Contribution of Hygiene Behavior Change interventions in trachoma elimination efforts in Uganda: A case study of Napak and Nakapiripirit districts

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Abstract: Trachoma a neglected tropical disease remains the World's leading infectious cause of blindness thriving especially in living conditions where there are shortages of water, inadequate sanitation and where numerous eye-seeking flies are present (WHO 2018). World Health Organization (WHO) adopted the "SAFE (Surgery, Antibiotics, Facial cleanliness, and Environmental improvements) strategy for elimination of trachoma by 2020. Today the number of people at risk of trachoma has fallen from 1.5 billion in 2002 to just over 142 million in 2019, a reduction of 91%, (WHO 2019). WaterAid Uganda (WAU), Implemented hand and face washing 2-year project in Napak and Nakirpirit districts of Uganda as part of the F and E strategy guided by a Hygiene Behavior Change (HBC) strategy. This paper seeks to exhibit the contribution of Hygiene Behavior Change, particularly adoption of hand and face washing in addressing the high prevalence Trachoma. A cross-sectional household and community surveys were used to assesses the status of face and hand washing before and after the project implementation as part of the baseline and end-line survey/s conducted by the Global Trachoma Mapping Project (GTMP). In the GTMP 2007 Baseline surveys; Napak and Nakirpirit districts had a Trachomatous follicular (TF) first stage of trachoma characterized by the inflammation of the eyelids prevalence of > 10%. In the 2018 Trachoma impact assessment survey, Napak and Nakirpirit districts had a TF prevalence of > 5% and have now achieved elimination threshold thus no more intervention. The end-line survey indicates increase in households with hand/face washing facilities with water by 43% (4.2 to 7.4, p=0.03) and households with hand/face washing facilities with soap increased by 59.5% (1.7 to 4.2, p=0.016). Respondents who knew 1+ symptoms of trachoma increased by 21.8% (70.9 to 90.7, p<0.001). Belief amongst primary caregivers that health hygiene practices (such as hand and face washing) will reduce chances of getting trachoma increased by 42.3% (43.3 to 75.0, p<.001). In summary, HBC communication interventions can bring about change community members' knowledge, attitudes, and behavior related to prevention and control of trachoma irrespective of the community's poverty levels. Findings highlighted the need to integrate HBC intervention in ongoing WASH intervention as part of the Facial cleanliness and environmental improvement(F&E) component.

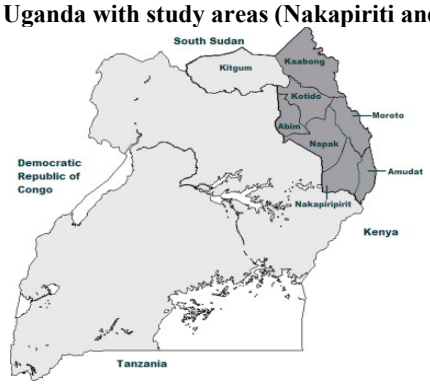
Keywords: Trachoma, Hygiene Behavior Change, Facial cleanliness, Environment, Blindness, Water, Sanitation

Introduction

Hygiene Behaviour Change (HBC) strategies have long been used to support public health initiatives around the world. Could the lessons from the health sector inform efforts to enlist communities and schools in adoption of consistent hand and face washing behaviors in a bid to eliminate Trachoma especially in poverty-stricken areas with already poor access to Water, Sanitation and Hygiene (WASH) services?. To answer this question, WaterAid Uganda with support from Queen Elizabeth Jubilee trust fund implemented a two-year Sanitation and Hygiene For Personal Improvement (SHAPE) project in Napak and Nakirpirit districts as part of the World Health Organization (WHO) SAFE strategy under the National Trachoma elimination program. The paper describes whether HBC techniques brought about changes in the targeted populations' knowledge, attitudes, and behaviors related to their personal hygiene with focus on face and hand washing. Napak and Nakirpirit districts household's latrine coverage stands at 22% and 28% respectively against the national 77% (SPR 2016). The national latrine pupil: stance ratio is at 1:67 against the national standard 1:40. Particularly in Napak and Nakirpirit, the pupil to latrine stance ratio stood at 1:20 and 1:70

respectively (SPR 2015). Karamoja region where these two-district falls is a nomadic population classified as one of the world's poorest areas. The proportion of people trapped in chronic poverty is at a high 24%, twice higher more the national average of 10 % (UNHS, 2016). The regions collective GDP accounts for less than 1% of Uganda's total GDP (USAID, 2017). This implies all communities and schools in the target districts are underserved with WASH services. As a result, such poor WASH services escalated the already dare situation contributing to the previously high trachoma prevalence at 57.1% and 57.8% for Napak and Nakirpirit districts respectively (MoH, 2007). This HBC initiative was integrated in the already ongoing WASH interventions supported by WaterAid and partners in the target districts. Some of the HBC activities included; Community theater, radio talk shows, jingles, DJ mentions, demonstrations, talking compounds, video shows, music, dance and drama sessions among others.

Figure 1: Map of Uganda with study areas (Nakapiriti and Napak districts)



Materials and methods

A cross-sectional household and community survey was used to assesses the status of face and hand washing before and after the project implementation as part of the baseline and end-line survey/s conducted the Global Trachoma Mapping Project (GTMP). Both surveys were aligned to the indicators identified for evaluation of the F&E interventions by the MoH in Uganda in preparation for the Dossier documenting elimination of Trachoma as a Public Health Problem in Uganda by 2020. Sample size was calculated to evaluate at a regional level, 15 schools and 82 communities were selected, stratified by district. Within each community, 24 households were selected, and, with informed consent, the primary caregiver was interviewed regarding access and use of water and sanitation, basic trachoma knowledge, and factors related to hygiene and sanitation practices. In addition, available facilities were enumerated, and children's faces were observed for cleanliness. Eligibility criteria included the primary caregiver being available for the interview and the presence of children under 9 years old in the house at the time of interview. Within schools, with informed consent of the headteachers, observations were made of hand and face washing practices of learners, facilities were enumerated and 42 Learners per school were selected and interviewed regarding their knowledge and awareness of trachoma. The Learners were selected from two classes (21 per class) in each school, one class from lower primary levels P1 through P3 and one class from upper primary levels P4 through P6 to represent younger and older Learners. Villages and schools selected in the baseline were revisited in the end-line; however, households and learners were randomly resampled within villages and schools, respectively. Data was collected using the commcare mobile data collection platform. Enumerators were trained for two days and participated in a practicum on a third day. The Data was then imported to a statistical analysis software (STATA13), weighted appropriately and analyzed primarily for the key indicators and their disaggregation.

In the community survey, 1,966 and 1,986 households were reached in the baselines and end-line surveys, respectively – this was enough to meet the sampling requirements. The respondents were mainly (95% and 85%; baseline and end-line) female with an average age of 35 years in both surveys (range 18-83 and 18-93; baseline and end-line). In the school survey, 15 schools were reached and agreed to participate. Observations were carried out in 15 and 14 schools and a total of 195 and 604 events were observed in the baseline and end-line surveys, respectively. The baseline survey had fewer observations due to a failure of the data collection tool, rectified in the end-line survey. The required sample size of children interviewed in schools was reached (630 and 604; baseline and end-line). The children interviewed were 44% male and 42% female, with a median age of 11 and 12 (baseline and end-line).

Results and discussions

Household Indicators

The percentage of households found to have a face/handwashing station was low and unchanged from baseline to end-line (9.3 to 11.5, p=0.361). Percentage of households with hand/face washing facilities with water increased significantly (4.2 to 7.4, p=0.03). Percentage of households with hand/face washing facilities with soap increased significantly (1.7 to 4.2, p=0.016). There was a slight decrease in percentage of children under 15years with clean face (58.2 to 50.1, p=.001) but no significant change in percentage of children under 9 with clean face (62.0 to 58.2, p=0.11). Percent of households free of human faeces decreased significantly (95 to 91.5, p=0.011). There was no significant increase in the presence of VIP toilets (0.7 to 2.4, p= 0.119). Percent of respondents who know 1+ symptoms of trachoma increased significantly (70.9 to 90.7, p<0.001). Percent of respondents who know 1+ ways trachoma spreads increased significantly (40.3 to 63.4, p<0.001). Percent of respondents who saw or heard any message about trachoma increased significantly (6.6 to 14.5, p<0.001). The primary caretakers who discussed key messages about trachoma prevention and treatment with friends or family members increased significantly (5.3 to 16.5, p<0.001). Belief amongst primary caregivers that health hygiene practices (such as hand a face washing) will reduce chances of getting trachoma increased significantly (43.3 to 75.0, p<.001).

Table 1: Household Indicators in the Karamoja region

	Karamoja		Combined		
Indicator	**Baseline**	**Endline**	**Baseline**	**Endline**	**P**
% of households found to have a hand/face washing station	1.4 (0.7 - 2.8)	10.1 (7.2 - 14.1)	9.3 (6.3 - 13.4)	11.5 (8.8 - 14.9)	0.361
% of children under 15yo with clean faces (free of nasal and ocular discharge) among all children in or near their home	59.9 (54.6 - 65)	45.5 (41.7 - 49.4)	58.2 (54.2 - 62.1)	50.1 (47.1 - 53)	0.001
% of children under 9yo with clean faces (free of ocular and nasal discharge) among all children in or near their home	60.8 (55.6 - 65.8)	48.7 (44.4 - 52.9)	62 (58.3 - 65.6)	58.2 (55.1 - 61.2)	0.11
% of adults 16 or older with clean faces (free of ocular and nasal discharge)	72.8 (68.1 - 77)	57.2 (53.2 - 61.1)	68.7 (65.7 - 71.5)	57.3 (54.9 - 59.6)	<0.001
% of HH with hand/face washing facilities with soap	0.3 (0.1 - 0.9)	2.3 (1.4 - 3.9)	1.7 (1.1 - 2.5)	4.2 (2.3 - 7.7)	0.016
% of HH with hand/face washing facilities with water	0.5 (0.2 - 1.2)	4 (2.5 - 6.4)	4.2 (3-6)	7.4 (5.1 - 10.7)	0.03
% of households in target areas with presence of a functioning, clean pit latrine, defined as a VIP, for household use	0.7 (0.2 - 2.7)	2.4 (1 - 5.6)	3 (1.7 - 5.2)	4.9 (3.4 - 7.1)	0.149
% of HH respondents who know 1 or more symptoms of Trachoma	50.2 (44.2 - 56.3)	68.2 (62.7 - 73.3)	70.9 (65.1 - 76.2)	90.7 (87.4 - 93.3)	<0.001
% of HH respondents who have seen or heard any message about Trachoma	7.7 (5.5 - 10.6)	17.4 (13.4 - 22.4)	6.6 (5 - 8.7)	14.5 (12.5 - 16.8)	<0.001
% of households (compounds) free of human faeces	88.6 (84 - 92.1)	86.8 (83.1 - 89.7)	95 (93 - 96.4)	91.5 (89.3 - 93.2)	0.011
% of HH respondents who know 1 or more way on how trachoma disease spreads	25.7 (21.6 - 30.3)	56.1 (51.1 - 60.9)	40.3 (35.7 - 45.1)	63.4 (59 - 67.7)	<0.001
% of primary caretakers that perceive they are at risk for getting trachoma	23 (18.3 - 28.5)	24.8 (20.3 - 29.9)	25.4 (21.6 - 29.7)	35.7 (31.9 - 39.7)	0.001
% of primary caretakers who discussed key messages about trachoma prevention and treatment with friends or family members	5.3 (3.7 - 7.6)	16.5 (12.5 - 21.4)	4.6 (3.5 - 6)	6.7 (5.2 - 8.7)	0.043

School Indicators

Year-round water accessibility did not change significantly between surveys (43.1 to 50, p=0.724). Knowledge amongst school children of 1+ measure to prevent trachoma increased significantly between surveys (49.9 to 76.3, p=0.004). However, the percent of schools with hand/face washing facilities with soap saw no change between surveys (13.9 to 15.3, p=0.916). Compound cleanliness and garbage pit availability was low and saw no change between surveys (13.9 to 20.8, p=0.657).

Table 2: School Indicators in Karamoja region

Indicator	Baseline	Endline	P
% of schools with water accessibility year-round from an improved water source	43.1 (18.8 - 71.2)	50 (23.3 - 76.7)	0.724
% of children under 14 years old with clean faces (free of nasal and ocular discharge) among all children at school	84.3 (60.2 - 95)	79.8 (68.8 - 87.6)	0.634
% of school children under 9yo with clean faces (free of nasal and ocular discharge) among all children at school	87.9 (76.8 - 94.1)	82.9 (75.9 - 88.2)	0.343
% schools with hand/face washing facilities with soap	13.9 (2.9 - 46.8)	15.3 (3.9 - 44.2)	0.916
% school children washing their faces when washing their hands during school day	22.0 (12.2 - 36.2)	13.0 (6 - 25.9)	0.219
% of schools where compound is well swept and where garbage pits are available	13.9 (2.6 - 49.5)	20.8 (5.6 - 53.8)	0.657
% school children who know at least 1 measure to prevent trachoma	49.9 (39.6 - 60.1)	76.3 (61.9 - 86.5)	0.004
% of school compounds free of human faeces	69.4 (37.1 - 89.7)	90.3 (48.1 - 98.9)	0.268
% of schools that have a least one clean latrine for both boys and girls.	27.8 9.9 - 57.3)	70.8 (39.1 - 90.2)	0.039

Discussion

From this HBC intervention and assessment findings, respondents who knew 1+ symptoms of trachoma increased by 21.8% (70.9 to 90.7, p<0.001). Belief amongst primary caregivers that health hygiene practices (such as hand and face washing) will reduce chances of getting trachoma increased by 42.3% (43.3 to 75.0, p<.001). A similar study indicated that community-based programs can reduce the prevalence of active trachoma (Sutter & Ballard 1978,1983), implying that interventions targeting behavior change contributed to the combined efforts that led to the elimination of trachoma in the districts. Findings also indicated an increase in households with hand/face washing facilities with water by 43% (4.2 to 7.4, p=0.03) and households with hand/face washing facilities with soap increased by 59.5% (1.7 to 4.2, p=0.016). Other studies have shown that the presence of an adequate water supply is associated with a reduced community prevalence of active trachoma, but although necessary, this is only a part of what is required and not the whole answer (Prost & Négrel, 1989). This affirms the need for Integration of the Hygiene Behavior Change activities in traditional WASH interventions targeting elimination of Trachoma is a recommended approach. The finding of this assessment also agrees with a similar study by Maryann and Hiwote (2018), which concluded that the only way SAFE strategy can achieve and sustain trachoma elimination is by integrating HBC as part of the F&E component in addition to ensuring that such intervention are aligned with established behavior change theories and empirical evidence. This would allow implementation beyond information dissemination, and appropriately employing a variety of behavior change techniques to address more proximal influencers of behavior change giving a long-lasting recall effect and sustained behavior change.

Conclusion and recommendation.

A considerable proportion of the respondents exposed to the HBC intervention exhibited adoption of hand and face washing in their new behaviors despite leaving in one of the poorest and nomadic areas in the world. This intervention builds on the knowledge base that already established the lack of HBC as the major limitation of the F&E programming by demonstrating how enough integration of behavior change interventions and evidence into the design and implementation of F&E activities may yield sustained improvements in F&E behaviors and practices. And of interest is incorporation of face and hand washing activities as 'routines' or 'rituals' in all WASH activities in the district. This encouraged face and hand washing through frequent and continuous demonstrations and practice that ensured adoption of appropriate hygiene practices becames habitual and routine in their daily activities.

Nomadic Contexts

It was evident that behavior change in pastoral communities takes longer time compared to non-pastoral communities. Future interventions must consider the local context and nomadic nature of the communities to design a successful and effective intervention for behavior change campaign. The target population for these initiatives were majorly nomadic, regularly moving across the border to South Sudan and Kenya, making reaching and ensuring their active participation in HBC activities challenging. Their nomadic nature made sustaining behavior change campaigns challenging as they kept on wandering in search of pasture for their animals. It also made it hard to maintain the momentum (behaviour change tipping point) as communities moved away leaving behind completed and covered latrines. Often WaterAid, partners and District Officials followed up these communities in the new locations where possible and encouraged them to start latrine construction afresh.

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