

Productivity, efficiency and gender equity of community mobilisation approaches in trichiasis campaigns: analysis of programmatic data from seven sub-Saharan African countries

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Received 20 August 2021; revised 25 November 2021; editorial decision 2 December 2021; accepted 15 December 2021

Background: Achieving elimination of trachoma as a public health problem in trichiasis-endemic districts requires a systematic approach to trichiasis case finding and outreach.

Methods: Programme monitoring data from seven countries for 2017–2019 were used to explore the efficiency of different community mobilisation approaches and uptake of trichiasis surgical services.

Results: Three countries (Ethiopia, Kenya and Mozambique) using broad-based community mobilisation strategies had large numbers of people presenting at outreach but only 2.9% of them had trichiasis, while in four countries (Nigeria, Tanzania, Uganda and Zambia) using house-to-house case finding, 37.5% of outreach attendees had trichiasis. Countries using house-to-house case finding have proportionally more women attending outreach compared with countries using broad-based mobilisation. Among trichiasis cases offered surgery 86% accepted, which was similar for men and women.

Conclusions: In these settings, house-to-house case finding appears to be a more effective and efficient approach to ensure that trichiasis cases, particularly in women, obtain access to surgical services.

Keywords: case finding, community mobilisation, equity, gender, house-to-house, trichiasis.

Introduction

Trachoma, the leading infectious cause of blindness, is caused by the bacterium *Chlamydia trachomatis*. Repeated episodes of infection, mostly in childhood, can lead to conjunctival inflammation, conjunctival scarring, trichiasis (eyelashes touching the cornea) and corneal damage later in life. There are an estimated 167 million people living in trachoma-endemic areas, mostly in Africa, and around 2 million people have trichiasis.¹ Trachoma

elimination in an endemic district is achieved when the prevalence of trachomatous inflammation-follicular is <5% in children aged 1–9 y and when the prevalence of trichiasis unknown to the health system is <0.2% of those aged ≥15 y.² Trachoma-endemic countries have adopted the WHO's SAFE strategy, which includes Surgery to reposition deviated eyelids, Antibiotics to treat infection, Facial cleanliness and Environmental improvement to reduce transmission.³

Trichiasis surgery is usually performed by non-physician trichiasis surgeons and patients are recruited through community mobilisation and case finding. Where trichiasis is a public health problem, surgical outreach is conducted near to endemic communities and surgery is provided free of charge. Community mobilisation is critical for successful trichiasis campaigns, and a variety of approaches have been used, including radio announcements, community meetings, town criers and specially trained community-based house-to-house case finders.⁴ In the settings that use house-to-house case finding, community members are trained in trichiasis case detection, recording of suspected cases and how to assist patients reach outreach; this training generally lasts 1 d.⁵ Recent studies have suggested that house-to-house case finding may be the most effective way to ensure that all trichiasis cases are identified and referred for surgery.^{6,7} Comprehensive (house-to-house) case finding should maximise the effectiveness of outreach and optimise the use of limited resources for trichiasis campaigns.

Women have an almost twofold (1.82) higher age-adjusted prevalence of trichiasis compared with men.⁸ The excess trichiasis in women may be due to several reasons, including reinfection due to their childcare responsibilities.⁹ There is no evidence in the literature, however, on the relative contribution of male and female case finders to ensure that people with trichiasis are identified and receive management. There is conflicting evidence on whether women are as likely to receive trichiasis surgery compared with men.^{4,10,11} This suggests that it is critical that programmes consider complex social and cultural factors which shape how men and women engage with trichiasis surgical services. Failing to recognise and respond to gender considerations in the design and implementation of service delivery during trichiasis campaigns will limit their success.^{12,13}

We reviewed programme monitoring data from seven trachoma-endemic countries in Africa, collected from two large trachoma-elimination programmes funded by UK aid and the Queen Elizabeth diamond jubilee trust. The purpose of the analysis was to assess the productivity and efficiency of different approaches for patient mobilisation and surgical uptake. We specifically examined: (1) gender characteristics of case finders and patients presenting to outreach; (2) trichiasis case productivity of case finders; (3) outreach efficiency in terms of confirmed trichiasis cases; and (4) gender differences in surgery uptake.

Methods

Trichiasis programme data were available from trachoma-endemic areas in seven countries (Ethiopia, Kenya, Mozambique, Nigeria, Tanzania, Uganda and Zambia) and covered April 2017–June 2019. During this period, four countries (Nigeria, Tanzania, Uganda and Zambia) used a house-to-house case-finder approach to examine adults and identify suspected trichiasis cases in communities.⁵ In three countries (Ethiopia, Kenya and Mozambique), case finders were recruited but community mobilisation was non-targeted and included a broad range of activities, such as radio communications, community meetings and village announcers/criers. These non-targeted approaches were adopted according to the local context and provided in the local language.

Data extracted from the routine programme records included the number of case finders trained, the number of people presenting to trichiasis outreach, the number of trichiasis cases confirmed, the number of patients referred for surgery and the number of surgeries performed. All case-finder and patient data were disaggregated by gender. Information on the social mobilisation approach, as to whether house-to-house case finding or less targeted approaches to patient mobilisation (e.g. radio messages, community meetings and community announcers/criers), was also confirmed with the programme managers.

Analysis of findings was carried out to assess differences between mobilisation approaches, with descriptive statistics (χ^2 , *p* value) used to describe differences in case finding, outreach presentation and acceptance of surgery. We also calculated outreach efficiency, defined as the proportion of people with confirmed trichiasis among those who presented to outreach.

Results

A total of 40 232 case finders were trained in the programme areas of the seven countries during 2017–2019. Just over half of the case-finders were women, with the proportion varying from 21% in Mozambique to 60% in Ethiopia (Table 1).

Case-finder productivity could be calculated only in four countries that used house-to-house finding as their primary case-finder strategy; the average number of suspected trichiasis cases per case finder was 3.51, ranging from 2.57 in Nigeria to 5.93 in Tanzania (Table 2).

A total of 1 032 711 people attended trichiasis outreach in the study areas during the 2-y period. There were 1.27 women per man attending outreach in all seven countries, but the proportion of women was significantly ($p < 0.001$) higher in the four countries that used house-to-house search strategies (65.4%), with the female-to-male ratio ranging from 1.67 in Zambia to 2.3 in Uganda (Table 3). In the three countries that used non-targeted community mobilisation approaches, 55.2% of outreach attendees were women and the female-to-male ratios ranged from 1.13 in Kenya to 1.42 in Ethiopia.

In the three countries that used non-targeted community mobilisation, only 2.9% of those presenting at outreach were confirmed to have trichiasis, with outreach efficiency ranging from 1.1% in Mozambique to 5.8% in Ethiopia (Table 4). In the four countries that used house-to-house case finding, 37.4% of people presenting to outreach had trichiasis, 12 times higher ($p < 0.001$) than countries using less targeted mobilisation.

Across all seven countries, 95% of confirmed trichiasis cases ($n = 57\ 164$) were offered trichiasis surgery, with little variation by gender or by country, and 86% of those offered surgery accepted it. Acceptance ranged from 64.8% in Tanzania to 98.4% in Nigeria and there were no differences in the uptake of surgery by gender (Table 5).

Discussion

Elimination of trachoma as a public health problem requires addressing both active trachoma through antibiotics, facial cleanliness and environmental improvements and trichiasis

Table 1. Trichiasis case finders trained in programme countries

Country	Case finders trained Men (%)	Case finders trained Women (%)	Total
Ethiopia	4066 (40.5)	5979 (59.5)	10 045
Kenya	4116 (51.0)	3960 (49.0)	8076
Mozambique	942 (79.1)	249 (20.9)	1191
Nigeria	5264 (46.8)	5989 (53.2)	11 253
Tanzania	2271 (47.0)	2561 (53.0)	4832
Uganda	2360 (60.7)	1527 (39.3)	3887
Zambia	618 (65.2)	330 (34.8)	948
Total	19 631(48.8)	20 588 (51.2)	40 232

Table 2. Suspected trichiasis cases identified by case finders

Country	Suspected trichiasis cases	No. of case finders trained and deployed	Mean no. of cases per case finder
Ethiopia*	-	-	-
Kenya*	-	-	-
Mozambique*	-	-	-
Nigeria	28 864	11 253	2.57
Tanzania	28 675	4832	5.93
Uganda	12 085	3887	3.11
Zambia	3846	948	4.06
Total	73 470	20 920	3.51

*Community-based case finders not the primary mechanism for patient recruitment.

Table 3. Number of people presenting to outreach

Country	Men	Women	Total	Female-to-male ratio
Ethiopia	129 929	184 645	314 574	1.42
Kenya	245 965	276 964	522 929	1.13
Mozambique	51 295	64 178	115 473	1.25
Nigeria	11 819	22 580	34 399	1.91
Tanzania	10 675	19 198	29 873	1.80
Uganda	2908	6678	9586	2.30
Zambia	2199	3678	5877	1.67
Total	454 790	577 921	1 032 711	1.27

management. For trichiasis, the goal is to ensure that the prevalence of trichiasis unknown to the health system becomes and remains below the WHO threshold of <0.2% in adults aged ≥ 15 y.¹⁴ Trichiasis campaigns in the seven countries have been successful in mobilising communities and providing thousands of people with trichiasis management, putting countries on a pathway to elimination.

Although it is often more expensive to train and utilise community-based trichiasis case finders, our findings suggest that this approach is more efficient than less targeted ap-

proaches. While outreach programmes in some countries with less targeted community mobilisation approaches managed to draw large numbers of people to attend, >95% of people attending did not have trichiasis. Available evidence suggests that people who come to an outreach site often have other vision problems and expect some form of service, and they can be frustrated if no other or only limited services are available.¹⁵ This can negatively impact communities' perceptions of outreach services and unintentionally undermine the effectiveness of future trichiasis outreach. Research in Sudan,⁶ Nigeria¹⁵ and Egypt⁴ has also demonstrated the value of house-to-house case finding by community members, although none of these studies compared different approaches to patient mobilisation. There are other factors that may influence productivity and efficiency, which could not be addressed using programme data, a limitation of the analysis.

The prevalence of trichiasis varies considerably in all programme areas in the four countries using case finders, likely leading to the different productivity figures noted; even within high-endemicity countries, some communities will have no trichiasis cases. Nevertheless, in endemic districts, community-based case finders are essential to ensure that all households have been visited and adults examined.

Once trichiasis cases were confirmed, most received surgery, although the uptake was lower in some settings than in others. The reasons for this could not be explored with the existing dataset; however, earlier research suggests that patients refuse surgery because of fears or due to social events, like funerals,

Table 4. Trichiasis cases among people presenting to outreach

Country	Trichiasis cases/ presenting to outreach (men)	Outreach efficiency (% for men)	Trichiasis cases/ presenting to outreach (women)	Outreach efficiency (% for women)	Overall outreach efficiency (% total)
Ethiopia	4120/129 929	3.2	14 154/184 645	7.7	5.8
Kenya	2159/245 965	0.9	5636/276 964	2.0	1.5
Mozambique	383/51 295	0.8	921/64 178	1.4	1.1
Nigeria	3565/11 819	30.2	10 199/22 580	45.2	40.0
Tanzania	2287/10 675	21.7	6282/19 198	32.7	28.7
Uganda	1783/2908	61.3	4962/6678	74.3	70.4
Zambia	151/2199	6.9	562/3678	15.3	12.1
Total	14 448/454 790	3.2	42 716/577 921	7.4	5.5

Table 5. Confirmed trichiasis cases who were offered and accepted surgery

Country	Men who were offered surgery/ men confirmed with trichiasis (%)	Men who accepted surgery/men offered surgery (%)	Women who were offered surgery/ women confirmed with trichiasis (%)	Women who accepted surgery/ women offered surgery (%)	Total accepted surgery/offered surgery (%)
Ethiopia	4114/4120 (99.9)	3854/4114 (93.7)	14 098/14 154 (99.6)	13 524/14 098 (95.9)	17 378/18 212 (95.4)
Kenya	2116/2159 (98.0)	1705/2116 (80.6)	5575/5636 (98.9)	4645/5575 (83.3)	6350/7691 (82.6)
Mozambique	383/383 (100.0)	357/383 (93.2)	921/921 (100)	875/921 (95.0)	1232/1304 (94.5)
Nigeria	2830/3565 (79.4)	2771/2830 (97.9)	8762/10 199 (85.9)	8630/8762 (98.5)	11 401/11 592 (98.4)
Tanzania	2147/2287 (94.0)	1415/2147 (65.9)	5956/6282 (94.8)	3833/5956 (64.4)	5248/8103 (64.7)
Uganda	1781/1783 (99.9)	1217/1781 (68.3)	4962/4962 (100)	3538/4962 (71.3)	4755/6743 (70.5)
Zambia	138/151 (94.1)	121/138 (87.7)	502/562 (89.3)	431/502 (85.9)	552/640 (86.3)
Total	13 509/14 448 (93.5)	11 438/13 507 (84.7)	40 776/42 716 (95.5)	35 476/40 776 (87.0)	46 916/54 285 (86.4)

baptisms or markets, which can affect both women and men.^{4,16–18} Similar to our findings, studies in Tanzania and Vietnam¹¹ showed no gender differences in the acceptance of trichiasis surgery by men and women. In previous work in Ethiopia and Egypt, however, some barriers, such as fear of surgery, costs of transport and lack of an escort, were more challenging for women.^{4,10}

Trachoma programmes should not make assumptions about potential gender inequities in the uptake of trichiasis surgery but rather assess the local context and systematically collect and review gender-disaggregated data. A limitation of this study was the inability to assess case-finding productivity separately for male and female case finders. Although routine programme data always has its limitations in terms of accuracy or consistency over time, this study showed that systematic analysis of such data can be extremely valuable to provide insights into programme delivery and to guide operational decisions.

In conclusion, while less targeted mobilisation resulted in more people being screened at outreach, there were proportionately fewer trichiasis cases compared with the use of house-to-house trichiasis case finders. Countries using case finders had a higher proportion of women presenting to outreach, suggesting better penetration of targeted communities. Once trichiasis cases

are confirmed at outreach, a large majority receive management, regardless of gender. Further research should focus on the community, the work of case finders to identify all potential trichiasis cases within the community and ensuring that suspected cases attend scheduled outreach. Programmes will have a higher likelihood of reaching the elimination of trichiasis as a public health problem by adopting a systematic approach with the community, and house-to-house case finding appears to be the best way to achieve this.

Authors' contributions: EUH and PC developed the study design, data analysis and interpretation and provided the first draft of the manuscript. The other authors contributed by revising the content of the manuscript.

Acknowledgements: The secondary data analysis for the purpose of this paper was supported through the Accelerate programme, funded by a consortium of donors including the Bill and Melinda Gates Foundation, DFID & Queen Elizabeth Diamond Jubilee Trust, CIFF, ELMA and Virgin. We are grateful for the support provided by the Ministries of Health, implementation partners and individuals in Ethiopia, Kenya, Mozambique, Nigeria, Tanzania, Uganda and Zambia.

Competing interests: None declared.

Ethical approval: As we conducted a secondary analysis of routinely collected programmatic data, the study did not require ethical approval. The ministries of health of all seven countries approved the use of the anonymised data.

Data availability: All data included in the manuscript is available.

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