers and babies.

Women are naturally susceptible to health issues, especially those related to reproductive health. Hidayati dan Fitriani (2021). Therefore, they have the right and freedom to choose a place and provider of childbirth services that suit their needs. (Nuryantiningih, 2017). Empowering women in this decision-making is essential to ensure a safe, comfortable, and humane childbirth experience. (Nurasih & Nurrochmi, 2017).

Choosing a place of birth and competent medical personnel is an integral part of efforts to minimize the risk of complications during labor and delivery. When a mother chooses to give birth in a medical facility, the chances of safety increase significantly because of the support of trained health workers who are ready to handle various emergency conditions. Therefore, the decision regarding the place of birth is a crucial factor in ensuring the safety of both the mother and baby (N. Anggraini, 2021; Fitriani et al., 2018; Nugraha et al., 2023; Wijaya et al., 2024).

The high maternal mortality rate in various countries, especially in developing countries, shows that there are many challenges to be faced in providing maternal health services. WHO (2023) Noted that around 830 women die every day from preventable causes. This condition is more prevalent in rural and impoverished areas that have limited access to medical services. Services by trained health workers before, during, and after childbirth have been proven to save the lives of mothers and newborns.

In Indonesia itself, the Maternal Mortality Rate (MMR) shows a fluctuating trend, indicating the need for further intervention. Data from the Ministry of Health noted that in 2019, there were 4,482 maternal deaths. Although there was a significant decrease from 390 to 189 per 100,000 live births, the 2030 Sustainable Development Goals (SDGs) target of 70 per 100,000 live births is still far from being achieved. This emphasizes the importance of accelerating efforts to improve the quality and reach of delivery services in Indonesia. (Ministry of Health of the Republic of Indonesia, 2020).

The striking difference in the coverage of maternity services with trained health workers still occurs in various parts of the world. WHO (2019) Revealed that although global coverage has reached 80%, as many as 22% of births still take place without adequate health worker assistance. This disparity is evident, for example, between Eastern Europe, which has 99% coverage, and West Africa, which reaches only 52%. The inaccessibility of quality services can lead to serious complications, both for mothers and babies.

This phenomenon is also influenced by the dynamics of the increasingly competitive health service sector. Health facilities compete to improve the quality of services as a strategy to attract more patients. (Bukhari et al., 2018). Quality of service, comfort during the delivery process, and promotions are important considerations for pregnant women in choosing a place to give birth. This indicates that tangible aspects of the facility, such as cleanliness, the comfort of the delivery room, and the friendliness of medical personnel, also play a significant role. (Anisah et al., 2023; Meilani & Insiyroh, 2023; Puteri et al., 2024; Sujarwinata et al., 2023).

The Indonesian government has set an ambitious target of 100% of deliveries taking place in health facilities as part of the indicators of the success of the maternal health program. (Ainurrahmah, 2017; Dinengsih et al., 2024). To achieve this, a deeper understanding of the factors that influence mothers' decisions regarding the place of delivery is needed. These factors include aspects of individual characteristics, distance, costs, and the quality of services or tangibles offered by the maternity facility (Ningrum, 2017; Putra et al., 2020). This study aims to determine the effect of individual characteristics, distance, costs, and tangibles on the decision to choose a place of delivery.

2. RESEARCH METHOD

This study uses a quantitative approach with a cross-sectional analytic survey design. The study was conducted in the working area of the Bonebakal Health Center, Lamala District, Banggai Regency, Central Sulawesi Province. The research time took place from February 12 to March 23, 2025. The population in this study consisted of all pregnant women domiciled in the working area of the Bonebakal Health Center, totaling 38 individuals. The research sample consisted of 35 respondents, selected using purposive sampling techniques, which involve selecting participants based on specific criteria.

Inclusion criteria in this study include pregnant women aged 17-49 years, domiciled in the working area of the Bonebakal Health Center, able to communicate both orally and in writing, and willing to be a respondent by signing an informed consent sheet. The exclusion criteria are pregnant women who have a history of severe pregnancy complications that require referrals to hospitals, as well as pregnant women with mental or cognitive disorders that inhibit communication and understanding of research instruments.

Data collection is conducted using a questionnaire instrument prepared by the research variable's indicator. Data analysis is carried out in two stages. The first stage involves a bivariate analysis using the Chi-Square test to determine the relationship between the independent variables and the dependent variables. The second stage is a multivariate analysis using multiple logistics regression to identify the variables that most influence the decision to select labor. Model feasibility

testing is conducted through the Omnibus Test of Model Coefficients and the Hosmer and Lemeshow Goodness-of-Fit Test. The Nagelkerke R^2 value is used to assess the proportion of variations described by the model. In contrast, the odds ratio (Exp(B)) value is used to determine the strength of the influence of each independent variable on the dependent variable.

3. RESULTS AND DISCUSSIONS

Table 1. Respondent characteristics (n=35)

Characteristics	n	%
Age		
High Risk (<20 and >35 years)	9	25,7
Normal (20 to 35 years)	26	74,3
Education		
Higher Education	3	8,6
High School	19	54,3
Junior High School	8	22,9
Elementary School	2	5,7
Not in School	3	8,6
Occupation		
Farmer	1	2,9
Civil Servant	3	8,6
Housewife	31	88,6
Income		
< 3.000.000	30	85,7
≥3.000.000	5	14,3
Distance		
Near (≤ 4 km)	16	45,7
Far (> 4 km)	19	54,3
Cost		
Good Enough	9	25,7
Good	26	74,3
Tangible		
Good Enough	8	22,9
Good	27	77,1
Decision to Choose		
Not Choose	10	28,6
Choose	25	71,4

Table 1 shows that the majority of respondents (74.3%) fall within the normal age range and have a minimum education level of Senior High School (54.3%). Most work as housewives (88.6%), with an income of less than Rp 3,000,000 (85.7%). In terms of access, 54.3% live far from the Health Center; however, most of them consider the cost of delivery (74.3%) and the quality of facilities (77.1%) at the Health Center to be good. As many as 71.4% of respondents chose the Health Center as a place of delivery, indicating that individual characteristics, perceptions of costs, and quality of facilities influence the decision to choose a place of delivery.

Table 2. The influence of individual characteristics, distance, costs, and tangibles on the decision to choose a place of delivery

Variables	Decision to Choose a Place of Birth at a Health Center				Total		p-value*
	Not Choose		Choose		n	%	
	n	%	n	%			
Age							
High Risk (<20 and >35 years)	6	66,7	3	33,3	9	100	0,003
Normal (20 to 35 years)	4	15,4	22	84,6	26	100	
Education							
Higher Education	0	0	3	100	3	100	0,001

High School	3	15,8	16	84,2	19	100	
Junior High School	7	87,5	1	12,5	8	100	
Elementary School	0	0	2	100	2	100	
Not in School	0	0	3	100	3	100	
Occupation							
Farmer	9	29	22	71	31	100	
Civil Servant	1	100	0	0	1	100	0,157
Housewife	0	0	3	100	3	100	
Income							
< 3.000.000	10	33,3	20	66,7	30	100	
≥3.000.000	0	0	5	100	5	100	0,127
Distance							
Near (≤ 4 km)	1	6,3	15	93,8	16	100	0,007
Far (> 4 km)	9	47,4	10	52,6	19	100	
Cost							
Good Enough	6	66,7	3	33,3	9	100	
Good	4	15,4	22	84,6	26	100	0,003
Tangible							
Good Enough	6	75	2	25	8	100	
Good	4	14,8	23	85,2	27	100	0,001

*Uji chi-square

Table 2 shows that age, education, distance of residence, perception of costs, and tangible quality have a significant influence on the decision to choose a place of delivery at a Community Health Center. Mothers of normal age and higher education tend to choose a Community Health Center more often than mothers from high-risk and low-educated groups. Respondents who live closer to the Community Health Center and who assess the costs and physical facilities (tangible) as "good" are more likely to choose a Community Health Center as a place of delivery. In contrast, the variables of work and income do not show a significant influence on the choice of place of delivery.

Table 3. Results of multiple logistic regression tests

Variables	B	Sig.*	OR	95% CI for EXP (B)
Age	-2,196	0,029	0,111	0,007-1,894
Education	-1,359	0,046	0,257	0,039-1,681
Occupation	1,992	0,494	7,328	0,024-2199,375
Income	19,956	0,999	4624261862,626	0,000-0
Distance	-2,694	0,036	0,068	0,002-3,045
Cost	3,532	0,133	34,204	0,341-3429,027
Tangible	1,755	0,030	5,783	0,125-267,608

* Multiple logistic regression tests

Table 3 shows that age, education, distance from residence, and tangible quality have a significant effect on mothers' decisions to choose Bonebakal Health Center as a place of delivery. Mothers with high-risk age, low education, and long distance from residence tend to be less likely to choose a Health Center. At the same time, a positive assessment of physical facilities (tangible) increases the likelihood of choosing a Health Center. Among all the variables, tangible factors are the most dominant in influencing decisions, with the highest odds ratio value (OR = 5.783; p = 0.030). In contrast, the variables of work, income, and costs do not have a significant effect in this model.

Table 4. Omnibus test results

Chi Square	df	p-value
25.656	7	0.001

Table 4 shows that the significant value of p = 0.001 (<0.05) indicates that age, education, occupation, income, distance, cost, and tangible factors together influence the decision to choose the place of delivery. The Nagelkerke R² value was found to be 0.745, indicating that the model

explains 74.5% of the variation in the decision to choose the place of delivery. This indicates that the model exhibits excellent predictive power.

Table 5. Hosmer and Lemeshow

Chi-square	df	p-value
3.960	6	0.682

Table 5 shows that the significance value of $p = 0.682$ (> 0.05) indicates that the model is not significantly different from the actual data, meaning that the model is suitable for explaining the factors that influence mothers' decisions in choosing a place of delivery.

This study reveals that maternal age has a significant impact on the decision to choose a place of delivery at the Bonebakal Health Center ($p = 0.029$; $OR = 0.111$), where mothers with high-risk ages are less likely to select the Health Center compared to mothers of normal age. This finding is in line with the results of studies by Timisela and Samallo (2021) and Purwatiningsih (2020), which indicates that maternal age is a significant factor in determining the place of delivery. In contrast, studies by Nst and Harahap (2021) and Nuhan (2021) Showed different results, indicating that differences in cultural context and other supporting factors, such as attitudes or previous experiences, can moderate the influence of age.

Education level was also shown to have a significant influence ($p = 0.046$; $OR = 0.257$) on mothers' decisions regarding the location of childbirth. Mothers with low education tend not to choose Community Health Centers. This is based on the findings of Fitriani et al. (2018), Syahnita et al. (2021), and Adipriati (2007), which stated that the higher a mother's education, the greater the tendency to choose formal health facilities. However, research by Purwatiningsih (2020) and Abdurrahim et al. (2016) Showed no significant relationship, indicating the need to consider interactions with other variables such as knowledge or accessibility.

In this study, the variables of employment ($p = 0.494$) and income ($p = 0.999$) did not show a significant relationship with the decision to choose a place of delivery. This is supported by the results of Situmorang et al. (2022) and Fauzia (2014), which indicates that the direct economic aspect is not the primary determinant. In contrast, studies by Muni et al. (2022) and Setyaningsih et al. (2023) Found a significant relationship, indicating that the role of income may be contextual and dependent on indirect costs and cost perceptions.

Distance showed a significant effect on the choice of place of delivery ($p = 0.036$; $OR = 0.068$). Mothers who live closer to the Puskesmas are more likely to choose the facility. This is in line with the studies of Rambu et al. (2022), Angraini et al. (2020), and Rocmaeda (2025), which underlines the importance of geographical factors. However, different findings from Azis and Syafar (2022) and Koesbardiati (2017) Indicate that in specific contexts, cultural factors, family support, and experience may be more influential.

Tangible aspects, including physical facilities and comfort, are the most dominant factors in influencing maternal decisions ($p = 0.030$; $OR = 5.783$). These results are supported by Ekawati and Andriani (2022) and Widodo and Hidayat (2024), which shows that cleanliness, completeness of medical devices, and environmental conditions have a significant impact on patient decisions. These findings are also in line with the theory of service quality, which emphasizes the importance of tangible dimensions in shaping patients' initial perceptions of service quality.

Although bivariate perception of cost showed a significant effect on the choice of place of delivery ($p = 0.003$), the results of multiple logistic regression showed the opposite ($p = 0.133$). This difference may be due to confounding effects or interactions between variables. Several studies including Handayani et al. (2019) Showed cost as the dominant factor, while others did Darussalam and Rahmawati (2019) The study found no significant effect, indicating the importance of considering intervening variables, such as health insurance.

The findings on age, education, and tangible support health behavior theory, particularly the Health Belief Model, which states that perceptions of benefits and barriers influence a person's actions in using health services (Rapheal et al., 2023). Mothers who assess the delivery facility at the Puskesmas as safe, comfortable, and affordable will be more motivated to choose it than those who have the opposite perception. Some inconsistencies in the influence of variables such as age,

education, and distance can be explained by the local social and cultural context. Studies by Siallagan (2017) and Khasanah (2017) Highlight the role of culture and family customs in influencing delivery decisions. In many areas, the decision on where to give birth is made not only by the mother, but also by the husband or other family members.

Previous experiences with health facilities also influence subsequent decisions. Mothers who have positive experiences with delivery facilities, especially in terms of tangible aspects such as comfort and cleanliness, are more likely to choose the same facility for subsequent deliveries (Bishanga et al., 2019). This emphasizes the importance of maintaining consistent service standards. Although not directly tested in this study, the existence of the JKN program has great potential to improve access and perceptions of the cost of delivery services. Nugraheni et al. (2020) demonstrated that participation in JKN can reduce direct cost barriers; however, indirect costs, such as transportation, remain a challenge, particularly for mothers residing far from facilities.

The logistic regression model used in this study was found to be valid, with a Nagelkerke R^2 value of 0.745, indicating that the model can explain 74.5% of the variation in decisions. The Hosmer and Lemeshow test also yielded promising results ($p = 0.682$), indicating that the model's predictions align with the actual data. This strengthens the reliability of the results and the practical implications of the study. Improving the quality of physical facilities (tangible), mapping areas with limited access, and providing education that is tailored to the level of maternal education are important strategies to encourage the use of formal maternity facilities. By prioritizing tangible improvements and paying attention to public perceptions of services, the government and health facility managers can increase the number of mothers who choose safe and standardized places to give birth.

Improving the quality of physical facilities, the regions maps the limited access, and educational education which is the same level as the level of maternal education is a strategy for the formation of encouraging the use of the use of facilities. Performity of physical facilities, such as ensuring privacy, comfort, and availability of resources, is proven to improve the experience of more dignified childbirth and respect for respect or Kaata Kaata Kaata Hormar A or Kaara Kaara Kaurang. In addition, the AKSES mapping area is limited, such as through the construction of the Optimization of Pregnancy Waiting Homes (MWHS), it can shorten the distance and representatives of the impression of impression, sedatanka, decrease the risk of maternal and infant mortality (Kasaye et al., 2023; McRae et al., 2021).

4. CONCLUSION

Age, education level, distance from residence, and the quality of physical facilities (tangible) significantly influence mothers' decisions regarding the choice of a delivery location at the Bonebakal Health Center. The tangible factor is the most dominant variable with the highest odds ratio, indicating the importance of comfort and completeness of facilities in attracting mothers to give birth at health facilities. In contrast, the variables of employment, income, and perception of costs did not show a significant influence in the multiple logistic regression model. Further research can consider cultural factors, family roles (such as husband and parents), and social influences as variables that may influence the decision to choose a place of delivery.

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