Widening the arc of indigenous communication: Examining potential for use of ICT in strengthening social and behavior change communication efforts with marginalized communities in India

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Abstract
Marginalized communities in India have their own systems of governance, culture, and communication. They remain socially and physically distanced from mainstream methods of communication. At the same time, India is witnessing a digital revolution, represented by a phenomenal growth in mobile and internet penetration. To date, however, scholarly discourse on use of ICT among marginalized communities in India has, for the most part, been limited.

Four related field studies initiated by UNICEF revealed that melding indigenous (local) and mainstream communication channels can be an optimal approach to social and behavior change communication with marginalized communities across multiple social development themes. They indicated the increasing popularity of mobile and other digital media among marginalized communities, especially youth, and the potential for utilizing local communication methods along with new digital media. This hypothesis is supported by findings from one of the field studies, a digital training and communication tools/materials pilot for frontline workers, to improve nutrition behaviors among marginalized communities. They also provided field evidence for the efficacy of mobile technology in civic participation, education, and health. These findings have far-reaching import for designing inclusive social and behavior change communication programs for marginalized communities where local and mainstream channels (particularly digital) complement each other.

KEYWORDS
digital communication, ICTs, indigenous communication, marginalized communities, social and behavior change, two-way communication
1 | INTRODUCTION

Scheduled castes (SCs) and scheduled tribes (STs) are 2 groupings of historically disadvantaged peoples who are given express recognition in the Constitution of India. SCs and STs constitute around 16.2% and 8.2% of the total population of India, respectively, with a total of around 25% altogether, according to the 2011 Census.

These 2 community groups are not homogenous. They contain within them a myriad of communities and tribes who practice just as many different ways of living, follow different cultures, and speak different dialects. Their exclusion from the mainstream in terms of access to services and opportunities stems from historical discrimination and geographical remoteness.

SC communities have experienced historical discrimination that manifests largely due to the effects of colonization and the caste system. Their marginalization is thus due to their resultant undervalued social status. On the other hand, ST communities have a history of self-sufficiency in their culture and way of life which creates exclusion from the mainstream, but such exclusion is not discriminatory in and of itself. The prevalent notions about tribal ways of living which are discriminatory at times have perpetuated their marginalization. Concurrently, many ST communities reside in inaccessible and distant areas with poor transport services which adds another layer of exclusion (Sonowal, 2008).

These communities who have been marginalized as a result of geographic, economic, social, and cultural factors typically exhibit poor development indicators in terms of health, sanitation, education, and access to livelihood. Both these groups exhibit strong cultural ties, community-based norms, and use locally developed (indigenous) methods of communication which have evolved over time and yet differ significantly from mainstream (exogenous) methods of communication such as outdoor media (hoardings, wall paintings, etc.), mass media (such as TV and radio), print media, and digital media.

United Nations Children’s Fund (UNICEF) initiated 4 related field studies to gain an in-depth understanding of local communication sources, channels, and methods that these communities use; to develop innovative training tools and communication products for FLWs engaged among these communities based on this understanding; and to test their effectiveness.

The first study titled “Social inclusion: A barrier analysis”, (here onwards referred to as the “barrier study”) made an attempt to understand the extent to which communication messages reach excluded groups and get internalized as well as barriers to social inclusion. The study used a household survey, in-depth interviews (IDIs), and focus group discussions (FGDs) with the excluded groups—SCs, STs, and tea garden workers—and interviews with service providers across 6 districts in 6 different states of India.

The second study titled “Communication opportunities to engage select SC and ST populations” was a scoping study (here onwards referred to as the “scoping study”) involving 35 population groups of SCs and STs across 10 states. The objective of the study was to understand local communication systems and practices; available communication channels and their potential; and identify most credible and authentic spokespersons.

The third study titled “A study on programming innovation” (here onwards referred to as the “innovation study”) attempted to test the efficacy of training tools and communication materials, some of them information and communication technology (ICT) enabled, developed for service providers and marginalized population groups in 2 of these states.

The fourth study titled “Mobiles for social and behavior change” (here onwards referred to as the “mobile study”) attempted to understand in which parts of India mobile phones are being used in areas of civic participation, education, and health; and how the use of mobile is contributing to social and behavior changes.

This paper attempts to synthesize findings from these field studies to arrive at recommendations for designing inclusive social and behavior change communication (SBCC) programs using ICT communication tools for marginalized communities.

2 | LITERATURE REVIEW

Indigenous (or local) communication systems exist alongside exogenous (or mainstream) forms and platforms such as mass media, schools, extension services, banks, postal, telecommunication, internet, and mobile services (Mundy, 1993). Indigenous communication channels include folk media such as puppet shows and folk drama, interpersonal communication (IPC) channels, storytelling, village organizations, markets (see Figure 1), discussions at the well and tea house, and other forms. They carry a wide range of messages: entertainment, news, and other social exchanges. Together with exogenous forms, they constitute the information environment of communities. The spread of mainstream information through local interpersonal networks has been the focus of many studies. Much effort has been put into identifying interpersonal networks and key actors (or opinion leaders) who can be targeted in information campaigns, such as education, health, nutrition, and so on. Organized channels and folk media have also been used to spread mainstream information. However, there have been problems. Even though these media enjoy familiarity and credibility among local people, they are primarily meant for entertainment. Therefore, audiences may not understand development messages included in their script. It is possible to meld local and external forms of communication as when development interventions tap into local channels to exchange information, or when locals use videos or mobile media to communicate with peers.

Tea cultivation in the state of Assam in India employs 17% of the workforce. The first tea gardens were set up by the British East India Company in 1823. At that time, local Assamese were not willing to work on plantations and hence plantation owners employed workers from the present-day states of Jharkhand, Chhattisgarh, Bihar, Andhra Pradesh, Odisha, Uttar Pradesh, and West Bengal who now form the “tea garden community” in Assam.

According to UNICEF, social and behavior change communication (SBCC) “focuses on enabling groups of individuals to engage in a participatory process to define their needs, demand their rights and collaborate to transform their social system. It emphasizes on public and private dialogue to change behavior on a large scale, including norms and structural inequalities in an enabling environment”.

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Digital and social media have shown promise in this arena. A study found that high utilization of social media among young indigenous Australians creates potential opportunities to bridge their social, educational, and health gaps (Rice et al., 2016). Because of this, development practitioners need to gain a better understanding about appropriate ways to embrace social media to enhance the impact of their interventions.

The language used for communicating messages has been identified as a critical factor in many studies. Language has a critical role not only as a means of receiving development information but also as a means of communicating complex feelings and emotions and connecting with cultural conceptions of social development (Murphy, 2013). This underscores the need for service providers to have relevant linguistic and cultural knowledge to serve marginalized populations.

Use of ICTs and new media in empowering marginalized communities to develop their shared norms and values can address the digital divide as pointed out in a study on how ICTs and media are communicated in Native American communities (Qureshi & Trumbly-Lamsam, 2008). This comes from the understanding that the digital divide represents not so much the unequal access to ICTs but unequal ways in which they are used (UNESCO, 2001). This has also been brought out by a study in an Indonesian village which revealed the positive effects of internet use on community participation and networking (Onitsuka, Hidayat, & Huang, 2018). ICTs have also been found to be effective in transmitting cultures to future generations, thus strengthening preservation of indigenous culture in a situation of rapid urbanization (Harris & Harris, 2011).

While ICTs have potential to strengthen indigenous cultures, they have even greater potential to empower indigenous communities by enabling better access to information and entitlements. A study of the underserved populations of Latin America and the Caribbean (Farach et al., 2015) indicates that ICT may contribute to improved outcomes for projects addressing the health needs of vulnerable populations by expanding geographic coverage, increasing reach into marginalized or hard-to-reach groups, allowing real-time data collection and transforming target audiences from passive recipients into content disseminators and creators. At the same time, such projects experienced challenges in establishing meaningful communication with target audience members, mainly because of divergent motivations behind ICT use between projects and its target audience and the lack of access or familiarity with ICT among the most underserved members of such audiences.

There are several studies (Broadband for the Bush Alliance, 2013, Dell’Arciprete et al., 2014, Fayoyin, 2016, and Fish, 2011) which examine factors affecting the digital divide between marginalized and mainstream communities in Argentina, Africa, Colombia, and Australia. But there is not much research available on how ICT and digital media can be made acceptable to indigenous communities and melded seamlessly with indigenous channels, particularly in the Indian context.

Typical "indigenized" or "locally appropriate" communication materials render development messages using local art forms, visuals, symbols, and mannerisms. While there has been some utility to such methods (Namdeo, 2004), the rapidly changing social dynamics brought about by digitization cannot be denied. In pluriethnic societies such as those that thrive in India, a mere translation of development communication messages into indigenous languages does not suffice. This conclusion can be derived from the experiences of Mexico (Murphy, 2013), Australia (Rice et al., 2016), and North America (Qureshi & Trumbly-Lamsam, 2008).

These studies indicate that the indigenous perspective and understanding of health issues are vastly different from the Western mainstream health care model and point to the need for greater coordination between indigenous and mainstream languages of health and greater participation of indigenous representatives in planning along with service delivery. There is a need to investigate more strategic and contemporary methods, especially mobile-based methods which are viewed favorably by indigenous communities and can be seamlessly melded with indigenous communication channels.

This is particularly a priority for India where it is projected that internet users will cross 550 million in 2018 in the best case scenario making it the second largest online population in the world (IAMAI, 2015). Of these, rural internet users are estimated to add up to 280 million in 2018. A study points out that there is growing acceptability of internet-based mobile apps even in the most remote districts of India’s largest state, Uttar Pradesh (Abbas & Singh, 2015).

However, to enable such a catalytic melding through digital media, it is important to develop digital or mobile interventions based on evidence rather than considering them as a "universal cure" or including them without consideration for their relevance to the local context and need. The
research phase of any SBCC strategy, stakeholder analysis, and understanding the “why” of the problem must consider voices from indigenous and marginalized communities and barriers to communication. Mapping of their communication channels, IPC sources, media habits, and authentic spokespersons is essential. Similar considerations must drive the planning phase of SBCC strategies from the selection of communication approaches, media, and channels to developing creative briefs.

3 | METHODOLOGY

3.1 | Barrier study: social inclusion—a barrier analysis

The study was conducted in 2011 to understand the barriers to social inclusion in terms of access and uptake of services related to child survival and development. To identify barriers faced by certain social groups, the ways in which various social groups access services and adopt health seeking behaviors related to government programs were studied.

The population in each study district was divided into 2 groups, viz. the “excluded group” which was the ST population in a district with a sizeable ST population or the SC population in a district with a sizeable SC population or tea garden labour (TGL) population in a district with a sizeable TGL population. The "other group" comprised all other social groups.

The study was conducted in the following states and districts of India:
1. Shivpuri district in Madhya Pradesh state (SCs were the excluded group)
2. Lalitpur district in Uttar Pradesh state (SCs were the excluded group)
3. Vaishali district in Bihar state (SCs were the excluded group)
4. East Singhbhum district in Jharkhand state (STs were the excluded group)
5. Koraput district in Odisha state (STs were the excluded group)
6. Dibrugarh district in Assam state (TGLs were the excluded group)

The study design was exploratory and combined quantitative and qualitative data analysis. The respondents included mothers of children between 0 and 2 and 5 and 10 years of age, FLWs, district officials, civil society members, and communication specialists from the state UNICEF offices. Mothers of children between 0 and 2 years of age were asked questions related to child survival, while mothers of children between 5 and 10 years of age were asked questions related to education.

The study villages were selected using systematic random sampling. The villages were segregated into 2 broad strata. Strata 1 comprised villages with 20% to 49% SC or ST population, and Strata 2 comprised villages with 50% to 80% SC or ST population.

In Dibrugarh district, because the study population was determined by occupation, and a list of villages by occupation was not available in the 2001 Census, 4 TGL villages were sampled from a list provided by the Assam branch of the Indian Tea Association and 3 non-TGL villages and 1 river island were selected for the study.

Respondents were selected from both excluded and other groups. The selection was made from a household listing of the entire village. Eighteen respondents were selected from each village from this list using a systematic random method of which 12 were from the excluded group and 6 from the other group. Study tools included a village sheet, household survey format, IDIs with village respondents, FGDs with village communities, interview schedules for village-level service providers, non-government organizations (NGOs) working in the area, and district-level government officials.

A total of 829 mothers were interviewed across the 6 districts of which 442 had children below 2 years of age and 387 had children in the 5 to 10 years age group. More than 90 FGDs were carried out with respondents from excluded groups. A total of 124 FLWs and 25 district-level officials were interviewed. The survey team also interviewed 17 NGO representatives.

3.2 | Scoping study: Communication opportunities to engage select SC and ST population groups

This study, the second of the 4 related studies, was carried out in 10 states—Assam, Andhra Pradesh, Bihar, Gujarat, Jharkhand, Odisha, Chhattisgarh, Uttar Pradesh, Madhya Pradesh, and Rajasthan in 2013. Although this study covered all 6 states of the barrier study, the study districts were mostly different because of different criteria for selecting the population groups.

The research purpose included the following:

- To determine local communication systems and practices (how do people communicate in these socio-cultural groups—SCs/STs) and existing/available communication opportunities/platforms
- To determine the purpose (internal and external information flow) and way of use of communication systems by these groups with a special focus on men, women, and adolescents
- To prioritize communication systems/practices as per their relevance to various issues
The specific objectives of the study were to:

- Study information flows (process) among different population segments (men, women, adolescent boys, and girls) of SC/ST groups in media dark areas
- Identify communication platforms/indigenous methods (opportunities) of communication
- Examine whether communication channels differ as per information to be communicated, eg, are channels for governance information and health information the same or different?
- Identify the most credible and authentic spokespersons in different groups for various kinds of information, including entitlements and health behaviors
- Identify how communication channels work and what they are used for in different SC/ST groups
- Examine the potential of using these communication channels for communication for development (C4D) programming and feeding into government’s flagship programs communication strategies.

The study was exploratory and predominantly qualitative in nature. The study used FGDs, IDIs, observation checklists, and participatory rural appraisal tools.

The broad areas of probe covered by the qualitative research tools for different population segments (men, women, and adolescent boys and girls) were:

- Potential channels of communication
- Communication channels available (opportunities); how they work and what they are used for
- Communication platforms and indigenous methods (opportunities) of communication
- Most credible and authentic spokespersons for various kinds of information.

The study covered 35 population groups. For each state, a list of SC and ST population groups were made. Those groups having the highest population or high literacy rate within the state were excluded from the sample frame because chances were that they would already be accessing mainstream media. Similarly, groups which were very small in population size were excluded. The required number of population groups for each state were then chosen randomly from the list (See Appendix 1 for population groups included in the study).

Two villages were purposively selected per population group and covering these communities. A total of 175 FGDs, 140 participatory observations, 175 IDIs, and 105 participatory rural appraisal exercises were conducted with the communities.

Observation checklists covered ceremonies/rituals, festivals/fairs, community meetings, and social group meetings/engagements. Participatory tools included a communication resource mapping tool, preference ranking tool, and a visioning exercise with children.

The respondent groups included:

- Adult men and women (>26 years)
- Young men and women (15–25 years)
- Children (11–14 years)
- Key informants and influencers like community leaders, religious leaders, caste/tribe leaders, and FLWs, academia, government officials etc.

(See Appendix 2 for sampling of respondents across the research tools)

### 3.3 Innovation study—a study on programming innovation

The recommendations of the scoping study were used to underpin the design and implementation of a pilot that focused on using innovative communication and training tools to build IPC skills of FLWs and mid-level program managers in 2 states of Gujarat and Odisha (which were among the 10 states included in the scoping study).

The study was conducted in 2014 as a pre-intervention and post-intervention study to test the efficacy of a programming innovation to build the SBCC skills of FLWs called Anganwadi workers (AWWs)** and mid-level program managers (Integrated Child Development Services (ICDS)†† supervisors) from the government system in 2 districts of Gujarat state and 3 districts of Odisha state. The behaviors promoted included timely initiation of breastfeeding and colostrum feeding, exclusive breastfeeding, proper breastfeeding techniques, age appropriate and safe

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**Communication for development (C4D) is seen by UNICEF as a 2-way process for sharing ideas and knowledge using a range of communication tools and approaches that empower individuals and communities to take actions to improve their lives.

**Under the Integrated Child Development Services (ICDS) of the Ministry of Women and Child Development, Government of India, the Anganwadi worker is a government frontline worker who runs a community crèche and counseling center (Anganwadi center (AWC)) which provides supplementary nutrition, pre-school non-formal education, nutrition and health education, immunization, health check-ups and referral services. Every village in India depending on its population size has 1 or more AWCs.
complementary feeding, growth monitoring of children, giving proper nutrition for mental development, vitamin A and iron supplementation, using iodized salt, care of pregnant women (diet and rest), nutrition, and care for the girl child.

The pilot used modules and media in the mainstream language (modules on IPC and BCC,‡‡ and films) and communication tools (11 IPC videos, mobile episodes, and state-specific pilot-tested materials like interactive games and flipbooks/flipcharts) to train government FLWs. Over 4 months, the trained FLWs then conducted sessions with the community using the media-based communication tools.

To test the efficacy of this pilot intervention, a baseline-endline panel study was conducted in the following sample districts and blocks:

- Gujarat—Ahwa, Subir, and Vaghai blocks in Dangs district, Khedbrahma 1 and 2 blocks in Sabarkantha district
- Odisha—Junagarh, Narla, and Thumul Rampur blocks in Kalahandi district, Laxmipur and Pottangi blocks in Koraput district and Balisankara, Lahunipara, and Tangarpali in Sundargarh district

(See Table 1 for baseline and endline samples).

IDI tools were used for FLWs and mid-level managers. A semi-structured questionnaire was used for caregivers who comprised mothers of children between 6 and 23 months old, pregnant women, and lactating women. In addition, an observation tool was used for observing training and communication sessions.

3.4 | Mobile study: mobiles for social and behavior change

The study aimed to understand mobile usage patterns in India in the areas of civic participation, education, and health; and how mobiles can be better used as a communication tool by FLWs, mothers, pregnant women, and community members.

Fourteen mobile interventions were selected on the basis of their geographical spread and usage in 3 categories—information dissemination, monitoring and tracking, and support to FLWs.

In the study, both quantitative and qualitative methods were employed to assess relevance, effectiveness, efficiency, and sustainability of different mobile applications. Several research tools and methods such as structured questionnaires, semi-structured questionnaires, individual interviews, and FGDs were used to understand different needs of end users and the ability of different mobile applications to meet their needs.

The field work covered 12 states of India and involved 2835 respondents (See Appendix 3 for list of 14 case studies).

4 | RESULTS

4.1 | Barrier study: social inclusion—a barrier analysis

4.1.1 | State of exclusion

The barrier study found that these communities experienced lesser communication from mainstream channels and had reduced access to services than the remaining village members. The study also shed light on the low sense of agency of both SC and ST communities who were aware of the discrimination they face but were not able to or were not inclined to question discriminatory behaviors because of cultural conditioning and tenaciously deep-rooted social norms. Many times, community leaders such as teachers and also FLWs harbor the tendency to discriminate with these groups.

“Children from the Sahariya§§ community are not in the least bothered about personal hygiene and cleanliness. They do not change their clothes or shower for many days. Hence, children from other communities do not mix with them.”—A teacher in Lalitpur district of Uttar Pradesh.

‡‡As defined by the Manoff Group, behavior change communication is “an evidence-based and research-based process of using communication to promote behaviors that lead to improvements in outcomes”. Retrieved from http://manoffgroup.com/documents/DefiningSBCC.pdf

§§The Sahariya are a tribal group mainly residing in the states of Madhya Pradesh and Rajasthan in India and in smaller numbers in other states. They have been denoted as a particularly vulnerable tribal group (PVTG) by the government of India. They collect forest produce.
Furthermore, untouchability (in which some SC communities face discrimination and live in hamlets/clusters away from the mainstream populations; many times members of such communities are also excluded from unstructured communication platforms such as places of worship, water points or other community gathering areas or are allowed under certain discriminatory conditions) is also still prevalent in the social fabric of India (see Figure 2).

### 4.1.2 Challenges in the demand and supply interface of government service delivery

The primary focus of SBCC is to bring about an improvement in the quality of the lives of people by assisting them in the adoption of safe and optimal behaviors. However, the barrier analysis revealed that uptake of government services related to health and education was affected by supply-side challenges such as the attitudinal practices of government FLWs who may themselves have discriminated against members of marginalized communities. Their knowledge and skills with respect to communicating with these communities were also lacking to varying degrees, and hence the accuracy of the information they imparted, methods they used to counsel community members, and regularity of follow-up visits that they made were all impacted adversely. Additionally, they were often overburdened and unable to give adequate time to counsel and build a rapport with all community members. This finds resonance in the “unproductive communication” described by Dell’Arciprete et al. (2014), in the context of Chagas disease prevention and control among indigenous communities in northern Argentina, in which there is information loss when a doctor/health provider communicates using scientific terms while community members use terms in local Andean languages.

There were also many demand-side challenges which hindered community members from accessing services or practicing positive behaviors, such as a lack of complete information and knowledge, inability to dedicate time to cover the physical distance to reach services, and limited monetary resources to pay for certain services, the cost for which would be reimbursed later. However, at times, even when community members were aware of the benefits of certain behaviors, they did not practice them for many reasons, prominent among which were social norms, prevalence of some traditional norms (for example, in some communities, colostrum is offered to the local deity to pray for the long life of the child), and social exclusion of marginalized communities as described earlier. Economic constraints also had a significant adverse effect on behavior change. Mothers may have been aware of the positive aspects of institutional delivery but instead chose to deliver at home because they perceived a greater opportunity cost and loss of wage days in delivering at a hospital. Moreover, even though the government provided an incentive that they were entitled to after institutional delivery, their economic condition limited their ability to spend for travel and other incidentals before the delivery.

### 4.2 Scoping study: communication opportunities to engage select SC and ST population groups

The scoping study conducted in 10 states of India among 35 SC and ST communities brought out nuanced findings that went against prevalent notions (and in some cases, misconceptions) about indigenous communication in development practice and theory.

#### 4.2.1 Socio-economic-cultural context of marginalized population groups

The study highlighted that there was a strong social cohesion among marginalized communities. Even as they adapted to the mainstream official languages used in their respective states, most of these communities preferred to communicate in their own dialects. Most adult members of these populations were illiterate, and literacy levels among youth were low. Across states, unstructured channels (IPC at the village well, festivals, fairs, community events, etc.) played an important role in the flow of information and almost all communities were characterized by their own traditional messengers who would go around the village and disseminate information/news on social and cultural events. Local government body members were the most credible and authentic spokespersons for all communities followed by traditional heads, religious leaders, FLWs, and

**FIGURE 2** Children from the marginalized Bansour community eating separately in school in a village of Madhya Pradesh
NGO volunteers. Community and religious leaders were well-networked with people, oft consulted on personal and social matters, commanded respect, and acted as a conduit of information between government officials, elected representatives, and community members. Among FLWs, those who were a part of the community were considered more trustworthy than those who were not.

4.2.2 Process of information flow

IPC was the most prevalent mode of information exchange related to government services and schemes with FLWs such as AWWs, Accredited Social Health Activists, Auxiliary Nurse Midwives, and school teachers playing an important role.

It also emerged that, although these communities were known for their traditional art forms, these art forms were largely used during festivals and for cultural purposes and did not hold enthusiasm for the youth. To a certain extent, only NGOs were observed to use such forms to disseminate social messages in some areas. In a deviation from the mainstream notion of thriving indigenous communication used in these areas, the study highlighted that while there are unique traditional art and dance forms (Jhumur dance among youth living and working in tea plantations, Raas and Bihu among other indigenous communities of Assam, Santhali dance among Santhals, Jhumur among Lohras) and a wide collection of songs that are specific to these communities (like the Birha folk song form from Uttar Pradesh and Oinitom songs of the Missing tribe in Assam), these were not used for information exchange related to government services and schemes. In essence, these are religious, cultural, and recreational forms only and with great potential to bring these communities together in times of celebration and leisure.

4.2.3 Indigenous communication methods

The study revealed that indigenous communication methods like drum beating, dance, and tamasha were still widely used by tribal communities to disseminate messages (see Figure 3). For example, the Birha folk song form which is not specific to any particular community in the eastern part of Uttar Pradesh but has its origin in the region was very popular among communities studied in that state. Birha artists in the region composed issue-based songs which local community members downloaded and listened to on their mobiles. Similarly, tamasha in Gujarat was found to be very popular among all age groups. The Doms in Kalahandi district of Odisha were culturally active and had a wide repertoire of songs and traditional dance forms with the potential to convey social messages. The story-telling tradition of Budaga Jangam in Andhra Pradesh was a potential channel for engaging communities on social issues and entitlements. Likewise, other traditional art forms such as kala jathas adapted to the local context, had considerable potential as communication channels. Certain government programs such as the Society for Elimination of Rural Poverty in the state of Andhra Pradesh had developed communication strategies utilizing traditional art forms which could be further leveraged.

***The ASHA and ANM are government frontline workers under the Ministry of Health and Family Welfare, Government of India. There is one ASHA for every population of 1000. There are 2 ANMs in every health subcenter (government health center for every population of 5000).

†††Form of indigenous Indian theatre.

‡‡‡Birha is a style of poetry and song in North India.

§§§The Doms are a marginalized social group in India. Typically, they hunt, perform agricultural work and do basket weaving.

****A semi-nomadic tribe in the state of Andhra Pradesh. Hunting and making leaf mats are some of their main vocations. http://www.thehindu.com/todays-paper/tp-national/tp-andhrapradh/budaga-jangam-leaders-seek-study-of-community-traits/article3752584.ece

††††A form of Indian folk theatre.
4.2.4 Mainstream communication methods

Mainstream print and outdoor media such as posters, wall paintings (see Figure 4), and hoardings had very little recall value among indigenous communities. The reasons were chiefly that most materials were of poor design quality, lacked a visual-language balance, were in mainstream languages, placed in non-strategic locations, and had not been pilot tested for relevance before upscaling their use. Such a finding emphasizes the need to develop communication prototypes in a scientific manner after pilot testing them with stakeholder communities and ensuring optimal implementation strategies.

4.2.5 The digital interface

Mobile phone usage was noticeably high among youth in indigenous communities. The scoping study also found that internet services and "one-stop community service centers" had high influence and appeal among marginalized communities, especially the youth. Furthermore, mass media like television, radio, and newspaper were relatively less accessed among indigenous communities while mobile usage was relatively high. People used mobile phones for communicating with family members via message or call, for work, and for entertainment by way of songs or videos. These findings are in tune with an industry report on the trends in Indian media (FICCI-KPMG, 2015) which highlighted that there are 61 million active internet users in rural India and among these 64% use the internet in their own local languages. The report also pointed out that men had greater access to mobile phones than women, on an average.

Youth used to hire DVDs and watch popular movies in Hindi and other regional languages that at times did not correspond to their own regional or state languages. They would do so in groups and also download songs and movies on their mobiles and watch them. This confirmed that digital media is already popular among the youth of marginalized communities even if it is not in the local dialect or language. This is cogently corroborated by Rice et al. (2016) and Fish (2011) who have said that digital multimedia and the use of social media within that lend themselves well to indigenous communication as the oral and visual aspects of indigenous communication have greater cohesion with the digital interface rather than with mainstream literacy and numerics. Rice et al. (2016) also state that digital multimedia enables indigenous youth to showcase their indigenous culture and identity while at the same time giving them a sense of agency, thus making it a more "inclusive", 2-way, and dynamic communication method.

The results from a framing analysis of ICT-related news in Native American tribal newspapers (Qureshi & Trumbly-Lamsam, 2008) indicated that ICT-based media can positively influence the level of development and empowerment of a community through providing information and technology and developing infrastructure.

4.3 Innovation study: a study on programming innovation

Study findings pointed out that using training tools including audio-visual and digital tools significantly increased the knowledge of FLWs regarding maternal, child, and adolescent nutrition and the importance of micro-nutrients.

A statistical analysis of primary data determined that in Gujarat, 50% AWWs at endline found it easy to use mobile episodes (mobile-based videos also called mobisodes) while teaching community members as compared with 33.3% at baseline (Pearson’s chi: 9.722, df = 3, 80007

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The statistical analysis was conducted using the SPSS 16.0 statistical package. A chi-square test was conducted at 95% confidence interval.
58.5% AWWs found mobisode use very easy at endline as compared with 18.8% at baseline (Pearson's chi: 20.1, df = 3, \( P < 0.001 \)). Their skills in engaging with community members also rose perceptibly at the end of the intervention. At endline, 35.7% AWWs in Gujarat felt very confident in conducting follow-up visits and providing support to the community as compared with 8.4% at baseline (Pearson's chi: 51.819, df = 5, \( P < 0.001 \), while in Odisha, 29.4% AWWs felt very confident in providing follow-up support to the community at endline as compared with 5.8% at baseline (Pearson's chi: 68.635, df = 5, \( P < 0.001 \)).

This positive self-assessment of their skills by the AWWs was corroborated by the experience of community members. At endline, 76.5% caregivers in Gujarat said that FLWs had visited them in the past 2 months as compared with 52.6% at baseline (Pearson's chi = 1.845E2, df = 1, \( P < 0.001 \)), while in Odisha, 79.2% reported a positive trend in home visits by FLWs as compared with 48.1% at baseline (Pearson's chi = 2.086E2, df = 1, \( P < 0.001 \)). Similarly, at endline, 38.8% of caregivers in Gujarat felt that they were provided with new information during communication sessions as compared with 14.7% at baseline (Pearson's chi = 1.003E3, df = 2, \( P < 0.001 \)) while in Odisha, 47.4% felt the same at endline as compared with 23.7% at baseline (Pearson's chi: 2.764E2, df = 2, \( P < 0.001 \)) (see Tables 2 and 3 for the statistical tables with relevant results).

The endline study showed that FLWs trained in the use of digital and mobile-based communication materials could overcome barriers in communicating with marginalized population groups. As a corollary, caregivers belonging to marginalized population groups were receptive to these materials.

### 4.4 Mobile study: mobiles for social and behavior change

Mobile phones are rapidly emerging as effective tools for social and behavior change. The review showed that mobiles can be used as tools for information dissemination, training and monitoring, education, and governance. It also highlighted that mobile-based interventions demand (and foster) multi-stakeholder engagement, which includes greater participation from community-based stakeholders. The findings are presented below under 3 thematic areas.

#### 4.4.1 Mobiles for civic participation

- **Mobiles help in creating a stronger democracy through citizen participation and insight into state affairs, thereby influencing political decisions and making local governments accountable.**
- **m-Governance can be used extensively in the sectors of health, education, and various financial services with the help of 3G or 4G technologies**

| TABLE 2 | Baseline-endline data related to FLWs' capacity building and communication skills during the programming innovation study |
|-----------------------------|----------------------------------------------------------|
| **Indicator**               | **Gujarat** | **Odisha** | **Significance and chi-square (Pearson's chi coefficient)** | **Significance and chi-square (Pearson's chi coefficient)** |
| % of AWWs who found mobisodes very easy to use while teaching community members | 33.3% | 50% | Pearson's chi: 9.722 | 18.8% | 58.5% | Pearson's chi: 20.1 |
| % of AWWs who conduct home visits | 6% (daily) | 71.5% (daily) | Pearson's chi: 21.099 | 32.6% (thrice a week) | 41.1% (thrice a week) | Pearson's chi: 12.668 |
| % of AWWs who felt very confident in returning to the community for follow-up and support | 8.4% | 35.7% | Pearson's chi: 51.819 | 5.8% | 29.4% | Pearson's chi: 68.635 |
| % of AWWs who felt very confident in helping people with decision-making | 6.4% | 27.5% | Pearson's chi: 40.923 | 11.2% | 24.5% | Pearson's chi: 42.05 |

The statistical tests were conducted using SPSS 16.0. A chi-square test was conducted for each indicator at 95% confidence interval.
Mobiles for education

- Mobiles impact educational outcomes by improving access to education while maintaining the quality of education delivered.
- Mobiles impact educational outcomes by facilitating alternative learning processes and instructional methods collectively known as new learning.

### Mobiles for health

- m-Health interventions are based on improving health services and are directed towards the recipients of health services that include sending information or reminders to improve the recipient's health.
- The aim of mobile technology in the health sector is to increase the knowledge level of family members on various health issues and promote behavior change in health-related practices.

## Discussion

The barrier study drew attention to the fact that socio-cultural barriers were the most deep rooted of all barriers which impede inclusion in the development process. They are critical determinants of outcomes of many interventions. Therefore, communication strategies have to adequately address many complex social issues that are linked to marginalized groups.

The study on communication opportunities among SC/ST populations added more insights to addressing these complex social issues to co-create effective communication strategies with these groups. It observed that while there exists a repertoire of indigenous channels of communication, based on local art forms, among these communities, not all of them are used as communication channels. They are

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**TABLE 3** Baseline-endline data related to caregivers' experiences during the programming innovation study in Odisha and Gujarath

| Indicator | Gujarat Baseline | Endline | Significance and chi-square (Pearson's chi coefficient) | Odisha Baseline | Endline | Significance and chi-square (Pearson's chi coefficient) |
|-----------|------------------|---------|------------------------------------------------------|-----------------|---------|------------------------------------------------------|
| % of caregivers who said that a health provider had visited them in the last 2 months | 52.6% | 76.5% | Pearson's chi: 1.845E2 Df: 1 Asymptotic significance: 0.000 | 48.1% | 79.2% | Pearson's chi: 2.086E2 Df: 1 Asymptotic significance: 0.000 |
| % of caregivers who said that practical exercises were conducted during the communication session | 0.9% | 19.3% | Pearson's chi: 8.953E2 Df: 2 Asymptotic significance: 0.000 | 20.4% | 39% | Pearson's chi: 2.004E2 Df: 2 Asymptotic significance: 0.000 |
| % of caregivers who felt that participants in the communication sessions were very enthusiastic or enthusiastic about the session | 4.1% (very enthusiastic) 12.4% (enthusiastic) | 26.6% (very enthusiastic) 29.2% (enthusiastic) | Pearson's chi: 8.830E2 Df: 4 Asymptotic significance: 0.000 | 44.5% (very enthusiastic) 28.6% (enthusiastic) | 51.4% (very enthusiastic) 42.4% (enthusiastic) | Pearson's chi: 2.562E2 Df: 4 Asymptotic significance: 0.000 |
| % of caregivers who felt that new information was provided during the communication sessions | 14.7% | 38.8% | Pearson's chi: 1.003E3 Df: 2 Asymptotic significance: 0.000 | 23.7% | 47.4% | Pearson's chi: 2.764E2 Df: 2 Asymptotic significance: 0.000 |
| % of caregivers who felt that the quality of the communication sessions was either excellent, very good, or good | 0.6% (excellent) 3.1% (very good) 17.6% (good) | 7.6% (excellent) 26.7% (very good) 51.5% (good) | Pearson's chi: 9.837E2 Df: 5 Asymptotic significance: 0.000 | 2.9% (excellent) 7.9% (very good) 60.4% (good) | 6.3% (excellent) 14.9% (very good) 71.9% (good) | Pearson's chi: 2.874E2 Df: 5 Asymptotic significance: 0.000 |

The statistical tests were conducted using SPSS 16.0. A chi-square test was conducted for each indicator at 95% confidence interval.
essentially religious, cultural, and recreational forms and have the potential to bring together these groups in times of celebration and relaxation. The study recommended that audio-visual communication products based on an entertainment education format, using simple Hindi, the mainstream language, or dubbed into local mainstream languages of the state, could be effective in group settings. The study also took note of the influence and appeal of internet services offered in “one stop community service centers” and mobile apps, especially among the youth.

The findings of the innovation study confirmed that caregivers felt that the quality of counseling and messages imparted to them by FLWs had improved at endline as compared with baseline. They found mobile videos to be entertaining and in spite of the prevalence of high illiteracy and poor access to mass media among them, understood the mobile content. The number of home visits by FLWs to homes of caregivers also increased at endline as did their confidence levels about providing follow-up and counseling services to community members.

The case for melding indigenous and exogenous communication for better development outcomes has been proven in the seminal work of Paul Mundy (1993). All the earlier studies discussed here have highlighted the significance of this approach in the Indian context. The mobile study further emphasized this by underlining the effectiveness of m-governance using 3G and 4G technologies in which citizen participation in governance was strengthened. Mobile technologies also find vital use in classrooms by facilitating alternative pedagogies that are categorized as “new learning”. They currently offer wide-ranging application in health by providing a platform to remind stakeholders about key messages and promote behavior change. Along with the existing utility of mobile technologies, the scope for capitalizing on their expanding reach and easy-to-use format is formidable.

Mobile phones are among the most coveted items among youth, including those from indigenous communities. The desirability of mobile phones implies greater promise for favorable reception of messaging that is imparted through mobile-based platforms. Youth are likely to view and listen to audio-visual and text-based content in a more amenable manner if the communication medium is mobile based (Johnson, 2016). Edutainment or imparting education through digital entertainment has been linked with positive psychosocial development outcomes among indigenous youth (Johnson, 2016) and can influence memory, critical thinking, and problem solving. While these spinoff benefits of using mobile-based communication add to its appeal, the adaptability of this mode of communication and its increasing penetration among marginalized populations makes its inclusion in programming SBCC interventions a necessity for enhancing their viability, cost-effectiveness, and sustainability.

6 | CONCLUSION

Findings from the 4 field studies discussed challenge the romanticism of indigenous communication and value judgments about the extent and methods of communication to be undertaken with marginalized communities. Do the aspirations of marginalized communities fall below those of the general population? Should the choice of communication channels depend upon the perceived aspirational levels of marginalized populations? Is it true that the poor need basic solutions while the poorest need even more threadbare solutions? These questions of equity and opportunity merit deep and holistic investigation.

While the term “indigenous” is associated with groups that have historical ties and cultures intertwined with a specific region or locality, the term is also used in changing contexts and situations in both mainstream and subaltern discourse and with similarly changing intent. What is considered indigenous? When English movies are dubbed in Indian languages or Hindi movies are dubbed in regional languages and vice versa are they considered to be indigenized to the Indian context or to that particular Indian state? Who defines “indigenous” and for whom?

Typical “indigenized” or “locally appropriate” communication materials render development messages using local art forms, visuals, symbols, and mannerisms. It is common to see health messages depicted using the indigenous Warli art form in the state of Maharashtra or the indigenous Madhubani art form in the state of Bihar. While there has been some utility to such methods, the rapidly changing social dynamics brought about by digitization cannot be denied. In pluriethnic societies such as those that thrive in India, a mere translation of development communication messages into indigenous languages does not suffice. The experience of Mexico, which has a similarly complex social fabric, indicates that the indigenous perspective and understanding of health is vastly different from the Western mainstream health care model and points to the need for greater coordination between indigenous and mainstream languages of health and greater participation of indigenous representatives in planning along with service delivery (Murphy, 2013). There is a need to investigate more strategic and contemporary methods, especially mobile-based methods which are viewed favorably by indigenous communities and can be seamlessly melded with indigenous communication channels.

The use of SBCC materials in the edutainment format through mobile (and internet), through a trained “last-mile interlocutor” based in the community can overcome socio-cultural and language barriers and meld exogenous channels with indigenous channels of communication. The findings related to the potential of effective mobile usage in SBCC interventions have far-reaching implications for SBCC programming. However, to enable such a catalytic melding through digital media, it is also important to develop digital or mobile interventions based on evidence rather than considering them as a "universal cure" or including them without consideration for their relevance to the local context and need. The research phase of any SBC strategy, stakeholder analysis and understanding the "why" of the problem must consider voices from
indigenous and marginalized communities. Mapping of their communication channels, IPC sources and media habits, and authentic spokespersons is also essential. Similar considerations must be made during the planning phase of SBC strategies from the selection of communication approaches, media, and channels to developing creative briefs.

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REFERENCES

Abbas, S., & Singh, A. K. (2015). Mobile media penetration: Growing trends in four centrally backward districts of Uttar Pradesh. *Amity Journal of Media & Communication Studies*, 5(1–2), 66–74. Retrieved from http://amity.edu/UserFiles/asco/journal/ISSUE19_8,%20Shirin%20Abbas%20-%20.pdf

Boston Consulting Group (BCG) & Internet and Mobile Association of India (IAMAI) (2015, January). *India@Digital.Bharat; Creating a $200 billion internet economy*. Retrieved from https://tidedotcom.files.wordpress.com/2015/04/file180687.pdf

Broadband for the Bush Alliance (2013). Rethinking the indigenous communications program. Submission 139: Attachment-C.

Dell’Arciprete, et al. (2014). Cultural barriers to effective communication between indigenous communities and health care providers in northern Argentina: An anthropological contribution to Chagas disease prevention and control. *International Journal for Equity in Health*, 13, 6.

Farach, N., Faba, G., Julian, S., Mejia, F., Cableses, B., D’Agostino, M., & Cortinois, A. A. (2015). Stories from the field: The use of information and communication technologies to address the health needs of underserved populations in Latin America and the Caribbean. *JMIR Public Health and Surveillance*, 1(1), e1. https://doi.org/10.2196/publichealth.4108

Fish, A. (2011). Indigenous digital media and the history of the internet on the Columbia plateau. *Journal of Northwest Anthropology*, 45(1), 91–114.

Harris, C. A., & Harris, R. W. (2011). Information and communication technologies for cultural transmission among indigenous peoples. *Electronic Journal of Information Systems in Developing Countries*, 45(2), 1–19.

Johnson, G. (2016). Technology use among indigenous adolescents in remote regions of Australia. *International Journal of Adolescence and Youth*, 21(2), 218–231.

Mundy, P. (1993). Indigenous knowledge and communication: Current approaches. *Development, the Journal of the Society for International Development*. Retrieved from http://mamud.com/Docs/ik_and_ic.pdf

Murphy, K. M. (2013). Language and indigenous health in Latin America: Case study of Mexico. *Working Papers in Educational Linguistics*, 28(1), 101–118.

Namdeo, M. (2004, May). Indigenous communication systems in a tribal village: A study in Chhattisgarh (unpublished master’s thesis). G.B. Pant University of Agriculture & Technology, Uttaranchal, India. Retrieved from http://krishikosh.egranth.ac.in/bitstream/1/5810009019/1/PANT-405839.pdf

Onitsuka, K., Hidayat, A. R. R. T., & Huang, W. (2018). Challenges for the next level of digital divide in rural Indonesian communities. *Electronic Journal of Information Systems in Developing Countries*, 84, e12021. https://doi.org/10.1002/isd2.12021

Qureshi, S. & Trumbly-Lamsam, T. (2008). Transcending the digital divide: A framing analysis of information and communication technologies news in Native American tribal newspapers. *Proceedings of the 41st Hawaii International Conference on Systems Sciences*. doi: https://doi.org/10.1109/HICSS.2008.473.

Rice, E. S., et al. (2016). Social media and digital technology use among indigenous young people in Australia: A literature review. *International Journal for Equity in Health*, 15, 81.

Sonowal, C. J. (2008). Indian tribes and issue of social inclusion and exclusion. *Studies of Tribes and Tribals*, 6(2), 123–134. Retrieved from https://pdfs.semanticscholar.org/86fb/8a5749e7cc297dd7c2336d4d53fc1e08c737.pdf

UNESCO (2001). Integrating modern and traditional information and communication technologies for community development. *An International Seminar addressing the digital divide in some of the poorest communities of the developing world*. Retrieved from http://unesdoc.unesco.org/images/0012/001219/121944Eo.pdf

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**APPENDIX A**

**POPULATION GROUPS INCLUDED IN THE SCOPING STUDY**

| State               | Scheduled castes | Districts | Scheduled tribes | Districts                      |
|---------------------|------------------|-----------|------------------|--------------------------------|
| Andhra Pradesh      | Beda/Budga Jangam | Mahbubnagar* | Khonda Dhoras/Konda-Dora | Vishakhapatnam               |
| Assam               | Kaibarttas        | Nagaon*   | Missing, Tiwas, tea garden community (classified as minorities and other backward classes (MOBC) in government census records) | North Lakhimpur, Morigaon, Jorhat |
| Bihar               | Bhuiya, Chamar, Musahar, Rajwar | Gaya*, Purnia*, Araria*, Aurangabad | Bhatta, Korwa/Kodaku, Baiga (classified as primitive tribal group [PTG] in government census records during the study period. They are now called particularly vulnerable tribal groups [PVTGs]) | Bastar, Jashpur*, Kawardha |
| Chhattisgarh        | Ghasi, Ghasia     | Sarguja*  |                                |                                |
| Gujarat             |                   |           | Bhils, Rathawas               |                                |
| Jharkhand           | Basor, Burud, Bansor | Rewa | Korku, Bopchi, Mouasi, Kol, Sahariya, Saharia, Seeharia | East Nimar (Khandwa), Sidhi*, Shivpuri |
| Madhya Pradesh      |                   |           | Dumsa*, Palamu*, Khunti, Pakur* |                                |
| Odisha              | Dom/Dombo/Duria Dom | Kalahandi | Bhottada, Kolha, Saora (PTG) | Nabarangpur, Mayurbhanj, Gajapati |
| Rajasthan           | Sargara, Kalbelia, Sapera | Jalore, Chhitaugarh | Damor, Garasia | Banswara, Udaipur |
| Uttar Pradesh       | Dharkar, Dusadh, Julaha, Musahar | Sonbhadrā*, Chandauli, Sitapur*, Sonbhadrā* |                                |                                |

*High priority districts*.

*Those districts in a state, whose composite health index rankings as calculated by the government of India, place them at the bottom 25% of all districts in that particular state are identified as high priority districts.
APPENDIX B
RESPONDENTS COVERED ACROSS RESEARCH TOOLS

TABLE A2  Respondents covered across research tools

| Methodology                                      | Units per group | Respondents/situations                                                                 |
|-------------------------------------------------|-----------------|---------------------------------------------------------------------------------------|
| FGDs                                            | 5               | Women (>26 years); Men (>26 years); Young men (15–24 years); Young women (15–24 years); Children (11–14) |
| Observation of communication opportunities       | 4               | Tribal councils/Gram Sabhas\(^a\)/community meetings; immunization days, village health and nutrition days VHNDs; SHG meetings; social engagement: Haat,\(^b\) market, mela\(^c\), church mass, choupal\(^d\), dance, folk art, any other; rituals/events including religious events and weddings |
| IDIs with tribal leaders and other stakeholders | 5               | Tribal/community/religious leaders; sarpanch and PRI members (from the study groups) along with members of other local village committees; FLWs/traditional birth attendants (TBAs)/traditional healers; school teachers; SHG members/CBO representatives/youth leaders; academia/district level officers (1-2 per state depending on availability of informed persons) |
| Participatory techniques with communities        | 3               | Communication resource mapping; ranking/priority; visioning exercise with children |

\(^a\)Gram sabhas are a town-hall style meeting of members of the local administrative body. They are led by the sarpanch who is the village head.

\(^b\)Haat is the local village market.

\(^c\)Mela is the local village fair.

\(^d\)Choupal is the local village meeting place, similar to a town square.

APPENDIX C
LISTING OF MOBILE PROJECTS REVIEWED IN THE STUDY TITLED “MOBILE PHONE: A PUBLIC TOOL (ANALYZING THE USE OF MOBILE TECHNOLOGY IN CIVIC PARTICIPATION, EDUCATION AND HEALTH—REVIEW OF 14 CASE STUDIES IN 12 STATES)”

Mobile projects studied in civic participation:

1. CGNet Swara
2. GPower
3. Mobile Vaani

Mobile projects studied in education:

1. BridgeIT
2. GIS@School
3. Learn out of the box

Mobile projects studied in health:

1. Arogyashreni
2. eMantra
3. Hamari Ladli
4. Mobile Kunji
5. Mobile for mothers
6. mSakhi
7. ReMiND
8. Vatsalya Mandla