Enhancing community knowledge and health behaviors to eliminate blinding trachoma in Mali using radio messaging as a strategy

Sanoussi Bamani1, Emily Toubali2*, Sadio Diarra3, Seydou Goita3, Zana Berté3, Famolo Coulibaly1, Hama Sangaré1, Marjon Tuinsma3, Yaobi Zhang4, Benoit Dembele3, Palesa Melvin2 and Chad MacArthur2

1Programme National de Lutte Contre la Cécité, Ministère de la Santé, Bamako, Mali, 2Department of Neglected Tropical Disease Control, Helen Keller International Headquarters, New York, NY 10010, USA, 3Helen Keller International, Mali Country Office, Bamako, Mali and 4Helen Keller International, Regional Office for Africa, Dakar, Senegal

*Correspondence to: E. Toubali. E-mail: etoubali@hki.org
Received on May 24, 2012; accepted on September 25, 2012

Abstract

The National Blindness Prevention Program in Mali has broadcast messages on the radio about trachoma as part of the country’s trachoma elimination strategy since 2008. In 2011, a radio impact survey using multi-stage cluster sampling was conducted in the regions of Kayes and Segou to assess radio listening habits, coverage of the broadcasts, community knowledge and behavior specific to trachoma and facial cleanliness of children. Radio access and listening were high, with 60% of respondents having heard a message on the radio about trachoma. The majority of respondents knew about trachoma, its root causes, its impact on health and prevention measures. Additionally, 66% reported washing their children’s faces more than or equal to twice/day and 94% reported latrine disposal of feces. A high percentage of persons who gave a positive response to knowledge and behavior questions reported hearing the trachoma messages on the radio with 60% reporting that the radio is where they learned about trachoma. There was no significant difference in facial cleanliness when comparing children whose primary caregiver had/ had not heard the trachoma messages. Next steps include revising the current messages to include more focused behavior change messaging and to engage in a more robust use of community radios.

Introduction

Trachoma is the world’s leading infectious cause of blindness, disproportionately affecting people who live in communities lacking access to clean water, sanitation and adequate health care [1, 2]. It is caused by eye infection with the bacteria Chlamydia trachomatis. Such an infection causes papillary and/or follicular inflammation of the tarsal conjunctiva, which is referred to as active trachoma, subdivided into trachomatous inflammation—follicular and trachomatous inflammation—intense [3, 4]. Recurrent infections of the conjunctiva lead to the development of scar tissue within the conjunctiva. Because of the contraction of the scar tissue, the eyelid is turned inward allowing the eyelashes to rub against and eventually abrade the cornea (trachomatous trichiasis), eventually leading to corneal opacity and blindness [3, 4]. The global objective set by the World Health Assembly in 1998 is to eliminate trachoma as a blinding disease by the year 2020 [5]. The World Health Organization has endorsed the implementation of the SAFE strategy (Surgery to correct trichiasis, Antibiotics to treat active infection, Facial cleanliness to prevent the
transmission of bacteria and Environmental improvement by increasing use of latrines and access to water) to help trachoma endemic countries achieve disease elimination [6, 7]. Children younger than 10 years—primarily pre-school aged children—are most susceptible to active infection, and thus the target of preventive activities, most notably face-washing to eliminate the ocular and nasal discharge that attracts flies to the face and allows the transmission of *Chlamydia* from person to person [8, 9].

The Republic of Mali is a large, land-locked country in West Africa with a population of over 15 million. The country is divided into eight administrative regions plus Bamako, which consist of a total of 60 health districts [10]. Nationwide mapping of trachoma was conducted in Mali from 1996 to 1997 whereby active trachoma prevalence in children was found to range from 23.1 to 46.7%, and the national prevalence of trichiasis in women older than 14 years was 2.5% [11]. Evidence of widespread endemicity led to the implementation of a trachoma control program through the National Blindness Prevention Program (PNLC) in 1998 [12, 13]. The national program adopts the SAFE strategy, setting a national target of eliminating the blinding disease by 2015 and is supported by a number of partner organizations, such as Helen Keller International (HKI), the Carter Center, Organisation pour le Prevention de la Cécité and Sightsavers. It receives major funding from the US Government, the Conrad N. Hilton Foundation and Lions Clubs International Foundation, together with the donation of Zithromax® from Pfizer Inc., through the International Trachoma Initiative. The major program activities include mass drug administration (MDA), surgical camps for trichiasis cases, latrine building, health education and behavior change communication. Since the onset of the program, the PNLC has successfully taken the program coverage to national scale with the results that district-level MDA has been halted in 43 districts, and the trichiasis backlog has been significantly reduced. Mali was recently removed from the list of high burden trachoma countries [2, 14, 15].

Health communication in Mali benefits from an extensive, national network of over 160 radio stations [16]. Since 2008, the PNLC has partnered with the Union of Free Radio and Televisions (URTEL) of Mali to broadcast trachoma messages to promote trachoma awareness, social mobilization and behavior change communication through this network. The trachoma messages aim to provide consistent, educational information about trachoma, such as disease manifestation, transmission and specific behavioral steps to prevent and eventually eliminate trachoma as a public health problem through the SAFE strategy. They were developed to be disseminated by locally based communicators and applied in the local cultural context in appropriate languages [17]. Through contracts with 100 radio stations in the regions of Kayes, Koulikoro, Mopti, Segou and Sikasso, the messages have been broadcast for 6-month periods each year at least three times per day per station. After three consecutive years of the trachoma messages being broadcast through URTEL, a survey was implemented in July 2011 in Kayes and Segou regions to assess community knowledge and behaviors specific to trachoma, to understand radio listening habits, to validate the coverage of the radio broadcasts and to examine the presence of ocular and nasal discharge on the faces of children.

**Methods**

**Training of the survey teams**

Four interviewers from the PNLC, the Health Center of Referral and the National Center for Information, Education and Communication for Health (CNIECS) and two supervisors (one from the PNLC and one from HKI) were trained in Bamako over the course of 2 days. The first day of the training provided an overview of trachoma elimination efforts in Mali, the purpose of the survey and an in-depth review of the protocol and questionnaires. On the second day of training, the interviewers, supervisors and the survey coordinator traveled to Kanadiguila town on the border between Bamako and Koulikoro regions to practice the sampling of
households, administration of the questionnaire and identification of ocular and nasal discharge in children. For the purpose of the survey, ocular discharge was defined as mucous found in the corner of one or both eyes or any material causing matting of the eyelashes (excluding ointment, make-up or tears). Nasal discharge was defined as liquid or dried mucous below one or both nostrils. Afterwards, the group discussed lessons learned during the practice session and made necessary amendments to the questionnaire based on feedback from the practice session. The interviewers and supervisors were then divided into two teams (two interviewers and one supervisor each) and a study coordinator to oversee both teams; one team was assigned all of the villages selected in the region of Kayes, and the other the villages in the region of Segou.

**Sampling**

The survey focused on the region of Kayes bordered by Senegal, Guinea and Mauritania; and the region of Segou, bordered by Mauritania and Burkina Faso. We estimated that a minimum sample size of 384 adults would be needed in total with 192 per region. The sample size calculation was based on an alpha risk of 5%, a 50% proportion of adults 15 years and older who had heard a trachoma radio message, a precision of 10% and a design effect of 4. We divided the total sample size by 16 villages (8 per region) and determined that 24 households would need to be visited in each village with a minimum of one person interviewed per household. In each region, a list of all villages (clusters) was made, listed in geographic order. Eight villages were then selected from the regional list of villages using probability proportionate sampling, for a total of 16 villages.

Upon entry to each village, the survey team first gave an overview of the survey and its purpose to the village chief(s) and all other community leaders. Afterwards, a community volunteer was recruited to help with the sampling of households (defined as those who live under the same roof and eat from the same cooking pot), which included creating a list of all of the households in the village, segmenting the households into groups of 4, and then randomly sampling 6 segments for a total of 24 households. The household survey included two parts: (i) interview of household caregiver aged 15 years and older on their trachoma knowledge/behavior and radio listening habits and (ii) examination of children aged 10 years and younger within the households for ocular and nasal discharge.

**Interviews**

When the interviewers reached the selected households, they asked to interview any woman or man in the household who had children aged 10 years and younger or provided care for children in this age group. In some cases, several separate households were found to be living in the same household which was selected from the household list. In these cases, they were treated as separate households and an adult from each was interviewed. After interviewing the adult, the interviewers then asked permission to examine all of the respondent’s children between 0 and 10 years of age for the presence of ocular and nasal discharge.

**Data collection and analysis**

The data were hand recorded on the questionnaires. Before leaving each village, the supervisor reviewed the questionnaires to ensure that all the questions had been answered and provided supervisory support during the assessment of ocular and nasal discharge among children. The survey teams averaged one village per day for data collection.

Data were double-entered and crosschecked and the cleaned data were analyzed using STATA (12.0, College Station, TX, USA). Since the broadcast strategies were identical across regions and there was not a significant difference between those who heard the radio broadcasts in Kayes and Segou ($P = 0.8303$, Pearson’s chi-squared test), results for both regions were analyzed together. Data were analyzed using the survey data analysis feature in STATA to take into account the cluster sampling methodology used. Percentages were calculated using the tabulate command for univariate and bivariate analysis. The calculation of the difference
in percentage points was compared with the Pearson’s chi-squared test.

Ethics
This survey was conducted according to the principles of the Helsinki Declaration and was approved by the PNLC of the Ministry of Health in Mali. Information on the national program and the survey was communicated to the village chief(s) and other community leaders during discussion upon arrival of the survey team in the villages. Informed verbal consent was obtained from heads of household and individual adults and children interviewed during the survey. For young children examined, verbal consent was given by their parents. The PNLC recommended that the survey teams obtain informed verbal consent due to the low literacy rates across the country [18]. Names were not collected on the questionnaires and each person interviewed was given a unique ID number in the database.

Results

Demographic data
A total of 391 adults and 687 children participated in the survey (Fig. 1 and Table I). Since the survey teams spent an entire day in each village, they were able to survey eligible adults and children in each selected household. There were many more females (96.9%) than males that participated in the survey, with the largest age group being those 30–40 years of age (44.5%). The majority of those surveyed had not received formal education (81.2%) and spoke only Bambara (80.5%). For the children examined, there was approximately an equal number of girls (50.9%) and boys (49.1%) with the majority (63.2%) being younger than 5 years.

Radio access and listening habits
Across both regions, 87.2% of those surveyed reported having access to a radio (Table II). Of these, 34.6% owned one personally, 59.4% had a radio in their house (owned by either themselves or someone else in the house), and 2.3% were able to access a radio in their community. A total of 91.4% of respondents reported listening to the radio. When asked who makes the decision about the radio stations listened to, 33.8% reported that the decision rested with the male head-of-household (father of the house, grandfather or spouse of the respondent), 18.4% reported that it is the adult women who decided, 10.1% said it is both the male and female adults and 36.9% reported that everyone plays a role in the choice of the radio station.

Across both regions, 59.7% of respondents had heard a message on the radio about trachoma (Table II). Overall, 48.6% of those who had heard the message reported a frequency of two trachoma messages per day, followed by one message per day (32.3%) and several times per day (12.3%). The majority of respondents had most recently heard a message the previous week (29.5%), the previous month (21.0%), several months ago (21.0%) and the previous year (51.5%). Only a handful had heard a message either that day (1.5%) or the previous day (6.0%). A total of 79.8% reported hearing broadcasts in Bambara, 11.2% in Sarakolé and 5.9% in both languages.

Knowledge about trachoma
Overall, reported knowledge about trachoma was high, ranging from 64.3% reporting the root causes of disease to 86.6% reporting the visual consequences of trachoma. We examined the association between knowledge about trachoma and whether the person surveyed had heard the radio broadcasts (Table III). Notably, among those who reported that trachoma is a disease of the eye and/or a condition that can cause blindness, a higher percentage of people had heard a trachoma message on the radio (33.4 percentage point difference). Persons who had heard the broadcasts were more likely to list one or more of the root causes of trachoma infection (46 percentage point difference) or the potential health outcome of trachoma (39.4 percentage point difference). Finally, those who had heard the broadcasts more commonly acknowledged that
blindness from trachoma can be prevented through one or more components of the SAFE strategy compared with those who had not heard the broadcasts (41.4 percentage point difference).

When asked generally from whom or where they had learned about trachoma, 49.4% of respondents said they had learned through radio messages, 12.8% through a health agent/community health

---

**Fig. 1.** Flow diagram of sampling and assessments.

**Table I.** Demographic data of people interviewed or examined

<table>
<thead>
<tr>
<th></th>
<th>Number of persons interviewed/examined</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Kayes</td>
</tr>
<tr>
<td>Household questionnaire</td>
<td></td>
</tr>
<tr>
<td>Total interviewed</td>
<td>197</td>
</tr>
<tr>
<td>Sex</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>194</td>
</tr>
<tr>
<td>Male</td>
<td>3</td>
</tr>
<tr>
<td>Level of Education</td>
<td></td>
</tr>
<tr>
<td>No formal education</td>
<td>173</td>
</tr>
<tr>
<td>Primary school</td>
<td>16</td>
</tr>
<tr>
<td>Secondary school</td>
<td>2</td>
</tr>
<tr>
<td>Non-formal education</td>
<td>6</td>
</tr>
<tr>
<td>Mean age in years (range in years)</td>
<td>29.4 (15–70)</td>
</tr>
</tbody>
</table>

Examination of children for ocular and nasal discharge

<table>
<thead>
<tr>
<th></th>
<th>Number of persons interviewed/examined</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Kayes</td>
</tr>
<tr>
<td>Total examined</td>
<td>369</td>
</tr>
<tr>
<td>Sex</td>
<td></td>
</tr>
<tr>
<td>Girls</td>
<td>192</td>
</tr>
<tr>
<td>Boys</td>
<td>177</td>
</tr>
<tr>
<td>Mean age in years (range in years)</td>
<td>3.6 (0–9)</td>
</tr>
</tbody>
</table>
worker, 12.2% through a member of the community and 10.3% through both radio messages and a health agent/community health worker.

Behavior pertaining to trachoma

Reported positive behavior that is related to trachoma prevention was also found to be high among respondents; 65.5% reported face washing of children at least twice per day, 93.8% reported disposing feces in a latrine and 66.4% reported children using latrines. As displayed in Table IV, persons who had heard the radio broadcasts were more likely to report washing their children’s faces at least two times each day, compared with those who had not heard the broadcasts (34.8 percentage point difference). Those who heard a message had a higher percentage of reportedly disposing their feces in a latrine (19.8 percentage point difference) and of having children who used the household latrine (14.6 percentage point difference), compared with those who had not heard the broadcasts.

Children facial cleanliness assessment

The ages of the children examined for ocular and nasal discharge ranged from 0 to 10 years: 95.5% of children did not show signs of ocular discharge, 83.7% did not show signs of nasal discharge and 82.8% did not show signs of either ocular or nasal discharge (Table V). Of those children with a completely clean face, 61.4% of their caretakers reported having heard a trachoma message and 39.0% had not (22.4 percentage point difference).

Discussion

Across remote, trachoma-endemic areas of Mali, the percentage of those who reported radio access and radio listening was over 85% and more than half of those surveyed reported to have heard messages on the radio about trachoma. Of those who reported to have heard the broadcasts, ~60% reported to have heard the messages at least two or more times per day and ~70% reported to have heard them within the past several months. Those who reported to have heard the trachoma broadcasts were more likely to know what trachoma is, how it is spread, its potential to lead to blindness and prevention measures through the SAFE strategy, than those who reported to have not heard the messages. Furthermore, those who reported to have heard the broadcasts were more likely to report washing their children’s faces at least two times per day.

Mass media as an effective tool in public health for increasing awareness and changing behavior has been documented for the prevention of diarrhea (through hand washing), HIV/AIDS and malaria.
### Table III. Responses to key questions about trachoma knowledge

<table>
<thead>
<tr>
<th>Responses pertaining to knowledge</th>
<th>% of total (95% CI)</th>
<th>% heard trachoma message (95% CI)</th>
<th>% did not hear trachoma message (95% CI)</th>
<th>Percentage point difference $^a$ ($P$-value$^b$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trachoma is an eye disease and/or condition that causes blindness</td>
<td>80.3 (74.0–85.5); N = 351</td>
<td>66.7 (55.4–68.2); N = 282</td>
<td>33.3 (23.7–44.6); N = 282</td>
<td>+33.4 (&lt;0.001)</td>
</tr>
<tr>
<td>Trachoma infection is associated with one or more of the following: bacteria, flies, sharing towels/bed with someone who has trachoma, dirty environment</td>
<td>65.4 (52.6–76.2); N = 283</td>
<td>73.0 (62.7–81.3); N = 185</td>
<td>27.0 (18.7–37.3); N = 185</td>
<td>+46 (0.0192)</td>
</tr>
<tr>
<td>Blindness and/or reduced vision can result from trachoma</td>
<td>86.6 (73.2–93.8); N = 298</td>
<td>70.2 (57.9–80.1); N = 258</td>
<td>29.8 (19.9–42.1); N = 258</td>
<td>+39.4 (0.0052)</td>
</tr>
<tr>
<td>Knowledge that blindness caused by trachoma can be prevented through one or more components of the SAFE strategy</td>
<td>85.1 (73.4–92.2); N = 281</td>
<td>70.7 (59.5–79.9); N = 239</td>
<td>29.3 (20.1–40.5); N = 239</td>
<td>+41.4 (0.0016)</td>
</tr>
</tbody>
</table>

$^a$Percentage point difference calculated by subtracting the % of those who did not hear the trachoma message from the % of those who did. $^b$Pearson’s chi-squared $P$-value.

### Table IV. Responses to key questions about behavior linked to facial cleanliness and environmental improvement

<table>
<thead>
<tr>
<th>Responses pertaining to behavior</th>
<th>% of total (95% CI)</th>
<th>% heard trachoma message (95% CI)</th>
<th>% did not hear trachoma message (95% CI)</th>
<th>Percentage point difference $^a$ ($P$-value$^b$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wash the faces of children at least two times per day</td>
<td>66.5 (53.4–77.5); N = 364</td>
<td>67.4 (59.6–74.3); N = 242</td>
<td>32.6 (25.7–40.4); N = 242</td>
<td>+34.8 (0.0074)</td>
</tr>
<tr>
<td>Dispose feces in a latrine</td>
<td>93.7 (86.0–97.3); N = 362</td>
<td>59.9 (50.5–68.6); N = 339</td>
<td>40.1 (31.4–49.6); N = 339</td>
<td>+19.8 (0.7952)</td>
</tr>
<tr>
<td>Latrines are regularly used by the children in the house</td>
<td>66.1 (57.7–73.6); N = 351</td>
<td>57.3 (47.6–66.5); N = 232</td>
<td>42.7 (33.5–52.4); N = 232</td>
<td>+14.6 (0.2847)</td>
</tr>
</tbody>
</table>

$^a$Percentage point difference calculated by subtracting the % of those who did not hear the trachoma message from the % of those who did. $^b$Pearson’s chi-squared $P$-value.
and the promotion of breastfeeding [19–24]. Some studies have found that family members, village leaders and health workers play a significant role in relaying health information [16, 25]. Yet, other studies have indicated that where behavior change is a program objective, broadcasting program messages through local radio spots and radio programs was more effective than village visits by community health workers and hearing messages at health centers; these study findings show that members of various target populations were more likely to recall messages heard on the radio and to subsequently change their behaviors in accordance with recalled messages [23, 25].

Results from our survey suggest that exposure to the trachoma radio broadcasts has played a role in knowledge about trachoma; however, the survey also found that community health workers, health agents and other community members relayed information about trachoma. Our study is not able to show a direct effect on facial cleanliness as a result of the trachoma messages, this can only be inferred. It is also difficult to show an association through this study between the trachoma messages and behavior change specific to trachoma. However, across the board, we did find that among those who had clean faces or exhibited a behavior conducive to trachoma prevention, a higher percentage of the caregivers/adults reported having heard a trachoma message. It is important to note, however, that these observations and behaviors are not necessarily specific to trachoma but can be attributed to cultural practices, such as the face washing of children, as well as broader water, sanitation and hygiene concepts and initiatives. It is plausible that those who did not hear the broadcasts, still practice these behaviors. For example, the prevalence of clean faces of children in the surveyed population was above the recommended 80% which includes children with guardians who had or had not heard a message [26].

It costs our program ~$0.57 per trachoma message aired, with each message having the potential to reach hundreds of people simultaneously. In the regions in Mali where messages are broadcast we have found this means of health promotion to be cost-effective since a high number of people are

<table>
<thead>
<tr>
<th>Table V. Facial cleanliness assessment of children</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td>No observed ocular discharge</td>
</tr>
<tr>
<td>No observed nasal discharge</td>
</tr>
<tr>
<td>Neither ocular nor nasal discharge</td>
</tr>
</tbody>
</table>

Percentage point difference calculated by subtracting the % of those who did not hear the trachoma message from the % of those who did. Pearson's chi-squared P-value.
reportedly listening to the radio, hearing the trachoma broadcasts, and reporting positive knowledge and behavior specific to trachoma. Other studies have drawn similar conclusions related to the cost-effectiveness of the use of mass media in public health messaging, noting that these messages must be appropriate for the specific community where they are being broadcast and that the broadcasts should take place at peak listening times [24, 27, 28].

It is possible that education and household income served as confounding factors, since one would assume that those adults with higher education and/or higher income would have a greater access to radio broadcasts and health education. However, since over 80% of the adults surveyed had not completed any level of schooling and the socioeconomic status of individuals and villages surveyed was homogenous, we do not consider these factors to be major confounding factors.

The survey results shed light on some messages that were not clearly reaching the community, such as ‘face washing must be done with soap’ and ‘a dirty environment in general can lead to trachoma.’ Moving forward, the current messages will be revised so that the messages about behavior change pertaining to each component of SAFE are very clear, such as ‘face washing with water is sufficient’ and ‘human feces in the open environment breed the flies that carry bacteria from person-to-person.’

Several limitations should be addressed pertaining to this survey. Mali has been the site of intensive donor commitment to trachoma elimination over the past decade; therefore, other strategies to promote information, education and communication about trachoma are implemented in the same areas where the radio messages are broadcast. For example, through the National NTD Control Program, messages about MDA for trachoma and other NTDs are disseminated through health workers, posters, flip charts, counseling cards, television and radio for several months each year. Respondents who said they heard a trachoma radio message could have been remembering information they had heard over the radio through the messages supported by the NTD Control Program, which would have been focused on the social mobilization of populations to participate in the MDA of Zithromax® and tetracycline. Additionally, the survey was only conducted in two of the five regions where trachoma radio messages have been broadcast for the past 3 years, therefore inclusion of these other regions would have given us a sample that was more representative of the work that has been done in Mali and of the ethnic, lingual and environmental diversity of the country. Finally, we did not have baseline data for comparative purposes to determine the impact of the radio messages on the trachoma-specific knowledge and behavior of the community over time, nor could we include a control region in the study to compare with the intervention regions due to limited resources. Although data from another study exist on trachoma knowledge in the regions of Kayes and Koulikoro, we do not have enough information about the study location, methodology and questionnaire to compare our results [29].

Face washing and environmental improvement initiatives led by Ministries of Health will not only sustain progress toward elimination of trachoma as part of the full SAFE strategy, but will also bring countries closer to reaching Millennium Development Goal 7: to ensure improved water and sanitation. Future plans include a strategy whereby the broadcasting of radio messages through the URTEL network and community radio stations will work in tandem with women’s groups, relais (community health workers) and community leaders to provide communities with information about trachoma prevention in districts where trachoma interventions are still ongoing, and those that have entered post-endemic surveillance. The Ministry of Education will also be piloting a trachoma school health curriculum in two districts focused on primary school students, with the aim to improve and scale-up the curriculum over time. Additionally, in higher prevalence districts, highly focused messages about the location and date of trichiasis camps will be broadcast through community radio stations to maximize the coverage of broadcasts and the social mobilization potential. The results from this survey underscore the power of radio messaging in
Mali and its ability to reach populations with important trachoma prevention information that otherwise would have been potentially difficult and cost-prohibitive to reach, especially considering the widespread low literacy levels. With a trachoma elimination date of 2015, an effective multi-pronged behavior change strategy to promote the F and E components of the SAFE strategy is crucial to Mali’s continued success.

Acknowledgements

The authors thank the PNLC, URTEL and CNI ECS of Mali for their implementation of this survey and continued commitment to using the most effective social mobilization strategies for trachoma elimination. They also acknowledge the Carter Center’s Trachoma Control Program for their assistance with the design of the survey and questionnaire. Finally, they thank the survey teams for the tireless work during the rainy season and the communities for their participation in the survey.

Funding

Conrad N. Hilton Foundation’s grant (2080500) to Helen Keller International.

Conflict of interest statement

None declared.

References


