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Operationalizing national protocol for preventing and managing PE/E in community facilities in Bangladesh

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OPERATIONALIZING NATIONAL PROTOCOL FOR PREVENTING AND MANAGING PE/E IN COMMUNITY FACILITIES IN BANGLADESH

Background

In Bangladesh, between 5,000 and 6,000 women die every year from pregnancy-related complications. There is no study that specifically measures the incidence and prevalence of pre-eclampsia and eclampsia (PE/E), but the 2010 Bangladesh Maternal Mortality Survey (BMMS 2010) suggests post-partum hemorrhage (31%), PE/E (20%), and prolonged and obstructed labor (7%) are the three main causes of maternal mortality.

The World Health Organization (WHO) recommends magnesium sulphate ($MgSO_4$) as the most effective, safe, and low-cost anticonvulsant treatment for PE/E. In Bangladesh, the drug is registered and has been in use at secondary and tertiary facilities for 30 years, but it is not available in primary facilities.

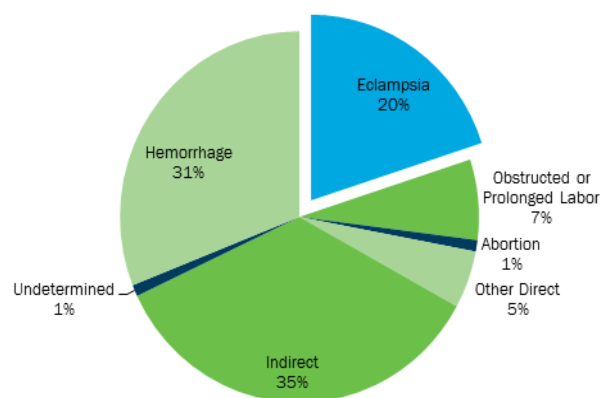
Considering the maternal deaths associated with PE/E, the Ministry of Health and Family Welfare, with technical assistance from the Obstetrical and Gynecological Society of Bangladesh, developed a national protocol allowing community providers to give an $MgSO_4$ loading dose.

At the approval of the National Technical Committee of Directorate General of Family Planning, this study operationalized and assessed the ability of community providers to detect and treat PE/E, and administer a loading dose of $MgSO_4$ before referral to higher-level facilities. This brief details those findings.

Methods

The study took place between July 2013 and July 2014 in the Sarail and Kasba upazilas of Brahmanbaria District. Fieldworkers conducted awareness-raising activities, identified high-risk pregnant women, and referred them to the Union Health & Family Welfare Centers (UH&FWCs). The intervention involved training community health providers to screen for, and detect, PE/E, and to administer an $MgSO_4$ loading dose to prevent and control convulsions/seizures. Trainings included orienting fieldworkers to educate pregnant

**Causes of Maternal Death:
Bangladesh, 2010**



- Globally, about 10% of pregnant women experience increased blood pressure, and between 2-8% of pregnant woman experience pre-eclampsia and eclampsia-related complications.
- Among pre-eclampsia patients, 10% develop eclampsia, which contributes to between 10% and 20% of maternal deaths globally each year.
- Prescribing low-dose aspirin and calcium to at-risk women can prevent pre-eclampsia and eclampsia (PE/E).
- Pre-eclampsia and eclampsia can be managed by administering anti-hypertensive drugs and magnesium sulphate ($MgSO_4$).
- $MgSO_4$ is the safest and most effective treatment for severe PE/E, and is one of 13 UN Life-Saving Commodities for Women and Children.
- PE/E and other hypertensive disorders in pregnancy increase the risk of pre-term births, which can lead to low birth weight, anemia, and stunting.

women about PE/E, identify high-risk pregnant women and refer them to community facilities, and establish linkages between community and referral facilities.

Researchers trained district and upazila program managers and service providers on their roles in managing PE/E cases, provided them with educational materials, and made sure facilities had the supplies and equipment necessary to detect and treat PE/E. After the trainings, researchers assessed:

- The capacity of providers, including family welfare visitors (FWVs), sub-assistant community medical officers (SACMOs), nurses, community skilled birth attendant (CSBAs) and community health care providers (CHCPs) to screen and detect PE/E;
- Providers' ability to administer a loading dose of $MgSO_4$, and refer patients to secondary facilities;
- Efficacy of referral mechanisms between primary and secondary facilities; and
- The overall cost of interventions and the cost of potential scale up.

Results

Knowledge on danger signs

Before the trainings and after the intervention, researchers interviewed community providers to understand their knowledge of life-threatening complications, signs, and symptoms of PE/E observed during the antenatal, postnatal, and delivery periods. The baseline knowledge on life threatening complications was already high, but it improved marginally due to the intervention.

For example, 89% of respondents during the baseline survey mentioned that eclampsia/seizure is a complication during the antenatal period, but that increased to 94% at the endline survey ($p>.10$). Similarly, 77% of respondents before the trainings mentioned severe headaches as a complication during the antenatal period. This increased to 92% at the endline survey.

Table 1 shows the increase in providers' knowledge on danger signs during pregnancy.

TABLE 1. COMMUNITY SERVICE PROVIDERS' KNOWLEDGE ON DANGER SIGNS DURING PREGNANCY (%)

	Pre-intervention (n=105)	Post-intervention (n=105)
Knowledge of danger signs*		
Seizures/con-vulsions	88.6	94.3
Severe headache and blurred vision	77.1	92.4
Vaginal bleed-ing	91.4	89.5
High fever	80.0	84.8
Others	10.5	1.0
*Multiple Responses		

Findings suggest there was a significant improvement in knowledge about PE/E at the post-intervention period compared to pre-intervention period. Knowledge of signs and symptoms of PE/E also improved after the intervention. Knowing that high blood pressure is a sign of PE improved significantly from 60% at the baseline to 91% at the post-intervention survey ($p<.05$).

Similarly, knowledge on presence of protein in the urine as a sign of severe PE in addition to high blood pressure increased from 26% at the pre-intervention survey to 57% ($p<.05$). Findings suggest there was a significant improvement in the knowledge of PE/E at the post-intervention period compared to pre-intervention period.

Knowing high blood pressure is a sign of PE increased significantly from 60% at the baseline to 91% at the post-intervention survey ($p<.05$). Similarly, knowledge on presence of protein in the urine as a sign of severe PE, in addition to high blood pressure, increased from 26% at the pre-intervention survey to 57% ($p<.05$).

See Table 2 for details on community providers' knowledge of pre-eclampsia, severe pre-eclampsia, and eclampsia.



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TABLE 2. COMMUNITY PROVIDERS' KNOWLEDGE OF SIGNS AND SYMPTOMS OF PE/SPE/E

	Pre-intervention (n=105)	Post-intervention (n=105)
Signs and symptoms*		
Signs of pre-eclampsia*		
High blood pressure	60.0	91.4
Excess protein in urine	25.7	57.1
Headache	0.0	27.6
Blurred vision	0.0	21.9
Edema	0.0	12.4
Signs of severe pre-eclampsia		
Pregnancy-induced high blood pressure	63.8	94.3
Protein in urine	28.6	84.8
Severe headache	60.0	67.6
Blurred vision/light sensitivity/seeing spots	42.9	61.0
Upper abdominal pain (usually under ribs on right side)	8.6	51.4
Edema (swelling), particularly in face and hands	57.1	46.7
Signs of eclampsia		
Pregnancy-induced high blood pressure, plus:	59.0	67.3
Seizures/convulsions	97.1	98.2
Protein in urine	24.8	54.8

*Multiple responses

Prior to the intervention, there was no documented PE/E patient in the selected intervention upazilas, but during the intervention period 33 PE/E patients sought services. District-level findings suggest the majority of PE/E patients directly seek services from district hospitals.

Explanations for this vary, but community facility providers believe the main reasons for seeking services from district hospitals were easy transportation, awareness of available specialist care, and a lack of confidence in community facilities.

Program managers said people go directly to district hospitals because of a lack of providers at community facilities and the perception that service providers are incapable of managing PE/E patients and emergency other conditions.

More than 40% of PE/E patients received treatment at the Sadar Upazila UH&FWCs, which are close to nearby referral facilities. Interviews show that these providers are more confident in their ability to treat patients because it is relatively easy to get assistance from referral facility providers when needed.

Although, SACMOs, nurses, CHCPs, and CSBAs received training and were included in the service provision, only FWVs at UH&FWCs treated patients.

The district hospital documented outcomes of referred PE/E patients. Among those who received MgSO_4 injection at a community health facility, there were no maternal deaths but one newborn death. No serious adverse effects due to loading dose of MgSO_4 were reported among the study population.

Referral linkages

At district hospitals, PE/E patients can receive all services needed, including caesarian sections, which makes district hospitals the best place to refer PE/E patients. Results indicate that effective referral linkages between community facilities and secondary facilities are possible. However, primary facility providers did not correctly use referral slips developed by the Council. Also, in some cases providers consulted referral facility providers before treating an eclamptic patient.

Cost of intervention and scaling up

This analysis assumed FWVs/SACMOs are the main service providers for administering loading dose of MgSO_4 at community facilities. The unit cost for scaling up the intervention per upazila/sub-district is US \$7,948, and the recurrent cost for continuing the program every year is US \$2,052.

If refresher trainings are planned, there is an additional cost of US \$4,046 per upazila per training. Other service providers like CSBAs, CHCPs, nurses, and FWVs would also need training to detect and refer clients to the UH&FWCs for further management.

Challenges

- People living in rural areas are not fully aware of the signs and symptoms of PE/E. Some considered danger signs to be normal occurrences during pregnancy. Sensitization and education by fieldworkers would be difficult, as most of them do not visit homes and are already overburdened with their assigned roles.
- Regular measurement and documentation of blood pressure and protein in urine during antenatal and postnatal care visits and during delivery by primary facility providers is vital but challenging due to limited resources.
- In some instances, patients and their attendants refused to receive or give a MgSO_4 injection at community facilities due to lack of confidence in community facility providers. Sometimes it was very difficult to convince the attendants about the nature of emergency management and referral needed for patients.

- The number of pregnant women seeking antenatal care, delivery assistance, and postnatal care at facilities did not increase due to new intervention, which is problematic if pregnancy-related complications are to be detected.
- Motivating service providers to write complete information about a patient warrants a frequent, strong monitoring and supervision system.

Recommendations

These study results indicate that with national protocol, training, and mentorship health providers at diverse levels of the health care system can detect PE/E, provide the loading dose of $MgSO_4$, and refer patients to higher level facilities for further management. Despite this, further improvements are needed, and are listed below.

- FWVs and SACMOs should utilize national protocols for PE/E management at community facilities, with close monitoring of cases;
- The $MgSO_4$ injection loading dose should be available in one or two vials, rather than four vials, which is currently available. This requires advocacy targeted at manufacturers;
- All essential instruments and equipment must be available and functioning at the community facilities;
- Fieldworkers should identify PE/E patients to refer to community health facilities;
- Each referral facility should have a focal person familiar with the referral system, and all service providers should recognize this person as a resource for PE/E cases;
- Trainings should include broader issues of maternal health like antenatal care, postnatal care, delivery, and newborns, in addition to PE/E. These areas should be incorporated into refresher trainings that take place six months after the intervention starts; and
- Mass promotion campaigns on PE/E and treatment services in communities would encourage pregnant women to seek services at facilities.

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Photo credit: Sajeda Amin, Population Council

Resources

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