USING INTERACTIVE VOICE RESPONSE (IVR) TO IMPROVE MATERNAL AND CHILD HEALTH AND NUTRITION (MCHN) IN CAMBODIA

The first 1,000 days are a critical period for children: what happens in these first 3 years will influence a child’s life-long health and wellbeing. A key aspect of promoting and maintaining children’s health is the nutrition of both the child and mother.

Malnutrition is a problem throughout Cambodia, particularly for children under 5 in low-income homes in rural Cambodia. Nationally, 22% of children under five are stunted, 16% are underweight, 10% are wasted, and 4% are overweight (CDHS, 2021).

INTERVENTION

The Promoting Healthy Behaviors Activity (PHB), funded by USAID, has been conducting a social and behavior change (SBC) intervention called “Good Families Raise Smart Kids” in three provinces in Cambodia: Kampong Chhnang, Kampong Cham, and Tboung Khmum.

Key messages & Key behaviors

The main intervention strategy uses a series of engaging pre-recorded audio messages that are direct dialed to registered mothers at appropriate times during their pregnancy and after delivery. Using a system of interactive voice response (IVR), the messages are played once the call is answered. Created using a human centered design approach (HCD), these messages are designed to reinforce 5 key behaviors related to breastfeeding, wellness checkups and nutrition. Mothers are connected to the program via midwives, who present the IVR program to their patients during pre- and post-natal care visits, and via Community Health Workers (CHWs) who identify mothers in the community and help register them into the system. The phone messages are further reinforced by other SBC tools including posters, a desk tent, and a journey tracker used by the midwives and CHWs.

<table>
<thead>
<tr>
<th>5 Key Behaviors</th>
<th>% of participants who listened to messages about each behavior</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breastfed newborns within 1 hr of birth</td>
<td>38% of listeners</td>
</tr>
<tr>
<td>4 PNC checkups in first 10 weeks</td>
<td>71% of listeners</td>
</tr>
<tr>
<td>Exclusive breastfeeding for first 6 months</td>
<td>71% of listeners</td>
</tr>
<tr>
<td>Continue breastfeeding for 2 years</td>
<td>75% of listeners</td>
</tr>
<tr>
<td>Adequately supplement diet in months 6-24</td>
<td>79% of listeners</td>
</tr>
</tbody>
</table>

22,770
Number of people engaged in the IVR program

The project conducted a pre- and post-assessment in Kampong Chhnang, Kampong Cham, and Tboung Khmum to monitor the success of the intervention through two key metrics: 1) Self-reported increase in people’s confidence to perform healthy behaviors and 2) Self-reported increase in people’s practice of each of the key behaviors. The pre-assessment was conducted via face-to-face interviews with 621 pregnant and post-partum women in Aug-Oct 2022 before the start of the intervention. The post-assessment was conducted through phone-call interviews in June 2023 (9 months after initial SBC implementation) across the three provinces.

### Mother’s Knowledge of Key Behaviors

<table>
<thead>
<tr>
<th>Behavior</th>
<th>Pre</th>
<th>Post</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breastfeed within 1 hour</td>
<td>68%</td>
<td>86%</td>
</tr>
<tr>
<td>4 PNC check ups</td>
<td>8%</td>
<td>41%</td>
</tr>
<tr>
<td>Exclusively breastfeed for first 6 months</td>
<td>83%</td>
<td>99%</td>
</tr>
<tr>
<td>Continue breastfeeding for 2 years</td>
<td>32%</td>
<td>65%</td>
</tr>
<tr>
<td>Complementary feeding in months 6–24</td>
<td>2%</td>
<td>95%</td>
</tr>
<tr>
<td>All 5 key behaviors</td>
<td>2%</td>
<td>29%</td>
</tr>
</tbody>
</table>

### Knowledge of Key Behaviors

After the intervention, the mother’s knowledge of all 5 key behaviors increased significantly (2% at pre-assessment, and 29% at post-assessment, *p*<0.001). With the greatest increases in knowledge reported for 4 PNC check-ups in the first 10 weeks (8% at pre-assessment and 41% at post-assessment) and continued breastfeeding for 2 years (32% at pre-assessment and 65% at post-assessment).

### Recall of Messages

The project assessed how well respondents were able to recall the 5 key behaviors from the IVRs. The highest levels of recall were for complementary feeding in months 6–24 (76%) and exclusive breastfeeding for the first 6 months (70%). In terms of the other behaviors, recall was less than 50%.

### Self-Reported Practice

In terms of self-reported practice, during the pre-assessment only 5% of respondents reported attending 4 or more post-natal care (PNC) checkups at a health facility, rising significantly to 40% in the post-assessment (*p*<0.001). There were also increases in the other 4 areas at post-assessment: 78% report breastfeeding their newborn within an hour of birth; 59% reported exclusively breastfeeding for the first 6 months. And 100% of the mothers surveyed reported having established a complementary food habit in months 6–24.
Self-Efficacy

PHB’s formative research showed that self-efficacy was a key behavioral determinant for these MCH/N behaviors. In the post assessment mothers expressed high degrees of confidence in their ability to perform the five key behaviors. All (100%) of respondents reported feeling able to establish complementary feeding habits in months 6-24. The behavior with the lowest level of reported self-efficacy is “continue breastfeeding for 2 years”.

<table>
<thead>
<tr>
<th>Mother’s Self-Efficacy</th>
<th>100%</th>
<th>50%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breastfeed within the first hour</td>
<td>94%</td>
<td>79%</td>
</tr>
<tr>
<td>Attend 4 PNC check-ups within the first 10 weeks</td>
<td>88%</td>
<td>64%</td>
</tr>
<tr>
<td>Exclusively breastfeed during the first 6 months</td>
<td>50%</td>
<td>100%</td>
</tr>
<tr>
<td>Continue breastfeeding for 2 years</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Complementary feeding in months 6-24</td>
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Barriers to Key Behaviors

Barriers to adoption varied between the different behaviors. For PNC check-up visits, mothers reported being too busy with work, that it wasn’t necessary since the baby was healthy, they had been checked many times already, that the midwife had advised them that 2 times was sufficient, or they felt the health center was too far away. In terms of barriers to continued breastfeeding for 2 years, respondents reported that the main barriers were: mothers busy working, thinking that 2 years of breastfeeding is more than necessary, the baby refuses to breastfeed, they have switched to baby formula, exhaustion, and the mother’s belief that breast milk is not nutritious enough after 6 months.

Social Support

The survey also found that most mothers (89%) are supported by their family members in performing all 5 key behaviors. The highest support was for “Adequately complementing diet from months 6-24” at 100%; all other behaviors were above 94%.

Recommendations

The most common channel for registering for the program was via midwives (76%). Future interventions should continue to work with these trusted messengers to share health messages and engage the community. PHB will also explore ways to further enhance and support midwives and community health workers (eg. creating opportunities for providers to interact, and share experiences and best practices, etc.)

For self-reported practice, there were large improvements across specific behaviors. The behaviors with lowest self-reported practice include: 4 PNCs and continuing to breastfeed for the first 2 years. In future interventions, these areas should be further reinforced.

Continued collaboration with relevant stakeholders (NMCHC, NSSF, HCs, and Communes) is critical to sustain service-provider engagement in MCH/N and expand the reach of this intervention.

Learning from the high costs associated with using IVR, PHB has since modified the intervention to focus on using YouTube videos which will hopefully expand the reach of the intervention, increase accessibility, and provide a longer-lasting, more sustainable behavior change tool.

Future Plans

Future plans for this Maternal and Child Health and Nutrition intervention include the incorporation of YouTube videos (compiled into a playlist) for expectant and postpartum mothers into the intervention. Also expanding from targeting a mostly rural populations to also working with clinics, midwives, and mothers in more urban populations, including Phnom Penh.
**Theoretical Change**

**Inputs**
- **Digital**: IVR + SMS
- **Health Center Engagement**: VHSG poster
- **VHSG Engagement**: Midwife’s pitch

**Outputs**
- **Mother’s Journey Tracker**: Mothers and caregivers listen to the IVRs
- **Mother’s Journey Tracker**: Mothers and caregivers follow the Journey Tracker
- **Mother’s Journey Tracker**: Mothers and caregivers recall program messages

**Intermediate Outcomes**
- **Mother’s Journey Tracker**: Mothers feel that 4 PNC visits at a health facility are important to their health and the health of their child
- **Mother’s Journey Tracker**: Mothers believe that breastfeeding for the first 6 months, complementary feeding in months 6–24, and continued breastfeeding for 2 years are healthier and can save money for their family.

**Behavioral Outcomes**
- **Mother’s Journey Tracker**: Knowledge: Mothers know the right skills and information to perform key behaviors
- **Mother’s Journey Tracker**: Habit: Mothers are reminded when to perform behaviors.
- **Mother’s Journey Tracker**: Self Efficacy: Mothers are confident they can perform and adopt the key behaviors for their children’s health.

**Impact**
- **Health Center Engagement**: VHSG’s poster for home visit
- **Digital**: Complementary feeding in months 6–24
- **Health Center Engagement**: Posters

**Social Support**: Mothers are supported by their family members in attending 4 PNC check-ups within the first 10 weeks after birth, breastfeeding newborn within an hour of birth, exclusive breastfeeding for the first 6 months, providing complementary foods in months 6–24, and continuing breastfeeding for 2 years.

**Outputs**
- **Behavioral Outcomes**: Attend 4 PNC checkups within the first 10 weeks after birth
- **Behavioral Outcomes**: Breastfed newborn within an hour of birth
- **Behavioral Outcomes**: Complementary feeding in months 6–24
- **Behavioral Outcomes**: Continue breastfeeding for 2 years

**Outputs**
- **Impact**: Reduce % malnutrition among babies aged 0–2yrs
- **Impact**: Improve health + nutrition of mothers and babies