Original Article

WOMEN EMPOWERMENT AND SAFE MOTHERHOOD PRACTICES AMONG RURAL WOMEN

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ABSTRACT

Background: Women's empowerment is increasingly recognized as a determinant of maternal healthcare utilization, yet evidence from rural Bangladesh remains limited. This study examined the association between women's empowerment and safe motherhood practices among rural mothers.

Methods: A descriptive cross-sectional survey was conducted with 400 rural mothers in five villages of Kolakopa union, Nawabganj upazila. Data were collected via semi-structured questionnaires through face-to-face interviews using purposive sampling technique and analyzed using IBM SPSS 26 version with results presented through frequencies, percentages, charts, and tests.

Results: The women in the study had a mean age of 28.61 years (±5.763 SD). Most respondents were housewives (98.3%) with secondary-level education (42.5%) and small family size (82.5%). Nearly two-thirds (63.5%) of the women had low empowerment, while only 12.8% were highly empowered. Key safe motherhood indicators showed that less than half (43.5%) completed four or more ANC visits, although over two-thirds delivered in (74.3%) health facilities with skilled birth attendants (74.5%) and received postnatal care within 48 hours (70.3%). Women's empowerment was significantly associated with the use of antenatal care, institutional delivery, skilled birth attendance, and timely postnatal care (all $p < 0.001$). Sociodemographic factors—particularly education, household income, and age at marriage—were also strongly associated with both empowerment and maternal healthcare use. ($p < 0.001$)

Conclusion: Findings of the study shows that Higher women's empowerment is linked to greater use of safe motherhood services among rural women. Improving women's education, economic participation, and decision-making can help reduce preventable maternal deaths.

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INTRODUCTION

Maternal and neonatal mortality remain major challenges in LMICs despite global efforts. Now, the burden of maternal mortality is the highest in South Asia and Sub-Saharan Africa. In these regions, many women still don't receive adequate care during pregnancy, childbirth, or the postnatal period [1,2]. Several factors contribute to this problem: a shortage of skilled birth attendants, limited access to institutional deliveries, widespread poverty and illiteracy, persistent gender inequality, and overall weak health systems [3, 4]. To address this global

challenge, initiatives have been launched over the years. Starting with the Safe Motherhood Conference in 1987, followed by the Millennium Development Goals, and more recently the Sustainable Development Goals—all of these highlight maternal health as a major public health priority [3].

Proven interventions: ANC, skilled delivery, PNC—reduce morbidity/mortality and promote women's reproductive rights [3-5]**.** Women's empowerment is multidimensional. Factors such as Education, Economic Participation, decision making autonomy and freedom of mobility directly shape Whether the women are able to use maternal health services [6].

This study explores how women's empowerment influences the use of maternal health services and maternal health outcomes among rural women. It focuses on both external factors, such as education and access to resources, and internal factors, such as decision-making autonomy. Rural women are emphasized because they face greater barriers to maternal healthcare, making this group critical for reducing maternal mortality**.** Ultimately, this research seeks to contribute to the ongoing efforts to achieve the Sustainable Development Goal (SDG) target of reducing maternal mortality to below 70 per 100,000 live births by 2030.

METHODS

Study design, settings and period

A descriptive cross-sectional study was conducted to evaluate the association between women's empowerment and safe motherhood practices among rural women. The study was carried out over a period of one year, from July 2024 to June 2025, following a structured timeline that included protocol development, approval, ethical clearance, questionnaire preparation, data collection, analysis, and report writing. The study was conducted in five selected villages—Kashimpur, Purba Shamshabad, Pashchim Shamshabad, Panail, and Nobabganj—of Kolakopa Union under Nawabganj Upazila, Dhaka District.

Study population, sample size & sampling technique : The study population comprised married women aged 18–45 years who had children under two years of age, using a two-year recall period to minimize recall bias. A sample size of 400 respondents was determined based on the formula $n = Z^2pq/d^2$, considering relevant BDHS (2022) indicators and a 10% non-response adjustment. Respondents were selected through purposive sampling using house-to-house visits based on inclusion criteria.

Data collection: Data were collected using a pre-tested semi-structured questionnaire through face-to-face interviews conducted in Bengali after obtaining informed written consent. The questionnaire focused on sociodemographic characteristics; variables related to safe motherhood practices and different dimensions of women empowerment and developed through multiple literature reviews. In this study, safe motherhood practices denote the utilization of essential maternal health services during pregnancy, childbirth, and the postpartum period, including antenatal, delivery, and postnatal care, to reduce maternal and neonatal risks [3].Women's empowerment is measured using a Women Empowerment Index (WEI) constructed from three domestic dimensions—economic decision-making power, household decision-making authority, and freedom of physical movement—following the framework of Mason and Smith (2003). For each dimension, indicators are standardized on a scale of 0 to 1 using the Human Development Index formula: (Actual score − Minimum score) / (Maximum score − Minimum score), and the overall WEI is calculated as the simple average of the three-dimension indices [7-8] (UNDP, 2005). Consistent with UNDP (HDI, 2005), the WEI is categorized into low (0.00–0.49), medium (0.50–0.79), and high (0.80–1.00) levels of empowerment [8]

Data analysis: After collection data were checked, coded, cleaned, and analyzed using SPSS version 26.Descriptive statistics (frequency, percentage, mean, and standard deviation) were used to summarize socio-demographic characteristics, empowerment indicators, and maternal healthcare practices. Inferential statistics (chi square tests, Mann Whitney Kruskal Wali's) were performed to assess associations between empowerment and safe motherhood indicators.

Ethical considerations: Quality control was ensured at every stage, including protocol development, pretesting, translation, and data verification. Ethical approval was obtained from the Institutional Review Board (IRB) of NIPSOM, and all participants were assured of voluntary participation, confidentiality, and the right to withdraw at any stage without harm.

RESULTS

Table 1 shows that A total of 400 married rural women participated in the study. Most respondents were aged 18–28 years, with a mean age of 28.6 years. Nearly half had secondary-level education,

while only 5.5% had no formal education. Similar patterns were observed for husbands' education. Almost all women (98%) were housewives, and most families (43.3%) had monthly incomes between 20,001–30,000 BDT. A majority (57.5%) lived in nuclear families, and 82.5% had 2 or less children. Early marriage was highly prevalent (78.5%married at ≤18 years).

Table 2.1 shows that Antenatal care uptake was moderately high: 43.5% received ≥4 ANC visits, and 41.8% initiated ANC in the first trimester. TT vaccination coverage was 84.5%, but only 11.5% were aware of pregnancy danger signs. **Table 2.2** demonstrates that Institutional delivery occurred among 74.3% of respondents, with 74.8% attended by skilled birth attendants. **Table 2.3** shows that Postnatal care within 48 hours was received by 70.3%, although only 10.5% received PNC within 42 days. Newborn care practices such as colostrum feeding (98.5%), skin-to-skin contact (98.3%), and complete infant vaccination (94.5%) were high.

Table 3 shows that Women's empowerment was generally low, with 63.5% classified as low empowerment (WEI mean = 0.44). Economic decision-making was largely dominated by husbands, while women had greater involvement in household decisions. Mobility remained highly restricted.

Table 4 shows that Bivariate analysis shows that women's education, husbands' education, family income, age at marriage, and number of children were significantly associated with ANC use, institutional delivery, skilled attendance, and PNC ($p < 0.001$). Occupation and age showed no significant associations. Similar determinants—education, income, expenditure, family size, occupation, age, and age at marriage—were significantly related to empowerment ($p < 0.001$). (Table **5)**

Table 6 shows that Women's empowerment demonstrated a strong positive relationship with safe motherhood practices. Higher empowerment significantly increased the likelihood of adequate ANC, facility delivery, skilled attendance, and timely postnatal care ($p < 0.001$).

Table 1: Distribution of the respondents according to their socio-demographic characteristics:

Characteristics	Frequency(f)	Percentage (%)
Age group (In years)		
18-24	112	28.0
25-33	191	47.8
34-45	97	24.3
Mean=28.61, St. Deviation ±5.763		
Educational level of the respondents		
No formal education	22	5.5
Primary (1-5)	82	20.5
Secondary (6-10)	170	42.5
Higher secondary	76	19.0
Graduation	32	8.0
Masters	18	4.5
Educational level of the respondents' husbands		
No formal education	35	8.8
Primary (1-5)	81	20.3
Secondary (6-10)	144	36.0
Higher secondary	60	15.0
Graduation	48	12.0
Masters	32	8.0
Occupation of the respondents		
Housewife	393	98
Teacher	4	1.0
Service holder	2	0.5
Doctor/nurse	1	0.3
Occupation of the respondents' husbands		
Day labourer	55	13.8
Farmer	26	6.5

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Rickshaw/ vanpooler/Auto driver	17	4.3
Service holder	96	24
Businessman	102	25.5
Teacher	11	2.8
Others (extricate worker)	93	23.3
Monthly family income (BDT)		
10,000-20,000	145	36.3
20,001-30,000	173	43.3
30,001-50,000	82	20.5
Mean=26,265, St. Deviation±8608.137		
Monthly family expenditure (BDT)		
8000-18000	128	32.0
18,001-27,750	172	43.0
27,751-47,000	100	25.0
Mean=2920.0, St. Deviation±7806.469		
Type of Family		
Nuclear	230	57.5
Joint	170	42.5
Number of family members		
≤5	269	67.3
Above 5	131	32.8
Mean=5.08, St. Deviation±1.837		
Age at marriage (In years)		
≤18	314	78.5
Above 18	86	21.5
Mean=17.07, St. Deviation±2.627		
Number of children		
≤2	330	82.5
More than 2	70	17.5
Mean=1.86, St. Deviation±.755		
Total	**400**	**100.0**

Table 2: Distribution of the respondents according to safe motherhood practices:

Table 2.1: Antenatal care practices

Attributes	Frequency (f)	Percentage (%)
Number of ANC visits		
No visit	74	18.5
1-3 visits	152	38.0
4 or more visits	174	43.5
1st antenatal visit within first 3 months		
No	233	58.3
Yes	167	41.8
Comprehensive ANC examinations		
No comprehensive examinations	87	21.8
Basic/occasional ANC examinations	148	37.0
Comprehensive ANC examinations	165	41.3
Healthy or nutritious diet during pregnancy		
Never	108	27.0
Sometimes	188	47.0
Always	104	26.0
Nutritional supplements intake		
Never	131	32.8
Sometimes	127	31.8
Regular	142	35.5

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TT vaccination		
No vaccination	51	12.8
Incomplete vaccination	11	2.8
Complete vaccination	338	84.5
Proper rest/sleep		
Never	170	42.5
Sometimes	186	46.5
Always	44	11.0
Recommended screening tests		
No tests done	86	23.8
Some tests done	117	29.3
All tests done	197	49.3
Awareness about danger signs of pregnancy		
Not aware	241	60.3
Partially aware	113	28.2
Well aware	46	11.5
Preparedness for emergency and delivery		
Not prepared	95	23.8
Well prepared	305	76.3
Total	**400**	**100.0**

Table 2.2: Intranatal care practices (n=400)

Attributes	Frequency (f)	Percentage (%)
Delivery in health facility		
No	103	25.8
Yes	297	74.3
Delivery by skilled birth attendants		
No	101	25.3
Yes	299	74.8
Vitals checking during labour		
No	98	24.5
Yes	302	75.5
Progress of labour monitoring		
Not at all monitored	84	21.0
Infrequently monitored	32	8.0
Frequently monitored	284	71.0
Hygiene of delivery place		
No	93	23.3
Yes	307	76.8
Cord cut with sterile instruments		
No	67	16.8
Yes	333	83.3
Skin-to-skin-contact		
No	7	1.8
Yes	393	98.3
Colostrum feeding within first hour after birth		
No	6	1.5
Yes	394	98.5
Emergency transport for facility delivery		
No	92	23.0
Yes	308	77.0
Total	**400**	**100.0**

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Table 2.3: Postnatal care practices (n=400)

Attributes	Frequency (f)	Percentage (%)
Observation for postpartum complications		
Not at all monitored	90	22.5
Briefly monitored	34	8.5
Closely monitored	276	69.0
Postnatal check-up within 48 hours after delivery		
No postnatal check -up	99	24.8
Brief postnatal check-up	16	4.0
Detailed postnatal check-up	285	70.3
Postnatal check-up within 42 days after delivery		
Not at all	288	72.0
At least 1	70	17.5
2 or more	42	10.5
Maintenance of postpartum hygiene		
Not at all maintained	52	13.0
Fairly maintained	241	60.3
Very properly maintained	107	26.8
Nutritious diet/rest during postpartum period		
Never	191	47.8
Sometimes	181	45.3
Always	28	7.0
Exclusive breastfeeding for first 6 months		
Never	55	13.8
Sometimes (mixed)	57	14.2
Always	288	72.0
Postnatal family planning method		
No	102	25.5
Yes	298	74.5
Baby follow-up		
Never	187	46.8
Sometimes	116	29.0
Always	97	24.3
Counsel on baby danger signs		
No counselling	234	58.5
Partial counselling	121	30.3
Proper counselling	45	11.3
Baby vaccinations		
No vaccination	18	4.5
Incomplete vaccination	4	1.0
Complete vaccination	378	94.5
Total	**400**	**100.0**

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Table 3: Distribution of the respondents according to Women Empowerment Index and categorization (n=400):

Dimensions of Women Empowerment	Category	
	Involving women f (%)	**Not involving women f (%)**
Economic decision making		
Decision on spending money	84(21)	316(79)
Decision on large household purchase	93(23.3)	307(76.8)
Decision on daily household purchase	243(60.8)	157(39.3)
Household decision making		
Decision on own healthcare	289(72.3)	111(27.8)
Decision on child healthcare	273(68.3)	127(31.8)
Decision on food to be cooked daily	325(81.3)	75(18.8)
Decision on family planning	174(43.5)	226(56.5)
Physical movement	Alone f (%)	With others f (%)
Movement outside village	19(4.8)	381(95.3)
Going to hospital	106(26.5)	294(73.5)
Going to shopping	49(12.3)	351(87.8)
Women Empowerment Level	Frequency (f)	Percentage (%)
Low Empowerment (0.00-0.49)	254	63.5
Medium Empowerment (0.50-0.79)	95	23.8
High empowerment (0.80-1.00)	51	12.8
Mean=0.4388, St. Deviation=0.253		
Total	400	100

Table 4: Association Between sociodemographic characteristics and safe motherhood practices

Association variables	Attributes	Chi-square test statistic/Fisher's Exact value	P value
Age	≤28 years Vs. >28 years	χ^2 =1.277	**.536**
Education	Up to secondary Vs. Above secondary	χ^2 =121.97	**<0.0001****
Husbands' Education	Up to secondary Vs. Above secondary	χ^2 =105.33	**<0.0001****
Occupation	Housewife Vs. working women	χ^2 =4.056	**.095**
Monthly family income	≤25,000 Vs. >25,000	χ^2 =107.219	**<0.0001****
Monthly family expenditure	≤25,000 Vs. >25,000	χ^2 =77.757	**<0.0001****
Number of family members	≤5 Vs. >5	χ^2 =7.415	**.025***
Age at marriage	≤18 Vs. >18	χ^2 =81.133	**<0.0001****
Number of children	≤2Vs. >2	χ^2 =24.764	**<0.0001****
Age	≤28 years **Vs.** >28 years	χ^2 =0.390	**0.424**
Education	Up to secondary Vs. Above secondary	χ^2 =49.032	**<0.0001****
Husbands' Education	Up to secondary Vs. Above secondary	χ^2 =48.504	**<0.0001****
Occupation	Housewife Vs. working women	χ^2 =0.390	**0.424**
Monthly family income	≤25,000 Vs. >25,000	χ^2 =57.254	**<0.0001****
Monthly family expenditure	≤25,000 Vs. >25,000	χ^2 =35.705	**<0.0001****
Number of family members	≤5 Vs. >5	χ^2 =0.095	**0.757**

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Age at marriage	≤18 Vs. >18	χ^2 =25.508	**<0.0001****
Number of children	≤2Vs. >2	χ^2 =17.688	**<0.0001****
Age	≤28 years **Vs.** >28 years	χ^2 =0.746	**0.388**
Education	Up to secondary Vs. Above secondary	χ^2 =47.492	**<0.0001****
Husbands' Education	Up to secondary Vs. Above secondary	χ^2 =46.794	**<0.0001****
Occupation	Housewife Vs. working women	χ^2 =0.454	**0.685**
Monthly family income	≤25,000 Vs. >25,000	χ^2 =54.962	**<0.0001****
Monthly family expenditure	≤25,000 Vs. >25,000	χ^2 =34.273	**<0.0001****
Number of family members	≤5 Vs. >5	χ^2 =0.222	**0.713**
Age at marriage	≤18 Vs. >18	χ^2 =24.629	**<0.0001****
Number of children	≤2Vs. >2	χ^2 =16.290	**<0.0001****
Age	≤28 years **Vs.** >28 years	χ^2 =2.496	**0.287**
Education	Up to secondary Vs. Above secondary	χ^2 =49.508	**<0.0001****
Husbands' Education	Up to secondary Vs. Above secondary	χ^2 =51.261	**<0.0001****
Occupation	Housewife Vs. working women	Fisher's Exact value=2.211	**0.399**
Monthly family income	≤25,000 Vs. >25,000	χ^2 =61.695	**<0.0001****
Monthly family expenditure	≤25,000 Vs. >25,000	χ^2 =39.492	**<0.0001****
Number of family members	≤5 Vs. >5	χ^2 =.974	**0.615**
Age at marriage	≤18 Vs. >18	Fisher's Exact value =81.133	**<0.0001****
Number of children	≤2Vs. >2	χ^2 =15.286	**0 .001***

*Significant at $p < 0.05$; **Significant at $p < 0.001$

Table 5: Association between socio-demographic variables and Women Empowerment:

Test Name	Variable comparison	Test Statistic	P value
Spearman Correlation	Age and WEI	Spearman's rho=0.136	**0.006***
Mann Whiteney U	Education (Up to Secondary Vs above Secondary) & WEI	U=30699.300	**<0.0001****
Mann Whiteney U	Husbands' Education (up to Secondary Vs. Above Secondary) & WEI	U=7870.500	**<0.0001****
Mann Whiteney U	Occupation (Housewife Vs. Working women)	U=61.500	**<0.0001****
Mann Whiteney U	Monthly family income (Up to25000 Vs. above 25000) & WEI	U=8802.000	**<0.0001****
Mann Whiteney U	Monthly family expenditure (Up to25000 Vs. above 25000) & WEI	U=9752.000	**<0.0001****
Mann Whiteney U	Number of family members (up to 5 Vs. Above 5) &WEI	U=11555.000	**<0.0001****
Mann Whiteney U	Age at marriage (up to 18 VS. above 18) &WEI	U=3330.500	**<0.0001****
Mann Whiteney U	Number of children (Up to 2 Vs. above 2) &WEI	U=8477.000	**<0.0001****

**Significant at $p < 0.001$

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Table 6: Association between Women Empowerment and safe motherhood practices:

Test Name	Variable comparison	Test statistic	P value
Chi-square	Category of women empowerment and number of antenatal visits	χ^2 =4142.342	**<0.0001****
Chi-square	Category of women empowerment & delivery in health facility	χ^2 =63.729	**<0.0001****
Mann-Whiteney U test	WEI & delivery by Skilled birth attendant	U=25798.00	**<0.0001****
Kruskal Wali's	WEI & PNC within 48 hours after delivery	H=2125.641	**<0.0001****
Kruskal Wali's	WEI & PNC within 42 days after delivery	H=2136.713	**<0.0001****

**Significant at $p < 0.001$

DISCUSSION

This study examined the association between women's empowerment and safe motherhood practices among rural women in Kolakopa Union, Nawabganj, revealing strong interlinkages between socio-demographic characteristics, empowerment dimensions, and maternal healthcare utilization. The majority of women were young, married early, and had modest education and income levels—factors that collectively limited healthcare access. Consistent with findings from Madhupur, Tangail [4], Nepal [9] and BDHS 2022 [10], higher educational attainment and better economic conditions were strongly associated with improved maternal healthcare utilization. Similar to Bangladesh [11] and Nepal [3], maternal education emerged as a key determinant of ANC and PNC uptake. Despite progress in fertility reduction and increased family planning, the persistence of early marriage and limited education continues to reinforce vulnerabilities, highlighting the need for policies promoting girls' education, delayed marriage, and household-level economic strengthening [1].

Maternal healthcare utilization patterns reflected both progress and persisting challenges. While 74.3% of deliveries occurred in health facilities with skilled attendants [4, 12], only 43.5% completed four or more ANC visits, and just 41.8% initiated care during the first trimester, echoing BDHS 2022. Postnatal care remained the weakest link, with only 10.5% completing two or more checkups within 42 days, consistent with BMMS 2010. These gaps were strongly influenced by educational level, income, family size, and age at marriage [5, 12-13]. Although institutional delivery and newborn care indicators such as clean cord care (83.3%) and colostrum feeding (98.5%) were encouraging [14], persistent inequities in ANC quality and postnatal follow-up mirror structural and cultural barriers also identified in studies from Nepal [3], and Pakistan [12].

Women's empowerment was found to be a significant determinant of maternal healthcare utilization. The computed empowerment index (mean = 0.44, SD ±0.253) showed that 63.5% of respondents fell in the low empowerment category, aligning with BDHS 2017–18 and SWPER findings [2]. Empowerment was significantly higher among educated, employed, and economically stable women, as well as those with smaller families and delayed marriage [5,11-12]. Highly empowered women demonstrated substantially better outcomes across all maternal health indicators—ANC attendance (χ^2 = 142.342, p = 0.000), institutional delivery (χ^2 = 63.729, p = 0.000), and timely PNC (H = 125.641, p = 0.000). These findings echo the assertions of, emphasizig empowerment's mediating role in enhancing care-seeking and maternal health outcomes [6]. However, persistent constraints in mobility and financial autonomy highlight the need for integrated empowerment strategies combining education, income generation, and gender-transformative programs to advance maternal and neonatal health in line with national targets and SDG commitments [1,7,13].

This study shows that women's empowerment plays a major role in whether rural Bangladeshi women receive essential maternal healthcare, and the pattern clearly matches findings from Nepal [3,9], Pakistan [5, 12] and Ethiopia [14]. Similar to BDHS 2022 and SWPER global studies, higher education, better income, delayed marriage, smaller family size, and greater decision-making power were strongly linked with completing ≥4 ANC visits, facility delivery with skilled care, and timely PNC [15]. Low empowerment

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levels—especially limited mobility and financial control—also reflect challenges reported across South Asia and Sub-Saharan Africa [1,13-14].

These findings point to clear policy actions. Priority interventions include expanding girls' education, providing income-generating opportunities, and promoting financial inclusion, as these consistently improve maternal health across Bangladesh and other countries [4, 6,10]. Programs that delay early marriage and support reproductive autonomy are essential for reducing high fertility pressure. Improving the quality of ANC, intrapartum monitoring, and postnatal follow-up—similar to recommendations in Ethiopia (Mini DHS 2023) and Nepal is also critical. Strengthening community outreach, counselling, and safe mobility options for rural women can further reduce social and cultural barriers. Together, these empowerment-focused strategies can help Bangladesh achieve equitable maternal healthcare and meet national and SDG targets [1,14-16].

These findings highlight critical policy implications. Improving female education and enhancing household economic capacity are essential for increasing institutional delivery and skilled birth utilization. Policies should also focus on delaying marriage age and promoting family planning to sustain these gains. However, gaps remain in addressing non-economic barriers, such as cultural norms and access disparities in rural areas. Future interventions should adopt integrated strategies that combine educational programs, economic empowerment, and culturally sensitive outreach to ensure equitable access to skilled maternal care, thereby advancing maternal and neonatal health outcomes in line with national targets and SDG commitments.

Limitations of the study: This study has several limitations. The introverted nature of many respondents made it challenging to obtain detailed interview responses. The relatively small sample size of 400 women limits the generalizability of the findings to larger populations. Women's empowerment is a multidimensional concept; however, this study examined only three dimensions due to data constraints and time limitations. Additionally, despite using a two-year recall period to reduce recall bias, some responses may still be affected by imperfect memory.

CONCLUSION

The findings show that improving women's empowerment is essential for better maternal health in rural Bangladesh. Key actions include giving girls and women more access to education, creating income-earning opportunities so they can be financially independent, supporting their right to make decisions about marriage and childbirth, and making rural health services easier to reach and afford. Focusing on these areas can help more women use maternal healthcare and reduce the risks of illness and death during pregnancy and childbirth.

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