

Factors Contributing to the Increase of Caesarean Section Among Members of National Health Insurance in Indonesia

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Abstract

Every member of the National Health Insurance has the right to get the benefits package according to medical indications and service standards, not at their request. Nevertheless, by many scholars, it is considered ambiguous in reviewing the increasing utilization of caesarean section procedures because of the absence of guideline-defined indications of caesarean sections in Indonesia, which leads to the question of whether it is guideline-defined indications, doctor-defined indications, or maternal request. This study fills this research gap by identifying predisposing, enabling and need factors on the actual behaviour of caesarean section based on the Health-Seeking Behaviour model. Data for the study were obtained through a purposive sample of 564 postpartum women in three provinces. We used logistic regression models to examine factors influencing the caesarean section among NHIS' members. This study highlights self-rated health, religion, non-employee (BP), and moderate-socioeconomic (C status) influence the increasing caesarean section among mothers in the context of the NHI scheme. The most important finding from this study is that individuals in self-rated health with good conditions were also more likely to choose a caesarean section. Implications for consumers education and suggestions for future research are discussed.

Keywords: education, enabling factors, Health-Seeking Behaviour, need factors, predisposing factors, self-rated health.

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1. Introduction

“Every effort should be made to provide caesarean sections to women in need, rather than striving to achieve a specific rate” (WHO 2015). The quote is written in bold in a publication issued by the World Health Organization on the high rate of caesarean section, a global concern for the international health care community for more than three decades. Previous research in international journals has linked the high rate of caesarean section with an increased maternal preference for caesarean section (Dodd *et al.* 2004; Edmonds *et al.* 2015; Stoll *et al.* 2017; Ji *et al.* 2015; Liang *et al.* 2018). However, studies of consumer behaviour toward caesarean section from a mother's 'needs' variable—as quoted above—are still limited. According to Maslow (1943), humans try to meet lower-level needs before meeting higher-level needs. Consumers who have been able to meet their basic needs, then other higher needs usually appear, and so on. The most basic human needs are physiological needs, namely the human body's needs to maintain life. The next level is the need for security, namely the need for human physical protection. The third level as social needs concludes, namely the need for love from others, a sense of belonging and belonging, and being accepted by the people around them. Fourth, ego or esteem needs to achieve a higher degree than others, such as better achievement, prestige, reputation, and status.

The highest is the need for self-actualization, namely the desire of an individual to make himself the best person according to his potential and abilities and the desire to convey ideas, ideas, and value systems that he believes into others. The variable 'needs' was used by Andersen (1968) in the Healthcare Utilization Model, continuously developing to become an emerging model (Andersen 1995). This model was used by several researchers in the Health-Seeking Behaviour (HSB) Model. One of them is Kuuire *et al.* (2015), which suggests a person's urge to perform health-seeking behaviour due to the disease and the severity of the disease that stimulates the recognition of needs. Various reference groups or influencers or people around also influence, considering there can be asymmetric information (Hurley 2000). Inadequate information about caesarean section and vaginal delivery methods may hinder acceptance of vaginal delivery and even increase caesarean section. To see the driving factors from themselves or outside consumers, Ji *et al.* (2015) have identified a change in preference for the method of delivery from pregnant women in the second trimester to the third trimester to actual delivery due to the influence of doctor-defined indications (not based on guidelines).

In Indonesia, research on the factors that cause high caesarean sections using secondary data has been widely carried out, such as Riskesdas (Suryati 2012, Shombing *et al.* 2017, Ashar 2019), and NHI claim (Andikashwari 2018). However, because it only used secondary data, the analysis was limited to the variables available in the

secondary data, so other factors have not been described in previous studies, especially those related to consumer behaviour. Based on the description above, it is necessary to analyze the factors that influence the behaviour of the caesarean section method of NHIS' members from primary data and provide managerial implications that NHIS must carry out in the context of sustainability of the NHI program.

2. Literature Review and Testable Hypothesis

2.1 Health-Seeking Behaviour

Several researchers developed the Health-Seeking Behaviour model framework (Kuuire *et al.* 2015) by adapting the Health Utilization Model or health service utilization model (Andersen 1968) to predict a series of factors, namely predisposing factors, enabling factors and need factors that affect the utilization of health services by the community. Predisposing factors include demographics (age, gender), social structure (education, occupation, ethnicity) and health beliefs (attitudes, values, and knowledge people have about health and health services that can influence perceptions of their subsequent needs and use of health services) that affect the acceptance of health services. Enabling factors that facilitate an individual's service use include resource indicators such as income, indicators, and access to services; community or personal-support resources; health personnel and facilities should be available where people live and work. Then people must have the means to get to access those services and utilize them. This health utilization model has been widely used to explain the utilization of health services (Andersen, 1995). Although predisposing and enabling factors are essential in utilizing health services, they are insufficient to describe the actual use. Actual use is initiated by need, which can arise as a result of the illness level. This study, specifically, will try to answer whether the only poor condition of self-rated health mothers utilizes caesarean section services.

2.2 Effect of maternal age on caesarean section

Previous studies have a wide age range of respondents between the ages of 15 and 49. In this study, respondents' age was a specific age considered to have minimal risk and very possible to vaginal delivery. First, according to MoH (2014), the best pregnancy and the lowest risk are between 20 and 35. Second, referring to BKKBN *et al.* (2018), the peak fertility rate graph by age group (Age-specific Fertility Rate or ASFR) is between the ages of 25 and 29, while the birth rate for women aged 20 to 24 was 111 births per 1000 women and an increase in women aged 30 to 34 was 113 births per 1,000 women. Third, between 21 and 35 is still at the peak of the graph of the number of caesarean section cases in NHI claims nationally and in the research locations of three provinces (DKI Jakarta Province, DI Yogyakarta Province and Central Java Province). Fourth, based on NHI claim data, 85% of mild level severity of caesarean sections from the total caesarean sections in hospitals during 2019. The age range targeted for this study is on a peak graph or tends to be numerous so that it is easy to obtain the respondent. With the four reasons mentioned above, narrowing the respondent's age range does not complicate the research.

We divided the respondents in this study into three categories, namely aged 21 to 25; 26 to 30; and 31 to 35. The aged 21 to 25 was used as a reference category. Usually, older people will take advantage of caesarean section services. A greater chance of having a caesarean section came from the age category of more than 35 years (OR 1.68) (Sihombing *et al.*, 2017). Correspondingly, older people will use services more than younger people (Kuuire *et al.* 2015, Rydahl *et al.*, 2019). Thus, the mother's age affects the need for a caesarean section method. Generally, the higher the mother's age, the higher the need for a caesarean section.

2.3 Effect of maternal education on caesarean section

Several previous studies have found that higher education levels have a greater chance of caesarean section (Sihombing *et al.*, 2017, Suryati 2012). Accordingly, Yuksel *et al.* (2019) stated that education affects the mother's self-efficacy during childbirth. In contrast, Ji *et al.* (2015) and Soheili *et al.* (2017) found no relationship between the level of education and the desire for the type of delivery method a mother would undergo.

2.4 The influence of religion on caesarean section

Several previous studies found a relationship between religion and the method of delivery she chose (Ansah 2018, Ugwu & de Kok 2015). Ansah 2018 divides the mother's religion into six categories: Muslim, Christian, Catholic, Hindu, Buddhism, and Confucianism. As a reference category, the Muslim religion variable is used. A greater chance of having a caesarean section is a religion that accepts caesarean section as a method of delivery which has a three times greater tendency to have a caesarean section (Ansah 2018). In line with this, Ugwu & de Kok (2015) also argue that religion is one of the variables that influence the choice of caesarean section method, and divine intervention is considered to help mothers avoid caesarean section, which is a complication of supernatural causes. Also, faith in God can prevent a caesarean section.

2.5 Effect of self-rated health on caesarean section

Sihombing *et al.* (2017) suggested a relationship between maternal health status and the choice of caesarean section.

Based on the health status of the mother, the greater chance of having a caesarean section are those who have risk factors such as height 145 cm (OR: 1.93), age > 35 years (OR: 1.68), birth age > 42 weeks (OR: 1.97), with parity of 1 birth (OR: 2.49), gave birth with complications of labour (OR: 1.21), had a history of pregnancy complications (OR: 1.29) and delivery complications (OR: 6.63) as well as a complete pregnancy examination (K4) (OR: 1). In conclusion, one of the factors driving the incidence of caesarean section is the variable health status of the mother and fetus with complications, complications of pregnancy and childbirth, parity and history of complete ANC, which have a greater chance of having a caesarean section. Kuire *et al.* (2015) stated a relationship between self-rated health and health service seeking behaviour. This view is categorized into three categories, namely good condition, moderate and poor. Kuire *et al.* (2015) stated that the view of health status with a moderate level showed a more significant influence than good health status on the tendency to seek health services.

2.6 Effect of membership type on caesarean section

Participants in the NHI program are everyone, including foreigners who have worked for a minimum of six months in Indonesia, who have paid health insurance contributions. The types of memberships in the NHI program are divided into Subsidy Recipient Members (PBI, namely the poor and the poor as NHIS' members) and non-PBI participants. Sihombing *et al.* (2017) stated that the ownership of health insurance influences the incidence of caesarean sections in Indonesia. Mothers who have health insurance have a greater chance of giving birth by caesarean section than mothers who do not have health insurance, especially since the cost of caesarean section is much higher when compared to the costs incurred for vaginal delivery. Suh *et al.* (2014) found that the types of Medical Aid participants (similar to PBI participants) had higher utilization rates than Health Insurance patients (similar to PPU). The research of Suh *et al.* (2014) used the 2006-2007 Korean national health insurance database. This type of participation in Korea is similar to NHI participation, namely Health Insurance (wage-based, 96% population) and Medical Aid (government-subsidized public assistance for poor and medically needy individuals). The research of Wielen *et al.* (2018), which uses survey data on the living standards of the Ghanaian population in 2012-2013 with the score matching method, found the same results. Health insurance participation in Ghana has increased the utilization of health services. However, inequality is still occurring due to the existence of out-of-pockets, so that it is a burden for the poor to access health services. From these previous studies, it can be seen that the effect of the type of health insurance participation on the need for different delivery methods, some have an influence (Sihombing *et al.* 2017, Suh *et al.* 2014, and Wielen *et al.* 2018), but there are also studies who found no effect of the type of participation on the chances of cesarean delivery (Ji *et al.* 2015).

2.7 Effect of economic status on caesarean section

Family economic status is related to the incidence of caesarean sections in Indonesia. The higher the level of maternal economic status, the risk of the caesarean section also increases in Indonesia. A caesarean section will cost many times more than a vaginal delivery. Therefore, the family's financial ability is one of the considerations in deciding to give birth by caesarean section. The effect of the 'rich and poor' types of membership in health insurance is in line with the research of Boerma *et al.* (2018). Boerma *et al.* (2018) found high utilization of caesarean section services by the 'rich' group of pregnant women (2.4 times) compared to the 'poor' group of pregnant women because of low capacity to perform caesarean sections in rural areas, financial limitations, and the private sector's limited role in providing caesarean section services in rural areas. Family economic status can use income (Soheili *et al.* 2017) or quintiles (Sihombing *et al.* 2017). Soheili *et al.* (2017) stated no relationship between income and the desire for caesarean section. Sihombing *et al.* (2017) used three categories, namely lower (quintiles 1 and 2), moderate (quintiles 3), and upper (quintiles 4 and 5). As a reference category, lower economic status is used. A greater chance for a caesarean section to occur is for mothers with upper economic status (OR: 2.55). From these previous studies, economic status affects the need for delivery methods. The wealthiest quintile is higher in the use of caesarean section (Boerma *et al.* 2018, Sihombing *et al.* 2017). Still, some studies found no effect on the chance of caesarean section (Soheili *et al.*, 2017).

2.8 Effect of family structure on caesarean section

Based on Nurmansyah *et al.* (2019) and Koentjaraningrat (1987), there are four stages of family structure, namely promiscuity (giving birth to offspring without any ties/marriage), matriarchate (lineage from the mother, for example, Minangkabau, Semando), patriarchal (lineage from father, for example, Batak, Balinese, Ambon, Asmat, Dani) and parental (lineage from father and mother, for example, Javanese, Madurese, Sundanese, Bugis, Makassar). In general, the majority (41%) of the Indonesian population are Javanese (Suryadinata *et al.* 2003), so that the tendency to have a parental family structure means that the need for a caesarean section can be influenced by both parties of the extended family (father and mother). Kuire *et al.* (2015) see that the pattern of position and role of family members influences health-seeking behaviour. The polygamous family and patrilineal were more influential in health-seeking behaviour statistically.

2.9 Effect of availability of healthcare facilities on caesarean section

Kuure *et al.* (2015) found the influence of the nearest health facility indicators in the vicinity of their residence with health-seeking behaviour. Due to the absence of healthcare facilities, people who need health services have to travel long distances, causing transportation costs for people who want to get health services. Suryati (2012) suggests that one of the non-clinical factors that play a role in the choice of caesarean section is the characteristics of the available health care facilities. Based on the 2010 IDHS data, most caesarean sections were carried out in private healthcare facilities. The unequal distribution of healthcare facilities can lead to a tendency that the availability of healthcare facilities will affect the need for caesarean sections. Thus, the availability of healthcare facilities affects the perception of the mother's needs in choosing a delivery method (Suryati 2012).

2.10 Effect of availability of health workers on caesarean section

Fairbrother *et al.* (2012) and Edmonds *et al.* (2015) suggested the selection of health care facilities related to the preference of a method of delivery. The majority of mothers choose obstetricians as a preference for health care facilities. Hence, areas with limited availability of healthcare facilities with obstetricians are a concern and recommendations for improvement/restructuring of pregnancy and childbirth services for mothers in Canada. Kuure *et al.* (2015) stated that there is an influence of the availability of health workers in the vicinity of their residence with the behaviour of seeking health services. Due to the absence of health workers, people who need health services have to travel farther and causing a burden on transportation costs for people who want to get health services. The lack of health workers will also cause the choice of delivery methods to be limited. The unequal distribution of health workers can lead to a tendency for the availability of health workers to affect the need for caesarean sections. Based on these previous studies, the availability of health workers affects the need for a caesarean section method (Fairbrother *et al.* 2012, Edmonds *et al.*, 2015).

2.11 Effect of distance to healthcare facilities on caesarean section

Kuure *et al.* (2015) stated that distance between healthcare facilities and their place of residence on health service seeking behaviour. Because healthcare facilities are far away (> 5 km), it will cause people who need health services to travel farther and cause a more significant burden of transportation costs for people who want to get health services. The distance from healthcare facilities means that access is difficult, so access to delivery is also limited. The uneven distribution of healthcare facilities with adequate obstetricians to carry out caesarean sections can cause the distance to healthcare facilities to affect the need for caesarean sections.

Based on hypothesis 2.2 to hypothesis 2.11, a model that will be analyzed using logit is drawn up, as shown in Figure 1. This model is adopted from the Health-Seeking Behaviour Model.

3. Methods

3.1 Data Collection

A purposive sample of 564 postpartum women who met the criteria filled out a self-administered online survey questionnaire in three provinces in DKI Jakarta, DI Yogyakarta, and Central Java. The inclusion criteria include: mothers registered as NHIS' members; aged 21-35 years; had given birth 6 months before the survey; use healthcare facilities that work together to serve NHIS' members. Each respondent willing to participate in the survey is asked to check the informed consent provided in the google form before filling out the questionnaire independently.

3.2 Data Analysis

Logit analysis or logistic regression is a bivariate test of categorical variables on binary categorical variables. Logit analysis in this study was used to analyze the logit model of delivery (can be seen in Figure 1). The reason for choosing logit is because it is composed of variables that contain many nominal/categorical variables (Hair *et al.*, 2014). The dependent variable is the need for a caesarean section method or a non-caesarean section/normal). Logit regression is a part of regression analysis that examines the relationship between the influence of the independent variable (x) on the dependent variable (y) through a specific mathematical equation model. In general, if the dependent variable (y) in the regression analysis is categorical, then the regression analysis that can be used includes logistic regression analysis (Firdaus *et al.*, 2011). In logistic regression analysis, the modelling of the probability of certain events from the dependent variable category (y) is carried out through a transformation from linear to logit regression. The formula is as the following equation:

$$\text{Logit}(p_i) = \log e \left(\frac{p_i}{1 - p_i} \right)$$

Where p_i is the probability of a successful category event of the dependent variable (y) for the i -th person and \log is the logarithm with the number base e . In the study of the relationship between variables, it is also known that there is a measure of association, namely a measure of the closeness of the relationship between categorical variables. The size of this association is often a function of the parameter estimator obtained. One measure of

association obtained through logistic regression analysis is the odds ratio. The odds ratio is the ratio of the probability of a successful event to an unsuccessful event of the dependent variable (y), which indicates how much more likely it is to the odds value that a successful event occurs in one group compared to another.

4. Results

4.1 Respondents' Demography

The majority (45.2%) of the respondents were aged 26-30 years, followed by those aged 21-25 years with 24.6% and 31-35% aged 30.1%. In terms of the educational background, it is dominated by a diploma/college of 49% of the total respondents. The majority (94%) are Muslims in terms of their religion, followed by Christians at 3.5%, Catholics at 2.1%, and Hindus at 0.4%. As for self-rated health, most respondents stated that their health was good (80%), but some respondents had been sick in the last week but could still do activities/work or fair condition (17.4%). There were 2.7% whose health status in the past week has been sick, so they cannot work or do activities or poor condition. The characteristics of enabling factors include family, individual, and community resources, as seen in Table 5. From the type of participants, the respondents were dominated by employed members (PPU) at 48.6%, followed by 26.6% subsidy recipient members (PBI), 20.7% self-employed members (PBPU), and 4.1% non-employee (BP).

Respondents with fair economic status dominated this study or group C at 67.2%, followed by the highest economic level (AB) at 27.3% and the lowest economic level (DE) at 5.5%. From the side of the lineage of the father and mother or who may come from Java, Madura, Sunda, Bugis, Makassar dominate the respondents in this study (95.9%), followed by paternal lineage (2.3%) and maternal lineage (1.8%). The main healthcare facilities are primary healthcare facilities/Puskesmas (50.7%), followed by private hospitals (29.1%), clinics (16.1%) and public hospitals (4.1%), which may be less attractive. The majority of respondents chose midwives as health workers (43.6%) as the main health workers during pregnancy and maternity services, followed by obstetricians (37.2%) and general practitioners (19.1%). In terms of distance to the healthcare facilities, the majority of respondents chose to go to the nearest healthcare facility from their place of residence or < 5 km (74.3%), the remaining 25.7% chose to go to the farther healthcare facility from their place of residence or > 5 km (25.7%). In terms of distance to the nearest healthcare facility from their place of residence with a distance of < 5 km, there is 90.8%, while the distance to the nearest health facility with a distance of > 5 km is 9.2%, means 16.5% of respondents do not use the facility closest to their place of residence as the main healthcare facilities for pregnancy and maternity services.

4.2 Uji Regresi Logistik

Logistic regression test is a bivariate test of categorical variables on binary categorical variables. In this study, the test was conducted on variables of age, education, religion, self-rated health status, type of membership, socioeconomic status (SEC), family structure, the main healthcare facilities, healthcare workers and distance to healthcare facilities, as seen in Table 1.

The estimation of the binary logistic regression model using all variables resulted in a G test statistic of 43,843 with P-Value < 0.005 (P-Value = 0.002). Based on these values, at the 5% significance level, the independent variables used together to affect the chosen delivery method, or at least one independent variable, has an effect. The results of the logistic regression test on all variables, there are only a few significant variables (P-Value < 0.05), namely the religion variable, health degree variable, type of membership and economic status. The value of P-Value and Odds Ratio (OR) can be seen in Table 24. The interpretation of the parameter coefficients of the estimation results on the significant variables is Christian; OR = 6.6167 with P-Value < 0.05 (P-Value = 0.006), it is said that Christian respondents have a significantly higher probability of caesarean section method, which is 6.6167 times higher than Muslim. Catholic Religion; OR = 4,523 with P-Value < 0.005 (P-Value = 0.039). Then, it is said that respondents in the Catholic religion significantly have a caesarean section method which is 4.523 times higher than the Muslim religion.

Self-rated health status: Good; OR = 0.249 with P-Value < 0.005 (P-Value = 0.031) then respondents with good health have a significantly higher probability of having a caesarean section method that is 0.249 times lower than that of poor health. Types of participants are Non-Workers, OR = 0.282 with P-Value < 0.005 (P-Value = 0.019). Then, it is said that the respondent type of Non-Worker participant significantly has the possibility of caesarean section method, which is 0.282 times lower than the type of Subsidy Recipient Members (PBI). Economic status C; OR = 0.634 with P-Value < 0.005 (P-Value = 0.030), then it is said that respondents with economic status C are significantly more likely to have a caesarean section method.

In line with Ji *et al.* (2015), the respondent's educational background variable in this study had no significant effect on the chosen delivery method. Christian was significantly six times more likely to have a caesarean section (the high tendency for caesarean). In line with several previous studies that religion that accepts caesarean section as a method of delivery has a three times greater tendency to have a caesarean section (Ansah 2018), traditional beliefs, norms and practices and perceptions play a significant role in determining the place of delivery (Yidana &

Issahaku 2014).

From the socioeconomic aspect, this study found that the socioeconomic group C (fair economic level) was significantly more likely to have a caesarean section method. In line with several previous studies, namely, the greater chance for caesarean section to occur in mothers with the highest economic level (OR: 2.55) and stronger financial overcome financial barriers, especially in terms of transportation costs (Kuire *et al.* 2015).

5. Discussion

5.1 Main finding of this study

In this study, we examined the health-seeking behaviours of pregnant women in choosing the mode of deliveries in the NHIS' provider in Indonesia. The most important finding from this study is that individuals in self-rated health with good- and poor conditions were more likely to choose a caesarean section. Based on Betrán *et al.* (2018) and Sandall *et al.* (2018), the unnecessary caesarean section is risky for the mother and baby. The NHI and MoH should educate their members about the benefits and the risk of each mode of delivery. This finding is at odds with the NHI scheme's tenets that aim to provide a benefits package according to the appropriate medical indicated and guideline-indicated and not according to maternal request (President, 2018). This study questions why pregnant women with good self-rated health conditions were more likely to choose a caesarean section.

Furthermore, this finding suggests that the significance of good condition of self-rated health pregnant women of NHI members does not translate to choose caesarean section immediately but try to find the second opinion. This finding implies that pregnant women in the NHI are more likely to choose caesarean section even when they have a good self-rated health condition, potentially predisposing mothers to further health complications with consequences for mortality. Based on Sandall *et al.* (2018), the caesarean section also confers an increased risk of maternal mortality. According to (Ministry of National Development Planning, 2019) Maternal Mortality Rate (MMR) and Infant Mortality Rate (IMR) in Indonesia is the highest among peer countries in ASEAN.

5.2 What is already known on this topic

The health-seeking behaviour model has been used to demonstrate the usefulness of enabling, need and predisposing factors in understanding health-seeking behaviours (Kuire *et al.* 2015). For example, we found that two of the predisposing factors in our study emerged as necessary for understanding factors contributing to the increase of caesarean section in Indonesia. The influence of predisposing factors (i.e. self-rated health, and religion) on the caesarean section in this study is similar to the previous literature. Previous studies from Indonesia also indicated that caesarean sections without being medically indicated (Andikashwari 2018). Similar to our findings that show the good-condition of self-rated health is also more likely to choose caesarean section at actual behaviour. Sihombing *et al.* (2017) suggested a relationship between maternal health status and the choice of caesarean section. Based on the mother's health status, the greater the chance of having a caesarean section are risk factors. One of the factors driving the incidence of caesarean section is the variable health status of the mother and fetus with complications, complications of pregnancy and childbirth, parity and history of complete ANC, which have a greater chance of having a caesarean section. Our study finds that good self-rated health is associated with caesarean section, unlike many previously published studies reported. Previous research also found a relationship between religion and the method of delivery she chose (Ansah 2018).

We also found that two of the enabling factors in our study emerged as important for understanding factors contributing to caesarean sections in Indonesia. Non-employee participation types are significantly more likely to perform a caesarean section method. From the socioeconomic aspect, this study also found that the socioeconomic group C (fair economic level) was significantly more likely to have a caesarean section method. Based on these previous studies, the effect of health insurance participation on the need for different delivery methods has some influence (Sihombing *et al.* 2017, Suh *et al.* 2014, and Wielen *et al.* al., 2018). Still, some studies found no effect of participation on the chances of caesarean section (Ji *et al.*, 2015). Sihombing *et al.* (2017) stated that the ownership of health insurance influences the incidence of caesarean sections in Indonesia. Mothers who have health insurance have a greater chance of giving birth by caesarean section than mothers who do not have health insurance, especially since the cost of caesarean section is much higher when compared to the costs incurred for vaginal delivery.

Suh *et al.* (2014) found that the types of Medical Aid participants (similar to PBI participants) had higher utilization rates than Health Insurance patients (similar to PPU). The research of Suh *et al.* (2014) used the 2006-2007 Korean national health insurance database. This type of participation in Korea is similar to NHI participation, namely PBI and non-PBI participants (salary/employee-based type of participation). The research of Wielen *et al.* (2018), which uses survey data on the living standards of the Ghanaian population in 2012-2013 with the score matching method, found the same results. Health insurance participation in Ghana has increased the utilization of health services. However, inequality is still occurring due to the existence of out-of-pockets, so that it is a burden for the poor to access health services. In contrast, Ji *et al.* (2015) found no relationship between ownership of health insurance and the type of delivery method a mother underwent.

5.3 What this study adds

To the best of our knowledge, this study is the first to investigate the self-health rated of the women members of NHI in Indonesia by examining its impact on choosing the mode of delivery. Our study is also the first to examine the impact of the NHI scheme on caesarean section behaviour with a focus beyond a specific group of postpartum women. Our findings demonstrate higher odds of caesarean section among NHI members with good condition of self-health rated and highlight the need for a form of intervention to improve knowledge of the pregnant women about the risk and the benefit of each mode of delivery. Since the religion variable has significance in this study, thus the form of intervention to increase knowledge of NHIS' members, particularly primigravida women, can also be carried out in church and mosque.

6. Conclusion

The most important finding from this study is that individuals in good condition of self-rated health were more likely to choose a caesarean section and highlights the need for a form of intervention to improve knowledge of the pregnant women about the risk and the benefit of each mode of deliveries. National level trial field of primigravida women is necessary to investigate the impact of education of the risk and the benefit of each mode of delivery.

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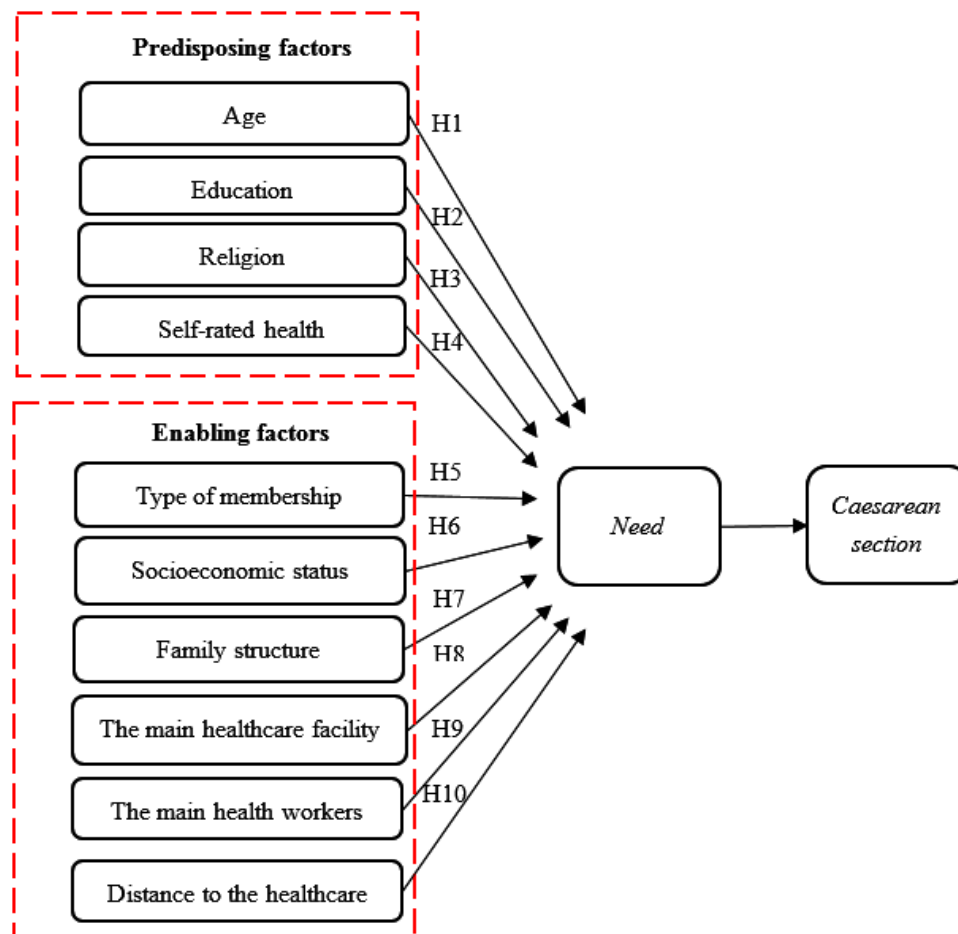


Figure 1. Research logit model (adopted from Kuuire *et al.* 2015)

Table 1 Logistic regression analysis

Variable	Variable	B	P Value (CI 95%)	OR
Age	Age	0.007	0.779	1.007
Education (ref.: < junior high school)	Senior high school	0.532	0.089	1.703
	Diploma/college	0.162	0.636	1.176
Religion (ref.: Muslim*)	Christian	1.819	0.006*	6.167
	Catholic	1.509	0.039*	4.523
	Hindu	-20.817	0.999	0.000
Self-rated health (ref.: Poor*)	Fair	-1.007	0.134	0.365
	Good	-1.390	0.031*	0.249
Type of membership (ref.: subsidy recipient members/PBI)	employed members (PPU)	-0.017	0.947	0.983
	self-employed members (PBPU)	0.182	0.504	1.200
	non-employee (BP)	-1.264	0.019*	0.282
Socioeconomic status (ref.: A/highest economic level)	C (fair economic level)	-0.456	0.030*	0.634
	DE (lower economic level)	-0.228	0.588	0.796
Family structure (ref.: Matrilineal)	Patrilineal	-0.610	0.551	0.543
	Parental	0.648	0.348	1.911
The main healthcare facility (ref.: Primary healthcare facilities)	Clinic	-0.279	0.325	0.757
	Public hospital	-0.514	0.311	0.598
	Private hospital	-0.049	0.874	0.952
The main health workers (ref.: Midwives)	General practitioners	-0.062	0.810	0.940
	Obstetricians	0.321	0.269	1.379
Distance to the healthcare facility	≥ 5 KM	-0.061	0.768	0.941
Constant		0.448	0.707	1.565