Achieving Coverage and Compliance of Antenatal Calcium Supplementation for Prevention of Pre-eclampsia/Eclampsia–Findings from Nepal

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**Eclampsia** is the leading cause of maternal mortality in Nepal

- 21% of total maternal deaths
- 29.8% of hospital maternal deaths

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**Brief Background**

MMR is declining, though still high: 229/100,000 (MMS, 2008/9)
Calcium supplementation among low calcium intake women: WHO randomized trial


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Revised Systematic Review:

Hofmeyr GJ, Lawrie TA, Atallah ÁN, Duley L.

*Cochrane Database of Syst Reviews* 2010
Calcium and pre-eclampsia

• Epidemiological association of dietary calcium deficiency with pre-eclampsia / eclampsia

• Calcium supplementation reduces:
  • Pre-eclampsia by 64%
  • Severe morbidity by 20%
  • Preterm birth by 10% (borderline significance)

• Increases HELLP syndrome
### Daily intake of calcium per capita in developing/developed countries (FAO, 1990)

<table>
<thead>
<tr>
<th>REGION</th>
<th>CALCIUM (mg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>World</td>
<td>472</td>
</tr>
<tr>
<td>Developed countries</td>
<td>860</td>
</tr>
<tr>
<td>Developing countries</td>
<td>346</td>
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</tbody>
</table>
Health Sector Strategy for Addressing Maternal Undernutrition (2013-17)

• Study conducted in 2011
  ▪ Recommended further evaluation of interventions for improving maternal nutrition - calcium supplementation during pregnancy

• Nutrition surveillance, monitoring, evaluation and research
  ▪ Explore avenues for calcium supplementation during pregnancy.
Objectives of the Operations Research Study

Post-Intervention Cluster Household Survey
Women who had given birth in the last six months (recently delivered women) in the intervention district.

1. Assess coverage and compliance

2. Assess acceptability and feasibility of antenatal calcium supplementation program in one hill district of Nepal.
Building the System for Implementation

District Level Policy Makers:
- Introduction of a drug not yet on essential drugs list
- Storage and distribution logistics

ANC Providers day long orientation:
- Compliance counselling
- Retrain in PEE management
- Calcium distribution logistics

Female Community Health Volunteers day long orientation:
- Reinforce counselling messages
Distribution and Compliance

Distribution:
• 9246 pregnant women coming for their first ANC visit after the 3rd month gestational age or onwards

Compliance:
• Calcium to be taken every day for 150 days
• One gram daily (2 tablets containing 500 mg each of elemental calcium) taken at once
• Calcium in the morning after meal
• Iron to be taken in the evening
Calcium Related BCC Material

Brochure PW

Flip Chart for FCHV

Flex at health facility

Calcium Bag for PW
Survey Results

1,240 recently delivered women (RDW) surveyed

1,173 attended ANC (94.6%)

1,173 received counseling and calcium (100%)

965 received 300 tablets (82.3%)
161 received 200 tablets (13.7%)
47 received 100 tablets (4.0%)

67 No ANC (5.4%)

Calcium coverage = 94.6% of RDW surveyed

Missed 5%: who never came for ANC
SOLUTION = limited distribution through FCHVs

Received full course = 82.3% (300 tablets)

Missed 17.7%: came to ANC too late
SOLUTION = Encourage early ANC
Calcium Compliance Results

**Consumed full course = 67.3%**
(150 days or 300 tablets)

**Significant predictors of completing a full course:**
- gestational age at first ANC visit
- number of ANC visits during their most recent pregnancy (p<0.01).

- **99.2%** of women reported compliance with respect to dose, timing and frequency.
- **99.8%** reported taking calcium and iron at separate times of the day.
Calcium Supplementation Feasibility

• 100% of clients making ANC visit were provided calcium tablets
• Screening services were regularly provided at ANC visit
• Women reported no problem with storing calcium
• 97.5% would recommend taking calcium to other pregnant women
• FCHVs and health workers played their roles well.
Implementation Challenges

• Cost of commodity per woman: $2.87-$4.86 (approx. 2-4 times that of iron)
• Continuing concerns of GON regarding the sustainability to cover cost for nation-wide scale up
• Require large storage space: calcium is bulky
• Size of the tablet
• Ongoing debate regarding dosage as WHO most recent recommendation is for 1.5-2 gm.
THANK YOU!