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Communicating to reduce disaster risk through radio in Nepal: A case study of *Milijuli Nepali* and *Kathamaala*

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ABSTRACT

This paper presents findings from a survey (2018) that examined how radio programming supported people in 14 severely affected districts in Nepal following the 2015 Gorkha earthquake. Results showed that regular listeners of the programmes knew more and were more likely to take actions than non-listeners. Nearly two-thirds (62%) of regular listeners reported that they now know about specific government suggested techniques for earthquake resistant foundations and nearly half (45%) reported using these techniques. Logistic regression suggested that regular listeners were more likely to mention taking actions than non-listeners. However, concerns around financial support for reconstruction remained a key issue.

1. Introduction

Nepal is prone to disasters, including earthquakes. The earthquake of 1934 A. D. is the most devastating earthquake (in recorded history) that occurred in the territory of Nepal with casualties of more than 160,00 people including from Nepal and India put together. Other major earthquakes in the region that affected Nepal included the Assam earthquake of 1897, the Kangra earthquake of 1905, and the Assam earthquake of 1950. The 7.6 magnitude Gorkha earthquake that struck Nepal on 25 April 2015 was the most powerful quake to hit the country in over 80 years. The quake was followed by more than 300 aftershocks in the following days. The Post Disaster Needs Assessment estimated the quakes killed nearly 9000 people and injured at least 22,000 [1]. The assessment estimated that eight million people, almost one-third of the population of Nepal, were affected by the earthquake and aftershocks, which destroyed more than 600,000 homes and damaged more than 288,000 in 14 severely affected districts [Fig. 1]. The strongest impact was in remote rural areas and in Himalayan villages destroyed by avalanches and landslides, making the response extremely challenging.

People are still recovering from the impact on their families, homes, livelihoods, and communities. The National Reconstruction Authority (NRA) founded in 2015 surveyed 1,037,291 houses in the post-disaster phase and recommended 834,911 eligible for private housing reconstruction and retrofitting grants. Only 61% of those (507,623) had been reconstructed as of October 2020 [2]. Information Needs Assessments (INA)[1] identified that barriers to complete reconstruction and retrofitting include cost, a complex grant system,[2] and lack of familiarity with earthquake-resistant rebuilding practices.

Media and communication can play a key role in this reconstruction process – and in disaster risk reduction strategies in general – by increasing

Abbreviations: ACORAB, Association of Community Radio Broadcasters; BAN, Broadcasting Association of Nepal; BBC, Media Action; NGOs/INGOs, Non-governmental organization/International non-governmental organization; NRA, National Reconstruction Authority, Nepal.

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[1] BBC Media Action worked with 11 partner radio stations across the 14 earthquake affected districts. The partner radio stations conducted community discussions that included Information Needs Assessment (INA) with affected communities. BBC Media Action research team trained and mentored radio stations' staffs in conducting and analysing INA data and disseminating them across all partner stations. See Fig. 8 for an example. A total of 154 community discussions and INAs were conducted between June 2016 and December 2018. Each community discussion was edited into a 15-min radio programme and broadcast on their channel.

[2] People who were affected by the earthquake were entitled to receive a government grant to help rebuild their homes. This was provided in three tranches and released to people once NRA engineers had completed a six-point check to ensure the correct construction materials, frames and foundations had been used.

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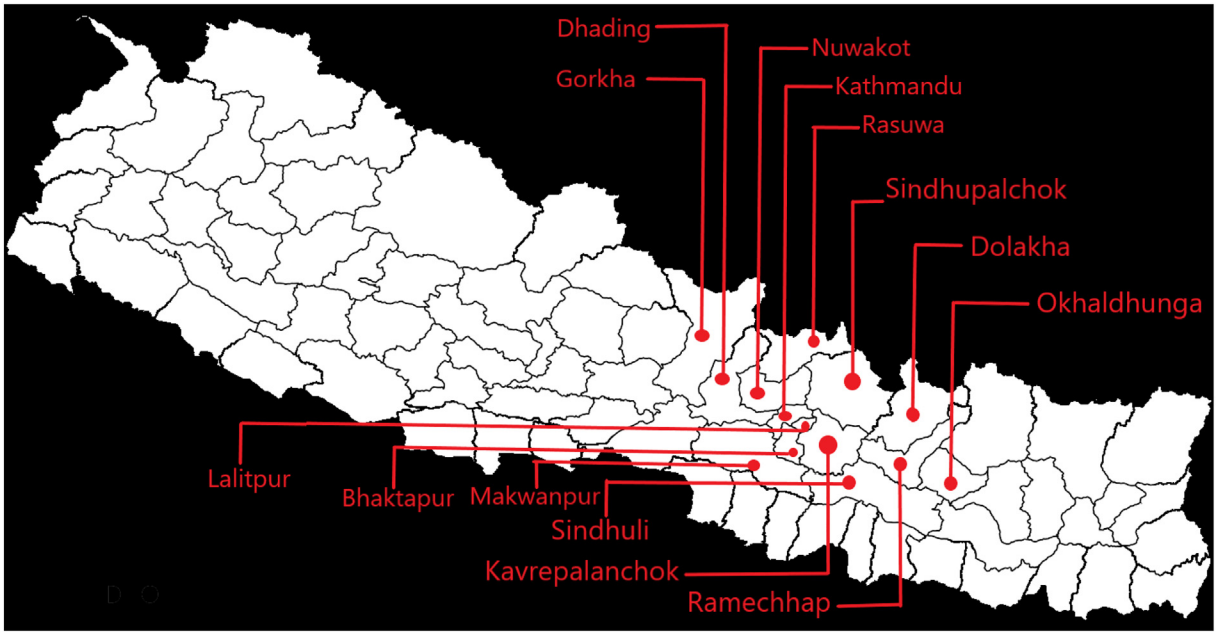

Fig. 1. Fourteen severely affected district of 2015 Gorkha earthquake.

people's understanding of risk, strengthening disaster risk governance, and enhancing disaster preparedness (in this case supporting reconstruction) [10], all of which are priority areas for action under the Sendai Framework.[3] Through the exchange of information, advice and opinions between experts and affected populations, people at all levels can make informed decisions and take actions to reduce risk and protect lives and livelihoods. Communicating disaster risk to prompt action can be complex. It requires a sound understanding of people's perceptions [11], concerns and beliefs, their knowledge and practices and the environments in which they live and work. Despite this recognition, there remains a lack of evidence around what works [10].

Media and communication can also play a key role in disaster response by informing and connecting people, prompting discussion and providing psychosocial support [3]. The BBC World Service has a history of using radio to support people directly affected by crises. In 1994 language services ran dedicated programmes for people affected by conflict in the Great Lakes Region and in Afghanistan [3]. Since then, BBC World Service and (since its was established in 1999) BBC Media Action have used radio to respond to disaster and conflict with humanitarian aims [3]. Over the past 10–15 years the humanitarian community has increasingly recognized the importance and need for information to and from people affected [3]. However, these communication initiatives have not been adequately evaluated (or at all in most cases), and there is therefore a lack of systematic learning of what works and what does not [3,10,4].

In light of the lack of impact evaluation of communication to reduce disaster risk and to address humanitarian needs, this evaluative research sought to measure the impact of the two complimentary radio programmes *Milijuli Nepali and KathaMaala* on people severely affected by the 2015 Gorkha earthquake in Nepal.

1.1. How BBC Media Action responded in Nepal

Immediately after the earthquake, BBC Media Action launched a Lifeline[4] radio programme [5], providing humanitarian support on radio through the BBC Nepali Service and the Association of Community Radio Broadcasters (ACORAB) and the Broadcasting Association of Nepal (BAN), reaching across Nepal including those districts affected by the earthquake. This included information on where to find food, shelter, and water and how people could protect themselves and their loved ones in the immediate aftermath of the disaster [3].

A week later, this Lifeline programme transitioned into a radio magazine[5] show called *Milijuli Nepali* (Together Nepal), with 15-min episodes broadcast twice a day, six days a week across the entire country as a result of partnerships between the BBC Nepali Service, British Forces Broadcasting Services and 400 other radio stations. This programme reached 12% of Nepalis nationally, reaching a slightly higher population in the earthquake affected districts (14%) [12].[6] Alongside this factual programme, BBC Media Action also ran a radio drama series titled *KathaMaala* (Garland of Stories). The story followed a milkmaid that went from shelter to shelter sharing information. She retrained as a mason and rebuilds houses in other areas. This drama complimented the factual show by attracting female radio listeners and encouraged female participation in reconstruction process.

From June 2016, the radio programmes began to focus on reconstruction, continued to broadcast nationally on the BBC Nepali Service and Radio Nepal. The programmes also broadcast on 11 local FM radio stations, to provide optimum coverage in in the 14 severely affected districts [Fig. 1].

The programmes aimed to support communities in the earthquake-affected areas of Nepal to live in safer housing and therefore at lower risk of being affected by future earthquakes. To achieve this aim, BBC Media Action set out a theory of Change (ToC) and a clear communication objectives [13] that would increase knowledge on building safer earthquake-resistant houses and motivate affected people and communities to:

[3] The Sendai Framework is a 15-year, voluntary, non-binding agreement which recognizes that the State has the primary role to reduce disaster risk but that responsibility should be shared with other stakeholders including local government.

[4] Lifeline programming is special media programming for communities affected by humanitarian crises. It aims to provide people with timely, relevant and practical information to alleviate their suffering and assist with their recovery. Lifeline programming also aims to give affected people the opportunity to voice their concerns, express their needs, share their stories and hold humanitarian aid providers to account.

[5] A magazine programme presents a variety of topics in a format that often includes interviews and commentary.

[6] In December 2015, BBC Media Action conducted a nationally represented survey in 25 districts among 4000 people of Nepal. The main objective of the research was to measure the reach, impact and outcome of BBC Media Action's media programmes in Nepal, focusing mainly on governance and Nepal lifeline earthquake response i.e MiliJuli Nepali. Five districts out of those 25 sampled districts were severely affected by the earthquake: Kathmandu, Lalitpur, Sindupalchowk, Dolakha and Makwanpur. Respondents from affected districts were asked additional questions on MiliJuli Nepali as well as questions on influence of programme on them. See reference vii for detail methodology of this survey.

- Engage with experts and decision-makers
- Try new building techniques
- Access the government's housing grant schemes
- Take steps to improve their livelihoods and invest in safer rebuilding

The programmes used real-life stories, drama, and advice from experts to provide people with information, role model best practice and highlight the challenges around reconstructing safer homes. The two programmes also aimed to inform and provide examples of alternative livelihoods that people could take up to increase their income to invest in reconstruction and encouraged women to participate more in the livelihood activities and reconstruction processes (such as undertaking mason training).

This research paper shows how BBC Media Action's radio programming supported affected communities and encouraged people to build homes that were more resistant to earthquakes.

2. Methodology

2.1. Research objectives

The main purpose of the study was to assess the impact of the two programmes – *Milijuli Nepali and KathaMaala* – on the affected communities. The main objectives of the research were to:

- Measure listenership of and engagement with the two BBC Media Action reconstruction radio programmes: *Milijuli Nepali* and *KathaMaala* in the project target districts
- Understand influence of the programmes on affected people's knowledge around reconstruction issues
- Identify if affected people in the project target districts had taken any action based on the information, they received from the programmes

2.2. Sampling

The research took a quantitative approach with a face-to-face household survey conducted in the 14 severely affected districts in August 2018. The sample size of the survey was 2636. The sample was calculated using the following statistical formula:

$$n = \frac{z^2 \times p(100-p)}{m^2} \times \text{deff} \times \text{nr}$$

Where:

n = required sample size.

z = confidence level at 95% (standard value of 1.96).

p = percent of population who listens to BBC Media Action programme = 12%.

m = margin of error at 15% of p = 1.8.

deff = design effect[7] = 2.

nr = non response = 5%.

This sample was representative of the population of the 14 districts. A Probability Proportionate to Size (PPS) two stage stratified cluster sampling approach was taken: in the first stage, for each district, urban and rural wards within the district were listed. Municipal wards as per the national census 2011 were used as PSUs (primary sampling units) in both urban and rural areas in all the districts. In the second stage, to maintain the proportionality of households in each district, a PPS sampling method was used to select PSUs from all selected districts. Fifteen households were randomly selected in each PSU; hence 175 PSUs were selected accounting to the sample size of 2636. One eligible respondent was selected from each household using a Kish Grid. Demographic information on all respondents is shown in Fig. 2.

In addition to this random sample, 400 booster interviews were conducted with purposively selected *Milijuli Nepali* and *KathaMaala* listeners to provide a robust enough sample size to understand the outcomes of the programmes. This took the total sample to 3036 respondents. The booster sample of 400 people were selected from the same PSUs as the random sample but from different households, and only selected if they had listened to either or both the programmes. The sample was only used in analysis which aimed to examine the impact of programmes on key outcomes such as knowledge, attitudes and practices around reconstruction. Data collection was commissioned to a third-party research agency based in Kathmandu.

2.3. Weighting and analysis

We used SPSS 20 for data analysis. Data (collected through randomly sampled 2636 interviews) was weighted against the 2011 Nepal census proportions to ensure accurate representation of gender, location, and age. Analysis was done in two stages: first, descriptive analysis was undertaken in order to understand the status of people's reconstruction efforts in the 14 districts, people's media consumption, listenership to the programmes and the socio-demographic profile of those listeners e.g. age, gender, education, location etc. Randomly sampled weighted data was used for this first phase analysis to ensure that results were representative of the actual population. Secondly, analysis looked further at the type of engagement audiences had with these two programmes and their influence on key outcomes the project seeks to address such as knowledge and decision making around reconstruction. It used the dataset of 3036 (that included the 400 non-random booster interviews).

To further understand the impact of the programmes on the key outcomes, a range of quantitative analysis methods were undertaken. Inferential analysis and regression modelling were conducted to compare key outcomes i.e. people's knowledge related to reconstruction issues and actions they have taken during reconstructing their houses between those who regularly listen to the programmes and those who did not listen to any of them. Chi-square test was performed along with every cross-tabulation to identify the difference between groups were statistically significant. Only those with significant differences i.e. $p < 0.05$ were reported in this paper. The logistic regression tested the impact of the programmes on audiences while controlling for potential confounding socio-demographic factors in the survey i.e. age, sex, location, region, education, caste and ethnicity, household income, and status with the government private housing grant scheme [6].

3. Results

3.1. Concerns hindering reconstruction

This research sought to understand people's concerns around the reconstruction efforts and the reasons behind them. Respondents reported several issues or concerns affecting or slowing down their effort to reconstruct homes from the beginning of the process. Nearly three quarters (71%) of respondents who were in the process of reconstructing their house or had completed it, mentioned that some of the concerns they had at the beginning of the reconstruction process remained.

One of the main reasons for this slow progress in reconstruction was the lack of financial resources. Of the survey respondents who reported reconstructing their house or having completed it, 89% of them said the main issue affecting progress was the financial obstacle. 85% of them said this concern remained. During the time of the survey, the NRA had been able to complete agreements with 90% of beneficiaries and had disbursed full grants to 41% [6]. However, the total amount given for reconstruction (300,000 Nepali rupees per households) was insufficient to enable completion of reconstruction. Getting a loan from other financial institutions such as banks has always been difficult for affected people and it remained as a concern for some within the survey.

On the other hand, concerns around accessing construction materials and skilled resources such as trained masons or engineers had reduced significantly compared to earlier stages.[8] For example, one of the major concerns at the early stage of reconstruction was lack of reconstruction

[7] A design effect (DEFF) is an adjustment made to find a survey sample size, due to a sampling method (e.g. cluster sampling, respondent driven sampling, or stratified sampling) resulting in larger sample sizes (or wider confidence intervals) than you would expect with simple random sampling(SRS). The DEFF tells you the magnitude of these increases. More information on how to calculate design effect can be found here: https://www.statisticshowto.com/design-effect/

[8] The survey asked questions about people's concerns around reconstructions at the early stage reconstruction and their remaining concerns.

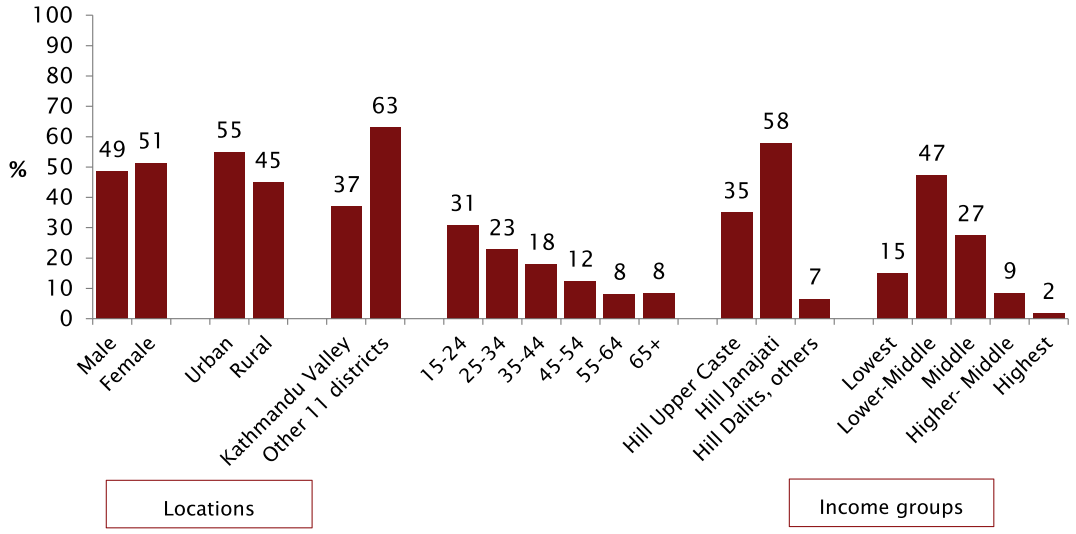

Fig. 2. Demographic Profile of the survey respondents (Base = 2636).

materials (60%) which only 28% of respondents mentioned as a remaining concern. (Fig. 3).

3.2. Information sources on reconstruction

People's remaining concerns may have been affected by the information gap they reported around reconstruction. More than half of the respondents (57%) said that the information they received on reconstruction was not enough to meet their needs. People in their locality were mentioned as a source of information on the reconstruction by the majority of people affected (56%) but only 44% of them said they trust this source a lot. On the other hand, people trusted engineers most (83%) but only 55% mentioned using them as a source of information. Surprisingly, very few respondents mentioned using the two most important stakeholders in the reconstruction process as their sources of information: the government and the NGOs/INGOs, despite the majority of respondents trusting those sources a lot. (Fig. 4).

3.3. Communication through radio

Historically radio has been the dominant media platform in mountainous Nepal. As the topography makes it hard for national frequencies to reach certain parts of the country, particularly Himalayan districts, hundreds of local FM radio stations proliferate. There were an estimated 450 functioning local community and commercial FM radio stations in the country in 2016, covering most of the districts. In the aftermath of the 2015 Gorkha earthquake, when most people in the affected communities lost access to electricity, radio was the only way to communicate lifesaving information to them. It remains an effective way of reaching people with important information. However, access to mobile phone and TV has increased over the past decade [6] and TV has become dominant media platform in many parts of Nepal (Fig. 5).

3.4. Audiences

Milijuli Nepali and *KathaMaala* are two of the most popular radio programmes among those that address reconstruction issues (Table 1). The survey found that 21% of people in the 14 severely affected districts, an estimated 747,257 people listened to either or both *Milijuli Nepali* and/or *KathaMaala* in the previous 12 months from the survey. The overwhelming majority of listeners (70%) listened to at least one of these programmes regularly i.e. at least twice a month.

These two programmes attracted a significant proportion of women and lower caste people in these districts. 46% of the listeners were female, and 50% were from Janajati and Adibasi caste groups. As expected, given the

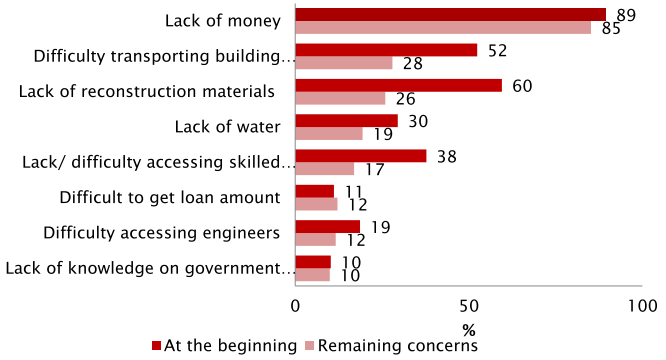

Fig. 3. Main concerns during reconstruction*. Base: All those reported reconstructing houses or had completed (n = 2049), and those reported having remaining concerns (n = 1444).
**Multiple response questions - percentages for both scenarios sum to more than 100 as respondents could identify more than one concern.*

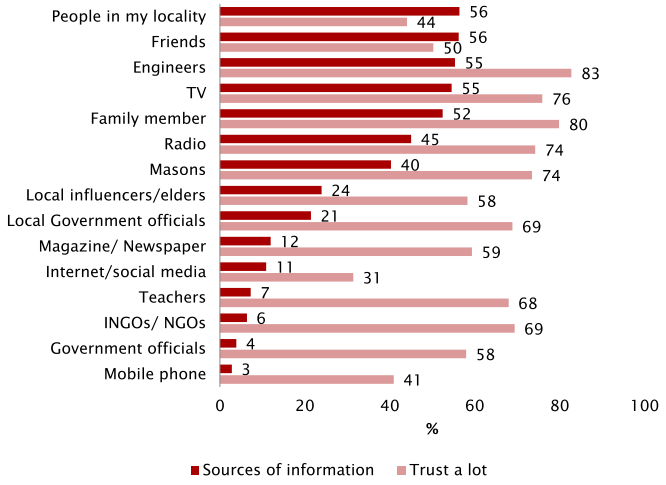

Fig. 4. Sources of information on reconstruction and trust on the sources (Base = 2636)*.
Base: 2636 **Multiple response questions - percentages for both scenarios sum to more than 100.*
**Multiple response questions - percentages sum to more than 100.*

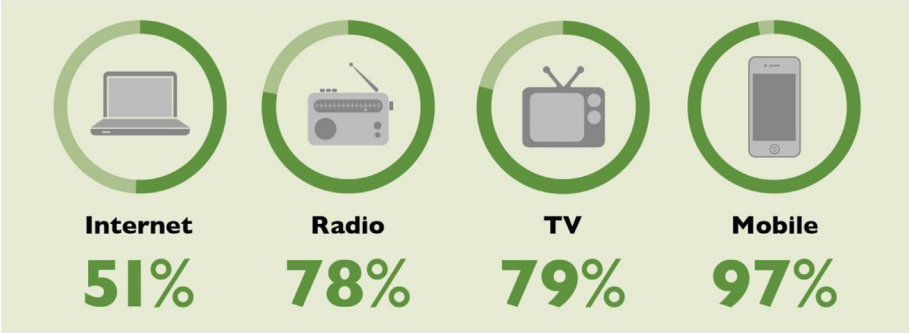

Fig. 5. Media access among earthquake-affected communities (Base = 2636).

Table 1
Media programmes in Nepal that addressed reconstruction issues after 2015 earthquake (Base = 2636).

Programmes address reconstruction issues	Broadcast media platform	Listened in the past 12 months
Baliyo Ghar (Strong House)	TV and radio	29%
Milijuli Nepali & KathaMaala	Radio only	21%
Surakchit Gharbas (Safe Housing)	TV and radio	20%
Mannabta Ko Lagi Hatelmalo (Joining hands for humanity)	Radio only	11%
Bipat Sarokar (Disaster affairs)	Radio only	9%

target audience, the majority of the listeners were from rural areas (59%) and more than three-quarters (78%) were from the districts outside of the Kathmandu Valley. (Fig. 6).

The access to radio varied between different demographic groups. This varied access is one of the influencing factors of varying reach among different groups. Men and people living in rural areas listen to radio more than women and urban dwellers (Fig. 7). The same pattern is reflected in the *Milijuli Nepali* and *KathaMaala* audience profile. Similarly, Hill upper cast and Dalits reported listening to radio more than Janjati and Adivasi (Fig. 7). This is reflected in the audience profile too: 41% hill upper caste respondents reported listening to the programmes as opposed to 35% in the sample, and 9% Dalits listened to the programme as opposed to 7% in the sample.

TV is the most widely accessed form of media in Kathmandu Valley with 98% participants reported having access to TV compared to only 61% of those from outside the valley. Similarly, internet is more accessible in the valley too with 73% compared to 39% from those outside of the valley . Therefore, people living in the Kathmandu valley clearly have other means to access information than radio. Similar patterns have also been observed among audience of similar radio programmes to *Milijuli Neplai*. For example, listenership of *Surakchit Gharbas* was 47% women and and 7% Dalit.

3.5. Radio programmes' influence on knowledge

Nearly all (99%) of respondents recognized the importance of having a safe house, and almost all of them felt it was important in order to save lives in case of a disaster (97%). There were long-term motivations too, such as avoiding financial losses in future and making sure that the house was resistant to future earthquakes. Regular listeners[9] of *Milijuli Nepali* and *KathaMaala* mentioned these long-term benefits more than those who did not listen to the programmes. 61% of regular listeners mentioned building safe housing is important to ensure the house is earthquake resistant (compared to 49% non-listeners) and 53% said they wanted to avoid financial losses in future (compared to 44% non-listeners). This indicates the programmes perhaps influenced their knowledge around long-term benefits. Results from logistic regression also suggested that the regular listeners of the programmes were 1.6 times (and 1.3 times) more likely to mention both of these long-term motivational factors compared to those who did not listen to any of the programmes (See Regression 1 & 2 in annex 2). However, people who already believed building safe houses was important and wanted to do so might more likely to listen to a programming about building safe houses.

Affected people in the 14 districts were also aware about different sources of help for reconstruction. More than half of the respondents mentioned engineers (62%) and local authorities (59%), and nearly a half (48%) mentioned masons as people to help with reconstruction work. Regular listeners were more aware of contacting local government and skilled resources (i.e. masons and engineers) for relevant information and advice for their reconstruction work than those did not listen to the programmes (Table 2).

A much smaller proportion of people, both listeners and non-listeners, mentioned I/NGOs as sources of support for reconstruction (Table 2). People generally had very low trust of INGOs following the earthquake and most of the reconstruction activities were managed by local government bodies [7]. Banks were an important part of the grants process but only 10% mentioned them as a place to go for support in reconstruction.

3.5.1. Radio programmes' influences on reconstruction awareness

The survey also measured people's knowledge of the actions they could take to reconstruct their homes. The majority of the respondents (59%) said they were aware of using earthquake resistant techniques endorsed by skilled resources i.e. masons and engineers and using quality construction materials that were available locally (53%). Nearly half (48%) of the respondents said they were aware of the specific techniques to make their houses strong and durable such as using vertical, horizontal, and bracing frames, through stones (locally known as *Kaichi Dunga*) etc. (Table 3). Many of these techniques were included in the NRA-approved earthquake resistant building code and were followed by the trained masons and engineers.

People who had been listening to *Milijuli Nepali* or *KathaMaala*, reported knowing about more actions people should take during reconstruction of their houses compared to those who did not listen to either of the two programmes. For example, 62% of regular listeners reported knowing about specific techniques like vertical, horizontal, and bracing frames, and *Khaichi Dunga* compared to 43% non-listeners of the programmes. (Table 3).

It should be noted, however, that affected people in the study areas have strong financial motivation to learn about and use these techniques in their reconstruction work. To make progress on rebuilding andto receive the second and third tranches of the government's private housing grant, homeowners are required to ensure they follow earthquake resistant building codes. NRA engineers scrutinize six key items while inspecting every stage of the grant process and those include construction materials, frame, foundation etc. Thus, 57% of those who are the beneficiary of the government's grants scheme reported knowing about specific techniques like vertical, horizontal and bracing frames and *Kaichi Dunga* compared to just 33% of those who were not a beneficiary. Nonetheless, results from logistic regression show that whether they were beneficiaries or not, regular listeners of *Milijuli Nepali* or *KathaMaala* were 1.3 times more likely to know

[9] Those who listened to Milijuli Nepali and/or KathaMaala at least twice a month.

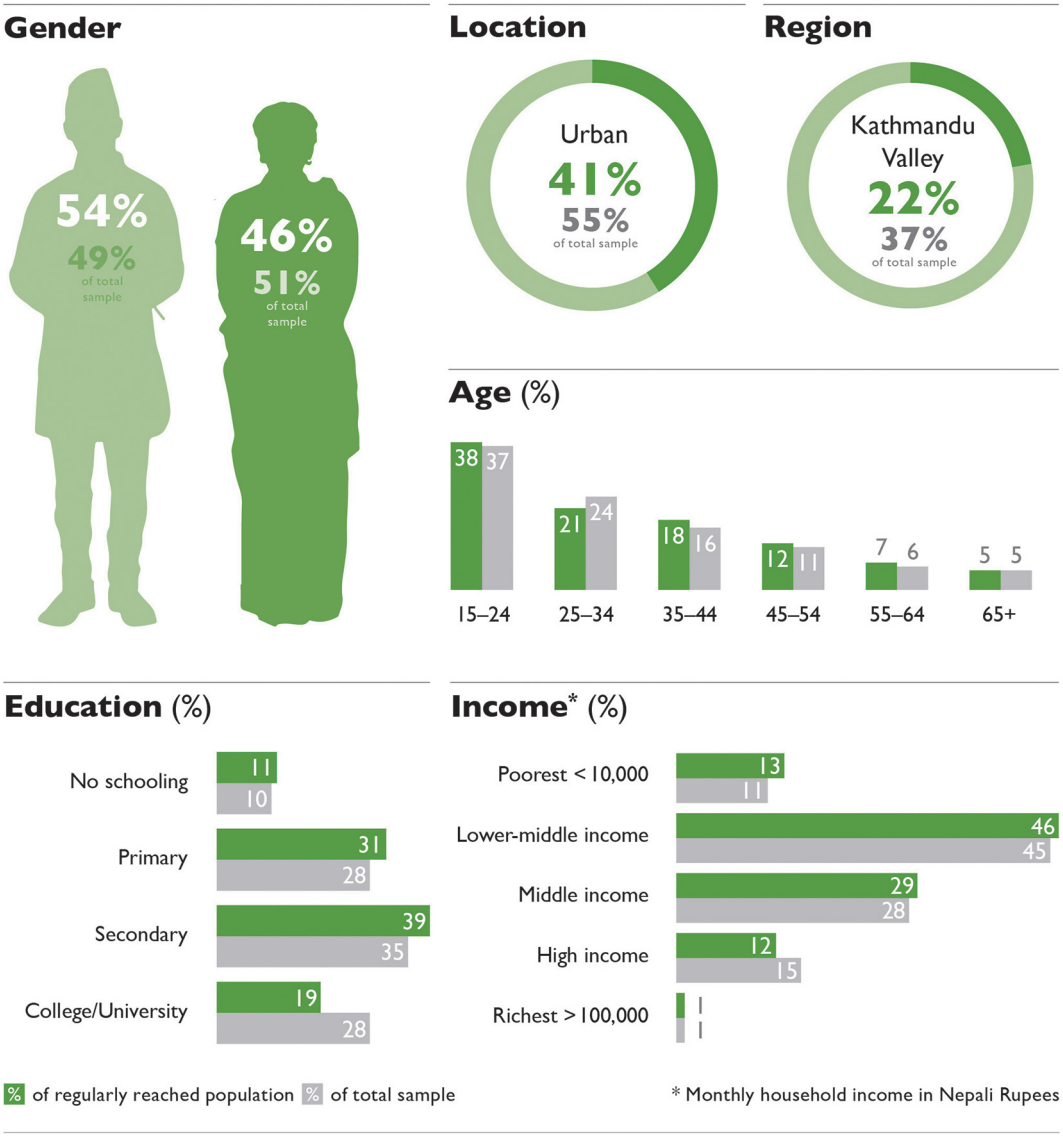

Fig. 6. Demographic profile of BBC Media Action's reconstruction radio programmes' audiences.
Base: Those who listen to Milijuli Nepali or KathaMaala in the 12 months from survey (n = 560).

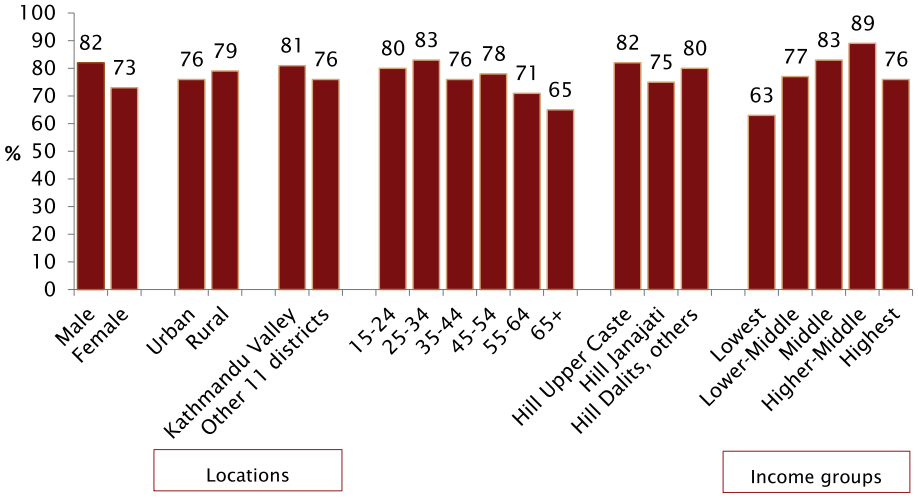

Fig. 7. Demographic profile of radio listeners in affected communities. *Base: Those have access to radio (n = 2044).*

Table 2
Sources of help and support on reconstruction (Base = 3036)[a].

Q: Where do you think people can go to get help for rebuilding their houses?	All (%)	Regularly listened to Milijuli Nepali or KathaMaala (%)	Did not listen to Milijuli Nepali and KathaMaala (%)
Engineers	62	69	59
Local authority	59	71	53
Masons	48	55	44
I/NGOs	12	16	10

[a] Base included 400 booster sample; Multiple response question – percentage sum to more than 100.

about four or more actions that people could take during reconstruction of their houses than non-listeners (see Regression 3 in Annex 2).

Awareness of both male and female masons and using female masons in reconstruction activities was also higher among regular listeners of the programmes. 22% of regular listeners mentioned accessing and using women masons compared to 19% of those who did not listen to these programmes. Logistic regression also showed regular listeners of *Milijuli Nepali* or *KathaMaala* programmes are 1.6 times more likely to know about using women masons compared to those who did not listen to the programmes. (See Regression 4 in Annex 2).

3.6. Radio programmes' influence on action

Milijuli Nepali and *KaathaMaala* influenced people's decisions around technical aspects of reconstruction. Among listeners, nearly two thirds of listeners (65%) reported that their decisions around reconstruction were influenced by the programmes. Regular listeners of *Milijuli Nepali* and *KathaMaala* reported taking actions more than non-listeners. For example, 38% reported using construction techniques endorsed by engineers, and 34% used vertical, horizontal, and bracing frames. Other actions they reported taking during their reconstruction work include using skilled resources like masons, and using earthquake resilient techniques advised by them, and taking mason training to change their livelihoods. However, *Milijuli Nepali* and *KathaMaala* regular listeners were more likely to report taking these actions than those who did not listen to the programmes. For example, 45% of the regular listeners of *Milijuli Nepali* or *KathaMaala* reported following specific techniques like using vertical, horizontal and bracing frames, maintain a safe level (as advised by engineers) of windows and doors and *Kaichi Dunga* in their house reconstruction compared to 28% of non-listeners. (Table 4).

These topics (using locally available materials, trained masons, taking up mason training and following specific earthquake proof techniques like foundations, fortifying the house with lintels and bends, keeping roofs lighter, having the same level of windows and doors etc.) were key issues covered in *Milijuli Nepali* and *KathaMaala*. Since using these earthquake-resistant techniques and advised materials are pre-conditions to progress through the NRA grant process beneficiaries reported taking these actions more than those who were not receiving grants from the government. For example, 45% of those receiving grants reported using vertical, horizontal, and bracing frame, safe level of windows and Kaichi Dunga compared to only 9% of those not receiving grants. However, logistic regression found that regular listeners were 1.4 times more likely to report taking six or more specific actions related to reconstruction of their house compared to non-listeners irrespective of whether they were a grant beneficiary or not (See Regression 5 in annex 2).

Almost half of the listeners (49%) reported taking an action or doing things differently after listening to the programmes. This includes using trained masons or female masons along with technical actions. Initially, when BBC Media Action had conducted Information Needs Assessments (INA) together with local partner stations, people raised their concerns that they lacked trust in newly trained masons. Thus, both *Milijuli Nepali* and *KathaMaala* programmes tried to build trust in the masons in various ways, such as by providing information on how trained masons could help, how to identify a trained mason, sharing real life stories of house owners using masons and benefiting from it etc. 14% of listeners reported using a trained mason or a trained female mason after listening to the programmes (Table 5). Regression results also found that regular listeners were 1.3 times more likely to access and use trained masons (including women masons), use semi-skilled masons under direct supervision of trained masons, use techniques and raw materials suggested by masons,

Table 3
Knowledge of actions people can take on reconstruction (Base = 3036)[a].

Q: What can, or should people do while reconstructing their houses?	All (%)	Regularly listened to Milijuli Nepali or KathaMaala(%)	Did not listen to Milijuli Nepali and KathaMaala(%)
Used techniques endorsed by engineers	59	64	58
Using or reusing local materials	53	62	50
Following specific techniques such as vertical, horizontal, and bracing frames (Nas), safe level of windows and doors, and Kaichi Dunga etc.	48	62	43
Take mason training	33	36	32
Rotate trained mason (alopalo) for building house	22	25	21
Approached local government for information	20	24	19
Accessed or used trained women masons	20	22	19
Frequently visited or contacted with local authorities	14	17	13

[a] Base included 400 booster sample; Multiple response question – percentage sum to more than 100.

Table 4
Actions taken while reconstructing houses (Base = 3036)[a].

Q: Which actions did you take while reconstructing your houses?	All (%)	Regularly listened to Milijuli Nepali or KathaMaala(%)	Did not listen to Milijuli Nepali and KathaMaala(%)
Used techniques endorsed by engineers	38	45	34
Bought construction materials from the neighbouring/ local areas	36	39	34
Used or reused local materials	34	44	29
Following specific techniques such as vertical, horizontal, and bracing frames (Nas), safe level of windows and doors, and Kaichi Dunga etc	34	45	28
Took up mason training	11	13	10

[a] Base included 400 booster sample; Multiple response question – percentage sum to more than 100.

Table 5
Listeners took action after listening to *Milijuli Nepali* or *KathaMaala. Base: Those who listen to Milijuli Nepali or KathaMaala in the 12 months from survey (n = 1060)*[a].

Q: What actions have you or your family taken after listening to *Milijuli Nepali* or *KathaMaala*?	*Milijuli Nepali* or *KathMaala* listeners (%)
Used techniques endorsed by engineers	35
Using or reusing local materials	29
Helped each other	27
Used trained masons or women masons	14
Approached for government's financial support i.e. grants	13

[a] Base included 400 booster sample.

and take mason training compared to non-listeners (See Regression 6 in Annex 2).

3.7. Programmes' influence on self-efficacy

Listeners reported higher self-efficacy than non-listeners in managing the reconstruction process. People in the 14 districts were generally confident in dealing with issues around reconstruction. Most of the respondents agreed that they knew and felt confident about receiving grants, accessing information and local resources, contributing to a discussion regarding reconstruction and providing technical suggestions. This self-reported confidence was reported more by the regular listeners of *Milijuli Nepali* or *KathaMaala* compared to those who did not listen to the programmes. 94% of regular listeners of the programmes reported feeling confident to go into the process to receive private housing reconstruction grants compared to 80% non-listeners. Similarly, 77% said they could make suggestions to community people on the technical areas of house construction compared to 62% of non-listeners. (Table 6).

3.8. Programmes' influence on changing or adopting livelihood

Neither *Milijuli Nepali nor KathaMaala* focused heavily on diversification of livelihoods although there was some focus on encouraging people (especially women) to undertake mason training. For example, in *Milijuli Nepali*, the programme followed stories of a group of masons who travelled across communities and supported people in rebuilding, and who had trained specifically in this role since the earthquake. The programme also showcased stories of women diversifying their income through selling vegetables or taking a lead role in reconstruction in the absence of male members in the household. In the drama series *KathaMaala*, the central character Maala changed her profession after the earthquake. Maala, who was a milk maid, trained herself as mason and started helping people in rebuilding their houses. Whereas the programmes have had a greater impact on motivating people to take action around specific techniques related to reconstructing their home, they were less successful at motivating people to take up or diversify their livelihood, arguably a more difficult action to take. Nearly one third (32%) of the respondents reported having made a change to their livelihood due to reconstruction. These changes included taking mason training, applying new techniques in agriculture or increasing the number of livestock. Regular listeners of *Milijuli Nepali* or *KathaMaala* reported changing or adopting their livelihood significantly more than those who did not listen to either of these programmes. For example, 14% of regular listeners reported taking up mason training compared to only 7% of non-listeners (Table 7). Thus, the programmes partially met their expectations in encouraging women to take up these livelihood options and many female respondents reported doing so alongside men.

4. Discussion: factors that helped in achieving these results

4.1. Developing and adapting the communication strategy to changing audience needs

Communicating risk is complex. Designing and executing media programmes that prompt people to understand risk and to take decisions and actions accordingly requires a carefully considered communication strategy that reflects a clear understanding of the complexity of people's lives – what spurs them to change the way they do things and what may prevent them from doing so. If communication activities are to prompt people to act, they must be engaging, trustworthy and appeal to the changing needs and specific preferences of the audience. To get these things right, it is important to conduct regular research, collaborate with a wide range of partners, and if producing through local media providers, strengthen

Table 6
Confidence in dealing with issues around reconstruction (Base = 3036)[a]

Q: How much do you agree or disagree with the following statements?	Agreed (%)	Regularly listened to Milijuli Nepali or Kathamaala(%)	Did not listen to Milijuli Nepali and Kathamaala(%)
I know all the steps to follow to receive the grants	85	94	81
I feel confident to go into the process to receive the grants	84	94	80
I can access local resources required for safe construction	93	95	92
I can access all the information I require for safe construction	90	95	87
I feel I can contribute in the discussion regarding reconstruction in my community	79	89	73
I can make suggestions on some of the technical areas of house construction to others	67	77	62

[a] Base included 400 buster sample; Multiple response question – percentage sum to more than 100.

Table 7
Changes made to livelihoods due to reconstruction (Base = 2660)[a]

Q: What changes have you or your family members made to your/their livelihood due to reconstruction?	All (%)	Regularly listened to Milijuli Nepali or Kathamaala(%)	Did not listen to Milijuli Nepali and Kathamaala(%)
	Base: 2660	*Base: 2442*	
Increased the number of livestock/cattle	9	11	8
Adopted new techniques of agriculture	6	11	4
Started a new business	7	8	6
Changed their job	8	10	6
Took a mason training	9	14	7
Took training to generate more income	5	8	3

[a] Base includes those responded to this questions only.

Fig. 8. A graphical presentation of findings from community needs assessments in Dhading districts.

their capacities. Although the programmes launched in an emergency context, BBC Media Action spent considerable time understanding what would help audiences make decisions and act on them. Continuous Information Needs Assessments with the affected communities provided useful insights regarding their changing needs, and the programmes were tailored accordingly. [13].

One year after the earthquakes, as people's needs moved from recovery to reconstruction, so did the focus of the radio programmes. *Milijuli Nepali* began sharing information on how to construct earthquake-resistant housing. As outlined in Fig. 8, affected people had specific barriers to access information on grants and technical issues of rebuilding houses. Access to skilled resources like trained masons and engineers were barriers too. The programme featured experts (i.e. engineers and trained masons) discussing and offering solutions to issues raised by affected people from different communities. It re-visited communities to monitor their progress (Fig. 8). *KathaMaala* presented its central character Maala in a new occupation, having trained as a mason. This change not only encouraged people to use trained masons in their house reconstruction but also inspired other women to take up masonry as a profession.

4.2. Delivering creative and entertaining content to hold audiences' attention

Both *Milijuli Nepali* and *KathaMaala* kept audiences at the centre of programming and featured characters and individuals that audiences could identify with.

The magazine show *Milijuli Nepali* travelled to affected areas and brought the voices of local people and communities into the show, alongside experts, to discuss and advise on solutions, issues and concerns raised. The show followed up with communities to ascertain their progress. It included entertaining content such as music and poetry from affected people

[This conversation between presenter of Milijuli Nepali and two trained masons demonstrate how the programme used simple language to give technical information about foundation of houses.]

00:00 Mason 1: The walls have been tied together in such a way inside-out, that if there is a tremor, it shakes in its entirety, instead of crumbling.
00:12 Presenter: Because this stone helps to tie the internal and external walls together. This is called '*Chhadh*' in some places. Some called it '*Garho Badeko*'.
00:21 Mason 1: Some call it '*Karuwa Dhunga*' or '*Paitalish*'.
00:23 Presenter: What happens when we use such techniques?
00:24 Mason 1: If we use this technique, it makes the wall stronger. If you look carefully, you will see that the vertical stones are placed against the horizontal stones, so as to tie up the internal and external walls. When it reaches a certain height, DPC (damp proof concrete) would also help to tie it up. This is basically used for the walls to be stable.
00:36 Presenter: What is the thickness of the wall?
00:38 Mason 1: 18 inches
00:40 Presenter: The stone used here in this 18-inch wall stretches from the internal wall to the external wall.
00:43 Mason 1: Yes! (laughs) It is almost 25 inches (laughs)
00:47 Mason 2: We built the houses by tying up the wall. We call it '*Paitalish Dhunga*'. Some called it '*Kaichi Dhunga*'. If we use such techniques, then the house will be strong. We have used the techniques in many houses. The houses, where we did not use this technique, now have cracks in them. During the training, we were taught to keep such stones at a distance of every two feet.

Fig. 9. Transcript of a *Milijuli Nepali* episode explaining earthquake-resistant foundation technique locally known as *Kaichi Dunga or Paitalish.*

or listeners. These efforts kept the audience engaged over more than four years– the *Milijuli Nepali* audience increased from 15% in 2016 to 20% in 2019 in the severely affected districts [12].

The programmes also attracted listeners from diverse backgrounds: nearly half (46%) of the listeners were women, nearly eight in 10 listeners (78%) were from 11 districts outside of the Kathmandu valley, and nearly six in 10 (59%) were from rural areas and from the caste and ethnic groups not labelled as higher hill castes.

It should be noted that the programme content was informed by formative research partnerships and discussions with civil society, experts, and the Nepali government who were consulted widely when making all programmes.

4.3. Storytelling and role modelling to give people confidence to take action

At the beginning of the reconstruction phase, many people raised concerns in audience needs assessments that they lacked trust in newly trained masons. To address this issue, the drama series *KathaMaala* introduced a mason through its central female character *Maala*, who trained as a mason and encouraged listeners to follow her example to train as well as to seek support from trained masons. *Milijuli Nepali* also discussed the importance of seeking advice and support from skilled masons and engineers when reconstructing houses. The presenter used metaphors to make these technical aspects simple and comprehensible for listeners and helped listeners visualise these techniques. The programme brought stories of people 'like them' taking action and trying things that might otherwise seem awkward or difficult. This research found that the programmes helped to build people's trust in masons. Other research has shown that well-known and trusted figures increased acceptance of information provided on the radio during responses to the Ebola epidemic in West Africa between 2014 and 2016 [8].

The results showed that listeners were more likely to feel confident about applying for government grants compared to non-listeners (94% vs. 80%), and felt they could contribute in discussions regarding safe reconstruction in their communities (89% vs. 73%). Listening to community leaders and experts on the radio, people gained trust in authorities and response teams, and gained confidence in their own individual ability to cope and recover from the crisis [9].

4.4. Using simple and clear language to facilitate understanding of building techniques

Both programmes used language that was easy for the audience to understand, particularly regarding explanations of technical NRA-mandated techniques and other earthquake-resistant techniques (Fig. 9). Some episodes of *Milijuli Nepali* focused on different technical aspects of construction, such as how to create strong foundations, how to strengthen houses with lintels and the importance of keeping roofs lighter. The presenter used metaphors to ensure these technical aspects were easy to understand and helped listeners visualise them. The programme also featured experts and engineers to explain these techniques in precise, yet clear, terms.

Listeners were especially engaged with parts of the programmes that provided technical information on rebuilding their homes. People who were affected by the earthquake were entitled to receive a government grant to help rebuild their homes. This was provided in three tranches and released to people once NRA engineers had completed a six-point check to ensure the correct construction materials, frames and foundations had been used. As discussed above, analysis found that listeners were more likely to than non-listeners to know about actions and to take more actions around rebuilding correctly, even when controlling for other factors.

5. Conclusion

This research provides evidence that people in the 14 severely affected districts have benefited from the trusted and relevant information provided in *Milijuli Nepali* and *KathaMaala*. It provides evidence that these two programmes have affected the way people understand earthquake risk in relation to housing and what they do about it.

The programmes have made earthquake affected people aware of where and how to access information and financial support for reconstruction, and informed them about earthquake-resistant building techniques, locally available materials, and skilled service providers, such as masons and engineers. In addition, the programmes have been successful at motivating people to make important decisions related to their reconstruction work and at prompting them to take concrete action that will contribute to risk reduction and building safer housing.

Role modelling good practices through a diverse range of real-life stories and drama and allowing ordinary people to tell their own stories in an engaging way were effective at building knowledge and self-efficacy. Audiences recognized themselves in these stories and identified with the situations. The success of these programmes was also contingent on adapting programming according to people's changing needs at different stages of the reconstruction process.

This paper has brought to light that lack of evaluative data and evidence of impact from similar disaster risk reduction and recovery programmes on the radio has effectively reduced the scope to compare results of this study with others.

However, evidence gathered through a comprehensive review of research papers covering the use or impact of humanitarian radio in several large-scale emergencies has demonstrated that radio programmes were effective at influencing positive behaviours for coping in emergencies. The authors of that review predicted 'no reason to doubt' that radio programmes in emergencies would not create the same positive effect [4]. However, drawing such conclusion based on the robust evaluative results or empirical data may not be possible in the future as Hannides [3] rightly mentioned "evaluations that are considered 'robust'" face multiple practical challenges in a crisis.

6. Implications for future media and communication interventions

Develop disaster risk communication strategies based on research and evidence	Conduct early and regular research, work with partners, and adapt programming accordingly. Future programming should continue to not only provide people with trustworthy and relevant information, but encouragement and support through effective role modelling and storytelling – especially reinforcing women's roles in the overall recovery process.
Support to develop livelihoods and to access financial services	DRR programmes for low-income audiences could support people more effectively by including discussion of how to increase their incomes, develop their livelihoods, access financial services, and manage money wisely in order to invest in reconstruction and retrofitting.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Annex 1: Questions asked in the survey

- Do you (or your family) consider yourself affected by the 2015 (2072) earthquake?
- After the earthquake and till now, in what ways did the earthquake affect you?
- How did the government classify your house during the damage assessment?
- What is the status of your house now?
- Are/ were you a beneficiary for the government grant? How many tranches of government grant you have received so far for building your house?
- What were your main concerns at the beginning stages of the reconstruction? Do you still have any of these concerns?
- What are remaining concerns you have related to reconstruction of your home?
- What has been the impact of having to reconstruct or renovate your home?
- What changes have you or your family members made to your livelihoods due to reconstruction?
- Besides the changes mentioned above, are any changes you or your family members made to your livelihoods due to reconstruction?
- What can/ should people do while reconstructing / renovating their house?
- Are there any other ways that people should do while reconstructing their house in terms of using building materials, using different techniques of building house, mason, government information? (What actions can be taken?) Out of these, which action you have done?
- Where do you think people can go to get help for rebuilding their houses?
- How important do you think building safe house is? Why building safe house is important?
- Over the last 1 year, do you think your knowledge on the following have increased, remained same, or decreased?
- What are your main sources of information for reconstruction? How much trust do you have on these sources of information on reconstruction?
- Do you feel you have the information you need to access reconstruction support?
- To what extent does information in the media has influenced your ability to make decision on rebuilding your house?
- Are you aware of any programme on radio and TV about reconstruction?
- Which of these programmes did you listen in the past 12 months? When did you last listened to Milijuli Nepali and Kathamala?
- How often do you listen to Milijuli Nepali,Kathamala and Local discussion programme?
- Has Milijuli Nepali or Kathamaala influenced any decisions you have taken around reconstruction? If Yes, which decisions were influenced?

- Have you or your family taken any action/done things differently after listening to Milijuli Nepali or Kathamala, to deal with issues on reconstruction? If Yes, what actions/changes have you/your family made/done?

Annex 2: Tables of logistic regression

Regression modelling was conducted to compare key outcomes i.e. people's knowledge related to reconstruction issues and actions they have taken during reconstructing their houses between those regularly listening to the programmes and those did not listen any of them. The logistic regression tested the impact of the programmes on audiences while controlling for potential confounding socio-demographic factors i.e. age, sex, location, region, education, caste and ethnicity, and household income as well as their beneficiary status with the government private housing grant scheme.

Regression 1: Knowledge of benefit of reconstruction (To avoid financial loses and dmage) by regular listeners of Milijuli Nepali and/or KathaMaala.

N = 2791

Variables	Unstandardized Coefficients		Wald	df	Sig.	Exp(B)	95% C.I.for EXP(B)	
	B	S.E.					Lower	Upper
Regular audience	0.243	0.088	7.586	1	0.006	1.275	1.072	1.515
AGE			3.491	5	0.625			
15–24	0.179	0.180	0.996	1	0.318	1.197	0.841	1.702
25–34	0.150	0.159	0.895	1	0.344	1.162	0.851	1.586
35–44	0.258	0.151	2.919	1	0.088	1.294	0.963	1.740
45–54	0.090	0.148	0.366	1	0.545	1.094	0.818	1.462
55–64	0.150	0.153	0.968	1	0.325	1.162	0.861	1.569
RURAL	0.394	0.172	5.219	1	0.022	1.482	1.058	2.077
SEX Male	0.034	0.081	0.179	1	0.672	1.035	0.883	1.213
REGION Kathmandu	0.369	0.190	3.774	1	0.052	1.447	0.997	2.100
EDUCATION			13.042	3	0.005			
No schooling	−0.591	0.169	12.213	1	0.000	0.554	0.397	0.771
Primary-5 years edu	−0.468	0.143	10.631	1	0.001	0.626	0.473	0.830
Secondary-10 years edu	−0.372	0.140	7.093	1	0.008	0.690	0.525	0.907
CASTE			6.134	2	0.047			
Hill upper castes	−0.158	0.159	0.980	1	0.322	0.854	0.625	1.167
Hill Adibasi/Janajati groups	−0.307	0.151	4.158	1	0.041	0.735	0.547	0.988
HOUSEHOLD INCOME			0.415	3	0.937			
Poorest >10,000	0.057	0.180	0.102	1	0.749	1.059	0.745	1.506
Lower-MiddleIncome group 10,000 to 20,000	0.092	0.163	0.319	1	0.572	1.096	0.797	1.509
MiddleIncome group <20,000 to 40,000	0.057	0.172	0.110	1	0.740	1.059	0.756	1.482
Constant	−0.163	0.321	0.259	1	0.611	0.849		

The reference categories for this model are Not reached by Milijuli Nepalis and KathaMaala, Age 65 +, urban, female, other regions, College&Uni education, Hill Dalits, Modeshi & others, and High income group. The model had an Cox & Snell R Square value of 0.019.

Regression 2: Knowledge of benefit of reconstruction (To build durable, strong earthquake resilient house) by regular listeners of Milijuli Nepali and/or KathaMaala

N = 2791

Variables	Unstandardized Coefficients		Wald	df	Sig.	Exp(B)	95% C.I.for EXP(B)	
	B	S.E.					Lower	Upper
Regular audience	0.469	0.089	27.520	1	0.000	1.599	1.342	1.905
AGE			4.695	5	0.454			
15–24	−0.345	0.181	3.642	1	0.056	0.708	0.497	1.009
25–34	−0.147	0.159	0.855	1	0.355	0.863	0.632	1.179
35–44	−0.209	0.152	1.899	1	0.168	0.811	0.603	1.092
45–54	−0.235	0.148	2.519	1	0.112	0.790	0.591	1.057
55–64	−0.152	0.153	0.979	1	0.322	0.859	0.636	1.160
RURAL	0.004	0.170	0.001	1	0.982	1.004	0.720	1.400
SEX Male	0.079	0.081	0.946	1	0.331	1.082	0.923	1.270
REGION Kathmandu	0.502	0.190	6.981	1	0.008	1.651	1.138	2.396
EDUCATION			18.384	3	0.000			
No schooling	−0.444	0.170	6.813	1	0.009	0.642	0.460	0.895
Primary-5 years edu	−0.040	0.144	0.079	1	0.779	0.960	0.724	1.274
Secondary-10 years edu	0.105	0.141	0.557	1	0.456	1.111	0.843	1.465
CASTE			1.054	2	0.590			
Hill upper castes	0.156	0.161	0.943	1	0.331	1.169	0.853	1.603
Hill Adibasi/Janajati groups	0.099	0.152	0.423	1	0.516	1.104	0.819	1.488
HOUSEHOLD INCOME			3.282	3	0.350			

(*continued*)

Regression 2: Knowledge of benefit of reconstruction (To build durable, strong earthquake resilient house) by regular listeners of Milijuli Nepali and/or KathaMaala								
N = 2791								
Variables	Unstandardized Coefficients		Wald	df	Sig.	Exp(B)	95% C.I.for EXP(B)	
	B	S.E.					Lower	Upper
Poorest >10,000	−0.330	0.183	3.241	1	0.072	0.719	0.502	1.030
Lower-MiddleIncome group 10,000 to 20,000	−0.268	0.167	2.568	1	0.109	0.765	0.552	1.062
MiddleIncome group <20,000 to 40,000	−0.258	0.176	2.144	1	0.143	0.773	0.547	1.091
Constant	0.287	0.323	0.793	1	0.373	1.333		

The reference categories for this model are Not reached by Milijuli Nepalis and KathaMaala, Age 65 + , urban, female, other regions, College&Uni education, Hill Dalits, Modeshi & others, and High income group. The model had an Cox & Snell R Square value of 0.034.

Regression 3: Knowledge of actions by regular listeners of Milijuli Nepali and/or KathaMaala								
N = 2791								
Variables	Unstandardized Coefficients		Wald	df	Sig.	Exp(B)	95% C.I.for EXP(B)	
	B	S.E.					Lower	Upper
Regular audience of MiliJuli Nepali and/or KathaMaala	0.294	0.090	10.767	1	0.001	1.342	1.126	1.600
AGE			12.985	5	0.024			
15–24	−0.352	0.185	3.637	1	0.057	0.703	0.490	1.010
25–34	−0.368	0.164	5.053	1	0.025	0.692	0.502	0.954
35–44	−0.046	0.154	0.089	1	0.766	0.955	0.706	1.292
45–54	0.032	0.150	0.044	1	0.834	1.032	0.768	1.386
55–64	−0.110	0.157	0.489	1	0.484	0.896	0.659	1.219
RURAL	−0.403	0.170	5.615	1	0.018	0.668	0.479	0.933
SEX Male	0.080	0.083	0.924	1	0.336	1.083	0.920	1.275
REGION Kathmandu	−0.038	0.189	0.041	1	0.839	0.962	0.664	1.394
EDUCATION			17.417	3	0.001			
No schooling	−0.630	0.173	13.196	1	0.000	0.533	0.379	0.748
Primary-5 years edu	−0.293	0.145	4.050	1	0.044	0.746	0.561	0.992
Secondary-10 years edu	−0.084	0.141	0.357	1	0.550	0.919	0.698	1.211
CASTE			11.657	2	0.003			
Hill upper castes	−0.530	0.161	10.828	1	0.001	0.588	0.429	0.807
Hill Adibasi/Janajati groups	−0.496	0.152	10.664	1	0.001	0.609	0.452	0.820
HOUSEHOLD INCOME			5.526	3	0.137			
Poorest >10,000	0.289	0.186	2.427	1	0.119	1.336	0.928	1.922
Lower-MiddleIncome group 10,000 to 20,000	0.334	0.168	3.932	1	0.047	1.396	1.004	1.942
MiddleIncome group <20,000 to 40,000	0.159	0.177	0.801	1	0.371	1.172	0.828	1.659
Constant	0.395	0.325	1.477	1	0.224	1.485		

The reference categories for this model are Not reached by Milijuli Nepalis and KathaMaala, Age 65 + , urban, female, other regions, College&Uni education, Hill Dalits, Modeshi & others, and High income group. The model had an Cox & Snell R Square value of 0.025.

Regrssion 4: Knowledge of accessing and using skilled and trained masons by regular listeners of Milijuli Nepali and/or KathaMaala								
N = 2791								
Variables	Unstandardized Coefficients		Wald	df	Sig.	Exp(B)	95% C.I.for EXP(B)	
	B	S.E.					Lower	Upper
Regular audience of MiliJuli Nepali and/or KathaMaala	0.465	0.138	11.345	1	0.001	1.591	1.214	2.086
AGE			6.095	5	0.297			
15–24	−0.508	0.313	2.635	1	0.105	0.602	0.326	1.111
25–34	−0.173	0.266	0.422	1	0.516	0.841	0.499	1.417

(continued on next page)

(*continued*)

Regrssion 4: Knowledge of accessing and using skilled and trained masons by regular listeners of Milijuli Nepali and/or KathaMaala								
N = 2791								
Variables	Unstandardized Coefficients		Wald	df	Sig.	Exp(B)	95% C.I.for EXP(B)	
	B	S.E.					Lower	Upper
35–44	0.038	0.248	0.024	1	0.877	1.039	0.640	1.688
45–54	0.049	0.242	0.041	1	0.839	1.050	0.653	1.689
55–64	0.080	0.251	0.101	1	0.750	1.083	0.663	1.771
RURAL	−0.309	0.259	1.417	1	0.234	0.735	0.442	1.221
SEX Male	0.005	0.133	0.001	1	0.971	1.005	0.774	1.305
REGION Kathmandu	0.039	0.288	0.018	1	0.892	1.040	0.592	1.827
EDUCATION			0.895	3	0.827			
No schooling	−0.078	0.273	0.082	1	0.775	0.925	0.541	1.579
Primary-5 years edu	−0.069	0.229	0.092	1	0.762	0.933	0.595	1.462
Secondary-10 years edu	0.090	0.221	0.165	1	0.685	1.094	0.710	1.685
CASTE			11.174	2	0.004			
Hill upper castes	−0.691	0.225	9.409	1	0.002	0.501	0.322	0.779
Hill Adibasi/Janajati groups	−0.680	0.210	10.487	1	0.001	0.507	0.336	0.765
HOUSEHOLD INCOME			5.770	3	0.123			
Poorest >10,000	−0.623	0.272	5.240	1	0.022	0.537	0.315	0.914
Lower-MiddleIncome group 10,000 to 20,000	−0.394	0.233	2.875	1	0.090	0.674	0.427	1.063
MiddleIncome group <20,000 to 40,000	−0.261	0.245	1.139	1	0.286	0.770	0.477	1.244
Constant	−0.976	0.481	4.108	1	0.043	0.377		

The reference categories for this model are Not reached by Milijuli Nepali and KathaMaala, Age 65 + , urban, female, other regions, College&Uni education, Hill Dalits, Modeshi & others, and High income group. The model had an Cox & Snell R Square value of 0.014.

Regression 5: Action taken to reconstruct house by regular listeners of Milijuli Nepali and/or KathaMaala								
N = 2789								
Variables	Unstandardized Coefficients		Wald	df	Sig.	Exp(B)	95% C.I.for EXP(B)	
	B	S.E.					Lower	Upper
Regular audience of MiliJuli Nepali and/or KathaMaala	0.332	0.106	9.788	1	0.002	1.393	1.132	1.715
AGE			12.602	5	0.027			
15–24	0.040	0.230	0.030	1	0.863	1.041	0.662	1.635
25–34	−0.070	0.208	0.113	1	0.736	0.932	0.620	1.402
35–44	0.032	0.198	0.026	1	0.872	1.033	0.701	1.522
45–54	0.403	0.189	4.546	1	0.033	1.496	1.033	2.166
55–64	0.289	0.198	2.132	1	0.144	1.335	0.906	1.969
RURAL	0.098	0.228	0.183	1	0.668	1.103	0.705	1.724
SEX Male	0.047	0.103	0.207	1	0.649	1.048	0.857	1.282
REGION Kathmandu	−2.682	0.459	34.168	1	0.000	0.068	0.028	0.168
EDUCATION			2.775	3	0.428			
No schooling	−0.347	0.219	2.512	1	0.113	0.707	0.460	1.086
Primary-5 years edu	−0.174	0.185	0.884	1	0.347	0.841	0.585	1.207
Secondary-10 years edu	−0.163	0.181	0.810	1	0.368	0.850	0.596	1.212
CASTE			7.270	2	0.026			
Hill upper castes	−0.330	0.184	3.226	1	0.072	0.719	0.502	1.031
Hill Adibasi/Janajati groups	−0.454	0.173	6.909	1	0.009	0.635	0.453	0.891
HOUSEHOLD INCOME			1.131	3	0.770			
Poorest >10,000	0.181	0.243	0.554	1	0.457	1.198	0.745	1.927
Lower-MiddleIncome group 10,000 to 20,000	0.230	0.224	1.059	1	0.303	1.259	0.812	1.952
MiddleIncome group <20,000 to 40,000	0.208	0.237	0.767	1	0.381	1.231	0.773	1.960
Constant	−1.234	0.417	8.737	1	0.003	0.291		

The reference categories for this model are Not reached by Milijuli Nepali and KathaMaala, Age 65 + , urban, female, other regions, College&Uni education, Hill Dalits, Modeshi & others, and High income group. The model had an Cox & Snell R Square value of 0.054.

Regression 6: Using masons by regular listeners of Milijuli Nepali and/or KathaMaala								
N = 2791								
Variables	Unstandardized Coefficients		Wald	df	Sig.	Exp(B)	95% C.I.for EXP(B)	
	B	S.E.					Lower	Upper
Regularly reached	0.273	0.101	7.283	1	0.007	1.314	1.078	1.602
AGE			8.534	5	0.129			
15–24	−0.118	0.201	0.346	1	0.556	0.889	0.600	1.317
25–34	−0.358	0.174	4.249	1	0.039	0.699	0.497	0.983

(*continued*)

Regression 6: Using masons by regular listeners of Milijuli Nepali and/or KathaMaala								
N = 2791								
Variables	Unstandardized Coefficients		Wald	df	Sig.	Exp(B)	95% C.I.for EXP(B)	
	B	S.E.					Lower	Upper
35–44	−0.057	0.167	0.114	1	0.735	0.945	0.681	1.312
45–54	−0.054	0.163	0.108	1	0.742	0.948	0.688	1.305
55–64	0.022	0.169	0.017	1	0.898	1.022	0.733	1.424
RURAL	0.381	0.175	4.742	1	0.029	1.464	1.039	2.063
SEX Male	0.010	0.090	0.012	1	0.913	1.010	0.847	1.204
REGION Kathmandu	−1.123	0.193	33.914	1	0.000	0.325	0.223	0.475
EDUCATION			8.596	3	0.035			
No schooling	−0.444	0.186	5.695	1	0.017	0.642	0.446	0.924
Primary-5 years edu	−0.129	0.159	0.657	1	0.418	0.879	0.643	1.201
Secondary-10 years edu	−0.116	0.155	0.562	1	0.453	0.890	0.657	1.207
CASTE			0.919	2	0.632			
Hill upper castes	−0.043	0.181	0.055	1	0.814	0.958	0.672	1.366
Hill Adibasi/Janajati groups	−0.117	0.171	0.467	1	0.494	0.890	0.637	1.244
HOUSEHOLD INCOME			4.294	3	0.231			
Poorest >10,000	0.258	0.198	1.702	1	0.192	1.294	0.879	1.907
Lower-MiddleIncome group 10,000 to 20,000	0.041	0.177	0.054	1	0.816	1.042	0.736	1.476
MiddleIncome group <20,000 to 40,000	0.159	0.188	0.713	1	0.398	1.172	0.811	1.693
Constant	0.838	0.348	5.804	1	0.016	2.312		

The reference categories for this model are Not reached by Milijuli Nepali and KathaMaala, Age 65 + , urban, female, other regions, College&Uni education, Hill Dalits, Modeshi & others, and High income group. The model had an Cox & Snell R Square value of 0.064.

References

[1] National Planning Commission, Government of Nepal. Post Disaster Needs Assessment; Vol-A: Key Findings. [online]. Available from: https://www.nepalhousingreconstruction. org/documents/nepal-earthquake-2015-post-disaster-needs-assessment-volume-key-findings; 2015. [Accessed on 29 July 2019].

[2] National Reconstruction Authority, Government of Nepal. Reconstruction progress [Webpage]. Available from: http://www.nra.gov.np/en; 2019. [Accessed on 10 October 2020].

[3] Hannides T. Humanitarian Broadcasting in Emergencies. A Synthesis of Evaluation Findings. [online]. BBC Media Action Research Report Issue 7 October 2015 [online]. Available from http://downloads.bbc.co.uk/mediaaction/pdf/research/humanitarian-broadcasting-in-emergencies-2015-report.pdf; 2015. [Accessed 24 September 2020].

[4] Hugelius K, Adams M, Murphy ER. The power of radio to promote health and resilience in natural disasters: A review [online]. Int J Environ Res Public Health. 2019;16(14):1–2 15 July 2019. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6679034/. [Accessed 24 September 2020].

[5] BBC Media Action. Lifeline Programming: Communication with crisis affected people. [online]. Available from: https://lifeline.bbcmediaaction.org/wp-content/uploads/2020/05/LifelineProgramming.pdf; 2013. [Accessed 23 August 2019].

[6] Nepal Earthquake housing reconstruction multi-donor trust fund. How does the Cash-Transfer Mechanism work? Available online https://www.nepalhousingreconstruction.org/how-does-cash-transfer-mechanism-work; 2019. [Accessed on 05 February 2019].

[7] Saha S, Pradhan S. Strengthening accountability through media in Nepal. *Research Report* BBC Media Action [online] Available from: http://dataportal.bbcmediaaction.org/site/assets/uploads/2017/07/Nepal-Country-Report-2017.pdf; 2017.

[8] Bedrosian SR, Young CE, Smith LA, Manning C, Pecha L, Telfer JL, et al. Lessons of Risk Communication and Health Promotion—West Africa and United States [online]. , 65Center for Disease Control and Prevention (CDC); 2016; 68–74 Available from: https://www.cdc.gov/mmwr/volumes/65/su/su6503a10.htm?s_cid=su6503a10_w [Accessed 24 September 2020].

[9] Hugelius K, Giord M, Ortenwall P, Adolfsson A. To silence the deafening silence: Survivor's needs and experiences of the impact of disaster radio for their recovery after a natural disaster [online]. J Int Emer Nurs. 2016;28(2016):8–13 Available from: https://www.firstresponseradio.org/uploads/4/9/2/7/49270391/2_-_hugelius_et_al_2016_to_silence.....pdf. [Accessed 24 September 2020].

[10] Bradley DT, McFarland M, Clarke M. The effectiveness of disaster risk communication: a systematic review of intervention studies. PLOS Curr Dis. 2014. https://doi.org/10.1371/currents.dis.349062e0db1048bb9fc3a3fa67d8a4f8 2014 Aug 22 . Edition 1. Available online from. file:///C:/users/sahas02/Downloads/_currents.plos.org_disasters_article_the-effectiveness-of.pdf [Accessed 22 February 2021].

[11] Paul S. The perception of risk. Research Gate. 2016. https://doi.org/10.1017/CBO9781316422250.040 [online]. Available from. file:///C:/users/sahas02/Downloads/241%20(1).pdf [Accessed 22 February 2021].

[12] Pradhan S, Sandberg HG. Qualitative evaluation of Nepal lifeline programme Milijuli Nepali [unpublished]. BBC Media Action; 2016 [contact author for a copy of this report].

[13] BBC Media Action. Media for development. [online]. Available from: https://mediafordevelopment.bbcmediaaction.org/ourapproach/; 2017. [Accessed 22 February 2021].