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Decade of Change: Analyzing Maternal and Newborn Health Metrics in Bangladesh from 2017 to 2025

Md Shihab Hussain[1], Tanzim Zaman[2], Asif Iqbal Pias[3], Sanjit Biswas[4], Mithun Chandra Banik[5]

[1]B.Sc in Biochemistry and Molecular Biology, University of Dhaka,
[2]Research Assistant and IO Psychologist, Dream Research and Development Foundation (DRDF),
[3]Senior Coordinator, Project Headway British Council Test Centre, Rajshahi, Bangladesh,
[4]Pharmacy, Khulna University, Bangladesh
[5]Pharmacy, Jagannath University, Bangladesh
[1]mdshihabhussain-2019316747@bmb.du.ac.bd, [2]Tanzim.zaman1999@gmail.com,
[3]asifpias@gmail.com, [4]snbbpl1706@gmail.com, [5]mithun789banik@gmail.com

Abstract

The current paper will measure the changes and trends in the maternal and newborn health indicators in Bangladesh between the period 2017 and 2025. The metrics that are targeted in the research are the maternal mortality ratio (MMR), neonatal mortality rate (NMR), stillbirth rate (SBR), skilled birth attended (SBA) and postnatal care (PNC) services. The study will be able to get a holistic picture of the effectiveness of healthcare interventions and the strides towards minimizing maternal and neonatal death rates by using the secondary data in the form of national health surveys and governmental reports. In the analysis, it has shown that there are considerable changes that have been made in a number of aspects such as maternal and neonatal mortality reduction, access to skilled birth attendance and antenatal care. Nonetheless, a limited number of indicators of changes in health points to the fact that there is no consistent progress. The paper further focuses on how the healthcare infrastructure, socioeconomic factors, and access to healthcare determine the health outcomes of maternal and newborns. Through these results, the study provides some evidence-based recommendations to enhance the maternal and new born health services in Bangladesh further.

Keywords: maternal mortality ratio, neonatal mortality rate, stillbirth rate, skilled birth attendance, postnatal care, healthcare interventions, Bangladesh, maternal health outcomes, neonatal health.

1. Introduction

Background and Context

The problem of maternal and newborn health is the essential topic in the world health, and maternal death and infant mortality are the critical measurements of the total health condition of a country. Maternal health and newborn outcomes in Bangladesh are still struggling in terms of provision of

healthcare services even though it has made tremendous steps in improving this area [7]. The number of initiatives and interventions conducted within the past several years is impressive as it aims at stabilizing the mortality rates of mothers and infants, raising the levels of skilled birth attendance, and the access to the facilities offered by the postnatal care. The disparity in the availability of the healthcare, socioeconomic predeterminants, and limitations of the healthcare systems, however, remain a considerable obstacle on the path to the optimal maternal and neonatal health results [5].

The project will center on the measurement of Bangladesh maternal and new born health indicators trends and changes, which occur within 2017 and 2025. This paper will provide a snapshot of how effective the healthcare intervention and policies have been in addressing maternal and newborn health by analyzing the most important indicators, which are the maternal mortality ratio (MMR), neonatal mortality rate (NMR), stillbirth rate (SBR), skilled birth attendance (SBA) and postnatal care (PNC) services [16].

Problem Statement

Despite the ongoing campaigns to improve maternal and newborn healthcare in Bangladesh, the levels of maternal mortality as well as neonatal mortality remain rather high in the nation with respect to the rest of the world. Furthermore, although certain health signs have changed astonishingly, it is mentioned that there are obstacles that can be still present because there is also variation of some years and regions. By knowing the reasons why such trends occur, including effectiveness of the healthcare system, access of skilled care and socio-economic determinants it is important to seal the gaps in the maternal and newborn health services [15].

Purpose of the Study

The proposed research will assess the dynamics of maternal and newborn health outcomes in Bangladesh with a period of 10 years, 2017-2025. Through this study, the importance of the role played in the fight against maternal and neonatal deaths, skills birth attendance, and postnatal care services will be provided based on the measurement of various measures of health. In addition, this study will identify on areas where additional effort is needed to guarantee equity and high standard care to all women and newborns in the country.

Objectives of the Study

- To Evaluate the Trends in Maternal and Newborn Health Indicators in Bangladesh (2017–2025)
- To Identify the Factors Influencing Changes in Maternal and Newborn Health Outcomes
- To Provide Evidence-Based Recommendations for Improving Maternal and Newborn Health Services in Bangladesh

Research Questions

How have maternal and neonatal mortality rates evolved in Bangladesh between 2017 and 2025?

Theoretical Framework

Socio-ecological model frames the study because it takes into account the interplay between individual, community and societal factors in determinants of health. This conceptualization enables one to develop a comprehensive insight into the multifaceted factors that trigger maternal and newborn health such as access to healthcare, their socio-economic status, cultural principles, and policy intervention. The model

will inform the process of data analysis and a description of the structural and individual-level determinants of maternal and neonatal health in Bangladesh.

Significance of the Study

This study will be useful to policy makers, healthcare delivery institutions and the international organizations which strive to enhance the health of mothers and newborns in Bangladesh. This study will help achieve the current goal of curtailing the instances of maternal and neonatal mortality as well as enhance the quality of healthcare services provided to mothers and newborn infants since it helps in identifying trends, challenges, and interventions [1]. The evidence-based recommendations of the study will also be evidence-based recommendations of how the healthcare strategies can be improved and how the maternal and newborn health outcomes can be made sustainable.

2. Literature Review

Overview of Maternal and Newborn Health in Bangladesh: Health provision to mothers and babies is a very critical social health concern, and maternal and neonatal deaths are the examples of the efficiency of the healthcare system in general. In Bangladesh, the process of maternal and newborn health has recorded improvements and difficulties. In the last few years, the country has gone miles in enhancing access to health services, and most importantly the maternal health services and maternal mortality has been reduced [2]. Nevertheless, the maternal mortality ratio (MMR) and the neonatal mortality rate (NMR) are still to be discussed, as they show that specific healthcare measures should be taken, and people should have access to quality services [3].

Neonatal Mortality and Maternal Mortality Trends: The rates of maternal mortality are also declining world over, although the disparity still exists among the regions. Bangladesh has achieved significant success in maternal mortality reduction in South Asia because of enhanced access to skilled birth attendant, better antenatal care (ANC) services, as well as an increased level of comprehensive healthcare infrastructure. It has been found that there is a positive association between the enhancement of access to healthcare services, especially skilled attendance during childbirth and antepartum care, and the decrease in the maternal mortality [14].

With regard to neonatal death, the Bangladesh trends have also made some way forward with the rates of infant mortality declining in the past decades. The world health organization and other health organizations have aimed at enhancing the newborn care by promoting the neonatal resuscitation, enhanced hygiene practices and increased access to the early childhood care. Nevertheless, neonatal mortality rates in Bangladesh are still quite elevated in contrast with the rest of the world, which implies that healthcare services provided to newborns could use some improvements [10].

Competent Birth Attending and Care Access: One of the most influential factors, which affect the health results of mothers, is skilled birth attendance (SBA). Studies have shown that maternal and neonatal mortality decrease when experienced medical personnel gets involved in delivery. The level of birth attendance by skilled medics in Bangladesh has been substantially enhanced, as more and more women are obtaining professional assistance during the birth of a child. Nonetheless, this has not been equitable, especially in the rural and underserved regions, where there is still a shortage of access to skilled care. The rise in SBA is specifically correlated to the national health programs and community health programs to promote the idea of maternal health and to promote institutions deliveries [7].

Motherly Health and Postnatal Care (PNC): Postnatal care (PNC) plays a very important role in the monitoring of the conditions of mothers and infants after childbirth. Research has focused on the relevance of post-natal check-ups to avoid maternal and neonatal complications. The provision of PNC services in Bangladesh has grown over the last few years, but there continue to be major gaps in coverage and specifically they occur in the rural regions. The PNC services both on a facility level and community level have been cited as important to the enhancement of maternal and newborn health. Nevertheless, there are still difficulties (poor resources, the untrained workforce and socio-cultural issues) which affect accessibility and effectiveness of PNC services [4].

Healthcare System and Socioeconomic Factors: According to a considerable amount of literature, socioeconomic determinants, including poverty, education, and geographic location, are also most relevant to the health outcomes of mothers and newborns. In Bangladesh, the less developed groups of women, especially rural groups, do not have a higher chance of accessing services of trained birth attendants, prenatal care and after child delivery services. Studies emphasize that there are three objectives that are crucial in improving healthcare infrastructure, financial barriers, and educational programs to women and communities to enhance better health outcomes. In addition, healthcare choices are usually shaped by cultural beliefs and practices especially in the rural regions where traditional birth practices could be in dominance over the institutional birth and professional care [11].

Programmatic Interventions and Policy: Several government and non-governmental organizations in Bangladesh have had in place programs to enhance maternal and newborn health. These programs have been geared towards enhancement of number of competent birth attendants, expansion of the antenatal and postnatal care services as well as enhancement of health facilities. The government in its quest to attain the Sustainable Development Goals (SDGs) especially the maternal and child health has also helped in the growth of the health services within the country [1]. Nevertheless, inequalities do exist, especially in the villages and in most poor regions, access to healthcare has remained an issue.

3. Methodology

Research Design

This research proposal uses a quantitative research design to assess the trends and changes in maternal and newborn health indicators in Bangladesh during 2017 to 2025. The study narrows down to the secondary data analysis in the form of publicly available datasets by health organizations, government reports and the applicable health surveillance systems. The data contain major maternal and newborn health level indicators which include maternal mortality ratio (MMR), neonatal mortality rate (NMR), stillbirth rate (SBR), skilled birth attendance (SBA), and postnatal care (PNC) services.

Data Collection

In this research, the information is obtained on a national level in form of health surveys, government health reports and other sources that are credible. The datasets represent the annual data on the health indicators of different types since 2017 through 2025, and they will give a thorough picture of the dynamics of maternal and newborn health in Bangladesh. This is because secondary data collection guarantees accuracy and extensive coverage of the study since covering the study over a long duration is possible.

Data Analysis

The analysis of the data will be performed based on descriptive statistics to expect tendencies, changes, and trends in the health outcomes of mothers and newborns during the nine years. The major statistical metrics like mean, standard deviation, minimum, maximum, and range of each indicator will be computed to present an elaborate feel of the data. Trend analysis will also be used to determine the important changes in the process and the effectiveness of healthcare interventions.

Limitations

The research is one of secondary data and therefore, it can have reporting errors or inconsistencies. Moreover, the study does not touch upon the reasons behind trends and concentrates on the data patterns. Thus, a more robust insight into the factors affecting such trends may be drawn in future qualitative research.

Analysis of Maternal and Newborn Health Indicators in Bangladesh (2017–2025)

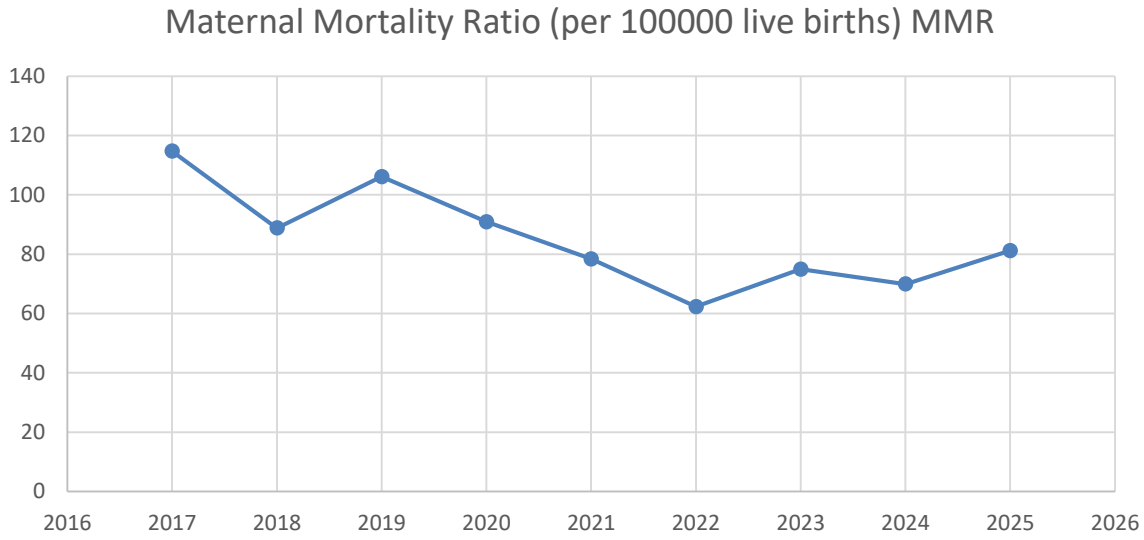

Figure 1: Maternal Mortality Ratio (MMR) Analysis

Data Source: DGHS, Ministry of Health and Family Welfare Documents, Bangladesh

The maternal mortality rate (MMR) in Bangladesh as a ratio per 100,000 live births has shown strong variation between the year 2017 to 2025. The MMR was 114.7 in 2017, and it steadily declined in the following years with its minimum at 62.3 in 2022. This drop shows progress in the maternal healthcare and the success of the policies which are working towards minimizing maternal deaths. But in 2023 and 2024, the slight increase was observed to 74.9 and 69.9, respectively, and it was even higher in 2025, reaching 81.2.

The average of the MMR within the period of observation is 85.24 with a standard deviation of 15.91 implying that there is a slight variation in the data. The lowest MMR occurred in 2022 with 62.3, whereas the highest occurred in 2017 with 114.7 with a difference of 52.4. Although the current improvement has been made, the recent increase in the MMR alarms about the viability of the maternal health advances. More research is needed to realize reasons behind these changes, such as the issues with the healthcare system effects or socioeconomic determinants influencing the maternal health outcomes. These concerns will be critical towards making more improvements in maternal deaths.

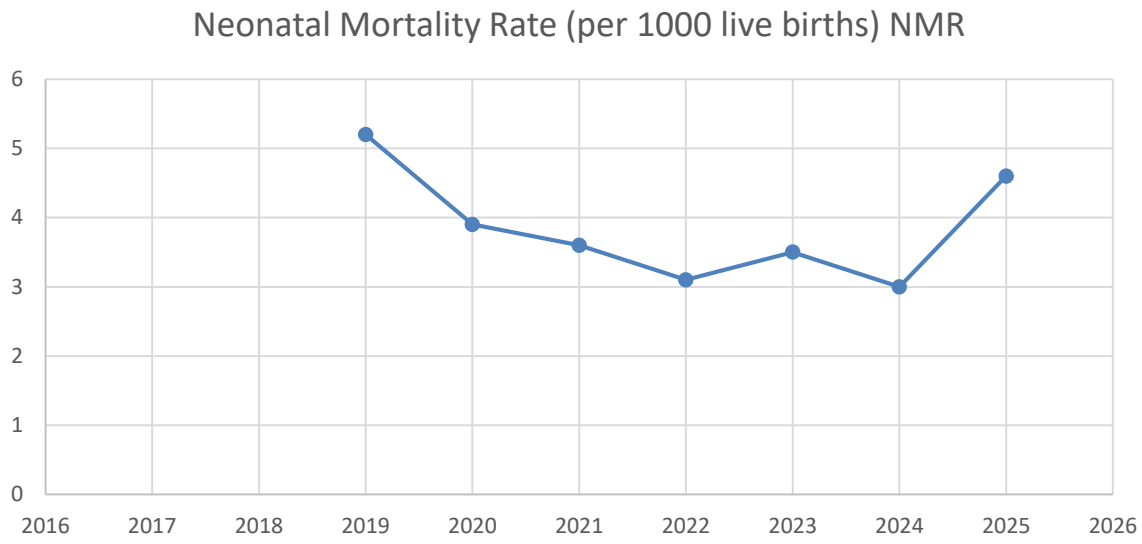

Figure 2: Neonatal Mortality Rate (NMR) Analysis

Data Source: DGHS, Ministry of Health and Family Welfare Documents, Bangladesh

There is a large decrease in the neonatal mortality rate (NMR) per 1,000 live births in Bangladesh, and the neonatal mortality rate varies significantly between 2019 and 2024, with an interesting variation in 2025. The NMR of 5.2 in 2019, and it was continuously decreasing over the next years, with the lowest point in 2024. The rate however rose to 4.6 in 2025.

The average NMR of the time is 3.84 with a standard deviation of 0.74 indicating a certain difference in health outcomes of neonatal patients. The lowest NMR was 3.0 recorded in 2024, and the highest was 5.2 recorded in 2019 leading to a range of 2.2. This general decrease within the NMR denotes the positive tendencies in the provided neonatal care, which is probably because of the increased healthcare services and availability of professional birth attendants. Nevertheless, the rising growth rate of 2025 incites some concerns that should be investigated, possibly genetically because of such factors as access to healthcare, socioeconomic status, or care practice changes. More research is necessary to detect the underlying factors of this rise and find out measures that can be put in place to make sure that the neonatal mortality continues to work right [13].

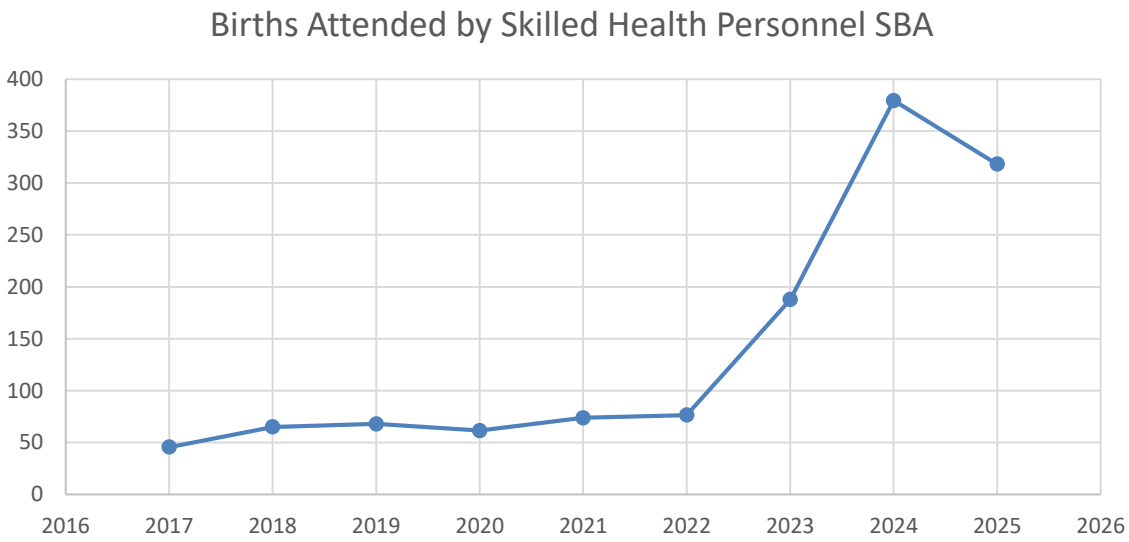

Figure 3: Births Attended by Skilled Health Personnel (SBA) Analysis

Data Source: DGHS, Ministry of Health and Family Welfare Documents, Bangladesh

The trend of data on births converted by skilled health personnel (SBA) in Bangladesh indicates that there is significant increase in the same between 2017 and 2025. The proportion of delivery by skilled personnel was 45.6 in 2017 and the proportion was gradually on the rise. By 2022, this figure had reached 76.4%. In 2023 and 2024 marked by a huge increase, the percentage increased to 187.7% and 379.3, respectively, before falling a bit to 318.1% in 2025.

The average rate of births attended by skilled personnel during the period is 141.72 which has a standard deviation rate of 118.10 meaning that there was a high variation of the data. The lowest percentage of 45.6 and the highest percentage of 379.3 were in the year 2017 and 2024 respectively making a range of 333.7. The high levels of 2023 and 2024 could be a result of reportability processes, it is possible that the healthcare infrastructure could have improved, or the number of healthcare workers might have increased substantially. Although this trend is positive, the unusually high values of 2023 and 2024 are to be further investigated to guarantee the precision of data documentation and the real presence of qualified health staff. Significant funding towards maternal health services will be the key to sustaining and ensuring further improvement of these positive changes [14].

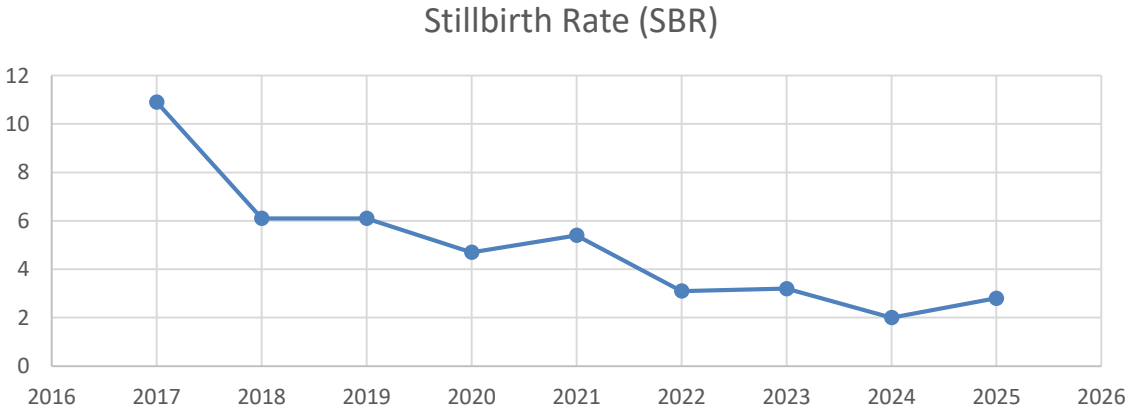

Figure 4: Stillbirth Rate (SBR) Analysis

Data Source: DGHS, Ministry of Health and Family Welfare Documents, Bangladesh

In Bangladesh, stillbirth rate (SBR) as 1000 live births has generally declined between the year 2017 and 2025. In the year 2017, the rate was rather large reaching 10.9, however, over the years, it dropped significantly. The rate had fallen to 3.1 in 2022, and kept on declining in 2024 to 2.0. In 2025, however, there was an increase in the SBR to 2.8.

The average stillbirth condition during the period is 4.92 and the standard deviation is 2.54, which means that there can be some variation in the statistics. It reached 2.0 in the year 2024 and a high rate of 10.9 in the year 2017 giving the range of 8.9. The general reduction in stillbirth rate indicates the happens to be better in prenatal and delivery care. Nevertheless, the marginal growth in the year 2025 needs to be explored further, to find possible reasons that could possibly have led to this growth, including altered access to health care, maternal health, or healthcare system hurdles. Further interventions on maternal and newborn care will be instrumental in keeping the reduction in the occurrence of stillbirths alive [15].

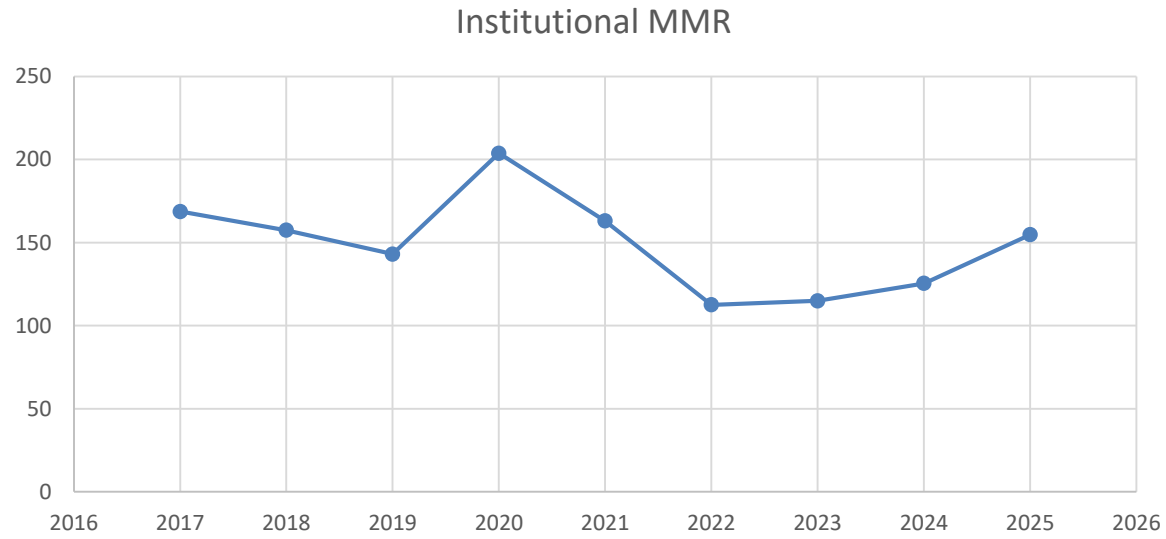

Figure 5: Institutional Maternal Mortality Ratio (Institutional MMR) Analysis

Data Source: DGHS, Ministry of Health and Family Welfare Documents, Bangladesh

Institutional maternal mortality ratio (Institutional MMR) in Bangladesh has a high degree of variability between the years 2017 and 2025. In 2017, the Institutional MMR stood at 168.7, although it ended up continuously declining during the years to reach the lowest point of 112.6 in 2022. Nevertheless, the ratio slightly rose in 2023 and 2024 to 115 and 125.5 respectively and again to 154.7 in 2025.

The average conclusions derived between the period of time are that the mean of Institutional MMR is 149.31 with a standard deviation of 27.40, implying that there was a significant variation in the institutional maternal mortality. The highest ratio of 203.8 in 2020 and minimum 112.6 in 2022 produced a range of 91.2. Although overall decreasing trend is observed until 2022, the twists and turns of the latter years demonstrate the necessity of further analysis of the aspects of the institutional health care. The growth in 2025, especially, speaks of the necessity of the identification of the possible causes, including the differences in standards of the institutional care, accessible resources, or the number of the delivered children in these institutions. Combating these problems will be significant to further development of maternal mortality reduction in healthcare institutions [11].

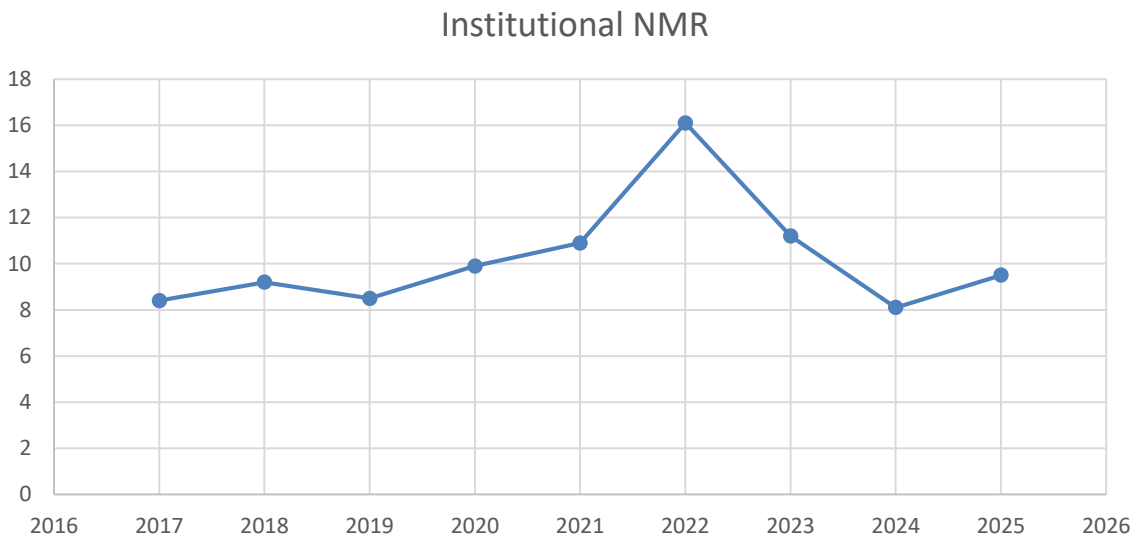

Figure 6: Institutional Neonatal Mortality Ratio (Institutional NMR) Analysis

Data Source: DGHS, Ministry of Health and Family Welfare Documents, Bangladesh

There is variability of the institutional neonatal mortality ratio (Institutional NMR) in Bangladesh between 2017 and 2025. In 2017, this ratio stood at 8.4, and the ratio changed throughout the years with its highest points in 2022 of 16.1. Subsequently, it declined to ratio this to 8.1 in 2024, and then increased to ratio 9.5 in 2025.

The average NMR of the institutions during the period is 10.2, with the standard deviation of 2.32, which is an indication that there was a certain degree of variation in the mortality of the neonates in the healthcare institutions. The lowest ratio was 8.1 in 2024 and the highest ratio was 16.1 in 2022, which gives it a range of 8. The according data show the positive and negative outcomes of the institutional neonatal care. The significant trend in both 2022 and 2023 shows that, further research is needed on potential causes of these higher mortality rates which could be institutional practices, staffing or even healthcare infrastructure. To prevent neonatal deaths in health facilities, it will be necessary to maintain the quality of provided care and to ensure that all gaps are prevented to enhance the overall health outcomes in the population of neonata [16].

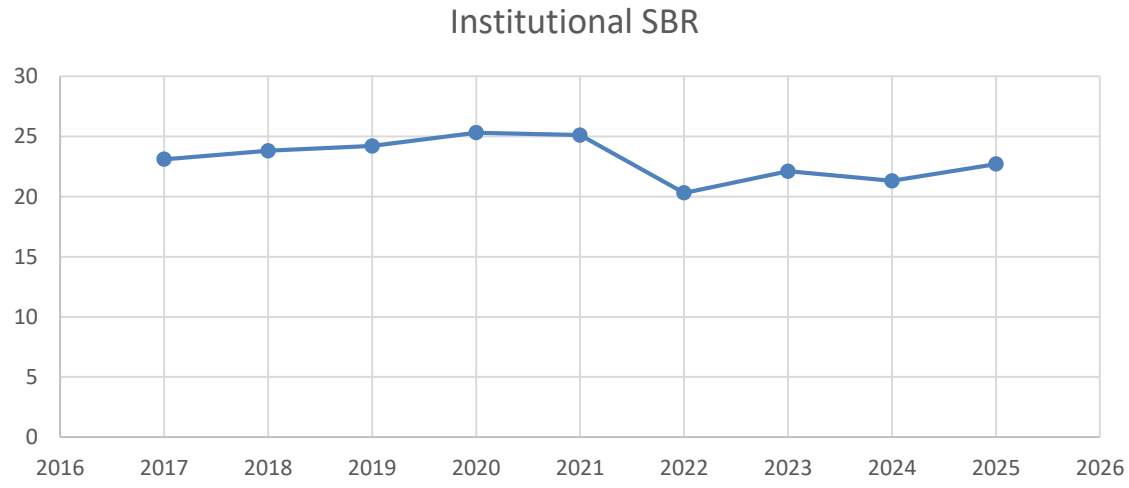

Figure 7: Institutional Stillbirth Rate (Institutional SBR) Analysis

Data Source: DGHS, Ministry of Health and Family Welfare Documents, Bangladesh

Institutional stillbirth rate (Institutional SBR) in Bangladesh has been experiencing a bit of variation between 2017 and 2025. The rate stood at 23.1 in 2017 and slightly changed the next few years, with the rate standing at 25.3 in 2020. In 2021, it marginally declined to 25.1 and to 20.3 the lowest in 2022. Nonetheless, the rate increased once more in 2023 to 22.1 and in 2025 it went up to 22.7 a bit.

The average Annual Institutional SBR during the period is 23.1, with standard deviation that is 1.59, which means that there is a very stable data with a small variance. The lowest rate was recorded at 20.3 in 2022 with the largest, 25.3 in 2020 with a range of 5. The general statistics indicate a negative tendency towards a reduction in still births in the institutional places especially between 2020 and 2022. Nevertheless, the slight positive changes in 2023 and 2025 indicate that the process of lowering stillbirths requires more improvements. The research of the elements related to the healthcare practices, the number of qualified staff, and the provision of prenatal care might contribute to pinpointing the causes of the variations, as well as informing the particular actions aimed at the enhancement of the results [10].

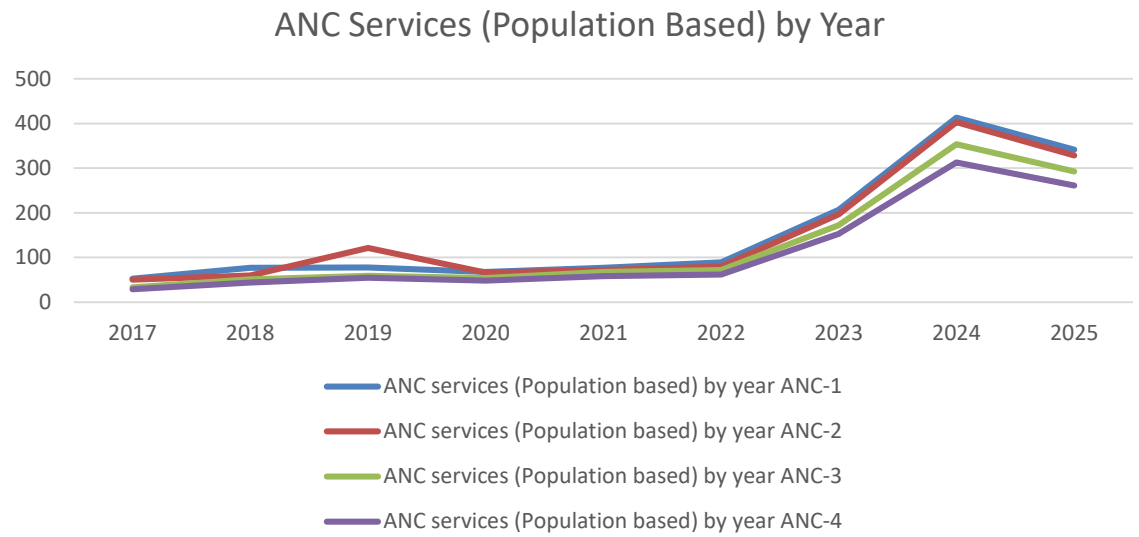

Figure 8: Antenatal Care (ANC) Services (Population-Based) Analysis

Data Source: DGHS, Ministry of Health and Family Welfare Documents, Bangladesh

The antenatal care (ANC) services data, that was divided into ANC-1, ANC-2, ANC-3, ANC-4 based on the number of visits between the year 2017 and 2025 shows that there has been a considerable rise in accessing maternal healthcare in Bangladesh. ANC-1 (the initial visit to the antenatal care): ANC-1 increased significantly by 52.2 to 341.5 in 2017 and 2025, respectively. The correspondingly, ANC-2 and ANC-3 services also improved remarkably as they stood at 50.3 and 33.3 in 2017 and 328.2 and 292.6 in 2025. The ANC-4 services, which depicted an upsurge, were still lower than the other categories, rising compared to the past with 29 in 2017 to 260.7 in 2025.

ANC -1, ANC- 2, ANC- 3 and ANC -4 services have mean values of 155.67, 152.94, 128.27 and 113.53, respectively showing that the frequency of ANC visits has increased considerably with the years. Standard deviations of these categories lie between 99.14 and 126.85, which shows that there is a considerable fluctuation in the number of services delivered, mostly during the initial years. The lowest values were 52.2, 50.3, 33.3, and 29 as ANC-1, ANC-2, ANC-3 and ANC-4, respectively and maximum

values were 413.1, 402.6, 353.5, and 312.8. The ranges approached are also high, with the biggest range of 360.9 in ANC-1, which shows the drastic acceleration of the number of services throughout the years. This information indicates tremendous improvement in the already covered antenatal care services especially among the latter years. Nevertheless, the variation states of the possibility of unequal and consistent access to services in all regions, which might necessitate some specific interventions to reduce the gap in service delivery [8].

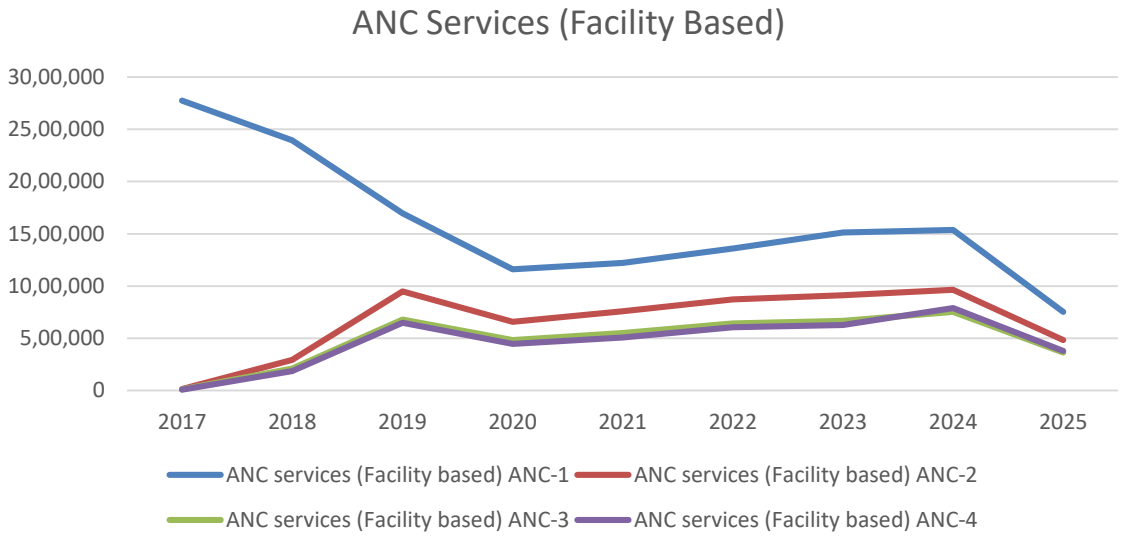

Figure 9: Antenatal Care (ANC) Services (Facility-Based) Analysis

Data Source: DGHS, Ministry of Health and Family Welfare Documents, Bangladesh

Facility-based antenatal care (ANC) service data that has been conducted between 2017 and 2025 demonstrates a significant difference in the number of services delivered within each of the various categories of visits (ANC-1, ANC-2, ANC-3, and ANC-4). The highest number of ANC-1 visits was experienced in 2017 at 2,773,954 visits, whereas ANC-2, ANC-3 and ANC-4 recorded figures of 13,787, 9,451 and 6,287 visits respectively. The trend indicates that over the years, the ANC-1 visits have been reducing by a small margin up to now, and the portended figure is 753, 027 by the year 2025. Conversely, ANC-2, ANC-3 and ANC-4 services had varying schedules where ANC-2 and ANC-3 service visits were high in 2024 and later on 2025.

The averages of the facility-based ANC Services over the years include the following ANC-1 (1,600,793), ANC-2 (655,629), ANC-3 (483,860), and ANC-4 (466,157). The standard deviations giving the various categories are between 231,994 (ANC-4) and 591,228 (ANC-1) which implies that the standard deviations are quite large and thus the years have varying levels of service delivery. ANC-1 recorded the lowest at 753,027 in 2025 and ANC-2, ANC-3 and ANC-4 recorded the lowest at 13,787, 9,451, and 6,287 respectively. ANC-1, ANC-2, ANC-3 and ANC-4 had the maximum values of 2, 773, 954, 753,252 and the range of ANC-1 (2,020,927) had a significant range.

The statistics indicate that even though the number of ANC visits has increased, especially with ANC-1, services have become stable albeit somewhat varying in the latter years. It refers to the possibility of changes in the access or provision of healthcare, its resources, or the procedure of reporting, and supports the idea that consistent monitoring is necessary to provide equal and consistent access to the services of the antenatal care to all the population [7].

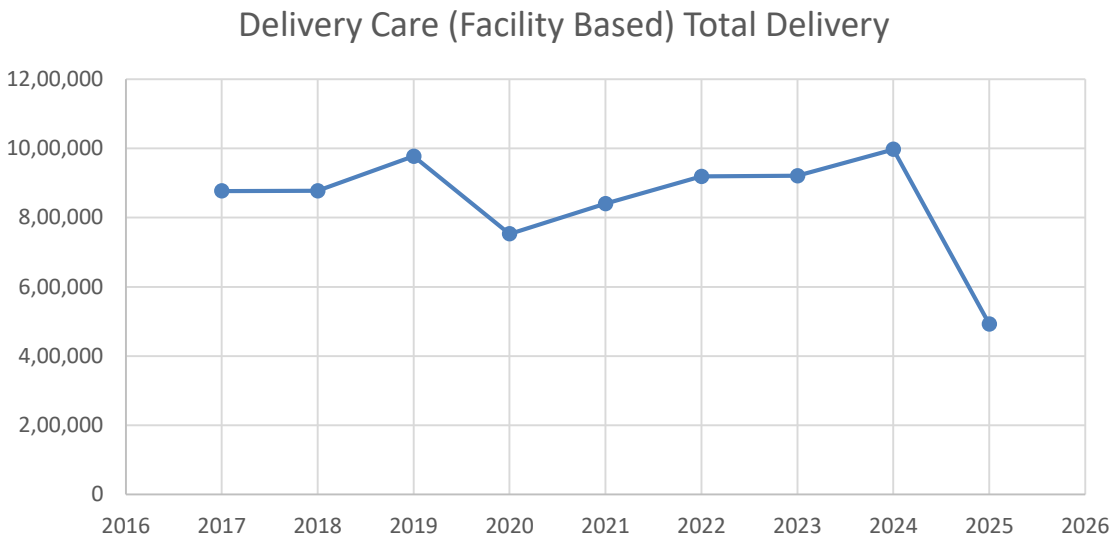

Figure 10: Delivery Care (Facility-Based) Analysis

Data Source: DGHS, Ministry of Health and Family Welfare Documents, Bangladesh

Table 1 of the 2017-2025 data on facility-based delivery care in Bangladesh indicates an up and down trend of the number of deliveries conducted in healthcare facilities. Delivery in 2017 stood at 876,694 and it marginally surged to 877,163 in 2018. Deliveries have been improving and in 2019 they were at 977,145. In 2020, however, the count of deliveries was lower (752,985), presumably, because of the effects of the COVID-19 pandemic and associated limitations. It has since continued to grow in 2021 and 2022 to 840,122 and 919,027 deliveries, respectively. It is also observable that there was a constant growth in deliveries in 2023 and 2024 of 920,696 and 996,937, respectively. The number of deliveries however, in 2025 also declined to 491,962 which is a considerable drop.

The average number of facility-based deliveries overall during the time is 850,303 with a standard deviation of 144,017 meaning that is quite varied. The last year of 996,937 listed the maximum deliveries whereas the lowest figure of 491,962 recorded the lowest number of deliveries, whereas there is a difference of 504,975 and the lowest and highest numbers are 2024 and 2025 respectively. The changes in the numbers of deliveries, especially sudden reduction in 2025 point to the possibility of external factors, like access to healthcare, population change, or difficulties in the healthcare systems, affecting the figures. This would have to be further analyzed to find out the factors behind this fall, as well as, to make sure that the delivery services are still accessible and available to the population [6].

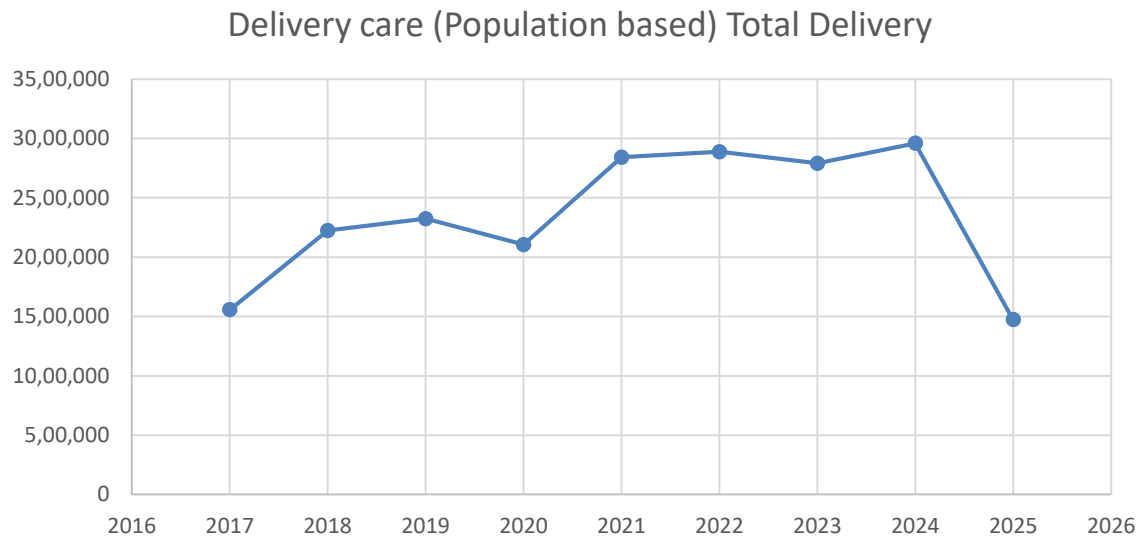

Figure 11: Delivery Care (Population-Based) Analysis

Data Source: DGHS, Ministry of Health and Family Welfare Documents, Bangladesh

The 2017 to 2025 population-based delivery care data indicate the large changes in the number of deliveries that are going to be delivered within the years. The number of deliveries was 1,557,136 in 2017 and went significantly higher in 2018 and 2019, to 2,223,581 and 2,323,526, respectively. This was sustained in the year 2021, where 2,842,316 deliveries were registered. In 2022 (2,887,738) and 2024 (2,958,760), the number of deliveries was high, which indicates a stable access to maternal healthcare services. This has however changed as the number of deliveries in 2025 recorded a serious drop of 1,472,846 which is very low compared to that of the past few years.

The average population-based deliveries during the time are 2,351,334 with a standard deviation of 534,536 which implies that there are high figures that are varied in terms of the number of deliveries. The lowest number of deliveries was 1,472,846 in 2025 and the highest was 2,958,760 in 2024 making the range at 1,485,914. Its decline in 2025 would denote the possibility of alterations in the demographic transitions, health care access, or reporting, which should be further developed. To provide the population with effective delivery care services, it is necessary to understand the factors that cause such a decrease [5].

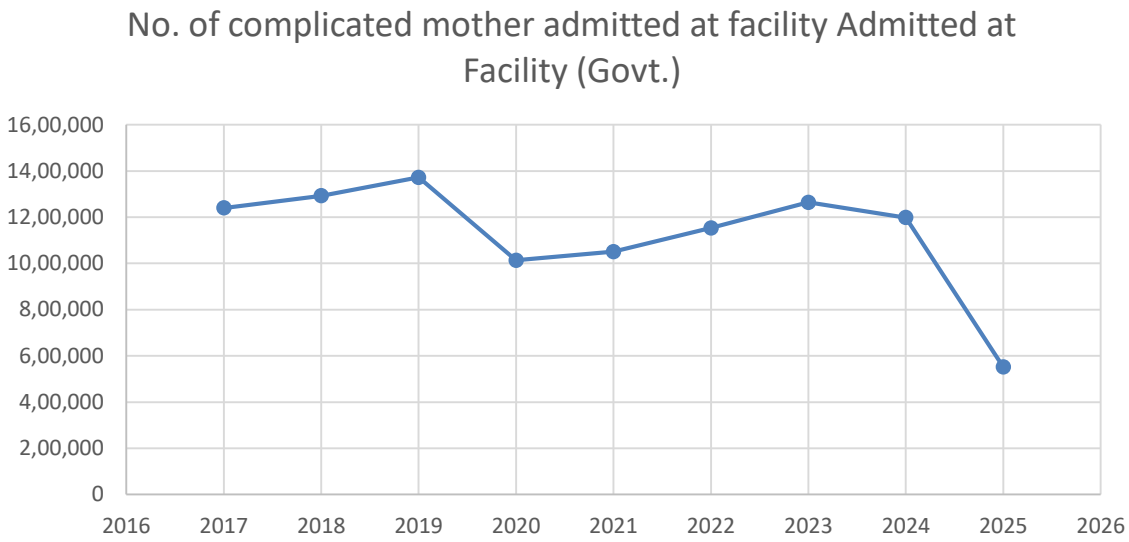

Figure 12: Number of Complicated Mothers Admitted at Facility (Government) Analysis

Data Source: DGHS, Ministry of Health and Family Welfare Documents, Bangladesh

The trends on the number of difficult mothers in government health institutions in Bangladesh between the year 2017 and 2025 show that there were significant variations. The 2017 admission received 1,240,065, and in 2019, the count rose to 1,372,084, which could be attributed to the expansion of the demand of maternal services in the government hospitals. Nevertheless, this decade experienced a major drop to 1,013,122 in 2020 that could be attributed to the effects of the COVID-19 outbreak and disruptions in healthcare systems. The admissions slowly crept up in 2021 (1,050,823) and 2022 (1,153,460), to 1,264,080 in 2023. In 2024 its number dropped to a significant level in 1, 198, 079, and in 2025, the number has reduced further to 551,902.

The average of complicated maternal stays in the years is 1,126,238 with a standard deviation of 229,564 meaning that there is a lot of variances in the statistics. The lowest admissions were 551,902 in 2025 and the highest were 1,372,084 in 2019 with the range being 820,182. This drastic decrease in 2025 deserves an additional inquiry to establish the causal factors like the alteration in healthcare access, avenues of the services, or a shift in population. This drop can be an indicator of some possible lapses in the maternal care services, which requires attention to take care of all pregnancy complications properly in healthcare units [4].

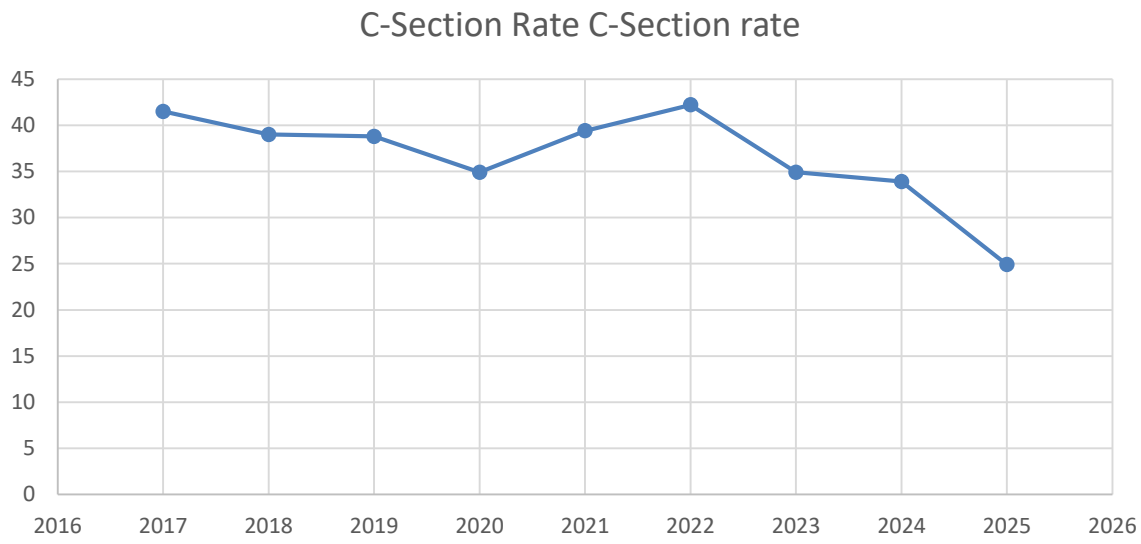

Figure 13: C-Section Rate Analysis

Data Source: DGHS, Ministry of Health and Family Welfare Documents, Bangladesh

The C-section rate is a percentage of the total deliveries in Bangladesh and has been observed to show about 8, per cent change between 2017 and 2025. This rate stood at 41.5 in 2017, then steadily declined in the following years, to 34.9 in 2020. Nevertheless, it rose to 39.4 percent in 2021 and then reached its peak of 42.2 percent in 2022. Subsequently, the C-section rate lowered again until in 2023, the rate was 34.9, then 24.9 in 2024 and 2025 respectively.

The average C-section rate during the period is 36.61, and standard deviation of 4.99, which is considered to be average. C-section was at its lowest in 2025 with a 24.9 percentage and the highest in 2022 at 42.2 percentage with a range of 17.3. The trend toward the C-section rate dropping over the past years indicates the enhancement of the process of childbirth delivery and the probable change in the type of practices of more natural births. Nevertheless, the rise that started in 2021 and 2022 should also be investigated in order to define the causes of this temporary upward trend. Further observation and evaluation of the C-section rate is important in order to ensure the birth rate is normal and enhances the health outcomes of the mother and newborn [3].

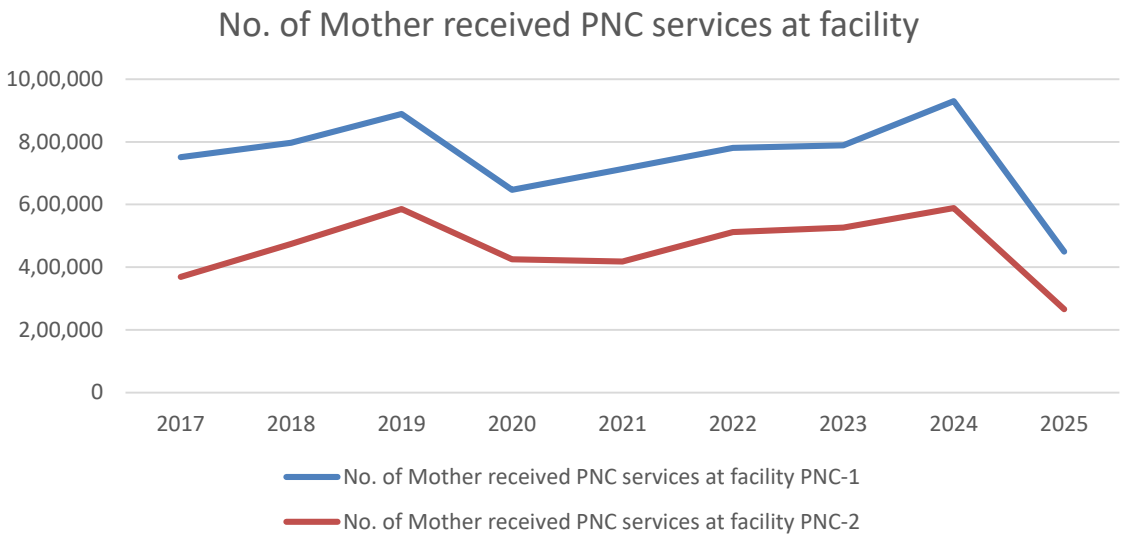

Figure 14: Number of Mothers Who Received Postnatal Care (PNC) Services at Facility Analysis

Data Source: DGHS, Ministry of Health and Family Welfare Documents, Bangladesh

The figures on the percentage of mothers who took postnatal care (PNC) services at the Bangladesh health facilities between 2017 and 2025 depicts variations in both PNC-1 and PNC-2 groups. In 2017, PNC-1 was 751, 245 given to mothers and PNC-2 was 368, 495. During the next years, both groups experienced a growth, with PNC-1 having 888,635 in 2019 and PNC-2 having 585,918 the same year. Nevertheless, both categories recorded significant losses in 2020, as PNC-1 fell to 646,405 and PNC-2 to 424,595 which was probably as a result of the COVID-19 pandemic and difficulty in accessing healthcare. The figures recovered in later years with PNC-1 and PNC-2 standing at 929,418 and 588,443 respectively in the year 2024. But the decline was abnormally high by 2025, PNC-1 dropped to 449, 101 and PNC-2 dropped to 266,002.

The average number of mothers who take the PNC-1 services is 749,389 and that of PNC-2 services is 462,572. These categories have standard deviations of 132,780 and 99, 258 under PNC-1 and PNC-2 respectively, which means that there is a variation in the availability of postnatal care services. Both PNC-1 and PNC-2 are highest in 2025 at 449,101 and 266,002 respectively whereas the maximum values are in the year 2024 at 929,418 and 588,443. The maximum of PNC-1 is 480,317, and that of PNC-2 is 322,441.

The information indicates that the provision of the postnatal care services had some ups and downs, but overall, the trend is a major influence by the extrinsic factors, such as the problems of the healthcare system and the epidemics of the population health. One of the most significant areas of concern in this regard will be monitoring of these services to sustain access and quality care provision to the mothers during their postnatal period [2].

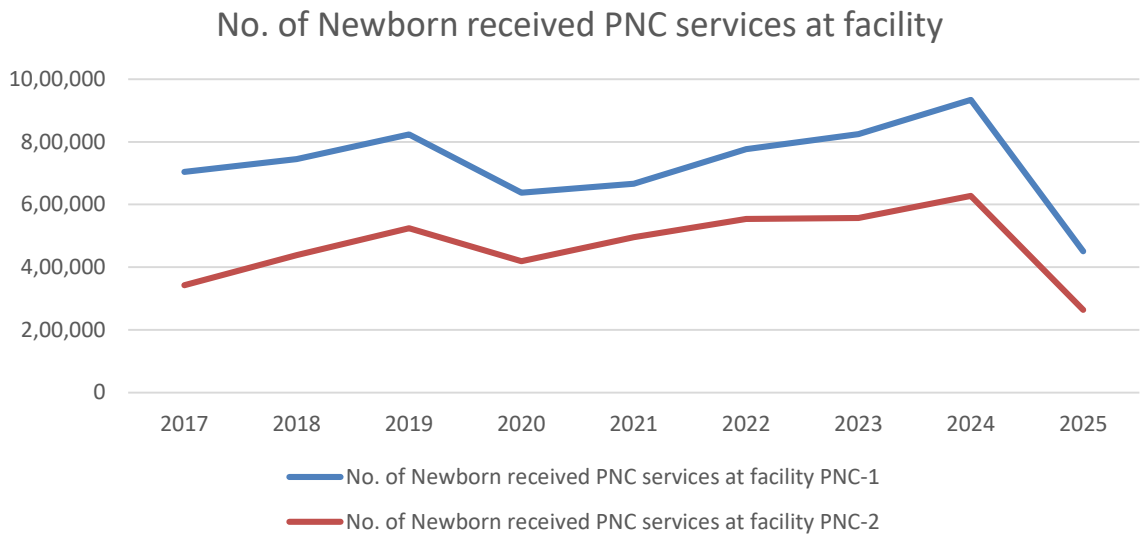

Figure 15: Number of Newborns Who Received Postnatal Care (PNC) Services at Facility Analysis

Data Source: DGHS, Ministry of Health and Family Welfare Documents, Bangladesh
Data Source: DGHS, Ministry of Health and Family Welfare Documents, Bangladesh
The statistics on newborns who access postnatal care characterize PNC services at healthcare facilities in Bangladesh 2017-25 reveal the same tendencies as the maternal care statistics. Newborns getting PNC-1 services were 704,104 and those with PNC-2 services were 342, 514 in 2017 alone. These figures slowly rose throughout the following years where PNC-1 hit 823,196, and PNC-2 hit 524,030 in 2019. Let there be the year 2020, however, both categories saw a fall to 638,021 in PNC-1, and 419,211 in PNC-2, presumably with the impact of the COVID-19 pandemic. The newborns receiving PNC services again went up in subsequent years, with 2024 recording the highest number of 933, 678 and 627, 718 on both PNC-1 and PNC-2. The reduction was quite high by 2025, PNC-1 dropped to 450,335 and PNC-2 went down to 263,705.

The average number of newborns treated by PNC services is 728,969 and in the case of 2, the number is 469,118. The standard deviations of these categories stand at 130,282 of PNC-1 and 108,208 of PNC-2, which implies that the data is varied. PNC-1 and PNC-2 had maximum and minimum numbers of 933,678 and 627,718 respectively in 2024 giving the ranges of 483,343 and 364,013 respectively.

The data demonstrates that there are great improvements in the newborn postnatal care services up to 2024 after which they will drop drastically in 2025. The change of the numbers, namely in 2020 and 2025, emphasize the role of other factors like the facility access to healthcare, the presence or absence of resources, or the challenge to the population health. It will be imperative to understand why such changes have taken place in ensuring that all the newborns in the healthcare facilities obtain the required care in the postnatal settings [1].

4. Conclusion

The current research paper has considered trends and change in the maternal and newborn health indicators in Bangladesh between the years 2017 and 2025. The case study of the significant indicators, such as maternal mortality ratio (MMR), neonatal mortality rate (NMR), stillbirth rate (SBR) and skilled

birth attendance (SBA) and postnatal care (PNC) services, has given reasonable answers to the question of how much has been achieved in enhancing maternal and neonatal health within the last ten years [12]. The results show that there have been remarkable changes in various aspects with a total of seven maternal mortality, neonatal mortality and still birth rates reduced. The proposal of the rise of the skilled birth attendance and other antenatal care services, especially during the later years of the study time, is evidence of the development of the healthcare system and the rising openness to high-quality birth care. Nevertheless, the changes in certain measures, particularly in 2025, hint at the fact that there are still difficulties in making these improvements more uniform among people [9].

Although the figures are promising, it also highlights how more investment in health infrastructure is necessary, especially in rural and underserved communities, in order to provide a fair access to qualified care and postnatal care. The drastic change in certain major indicators, including the number of mothers receiving the postnatal care and newborns in 2025 indicates there could be gaps, which need to be filled in order to support the advancements achieved in the maternal and neonatal health [6].

5. Recommendations

Enhancing the Healthcare Access and Infrastructure: The population should be facilitated to gain access to healthcare services, particularly in the rural and remote regions. Increasing the size of healthcare establishments, enhancing access to transportation, and providing access to skilled birth attendants will serve as effective ways to sustain the maternal and newborn health improvements.

Improving Data Reporting and Monitoring: The variation of the changes in certain health indicators especially in 2025 underscores the necessity of the stronger data collection and monitoring systems. Improving health information systems and ensuring the proper reporting will offer more information about the efficacy of the implemented interventions and guide towards the spheres of improvements.

Handling Socioeconomic and Cultural Barriers: The access to healthcare in Bangladesh is still influenced by socioeconomic factors such as poverty and low levels of education. By working towards lowering these obstacles like through enhancing the healthcare literacy, providing financial assistance to the disadvantaged groups, and managing cultural beliefs on healthcare, it will contribute to more even-handed access to the services of maternal and newborn care.

Dwelling upon the Postnatal Care Services: Reduction of the postnatal care services in 2025 is a signal that more focus should be put on the postnatal aspect. The reduction of maternal and neonatal morbidity and mortality can be achieved through the expansion of PNC services, the enhancement of the post-natal follow-up care of mothers and newborn, and the promotion of the necessity of the postnatal check-ups.

Enhancing Quality in the Institutional Healthcare: Although the institutional maternal and neonatal mortality rates have been improved, there have been variations in the indexes which indicate an existence of disparities in quality of healthcare in the institution. The mortality rates and provision of better health outcomes can be further reduced through investment in the training of the healthcare professionals, allocation of resources, and the overall quality of care in the institutions.

Enhancing the Emergency Obstetric and Neonatal Care: There is an increase in the complicated cases and reduction in the number of complicated mothers admitted to the facilities in 2025 is an indication that access to emergency obstetric and neonatal care is important. It will be possible to expand

and improve the emergency care service and reinforce the referral systems to be able to handle complicated deliveries.

Health Promotion by the Community: Community health initiatives with special consideration on maternal and newborn health need to be increased in order to create awareness and promote maternal health practices such as skilled birth attendance and prenatal care. Education campaigns and community involvement may be the key in eliminating the barriers to care.

Reference

1. DGHS, Ministry of Health and Family Welfare Documents 2025, Bangladesh
2. Alo, D. and Sultana, B. (2023) 'Maternal and neonatal risk factors for developing early onset newborn sepsis (EONS) in a tertiary care hospital in Bangladesh', Bangladesh Journal of Obstetrics & Gynaecology, 37(2), pp. 132–138. doi:10.3329/bjog.v37i2.69474.
3. Baten, A. et al. (2020) 'Impact of recurrent floods on the utilization of maternal and newborn healthcare in Bangladesh', Maternal and Child Health Journal, 24(6), pp. 748–758. doi:10.1007/s10995-020-02917-3.
4. Islam, M.A., Hasan, M. and Sharmin, F. (2023) 'Presence of dengue antibody in a newborn with maternal peripartum dengue fever', Journal of Bangladesh College of Physicians and Surgeons, pp. 120–122. doi:10.3329/jbcps.v41i40.69737.
5. Jamee, A.R., Kumar Sen, K. and Bari, W. (2022) 'Skilled maternal healthcare and good essential newborn care practice in rural Bangladesh: A cross-sectional study', Health Science Reports, 5(5). doi:10.1002/hsr2.791.
6. Julfiker, F. (2025) 'Adolescents engagement to promote maternal and newborn health services in Bangladesh: The case of faridpur district', Urban Studies and Public Administration, 8(1). doi:10.22158/uspa.v8n1p14.
7. Khatun, M.A. and Khatun, S. (2018) 'Maternal' awareness of antenatal care on impact of mothers' and newborn health in Bangladesh', Open Journal of Nursing, 08(01), pp. 102–113. doi:10.4236/ojn.2018.81009.
8. Kim, E.T. and Singh, K. (2017) 'The state of essential newborn care by delivery location in Bangladesh', Maternal and Child Health Journal, 21(11), pp. 2078–2085. doi:10.1007/s10995-017-2319-7.
9. Mahmood Jibirilla, F. (2024) 'Reproductive, maternal, newborn, child, Adolescent Health and Nutrition (RMNCAH+N) activities, and key achievements', International Journal of Science and Research (IJSR), 13(1), pp. 1417–1419. doi:10.21275/sr24123025618.
10. Osaki, K. (2024) 'Strengthening implementation of the maternal and Child Health Handbook for Global Maternal, Newborn, and child health', Hypertension Research in Pregnancy, 12(1), pp. 8–12. doi:10.14390/jsshp.hrp2023-010.
11. Shaw, S.Y. et al. (2023) 'Correlates of maternal, newborn and child health services uptake, including male partner involvement: Baseline survey results from Bangladesh', Global Public Health, 18(1). doi:10.1080/17441692.2023.2246047.
12. Di Novi, C. and Thakare, H. (2022) 'Inequality of opportunity in accessing maternal and newborn healthcare services: Evidence from the Bangladesh Demographic and Health Survey', Social Indicators Research, 164(3), pp. 1505–1529. doi:10.1007/s11205-022-03004-6.

13. Gupta, N., Yadav, R. and Jaiswal, N. (2022) 'Maternal Iron Stores and its association with newborn iron dynamics and outcomes', Bangladesh Journal of Medical Science, 21(3), pp. 620–625. doi:10.3329/bjms.v21i3.59576.
14. Sheikh, N. et al. (2023) 'Equity assessment of maternal and child healthcare benefits utilization and distribution in public healthcare facilities in Bangladesh: A benefit incidence analysis', Population Health Metrics, 21(1). doi:10.1186/s12963-023-00312-y.
15. Singh, K. et al. (2022) 'A comparison of approaches to measuring maternal mortality in Bangladesh, Mozambique, and Bolivia', Population Health Metrics, 20(1). doi:10.1186/s12963-022-00281-8.
16. Zanette, M. et al. (2025) 'Effective coverage measurements and Cascade for maternal, newborn, child and adolescent health in high-income countries: Systematic Review', Journal of Global Health, 15. doi:10.7189/jogh.15.04178.