



A digital messaging intervention and remote data collection to support early child development and nutrition: Telangana, India

A group counselling session in Telangana, India

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KEY MESSAGES

- This article explores the development of a digital messaging intervention and of methodologies to collect data remotely during the COVID-19 pandemic in Telangana, India, which targeted message recall, early child development (ECD) and infant and young child feeding (IYCF) practices.
- The digital messaging intervention leveraged an existing opportunity in Telangana, one of the states with the highest penetration of mobile phones and internet usage, including ownership of phones among women, which ensured that messages delivered through the intervention achieved significant reach among beneficiaries.
- While digital messaging is a promising model for ensuring messages reach women, it cannot replace the critical interpersonal communication offered by frontline workers. Both models are therefore complementary.

Background

The COVID-19 pandemic and its associated lockdowns have impacted the health, nutrition and learning of children in multiple ways (Yoshikawa et al, 2020). These include impacts of protracted lockdowns and family unit disruptions on immediate socioemotional development outcomes, including adverse effects on children due to increased caregiver stress; the

trickle-down economic implications on household food availability; direct infection from the virus itself, both in the immediate and longer-term; and the implications of curtailing progress towards meeting the Sustainable Development Goals (United Nations, 2020). Restrictions imposed during the pandemic have reduced access to social services, especially for vulnerable populations, with a knock-on effect on multi-sector initiatives and child health services such

as school feeding programmes and child immunisation (Pérez-Escamilla et al, 2020).

Despite these disruptions, community workers – including Anganwadi workers (AWW) in India – have demonstrated both resilience and industry (Nanda et al, 2020), distributing food to families to support complementary feeding for young children and using technology to deliver relevant nutrition and health messages. The distribution of family-level food allowance, or ‘ration’, was among the least disrupted child health services, with periods between lockdowns seeing the moderate resumption of this service (Avula et al, 2022).

At the onset of the COVID-19 pandemic, community-level service delivery for components under *POSHAN Abhiyaan* (the National Nutrition Mission) were brought to a standstill in India. The Department of Women Development and Child Welfare (DWDCW), the Government of Telangana and UNICEF conducted rapid online assessments to better understand service delivery gaps within the Integrated Child Development Services (ICDS) and the National Health Mission. While improvements were reported in take-home food ration and growth monitoring, counselling services re-

mained unavailable for over 90% of beneficiaries. In response to this unmet need and to complement *POSHAN Maah* (Nutrition Month), a digital messaging intervention was developed in September 2020 for dissemination in the community. Sangath, a not-for-profit organisation, led the development of this counselling intervention as part of the wider *Aalana Palana* intervention (Box 1) that was initiated in the state before the COVID-19 Pandemic.

This article explores the development of this digital messaging intervention and the methodologies used to collect data remotely during the pandemic, targeting message recall, ECD and IYCF practices.

Methods

Development of the digital messaging intervention

The rationale of developing this digital intervention using multimedia formats (video, audio and text) was based on existing mobile and internet access in Telangana. National Family Health Survey 5 (2019–21) data show that over 75% of households in the state have at least one mobile phone, with over 50% of women in rural Telangana and 75% of women in urban Telangana having ownership. Internet availability is at 42% across the state.

To develop key messages on ECD and nutrition, the *Aalana Palana* team reviewed relevant literature, including UNICEF and WHO

Box 1 The *Aalana Palana* intervention

The *Aalana Palana* intervention is a part of **ASPIRE (A Scalable Programme Incorporating ECD interventions)**, a collaboration between Sangath, DWDCW and UNICEF. *Aalana Palana*, which is delivered by AWWs at the community level, aims to design and pilot an integrated ECD and nutrition video intervention promoting nurturing care in the first 1,000 days of life. *Aalana Palana* in Telugu implies a caring and nurturing environment provided by caregivers to their children. Such an environment includes adequate nutrition and responsive and sensitive caregiving, including opportunities for learning and access to quality health services. *Aalana Palana* draws from the internationally promoted Nurturing Care Framework on ECD that provides healthcare providers and caregivers with guidance on giving children the best start in their lives.

guidance for supporting responsive parenting strategies during the pandemic (Parenting for Lifelong Health, n.d.; UNICEF, n.d.). The team produced a messaging matrix to guide the development of key messages (Table 1).

Since shorter videos often receive more views (Ferreira et al, 2021), the video and audio messages were kept brief at between 60–120 seconds in duration. All messages included information to address challenges regarding access to resources, limited mobility outside the home and associated stress in both children and caregivers. The appropriateness of the messages was checked with AWWs who had considerable experience of working in the community, especially during the pandemic.

The final set of messages across the media mix was shared with AWWs, and two virtual

training sessions were carried out to optimise circulation of the content across multiple platforms. Messages were made available on the DWDCW website and on a state-hosted YouTube channel.¹ Social media channels (Facebook and Instagram) were also used. AWWs forwarded the messages to WhatsApp groups for pregnant and breast-feeding women and their family members. Text messages reiterating key points were sent by centralised servers managed by DWDCW to registered mothers. In addition, AWWs further discussed the messages during their limited in-person interaction with women during the distribution of the take-home food ration.

For families who did not have internet or smartphone access, and to supplement social media messaging, other media included in this intervention were direct phone calls to families through a government-operated line and communication with AWWs through a satellite television channel operated by the DWDCW, known as T-SAT.

Remote data collection on coverage and recall of the digital messaging intervention

A message recall survey was conducted with 5,377 randomly selected pregnant women and mothers of children under two years of age in 16 districts of Telangana. These women were contacted through telephone calls and WhatsApp messages, and asked questions about whether they had received any digital counselling messages from the health system, the format and content of the messages, whether they had any further queries, who they reached out to for answers, and who they shared the messages with. Coverage of the digital messaging intervention was also assessed via tracking the number of WhatsApp groups created between frontline workers (including AWWs and families in their catchment area) on which these messages were circulated widely. Impressions on social media – including views, comments and shares – were tracked to estimate coverage on these platforms.

Remote data collection on ECD and IYCF practices during the COVID-19 pandemic

A random sample of 242 pregnant women and mothers with children aged 6–36 months residing in the catchment area of 30 AWCs were randomly selected and approached for the telephone interviews.

¹ <https://icds.tgwdcw.in/AalanaPaalana>

Table 1 Messaging matrix

Video messages	
Pregnant mother (3 messages) Health indicators to be checked during pregnancy. Dietary tips for pregnant and breastfeeding mothers. Family support for pregnant women and childcare.	Complementary feeding (2 messages) Feeding child with love and care (responsive feeding). Complementary feeding: frequency and quantity.
Text, audio messages and images	
Pregnant mother care (9 messages) Registering at the Anganwadi Centre (AWC) and antenatal care (3 messages). Micronutrient supplementation (1 message). Healthy diet for pregnant mothers (3 messages). Preparing for delivery (2 messages).	General wellbeing messages in the context of COVID-19 (11 messages) Stay informed – reassure. Missing friends? Here are some ideas. Turn off the gadgets, light up a conversation. Let's squeeze this stress ball together. Daily exercise adds value to your life. The more we learn, the more we know. Making routines – creating a rhythm. Be prepared ... be safe. Stay positive Breathe in ... breathe out Healthy mothers make healthy families
Breastfeeding messages (2 messages) A healthy mother nurtures a healthy baby. Breastmilk makes your baby stronger, sharper and healthier	
Complementary feeding (4 messages) Eat right, be bright. Eating all kinds of food makes children less fussy eaters Clean hands give us clean food. It's OK to make a mess.	ECD messages (8 messages) A much-loved child feels safe and secure. Let's sing together. Stretch together ... physical activity is fun. Playing together makes children smarter. Peek-a-boo: I can see you. Learning is fun ... it can happen inside or outside. Talk more, bond more. A father can be a child's best friend.

Box 2 Survey components featured in the sub-study

- Household financial security, including information on loss of employment
- IYCF practices, using the WHO Complementary Feeding Questionnaire (adapted) (WHO, 2021)
- Quality and extent of stimulation available to a child in the home environment (both interaction and physical environment), adapted from the Family Care Indicators (Kariger et al, 2012)
- Healthcare service provision through AWC for pregnant women and children, including measurement of height and weight, food supplementation and deworming
- Measurement of exposure to violence or neglect at home

Data were collected using a semi-structured questionnaire, which consisted of adapted versions of standardised questionnaires and additional questions based on a literature review (Box 2). Owing to the telephonic mode of administration, certain items – such as measuring the quantity of food the child ate using a standard bowl – had to be omitted. Questionnaires had to be reduced in order to minimise the administration time of the interview. Mock administrations were conducted within the team in order to test the final questionnaire.

Calls were made by a research assistant from Sangath who had had previous interactions with these families during a baseline conducted under the ASPIRE programme (the results of this baseline are not presented in this article). This existing rapport was used to increase the chances of participation and cooperation in the sub-study. The research assistant was trained on administering the questionnaires and on obtaining and recording consent over the phone. An Excel database was maintained that contained demographic details, as well as a record of call attempts.

Given the sensitive nature of certain questions, specifically those pertaining to violence towards the child and mother, information regarding helplines was provided and a follow-up was completed to check whether the family had received any required support.

Since the questionnaire took 20–30 minutes to administer, flexibility was offered regarding time of the day and the number of sessions across which the questionnaire could be delivered.

Ethical review and quality control

Participant consent was recorded over the phone after obtaining permission from the respondent. Prior to obtaining consent, an information sheet was read aloud and caregivers were encouraged to ask questions.

The study was cleared by the Sangath Institutional Review Board.

Results

Digital messaging intervention

During *POSHAN Maah* and the extended digital counselling rounds conducted between September and December 2020, 27,757 WhatsApp

groups were created by AWWs with their beneficiaries. This represented 78% of AWCs in the state. The remaining AWWs could not reach out to participants in their catchment area due to poor internet connectivity. 227,000 (94%) pregnant and lactating women and 423,000 (65%) parents and other family members of young children (aged 7–72 months) were reached through these groups.

Message recall survey

WhatsApp messages reached more than 60% of all registered women beneficiaries in the state. Besides these direct beneficiaries, 100,000 (60%) Village Panchayat members, municipality post-holders and women collectives received these messages. It was estimated that 1,500,000 people were reached across social media between September and December 2020.

Across 16 districts, an average of 84% of women recalled receiving messages in the week preceding the survey via WhatsApp. Results were largely comparable across districts, ranging between 81% and 89% (13 districts), with 77% in one district (Adilabad) and 61% in another

Among women who were able to recall messages, 97% were able to remember pregnancy care-related messages, followed by 93% for breastfeeding messages, and 77% for complementary feeding messages. A total of 97% of women reported receiving these messages on WhatsApp groups created by their AWWs, and 88% of women reported sharing messages among their peers and discussing it further with AWWs and family members.

Sub-study on ECD and IYCF during COVID-19

Of the 242 caregivers approached for the sub-study, 208 responded and consented to participate. Thirty-one caregivers were not contactable, and three children were deceased.

The results of the sub-study indicated that 51% mothers reported receiving support from family members when feeding their children during the pandemic. Paternal participation in child feeding was reported by 18% mothers. Additionally, 71% mothers reported receiving food from AWCs both before and during the COVID-19 lockdown. Only 43% were able to get their child vaccinated, and 39% were able to get their child's height and weight measured both before and during the COVID-19 lockdown.

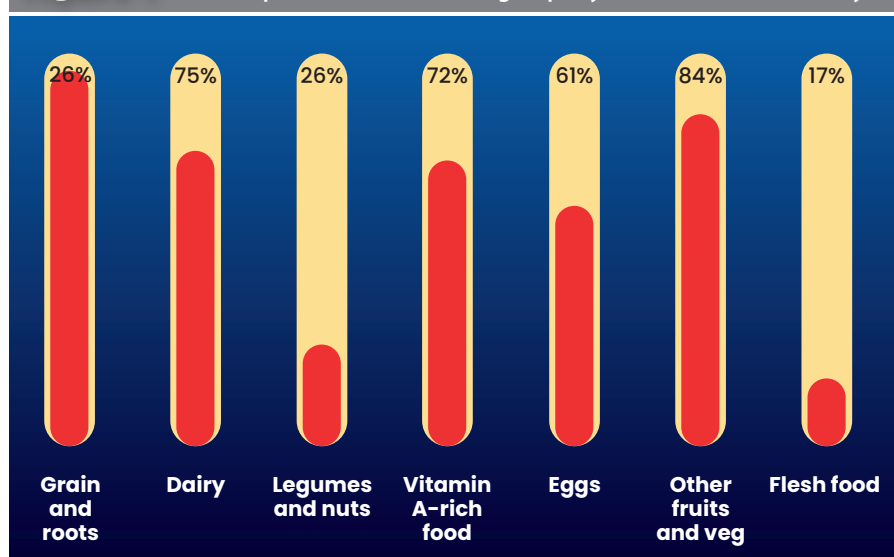
For parent–child interactions, 34% to 42% of caregivers reported playing, reading, singing, etc. with their child during the pandemic, yet had not engaged in such activities before the onset of the COVID-19 pandemic.

Most children (95%) received grains and roots in their diet, followed by other fruits and vegetables (84%), dairy products (75%), Vitamin A-rich foods (72%) and eggs (61%) (Figure 1). A quarter of children received legumes and nuts (26%). Flesh foods, including bird or animal meat & products made from these items, were consumed by 17% of children. Almost



Using a mobile phone to deliver health interventions during the COVID-19 Pandemic, India

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Figure 1 Consumption of different food groups by children in the sub-study

two-thirds (63%) of children received the WHO recommended minimum acceptable diet in the 24 hours preceding the survey; 73.5% received four or more food groups; and 92% received the recommended number of meals.

Lessons learned

This digital messaging intervention built on the opportunity provided by Telangana being one of the states with the highest penetration of mobile phones and internet, including ownership of phones among women. This ensured that key messages delivered through this intervention across multiple themes achieved significant reach among beneficiaries.

Key lessons learned from the development of the digital messaging intervention, as compared to in-person messaging, centred around making the messages sufficient in themselves so they would be effective even in the absence of a facilitator going through them with the families. This included significantly simplifying language, using colloquial terms and elaborating concepts. For audio recordings, increased importance was given to voice modulation and using a conversational tone to make the messages appealing enough for caregivers.

A key challenge, however, remained of customising messages to cater to the individual needs of families. To address this, customised tele-calling was later initiated for women to address specific concerns; however, this was possible only in a smaller geographic location. In addition, the digital messaging intervention served as a tool for AWWs to engage in discussions with community members, ensuring continuity of counselling services and uniformity in messaging and minimising information loss.

The messages developed for digital delivery have been integrated into various government schemes, including the wider *Aalana Palana* video intervention. The dissemination of messages on WhatsApp groups not only enabled two-way interactive communications, but also

helped create peer networks within communities to support women during pregnancy and after childbirth. It is noteworthy that many of these peer networks continued giving support to women and mothers after the lockdown.

In addition to the findings from the two cross-sectional surveys presented above, later interactions with beneficiaries after the easing of the pandemic-related restrictions showed an encouragingly high rate of recall of key messages. During these exchanges with ICDS functionaries at community-based events, as well as during home visits by AWWs, it was observed that women who were exposed to the digital messaging intervention were able to recall messages and had adopted certain promoted behaviours. These included behaviours on pregnancy care and hygiene, such as maternal nutrition supplementation, deworming, managing stress during the pandemic and hand-washing during food preparation, as well as before and after feeding children. Messages on the role of fathers and other care providers in supporting mothers in childcare and feeding were also remembered.

A major challenge of the telephone surveys was the fatigue encountered by respondents, which at times impacted the quality of their responses. Another consequence was the inability to complete all questionnaire sections in a single session, on occasion requiring multiple attempts to contact caregivers. The duration of the phone calls was further increased when families, who were already in a state of stress due to the pandemic, discussed their personal struggles, deviating from the actual interview.

Conclusion

Our experience demonstrates that a mix of high-dose universal digital messaging, in combination with targeting specific individual needs through one-on-one counselling, is a possible way forward for ECD and nutrition. While digital counselling is a promising model

to ensure that messages reach their target audience, it cannot replace the critical interpersonal communication with frontline workers like AWWs. Both models are complementary. A community-based mechanism for triaging pregnant women, mothers and young children into high-risk categories and providing them with additional home visits or creating referral pathways for specialised consultations is also required.

Digital platforms can also support the incorporation of data collection methods through chatbots or e-surveys alongside coverage of digital messaging, to ensure systematic collection of process indicators and data related to improvement in knowledge levels.

The lessons learnt from *Aalana Palana* during this unprecedented pandemic and associated lockdowns can be expanded to support young children and their caregivers in future disasters. Such disaster preparedness will be essential to ensure that services to the most vulnerable of our populations are minimally disrupted in the future.

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References

- Avula R, Nguyen PH, Ashok S et al (2022) Disruptions, restorations and adaptations to health and nutrition service delivery in multiple states across India over the course of the COVID-19 pandemic in 2020: An observational study. *PLOS ONE*, 17, 7, e0269674. <https://doi.org/10.1371/journal.pone.0269674>
- Ferreira M, Lopes B, Granado A et al (2021) Audio-visual tools in science communication: The video abstract in ecology and environmental sciences. *Frontiers in Communication*, 6, 1. www.frontiersin.org/articles/10.3389/fcomm.2021.596248/full
- Kariger P, Frongillo E, Engle P et al (2012) Indicators of family care for development for use in multicountry surveys. *Journal of Health, Population, and Nutrition*, 30, 4, 472–486. <https://doi.org/10.3329/jhpn.v30i4.13417>
- Nanda P, Lewis T, Das P et al (2020) From the frontlines to centre stage: Resilience of frontline health workers in the context of COVID-19. *Sexual and Reproductive Health Matters*, 28, 1. <https://doi.org/10.1080/26410397.2020.1837413>
- Parenting for Lifelong Health (n.d.) Covid-19 Parenting. www.covid19parenting.com/#/home
- Pérez-Escamilla R, Cunningham K & Moran VH (2020) COVID-19 and maternal and child food and nutrition insecurity: A complex syndemic. *Maternal & Child Nutrition*, 16, 3, e13036. <https://doi.org/10.1111/mcn.13036>
- UNICEF (n.d.) Coronavirus (COVID-19) Parenting Tips. UNICEF. www.unicef.org/coronavirus/covid-19-parenting-tips
- United Nations (2020) Policy Brief: The Impact of COVID-19 on Children. <https://unsdg.un.org/resources/policy-brief-impact-covid-19-children>
- WHO (2021) Indicators for Assessing Infant and young Child Feeding Practices: Definitions and Measurement Methods. www.who.int/publications-detail-redirect/9789240018389
- Yoshikawa H, Wuermli AJ, Britto PR et al (2020) Effects of the global COVID-19 pandemic on early childhood development: Short- and long-term risks and mitigating program and policy actions. *The Journal of Pediatrics*, 223, 188–193. <https://doi.org/10.1016/j.jpeds.2020.05.020>