

Perceptions and recommendations of stakeholders on the progress of trachoma elimination programs in Bugna district, Northeast Ethiopia: Descriptive qualitative study

Mesfin Wudu Kassaw

mesfine12a@gmail.com

Asrat Woldeyes Health Science College, Debre Berhan University

Kirubel Dagnaw Tegegne

Wollo University

Kindie Mekuria Tegegne

Woldia University

Mohammed Ahmed Yimam

Wollo University

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Abstract

Background

Trachoma is the prevalent neglected tropical disease in Ethiopia and it was earmarked for elimination at the end of 2020 using SAFE (surgery, antibiotics, facial cleanness, and environmental improvement) strategy. One of the aims of this study was to explore perceptions of stakeholders about SAFE strategy in controlling and eliminating Trachoma following the Ethiopian government and partner organizations' implementation of the strategy from 2006 to 2020. The second aim was describing the recommendation of the stakeholders for future intervention in Bugna district in order to eliminate trachoma in the study area, Ethiopia.

Methods

The study design of this study was descriptive qualitative and the study setting was Bugna district, Northeast Ethiopia. The study participants were all district level health care leaders, all district level public health professionals, all rural and urban Health Extension Workers (HEWs), and all kebele leaders (lowest level community leaders) of the district. The participants were selected by purposive sampling. An in-depth interview and focus group discussion were held to explore the participants' perception about SAFE strategy and their recommendation to eliminate trachoma in the study area. Both the in-depth interview and focus group discussion (FGD) sessions were audio-taped, and the interview lasted one to two hours, while the FGD lasted two to three hours. The data analysis framework was an inductive thematic analysis supported by N-Vivo.

Results

All sub-districts leaders from 16 kebeles (sub-districts) of Bugna district were included. Participants' opinions were categorized into two broad themes; contributors to the ineffectiveness of SAFE strategy in controlling trachoma in Bugna district, and suggested recommendations to reduce the prevalence of both trachomatous inflammation-follicular (TF) and trachomatous trichiasis (TT).

Conclusions

To control and eliminate trachoma in Bugna district, awareness creation part about trachoma prevention and elimination should be the priority. In addition, participants were requested a new approach to bring behavioural change in the community. The stakeholders believed that addressing contributing factors that caused SAFE ineffectiveness would be an important approach to control trachoma.

Background

Trachoma is the prevalent neglected tropical disease in Ethiopia and it was earmarked for global elimination by 2020 using the advocated WHO SAFE strategy (surgery for trichiasis, antibiotics for infection, facial cleanness, and environmental improvement) (1, 2) to limit the transmission. In many developing countries, trachoma was a leading cause of infectious blindness (1), and Ethiopia is the most affected country (3–6) in the 21st century, and particularly the Amhara Region was highly stricken by trachoma. In the Amhara Region, the prevalence of trachomatous inflammation-follicular (TF) and trachomatous inflammation-intense (trichiasis) (TT) among children aged 1–9 years was 25.9% and 5.5%, respectively (7). The prevalence of trachomatous scarring and trachomatous trichiasis among adults aged ≥ 15 years was 12.9% and 3.9% (7).

Despite the high prevalence of trachoma in the country, there was also considerable heterogeneity between districts. While SAFE implementations were practiced from 2010 to 2015, 56 (37%) districts of Ethiopia were hyper-endemic. The 2015 trachoma impact survey warranted the continuity of SAFE strategy in 150 of 152 districts in the Amhara Region from 2015 to 2020 (7).

Later in 2020, a twelve year (2007–2019) longitudinal trend of trachoma prevalence among children aged 1–9 years in the Amhara Region indicated that more than 30 districts of the region remained trachoma hyperendemic ($\geq 30\%$ TF) (8). Specific to the districts and zones bordering the study area, Bugna district, the prevalence of active trachoma among children aged 1–9 was high, as it was 21.6% in North and South Wollo Zones (9).

A study specifically on preschool children in Wadla District, North Wollo Zone, reported a 22% prevalence of active trachoma (10). In the other bordering district, Gazegibela District of Wagehemra Zone, Amhara Region, the prevalence of active trachoma among children aged 1–9 years was 52.4% (11).

A study from the Amhara Region indicated that time to reach the trachoma service center, unavailability of a TT surgeon, duration of the infection (trachoma), epilation practice, and place of TT surgery were contributors for not utilizing TT surgical services (12). In many of the 42 trachoma-endemic districts of the Amhara Region, the SAFE strategy was successful in overall to complete the high surgical backlog and meet the target of Get2020 (13) though there was low trichiasis surgery uptake, and considerable recurrence of trichiasis surgery. Trichiasis surgery recurrence undermines efforts to eliminate trachoma and historically had been problematic in programmatic settings despite the surgical quality (14). Despite the high number of quantitative researches about trachoma, there is no qualitative study to explore some opinions that can't be addressed by quantitative research. In addition, qualitative study is more reliable to obtain evidence when strategies don't meet the target. The research question of this study was; what the stakeholders perceive about the SAFE strategy intervention and their opinion for future improvements based on their work experience. Thus, this study aimed to explore the perception of stakeholders regarding the ineffectiveness of the SAFE strategy in bringing trachoma to below GET2020 targets and their recommendations to control trachoma by 2030 in line with WHO recommendations.

Methodology

Study design, setting and interviewing period

The study setting was Bugna district, which is located in Northeast Ethiopia and has 16 administrative sub-districts (kebeles). The interview and FGD held from October 25/2020 to November 31/2020. The study participants were composed of health care professionals who had been worked in Bugna district Health Department office, HEWs and kebele leaders. Bugna district was selected purposefully because of two reasons; (1) it had high trachoma prevalence at the end of 2020 compared to other districts of North Wollo Zones, and (2) it was considered hard-to-reach setting because of poor infrastructure including transportation and poor health care service delivery. The district also had no safe water access and it has humid and dry climate.

The study design used was descriptive qualitative in which the opinions of the participants were described inductively. Descriptive qualitative approach is preferable as the study was aimed to describe the post-intervention situation as a program evaluation (15, 16). Iteration and reflexivity were considered in the cyclic data collection (interview and FGD) and analysis process. The study participants mentioned all the possible contributors of; why the SAFE strategy was not successful to control trachoma to below GET2020 targets in Bugna district.

Participants and participants recruitment

The sample size was subjected to data saturation. The study participants invited to the interview and FGD were 28health extension workers, 16kebele leaders, 2district level health office leaders, 2district level trachoma officers, and 5district level public health officers. The interview saturated after interrogating the 16th participant, but two more participants were questioned if there was new opinion ($n = 18$). In the FGD, all the 53 study participants were assigned to a group that consisted of 6 to 8people, formed a total of 7groups ($n = 7$), and held discussions with all groups despite the saturation of the idea. The idea saturated after having a discussion with the 5th group but it was continued with the other remained two groups to accommodate the heterogeneity of the group since the group was not homogeneous. The interviewers were 5 in which all had qualitative research and interviewing experience. All the interviewers were health care professionals composed of nurses, public health, ophthalmic nurses, and mental health professionals. The interviewers have received one-day training about reflexivity, objectives, and other components of the research. They were trained not to lead participants to the answers, not to influence participants because of interviewers' background, and to consider both extremities (knowledgeable and non-knowledgeable participants) in allowing time and dealing with them. In the focus group discussion, the facilitators were two social science experts, and two of the interviewers were taking a field note. The facilitators were also trained how they can manage the discussion, control people with different behaviour, and motivate participants to generate new idea.

Data collection (instrument and procedure)

A purposive sampling method was used to select the setting and then the participants. Of the HEWs, district-level health office leaders, and kebele leaders who lived in Bugna district, only 18 participants were interviewed because of data saturation. Both the interview and FGD were held in the Bugna district Health Department training halls, and offices. This study was incorporated with a community service. After interview and FGD completed, all the 53 participants received 5 days of training about trachoma and SAFE strategy. The FGD teams were 7 composed of 6-8 participants per team. Both the interview and FGD sessions were audio-taped, and an interview lasted one to two hours, and the FGD lasted two to three hours.

The interview and FGD were undertaken using semi-structured interviewing guidelines with consecutive prompting questions (Additional file1). The interviewing/FGD guidebook was prepared based on the purpose and research questions of the study by the researchers. Two experts in qualitative researches were invited to comment on the interview checklist for content validity, consistency, and construct validity. The interviewing guidebook was edited before beginning the actual interview and FGD using an input from the expert comment. The simplicity of the language utilized for the interviews and descriptions to convey the findings were evaluated and corrected. The guidebook was also developed with the assumption of requesting all participants in a similar manner and considering that all participants answer and understand the questions similarly (dependability), properly, and checked it in a pre-test. The guidebook was focused mainly on contributors to SAFE ineffectiveness from the patient, leaders, health professionals, and community perspective. Similarly, it had also considered the role of patients, health professionals, leaders of health care and the wider community for better control of trachoma in the future.

Trustworthiness (rigorosity)

The code generation by two researchers were compared for the difference and correction was made in discussion with the research team. Internal validity (credibility), reliability (dependability), objectivity (conformability), and external validity (transferability) were considered to ensure trustworthiness (17). To ensure credibility (15), the participants selected purposively by considering their experience, responsibility, residence and profession to increase the maximum variation of samples to capture a range of ideas (18–20). Member check, the narrated data (results) were sent to participants of the interview and FGD for comments, and a further analysis was made after receiving comments. The interview was an open-ended, allowing the participants to spoke freely, but related to the topic a prompting question were raised by the interviewer (18) using the semi-structured guidebook. Dependability (15) was assured by conducting the interviews in a consistence manner in a way subjected to contextual changes to establish rapport, and vague statements were asked to be clarified.

The interviewers were trained how to listen attentively and tried to take memo's whenever it is necessary(21). And the field notes were taken immediately after each interview(16). Conformability (15) was assured by crosschecking the results with the collected data, research question, field notes, and the audio-taped sources (17). Transferability (15) was sought by providing detailed descriptions of all

aspects of the study (thick description), helping readers to judge whether the findings are applicable in their contexts/settings. To ensure authenticity (22), the findings reflect multiple realities and differences in functional ability at each phase of the trajectory. Finally, thick description of the directly unobserved or uncollected information was considered by interpreting the gesture including facial expressions and emotions of study participants during the interview and FGD.

Data analysis

The data verbatim was transcribed by five experienced researchers (authors of the paper), and translated by experienced qualitative data translators, who were proficient in both Amharic and English languages. The transcribed verbatim was narrated into textual codes by two experienced qualitative researchers independently to ensure researcher triangulation (23). Coding of the data was supported by the codebook developed by reviewing field notes and some data from both interview and FGD. The codebook was reviewed and changed, when necessary, based on the comments of coders. When there was inter-coder difference, a third person or the whole research team were involved and made a decision to choose the code group for text or paragraph. The consistence of codes was checked and there was no difference in generating codes by the two researchers. The data analysis started after the first in-depth interview and FGD using inductive thematic framework to build knowledge from the opinion of participants (24). The developments of themes were highly flexible and iterative. From the beginning of the first opinion analysis to the last participant's opinion analysis, themes were involved frequently and the reflexivity of the authors was very important in selecting the right and inclusive themes. The transcripts were read repeatedly to obtain a preliminary understanding of the participant's experiences and the context (25). Thus, thematic analysis was performed to reduce the many interview and FGD texts in to some limited frameworks (26).

In the initial exploration of the interview, the participant mentioned contributors to SAFE strategy ineffectiveness and stated different bottlenecks to control trachoma in the district. N-Vivo-10 (27) were used to extract the data to the research questions, including words, sentences and paragraphs (28). First, N-Vivo was used to support the manual inductive thematic analysis of the transcribed interviews. Paragraphs were also coded in N-Vivo for subsequent manual analysis of verbatim. Second, a manual inductive thematic analytic approach was used to develop themes (26, 29). Field notes and open codes were written down (28). In the initial coding cycle (30), the meaning units emerged freely from the text and were given a descriptive code. After reading and interpreting several interviews and FGD continued, saturation was reached as no new concepts emerged. In total, 1854 codes were generated from all participants in all categories. In the second coding cycle, the coded text sorted into mutually exclusive categories (Table 1, Table 2). The categories and sub-categories were revised several times to ensure that the stated points reflected the participants' perceptions correctly (28).

Table 1

Examples of codes, categories and themes generated about the contributors of SAFE ineffectiveness in Bugna District, 2020

Codes	Categories	Themes
"Kebele leaders hesitate about the skills of trichiasis surgery experts, because most patients experienced recurrence, and patients questioned the skills of the trichiasis surgery surgeons"	Poor outcome of trichiasis surgery	Lack of skills in performing surgery
"Health extension workers stated that the communities were not voluntary to take MDA during the first campaign years (2007–2011). In these years, they took the drug and through away. However, from 2012–2019, most of the community appreciated the importance of MDA and agreed to take the per oral medication. Although, there are some people who took the drug to their home and through away it still. Fasting is also the major reason raised by the community to oppose swallowing the drug in front of the health professionals during the campaign and requested to take the drug to their home to take after their spiritual fasting time"	Awareness matters to swallow or not to swallow the drug	Awareness about MDA in the intervention years
"The rural community usually discourages hand washing. They assume a person who washes his/her hand after meal will be poor"	Non-useful traditionally hold attitude of the community	Poor awareness about hand washing
"The district is known for shortage of water. Because of this water shortage, almost all people cannot wash their hands and faces". "In addition to the lack of water, the community is poor and cannot get soap"	Poor socio-economic status	Lack of personal hygiene
"The community construct latrine but cannot utilize it. The community use open field instead of latrine"	Conducive environment to flies multiplication	Lack of environmental improvement

Table 2

Examples of codes, categories and themes generated about the recommendation of stakeholders in Bugna District, 2020

Codes	Sub-categories	Themes
"The community is influenced by kebele leaders (KL) than health extension workers but kebele leaders are not communicating to HEWs frequently"	Create viable platform to increase communication between HEWs and kebele leaders	Fostering communication
"Some households are curious in constructing and utilizing latrine but some other households are not interested to construct or utilize latrine. Trachoma will be persistent until all households' construct and use latrine. It could be better to enforce household heads, who are not constructing by law while acknowledging the model households would be a solution".	Penalized households that did not construct latrine	Developing rules and regulations
	Acknowledgment and reward to households that construct latrine, whereas penalizing household heads who do not construct latrine	
"The community has culturally hold perception about cause of trachoma and such attitude cannot be corrected by health education only. It could be better if the patients who received the service teach the community about the widely accepted misperception".	Successfully recovered patients from trichiasis can influence surgery resistant trichiasis patients	Invite role models
"Surgery is restricted to some facilities that are far from some villages. The older people cannot walk more than one day to get the service, eye surgery. In addition, there is a shortage of Zithromax in the district despite the resistance of some households to swallow it during MDA"	The trichiasis surgery should reach each village of the district. The MDA should be decentralized to each health centres of the district	Increase trachoma service accessibility and coverage
"Facial cleanness can prevent trachoma than MDA. Environmental hygiene limits flies' multiplication. But the district has no sufficient water supply, thus the local government should work on increasing clean water supply coverage. If there are clean water supply, F and E can be achievable and useful"	Facial cleanness and environmental hygiene should be prioritized over surgery and antibiotics	Follow prevention than treatment principle

Results

Participants' characteristics

The study participants were dweller of 16 kebeles (sub-districts) at Bugna district. The age of health extension workers ranged from 23-35 years old. Of the 53 study participants, 29 were females, and 28 were health extension workers. All participants (HEWs, kebele leaders, and district-level health care staffs) were Ethiopian Orthodox Tewahdo Christian followers. Forty-one (77.4% of) participants were from rural kebeles (sub-districts) (Table 3, Additional file 2, and Additional file 3).

Table3: Socio-demographic characteristics of health extension workers in Bugna District (n=28), 2020

Variables	Categories	Frequency
Experience	Less than 5years	4
	5 to 10years	16
	Above 10years	8
	Total	28
	Total	28
Age	19-24	3
	25-30	19
	31-36	6
	Total	28
Residence	Kebelle 01	2
	Kebelle 02	2
	Kebelle 03	2
	Kebelle 04	2
	Kebelle 05	2
	Kebelle 06	1
	Kebelle 07	2
	Kebelle 08	2
	Kebelle 09	1
	Kebelle 10	2
	Kebelle 11	2
	Kebelle 12	2
	Kebelle 13	2
	Kebelle 14	1
	Kebelle 15	2
	Kebelle 16	1
Total		28

NB: All health extension workers were females and Ethiopian Orthodox Tewahdo Christian Church followers

Themes

The participants' opinion was categorized into 4 themes under the first research question; (1) what were the contributors for the SAFE strategy ineffectiveness in controlling trachoma in Bugna district, and 6 themes were generated for the second research question; (2) what interventions you suggested to reduce the prevalence of trachomatous inflammation follicular (TF) and trachomatous trichiasis (TT) to below WHO target by 2030.

Goal 1: Explore contributors for the SAFE strategy ineffectiveness in Bugna district

The participants felt that trachoma prevalence had not been reduced to below the elimination thresholds in Bugna district. The stakeholders stated multiple reasons including insufficient resources and poor infrastructures in the district, poor awareness of their community, misperception about trachoma, lack of trust about the trichiasis surgery, and HEWs workload by timely occurring health related events. The HEWs involved in more than 18 health packages such as infectious diseases, maternal and child health, mental health and etc. In addition, HEWs also involved in many timely events like COVID-19, health insurance, vaccination and etc. Sometimes, HEWs were enforced to support other governmental sectors since they are proximal to the community and the lowest level rural community health care service providers. The respondents raised such points with a particular emphasis on the poor infrastructures, lack of resources (human and budget), shortage of water, lack of health facilities, and shortage of antibiotics (Zithromax). The identified themes as contributors of SAFE strategy ineffectiveness from participants' perspectives were surgery related, facility-related, poor level of awareness, and poor environmental improvement.

Surgery related

Most trachoma patients refused to receive the surgery service for some reasons. The unjustifiable misperceptions of the community regarding trachoma surgery and lack of trust on the skills of trachoma surgeons were the two major reasons that hinder utilization of the surgery, which also dramatically affects SAFE implementation in eliminating trachoma in Bugna district.

In addition, health extension workers' lack of confidence about the skills of the trichiasis surgeons and health extensions workers workload by timely events, particularly, COVID-19 were the other major challenges, hold back the victory of trachoma elimination by 2020 in the district. The work load on the health extension workers makes the life of HEWs more challenging especially newly emerged packages like community mental health interrupted the continuous intervention of trachoma.

“Based on the community’s perception, any single TT surgery recurrence indicates that all cases will end up with trichiasis post-surgery recurrence. Thus, they were opposing with justification, they said, why I experienced pain for ineffective surgery”

HEW23

Facility related (surgery and zithromax)

In Bugna district, there is an enormous problem with infrastructures. Almost all kebeles have no paved roads and cannot be accessed by transport. Beyond this, there is also a shortage in health facilities. In these kebeles, providing the SA (surgery and antibiotics) components of the SAFE strategy is difficult. However, from the beginning of mass antibiotic distribution years to present, the community’s uptake of antibiotics has been improved. The other reason for SAFE ineffectiveness might be the religion and culture of the community coupled with the lack of health facility. People in the fasting seasons refused to take drug in the health facility and took it to their home with promise to take it later, but probably they might not use it later.

“During the first 5 years of trachoma campaign, there was no appropriate use of Zithromax. But starting from last year, 2019, the medication administered to the individuals in front of the health professionals but there are no sufficient drugs in health facilities. Although, the approach improves MDA utilization, the shortage of Zithromax is another drawback to control trachoma to below the threshold”

HEW9

Hygiene (environmental improvement and facial cleanness)

Although SA (surgery and antibiotics) are essential to decrease the prevalence of trachomatous inflammation-follicular (TF) to low level, FE (facial cleanness and environmental change) are vital to prevent transmission, recurrence and facilitate trachoma elimination. The significant components of FE are latrine construction and utilization, facial cleanness, hand washing, soap utilization, appropriate solid and liquid waste management. All participants' main concern for trachoma persistence in the Bugna district was lack of water despite presence of problem in all strategies of the FE components of SAFE strategy. In addition, there was low level of latrine utilization while latrine construction coverage was good. Regarding latrine construction, landlord in the rural towns didn’t construct latrine, but rented to people to live in it. The district administrators have no clear legislative to fine people who didn’t construct latrine. For having poor hygiene habit, water shortage had been raised as a major reason. The district had no safe water access as a whole that was mentioned almost by all the 53 participants of the study.

Poor level of awareness

Overall, in Ethiopia, there was an awareness problem about trachoma and its SAFE strategy. A culturally hold misperception deeply hinders the elimination of trachoma in the district, such as believing to be

blind and die due to TT surgery in which they are considering trachoma as a God's punishment. A community with reasonable awareness about trachoma will implement the SAFE strategy and cooperate with health professionals. On the contrary, poor awareness at the individual and community level makes all efforts worthless. All the participants agreed that the community still has an awareness problem. The community believed that, the cause of trachoma is bad spirit and thus surgery or antibiotics can't cure it.

"Some of the trachomatous trichiasis patients perceived that they are aged enough and surgery to them have no impact in their life. They assumed that they will die in short period of time but the surgery might make them blind and cause to experience pain"

KL3

Goal 2: Suggested recommendations to reduce trachoma to low level in Bugna district

Ethiopia as a country and Bugna district as study area did not control trachoma 100% in 2020 as per WHO's plan (31), and thus the post 2020 is a time to consider a new approach or scaling up the most critical components of the SAFE strategy to control trachoma below 5% by 2030. In considering a number of available options, stakeholders forwarded six sub-themes to be applied in the next implementation period.

The recommended sub-themes include; fostering communication, installing and implementing new rules and regulations, invite successfully recovered trichiasis patients (Ambassadors), improving water access, improve sanitation and Hygiene (WASH), increase accessibility of trachoma services, and follow prevention than treatment principle.

Awareness and communication

In eliminating and controlling trachoma, communication has a significant impact. There should be good communication between health extension workers, kebele leaders, and district-level experts to mobilize the community.

Various strategies like inviting religious leaders are needed to influence the community and create awareness. However, there was a gap between HEWs, kebele leaders, and district level health officers. The general community believes and accepts kebele leaders than health extension workers and district health care staffs. But, kebele leaders were not much involved in health care related activities. The kebele leaders didn't consider health care activities as their responsibilities and involved rarely when the district administrators communicate them to assist health professionals in a health care campaign. The health extension workers assumed that kebele leaders' involvement made a difference in controlling trachoma if they considered it as one of their duties. The role of religious fathers and health development army (HDA) were boldly mentioned. The Bugna community respect their religious fathers and committed to align the order given from religious fathers. The participants recommended working

with religious fathers and health development army (HDA) for better awareness creation. To increase awareness in the whole community, experience sharing from model districts was also indicated.

“While there are surgery opposing patients, the approach even the wording that the health professionals used is irritant to the surgery opposing patients. If a woman opposes a surgery, she might have sufficient justification or the reason might be that the professional is unable to influence the patient. However, some professionals used terms just like “you are the cause for high trachoma prevalence in this village”, or other hygiene related insults. This creates some bad feeling to the patient, his/her relatives, and the surrounding community and concluded that the trachoma program is unpleasant. Thus, the approach should be open, positive and caring. It should not be aggressive to mothers and fathers who had the cases”

KL26

Installing and implementing new rules and regulations

Most of the interview participants described different mechanisms to control trachoma below 5%, and these are summarized as follows. In the last ten years, a considerable amount of capital has been spent to control trachoma. However, the progress was not adequate. For such slow progress, several factors might be stated. Trichiasis surgery opposing patients and households with inappropriate latrine utilization and open field excretion took the highest contribution to SAFE strategy ineffectiveness. But for the following coming years, rules and regulations need to be developed regarding the SAFE strategy and other innovative interventions. The behaviour of the community in using latrine had not been changed. The community didn't believe that latrine utilization can eliminate and control trachoma.

“There is also a need to have rules and regulations in controlling trachoma. Any of a family member can transmit trachoma to other family members, or community at large. Therefore, a forceful rule is important. The previous but a more recent scenario teach us important lesson. In one week of trachoma campaign, we have done more than 60 trichiasis surgery where it had financial fine if the patients were absent without reliable reason”

HEW 21

Invite role models (ambassadors)

The backlog of trichiasis cases in the Bugna district was mainly because of patients who are unwilling to have surgical intervention. They were reluctant to receive the service because of religiously bound perception; link their illness with evil spirit. The role of household heads that had good handling of living

environment and had good awareness and behaviour would have paramount importance. The participants recommended inviting such people in public gatherings to inspire the wider community how the community should behave in controlling and eliminating trachoma particularly related to FE.

Similar to the model households head, best health professionals and health extension workers should be recognized for the efforts they paid in controlling trachoma.

“For surgery resistant patients, the previous trichiasis surgery service consumers would be serving as ambassadors. They can tell a testimony about their surgery. In particular, those ambassadors will be invited based on their religion in their religious institution”

DH03

Improving water, sanitation and hygiene (WASH): Water, sanitation and hygiene should be considered as a backbone of trachoma elimination program. However, Bugna district is known for considerable water shortage in North Wollo Zone, Amhara Region. It would be good if the district focusses on increasing clean water supply to improve sanitation, and hygiene.

“The district appreciates the gap that there is no clean water, even in the district administrative center, Ayina-Bugna town. Almost more than 95% of the community cannot get clean water. As a result, the district is trying to increase clean water coverage in the next years. There is a started project in 5kebelles of the district and these may have impact in controlling trachoma”

DH05

Increase the accessibility of trachoma service

The trachoma service should reach to every community to where they are living. The absence of health facilities in nearby to villages excluded older people from receiving the service because of distance. The participants recommended at least satellite clinics and traditional transports when necessary to reach the hard-to-reach settings.

Follow prevention than treatment principle

In the last year, 2019, the focus was on surgery and antibiotics. However, facial cleanness and environmental improvement were given low concern including by health care professionals. But the FE components of SAFE strategy are fundamental in controlling trachoma to below WHO targets. Thus, in

the next coming years, the focus should be shifted to prevention (FE) dominated strategies than treatment of trachoma. The participants explain the hard work in delivering antibiotics for more than five consecutive years since 2015 with *emphasis*.

“In the last 7years, males were the focus in assisting trachoma prevention and control program. But, in preventing trachoma, females are better. In our rural community, the tasks of women are directly linked to trachoma prevention. I believe, women are appropriate personnel to implement FE components. Thus, in the next years, the focus should shift to females to control trachoma”

KL11

Discussion

SAFE was indicated that might not be a good approach to bring trachoma to below 5% worldwide although it was given high hope that would be effective at least in more than 90% of the implementation areas (32, 33). In line with this, the World Health Organization reported that a number of people living in districts where the TF prevalence was $\geq 5\%$ declined by 91% between 2002 and 2019 globally (34). However, in Bugna district, the prevalence persists above 10% despite the SAFE intervention (7, 35, 36) as indicated by previous studies. The same scenario experienced in a trachoma endemic country despite implementing high dose Azithromycin (37). In addition to this overseas evidence, RCT study (TANA-I and TANA-II) in the study region indicated that a 36months prevalence of ocular chlamydia was significantly lower in communities continuing treatment compared with those discontinuing treatment. But the prevalence of ocular chlamydia after 36months of MDA were above 5% in the intervention districts, 6.6%-12.0% (38). Despite the effectiveness of MDA (Azithromycin), its low coverage was non-negligible contributor for trachoma consistency in the Amhara Region. The overall regional self-reported antibiotic coverage was 76.8% and 77.4% among 1–9 years old children. In this self-reported evidence, local coverage ranged from 67.8–90.2%. However, in all zones of Amhara Region, the reported administrative coverage was greater than 90% and was considerably higher than self-reported MDA coverage (39). The participants of this study also indicated that the perception of the community about the antibiotic use was low but it was in good progress. The community in whom trachoma was hyper-endemic had been experiencing different challenges, and the interventions should be related to the prioritized problems. For Bugna district, all actors of trachoma should work together to provide the minimum amount of safe water to make trachoma a history in the district, in the zone and the region. However, the ineffectiveness of SAFE was not exclusive to Bugna district because SAFE ineffectiveness could occur because of many other reasons and that would be justifiable. In addition, experts of infectious diseases believed that neglected tropical diseases eradication is a possibility to happen between 2040 and 2050, and they described that trachoma eradication by 2030 is likely unrealistic (40).

In this study; misperception about trichiasis surgery, limited health facility services, poor awareness, and low environmental improvements were quoted as contributors of SAFE strategy ineffectiveness.

The stakeholders described that the community of Bugna district have a poor awareness about the association between hygiene and sanitation with trachoma. This poor awareness might contribute to SAFE strategy ineffectiveness. To support the stakeholders view, a study revealed that communities with poor awareness and lack of involvement in trachoma program were affected more (7, 41). In controlling trachoma, studies from West Africa and Ethiopia confirmed that a double dose of Azithromycin was effective in controlling and eliminating trachoma (37, 38). But in Bugna district, some individuals did not get a single dose of Azithromycin in a year despite the high prevalence of trachoma almost in all kebeles (7), and this might be the reason for having high trachoma magnitude. Although, an evidence recommended a single dose of Azithromycin to controls TF below 5% effectively (42), a review by Xiong et al. disputed that Azithromycin administration to control trachoma should depend on the baseline prevalence (43). The Xiong et al's. review concluded that the recommendation of the World Health Organization; an annual MDA for 3 to 5 years in the districts with TF baseline > 10.0%, was not appropriate for all districts (43). The participants explained that the lack of water was the major reason for trachoma persistency in Bugna district, though they also mentioned that other FE components of SAFE were not addressed well. The opinion of the stakeholders agreed with the recommendation of the Carter Center and other international trachoma elimination partners; only massive surgery and antibiotic therapy with little effort to make sustainable changes in hygiene and sanitation might relieve only the symptoms of the disease, but not the causes (44).

A sustainable control of trachoma can be possible when the SAFE strategy components of F and E are prioritized in the SAFE program. Majority of the Bugna district community live below the poverty line (35), which is the main contributor to trachoma persistency and reoccurrence (44). This claim is clearly stated in which the highest-burden of trachoma existed in poor and developing countries characterized by low levels of personal and communal hygiene as shown by infection pooling at community and household levels (45). The stakeholders stated that MDA must continue further to eliminate trachoma in the following 5–10 years despite the WHO's target year, 2020. The WHO also suggested continuity of SAFE interventions beyond the target year of trachoma elimination goals were to be met (46) that demonstrated in a large majority of endemic countries in 2016. In considering measures to be taken for future trachoma elimination and control, the study participants stated possible options.

One of the recommendations suggested by stakeholders was to invite role models (recovered patients from trichiasis) to the public gatherings to create awareness and build trust among the community to tackle this misperception about trichiasis surgery. This is supported by a study that use local opinion leaders and champions to facilitate implementation by increasing acceptability and sustainability of the interventions (47).

The study participants stated that communication has a significant impact. There should be good communication between health extension workers, kebele leaders, and district-level experts (leaders) to

mobilize the community. Various strategies like inviting religious leaders are needed to influence the community and bring good awareness. The participants' opinion was in lined with a report that mass media campaigns increased the geographic coverage of implementation efforts while keeping implementation costs at a minimum and ensured that local communities are more likely to remember key health messages (48). However, most of the residents are in rural areas, and have no televisions, and radios. The recommended campaign style was portable advertisement using on car microphone.

The stakeholders also mentioned that much resource must be invested in increasing the service to each household level either by improving awareness or economic status. They stated that MDA must be given to each household member at the house-to-house level, and the site for surgery should be increased and trace every village. The suggestion of study participants was in line with a narration that described; adequate resources should be allocated to train and equip community members and health workers to bring community mobilization, information dissemination, drug distribution, boosting self-efficacy and confidence in taking part in trachoma control efforts (49).

The stakeholders of the district mentioned a number of contributors for SAFE strategy ineffectiveness, and also recommended alternatives strategies to eliminate trachoma at least by 2030. The awareness creation part about trachoma prevention and elimination should be prioritized and need a new approach to bring behavioural change in the community. Furthermore, the intervention should be area-specific; for example, in Bugna district, the significant contributors were water shortage, lack of facilities, and poor awareness. They believed that bridging these gaps would be important approach to control trachoma.

The first limitation of this study might be the participants under representativeness of study population in having opinion from different groups. The sample doesn't represent all the typical, deviant, and intense cases. Especially, trachoma infected individuals' perceptions, trachoma experts' opinion like ophthalmologists and integrated eye care workers, researchers of the field, program and policy personnel from regional and central government involvement would increase the quality of this paper if they were included.

The second limitation might be the composition of the focus group discussion team. The team was not homogeneous and that might hinder some of the people who were not knowledgeable about trachoma from explaining their thought but we assumed that the health care professionals educated the public for more than 10years, and the participants had relatively comparable awareness about trachoma.

The third limitation could be inappropriate group formation. In the two of the 7 teams, HEWs and their supervisors (district level health department leaders) were discussing together and that might impede HEWs from speaking challenges from the district health department and district health department leadership side. Similarly, district level health leaders might be reserved from speaking about the weakness of HEWs. However, having the other 5 teams composed of only HEWs and kebele leaders might bridge the above gap.

Abbreviations

DHO-District health officer, DTO-District trachoma officers, HEWs-Health extension workers, KLS-Kebele leaders, GET2020-Global elimination of trachoma by 2020, SAFE-surgery, antibiotics, facial cleanness, and “environmental improvement”, WHO-World Health Organization, WASH- water, sanitation and hygiene, TF-trachomatous inflammation-follicular, TT- trachomatous inflammation-intense (trichiasis), PTT- post-operative trachomatous trichiasis

Declarations

Ethics approval and consent to participate

Ethical clearance was obtained from Woldia University institutional review board committee, with a reference number of WDU/IRB-12076/2020. An official permission letter was received from Bugna district Health Department. Informed consent was obtained from all participants verbally, and when necessary, the interviews were terminated by the request of participants. All the data were de-identified, and more importantly, all study methodology was performed in accordance with the ethical principles of the Declaration of Helsinki.

Consent for publication

Not applicable

Availability of data and material

All the important data collected from participants during this study are summarized and included in the manuscript. However, the transcribed and translated verbatim can be accessible by requesting the principal author.

Competing interests

The authors declare that they have no conflicting of interests

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Authors' contributions

For this study MWK, KDT, KMT, and MAY were conceived the title and designed the study. MWK, KDT, KMT, MAY, TW, and W were preparing the code for analysis, building the theme, revising the first, second

and final draft of the manuscript. All the authors read and approved the final version of this manuscript and agreed to be accountable for all aspects of the work.

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References

1. Organization WH. Eliminating trachoma: WHO announces sustained progress with hundreds of millions of people no longer at risk of infection. 2019.
2. Solomon AWZM, Kuper H, Buchan J, Mabey D. Trachoma control: a guide for programme managers. Geneva World Health Organization; 2006.
3. Gebrie A, Alebel A, Zegeye A, Tesfaye B, Wagnaw F. Prevalence and associated factors of active trachoma among children in Ethiopia: a systematic review and meta-analysis. *BMC Infect Dis*. 2019;19(1):1073.
4. Melkie GAM, Gedamu G. Prevalence and associated factors of active trachoma among children aged 1–9 years old in mass drug administration graduated and non-graduated districts in Northwest Amhara region, Ethiopia: A comparative cross-sectional study. *PLoS ONE*. 2020.
5. Nigusie A, Berhe R, Gedefaw M. Prevalence and associated factors of active trachoma among children aged 1–9 years in rural communities of Gonji Kulella district, West Gojjam zone, North West Ethiopia. *BMC Res Notes*. 2015;8(1):641.
6. Ketema K, Tiruneh M, Woldeyohannes D, Muluye D. Active trachoma and associated risk factors among children in Baso Liben District of East Gojjam, Ethiopia. *BMC Public Health*. 2012;12(1):1105.
7. Stewart AE, Zerihun M, Gessese D, Melak B, Sata E, Nute AW, et al. Progress to eliminate trachoma as a public health problem in Amhara National Regional State, Ethiopia: results of 152 population-based surveys. *Am J Trop Med Hyg*. 2019;101(6):1286.
8. Sata E, Nute AW, Astale T, Gessese D, Ayele Z, Zerihun M, et al. Twelve-year longitudinal trends in trachoma prevalence among children aged 1–9 years in Amhara, Ethiopia, 2007–2019. *Am J Trop Med Hyg*. 2021;104(4):1278.
9. Tadesse B, Worku A, Kumie A, Yimer SA. The burden of and risk factors for active trachoma in the North and South Wollo Zones of Amhara Region, Ethiopia: a cross-sectional study. *Infect Dis*

- poverty. 2017;6(1):1–12.
10. Kassaw MW, Abebe AM, Tegegne KD, Getu MA, Bihonegn WT. Prevalence and associations of active trachoma among rural preschool children in Wadla district, northern Ethiopia. *BMC Ophthalmol*. 2020;20(1):1–10.
 11. Anteneh ZA, Getu WY. Prevalence of active trachoma and associated risk factors among children in Gazegibela district of Wagehemra Zone, Amhara region, Ethiopia: community-based cross-sectional study. *Tropical diseases, travel medicine and vaccines*. 2016;2(1):1–7.
 12. Meshesha TD, Senbete GH, Bogale GG. Determinants for not utilizing trachomatous trichiasis surgery among trachomatous trichiasis patients in Mehalsayint District, North-East Ethiopia. *PLoS Negl Trop Dis*. 2018;12(7):e0006669.
 13. Last A, Versteeg B, Shafi Abdurahman O, Robinson A, Dumessa G, Abraham Aga M, et al. Detecting extra-ocular Chlamydia trachomatis in a trachoma-endemic community in Ethiopia: Identifying potential routes of transmission. *PLoS Negl Trop Dis*. 2020;14(3):e0008120.
 14. Gower EW, Munoz B, Rajak S, Habtamu E, West SK, Merbs SL, et al. Pre-operative trichiatic eyelash pattern predicts post-operative trachomatous trichiasis. *PLoS Negl Trop Dis*. 2019;13(10):e0007637.
 15. Bryman A. Quantity and quality in social research. Routledge; 2003.
 16. Lincoln YS, Guba EG. Naturalistic inquiry. Newberry Park. CA: Sage; 1985.
 17. Rabasa A. Radical Islam in East Africa. Rand Corporation; 2009.
 18. Elo S, Kääriäinen M, Kanste O, Pölkki T, Utriainen K, Kyngäs H. Qualitative content analysis: A focus on trustworthiness. *SAGE open*. 2014;4(1):2158244014522633.
 19. Patton MQ. Qualitative research and evaluation methods. Thousand Oaks. Cal: Sage; 2002.
 20. Conrad P. The experience of illness: recent and new directions. *Research in the sociology of health care Vol 6: the experience and management of chronic illness*. 1987:1–31.
 21. Morse JM, Barrett M, Mayan M, Olson K, Spiers J. Verification strategies for establishing reliability and validity in qualitative research. *Int J qualitative methods*. 2002;1(2):13–22.
 22. Kvale S, Brinkmann S, Interviews. Learning the craft of qualitative research interviewing: sage; 2009.
 23. J. S. The coding manual for qualitative researchers. 2015.
 24. Polit DF, Beck CT. Nursing research: Generating and assessing evidence for nursing practice. Lippincott Williams & Wilkins; 2008.
 25. Hsieh H-F, Shannon SE. Three approaches to qualitative content analysis. *Qual Health Res*. 2005;15(9):1277–88.
 26. Elo S, Kyngäs H. The qualitative content analysis process. *J Adv Nurs*. 2008;62(1):107–15.
 27. Burnard P. A method of analysing interview transcripts in qualitative research. *Nurse Educ Today*. 1991;11(6):461–6.
 28. NVivo Q. QSR international Pty Ltd. Doncaster, Victoria, Australia. 2002.
 29. Schreier M. Qualitative content analysis in practice. Sage; 2012.

30. Downe-Wamboldt B. Content analysis: method, applications, and issues. *Health Care Women Int.* 1992;13(3):313–21.
31. Kuper HSA, Buchan J et al. A critical review of the SAFE strategy for the prevention of blinding trachoma. *Lancet Infect Dis.* 2003;3.
32. Bailey R, Lietman T. The SAFE strategy for the elimination of trachoma by 2020: will it work? *Bull World Health Organ.* 2001;79:233–6.
33. Lavett DK, Lansingh VC, Carter MJ, Eckert KA, Silva JC. Will the SAFE strategy be sufficient to eliminate trachoma by 2020? Puzzlements and possible solutions. *The Scientific World Journal.* 2013;2013.
34. Organization WH. WHO alliance for the global elimination of trachoma by 2020: progress report on elimination of trachoma, 2018. *Wkly Epidemiol Rec;* 2019.
35. district B. Bugna district health office report. 2020.
36. Altherr FM, Nute AW, Zerihun M, Sata E, Stewart AE, Gessese D, et al. Associations between Water, Sanitation and Hygiene (WASH) and trachoma clustering at aggregate spatial scales. *Amhara Ethiopia Parasites vectors.* 2019;12(1):1–11.
37. Last A, Cassama E, Bojang E, Nabicassa M, Burr S, Thompson K, et al. editors. Trachoma elimination in an endemic island setting in West Africa: are two doses of oral azithromycin better than one? *American Journal of Tropical Medicine and Hygiene;* 2015: AMER SOC TROP MED & HYGIENE 8000 WESTPARK DR, STE 130, MCLEAN, VA 22101 USA.
38. Keenan JD, Tadesse Z, Gebresillasie S, Shiferaw A, Zerihun M, Emerson PM, et al. Mass azithromycin distribution for hyperendemic trachoma following a cluster-randomized trial: a continuation study of randomly reassigned subclusters (TANA II). *PLoS Med.* 2018;15(8):e1002633.
39. Astale T, Sata E, Zerihun M, Nute AW, Stewart AE, Gessese D, et al. Population-based coverage survey results following the mass drug administration of azithromycin for the treatment of trachoma in Amhara, Ethiopia. *PLoS Negl Trop Dis.* 2018;12(2):e0006270.
40. Oldenburg E, Abdou Amza SA, Solomon AW, Brogdon J, Arnold BF, Keenan JD, Thomas M, Lietman. Can we eradicate trachoma? A survey of stakeholders Catherine Clinical Science, open access.
41. Oldenburg CE, Aragie S, Amza A, Solomon AW, Brogdon J, Arnold BF, et al. Can we eradicate trachoma? A survey of stakeholders. *Br J Ophthalmol.* 2021;105(8):1059–62.
42. Kuper HSA, Buchan J et al. A critical review of the SAFE strategy for the prevention of blinding trachoma. *Lancet Infect Dis.* 2003;3.
43. Xiong T, Yue Y, Li W-X, Choonara I, Qazi S, Chen H-J, et al. Effectiveness of azithromycin mass drug administration on trachoma: a systematic review. *Chin Med J.* 2021;134(24):2944–53.
44. Paul Emerson LF. Robin Bailey, David Mabey. Implementing the SAFE Strategy for Trachoma Control, A Toolbox of Interventions for Promoting Facial Cleanliness and Environmental Improvement.
45. Hu VH H-EE, Burton MJ, et al. Epidemiology and control of trachoma: systematic review. *Trop Med Int Health.* 2010;; 15.

46. Organisation WH. Trachoma Fact Sheet. 2016.
47. Khandekar R, Thanah TTK, Thi PD. Impact of Face Washing and Environmental Improvement on Reduction of Active Trachoma in Vietnam—A Public Health Intervention Study. *Ophthalmic Epidemiol.* 2006;13(1):43–52.
48. Bamani S, Toubali E, Diarra S, Goita S, Berté Z, Coulibaly F, et al. Enhancing community knowledge and health behaviors to eliminate blinding trachoma in Mali using radio messaging as a strategy. *Health Educ Res.* 2013;28(2):360–70.
49. Linehan MHC, Weaver A et al. Integrated implementation of programs targeting neglected tropical diseases through preventive chemotherapy: proving the feasibility at national scale. *Am J Trop Med Hyg.* 2011;84.

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