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# The Relationship between Maternal Participation in Household Decision-Making and Birth Attendant Selection: Evidence from Indonesia Demographic and Health Survey

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## Abstract

**BACKGROUND:** The decreasing maternal mortality rate (MMR) is an important indicator in achieving health development. The Ministry of Health has mandated delivery assistance by competent health personnel to achieve the MMR targets set out in the UN sustainable development goals.

**AIM:** This study aims to determine the relationship between maternal participation in household decision-making and the selection of birth attendant in Indonesia.

**METHODS:** The study uses secondary data from the 2017 Indonesia demographic and health survey, as part of a cross-sectional and large-scale national survey. The study involved ever-married women of reproductive age (15–49 years) and had given birth in the last 5 years prior to the survey (n = 14,193).

**RESULTS:** Of all birth attendants, 4,630 (32.6%) were non-health workers and 9,563 (67.4%) were health workers. Midwives account for the largest proportion of the health workers (61.8%). Decisions in healthcare, household expenses, visits to family/relatives' decisions are significantly associated with birth attendant selection. However, husband's income use decision had no significant relationship with birth attendant selection. The final multivariate model found that grand multipara mothers had a 1.9 times higher risk of choosing non-health birth attendants than primipara mothers (OR = 1.90, 95% CI = 1.60–2.25).

**CONCLUSION:** Findings demonstrated the importance of improving health education for men and women as well as women's decision-making autonomy. Health workers (especially midwives) should improve knowledge and communication between couples in choosing skilled birth attendants, especially for mothers with grand multiparity.

## Introduction

One of the World Health Organization's sustainable development goals (SDGs) targets is to reduce the global maternal mortality rate (MMR) to <70 per 100,000 live births. The average decline in maternal mortality globally between 2000 and 2017 was 2.9% [1]. According to the World Bank, Indonesia has the third-highest MMR in Southeast Asia [2]. One of the leading causes of high maternal mortality in Indonesia is the delay in recognizing the danger signs during pregnancy and making decisions accordingly [3].

Based on the results of the 2015 Inter-Census Population Survey, it was recorded that the MMR in Indonesia reached 305/100,000 population [4]. Meanwhile, according to estimates of the MMR by the United Nations, WHO, and the World Bank in 2017, the MMR in Indonesia was 177/100,000 live births, and it is still quite far from the target of the 2030 SDGs of 70/100,000 live births by 2030 [1]. Presidential Regulation No.18 of 2020 concerning the National Medium-Term Development Plan of 2020–2024

explains that reducing the MMR is set to be a strategic priority project, and one of them is achieved through a strategy to improve maternal, child, family planning and health reproductions. Where the increase in public health status is marked by a decrease in maternal mortality to 183/100,000 live births by means of supplementary food, micronutrient supplementation, and quality family planning services in health facilities, and health operational assistance [5].

Delivery assistance by health workers is important because health workers have the appropriate skills and tools to provide safe and clean services. The Ministry of Health has required childbirth to be assisted by competent health workers to achieve the SDG targets [6]. According to the 2018 Basic Health Research (RISKESDAS), only 79% of deliveries occur in health facilities, and 16% of births occur at home, of which non-health workers still assist in 6.7% of cases. According to the 2007–2012-2017 Indonesia demographic health survey (IDHS), the proportion of deliveries assisted by health personnel has increased from 73% (2007), 83% (2012) to 91% (2017), which means that around 9% of women still give birth using traditional birth attendants [7].

According to coverage of maternal and child health services indicators, birth assistance must be performed by health personnel competent in midwifery, such as specialist obstetrics, general practitioners, midwives, assistant midwives, and midwifery nurses [8]. Although there has been a decline in the coverage of traditional birth attendants, around 13–18% of childbirth are still assisted by traditional birth attendants, especially in rural areas (20–27%) [9].

Women's empowerment signifies the ability to make life choices, including making decisions and controlling resources [10]. Several studies have shown that increased women's empowerment is associated with increased reproductive health and maternal health outcomes, such as contraceptive use, birth spacing, prenatal care and birth. Women with knowledge of women's role are more likely to experience better medical service experiences during childbirth [11], [12], [13]. In the context of birth attendant selection, women's empowerment can be measured through health-care decisions in the household, household spending decisions, decisions related to visits to family/relatives, and influence over the husband's income decisions [14], [15]. Compliance of each family member to the head of household is still a tradition that results in poor access to health services, including health workers and facilities because each member cannot make their own decisions other than the head of the family [16]. Decisions taken directly by pregnant women usually have a positive impact on childbirth and also increase the range of birth choices for health workers [17]. The selection of skilled birth attendants tends to be undertaken by women who participate in household decision-making [10].

Although several studies show women's participation in the selection of birth attendants has a significant positive impact, some women in Indonesia are prevented from being involved in household decision-making because of the influence of family members, including their husbands, parents, and in-laws. In the 2017 IDHS data, 68% of women were involved in three household decisions, while as many as 10% had zero involvement. A further 11% of women were not involved in decisions about their healthcare, 23% of women were not involved in household spending decisions, and 13% of women were not involved in decisions regarding family visits [7]. This study thus explores in depth the relationship between mothers' participation in household decision-making on the selection of birth attendant through further analysis of the 2017 IDHS data.

## Methods

This study uses secondary data from the 2017 IDHS, a national-scale cross-sectional survey conducted by Statistics Indonesia, National Family Planning Coordinating Agency, and Ministry of Health. The survey used a two-stage stratified probability sampling technique. First, based on the Population Census 2010 lists, the numbers of census blocks were chosen using probability proportional to size sampling within the size of households. A total of 1,970 census blocks were used for the survey, with 25 households from each block, totaling 49,250 households (25,300 households in urban areas and 23,950 households in rural areas).

The initial population sample comprised 15,357 women of reproductive age (15–49 years). We excluded 1,164 women who did not meet the inclusion criteria (had given birth during the previous five years before the survey), leaving a final sample of 14,193 women. The dependent variable of this study is the selection of birth attendant. The independent variables are maternal participation in the household, such as: Health-care decisions in the household, household spending decisions, decisions related to visits to family/relatives, and influence over the husband's income decisions. This study also assesses the respondent's demographic and socioeconomic factors, namely the variables of mother's age, place of residence, mother's education, husband's education, mother's job, husband's job, living with a partner, parity, number of living children, maternal pregnancy knowledge during pregnancy, distance to health facilities, and wealth level.

SPSS version 25 was used to analyze data from the 2017 IDHS. The results of birth attendants' distribution were presented through descriptive statistics. The proportions and Chi-squared tests were used to see any differences in maternal participation in the household decision-making, demographic and socioeconomic characteristics between health workers and non-health workers. The data were analyzed using multiple logistic regressions on multivariate variables. The selection of the candidate variables to be included in the multivariate variables was based on the bivariate analysis results, with p = 0.25. The multivariate variable analysis began by entering all selected candidates into the model-variables with p > 0.05 are excluded from the model. If there is a change in the odds ratio (OR) value >10% in the model, the variable is re-entered as a confounding variable. The final model on multivariate variables was obtained when no more variables had p > 0.05, and confounding variables were absent.

This study was a secondary data analysis of the IDHS. Respondents read a written informed consent statement before each interview. The statements explained the participants' right to refuse to answer questions or terminate participation at any time. They also outlined standards of confidentiality and data protection. The Institutional review board (IRB) reviewed and approved the study procedures and survey protocols. After obtaining authorization from

the IDHS to use the dataset, the local IRB provided further ethical review approval (304/UN2.F10.D11/PPM.00.02/2021).

## Results

Table 1 shows that the proportion of mothers who choose to give birth assisted by health workers (67.4%) is higher than that of mothers who choose to give birth assisted by non-health worker (32.6%). Most birth attendants were assisted by midwives (61.8%), followed by obstetricians (30.1%), nurses (23.5%), and general practitioners (1.6%). For birth assistance by non-health workers, the most helpers are traditional birth attendants (13.6%). The birth attendant variable in this study are not mutually exclusive, meaning that mothers who have given birth more than once can have received childbirth assistance from more than one type of health worker or non-health worker.

**Table 1: Birth attendants in Indonesia based on IDHS 2017**

| Birth Attendants | n = 14,193 | | | |
|---|---|---|---|---|
| | n | % | n | % |
| Health workers | | | 9,563 | 67.4 |
| General practitioners | 225 | 1.6 | | |
| Obstetricians | 4278 | 30.1 | | |
| Nurses | 3335 | 23.5 | | |
| Midwives | 8775 | 61.8 | | |
| Non-health worker | | | 4,630 | 32.6 |
| Traditional birth attendants | 1934 | 13.6 | | |
| Relatives/Friends | 1714 | 12.1 | | |
| Others | 119 | 0.8 | | |

Table 2 describes the relationship between the independent variables in four aspects and the covariate variables with the choice of birth attendant. The independent variables that have a significant relationship with the selection of birth attendant are health-care decisions, decisions relating to household expenditures, and decisions relating to visits to family/relatives. There is no significant relationship between influences over a husband's spending on the selection of birth attendant. The covariate variables, which have a significant relationship to the selection of birth attendant, are maternal age, place of residence, mother's education, husband's education, knowledge of pregnancy, distance to health facilities, parity, number of living children, knowledge of pregnancy, and level of wealth.

There are 12 variables included in the final multivariate model: Health-care decisions, expenditure decisions, family/relative visit decisions, decisions to use husband's income, mother's age, place of residence, mother's education, husband's education, knowledge of pregnancy, distance to health facilities, parity, and wealth level (Table 3). The results of the analysis show that the largest OR was grand multiparity (OR = 1.90, 95% CI = 1.60–2.25). Mothers with grand multiparity had a 1.9 times higher risk of choosing birth attendants by non-health workers than primipara

mothers. Mothers with multiparity have 1.21 times the probability of choosing birth assistance from non-health workers compared to primipara mothers (OR = 1.21, 95% CI = 1.10–1.32).

## Discussion

Based on maternal and child services coverage indicators, birth attendants should use health workers who have competence in midwifery [18]. According to the Indonesian Health Profile, in 2019, 90.95% of deliveries were assisted by health workers. Meanwhile, the percentage of pregnant women who underwent childbirth assisted by health workers in health care facilities was 88.75%. Thus, around 2.2% of deliveries are still assisted by health personnel but not carried out in health-care facilities [19].

The high level of maternal trust in traditional birth attendants is influenced by access to health services and mother's belief. In some areas in Indonesia, there are mothers who still use the services of traditional birth attendants because there are still many myths circulating in the community regarding best practices in delivering children. At the time of delivery assisted by traditional birth attendants, there were mothers who died immediately due to labor complications, lack of health care services, and late help by skilled birth attendants [18].

Indonesia has a policy framework for determining the standard of health services, especially for maternity. The framework is based on the Regulation of the Minister of Health of the Republic of Indonesia Number 97 of 2014, concerning health services for the period before pregnancy, during pregnancy, childbirth, and the postnatal period. It also concerns the implementation of contraceptive services, as well as health services and sexual health. The regulations must be the basis of reference for complications that occur during childbirth, especially for mothers who are assisted by non-health workers, so that complications can be treated quickly [20].

Social determinants are thought to be one of the reasons for the limited access to health services that can contribute to maternal and infant mortality. One of the strongest social determinants impacting decisions taken in the household in the selection of birth attendant is gender [6]. Increasing the scope of the selection of skilled birth attendants can be achieved by increasing women's empowerment [10]. From the study results, the mother who participated in decision-making together with her husband was the dominant decision. Some women in Indonesia are not given the opportunity to be involved in decision-making in the household because of the influence of their family members, including their husbands, parents, and in-laws. In several regions in

**Table 2: Birth attendant selection, maternal participation in the household decision-making, and socio-demographic characteristics of respondents**

| | Birth attendants | | Total | p |
|---|---|---|---|---|
| | Health workers n (%) (n = 9,563) | Non-health workers n (%) (n = 4,630) | n (%) (n = 14,193) | |
| Health-care decision | | | | <0.001 |
| Respondent alone | 4,314 (69.3) | 1,908 (30.7) | 6,222 (43.8) | |
| Join with husband | 4,327 (66.5) | 2,176 (33.5) | 6,503 (45.8) | |
| Not at all | 922 (62.8) | 546 (37.2) | 1,468 (10.4) | |
| Household expenditure decision | | | | 0.005 |
| Respondent alone | 1389 (65.3) | 737 (34.7) | 2,126 (15.0) | |
| Join with husband | 6,002 (68.4) | 2,777 (31.6) | 8,779 (61.9) | |
| Not at all | 2172 (66.1) | 1116 (33.9) | 3288 (23.1) | |
| Visit to family/relatives decision | | | | 0.003 |
| Respondent alone | 1,434 (67.1) | 704 (32.9) | 2,138 (15.1) | |
| Join with husband | 6955 (68.1) | 3265 (31.9) | 10220 (72.0) | |
| Not at all | 1,174 (64.0) | 661 (36.0) | 1,835 (12.9) | |
| Husband's income use decision | | | | 0.476 |
| Respondent alone | 4,358 (66.9) | 2,158 (33.1) | 6.516 (46.0) | |
| Join with husband | 4,225 (67.9) | 1,998 (32.1) | 6,223 (43.8) | |
| Not at all | 980 (67.4) | 474 (32.6) | 1,454 (10.2) | |
| Mother's age | | | | <0.001 |
| <20 years | 181 (54.4) | 152 (45.6) | 333 (2.3) | |
| 20–35 years old | 6,805 (66.5) | 3,435 (33.5) | 10,240 (72.1) | |
| >35 years old | 2,577 (71.2) | 1,043 (28.8) | 3,620 (25.6) | |
| Place of residence | | | | <0.001 |
| Urban | 5,691 (80.3) | 1,399 (19.7) | 7,090 (50,0) | |
| Rural | 3,872 (54.5) | 3,231 (45.5) | 7,103 (50,0) | |
| Mother's education | | | | <0.001 |
| Low education | 7,517 (64.4) | 4,151 (35.6) | 11,668 (82,2) | |
| High education | 2,046 (81.0) | 479 (19.0) | 2,525 (17.8) | |
| Husband's education | | | | <0.001 |
| Low education | 7,786 (64.6) | 4,258 (35.4) | 12,044 (84.8) | |
| High education | 1,777 (82.7) | 372 (17.3) | 2,149 (15.2) | |
| Mother's job | | | | 0.032 |
| Working | 5,113 (68.2) | 2,387 (31.8) | 7,500 (52.8) | |
| Not working | 4,450 (66.5) | 2,243 (33.5) | 6,693 (47.2) | |
| Husband's job | | | | 0.350 |
| Working | 9,485 (67.3) | 4,599 (32.7) | 14,084 (99.2) | |
| Not working | 78 (71.6) | 31 (28.4) | 109 (0.8) | |
| Living with a partner | | | | 0.525 |
| Yes | 8,765 (67.5) | 4,229 (32.5) | 12,994 (91.5) | |
| No | 798 (66.6) | 401 (33.4) | 1,199 (8.5) | |
| Distance to health facilities | | | | <0.001 |
| Yes | 1,734 (61.4) | 1,089 (38.6) | 2,823 (19.9) | |
| No | 7,829 (68.9) | 3,541 (31.1) | 11,370 (80.1) | |
| Parity | | | | <0.001 |
| Primipara | 3,041 (70.0) | 1.306 (30.0) | 4,347 (30.6) | |
| Multipara | 6,002 (67.8) | 2,851 (32.2) | 8.853 (62.4) | |
| Grand multipara | 520 (52.4) | 473 (47.6) | 993 (7.0) | |
| Number of living children | | | | <0.001 |
| 0 | 32 (56.1) | 25 (43.9) | 57 (0.4) | |
| 1–2 | 6,523 (69.5) | 2,868 (30.5) | 9,391 (66.2) | |
| 3–5 | 2,846 (64.5) | 1,564 (35.5) | 4,410 (31.1) | |
| >5 | 162 (48.4) | 173 (51.6) | 335 (2.3) | |
| Maternal pregnancy knowledge during pregnancy | | | | <0.001 |
| High | 6,138 (70.1) | 2,619 (29.9) | 8,757 (61.7) | |
| Low | 3,425 (63.0) | 2,011 (37.0) | 5,436 (38.3) | |
| Wealth level | | | | <0.001 |
| Q1 | 1,559 (44.2) | 1,971 (55.8) | 3,530 (24.9) | |
| Q2 | 1,734 (61.4) | 1,089 (38.6) | 2,823 (19.9) | |
| Q3 | 1,999 (73.4) | 725 (26.6) | 2,724 (19.2) | |
| Q4 | 2,101 (79.9) | 527 (20.1) | 2,628 (18.5) | |
| Q5 | 2,170 (87.2) | 318 (12.8) | 2,488 (17.5) | |

Indonesia, gender dynamics still play a critical role in the selection of birth attendant. Of the nine ethnicities studied, all had faith in cultural values that influence decisions in selecting birth attendant for their families. In addition, women's economic limitations and poor education can lead to choosing birth attendant who are not health workers [6]. Women who do not participate in decision-making have a 1.6 times greater probability of giving birth in non-health facilities than women who participate in domestic decision-making [21].

Women tend to have less authority and bargaining power to make decisions regarding the use of some services. A woman's husband and family typically dominate decision-making in the household. Most decisions on how to spend income are determined unilaterally by the husband. Although the decision to use husband's income in the selection of birth attendant did not show significant results in our study, the husband's income might be channeled to ensure safe delivery by health workers and the equipment and transportation needed during the delivery process [22]. Husbands can provide support long before the birth arrives by learning what to do when their wife has entered into labor [8].

In addition to household participation, another factor closely related to selecting birth attendant is maternal parity. It was found that the greater the parity of the mother, the greater the risk of giving birth using non-health workers. Mothers who have given birth to more than one child assume that they are already experienced and are thus sometimes not motivated to have their pregnancy checked [23]. The experience of childbirth and previous pregnancies will greatly affect the selection of birth attendant. The mother's experience of being helped by birth attendants will influence her

**Table 3: The relationship between maternal participation in household decision-making and selection of birth attendant**

| Variables | B | p | OR (95% CI) |
|---|---|---|---|
| Health-care decision (mother and husband) | 0.09 | 0.05* | 1.09 (0.99–1.195) |
| Health-care decision (mother not participating) | 0.18 | 0.01 | 1.19 (1.04–1.37) |
| Expenditure decision (mother and husband) | −0.19 | 0.00 | 0.82 (0.73–0.93) |
| Expenditure decision (mother not participating) | −0.12 | 0.08* | 0,89 (0.77–1.01) |
| Decision on family/relative visits (mother and husband) | −0.01 | 0.93* | 0.99 (0.88–1.12) |
| Decision on family/relatives visit (mother not participating) | 0.08 | 0.28* | 1.09 (0.93–1.27) |
| Decision to use husband's income (mother and husband) | −0.04 | 0.38* | 0.96 (0.88–1.05) |
| Decision to use husband's income (mother not participating) | −0.07 | 0.30* | 0.93 (0.81–1.07) |
| Mother's age (20–35 years) | −0.32 | 0.01 | 0.73 (0.57–0.93) |
| Mother's age (>35 years) | −0.67 | <0.001 | 0.51 (0.40–0.67) |
| Place of residence (urban) | −0.73 | <0.001 | 0.48 (0.44–0.53) |
| Mother's education (higher education) | −0.18 | 0.01 | 0.84 (0.73–0.95) |
| Husband's education (higher education) | −0.29 | <0.001 | 0.75 (0.65–0.87) |
| Maternal pregnancy knowledge (don't know) | 0.19 | <0.001 | 1.21 (1.12–1.30) |
| Distance to health facilities (there is a problem) | 0.51 | <0.001 | 1.66 (1.50–1.84) |
| Parity (multipara) | 0.19 | <0.001 | 1.21 (1.10–1.32) |
| Parity (grand multipara) | 0.64 | <0.001 | 1.90 (1.60–2.25) |
| Wealth level (intermediate) | −0.92 | <0.001 | 0.40 (0.36–0.45) |
| Wealth level (upper intermediate) | −1.14 | <0.001 | 0.32 (0.28–0.37) |
| Wealth level (1) | −1.44 | <0.001 | 0.23 (0.20–0.28) |

decision to choose a birth attendant to help at her next birth. Mothers whose first birth went smoothly due to the help of a traditional birth attendant will assume that they will always give birth smoothly if they are assisted by a traditional birth attendant [24].

The number of children born to mothers is also related to health services for childbirth [25]. The greater the parity, the smaller the tendency to give birth with the help of skilled health workers [10]. Mothers with parity 2 are 46% less likely to give birth assisted by health workers. Mothers with parity 3 were 34% less likely to give birth with the help of a birth attendant compared to mothers with parity 1. Women with more parity >5 had a lower incidence of giving birth assisted by health workers (0.24) than parity 1. It can be concluded that the greater the parity of the mother, the greater the number of mothers who choose non-health workers [26]. Women with high parity will have more pregnancy and childbirth experience and feel more confident to give birth outside of health facilities [27]. However, according to other studies, parity has a significant positive impact on the utilization of health services for delivery [25]. One of the major risk factors for pregnant women is giving birth to more than four children, as one of the principal causes of maternal death is too many births. The first childbirth for young mothers is considered risky because the mother is not physically and mentally prepared for childbirth, while older women can face greater risks because a mother's body and reproductive organs decline after giving birth to her fourth child. Mothers with high parity (>4) have a greater risk of bleeding [28]. Pregnancy in mothers with grand multiparity involves an 8-times higher risk of death than other parities. Parity 2–3 is the safest in terms of maternal mortality. The risk of parity can be managed with better obstetric care [29]. Knowledge is obtained from one's own experience or the experience of others. Mothers who know about reproductive health will have more confidence, insight, and ability to make good decisions for themselves and

their families. Knowledge is a very influential factor in decision-making. Someone who has a good knowledge about something is likely to make a decision that is more precisely related to the problem than those who are less knowledgeable [30]. Women who have more knowledge are more likely to make wise decisions about their health and seek appropriate health care than women who have less knowledge. Mothers who have extensive knowledge usually do a pregnancy checking at the beginning of a pregnancy by inviting antenatal care visits by health workers. The mother is given health education and information about the benefits of having skilled birth attendants during childbirth [31]. Therefore, health education on safe delivery should prioritize mothers with grand multiparity by giving them greater access to free health services.

Although women's decision-making is a complex measure that does not have a mutually agreed or universal definition, this study has strength in using women's decision-making measures directly. This study also uses the latest IDHS data with a large sample size to provide accurate and up-to-date estimates to the general population. However, this study also has some limitations. First, decisions in women may be biased by the concept of endogeneity which was not controlled by the authors and is still a matter of debate in some studies. Second, Indonesia has a very diverse culture, including their decisions to use maternal health services in the household, this causes this study to be unable to control all variables related to culture and tradition that can influence women's decision making. Third, because decisions on women are difficult to measure, the literature that supports this research is still limited so that the analysis can lead to different meanings.

## Conclusion

There is a significant relationship between health care decisions and factors such as influence over decisions on household expenditure, and control over decisions to visit family/relatives on the selection of birth attendant. However, the decisions related to a husband's income had no significant relationship with the selection of birth attendant. At the time of antenatal care, women's decision-making autonomy is critical for improving women's empowerment as well as maternal, neonatal, and child health. Health workers (especially midwives) should increase health education through open or private classes to improve knowledge and communication between couples (e.g., yoga together during pregnancy) in choosing skilled birth attendants, especially for mothers with grand multiparity. More research is needed to understand the effect of cultural practices, perceived barriers to women's decision-making power, and the utilization of maternal health services.

## Author Contributions

Idea and initial version of the manuscript: PSD Formal analysis of data: PSD and HA Study design and methodology: PSD Critical revision of the manuscript: PSD and HA Writing, review and editing: PSD and HA. All authors contributed to the drafting, review, and approval of this manuscript.

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