Trends in maternal health facilities utilization and women’s autonomy in Nigeria (2013-2018): Attainment of sustainable development goals-5

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Abstract: Maternal health has emerged as a global priority because of a significant gap in the status of the mother’s wellbeing between the developed and the less developed countries. Women’s equality and empowerment are one of the 17 Sustainable Development Goals, aimed at ending and eliminating all forms of discrimination and violence against women and girls both in public and private spheres. The Decision-making power of women is one of the essential factors which influence maternal healthcare service utilization. This study aims to assess the association between women’s autonomy and the use of healthcare facilities for delivery in Nigeria. In all, a total of (n = 19,654), 2013 NDHS and (n = 21,340), 2018 NDHS women were analyzed in this study. The association of the socioeconomic and demographic variables, women’s autonomy, and healthcare utilization was analyzed using Pearson’s chi-square test in the bivariate and binary logistic regressions. Bivariate analysis indicated that all the background factors across the five years preceding the survey have a significant association with the women’s autonomy.

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PUBLIC INTEREST STATEMENT
Maternal health has emerged as a global priority and remains a yardstick for country development. The study impressed upon the use of maternal health facility as panacea for lowering the high maternal death in the country of study (Nigeria) and by extension other sub-Saharan African countries. One major challenge or seemingly restriction of women to access the health facility has been women dependency or lack of autonomy especially on the choice, timing for hospital attendance. The study highlighted that policies targeted to enforce and ensure the actualization of autonomy of pregnant women on their utilization of healthcare services should go a long way in increasing the level of use of healthcare facilities for delivery in Nigeria.

We recommend that government should also ensure the availability of healthcare services by placing special focus on those categories of women who had been identified in this study as very deficient in their decision autonomy.
during their last pregnancy (P < 0.001). The utilization of healthcare facilities was found to be high and encouraging among Nigerian women. The participation of women in the decision-making process regarding healthcare should be increased for better utilization of healthcare facilities for delivery in Nigeria. These findings made, are based on the recommendations which provide women with equal opportunity of having access to education, health care, decent work, and decision-making processes, which will fuel sustainable economies and humanity at large for all ages in Nigeria.

**Subjects:** Health; Health and Poverty; Inequality; Medical Access; Mortality; Population Health; Quality of life

**Keywords:** autonomy; final say; women; SDG 5; utilization

**Subjects:** D6; D7; I14

1. **Introduction**

The sustainable development goals seek to address the key challenges of the 21st century, especially as related to poverty, inequality, and violence against women. The achievement of these lofty goals could be hampered without a paradigm shift in women dependency especially in terms of the choice, timing and the use of healthcare services. While the women also have critical roles to play in all of the SDGs, the non-use of medical facilities could heighten the already high level of maternal morbidity and mortality including that of their infants. The World Health Organization (WHO, 2019) declares a high number of maternal deaths in some parts of the world, which reflects inequities in access to health services and highlights the gap between rich and poor. Nearly 100% of global maternal deaths occur in developing countries, with more than half of these deaths occurring in sub-Saharan Africa and almost one-third happening in South Asia. More than half of maternal deaths occur in fragile and humanitarian settings (WHO, 2019; World Bank Group, 2014). Nigeria, one of the developing countries, accounts for nearly 20% of all global maternal deaths (WHO, 2019). Records indicate that between 2000 and 2015, the maternal mortality rate in Nigeria has reduced from 1,170 deaths to 814 deaths per 100,000 live births, representing (30.4%) decrease (Adamu Hauwa Suleiman, 2011; WHO, 2018).

Despite various national and international initiatives to improve maternal health, more than half a million women from developing countries die each year as a result of complications related to pregnancy and childbirth (Ronsmans & Graham, 2006; WHO, 2005, 2019). While virtually all developed countries have made appreciable progress in curbing the menace of maternal mortality, the terrible rates in Nigeria and other sub-Saharan African countries remain worrisome (F. Fagbeminiyi Fasina & Oni, 2017; WHO, 2019). Besides, between 2000 and 2017, Southern Asia has achieved the greatest overall reduction in maternal mortality ratio with a decline of nearly 60%, from maternal mortality ratio of 384 down to 157 (WHO, 2019).

Additionally, four other sub-regions relatively shared similar experience in terms of MMRs during this period. These include Central Asia, Eastern Asia, Europe, and Northern Africa. According to UN inter-agency estimates, it was observed that from 2000 to 2017, global maternal mortality ratio has declined by 38% from 342 deaths to 211 deaths per 100,000 live births (Hollowell et al., 2011; World Bank Group, 2014; WHO, 2019). Hence, Nigerian mothers should intensify their effort in the utilization of modern healthcare facilities for delivery.

Autonomy is the ability to obtain information and makes decisions about one's concerns and fundamental human right (Beauchamp & Childress, 2001; Dyson & Moore, 1983; Waldemicael & Tenkorang, 2010). It facilitates access to material resources such as food, land, income and other forms of wealth, and social resources such as knowledge, power, prestige within the family and
community (Beauchamp & Childress, 2001; Dixon, 1978; United Nations General Assembly Economic and Social Council, 2017; Unite to End Violence Against Women, 2017; Woldemicael & Tenkorang, 2010). Women’s autonomy in healthcare decision-making is extremely important for better maternal and child health outcomes (International Conference on Population and Development, 1994), and it is an indicator of women’s empowerment. Gender-based power inequalities could restrict open communication between partners about reproductive health decisions as well as women’s access to reproductive health services and this, in turn, could contribute to poor health outcomes (Osamor, 2016; Power in Sexual Relationships, 2001; Wahaga, 2018).

Evidence from other developing countries showed that women’s age and family structure are the strongest determinants of women’s authority in decision making (Sathar & Shahnaz, 2000; United Nations General Assembly Economic and Social Council, 2017; Unite to End Violence Against Women, 2017). The socio-cultural context conditions the relationship of women’s individual-level characteristics to decision-making, and autonomy is a crucial intervening mediator between women’s status and reproductive outcomes (Amoo Emmanuel, 2017; Amoo et al., 2019; Fasina et al., 2020; WHO, 2016). Women have little freedom in many cultures, so it is essential to get a better understanding of the determinants of their decision-making autonomy and variations across regions and socio-cultural contexts in the same country.

Goal-5 is known as the stand-alone gender goal because it is highly dedicated to achieving women’s full and effective participation and equal opportunities at all levels of decision making in all areas of life (United Nation Women and Sustainable Development Goals, 2015). The use of modern healthcare services in developing countries has tended to demonstrate that people’s acceptance or rejection of modern healthcare facilities is based on their perception of its effectiveness (Wallis et al., 2017; Oni & Fagbeminiyi, 2017; Fagbeminiyi Fasina & Oni, 2017; Erasmus, 1961) and on how well it meshes with their traditional beliefs and practices concerning health and illness (Foster, 1976; Ramholt, 2015; Schäfer & Keppler, 2013). People participate in Primary Healthcare Programmes to the extent that they experience the services as offering reliable solutions to what they perceive as health problems, including nutritional ones. The decision whether to use the healthcare services at the beginning of an illness, later, or even at all is calculated by weighing the anticipated benefits, in terms of opportunity cost, against the expected expenditure of time and money, and the personal abuse that these efforts may entail.

The level of understanding of how people estimate factors on both sides of the equation relating costs to benefits is crucial to understanding the demand for primary healthcare services and, as a result, the strengths and weaknesses of the programs. Women’s ability to attend to their health and utilize healthcare facilities appropriately may depend in part on their decision-making autonomy (Fagbeminiyi Fasina & Oduaran, 2019; Woldemicael & Tenkorang, 2010). In many societies, especially in developing or low-income countries, the status of women often limits their autonomy and ability to make decisions about many aspects of their own lives. Many such societies still have stable social structures that rigidly define the roles of men and women, usually encoded in religious, tribal, and social traditions. These constraints often limit the circumstances under which women have or do not have the autonomy to make decisions regarding their health (Beauchamp & Childress, 2001).

For maternal health, women’s decision-making ability regarding the use of health services often discussed using the concept of autonomy. In Nigeria, the choice to deliver outside modern healthcare infrastructure settings could be motivated by varying factors such as economic, social, physical, cultural, or institutional. Outside the contemporary healthcare infrastructures setting, women are assisted by an attendant who may be unskilled. This attendant could be a traditional birth attendant (TBA), village midwife, member of the family, or neighbor. According to the Nigeria Demographic and Health Survey 2008, between 2003 and 2008, only 46% of women living in rural areas received antenatal care from a skilled provider: skilled provider assisted doctors, nurses/midwives, auxiliary nurses/midwives, 28% of births, and 25% of deliveries took place in modern healthcare facilities. Expectant mothers who cannot access these services, due to perceived
challenges like cost, distance, and trust, are left to use “alternatives” such as Traditional Birth Attendance (TBA) services.

An essential aspect of preserving health is to identify the factors that enable or prevent people from making healthy choices in either their lifestyle or their use of medical care and treatment, the underlying assumption being that behaviour is best understood in terms of an individual’s perception of their social environment (Easthope, 2006; NHS, 2017; Tipping & Segall, 1995; WHO, 2002). When individuals make decisions about their health, they weigh up the potential risks or benefits of a particular behavior and such influenced by their immediate physical environment, lifestyle, religious belief, and the whole outlook of life generally (Orubuloye, 2003; WHO, 2002). Studies by Fabrega (1973); Tanahashi (1978); Egunjobi (1983); Aregbeyen (1992); Orubuloye et al. (1992) and Ademuwagun (1998) indicate that in a pluralistic medical setting in which the rural dwellers find themselves, the decision to seek care, where to do this and the form of care perceived as appropriate are all influenced by a range of factors relating to the person, the facility, and the socio-cultural environment.

2. Method and materials
The study utilized secondary data extracted from the 2013 and 2018 Nigerian Demographic and Health Survey (NDHS). The data provided information on population and health indicators at the national, zonal, and state levels. It is a nationally representative sample designed to elicit information from women aged 15–49 years in randomly selected households across all the states in Nigeria, including the Federal Capital Territory (FCT). The sample design used in the collection of the NDHS data was a multi-stage cluster sampling technique. The stages involved the division into state, division of each state into Local Government Areas (LGAs), and dividing local government into different census enumeration areas (E.A.s). Each enumeration area was further classified into rural or urban, and households were randomly selected and interviewed from each location (National Population Commission (NPC) [Nigeria] and ICF International, 2014).

In all, a total sample of 38,948 women in 2013 and 41,821 women in 2018 aged 15–49 years were interviewed using a structured questionnaire. For this comparative study, a sub-sample of 19,654 and 21,340 (weighted) population consisting of women aged 15–49 years whose recent delivery occurred in the five years preceding the survey were utilized based on the focus of the study. Mothers were asked to indicate where they delivered their last babies (i.e., in a healthcare facility or outside the healthcare facility). Also, the survey asked women whether they were involved in the decision making (either by themselves or jointly with their husband), in four areas in which a married woman usually makes decisions, namely: on her health care, making major household purchases, making purchases for daily household needs, and visits to her family or relatives during the pregnancy. Decisions on everyday household purchases are indicative of women’s influence over routine household activities; the decision on large purchases is suggestive of decision making with a partner.

3. Variable measurements and analysis procedure
The socioeconomic and demographic characteristics used in this analysis include women’s age, children ever born, region, urban/rural area of residence, education, wealth index, religion, the final say on own health, and the tie of delivery. Women’s education and wealth index was taken as the necessary measure of their socioeconomic status. At the same time, visits to a relative are indicative of influence over her social life. In contrast, women’s participation in decisions on their health care is the most likely decision-making variable to influence the utilization of maternal care services. The data were analyzed using STATA12 computer software. The level of analyses involved comparing across the study, univariate, bivariate, and multivariate analysis, which will be descriptive, while bivariate analysis will include a Chi-Square test in the study. The multivariate analysis technique used is Binary logistic regression and likelihood ratio statistical test of significance was also applied.
4. Results
The results from the analysis are presented in tables. Table 1 shows the background characteristics of women who delivered at least a child during the five years before each of the survey that covers 2013–2018. Overall observation from the result signals similar statistics across the two survey periods in terms of demographic and social economic information. The 2013 distribution shows the highest proportions of women who were in the age group 25–29 years (26%) follow by women in the age group 35–34 (21%). Information on the women’s wealth index reveals that more proportions of the women (relatively, 45%) in the country are poor. Information on women’s final say on their healthcare (autonomy) is also presented. The variable was measured as: whether or not a woman was involved in the decision making concerning her health and healthcare utilization. The table reveals that about 37% of mothers reported having at least the power to influence any decision regarding healthcare-related issues. The rural-urban ratio was 6:3, as only about 34% of the women lived in the urban centres. A high proportion of the women, 46% do have formal education, and only 6% had more than a secondary educational level. Table 1 also showed that the majority of women are Muslims, with about 58%, and 2% were neither Christians nor Muslims. Without much ado, the result analysis of the various background factors in the 2018 NDHS data shows slight increase in the percentage across all the variables. This simply implies that the two data are standardized based on the collection and coding procedures with little difference as a result of the total number of women involved denominator.

The age distribution and the place of delivery show that more people in the older age groups (30–34 and 35–39) delivered at the health facility compared to women in lower age groups (29 and below). The opposite is the case for non-delivery at the health facility. The Pearson coefficient shows a positive relationship and the chi-square value of 204.0421, p-value = 0.000 (Table 2). In addition, Table 2 also reflects high level of delivery of baby at healthcare facility among women who have had between one and three children with a percentage between 49% and 43% respectively compared to their counterpart with lower number of children between four and seven children with low level of percentage delivery at health care facility. Also, mothers in southern region (i.e. south west, south east and south south) have positive association with the use of the healthcare facility (75%; 78%; 46%) compared to their counterparts in the Northern region having an indirect relationship with respect to taking significant decision on their health and place of delivery (53%; 21%; 11%). Christian mothers made more significant decisions on healthcare needs and delivery at health facility compared to mothers of other religions. However, on the overall decision-making patterns, it reveals that mothers have a significant decision power on their healthcare needs and delivery at the health facility. The total analysis results depict a positive relationship among the selected variables with Pearson coefficient showing a positive relationship across and the p-value = 0.000 (As shown in Table 2).

Table 3 depicts the bivariate result analysis between the selected background variables, women’s decision with place of delivery. It could be gathered that the age distribution with the place of delivery shows more people from the middle age to the older age groups (25–29, 30–34, and 35–39) delivered at the health facility compared to women in lower age groups (24 and below). The opposite is the case for non-delivery at the health facility. The Pearson coefficient shows a positive relationship and the chi-square value of 195.5074, p-value = 0.000 (Table 3). Furthermore, Table 3 also reveals high level of delivery of baby at healthcare facility among women who have had between one and six children with a percentage between 53%, 47%, and 40% respectively compared to their counterpart with lower number of children among seven children and above with low level of percentage delivery at healthcare facility. Also, mothers in southern region (i.e. south west, south east and south south) have positive association with the use of the healthcare facility (80%; 81%; 49%) compared to their counterparts in the Northern region having an indirect relationship with respect to taking significant decision on their health and place of delivery (52%; 25%; 15%). Christian mothers made more significant decisions on healthcare needs and delivery at health facility (65%) compared to mothers of other religions (26%) each. However, on the overall decision-making patterns, it reveals that mothers have a significant
Table 1. Percentage Distribution of Women by Selected Socioeconomic and Final Say on Own Healthcare

| NDHS, Variables                  | Frequency (N = 19,654) | Percentage (%) | NDHS, Variables                  | Frequency (N = 21,340) | Percentage (%) |
|---------------------------------|------------------------|----------------|---------------------------------|------------------------|----------------|
| Current Age                     |                        |                | Current Age                     |                        |                |
| Less than 20                    | 1,103                  | 5.61           | Less than 20                    | 1,179                  | 5.52           |
| 20–24                           | 3,672                  | 18.68          | 20–24                           | 4,117                  | 19.29          |
| 25–29                           | 5,176                  | 26.34          | 25–29                           | 5,503                  | 25.79          |
| 30–34                           | 4,163                  | 21.18          | 30–34                           | 4,562                  | 21.38          |
| 35–39                           | 3,172                  | 16.14          | 35–39                           | 3,544                  | 16.61          |
| 40–44                           | 1,672                  | 8.51           | 40–44                           | 1,733                  | 8.12           |
| 45–49                           | 696                    | 3.54           | 45–49                           | 702                    | 3.29           |
| Children Ever Born              |                        |                | Children Ever Born              |                        |                |
| 1 Child                         | 3,185                  | 16.21          | 1 Child                         | 3,634                  | 17.03          |
| 2–3 Children                    | 6,159                  | 31.34          | 2–3 Children                    | 6,924                  | 32.45          |
| 4–6 Children                    | 6,541                  | 33.28          | 4–6 Children                    | 6,923                  | 32.44          |
| 7+ Children                     | 3,769                  | 19.18          | 7+ Children                     | 3,859                  | 18.08          |
| Region                          |                        |                | Region                          |                        |                |
| North Central                   | 3,049                  | 15.51          | North Central                   | 3,837                  | 17.98          |
| North east                      | 3,944                  | 20.07          | North east                      | 4,497                  | 21.07          |
| North west                      | 6,193                  | 31.51          | North west                      | 6,307                  | 29.55          |
| South east                      | 1,621                  | 8.25           | South east                      | 2,337                  | 10.95          |
| South south                     | 2,263                  | 11.51          | South south                     | 1,952                  | 9.15           |
| South west                      | 2,584                  | 13.15          | South west                      | 2,410                  | 11.29          |
| Place of residence              |                        |                | Place of residence              |                        |                |
| Urban                           | 6,589                  | 33.52          | Urban                           | 7,494                  | 35.12          |
| Rural                           | 13,065                 | 66.48          | Rural                           | 13,846                 | 64.88          |
| Educational Level               |                        |                | Educational Level               |                        |                |
| No education                    | 9,148                  | 46.55          | No education                    | 9,494                  | 44.49          |
| Primary                         | 4,022                  | 20.46          | Primary                         | 3,306                  | 15.49          |
| Secondary                       | 5,172                  | 26.32          | Secondary                       | 6,783                  | 31.79          |
| Higher                          | 1,312                  | 6.68           | Higher                          | 1,757                  | 8.23           |
| Wealth Index                    |                        |                | Wealth Index                    |                        |                |
| Poorest                         | 4,342                  | 22.09          | Poorest                         | 4,994                  | 23.40          |
| Poorer                          | 4,502                  | 22.91          | Poorer                          | 4,852                  | 22.74          |
| Middle                          | 3,892                  | 19.80          | Middle                          | 4,469                  | 20.94          |
| Richer                          | 3,658                  | 18.61          | Richer                          | 3,892                  | 18.24          |
| Richest                         | 3,260                  | 16.59          | Richest                         | 3,133                  | 14.68          |
| Religion                        |                        |                | Religion                        |                        |                |
| Christianity                    | 7,848                  | 39.93          | Christianity                    | 8,643                  | 40.50          |
| Islam                           | 11,500                 | 58.51          | Islam                           | 12,625                 | 59.16          |
| Traditionalists                | 306                    | 1.56           | Traditionalists                | 72                     | 0.34           |
| Final say on own healthcare     |                        |                | Final say on own healthcare     |                        |                |

(Continued)
decision power on their healthcare needs and delivery at the health facility. The total analysis results depict a positive relationship among the selected variables with Pearson coefficient showing a positive relationship across and the p-value = 0.000 (As shown in Table 3).

Table 4 shows the results of the binary logistic regression analysis. All the background variables maintained significant effects. They are age of mother, number of children ever born, region, place of residence, women's education, wealth index, and religion. Data from education reveal positive direction with respect to the educational level. The higher the education the more likely mothers are willing to deliver at the health facility (O.R = 1.76; 2.68; 8.41; p = 0.000) respectively. Similarly, information on women's wealth index is also presented. Women from poorer level to the richest wealth index were more likely to make deliver at the health facility than women in the poorest wealth index (OR = 2.06; 3.42; 5.09; 8.61; p = 0.000). Of all the regions, only south east with (O.R = 1.72; CI = 1.46–2.02) and south west (O.R = 1.11; CI = 0.97–1.27) are more likely to use of healthcare facilities for delivery. Therefore, we conclude that the overall results obtained for all the analyses based on the selected background variables are not sufficient to explain the association (indirect effects) of the socioeconomic and demographic variables on place of delivery in Nigeria.

Table 5 also shows the results of the binary logistic regression analysis. The following background variables still maintained significant independent effects on the background variable, despite the presence of the autonomy variable in the table. They are age of mother, number of children ever born, region, place of residence, women's education, wealth index, and religion. The fact that most of these variables had previously shown significant relationship with women autonomy is an indication that they influence women's delivery in healthcare facilities. In addition, a direct increase in mother's level of education (O.R = 1.70; 2.58; 8.41; p = 0.000) and wealth status (OR = 2.11; 3.48; 5.06; 8.61; p = 0.000) corresponds to increased use of healthcare facilities for delivery. Therefore, we conclude that the women autonomy is not sufficient to explain the association (indirect effects) of the socioeconomic and demographic (background) variables on place of delivery in Nigeria.

5. Discussion
This study provided empirical analysis on the trends of maternal health facilities utilization and Women’s Autonomy in Nigeria during the last five years periods prior to the survey (2013 and 2018). It considered the possibility of attaining sustainable development goals (SGD-5) that emphasize, among others, the utilizing medical place of delivery as panacea for better maternal health outcomes (United Nations Development Programme, 2020). One of the unique features of this study is the use of nationally representative data as obtained from MeasuresDHS, the
Table 2. Bivariate Association of Socioeconomic and Demographic Characteristics and Final say on own healthcare with Place of Delivery (2013, NDHS)

| Variables                   | Delivery in a Health Facility | Did not deliver in a Health Facility | Chi-Square Value | P-Value |
|-----------------------------|-------------------------------|--------------------------------------|------------------|---------|
| **Current Age**             |                               |                                      |                  |         |
| Less than 20                | 261 (23.66)                   | 842 (76.34)                          | 204.0421         | 0.000   |
| 20–24                       | 1,235 (33.63)                 | 2,437 (66.37)                        |                  |         |
| 25–29                       | 2,020 (39.03)                 | 3,156 (60.97)                        |                  |         |
| 30–34                       | 1,766 (42.42)                 | 2,397 (57.58)                        |                  |         |
| 35–39                       | 1,331 (41.96)                 | 1,841 (58.04)                        |                  |         |
| 40–44                       | 652 (39.00)                   | 1,020 (61.00)                        |                  |         |
| 45–49                       | 208 (29.89)                   | 488 (70.11)                          |                  |         |
| **Children Ever Born**      |                               |                                      | 649.4537         | 0.000   |
| 1 Child                     | 1,588 (49.86)                 | 1,597 (50.14)                        |                  |         |
| 2–3 Children                | 2,657 (43.14)                 | 3,502 (56.86)                        |                  |         |
| 4–6 Children                | 2,379 (36.37)                 | 4,162 (63.63)                        |                  |         |
| 7+ Children                 | 849 (22.53)                   | 2,920 (77.47)                        |                  |         |
| **Region**                  |                               |                                      | 5400             | 0.000   |
| North Central               | 1,621 (53.16)                 | 1,428 (46.84)                        |                  |         |
| North East                  | 862 (21.86)                   | 3,082 (78.14)                        |                  |         |
| North West                  | 706 (11.40)                   | 5,487 (88.60)                        |                  |         |
| South East                  | 1,272 (78.47)                 | 349 (21.53)                          |                  |         |
| South south                 | 1,054 (46.58)                 | 1,209 (53.42)                        |                  |         |
| South West                  | 1,958 (75.77)                 | 626 (24.23)                          |                  |         |
| **Educational Level**       |                               |                                      | 5800             | 0.000   |
| No Education                | 1,166 (12.75)                 | 7,982 (87.25)                        |                  |         |
| Primary                     | 1,687 (41.94)                 | 2,335 (58.06)                        |                  |         |
| Secondary                   | 3,411 (65.95)                 | 1,761 (34.05)                        |                  |         |
| Higher                      | 1,209 (92.15)                 | 103 (7.85)                           |                  |         |
| **Wealth Index**            |                               |                                      | 5800             | 0.000   |
| Poorest                     | 288 (6.63)                    | 4,054 (93.37)                        |                  |         |
| Poorer                      | 858 (19.06)                   | 3,644 (80.94)                        |                  |         |
| Middle                      | 1,515 (38.93)                 | 2,377 (61.07)                        |                  |         |
| Richer                      | 2,138 (58.45)                 | 1,520 (41.55)                        |                  |         |
| Richest                     | 2,674 (82.02)                 | 586 (17.98)                          |                  |         |
| **Religion**                |                               |                                      | 2900             | 0.000   |
| Christian                   | 4,780 (60.91)                 | 3,068 (39.09)                        |                  |         |
| Islam                       | 2,612 (22.71)                 | 8,888 (77.29)                        |                  |         |
| Traditionalist              | 81 (26.47)                    | 225 (73.53)                          |                  |         |
| **Final say on own health care** |                             |                                      |                  |         |
| woman involved              | 4,083 (57.61)                 | 3,004 (42.39)                        | 1900             | 0.000   |
| woman not involved          | 3,098 (26.01)                 | 8,815 (73.99)                        |                  |         |

Source: Computed by the authors from 2013 NDHS
Table 3. Bivariate Association of Socioeconomic and Demographic Characteristics and Final say on own healthcare with Place of Delivery (2018, NDHS)

| Variables                  | Delivery in a health Facility | Did not deliver in a Health Facility | Chi-Square Value | P-Value |
|----------------------------|-------------------------------|-------------------------------------|------------------|---------|
| Current Age                |                               |                                     |                  |         |
| Less than 20               | 358 (30.36)                   | 821 (69.64)                         | 195.5074         | 0.000   |
| 20–24                      | 1,511 (36.70)                 | 2,606 (63.30)                       |                  |         |
| 25–29                      | 2,326 (42.27)                 | 3,177 (57.73)                       |                  |         |
| 30–34                      | 2,139 (46.89)                 | 2,423 (53.11)                       |                  |         |
| 35–39                      | 1,653 (46.64)                 | 1,891 (53.36)                       |                  |         |
| 40–44                      | 723 (41.72)                   | 1,010 (58.28)                       |                  |         |
| Children Ever Born         |                               |                                     | 820.6669         | 0.000   |
| 1 Child                    | 1,938 (53.33)                 | 1,696 (46.67)                       |                  |         |
| 2–3 Children               | 3,318 (47.92)                 | 3,606 (52.08)                       |                  |         |
| 4–6 Children               | 2,796 (40.39)                 | 4,127 (59.61)                       |                  |         |
| 7+ Children                | 920 (23.84)                   | 2,939 (76.16)                       |                  |         |
| Region                     |                               |                                     | 5400             | 0.000   |
| North Central              | 1,997 (52.05)                 | 1,840 (47.95)                       |                  |         |
| North East                 | 1,168 (25.97)                 | 3,329 (74.03)                       |                  |         |
| North West                 | 989 (15.68)                   | 5,318 (84.32)                       |                  |         |
| South East                 | 1,886 (80.70)                 | 451 (19.30)                         |                  |         |
| South south                | 971 (49.74)                   | 981 (50.26)                         |                  |         |
| South West                 | 1,961 (81.37)                 | 449 (18.63)                         |                  |         |
| Place of residence         |                               |                                     | 2100             | 0.000   |
| Urban                      | 4,746 (63.33)                 | 2,748 (36.67)                       |                  |         |
| Rural                      | 4,226 (30.52)                 | 9,620 (69.48)                       |                  |         |
| Educational Level          |                               |                                     | 6000             | 0.000   |
| No Education               | 1,462 (15.40)                 | 8,032 (84.60)                       |                  |         |
| Primary                    | 1,445 (43.71)                 | 1,861 (56.29)                       |                  |         |
| Secondary                  | 4,511 (66.50)                 | 2,272 (33.50)                       |                  |         |
| Higher                     | 1,554 (88.45)                 | 203 (11.55)                         |                  |         |
| Wealth Index               |                               |                                     | 5200             | 0.000   |
| Poorest                    | 621 (12.43)                   | 4,373 (87.57)                       |                  |         |
| Poorer                     | 1,241 (25.58)                 | 3,611 (74.42)                       |                  |         |
| Middle                     | 2,037 (45.58)                 | 2,432 (54.42)                       |                  |         |
| Richer                     | 2,483 (63.80)                 | 1,409 (36.20)                       |                  |         |
| Richest                    | 2,590 (82.67)                 | 543 (17.33)                         |                  |         |
| Religion                   |                               |                                     | 3200             | 0.000   |
| Christian                  | 5,623 (65.06)                 | 3,020 (34.94)                       |                  |         |
| Islam                      | 3,330 (26.38)                 | 9,295 (73.62)                       |                  |         |
| Traditionalist             | 19 (26.39)                    | 53 (73.61)                          |                  |         |
| Final say on own health care|                               |                                     | 1600             | 0.000   |
| woman involved             | 4,715 (58.51)                 | 3,344 (41.49)                       |                  |         |
| woman not involved         | 3,573 (29.87)                 | 8,389 (70.13)                       |                  |         |

Source: Computed by the authors from 2018 NDHS
Table 4. Binary Logistic Regression Model for Place of Delivery controlling for selected Socioeconomic Characteristics between (2013 and 2018 NDHS)

| Variables                | Model 1 | Model 2 |
|--------------------------|---------|---------|
|                          | Odds Ratio (2013) | Odds Ratio (2018) |
| Current Age              |         |         |
| Less than 20             | R.C.    | R.C.    |
| 20–24                    | 1.09 (0.91–1.31) | 1.07 (0.90–1.28) |
| 25–29                    | 1.23 (1.02–1.49)** | 1.20 (0.99–1.44) |
| 30–34                    | 1.50 (1.22–1.84)*** | 1.50 (1.23–1.83)*** |
| 35–39                    | 1.90 (1.52–2.37)*** | 1.68 (1.36–2.08)*** |
| 40–44                    | 2.16 (1.69–2.76)*** | 1.99 (1.57–2.51)*** |
| 45–49                    | 1.93 (1.44–2.59)*** | 2.14 (1.62–2.84)*** |
| Children Ever Born       |         |         |
| 1 Child                  | R.C.    | R.C.    |
| 2–3 Children             | 0.64 (0.57–0.73)** | 0.67 (0.60–0.75)** |
| 4–6 Children             | 0.53 (0.46–0.62)** | 0.57 (0.50–0.65)** |
| 7+ Children              | 0.41 (0.34–0.49)** | 0.44 (0.37–0.53)** |
| Region                   |         |         |
| North Central            | R.C.    | R.C.    |
| North East               | 0.52 (0.46–0.59)** | 0.67 (0.60–0.74)** |
| North West               | 0.25 (0.22–0.28)** | 0.33 (0.30–0.37)** |
| South East               | 1.72 (1.46–2.02)** | 1.71 (1.48–1.97)** |
| South south              | 0.33 (0.29–0.38)** | 0.35 (0.30–0.40)** |
| South West               | 1.11 (0.97–1.27) | 1.90 (1.66–2.18)** |
| Place of Residence       |         |         |
| Urban                    | R.C.    | R.C.    |
| Rural                    | 0.62 (0.57–0.68)** | 0.89 (0.82–0.97)** |
| Educational Level        |         |         |
| No Education             | R.C.    | R.C.    |
| Primary                  | 1.76 (1.58–1.96)** | 1.89 (1.70–2.10)** |
| Secondary                | 2.68 (2.39–3.01)** | 2.99 (2.71–3.32)** |
| Higher                   | 8.41 (6.66–10.61)** | 6.92 (5.75–8.33)** |
| Wealth Index             |         |         |
| Poorest                  | R.C.    | R.C.    |
| Poorer                   | 2.06 (1.78–2.39)** | 1.77 (1.57–1.98)** |
| Middle                   | 3.42 (2.94–3.98)** | 2.82 (2.51–3.18)** |
| Richer                   | 5.09 (4.33–5.99)** | 4.05 (3.55–4.62)** |
| Richest                  | 8.61 (7.13–10.40)** | 6.90 (5.88–8.11)** |
| Religion                 |         |         |
| Christian                | R.C.    | R.C.    |
| Islam                    | 0.76 (0.69–0.85)** | 0.70 (0.63–0.78)** |
| Traditionalist           | 0.62 (0.45–0.85)** | 0.84 (0.60–0.75) |

Source: Computed by the authors from 2013 and 2018 NDHS. Significance level ***p < 0.001.
Table 5. Binary Logistic Regression Model for Place of Delivery controlling for selected Socioeconomic Characteristics and Final say on own healthcare between (2013 and 2018 NDHS)

| Variables                      | Model 1          | Model 2          |
|--------------------------------|------------------|------------------|
|                                | Odds Ratio (2013)| Odds Ratio (2018)|
| **Current Age**                |                  |                  |
| Less than 20                   | R.C             | R.C              |
| 20–24                          | 1.05 (0.86–1.28) | 1.08 (0.89–1.30) |
| 25–29                          | 1.17 (0.95–1.44) | 1.21 (0.99–1.47) |
| 30–34                          | 1.35 (1.08–1.69)** | 1.51 (1.22–1.87)** |
| 35–39                          | 1.73 (1.36–2.20)** | 1.69 (1.35–2.12)** |
| 40–44                          | 1.93 (1.48–2.50)** | 1.99 (1.55–2.56)** |
| 45–49                          | 1.72 (1.26–2.36)** | 2.01 (1.49–2.70)** |
| **Children Ever Born**         |                  |                  |
| 1 Child                        | R.C             | R.C              |
| 2–3 Children                   | 0.60 (0.52–0.68)** | 0.62 (0.54–0.70)** |
| 4–6 Children                   | 0.50 (0.43–0.58)** | 0.53 (0.45–0.61)** |
| 7+ Children                    | 0.39 (0.32–0.47)** | 0.41 (0.34–0.49)** |
| **Region**                     |                  |                  |
| North Central                  | R.C             | R.C              |
| North East                     | 0.52 (0.46–0.59)** | 0.66 (0.59–0.74)** |
| North West                     | 0.26 (0.23–0.30)** | 0.33 (0.29–0.37)** |
| South East                     | 1.73 (1.45–2.05)** | 1.67 (1.43–1.95)** |
| South south                    | 0.35 (0.31–0.40)** | 0.34 (0.30–0.39)** |
| South West                     | 1.10 (0.95–1.26)  | 1.92 (1.67, 2.22)** |
| **Place of Residence**         |                  |                  |
| Urban                          | R.C             | R.C              |
| Rural                          | 0.62 (0.57–0.69)** | 0.87 (0.79–0.95)** |
| **Educational Level**          |                  |                  |
| No Education                   | R.C             | R.C              |
| Primary                        | 1.70 (1.52–1.90)** | 1.86 (1.67–2.07)** |
| Secondary                      | 2.58 (2.29–2.91)** | 2.95 (2.65–3.28)** |
| Higher                         | 8.41 (6.59–10.74)** | 6.77 (5.58–8.22)** |
| **Wealth Index**               |                  |                  |
| Poorest                        | R.C             | R.C              |
| Poorer                         | 2.11 (1.81–2.46)** | 1.75 (1.55–1.97)** |
| Middle                         | 3.48 (2.98–4.07)** | 2.82 (2.49–3.18)** |
| Richer                         | 5.06 (4.27–5.10)** | 2.82 (3.51–4.61)** |
| Richest                        | 8.61 (7.07–10.49)** | 6.77 (5.73–8.01)** |
| **Religion**                   |                  |                  |
| Christian                      | R.C             | R.C              |
| Islam                          | 0.78 (0.70–0.87)** | 0.69 (0.62–0.77)** |
| Traditionalist                 | 0.60 (0.44–0.84)** | 1.00 (0.51–1.97)** |
| **Final say on own health care**|                  |                  |
| woman involved                 | R.C             | R.C              |
| woman not involved             | 0.77 (0.71–0.84)** | 0.90 (0.83–0.98)** |

Source: Computed by the authors from 2013 and 2018 NDHS
Significance level ***p < 0.001
renowned agency for data collection on reproductive health. The finding highlighted that maternal health service utilization is very low in Nigeria, among women who reside in the rural area when compared with their urban counterpart across the two periods. Besides, the results also revealed that women are less likely to decide on issues relating to their health care, major household purchases, daily household needs, and visits to her family or relatives but rather been taken either solely or jointly by their husbands (National Population Commission (NPC) [Nigeria] and ICF International, 2014 and National Population Commission (NPC) [Nigeria] and ICF, 2019). As woman’s right to self-decision on matters concerning her health or the family was emphasized as significant in the study, it conforms to other past studies that have reported women autonomous in taking decision as vital key in maternal health and wellbeing (International Conference on Population and Development, 1994; Singh et al., 2019). Other prominent finding indicated that certain background factors such as education, wealth status, number of children ever born, region and religion are significant determinants of the place of delivery, especially where there is relative women autonomy (Ariyo et al., 2017; Doctor et al., 2012; McDermott & Cowden, 2015). The implication of this finding is that even though the proximate variable significantly account for the effects of those background variables on use of healthcare facility, the proximate variable was not sufficient to explain all the indirect effects of the background variables on the outcome variable. There were other proximate variables not captured in the model, through which those background variables are influencing mothers’ decision on the use of healthcare facilities. It is interesting to note that decisions to seek medical attention are often made by the husband and other family members of the husband rather than the women. In looking at the relationships between the various background variables and mothers’ utilization of healthcare facilities, most of the findings were as expected according to evidence from the literature. For example, variables such as mothers’ education, wealth status and urban/rural residence had significant and positive relationship with place of delivery. In addition, the higher the level of education or wealth status of the woman, the greater the possibility that she would have right to solely take decision and delivered her baby in a healthcare facility; also, urban resident mothers were more likely to deliver in healthcare facilities than their rural counterparts.

6. Limitations of the study
The data used in the study (2008 and 2013 NDHS) though, national representative data are not without their limitations. It measures mostly information collected on mortality, fertility, and nutrition outcomes among women and young children in most parts of the world.

7. Conclusion and recommendations
The study concludes that the decision-making autonomy is not a sufficient proximate factor to explain the use of maternal health facility but works in conjunction with background variables such as mother’s age, children ever born, region, place of residence, education, wealth index, and religion. The finding supports that maternal health service utilization is very low in Nigeria, among women who reside in the rural area when compared with their urban counterpart across the two periods. Policies that could enforce the actualization of autonomy of pregnant women on their utilization of healthcare services could enhance the use of healthcare facilities for delivery in Nigeria and possibly reduce morbidities and deaths of both the mothers and their babies. These policies could include communication programs that will enlighten women on the need to be able to make a healthy decision during pregnancy and delivery in healthcare facilities where they can receive adequate health professional assistance for safe delivery. The government should also ensure the availability of such services and well-targeted, by placing special focus on those categories of women who had been identified in this study as very deficient in their decision autonomy. These include rural mothers, very young mothers (i.e., under 20 years old), mothers with little or no education, poor women, women of high parity, and women who reside in the northern regions of the country, particularly the northeast and the northwest.
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