International Journal of Social Research and Development
www.socialsciencejournal.net
Online ISSN: 2664-8709, Print ISSN: 2664-8695
Received: 11-05-2024, Accepted: 01-06-2024, Published: 26-06-2024
Volume 6, Issue 1, 2024, Page No. 55-61

Prevalence and determinants of home delivery among rural women in Northern Bangladesh: A cross-sectional study

Abu Taleb[1], M Zulfiquar Ali Islam[2], Sultana Mustafa Khanum[2]
[1] Department of Sociology, Institute of Bangladesh Studies, University of Rajshahi, Bangladesh
[2] Professor, Department of Sociology, University of Rajshahi, Bangladesh

Abstract
Maternal and child health have received much global attention, yet non-institutional deliveries still present serious dangers, especially in developing countries where more than 90% of maternal deaths occur. Bangladesh, despite advancements in healthcare, continues to have one of the highest maternal death ratios worldwide. This study examines the frequency and characteristics that contribute to home deliveries among women living in rural areas of Northern Bangladesh. The study employed a mixed-methods approach, which included surveys, observations, case studies, key informants interview and focus group discussions. A total of 205 pregnant women were interviewed for this study as a sample by using the Simple Random Sampling technique. The findings reveal a substantial proportion of deliveries occurring at home (23.9%), with delivery sites being significantly influenced by factors such as educational attainment, household income, and the occupation of the husband. The primary factors driving the preference for home delivery are convenience, economic limitations, and the impact of familial influence. The report emphasizes the necessity of implementing focused measures to encourage institutional deliveries, enhance healthcare accessibility, and tackle socio-cultural and economic obstacles in rural Bangladesh.

Keywords: Northern Bangladesh, home delivery, rural women

Introduction

Maternal and child health has gained substantial global attention in recent years as an essential aspect of public health. Non-institutional delivery, or delivering a baby at home without the presence of trained birth attendants, presents substantial dangers to both the mother and the newborn. These hazards encompass potential problems such as postpartum bleeding, infections, and newborn hypoxia, which may typically be avoided in a clinical environment. Maternal mortality continues to be a significant problem worldwide, resulting in around 500,000 fatalities each year as a result of issues associated with pregnancy and childbirth. The majority of these fatalities, over 90%, occur in developing nations, underscoring substantial discrepancies in maternal healthcare [1]. A significant number of these fatalities can be avoided with the provision of adequate healthcare throughout pregnancy, childbirth, and the postpartum phase. Insufficient use of maternity services, combined with the lack of availability and difficulty in accessing these services, leads to elevated rates of maternal death in these areas [2, 3]. In numerous developing countries, a notable percentage of expectant mothers lack access to or communication with healthcare professionals throughout their pregnancies, and more than half of the births take place without the presence of a trained attendant [4,5,6]. Conversely, in developed nations, the overwhelming majority of women avail themselves of prenatal care (ANC) facilities, and childbirth is typically overseen by skilled birth attendants [7].

Bangladesh, a country in Southeast Asia that is susceptible to social and ecological challenges, nevertheless faces a significant maternal mortality rate (MMR) despite certain advancements in the healthcare industry [8]. Bangladesh has one of the highest Maternal Mortality Ratios (MMRs) in the world, second only to Sub-Saharan Africa. The utilization of antenatal and postnatal care and availability to skilled birth attendants (SBAs) is significantly low, with only approximately 42% of deliveries being attended by an SBA, in contrast to the global benchmark of approximately 80% [9]. Home delivery of newborns remains a widespread custom in Bangladesh. Based on the 2014 Bangladesh Demographic and Health Survey (BDHS), 62% of all births take place in homes, with traditional birth attendants present for 48% of these deliveries. According to the National Institute of Population Research and Training (NIPORT), Mitra and Associates, and ICF International (2016), doctors attend to less than one-third of deliveries, and this problem is even more severe in rural areas [10].

Maternal death is frequently attributed to factors such as gestational hypertension, improper termination of pregnancy, excessive haemorrhaging, and postpartum infections [11]. The utilization of hazardous home delivery techniques is a significant factor in the occurrence of maternal fatalities [12, 13]. It is crucial to have institutional deliveries, which involve births being overseen by qualified healthcare experts, in order to decrease maternal mortality and delivery difficulties [14, 15, 16, 17]. Although there have been some improvements in hospital deliveries in South Asia in the last two decades, the rates are still relatively low due to various obstacles, including insufficient healthcare services, financial limitations, geographical distance, cultural norms, and a lack of information [18, 19].

In Bangladesh, as well as in other low- and middle-income countries (LMICs) in the South Asian region, the practice of institutional delivery is not widespread [20]. Home is the usual location for deliveries, and a notable number of births take place outside of hospitals [21]. The northern region of Bangladesh, which is mainly rural and dependent on agriculture, has a significant number of home births. This is in spite of the combined endeavours by the government and non-governmental groups to encourage the use of healthcare facilities for childbirth and the presence of trained

professionals during delivery. The continued existence of home birth techniques in these areas is frequently influenced by a variety of factors, such as cultural traditions, socio-economic obstacles, and concerns related to accessibility. So, it is essential to comprehend the reasons behind rural women in Northern Bangladesh choosing home deliveries instead of institutional births in order to develop specific treatments that can improve maternal and newborn health outcomes in these regions.

The objective of this study is to investigate the frequency and factors influencing the practice of giving birth at home among women living in rural areas of Northern Bangladesh. To address the poor usage of maternity care services and preference for home delivery, it is essential to understand the root causes. By doing so, the researcher may build specific interventions that promote institutional deliveries and enhance maternal health outcomes in this area.

Methods and Materials

Study Design

A cross-sectional design of the research was conducted, applying both quantitative and qualitative approaches (mixed methods) to explore the prevalence and determinants of home delivery among rural women in Northern Bangladesh.

Study Setting

The study has been carried out in the northern part of Bangladesh. For this study, two districts from two divisions of the northern part have been selected through a simple random sampling technique. These are the Rajshahi and Rangpur districts. Global trends obscure significant inequalities in maternal survival between regions of the world and countries within those regions [22]. Considering the majority of people living in rural areas of Northern Bangladesh and with the intention to get various information related to obstetric care in different parts of Bangladesh, the northern region has been selected. Various information shows that maternal health services in the northern region are worse than those in other divisions of Bangladesh [23]. Two Upazilas named Poba from Rajshahi district and Mithapukur from Rangpur district were also selected randomly. Finally, one Union from Poba Upazila, named Hujuripara, and another Union from Mithapukur Upazila, named Ranipukur, were selected using simple random sampling techniques.

Sample Size and Sampling Procedure

The study population comprised pregnant women from two Unions who delivered babies in 2018. In the two selected Unions, (224+210) =434 women gave birth in 2018. By using the formula, $n= (z^2 Npq) /(e^2 (N-1)+z^2 pq)$ the sample size was determined which was 205. After those 106 respondents were selected from Hujuripara Union, and 99 respondents were selected from Ranipukur Union proportionally.

Data Collection

Primary data was collected from the respondents of the study areas through a questionnaire survey, observation, case studies, KII, and focus group discussions (FGD).

A semi-structured questionnaire containing both open and closed-ended questions was developed to collect relevant data. After the preparation of the interview schedules, to make them error-free, a pre-test was done through a pilot survey. Necessary adaptations were made in the schedules in the light of pre-testing.

It is challenging to extract appropriate qualitative data using an interview schedule for the qualitative study. A case study is perceived as an appropriate approach that would reflect the actual picture of the respondents' obstetric care-seeking behaviour. That is why case studies were used in this research to understand the intricacies of obstetric care-seeking behaviour among rural Bangladeshi women. These in-depth studies provided valuable insights into the social, cultural, and economic factors that shaped individual decisions. Respondents for the case studies were purposively chosen from the sample respondents selected by purposive sampling. Their pseudo names have been used in the text where necessary.

FGDs are ideal for capturing the lived experiences and social dynamics surrounding obstetric care-seeking behaviour in rural women. The group interaction allows participants to share their perspectives, challenges, and decision-making processes in a natural and supportive environment. Discussions of FGDs can uncover underlying reasons, cultural influences, and decision-making processes related to obstetric care. This can reveal rich data on factors influencing their choices beyond what individual interviews might uncover. It is necessary to cross-check the information provided by the respondents. That’s why FGDs were conducted.

Study Variables

The dependent variables in this study were the place of delivery of the last childbirth. Age, occupation, marital status, level of education, husband's education level and monthly income and obstetric characteristics, including parity, were treated as independent variables.

Statistical Analysis

At first, the researcher verified, reviewed and scrutinized the collected data to avoid any errors and inconsistency. Then, the data was arranged and tabulated based on demonstrable indicators of the set objectives. The qualitative data were analyzed by using narrative and verbatim forms. Descriptive statistics were used in this study to analyze quantitative data. The IBM Statistical Package for Social Sciences (SPSS), was used for processing and analyzing the data.

Result and Analysis

Characteristics of Study Participants

The study indicates that the majority of responses fall between the age range of 20-24 years (33.7%) and 25-29 years (26.3%), suggesting a predominantly youthful population. The educational achievement of rural women indicates that approximately 48.3% have belong to the secondary level (class 6 to 10), while a minority of 3.9% are unable to read or write. The respondents' employment status reveals that a vast majority (95.6%) are engaged in housekeeping, with limited presence in the agriculture, service, and tailoring industries. The majority of family headship is held by men, with husbands leading 76.1% of homes, followed by fathers-in-law at 19.0%. Regarding economic position, a substantial proportion of families have a monthly income of up to 10,000 BDT (44.4%), whereas a small fraction of families earns more than 40,000 BDT (1.5%).

When analyzing the characteristic of the husbands, it is observed that the majority fall within the age range of 25-29 years (27.3%), although a significant proportion also belong to the 35-39 years age group (22.4%). Their educational qualifications reveal that the majority (35.1%) have attained primary education, while a minuscule percentage (1.0%) have achieved higher education at the Masters level. Regarding occupation, the majority of individuals (35.6%) are involved in agriculture, followed by business (20.0%). A lesser percentage of people are engaged in service (13.7%) and other occupations. The majority of family structures are nuclear families (60.9%), whereas a substantial proportion (39.1%) are joint families. The findings emphasize that the women in the study were relatively young, had a moderate level of education, and were primarily housewives. Their husbands were primarily engaged in agricultural occupations and had a primary level of education. These characteristics were observed within a background of low household income and a nuclear family structure.

Marital Age of the Respondents

This study presents the breakdown of the participants according to their age at the time of marriage. Approximately three-quarters (74.1%) of the women were married prior to reaching the age of 18, while the remaining quarter (25.9%) were married at or after the age of 18. These findings suggest that a significant number of rural women in Northern Bangladesh engage in early marriage, as about 75% of the participants get married before reaching maturity.

Parity or Total Number of Child of Respondents

The distribution of respondents according to their number of children, often known as parity. Parity offers valuable insights into the reproductive trends observed among rural women in Northern Bangladesh. This information provides insight into the frequency of different parity levels, which is crucial for comprehending the reproductive health and family planning requirements of this demographic. 43.4% of women have a total of two children, while 33.7% have only one child. Among the respondents, 16.1% are women who have three children, while a smaller percentage (6.8%) have four or more children.

Place of Delivery of Last Child

The distribution of respondents according to the place where their last child was delivered. According to the data, 23.9% of mothers gave birth to their last child at home, which means non-institutional delivery. On the other hand, institutional deliveries are more prevalent, with 37.1% taking place in government facilities and 39.0% at private facilities or clinics. The data shows that rural women in Northern Bangladesh had a greater inclination towards institutional deliveries, with private facilities being the most commonly chosen alternative for giving birth.

Association of Respondents' Characteristics and Place of Last Child Birth

The study shows the distribution of characteristics of the respondents and their correlation with the location of last childbirth. Age had a significant role among the participants, as those between the ages of 15 and 19 had a more significant percentage of clinic deliveries (8.3%) compared to hospital deliveries (7.3%) and home deliveries (2.9%). The age group with the highest proportion of home deliveries was 25-29, with a rate of 8.8%. The chi-square test for age showed no statistically significant correlation with the place of childbirth (χ^2=16.41, df=10, p=0.088). The educational qualifications of the respondents were shown to have a strong correlation with the location of childbirth (χ^2=32.48, df=12, p=0.001). More precisely, individuals with education levels ranging from Class 6 to 10 exhibited the greatest percentage of home deliveries (13.7%). This indicates that women with lower levels of education are more inclined to give birth at home. Conversely, individuals with greater levels of education, such as secondary school certificate (SSC) and higher secondary certificate (HSC), were more inclined to choose institutional delivery. The place of birthing was found to have a significant association with monthly family income (χ^2=28.97, df=4, p=0.000). The category of families with an income of up to 10,000 BDT had the greatest percentage of home deliveries, which amounted to 14.6%. This suggests that families with lower incomes may opt for home births because of financial limitations, emphasizing the economic obstacles to accessing healthcare institutions. The educational attainment of the husbands of the respondents exhibited a noteworthy correlation with the location of childbirth (χ^2=32.04, df=16, p=0.010). The group of husbands with primary education had the largest percentage of home deliveries, accounting for 12.7% of the total. These findings indicate that the husband's degree of education can impact the choice between home and institutional deliveries, possibly because of variations in health literacy and attitudes towards medical treatment. The spouses' occupation was found to have a strong correlation with the location of childbirth (χ^2=31.34, df=14, p=0.005). Wives of husbands involved in agriculture had a higher likelihood (12.2%) of giving birth at home. These factors can be ascribed to the living conditions in rural areas, the lack of healthcare facilities, and the traditional practices that are common in agricultural communities.

The association between occupation and place of childbirth was not found to be statistically significant (χ^2=4.409, df=6, p=0.621). Housewives accounted for the majority of home (22.9%), hospital (35.1%), and clinic deliveries (37.6%). The household head's role did not exhibit a statistically significant correlation (χ^2=12.02, df=6, p=0.062). However, a greater percentage of respondents whose spouses were household heads had home deliveries (19.5%). The association between family type and place of childbirth was not statistically significant (χ^2=1.96, df=2, p=0.375). However, there was a minor tendency for nuclear families to have home deliveries (16.6%) compared to joint families (7.3%). Parity was investigated as an additional factor, revealing that respondents with one parity were more inclined to give birth at clinics (15.6%) rather than at home (4.4%) or hospitals (13.7%). The chi-square test revealed that there was no statistically significant relationship between parity and place of birthing (χ^2=7.83, df=4, p=0.098). The age at which individuals were married did not demonstrate a noteworthy correlation (χ^2=0.203, df=2, p=0.903). However, it was observed that those who got married before the age of 18 generally chose home (18%), hospital (26.8%), and clinic (29.3%) births.

These strong correlations suggest that both the level of education achieved and the economic standing of rural women in Northern Bangladesh are important factors in

deciding where they give birth. In order to enhance maternal health in this area, it is crucial to implement educational interventions and provide economic assistance to promote the utilization of institutional delivery services.

Reasons for Home Delivery

The study reveals the several rationales provided by respondents for selecting home delivery. According to 25.0% of the respondents, the primary reason for choosing home delivery is the sense of comfort and ease it provides. Financial factors are also important, as 20.6% choose home delivery due to its cost-effectiveness. 13.2 percent of individuals report experiencing fear related explicitly to surgical procedures, notably caesarian sections. In addition, 14.0% of women expressed a preference for home delivery because of the support offered by other women. The family decision has a significant impact on 8.8% of home births, which is equal to the percentage of people who stated that all their conditions and reports were favourable. 4.4% of individuals cited previous experience with home delivery, whereas 1.5% attributed the early commencement of labour as a contributing factor. 3.7% of the responses are attributed to causes that have not been identified. The findings emphasize that the main factors influencing the option for home delivery are a combination of personal comfort, budgetary limitations, and family influence.

In addition to these findings, qualitative data from focus group discussions (FGDs) and case studies offer more profound insights. One participant cited the proximity of their residence to the health facility and the delayed arrival of the local transportation 'Ulka' (Auto Rickshaw) as factors that resulted in unintended childbirth at home.

"Our home was a little bit far from the health centre. We called a local vehicle called 'Ulka' (Auto Rickshaw). However, it arrived late. In the meantime, the delivery has happened at home."

Another participant mentioned a crucial insight regarding the corruption of government health facilities staff. She said that-

"Informal payments were observed in the healthcare system, as indicated by the exchange of Taka 400 with the Aya (Ward Boy/Girl) after labour, followed by a further payment of Taka 100 following discharge. In addition, a charge of Taka 100 was levied for the services of the trolley attendant, who was responsible for transferring the mother from the operating theatre. Furthermore, a modest amount of money, typically between Taka 20-30, was requested in exchange for providing essential items like a fresh diaper for the baby. The persons obtaining healthcare services faced substantial financial burdens due to these financial demands, which underscored the widespread occurrence of informal payments in the healthcare system."

Another respondent said in favour of home delivery -

"I think Caesar (Caesarean Section) is very harmful; it creates problems. If I go for Caesar, I have to move like a patient. I like home delivery because it helps to recover very soon, and I can do all the work."

This highlights supplementary elements, such as physical obstacles and operational difficulties, that were not comprehensively accounted for in the survey. By considering these findings collectively, it is evident that the inclination towards home delivery is shaped not just by individual convenience, financial considerations, and familial impact but also by substantial geographical and logistical challenges. This detailed analysis emphasizes the necessity of implementing initiatives that specifically target transportation, healthcare infrastructure, and awareness regarding the advantages of institutional births in order to enhance maternal health outcomes in the region.

Key Person for Deciding the Delivery Place

In the majority of situations, the choice was typically made collectively by various family members, representing 38.5% of the cases. In 34.6% of cases, husbands held the key decision-making role. Only 9.8% of women independently made the decision. Additional relatives, including fathers, mothers, fathers-in-law, and mothers-in-law, had a very minor influence. Fathers and mothers-in-law each contributed to 2.9% of the decisions, while fathers-in-law and mothers each contributed to 2.0%. In addition, 7.3% of the choices were made by individuals who were not specified. The allocation of decision-making power within families is mainly influenced by husbands, emphasizing their prominent role in deciding the place of birth.

Discussion

The findings indicated that the study women were mainly young, with secondary school levels (class 6 to 10) of education, and primarily involved in housework. This demographic profile is consistent with the findings of previous studies on rural communities in comparable situations [24, 25]. Moreover, the high occurrence of early marriage among women living in rural areas, as indicated by almost 75% getting married before reaching adulthood, emphasizes the necessity for specific initiatives to tackle this problem [26]. Moreover, the high occurrence of housewives as the main profession indicates the traditional gender norms that are widespread in rural regions, where women frequently prefer householdresponsibilities above official jobs [25]. The reproductive trends in Northern Bangladesh are consistent with previous studies that emphasize the significance of comprehending reproductive health dynamics within specific populations. This is evident from the distribution of parity levels and the prevalent preference for institutional deliveries among rural women in the region [27].

Moreover, the high occurrence of early marriage among rural women, with almost 75% getting married before reaching adulthood, emphasizes the necessity for specific initiatives to tackle this problem [26]. Early marriage is widely acknowledged as a crucial factor affecting the health outcomes of both mothers and children, and it has implications for reproductive health, education, and socio-economic development [25]. Delaying marriage and promoting girls' education are crucial elements of broader measures designed to enhance maternal and child health in areas with limited resources [27].

The reproductive trends in Northern Bangladesh are consistent with previous studies that emphasize the significance of comprehending reproductive health dynamics in specific populations. This is evident from the distribution of parity levels and the prevalent preference for institutional deliveries among rural women [28, 29].

The place where the last child was born shows a preference for giving birth in formal healthcare settings, with 37.1% of deliveries taking place in government institutions and 39.0% in private facilities or clinics. Nevertheless, 23.9% of deliveries continue to take place in residential settings

(home delivery). Research conducted by Islam & Shahjahan (2021), found a high rate of home deliveries (58%) in rural Bangladesh, with 20% of mothers never receiving any ANC [30]. Another research finding shows that the majority (80%) of the respondents delivered at home, with 71% feeling that home delivery was comfortable and 29% being compelled to deliver at home due to family decisions and financial constraints [28]. On the other hand, the prevalence of home delivery among Bangladeshi mothers decreased from 82.60% in 2007 to 64.17% in 2014, indicating an improvement in institutional delivery [29]. The inclination towards institutional deliveries is a favourable development; however, the substantial proportion of home deliveries underscores the necessity for enhanced availability and affordability of healthcare services.

The study's findings demonstrate noteworthy correlations between respondents characteristics and the location of childbirth among rural women in Northern Bangladesh. This section aims to conduct a comparative analysis of the study findings with those presented in previously published studies. The objective is to gain a complete understanding of the factors that influence home delivery and the frequency at which it occurs in similar circumstances. The results of this study indicate that the level of education achieved by women has a substantial impact on where they choose to give birth. Women with lesser levels of education exhibit a more significant propensity to deliver their babies at home, whilst those with higher levels of education tend to favour institutional settings. This discovery is consistent with the research conducted by Islam & Shahjahan (2021), who determined that a deficiency in mother education is a noteworthy indicator of home births [30]. Similarly, according to Karim's (2019) findings, there is a positive correlation between higher levels of education and a greater use of institutional delivery services [31].

The economic position of individuals also significantly influences the choice of delivery location. The study's data indicates that households with lower income levels exhibit a greater occurrence of home deliveries, hence emphasizing the financial obstacles in getting institutional care. These results align with the research conducted by Amin (2012) [32] and Ali *et al*. (2022) [33], which found that women from disadvantaged socio-economic backgrounds have a higher tendency to give birth at home because of the expensive nature of institutional delivery services.

The professional occupation and educational level of spouses substantially influence the delivery site. Men who belong to the primary education level (class 1 to class 5) and are employed in the agriculture sector have a higher likelihood of experiencing home deliveries. These results corroborate the conclusions of Ali *et al*. (2022), who found that women who have less autonomy and decision-making authority, typically due to the impact of their husbands' financial level, are more inclined to give birth at home [33].

The study delineates various factors contributing to the inclination towards home deliveries, such as convenience, cost-effectiveness, aversion to surgical interventions, familial influence, and recommendations from other women. These factors align with the conclusions of Sarker *et al*. (2016), who observed that poverty, traditional beliefs, and restricted authority in decision-making all contribute to the inclination towards home delivery [34]. In addition, the concerns about cesarean sections and the perceived substandard quality of institutional services, as emphasized by Islam & Shahjahan (2021), correspond with our findings about anxiety towards surgical procedures [30].

The impact of economic status as an obstacle to accessing institutional delivery services is consistently documented in multiple studies, including our own and those conducted by Amin (2012) and Ali *et al*. (2022) [32, 33]. The current study supports the findings of Sarker *et al*. (2016) about the impact of traditional beliefs and restricted decision-making authority on the inclination towards home deliveries [34].

Curiously, Amin (2012) did not discover any significant connections between characteristics such as the mother's age, occupation, and place of delivery. In the study, researcher found that older mothers' age and the employment positions of their husbands were significant predictors [32]. This suggests that these characteristics may have distinct effects in different situations.

The study's findings emphasize the intricate interaction of socio economic, and institutional factors that affect home deliveries among rural women in Northern Bangladesh. The strong relationships between educational achievement, financial position, and location of childbirth emphasize the need for focused measures to enhance access to and results of maternal healthcare. To promote institutional deliveries and improve mother health in this region, it is essential to address educational inequities, provide economic support, and enhance hospital infrastructure.

Conclusions

This study emphasizes the various socio-economic aspects that influence rural women in Northern Bangladesh when deciding to have a home delivery. The study reveals that although there have been attempts to encourage institutional deliveries, a significant number of rural women continue to choose home births because they find them more convenient and cost-effective and have concerns about surgical procedures. When mothers and fathers have less education, face financial limitations, and work in traditional occupations, there is a considerably higher chance of home deliveries occurring. Furthermore, individual inclinations, economic constraints, and family influences are crucial factors in the process of making decisions. These observations emphasize the need for specific actions, such as strengthening educational chances, providing greater economic support, and raising knowledge about the advantages of institutional deliveries. It is crucial to overcome these obstacles in order to enhance maternal health outcomes and ensure the implementation of safer delivery techniques in rural Bangladesh.

References

1. World Health Organization [WHO]. Trends in maternal mortality: 1990 to 2015: estimates by WHO, UNICEF, UNFPA, World Bank group and the United Nations population division. Geneva: WHO, 2015.
2. Paxton A, Bailey P, Lobis S, Fry D. Global patterns in availability of emergency obstetric care. Int J Gynaecol Obstet,2006:93(3):300-7.
3. Campbell OM, Graham WJ. Strategies for reducing maternal mortality: getting on with what works. Lancet,2006:368(9543):1284-99.
4. United Nations Children's Fund [UNICEF]. The progress of nations 2000. New York, NY: UNICEF, 2000.

5. Coeytaux F, Bingham D, Langer A. Reducing maternal mortality: a global imperative. Contraception,2011:83(2):95-8.
6. Finlayson K, Downe S. Why do women not use antenatal services in low- and middle-income countries? A meta-synthesis of qualitative studies. PLoS Med, 2013, 10(1)
7. Zanconato G, Msolomba R, Guarenti L, Franchi M. Antenatal care in developing countries: the need for a tailored model. Semin Fetal Neonatal Med, 2006.
8. Saha M, Odjidja EN. Access to a skilled birth attendant in Bangladesh: what we know and what health system framework can teach us. Health Syst Policy Res,2017:4(4):66.
9. World Health Organization [WHO]. Improving maternal, newborn and child health in the Southeast Asia Region. New Delhi: WHO, 2005.
10. National Institute of Population Research and Training [NIPORT], Mitra and Associates, & ICF International. Bangladesh demographic and health survey 2014. Dhaka, Bangladesh and Rockville, Maryland: NIPORT, Mitra and Associates, and ICF International, 2016.
11. Apanga PA, Awoonor-Williams JK. Maternal death in rural Ghana: a case study in the upper east region of Ghana. Front Public Health,2018:6:101. https://doi.org/10.3389/fpubh.2018.00101.
12. Benova L, Macleod D, Radovich E, *et al*. Should I stay or should I go: consistency and switching of delivery locations among new mothers in 39 Sub-Saharan African and South/Southeast Asian countries. Health Policy Plan,2017:32:1294-308. https://doi.org/10.1093/heapol/czx087.
13. Devkota B, Maskey J, Pandey AR, *et al*. Determinants of home delivery in Nepal – a disaggregated analysis of marginalized and non-marginalized women from the 2016 Nepal Demographic and Health Survey. PLoS One, 2020, 15(1) https://doi.org/10.1371/journal.pone.0228440.
14. Dahal RK. Factors influencing the choice of place of delivery among women in Eastern rural Nepal. Int J Matern Child Health,2013:1:30-7.
15. Assarag B, Dujardin B, Delamou A, *et al*. Determinants of maternal near-miss in Morocco: too late, too far, too sloppy? PLoS One, 2015, 10
16. De Brouwere V, Richard F, Witter S. Access to maternal and perinatal health services: Lessons from successful and less successful examples of improving access to safe delivery and care of the newborn. Trop Med Int Health,2010:15:901-9.
17. Karkee R, Binns CW, Lee AH. Determinants of facility delivery after implementation of safer mother programme in Nepal: a prospective cohort study. BMC Pregnancy Childbirth,2013:13:193.
18. Sharma SR, Poudyal AK, Devkota BM, Singh S. Factors associated with place of delivery in rural Nepal. BMC Public Health,2014:14(1):306. https://doi.org/10.1186/1471-2458-14-306.
19. Das S, Alcock G, Azad K, *et al*. Institutional delivery in public and private sectors in South Asia: a comparative analysis of prospective data from four demographic surveillance sites. BMC Pregnancy Childbirth,2016:16(1). https://doi.org/10.1186/s12884-016-1069-7.
20. Prata N, Bell S, Quaiyum MA. Modeling maternal mortality in Bangladesh: the role of misoprostol in postpartum hemorrhage prevention. BMC Pregnancy Childbirth,2014:14(1):78. https://doi.org/10.1186/1471-2393-14-78.
21. Kabir S, Hasan MR, Hossain MI, *et al*. Determinants and trends of health facility delivery in Bangladesh: a hierarchical modeling approach. Biomed Res Int, 2022 https://doi.org/10.1155/2022/1359572.
22. World Health Organization. Trends in maternal mortality 2000 to 2020: estimates by WHO, UNICEF, UNFPA, World Bank Group and UNDESA/Population Division. Geneva: World Health Organization, 2023. Available from: http://books.google.ie/books?id=6WnWEAAAQBAJ&printsec=frontcover&dq=Trends+in+Maternal+Mortality+2000+to+2020:+Estimates+by+WHO,+UNICEF,+UNFPA,+World+Bank+Group+and+UNDESA/Population+Division.%E2%80%9D+Geneva:+World+Health+Organization,+2023+p2&hl=&cd=1&source=gbs_api.
23. Banik BK. Barriers to access in maternal healthcare services in Northern Bangladesh. South East Asia J Public Health,2017:6(2):23-36. https://doi.org/10.3329/seajph.v6i2.31832.
24. Yousaf O, Grunfeld EA, Hunter MS. A systematic review of the factors associated with delays in medical and psychological help-seeking among men. Health Psychol Rev,2015:9(2):264-76. https://doi.org/10.1080/17437199.2013.840954.
25. Jahan M, Jahan E. Socio-demographic determinants influencing antenatal care seeking behaviour among women in Bangladesh: an application of factor analysis. Int J Community Med Public Health,2017:3(4):925-30.
26. Ronsmans C, Vanneste AM, Chakraborty J, van Ginneken J. Decline in maternal mortality in Matlab, Bangladesh: a cautionary tale. Lancet,1997:350(9094):1810-4. https://doi.org/10.1016/S0140-6736(97)08012-4.
27. Rahman MA, Sultana S, Kundu S, Islam MA, Roshid HO, Khan ZI, *et al*. Trends and patterns of inequalities in using facility delivery among reproductive-age women in Bangladesh: a decomposition analysis of 2007–2017 Demographic and Health Survey data. BMJ Open, 2022, 12(12) https://doi.org/10.1136/bmjopen-2022-065674.
28. Begum M, Sarwar KB, Akther N, *et al*. Socio demographic determinants of delivery practice in rural women of Bangladesh. Delta Med Coll J,2013:1(2):42-5. https://doi.org/10.3329/dmcj.v1i2.15917.
29. Talukder A, Bayezid A, Hossain M, Haq I, Habib M. Socio-economic and demographic factors for mothers' delivery at home: a comparative study among BDHS 2007, 2011 and 2014. Asian J Soc Health Behav,2022:5:10-7. https://doi.org/10.4103/shb.shb_160_21.
30. Islam MM, Shahjahan M. Exploring the reasons and factors influencing the choice of home delivery of births in rural Bangladesh: a community-based cross-sectional study. Emerald Publ Ltd,2021:36(3):503-14. https://doi.org/10.1108/jhr-07-2020-0284.
31. Karim AR. Factors affecting the selection of institutional delivery among tribal women in Bangladesh. J Cogn Sci Hum Dev,2019:5(2):104-15. https://doi.org/10.33736/jcshd.1923.2019.

32. Amin R. Factors influencing women's choices and use of safe delivery clinics, 2012. https://www.amazon.com/Factors-Influencing-Choices-Delivery-Clinics/dp/3844395075.
33. Ali H, Mahmood QK, Jalil A, Fischer F. Women's status and its association with home delivery: a cross-sectional study conducted in Khyber-Pakhtunkhwa, Pakistan. Matern Child Health J,2022:26(6):1283-91. https://doi.org/10.1007/s10995-021-03294-1.
34. Sarker BK, Rahman M, Rahman T, Hossain J, Reichenbach L, Mitra DK. Reasons for preference of home delivery with traditional birth attendants (TBAs) in rural Bangladesh: a qualitative exploration. PLoS One, 2016, 11(1). https://doi.org/10.1371/journal.pone.0146161.