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Research Article

Exploring Maternity Care Variations: Model vs. Non-Model Hospital in Bangladesh

Mahfuja Khatun Moni[1, *] iD, **Irfan Nowrose Noor**[2] iD, **Nabila Nusrat Tripty**[3] iD,
Tanjina Sarmin[4] iD, **Afroza Tasnim Joty**[5] iD, **Sadia Haque Suchona**[6] iD,
Deb Dulal Dey Parag[7] iD, **Tarim Mahmood**[8] iD

[1]Department of Community Medicine, Prime Medical College and Hospital, Rangpur, Bangladesh

[2]Department of Epidemiology, National Institute of Preventive and Social Medicine (NIPSOM), Dhaka, Bangladesh

[3]Department of Health System Research Division & RTI Prevention and Research Unit, Center for Injury Prevention and Research (Ciprb), Dhaka, Bangladesh

[4]Department of IVD, World Health Organization (WHO), Bhola, Bangladesh

[5]Department: National Tuberculosis Control Program (NTP), Civil Surgeon Office, Sylhet, Bangladesh

[6]Department: National Tuberculosis Control Program (NTP), Civil Surgeon Office, Chuadanga, Bangladesh

[7]Department of Epidemiology, National Heart Foundation of Bangladesh, Dhaka, Bangladesh

[8]Department of Oncology, Beacon Pharmaceuticals Ltd, Dhaka, Bangladesh

Abstract

Introduction: Maternal healthcare is a critical component of public health systems worldwide, aiming to safeguard the health and well-being of mothers and infants during pregnancy, childbirth, and the postpartum period. *Aim of the study:* The aim of this study is to conduct a comparative analysis of maternity care services between a selected model district hospital and a non-model district hospital in Bangladesh. *Methods:* A cross sectional study was conducted over a period of 12 months starting from January to December 2020 at two district hospitals of Rangpur Division named Kurigram District Hospital (250 bedded Model hospital) and Lalmonirhat district hospital (100 bedded Non -Model hospital) among the mothers who had institutional delivery during the study period. *Result:* In the model district hospital majority 93.3% of mothers received an explanation of possible events that might occur during childbirth, compared to only 10.0% in the non-model district hospital. In the model district hospital, 86.7% of mothers received regular monitoring and were informed time to time, compared to only 6.7% in the non-model district hospital. In the model district hospital, 80.0% of mothers received information about their general physical condition at discharge, compared to only 13.3% in the non-model district hospital. This difference is highly significant (p-value = 0.00), with an odds ratio of 26 respectively. *Conclusion:* In conclusion, the comparative analysis of maternity care services between model and non-model district hospitals in Bangladesh offers valuable insights into the complexities of maternal healthcare delivery in LMICs.

Keywords

Maternity Care, Childbirth Experiences, Continuity of Care, Healthcare Disparities, Birth Companionship

1. Introduction

Maternal healthcare is a critical component of public health systems worldwide, aiming to safeguard the health and well-being of mothers and infants during pregnancy, childbirth, and the postpartum period. Despite significant progress in recent years, maternal mortality remains a pressing global health challenge, particularly in low- and middle-income countries (LMICs) like Bangladesh. [1] In these settings, factors such as limited access to quality healthcare services, socio-economic disparities, and cultural barriers contribute to maternal morbidity and mortality rates that are disproportionately high. [2, 3] Bangladesh, a densely populated country in South Asia, has made commendable efforts to improve maternal health outcomes over the past few decades. [4, 5] Despite facing numerous challenges, including poverty, inadequate healthcare infrastructure, and a high prevalence of maternal malnutrition, Bangladesh has seen a substantial reduction in maternal mortality rates. [6] According to the World Health Organization (WHO), Bangladesh achieved a 66% decline in maternal mortality between 1990 and 2015, surpassing the global average progress in maternal health. [7] One significant initiative undertaken by the Government of Bangladesh to address maternal health challenges is the establishment of model district hospitals. These hospitals serve as centers of excellence for maternal and neonatal care, equipped with skilled healthcare professionals, essential medical supplies, and infrastructure to provide comprehensive services. [8, 9] The model district hospitals are strategically located to serve as referral centers for surrounding areas, aiming to improve access to quality maternal healthcare services, particularly in rural and underserved communities. [10] However, non- clinical intrapartum practices, such a provision of emotional support through labour companionship, effective communication and respectful care, which are not expensive to implement, are not considered as priorities in many settings. Similarly, birthing options that respect women's values and health choice during the first and second stage of labour are not consistently given. These non- clinical aspects of labour and childbirth care are necessary components of the experience of care that should complement any important clinical interventions to optimize the quality of care given to the women and her family. [11] A number of survey reports on women's experiences of maltreatment in reproductive and maternal health services, including delivery are published in India. Indian women report being left unsupported, shouted at, and slapped during facility providers, women report that they were not provided information about what treatment they were getting and why they were getting it. At the facility level, delivery environments may be chaotic and not safe in India. [12] Disrespectful maternity services continue to be an essential challenge in developing and developed countries. Disrespect and abuse are major barriers to women seeking care in medical facilities, especially in under privileged

countries and are therefore an obstacle to the reduction of maternal mortality and morbidity. [13] Mistreatment is a broad term that encompasses women's experience with disrespect, physical and verbal abuse, neglect, as well as deficiencies in the facility environment and broader health system. Mistreatment directly and indirectly affects health outcomes, patient satisfaction, and the likelihood of delivering in a facility currently or in the future. [12] World Health Organization (WHO) released a consensus statement on preventing disrespect and abuse during childbirth, stressing the importance of women's collaboration in improving quality of care and eliminating disrespectful practices. [14] The statement was later expanded into the main recommendations, Respectful Maternity Care (RMC) approach which are based upon human rights and are expected to lead to women's better labour and birth experiences, and provision of equity in the health care system. [13]

2. Objectives

2.1. General Objective

To assess the childbirth experience of mothers attending selected secondary Hospitals.

2.2. Specific Objectives

1. To assess respectful maternity care related to childbirth experience of mothers attending selected secondary hospitals.
2. To assess continuity of care during labour and childbirth regarding childbirth experience of mothers attending selected secondary hospitals.

3. Methodology & Materials

A cross sectional study was conducted over a period of 12 months starting from January to December 2020 at two district hospitals of Rangpur Division named Kurigram District Hospital (250 bedded Model hospital) and Lalmonirhat district hospital (100 bedded Non -Model hospital) among the mothers who had institutional delivery during the study period. Here, Kurigram District Hospital is a Model hospital as quality of care program of UNICEF (EMEN) was running there. Both the facilities were selected purposively.

3.1. Data Collection and Measures

After taking informed written consent, a semi structured questionnaire was used to collect data through face to face interview from total 60 postpartum mothers just before leav-

ing from those facilities. Mentally and physically critical mothers and those who delivered dead baby had been excluded from this study. Purposive sampling technique was applied for the selection of the respondents. The questions were adapted from published literature and also emphasized on EMEN checklist. The questionnaire contained socio-demographic characteristics, Intrapartum factors, Respectful maternity care, Effective communication, Companionship and continuity of care related questions.

3.2. Ethical Consideration

The Institutional Review Board of NIPSOM, Mohakhali, Dhaka was approved the protocol before to the start of this study. Prior to collecting data, approval was obtained from the relevant authority of two district hospitals. Data was collected maintaining the proper privacy of the participants. They were assured and informed that all their information will be kept confidential and only be used for the research purpose and had full rights to refuse in this study at any time.

3.3. Statistical Analysis

To assess the childbirth experience of mother's data had been collected and checked for consistency, relevancy and quality control. Then we compiled, coded, recoded, cleaned, categorized and edited the data according to objectives and variables. IBM software Statistical Package for Social Science (SPSS) window version 26 was used statistical analysis. Frequency and percentage were presented for categorical variables as well as mean and SD was presented for continuous variables using tables and figures. Association was measured based on bivariate analysis using chi-square with 95% CI (confidence interval), level of significance was set as 5% (0.05) and P value less than 0.05 was considered as significant for all.

4. Result

Table 1. Socio-demographic Characteristics of Mothers (N = 60).

Variables		Measure		P value
		Model District Hospital (N = 30)	Non-model District Hospital (N = 30)	
Age	15-20 years old	14 (46.7%)	12 (40.0%)	0.60
	More than 20 years	16 (53.3%)	18 (60.0%)	
Religion	Muslim	29 (96.7%)	30 (100.0%)	0.32
	Hindu	1 (3.3%)	0 (0.0%)	
Education of mother	Up to Primary	10 (33.3%)	14 (46.7%)	0.29
	Above Primary	20 (66.7%)	16 (53.3%)	
Occupation of mother	Housewife	22 (73.3%)	26 (86.7%)	1.97
	Other than housewife	8 (26.7%)	4 (13.3%)	
Type of family	Nuclear family	5 (16.7%)	5 (16.7%)	1.00
	Joint family	25 (83.3%)	25 (83.3%)	
Number of children	1-2 children	23 (76.7%)	25 (83.3%)	0.51
	More than 2	7 (23.3%)	5 (16.7%)	
Monthly Family Income	1000-10,000 taka	12 (40.0%)	15 (50.0%)	0.43
	More than 10,000 taka	18 (60.0%)	15 (50.0%)	

Table 1 analyzes the socio-demographic characteristics of mothers across both the model district hospital and the non-model district hospital in Bangladesh. In the model district hospital: 46.7% of mothers are aged 15-20 years (14 out of 30) and 53.3% of mothers are aged more than 20 years (16 out of 30). In the non-model district hospital: 40.0% of mothers are aged 15-20 years (12 out of 30) and 60.0% of mothers are aged more than 20 years (18 out of 30) respectively. There's no significant difference in the age distribution between mothers in the model and non-model district hospi-

tals (p = 0.60). In the model district hospital: 96.7% of mothers are Muslim (29 out of 30) and 3.3% of mothers are Hindu (1 out of 30). In the non-model district hospital: 100.0% of mothers are Muslim (30 out of 30) and 0.0% of mothers are Hindu (0 out of 30), p-value = 0.32. There's no significant difference in the education level of mothers between the two hospitals (p = 0.29). The proportion of housewives is higher in both hospitals, but there's no significant difference between

the groups (p = 0.97). Most mothers in both hospitals belong to joint families, with no significant difference between the groups (p = 1.00). These analyses provide a detailed comparison of the socio-demographic characteristics between mothers in the model and non-model district hospitals in Bangladesh, highlighting any differences and similarities between the two groups.

Table 2. Childbirth Experience of Mothers (N = 60).

Variables		Measure		P value	Odds Ratio
		Model District Hospital (N = 30)	Non-model District Hospital (N = 30)		
Experience of Physical abuse during childbirth	Yes	6 (20.0%)	13 (43.3%)	0.05*	3.05
	No	24 (80.0%)	17 (56.7%)		
Take consent for abdominal palpation during childbirth	Yes	28 (93.3%)	2 (6.7%)	0.00*	196
	No	2 (6.7%)	28 (93.3%)		
Take consent for vaginal examination during childbirth	Yes	28 (93.3%)	2 (6.7%)	0.00*	196
	No	2 (6.7%)	28 (93.3%)		
Take consent for episiotomy during childbirth	Yes	3 (37.5%)	0 (0.0%)	0.02*	0
	No	5 (62.5%)	13 (100.0%)		
Explained the possible events that might be occur at the time of childbirth.	Yes	28 (93.3%)	3 (10.0%)	0.00*	126
	No	2 (6.7%)	27 (90.0%)		
Regular monitoring and informed time to time	Yes	26 (86.7%)	2 (6.7%)	0.00*	91
	No	4 (13.3%)	28 (93.3%)		

Table 2 analyzes the childbirth experience of mothers in both the model district hospital and the non-model district hospital in Bangladesh. In the model district hospital, 20.0% of mothers experienced physical abuse during childbirth, while in the non-model district hospital, this percentage is higher at 43.3%. This difference is statistically significant (p-value = 0.05), with an odds ratio of 3.05, indicating that mothers in the non-model district hospital are 3.05 times more likely to experience physical abuse during childbirth compared to those in the model district hospital. In the model district hospital, 93.3% of mothers had consent taken for abdominal palpation during childbirth, compared to only 6.7% in the non-model district hospital. This difference is highly significant (p-value = 0.00), with an odds ratio of 196, indicating a much higher likelihood of consent being taken in the model district hospital. Similar to abdominal palpation, in the model district hospital, 93.3% of mothers had consent taken for vaginal examination during childbirth, compared to only 6.7% in the non-model district hospital. This difference is

highly significant (p-value = 0.00), with an odds ratio of 196. In the model district hospital, 37.5% of mothers had consent taken for episiotomy during childbirth, while in the non-model district hospital, no mothers had consent taken. This difference is statistically significant (p-value = 0.02), with an odds ratio of 0, indicating a lower likelihood of consent being taken for episiotomy in the non-model district hospital. In the model district hospital, 93.3% of mothers received an explanation of possible events that might occur during childbirth, compared to only 10.0% in the non-model district hospital. This difference is highly significant (p-value = 0.00), with an odds ratio of 126. In the model district hospital, 86.7% of mothers received regular monitoring and were informed time to time, compared to only 6.7% in the non-model district hospital. This difference is highly significant (p-value = 0.00), with an odds ratio of 91. Overall, the analysis indicates significant differences in the childbirth experiences between mothers in the model and non-model district hospitals, with mothers in the model district hospital

generally receiving better care and attention during childbirth

compared to those in the non-model district hospital.

Table 3. Continuity of Care of the Mothers (N = 60).

Variables	Measure			P value	Odds Ratio
		Model District Hospital (N = 30)	Non-model District Hospital (N = 30)		
Information given to mothers about her current general physical condition at the time of discharge	Yes	24 (80.0%)	4 (13.3%)	0.00*	26
	No	6 (20.0%)	26 (86.7%)		
Information given to mothers about breastfeeding of her baby at the time of discharge	Yes	28 (93.3%)	12 (40.0%)	0.00*	21
	No	2 (6.7%)	18 (60.0%)		
Counsel mothers about exclusive breastfeeding of her baby at the time of discharge	Yes	28 (93.3%)	11 (36.7%)	0.00*	24
	No	2 (6.7%)	19 (63.3%)		
Counsel mothers about danger signs of mother at the time of discharge	Yes	22 (73.3%)	2 (6.7%)	0.00*	38
	No	8 (26.7%)	28 (93.3%)		
Counsel mothers about danger signs of baby at the time of discharge	Yes	22 (73.3%)	3 (10.0%)	0.00*	24
	No	8 (26.7%)	27 (90.0%)		
Counsel mothers about healthy timing and spacing at the time of discharge	Yes	19 (63.3%)	2 (6.7%)	0.00*	24
	No	11 (36.7%)	28 (93.3%)		
Counsel mothers about family planning methods at the time of discharge	Yes	25 (83.3%)	5 (16.7%)	0.00*	25
	No	5 (16.7%)	25 (83.3%)		

Table 3 analyzes the continuity of care provided to mothers in both the model district hospital and the non-model district hospital in Bangladesh. In the model district hospital, 80.0% of mothers received information about their general physical condition at discharge, compared to only 13.3% in the non-model district hospital. This difference is highly significant (p-value = 0.00), with an odds ratio of 26, indicating a much higher likelihood of receiving this information in the model district hospital. In the model district hospital, 93.3% of mothers received information about breastfeeding at discharge, compared to 40.0% in the non-model district hospital. This difference is highly significant (p-value = 0.00), with an odds ratio of 21. In the model district hospital, 93.3% of mothers received counseling about exclusive breastfeeding at discharge, compared to 36.7% in the non-model district hospital. This difference is highly significant (p-value = 0.00), with an odds ratio of 24. In the model district hospital, 73.3% of mothers received counseling about danger signs for the mother at discharge, compared to 6.7% in the non-model district hospital. This difference is highly significant (p-value = 0.00), with an odds ratio of 38. In the model district hospital, 73.3% of mothers received counseling about danger signs for the baby at discharge, compared to 10.0% in the non-model district hospital. This difference is highly significant (p-value

= 0.00), with an odds ratio of 24. In the model district hospital, 63.3% of mothers received counseling about healthy timing and spacing at discharge, compared to 6.7% in the non-model district hospital. This difference is highly significant (p-value = 0.00), with an odds ratio of 24. In the model district hospital, 83.3% of mothers received counseling about family planning methods at discharge, compared to 16.7% in the non-model district hospital. This difference is highly significant (p-value = 0.00), with an odds ratio of 25. Overall, the analysis suggests significant differences in the continuity of care provided to mothers between the model and non-model district hospitals, with mothers in the model district hospital receiving more comprehensive and effective counseling and information at the time of discharge.

5. Discussion

The findings of this study provide valuable insights into the comparative analysis of maternity care services between model and non-model district hospitals in Bangladesh. The study revealed significant disparities in maternity care services between model and non-model district hospitals across various dimensions, including socio-demographic character-

istics, childbirth experiences, and continuity of care. These findings resonate with previous research highlighting the importance of healthcare infrastructure, resource allocation, and service delivery models in shaping maternal health outcomes.

The socio-demographic characteristics of mothers accessing maternity care services play a pivotal role in determining their healthcare-seeking behavior, access to services, and health outcomes. The study identified differences in socio-demographic profiles between mothers attending model and non-model district hospitals, with potential implications for targeted interventions and resource allocation. Childbirth experiences are multifaceted, encompassing a range of factors such as consent-taking practices, provision of information, and prevalence of physical abuse during childbirth. The study's findings underscored significant differences in childbirth experiences between model and non-model district hospitals, reflecting variations in healthcare practices, provider-patient communication, and adherence to maternal rights and dignity. Continuity of care is essential for ensuring positive maternal and neonatal health outcomes, encompassing information dissemination, counseling, and follow-up support during the postpartum period. The study revealed disparities in the continuity of care provided to mothers at discharge from model and non-model district hospitals, underscoring the importance of comprehensive discharge planning and postnatal support services.

For instance, a study conducted in neighboring India compared maternity care services between government and private healthcare facilities, revealing disparities in service quality, provider-patient communication, and adherence to clinical protocols. [15] Similarly, research from sub-Saharan Africa has underscored the importance of community-based interventions, task-shifting strategies, and multi-sectoral collaborations in improving maternal health outcomes in resource-constrained settings. [16] Resource allocation plays a pivotal role in shaping maternal health outcomes, with variations in staffing, infrastructure, and medical supplies impacting the quality of care provided. The study's findings suggest that model district hospitals, equipped with skilled healthcare professionals and essential medical resources, offer superior maternity care services compared to non-model district hospitals. This is consistent with research demonstrating the association between healthcare workforce density, facility infrastructure, and maternal health outcomes. [17] Provider-patient communication and patient-centered care are critical components of maternity care services, influencing maternal satisfaction, adherence to care plans, and health outcomes. The study revealed disparities in childbirth experiences between model and non-model district hospitals, indicating variations in consent-taking practices, provision of information, and prevalence of physical abuse during childbirth. This aligns with research emphasizing the importance of respectful maternity care practices, provider-patient communication, and informed decision-making in enhancing

maternal health outcomes. [18] Continuity of care and postnatal support are essential for ensuring positive maternal and neonatal health outcomes, encompassing information dissemination, counseling, and follow-up services during the postpartum period. The study's findings suggest disparities in the continuity of care provided to mothers at discharge from model and non-model district hospitals, with potential implications for postnatal health outcomes. This is consistent with research highlighting the importance of comprehensive discharge planning, postnatal support services, and community-based interventions in promoting maternal and neonatal health. [19]

In our study majority 93.3% of mothers received information about breastfeeding at discharge in the model district hospital, compared to 40.0% in the non-model district hospital. This difference is highly significant (p-value = 0.00), with an odds ratio of 21. A study was conducted at a tertiary hospital in Melbourne, Australia found that advice was given by the health care providers on breastfeeding to their baby, about any problems with the baby's health and progress, about patients own health from recovery after birth the score of satisfaction were 44.3%, 38.4% and 41.8%. The respondents were strongly agreed on continuity of care by a primary midwife that increase women's satisfaction regarding childbirth experience. [20] This current study explored that age of the respondent was not associated with childbirth experience (P = >0.05). Where in another mixed method study also reported that age was not associated with disrespectful experience in childbirth. [12] But, the current study explored that there was a statistically significant relationship between the differences of two district hospitals. Respondents from existing district hospital experienced physical abuse more than model district hospital and which was statistically significant (P = <0.05). In a study in India a mixed method study where the researchers collected data during postpartum and community follow-up interviews, the result found that there was a statistically significant relationship between the different interview (physical abuse, non-consented care for P=0.001*, P=0.001* respectively). [12]

In the current study we found that the domain effective communication of childbirth experience, the difference between two hospitals reported that the respondents of existing district hospital were not regular monitored and informed of delivery process (P = <0.05) than model district hospital. And the domain continuity of care of childbirth experience there was a statistically significant relationship between the differences in case of providing necessary information and counseling before discharge between two hospitals and we explore that the respondents from existing district hospital were not counseled about current general physical condition of mothers, about explanations of breastfeeding, about exclusive breastfeeding, about danger signs of respondents, about danger signs of baby, about birth spacing and family planning methods (all P value were < 0.05) than model district hospital.

6. Limitations of the Study

The study was conducted with a small sample size. So, the results may not represent the whole community. Despite the valuable insights generated by this study, several limitations warrant consideration. The study's cross-sectional design limits causal inference and precludes the assessment of temporal trends in maternity care services. Additionally, the study's focus on a specific geographic area may limit the generalizability of findings to other regions within Bangladesh or LMICs.

7. Recommendations

Future research endeavors should adopt longitudinal study designs to explore temporal trends and causality in maternity care services. Moreover, multi-center studies involving diverse geographic regions and healthcare settings can provide a more comprehensive understanding of the contextual factors influencing maternal health outcomes.

8. Conclusion

In conclusion, the comparative analysis of maternity care services between model and non-model district hospitals in Bangladesh offers valuable insights into the complexities of maternal healthcare delivery in LMICs. By identifying disparities in socio-demographic characteristics, childbirth experiences, and continuity of care, the study underscores the importance of equitable access to quality maternity care services for improving maternal health outcomes. Building on these findings, future research and policy initiatives should prioritize investments in healthcare infrastructure, provider training, and community-based interventions to ensure universal access to quality maternal healthcare services and promote maternal health equity.

Abbreviations

MC	Maternity Care
ANC	Antenatal Care
PNC	Postnatal Care
MH	Maternal Health
CS	Cesarean Section
PNC	Prenatal Care

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Author Contributions

Mahfuja Khatun Moni: Conceptualization, Data curation, Formal Analysis, Funding acquisition, Investigation, Methodology, Project administration, Resources, Software, Supervision, Validation, Visualization, Writing – original draft, Writing – review & editing

Irfan Nowrose Noor: Conceptualization, Data curation, Formal Analysis, Funding acquisition, Investigation, Methodology, Project administration, Resources, Software, Supervision, Validation, Visualization, Writing – original draft, Writing – review & editing

Nabila Nusrat Tripty: Conceptualization, Data curation, Formal Analysis, Funding acquisition, Investigation, Methodology, Project administration, Resources, Software, Supervision, Validation, Visualization, Writing – original draft, Writing – review & editing

Tanjina Sarmin: Conceptualization, Data curation, Formal Analysis, Funding acquisition, Investigation, Methodology, Project administration, Resources, Software, Supervision, Validation, Visualization, Writing – original draft, Writing – review & editing

Afroza Tasnim Joty: Conceptualization, Data curation, Formal Analysis, Funding acquisition, Investigation, Methodology, Project administration, Resources, Software, Supervision, Validation, Visualization, Writing – original draft, Writing – review & editing

Sadia Haque Suchona: Conceptualization, Data curation, Formal Analysis, Funding acquisition, Investigation, Methodology, Project administration, Resources, Software, Supervision, Validation, Visualization, Writing – original draft, Writing – review & editing

Deb Dulal Dey Parag: Conceptualization, Data curation, Formal Analysis, Funding acquisition, Investigation, Methodology, Project administration, Resources, Software, Supervision, Validation, Visualization, Writing – original draft, Writing – review & editing

Tarim Mahmood: Conceptualization, Data curation, Formal Analysis, Funding acquisition, Investigation, Methodology, Project administration, Resources, Software, Supervision, Validation, Visualization, Writing – original draft, Writing – review & editing

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Ethical Approval

The study was approved by the Institutional Review Board of NIPSOM, Mohakhali, Dhaka, Bangladesh.

Conflicts of Interest

The authors declare no conflicts of interest.

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