Impact of Integrated Caregiving Intervention on Maternal Caregiving Practices and Mental Health in Rural Bangladesh, a Cluster RCT

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BACKGROUND

• In low- and middle-income countries (LMICs), children experience a disproportionately high burden of developmental delay associated with simultaneous risk factors for delayed development.
• These risk factors include: inadequate early learning opportunities, a lack of responsive caregiving, poor maternal mental health, poor sanitation, nutritional deficiencies, and environmental hazards.1
• Caregiving interventions have been shown to improve child development outcomes2, however responsive stimulation messages may be lost when integrated with many other health messages.

STUDY POPULATION & DESIGN

Location and duration: 9-month, cluster-randomized controlled trial in Kishorganj, Bangladesh.
Study population: Pregnant women and mothers of children up to 14 months of age.

MEASUREMENT

Stimulating caregiving practices: Six questions from the Early Child Development Index of UNICEF’s Multiple Indicator Cluster Survey.
- In the past 3 days, did you or any household member over 15 years of age engage in any of the following activities with your child:
  1. Read books or looked at picture books
  2. Told stories
  3. Sang songs, including lullabies
  4. Took your child outside the home, compound, yard, or enclosure?
  5. Played with your child?
  6. Named, counted, or drew things to or with your child?
- A sum score (0-6) was made from these variables

Maternal depressive symptoms: 20-question Center for Epidemiologic Studies Depression Scale (CES-D) which asks about experiences with depressive symptoms in the last 7 days.
- A CES-D style score was created from the 20 questions

ANALYSIS

• Descriptive analyses and linear regression analysis were used to compare the outcomes in the intervention group to those in the control group.
• All analyses were conducted intention to treat.
• Standard errors from regression analyses were clustered at the village level.

INTERVENTION DESIGN

Intervention delivery: either 1) group sessions (5-6 mother-child dyads) or 2) alternating group sessions and home visits
Session frequency: Every two weeks, a total of 18 sessions
Session content: Each session included responsive stimulation, and up to two other intervention components

RESULTS

Figure 1. Trial profile and analytic sample
273 clusters assessed for eligibility
31 clusters randomized
Control arm: 15 clusters
Baseline: 301 participants
Endline: 280 participants
Intervention arm: 16 clusters
Baseline: 319 participants
Endline: 294 participants

Table 1. Characteristics of the analytic sample

<table>
<thead>
<tr>
<th></th>
<th>Control</th>
<th>Intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maternal &amp; child characteristics</td>
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<tr>
<td>Maternal age (yrs)</td>
<td>25 ± 5.6</td>
<td>25 ± 6.1</td>
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<tr>
<td>Mother completed primary education</td>
<td>55.71 (156)</td>
<td>59.06 (176)</td>
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<tr>
<td>Child age (months)</td>
<td>16.40 ± 5.43</td>
<td>16.67 ± 5.48</td>
</tr>
<tr>
<td>Female child</td>
<td>44.64 (125)</td>
<td>45.58 (134)</td>
</tr>
<tr>
<td>Household characteristics</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Household size</td>
<td>5.15 ± 2.08</td>
<td>5.23 ± 2.28</td>
</tr>
<tr>
<td>Has cement floor</td>
<td>21.43 (60)</td>
<td>16.33 (48)</td>
</tr>
<tr>
<td>Has brick walls</td>
<td>23.93 (67)</td>
<td>17.35 (51)</td>
</tr>
<tr>
<td>Has electricity</td>
<td>81.79 (229)</td>
<td>90.14 (265)</td>
</tr>
<tr>
<td>Mean number of session attended by those in the intervention group</td>
<td>14.80 (SD 3.78)</td>
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<tr>
<td>70% of the intervention group attended &gt; 14 sessions</td>
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<tr>
<td>5% attended 5 or less sessions</td>
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<td></td>
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<tr>
<td>Average group size: 31% of groups had 4 or more sessions</td>
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Figure 2. Number of stimulation activities reported by the mother by intervention group

Figure 3. Stimulation activities in the last three days, performed in intervention and control groups at endline

Table 2. Intervention impacts on maternal stimulating caregiving practices and depressive symptoms

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>mean (SD)</th>
<th>Adjusted mean difference (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stimulation activities</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control</td>
<td>280</td>
<td>3.22 (1.51)</td>
<td></td>
</tr>
<tr>
<td>Intervention</td>
<td>294</td>
<td>4.49 (1.44)</td>
<td>1.28 (1.00, 1.57)</td>
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<tr>
<td>Depressive symptoms (CES-D)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control</td>
<td>280</td>
<td>15.09 (8.96)</td>
<td></td>
</tr>
<tr>
<td>Intervention</td>
<td>294</td>
<td>13.59 (8.13)</td>
<td>-1.51 (-2.66, -0.36)</td>
</tr>
</tbody>
</table>

KEY FINDINGS

Stimulating caregiving practices
• The intervention was associated with more (1.28, 95%CI: 1.0, 1.57) stimulating caregiving activities.
• A higher proportion of mothers in the intervention group participated in each of the 6 of the stimulation activities.
• The biggest differences between intervention and control groups for reading or looking at books and singing songs.

Maternal depressive symptoms
• The intervention was associated with lower scores on the CES-D (1.51, 95% CI: 0.36, 2.66), indicating fewer depressive symptoms.
• The proportion of participants above a US-based cutoff (CES-D score of 16) was higher in the control group (40.7%) than in the intervention group (34.7%).

DISCUSSION & CONCLUSIONS

• An integrated, mixed-age, group-based caregiving-support intervention delivered by trained community members in rural Bangladesh improved stimulating maternal caregiving behaviors and maternal mental health.
• The effect sizes for maternal caregiving practices (0.88) and maternal depressive symptoms (-0.18) are larger than the pooled effect sizes from a recent meta-analysis of stimulation interventions on parenting outcomes (0.57, 95% CI: 0.37, 0.77, and -0.10, 95% CI: -0.23, 0.03 respectively).
• This integrated platform may be a feasible way to simultaneously address multiple risk factors for child development to improve both child and maternal well-being.

NEXT STEPS

• Examine intervention effects by subgroups of intervention delivery mechanism and attendance to intervention sessions
• Examine main effects on other outcomes including nutrition and WASH indicators
• Exploratory analysis of effects on child development

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