

Research to inform the development of behaviour change interventions for the “F” and “E” of the SAFE strategy in Turkana and Marsabit, Kenya

Final report

Principal Applicant,

Professor Clare Gilbert,
International Centre for Eye Health,
Department of Clinical Research,
London School of Hygiene & Tropical Medicine (LSHTM)
Keppel Street,
LONDON WC1E 7HT

Co-Applicants:

Dr Lisa Danquah, Research Fellow,
International Centre for Eye Health, LSHTM

Dr Hillary Rono
Zonal Ophthalmologist western Kenya
Ministry of Health

Katie Greenland
Research Fellow in Hygiene Behaviour,
Environmental Health Group, LSHTM

Table of Contents

EXECUTIVE SUMMARY	5
BACKGROUND	7
Rationale	7
Conceptual Framework.....	8
Overview of study areas	9
Institutional background.....	11
Research objectives	11
METHODS.....	12
Study design.....	12
Study setting	12
Phase 1: Orientation and stakeholders' views.....	12
Stake holder meetings:	13
Key Informant Interviews:.....	13
Field emersion to explore the local context, and pilot testing:	13
Phase 2: Formative research.....	13
Study population.....	13
Selection of study households	14
Data collection.....	15
Structured observation	15
Facial cleanliness assessment	15
Environmental spot check.....	15
Household questionnaire.....	15
Clinical examination for active trachoma and trachomatous trichiasis.....	16
Knowledge, attitudes and practices survey (KAP survey).....	16
In-depth interviews.....	16
Focus group discussions.....	16
Water point observation.....	16
Data Management	17
Quantitative data:	17
Qualitative data:.....	17
Phase 3: Behavioural trial	17
RESULTS.....	18
Study Population.....	19
Turkana	19
Marsabit.....	19
Population characteristics.....	20
Cultural practices and differences	20
OBJECTIVE 1. STAKEHOLDERS.....	21

OBJECTIVE 2a: DEFECATION & STOOL DISPOSAL 2.....	24
Knowledge.....	24
Attitudes.....	24
Practices.....	25
Comparison with baseline data	26
Animal faeces	28
Barriers to "E" interventions.....	28
OBJECTIVE 2b: WASTE DISPOSAL PRACTICES.....	29
Knowledge and Attitudes.....	29
Practices.....	29
Comparison with baseline survey	29
OBJECTIVE 3a: WATER SOURCES & AVAILABILITY.....	30
Water sources	30
Water collection and storage.....	31
Household observation.....	31
Water point observation.....	34
Comparison with baseline.....	36
OBJECTIVE 3B: WATER USE	36
Water use and prioritization:.....	36
Practices at water point	36
Practices at home.....	37
Facial cleanliness.....	41
Barriers to "F" interventions.....	42
OBJECTIVE 4: TRACHOMA.....	43
Knowledge of active trachoma and trichiasis	43
Knowledge about transmission.....	44
Azithromycin treatment.....	45
Attitudes to surgery	45
OBJECTIVE 5: COMMUNITY VOLUNTEERS	47
OBJECTIVE 6: COMMUNICATION CHANNELS.....	47
OTHER FINDINGS - OVERCROWDING.....	49
MAIN FINDINGS BY LOCATION.....	49
HYGIENE BEHAVIOURAL TRIAL.....	51

CONCLUSIONS AND RECOMMENDATIONS.....	52
Summary: the “S” of the SAFE strategy	52
Summary: the “A” of the SAFE strategy.....	52
Summary: the “F” of the SAFE strategy	53
Summary: the “E” of the SAFE strategy	53
The need for context-dependent interventions	54
Intervention design and delivery principals.....	55
Pinning down the exact behaviours that need to change	55
PROPOSED NEXT STEPS.....	57
Limitations of the study	58
References.....	60
Appendix A: Terms of reference.....	61
Appendix B. Details of study communities.....	65
Appendix C: Modes of communication channels for implementing F and E activities	67

Abbreviations

CLTS	Community Led Total Sanitation
CO	Corneal opacity from trachoma
FGD	Focus group discussion
IRC	International Red Cross
KAP	Knowledge, attitudes and practices
KHS	Kenya shilling
MDA	Mass drug administration
OD	Open defecation
ODF	Open defecation free
TF	Trachoma follicular
TI	Trachoma intense inflammation
TT	Trachomatous trichiasis
WASH	Water, sanitation and hygiene

Acknowledgements

The study was funded by Sightsavers. The research team would like to acknowledge the extensive support provided by the Kenya Country Office, by staff in the Ministry of Health in Turkana and Marsabit, inputs from all the stake holders involved in trachoma control in Kenya, and the hard work and commitment of the field workers, often under very difficult circumstances.

The Terms of Reference are in Appendix A.

EXECUTIVE SUMMARY

Trachoma is the commonest cause of infectious blindness and causes considerable ocular morbidity in children and adults. It is endemic in many areas of Kenya, including Turkana and Marsabit. Control entails the SAFE strategy: **S**urgery for the distorted upper eyelid; **A**ntibiotics to treat infection; **F**acial cleanliness; and **E**nvironmental hygiene to reduce transmission. The “F” and “E” components are challenging in areas prone to drought, and amongst pastoralist communities who migrate and have inadequate access to water and sanitation. The purpose of this study was to review the available information from the trachoma baseline surveys conducted in Turkana and Marsabit counties in 2010 and to conduct additional formative research to establish the factors influencing community behaviour and practices that perpetuate the spread of trachoma and which prevent uptake of lid surgery for trichiasis.

The formative research study was undertaken in villages in a total of 6 sites, in two counties, Turkana and Marsabit Central in May-July 2013. Selection of study sites was made in consultation with Sightsavers after discussion with a range of stake holders and field visits. The study areas were selected purposively so as to reflect a range of cultural, social and religious practices, whether programmes such as Community Led Total Sanitation (CLTS) had been implemented, and the extent to which communities were static or migratory. Several different qualitative and quantitative methods were used in the study villages so as to triangulate and compare the findings. Quantitative data were obtained through structured observation of the cleanliness of the local environment, at water collection points, and of the hygiene and sanitation behaviours of households early in the morning as well as via household surveys. Qualitative data were obtained through in-depth interviews and focus group discussion with representatives of those implementing trachoma control and other health programs in Turkana and Marsabit; with individuals with trichiasis, village leaders/elders, and with male and female community leaders, as well as via a behaviour trial of a tippy tap for hand and face washing.

The findings support baseline data on the high prevalence of trachoma, except in one Muslim village in Marsabit, and that risk practices are common. All communities visited reported shortage of water to be a major problem. Water was primarily collected by women, who had to carry jerry cans which limited the volume collected. In Marsabit donkeys greatly increased the volume collected. Young children do not go to water collection points, where they could be washed. Water was mainly used for drinking, cooking and for animals, and most households had some water in the early morning. School going children’s faces were washed, as this is a requirement, but younger children were less likely to have their faces washed. However, hygiene in very young children is seen as a priority. Hand washing with soap is promoted in schools, but face washing. Leaky tins were very uncommon as was soap and communities did not seem to distinguish hygiene and health as different concepts. Ocular and nasal discharge was common, seen as normal, and mothers often used their fingers to clean nasal discharge. Flies on children’s faces were more common in Turkana. Many compounds were contaminated by animal and human faeces, particularly that of children, and had other waste. Animal faeces were commonly close to compounds as animals are kept close by for security reasons. Waste disposal is usually by burning in latrines, but these are often near compounds. Latrine construction is a challenge on account of the sandy soil and lack of equipment for construction. Embarrassment was one factor which limited use of latrines. Villages which had undergone CLTS tended to have less OD and animal faeces. There was considerable misunderstanding about MDA, side effects were frequent, and negatives attitudes were common. There is also considerable misunderstanding about and fear of trichiasis surgery. Knowledge about trachoma was moderate, communities reported that they had not been “sensitized” about it and there was a variety of

beliefs about causation e.g., excessive crying. Overcrowding at night was very common as mothers sleep on the ground with their children, often in very confined spaces.

The commonest communication channels were oral, usually via community meetings or in places of religious practice. Radios are uncommon and the majority of the population is not literate.

The WASH organizations active in northern Kenya acknowledge that delivering the SAFE strategy to migratory communities is a real challenge.

A trial of a leaky tin in two communities suggested that this intervention was acceptable to communities.

One of the main implications of the findings are that behaviour change interventions for “F” and “E” (as well as “S” and “A”) are required in Turkana and Marsabit, and need to be governed by and responsive to the local context e.g. access to water; existing infrastructures such as school and places of religious practice, rather than administrative divisions. Delivering any behaviour change intervention amongst unsettled, truly nomadic communities will remain a challenge, as there are no structures into which these can be integrated.

Barriers to implementation behaviour change interventions for the “F” and “E” include physical/infrastructural barriers such as lack of water and limited means of transport in most communities; difficulties in building latrines and this is not seen as valuable use of time and other resources for migratory communities; CLTS has only been implemented in communities with infrastructure. Cultural barriers include lack of distinction between hygiene and health; nasal discharge is seen as normal, and keeping animals close to compounds for security reasons. Knowledge about trachoma was reasonably good amongst mothers/primary caregivers, but this has not been translated into behaviours which reduce transmission.

Next steps for intervention development necessitate the translation of the formative research findings into a brief that sets out the precise behaviours that an “F” and “E” campaign should address and specify the target population. Intervention development should consider the physical and social environment in which behaviour takes place, needs to be specific to the local context, and should tap into drivers of behaviour. It is recommended that further behaviour trials of leaky or alternatives are conducted to identify the best way of instilling new hygiene routines. Community Led Total Sanitation should be continued to increase demand and uptake of latrines and coupled with efforts to encourage covering of all human faeces, including that of children. School programs to promote face washing hygiene have been very effective, and these could be expanded to include face washing, and the Child-to-Child approach so that school going children can be agents of change in their families and communities. To reach the communities in sparsely populated Turkana and Marsabit it is likely to be necessary to piggy-back onto existing programmes using existing infrastructure, although efforts should be made to include nomadic communities as far as possible.

BACKGROUND

Trachoma is the commonest cause of infectious blindness and causes considerable ocular morbidity in children and adults. Trachoma is caused by *Chlamydia trachomatis*. The infection spreads from eye to eye through eye seeking flies, principally *Musca sorbens* (Emerson, Bailey et al. 2000; Taye, Alemayehu et al. 2007), which are attracted to, and feed on ocular and nasal secretions. Female *Musca sorbens* flies lay their eggs in waste and faeces, preferring human faeces (Emerson, Bailey et al. 2001), but they also breed in faeces from other animals. Other factors which promote the transmission of trachoma include overcrowding and close contact (e.g. many children sleeping in the same bed/mat), and the use of dirty clothes to wipe children's faces. Affluent communities with adequate sanitation and water supplies, and who do not keep livestock are, therefore, much less at risk of trachoma. Trachoma is endemic in many areas of Kenya, including Turkana and Marsabit. Despite overcrowding being considered a risk factor for transmission, the evidence is largely historical i.e. from the USA and UK, locations where *Musca sorbens* does not exist (Taylor H, 2008) and there is only one small recent study from Oman. Reducing overcrowding is not considered in the SAFE strategy, and may have been overlooked as a behavioural risk factor.

Control of trachoma entails the SAFE strategy: **S**urgery for the distorted upper eyelid; **A**ntibiotics to treat infection; **F**acial cleanliness and **E**nvironmental hygiene to reduce transmission. The "F" and "E" components are challenging in areas prone to drought, and amongst pastoralist communities who migrate and have poor access to water. Indeed, migration makes all aspects of the SAFE strategy challenging to deliver.

Recently azithromycin (Zithromax) has been shown to be highly effective at clearing Chlamydial infection, after only one dose (Evans and Solomon 2011). Annual mass distribution of antibiotic (MDA) with Zithromax is now being rolled out in communities demonstrated to be endemic for trachoma. Surgery to correct the upper eye lid deformity is also effective at preventing visual loss, and in some instances can improve vision: it certainly reduces the pain and discomfort from ingrowing eyelashes (Yorston, Mabey et al. 2006). Evidence of the effectiveness in reducing fly populations comes from trials of insecticide spraying and the use of pit latrines (Emerson, Lindsay et al. 2004; Rabiou, Alhassan et al. 2012). There is however, less compelling evidence of the impact of facial hygiene on the transmission of trachoma (Ejere, Alhassan et al. 2012).

Rationale

An understanding of context is particularly important in relation to trachoma control as a multitude of factors perpetuate conditions which promote the transmission of active trachoma (TF/TI) or limit access to and uptake of services for trachomatous trichiasis (TT). Turkana has the highest prevalence of trachoma in Kenya, reflecting the fact that the region is extremely arid and prone to drought. The population density is very low, and the Turkana are nomadic and semi-nomadic pastoralists who migrate extensively to find grazing for their livestock. The region is extremely poor, with 94% living below the poverty line. There are high levels of malnutrition, low levels of literacy (17%) and educational attainment (34%), low life expectancy and large family sizes.

Community Led Total Sanitation (CLTS) is being rolled out in Turkana by the Ministry of Health (<http://www.communityledtotalsanitation.org/>). CLTS is an international movement whose goal is to work with communities to reduce open defecation (OD). Communities are facilitated to conduct their own appraisal and analysis of OD and take their own action to become open defecation free (ODF). The goal of CLTS is to facilitate communities to identify and change unhealthy sanitation and hygiene practices, particularly the practice of OD, through triggering feelings of shame and disgust in order for this to lead to action in relation to hygiene e.g. reducing OD. Communities are facilitated to conduct their own appraisal and analysis of OD and take their own action to become ODF such as construction of latrines from locally available materials. A national programme of CLTS started in Kenya in 2007. Several rounds of mass distribution of antibiotics (MDA) with Zithromax has also been undertaken. However, little has been done to address the F and E components to date, which means that the underlying causes of trachoma are not being adequately addressed. While CLTS will have the impact of reducing OD, communities in Turkana are heavily dependent on livestock, and so live in compounds contaminated by animal faeces.

Recent trachoma baseline surveys in two counties, Turkana (Karimurio and Rono 2010) and Marsabit (Karimurio and Rono 2011), established that both counties experience a high prevalence of both active trachoma (TF) and trachoma trichiasis (TT), being higher than the World Health Organisation (WHO) thresholds for intervention. Trachoma is, therefore, a significant public health problem that requires full implementation of the SAFE strategy. In this respect, Sightsavers is working in partnership with Ministry of Public Health and Sanitation, and the Catholic Diocese of Marsabit to roll out five year trachoma projects in both counties. The initiatives address key areas including access and time spent collecting water and to influence community behaviour change in favour of adequate environmental sanitation/hygiene practices in respect of face and hand-washing, latrine coverage and use/safe disposal of human faeces, and compost pit usage and promote community hygienic behavioural changes that lead to a reduction in trachoma risk factors currently prevalent in these areas.

The purpose of this study was to review the available information from the trachoma baseline surveys conducted in Turkana and Marsabit counties in 2010, and to conduct additional formative research to establish factor which influence community behaviour and practices that perpetuate the spread of trachoma with a view to the findings informing a behaviour change intervention.

Conceptual Framework

Formative research provides a systematic process to understand risk behaviours and to develop strategies to address them. Formative research provides the foundation to understand both the risk behaviours in relation to trachoma transmission, and understanding of the behavioural factors that both facilitate and inhibit hygiene practices particularly hand washing, facial cleanliness and environmental sanitation. Furthermore, such an approach provides the basis to understand the knowledge, attitudes and practices of caregivers of children, given that children are most at risk of active trachoma infection.

The conceptual framework within which this research is based upon is the “Evo-Eco” approach (Aunger and Curtis 2013). The formative research methods were designed using a theoretical framework to help focus data collection on uncovering information on important determinants of behaviour. This framework was developed by LSHTM researchers (Figure 1). Reading from the outside in, this framework shows in green how behaviour is influenced by the environment in which it takes place in the form of the “physical”

environment (e.g. infrastructure), “biological” environment (e.g. presence of faeces, flies etc.) and “social” environment, the networks and rules that govern and influence normative behaviour.

Behaviour is also determined by our brains (in blue) in three different ways: some actions we take are “reactive”, automatic responses to cues or habitual acts, others are “motivated” by an emotional driver such as comfort, hunger, disgust or fear, while the “executive” part of the brain considers the future and consequences of acting in a certain way now. The way in which our brains respond causes our body to act in different ways according to the setting we are in: e.g. we modify our own early-morning routines if we are staying in a hotel compared to what we would normally do at home.

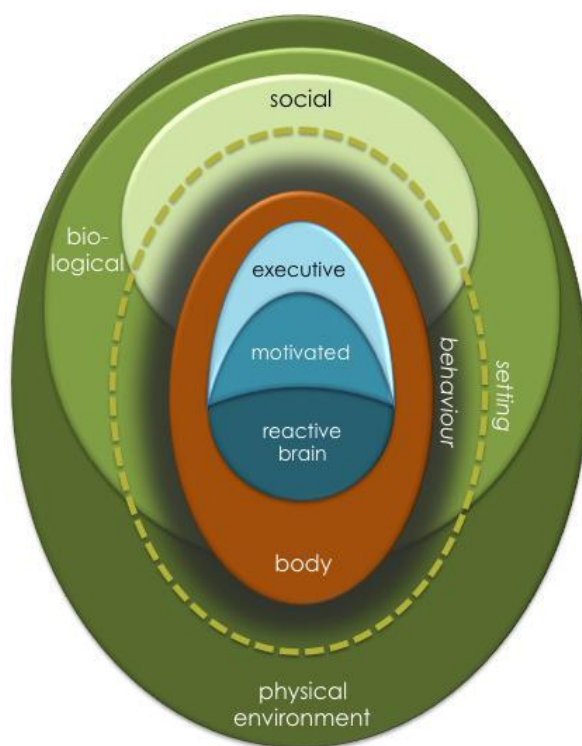


Figure 1: “Evo-Eco”, a theoretical framework of the factors influencing behaviour

This research sought to understand the attitudes, practices and behaviours of communities affected by trachoma in Turkana and Marsabit, Kenya, with respect to water use, hygiene and sanitation, and health seeking behaviour amongst those with trichiasis, and to elicit their knowledge of trachoma and its risk factors in order to inform a community behaviour change health education programme to reduce the transmission of trachoma and increase the uptake of lid surgery.

Overview of study areas

Turkana

The county of Turkana is located in the North-western region of the country, in the former Rift Valley Province. Turkana is the largest county in Kenya and neighbouring counties include Marsabit County to the East, Samburu County to the South-east and Baringo and West Pokot to the South-west. The country is bordered by Uganda to the west, South Sudan to the north and Ethiopia to the northeast, and Lake Turkana to the east. Turkana County is approximately 77,000 square kilometres and has a population of 855,399 (2009 est).

The county is divided into six districts namely Turkana Central, Turkana North, Turkana South, Turkana West, Turkana East and Loima, and 17 administrative divisions. The predominant community is the Turkana people and the main livelihood is pastoral, which accounts for 60% of the population. The population density is very low (6.9/km²), and the Turkana are nomadic and semi-nomadic pastoralists who migrate extensively to find grazing for their livestock. The county is characterised by high levels of poverty with 95% of the population living below the poverty line and major humanitarian issues in the form of food insecurity and drought. Levels of malnutrition are high with the county experiencing malnutrition rates of up to 37.4%, low levels of literacy (17%) and educational attainment (34%), low life expectancy and large family sizes.

Internal insecurity (e.g., cattle raiding by armed individuals) and forced migration remain important challenges facing the county.

Trachoma in Turkana

Trachoma remains highly endemic in Turkana. The county has the highest prevalence of trachoma in Kenya. A recent trachoma baseline survey conducted in the county in 2010 established the average prevalence of active trachoma (TF) amongst children to be 42.3%, while that of potentially blinding trachoma (TT) in adults ≥ 40 years was 9%, the highest in Kenya. Turkana West District has the highest TF and TT prevalence rates in Kenya, 67.7% and 9% respectively. The TF prevalence in Turkana Central and Loima districts were 20% and 71% respectively, while TT in adults ≥ 40 years was 4.2%, making both active and potentially blinding trachoma issues of public health concern in all the districts.

Furthermore, the baseline survey also identified that known risk factors for trachoma are highly prevalent, with scarcity of water, shortages of pit latrines with frequent OD, unsafe disposal of children's stools, waste and garbage disposal, inadequate facial hygiene, a lack of adequate hand washing facilities, low uptake of surgery amongst those with trichiasis and low levels of knowledge in relation to trachoma.

Several rounds of mass distribution of antibiotics (MDA) with Zithromax have also been undertaken and will continue. However, little has been done to date to address the F and E components of the SAFE strategy, which means that the underlying causes of trachoma are not being adequately addressed. While initiatives such as CLTS will have the impact of reducing OD, communities in Turkana are heavily dependent on livestock, and so live in compounds contaminated by animal faeces.

Marsabit

Marsabit County is the second largest in Kenya, covering 12% of the country. The county has a population of 291,166 according to the 2009 National Housing and Population Census. There are six administrative divisions in Marsabit including Central, Gadamoji, Laisamis, Loiyangalani, Maikona and North Horr. Moyale is the largest town in Marsabit County and is being targeted for intervention as part of the Marsabit Trachoma Control Program

Marsabit is located in one of the driest regions in Kenya and is one of the poorest counties in the country, with an absolute poverty index of 88.2%. Eighty percent of the population are pastoralist and 27 percent are in need of food aid. Water shortages and drought are also characteristic of this county.

Trachoma in Marsabit

Active trachoma (TF) and trachoma trichiasis (TT) prevalence in Marsabit were 14.1% and 1.7% respectively in 2011, higher than the WHO thresholds, suggesting trachoma is a disease of public health concern in the county and that the full implementation of the SAFE strategy is justified. As in Turkana, the recent baseline survey established that the county has risk factors that perpetuate the spread of trachoma.

Key findings from the baseline include an estimated 73% of children had dirty faces while only 28.1% of households had latrines. 59.8% of those who do not have latrines are unwilling to construct them while 90% of the population does not have a means of garbage disposal. The practice of hand-washing before eating is performed by 54.5% of the population and before feeding a child by 27.5%. Compounding poor sanitation was lack of knowledge of trachoma, with only 37.4% of the population understanding the disease and how it can be transmitted.

Institutional background

The Hygiene Centre and the International Centre for Eye Health at the London School of Hygiene and Tropical Medicine were commissioned to undertake this research following an open call for applications. Field work took place over a 10 week period between May and July 2013. Data analysis, interpretation and report writing took place between July and October 2013.

The findings from this research will be used by the Sightsavers Country Office, Kenya, to develop a health education / behaviour change intervention strategy to address issues identified as posing barriers to the effective implementation of the project which will be adapted to the local setting and includes mechanisms to ensure and promote sustainability.

Research objectives

General:

To understand the attitudes, practices and behaviours of communities affected by trachoma in Turkana and Marsabit, Kenya, with respect to water use, hygiene and sanitation, and health seeking behaviour amongst those with trichiasis, and to elicit their knowledge of trachoma and its risk factors in order to inform a community behaviour change health education programme to reduce the transmission of trachoma and increase the uptake of lid surgery.

Specific:

1. To obtain up to date information from key stakeholders on the status of interventions for trachoma control in the study districts and plans for the future, including health education
2. To assess environmental hygiene (OD and waste disposal) and attitudes and behaviours towards factors which promote eye seeking flies
3. To assess water use and hygiene behaviours of carers of young children and their attitudes towards facial hygiene in particular
4. To assess perceptions of trachomatous trichiasis and health seeking behaviour and barriers to accessing lid surgery
5. To assess the current and potential role of community volunteers in trachoma control
6. To identify how communities receive and disseminate health education communication

METHODS

Study design - overview:

A cross sectional formative research study was undertaken using mixed, quantitative and qualitative methods. The study comprised three main phases: i.) Phase 1: Orientation and stakeholders' views ii.) Phase 2: Formative research iii.) Phase 3: Behavioural trials, which used emerging and preliminary findings. One or two behaviour change interventions were trialled in selected communities to assess the acceptability of the behaviour change, their ability to practise the behaviour, and possible barriers and solutions.

Study setting

The study was conducted in three settings in Turkana district (Kerio, Turkwell and Loima divisions), in villages in Kakimat, Lorugum and Lokiriama sub-locations. In Marsabit County, the three study sites were located in Gadamoji and Marsabit Central divisions, in villages in Songa, Hula Hula and Qilta sub-locations. The study areas are characterised by perennial water shortages, inadequate sanitation, poor hygiene and poverty. Figure 2 shows the point location of the five divisions where the six study sites were located.

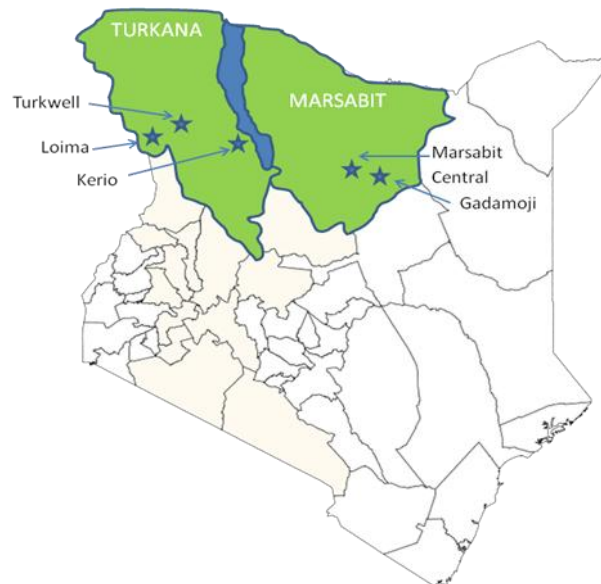


Figure 2: Map showing the divisions where study was carried out (six sites in five divisions) in Turkana and Marsabit Districts, Kenya

Phase 1: Orientation and stakeholders' views

The pre-formative phase of the study involved scoping the research area through a series of stakeholder meetings at national level and in the local study districts. This included interviews with key stakeholders and field visits to selected communities to understand the context and context specific factors in relation to trachoma, water, sanitation and hygiene issues. This phase also included field visits to the study areas.

Stake holder meetings:

A series of stakeholder meetings were held at national and local levels prior to the main fieldwork. The purpose of the meetings was to provide an overview of the study and the methods to be used, and to gain input on data collection instruments. Participants described their current and future roles in trachoma control, particularly in Turkana and Marsabit and highlighted challenges for trachoma control in these areas.

Key Informant Interviews:

Key stakeholder interviews were conducted with key actors at national and local districts levels. This included those responsible for trachoma control at national and district level, key stakeholders from the Ministry of Health and Sanitation, WASH actors and those managing CLTS.

Field emersion to explore the local context, and pilot testing:

The findings from the stakeholder meetings and key informant interviews provided important information that was used to inform the formative research, selection of study villages and design of study instruments. Field emersion visits were undertaken to several communities in each of the study settings to assess differences in relation to a range of characteristics and to field test study instruments.

Communities varied within Turkana and Marsabit with respect to their migration characteristics and included those that were settled, true pastoralist communities with a high burden of trachoma and those that had been internally displaced. Communities also differed with respect to their ethnic composition, cultural beliefs and religion, access to water and type of water source e.g. unprotected shallow wells, dams, boreholes, and level of sanitation, prevalence of active trachoma and trachomatous trichiasis, exposure to CLTS and other socio-economic characteristics (see Results section for more details). There was considerable variation in community characteristics within each county, with less pronounced differences between counties. This has implications for deciding which behaviour change intervention would be the most appropriate, as the local context rather than the geographical location needs to be the main driver.

Phase 2: Formative research

This section describes the methods used in the formative research component of the study. Following feedback from Phase 1, particularly the national stakeholder meetings and key informant interviews, and given the logistical and time considerations, a total of 72 households were included in this phase, 12 more than planned. This reflected and considered the feasibility of conducting formative research in three villages in each study county and providing sufficient numbers in each study village for each of the formative research methods.

Minor modifications were made to the data collection instruments following feedback and suggestions made at the stakeholder meetings, key informant interviews, field emersion visits and pilot testing.

Study population

Criteria for the selection of study villages included access and distance to water sources; prevalence of active trachoma and trachomatous trichiasis, level of sanitation coverage and whether they had been

exposed to CLTS, ethnic/religious composition and cultural characteristics. The study locations were suggested by Sightsavers based on areas known to them.

Following feedback from participants at the national stakeholder meeting on the selection of study sites, particularly for Marsabit, it was decided to include a new site in Marsabit Central division in addition to the previously selected Gadamoji to account for and address the different ethnic, religious and social/cultural characteristics of the area and the higher prevalence of trachoma in Marsabit Central division. Therefore, two study villages were selected in Marsabit Central and one was selected in Gadamoji. Details of the study sites are shown in Table 1 and in Appendix B. Additional fieldworkers were recruited and trained who spoke the local languages and understood the local context.

Table 1. Details of study locations

	TURKANA			MARSABIT		
Study site	1	2	3	1	2	3
Division	Kerio	Turkwell	Loima	Central	Central	Gadamoji
Sub-location	Kakimat	Lorugum	Lokiriama	Songa	Hulahula	Quilta
Village	Lorengelup	Nang'oridengo Nalepoto	Lochor Alamala	Leyai	Hulahula	Manyatta Jilo
Way of life	Settled	Partially settled	True nomads	Partially settled	Nomadic	Settled
Religion	Christianity	Christianity	Christianity	Christianity and Islam	Christianity	Islam

Children less than ten years were the main focus of this study. They are particularly vulnerable to active trachoma infection, are the main reservoir of infection, and it is well established that younger children, aged one to five, are particularly at risk of infection compared to children in older age groups. Females were also a major focus as they are primarily the caregivers of children, and their hygiene behaviour with respect to hand washing and facial cleanliness can directly influence the health status and habits of their children. Other groups were also included.

Selection of study households

Eligible households were those with at least one child aged between 1-9 years who resided in the study area for at least one month and had settled in that area.

Study villages were visited in advance of the fieldwork and the purpose of the study was explained to the village chief prior to data collection. Households with children aged 1-9 were identified by the village chief. Twelve households in each of the three villages in the two study settings were identified, giving a total of 72 households: 36 in Turkana and 36 in Marsabit. Once permission had been sought, eligible households were visited and the purpose of the study explained. Once permission and consent had been granted by the household head and mother/primary caregiver of the children, the household was enumerated to ascertain the number of household members and their age, gender and education status. The procedures for the study were explained, informing them that the study team would arrive early the following morning.

The specific behaviours of interest for structured observation were not divulged to ensure that behaviours were not modified and to reduce reactivity.

Data collection

Structured observation

Structured observation was used to assess actual behaviour in relation to water availability, defecation and stool disposal and personal hygiene and other water use behaviours including hand washing after defecation; personal hygiene including facial wiping, hand and body washing, and other water use activities e.g. domestic activities. Forty eight of the 72 households were included, and eight of the twelve study households in each of the six villages were selected. As observation started very early in the morning it was not possible to include all study households within the time available. This number was deemed sufficient to capture behaviours of interest in each study village.

Observation started at 5.45 am, as household members were waking up, and continued until 9.00 am. One trained fieldworker was assigned to a household who positioned themselves where they could observe household members. A pre-defined form was used to record the behaviours of interest. All household members were observed but emphasis was placed on the primary caregiver/mother of children and children aged 1-9 years. An activity log listing all activities also formed part of the structured observation in order to validate the main observation.

Facial cleanliness assessment

During the structured observation the faces of children aged 1-9 were assessed for the presence of nasal and ocular discharge when the child woke up, and flies on the face. Nasal discharge was defined as discharge or crusting around the nose, and ocular discharge was defined as discharge or crusting around the eye(s). Flies on the face were defined as flies on a child's face for more than 30 seconds. There was also an assessment of whether the child's face was washed and whether the child went to school. Facial washing and school attendance among children aged 10 to 15 years was also recorded.

Environmental spot check

The environmental spot check was conducted in all study households and involved a simple inspection of the compound and surroundings. This took place immediately after the structured observation and took approximately 10-15 minutes. This method captured the presence of human/animal faeces in and around the compound to assess the proximity of fly breeding sites, waste disposal practices and proximity to the household, access and use of a latrine, proximity of animal enclosures to the household and types of animals kept.

Household questionnaire

The household questionnaire was administered to all study households. The head of household or mother/primary caregiver was interviewed if the head of household was not available. Interviews took 30-45 minutes. The questionnaire included a household roster that was used to list all household members and the socio-demographic characteristics, migration and family characteristics including ethnicity and religion, housing and socio-economic characteristics, water and sanitation and access to mass media and communication channels.

Clinical examination for active trachoma and trachomatous trichiasis

Clinical examination for signs of active trachoma and trachomatous trichiasis was added following feedback from key stakeholders so that findings could be compared between households with and without trachoma to assess differences in behaviours in relation to trachoma [data still to be analysed].

Household members, including children aged 1-9 years, were examined by an ophthalmologist for signs of active trachoma and trachomatous trichiasis using the WHO simplified grading system.

Knowledge, attitudes and practices survey (KAP survey)

The knowledge, attitudes and practices survey was administered to the mother/main primary caregiver of children aged 1-9 in all study households. The interview took approximately 40 minutes. Questions focused on knowledge, attitudes and practice in relation to trachoma including awareness of trachoma, local context, causes and transmission, behaviour, including health seeking behaviour and practices in relation to prevention of transmission: facial cleanliness and hand washing behaviours, access to water and sanitation, domestic hygiene and access to health information and communication channels.

In-depth interviews

In-depth interviews were conducted in each study village with village chiefs or elders, community health workers/volunteers, teachers and individuals with trachomatous trichiasis. The latter were identified by asking the village leader/village elders and household heads whether anyone in their community had painful eyes with ingrowing eyelashes. The key areas focused on included how communities receive general information and health information; attitudes towards and challenges regarding sanitation, personal hygiene and flies; and knowledge of trachoma and control strategies. The in-depth interviews with individuals with trichiasis focused on the impact of the condition on their life, knowledge regarding the condition and health seeking behaviour. Interviews lasted 30-60 minutes and were audio recorded where permission was given.

Focus group discussions

Focus group discussions were conducted in each study village with men and women/primary caregivers of young children in separate groups ranging from 4-10 people. A discussion guide was developed and focused on climatic conditions e.g. drought and the impact on households; water supplies, water collection responsibilities, and water treatment practices; sanitation; knowledge and awareness of trachoma including causes, prevention and mass distribution of antibiotics. Focus groups lasted 45-60 minutes and were audio recorded.

Water point observation

Water point observation was added as water points are potentially a site for behaviour change and it became apparent that it is important to understand distance to the water sources as well as activities during water collection.

The main water points in each study village were identified through discussion with village leaders/elders. Activities at the water source were observed for an hour at times when people usually collect water. A pre-defined form was used to record the timing, person collecting water, the amount collected e.g. 20 litres, any accompanying persons and activities e.g. washing clothes or bathing.

Data Management

Quantitative data:

Databases were created in Access to capture the findings of the structured observation in households and at water points, the environmental spot check, and data from the household and KAP surveys. Data cleaning and analysis were performed in STATA 13. Analyses involved frequencies and cross tabulation by study site.

Qualitative data:

All recorded interviews and focus group discussions were transcribed by bilingual Kenyans. The researchers analysed the findings using immersion i.e. repeated reading, to identify emerging themes, and by coding themes arising out of the objectives using NVivo. Quotes were extracted to illustrate the themes. All paper records of data, including personal identifiers and consent forms were left with Sightsavers in Kenya.

Phase 3: Behavioural trial

The hygiene behaviour selected for the trial was based on data and information collected during field work, and after discussion with staff in Sightsavers Country Office. A behavioural trial planned in schools could not be undertaken due to a national teachers strike.

The intervention had two broad components:

1. Improving knowledge about trachoma and
2. Behaviour change:
 - a. improved face and hand washing, focussing primarily of children aged 1-9 years;
 - b. how a leaky tin could be used in water scarce environments for personal hygiene;
 - c. improved environmental and domestic hygiene

The behavioural trial used the mechanism of a community meeting (baraza) called by the village elder to improve knowledge and understanding of trachoma and trial a behavioural change intervention in two selected study villages in Turkana and Marsabit. The baraza was for all members of the community, focussing on mothers/primary caregivers of young children, young children and their fathers. Activities included a) an introductory interactive session b) community education session on trachoma and modes of transmission c) trachoma prevention and face and hand washing demonstration and the behaviour change component included d) practical leaky tin production demonstration and water conservation demonstration and e) effective hand and face washing demonstration and f) critical times for face washing.

RESULTS

A total of six communities (study villages) across Turkana and Marsabit Central counties were included in this study. The study villages were in the same divisions but not the same sub-locations as in the 2010 Trachoma Baseline Surveys. Study villages had similar geographical characteristics and prevalence of active trachoma and trichiasis. All had a high prevalence of active trachoma, ranging from 20 – 67% in Turkana and 10 – 45% in Marsabit.

A total of 72 households participated and had data collected for the environmental spot check, household questionnaire, observation of facial cleanliness, active trachoma and trichomatous trichiasis assessment and knowledge, attitudes and practices survey (Table 2). Structured observations were conducted in 48 households, 24 in each setting (8 in each of the three villages in each setting).

Eight water point observations were conducted: six in Turkana and two in Marsabit Central. A total of eleven key informant interviews were conducted with key stakeholders, twelve focus groups with men and women, two in each of the six study villages and a behavioural trial was conducted in both settings.

Table 2: Summary of main fieldwork activities

	Data type	Turkana	Marsabit	Total
Communities visited		3	3	6
Environmental spot check	Quantitative	36	36	72
Household surveys	Quantitative	36	36	72
Structured observation in households (from 5.45am)	Quantitative	24	24	48
Observation of facial cleanliness (Households)	Quantitative	36	36	72
Active trachoma and TT assessment*	Quantitative	36	36	72
Knowledge, attitudes and practices survey	Quantitative	36	36	72
Observation at water sources*	Quantitative	6	2	8
Key informant interviews	Qualitative	7	4	11
In-depth interviews				
Village leaders	Qualitative	3	2	5
Teachers	Qualitative	2	3	5
Community health workers/volunteers	Qualitative			
People with trichiasis	Qualitative	7	1	8
Focus Group Discussions				
Men	Qualitative	3	3	6
Women/Carers of young children	Qualitative	3	3	6
Behavioural trial: using leaky tin		1	1	2

**Included after initial pilot phase*

Results are presented by behaviour according to the study objectives. Findings are compared with baseline data whenever possible. The “Evo-Eco” framework was used in considering the domains to be used topics to be covered in the methods, and in consideration of possible barriers to implementation that emerged during the research, including social and cultural factor and infrastructure barriers, such as lack of water.

Study Population

The household survey provided information on the demographic characteristics of study households. Household members were defined as those who were usually resident in the household, who eat, sleep and share meals together (Table 3). There were very high levels of illiteracy in both districts with many households without anyone who had been to school.

Table 3: Characteristics of study population

	Turkana	Marsabit
Number of household members enumerated	285	230
Average household size	8	6
Mean age of respondents (years)	17	18
No of children aged 1 -9 years	105	98
Mean monthly household income (KHS*)	619.1	2854.4

*KHS - Kenya Shillings

Turkana

In the study villages in Turkana, a total of 285 individuals were enumerated. The average household size was eight members. Among households with complete information (n=264), 122 (46.2%) were male. A total of 124 (46.9%) individuals had never attended or were not in school, and 102 (38.6%) had achieved primary school education as their highest level of education. Current school attendance was 42.4% with 112 of the 264 individuals currently being enrolled in school. Illiteracy levels were high: 65.5% could not read at all, 17% were able to read a little and 17.4% were able to read well. The mean monthly income was 619.1 KHS (range 0 -12,000 KHS). The main sources of household income were petty trading (44.1%), livestock/livestock product sale (26.5%), sale of ration foods (8.8%) and other (8.8%), which included selling wild fruit.

Marsabit

In the study villages in Marsabit, a total of 230 individuals were enumerated. The average household size was six members. In Marsabit, 49.6% of household members were male. 104 (45.2%) of the 230 respondents had never attended school. The level of illiteracy was high with 53.9% of participants not being able to read at all.

Mean monthly income was higher than in Turkana, at 2,854.4 (range 0-20,000). The main source of household income was through livestock (28.6%) own agriculture (22.9%), casual labour (22.9%) and other (11.4%), which included being dependant on relatives.

Population characteristics

Three distinct population groups live in Turkana and Marsabit: i) “settled” communities, typically with fewer animals and an income from making and selling items such as brooms or charcoal; ii) “drop outs”, communities that no longer lead a nomadic lifestyle; and iii) “unsettled, true pastoralists” who migrate with large herds. True pastoralists form the majority of the population in both districts. Both areas experience high levels of poverty. In Turkana, 95% of the population live below the poverty line and Marsabit is one of the poorest counties in Kenya, with 88.2% absolute poverty index.

As livestock are the main source of income and provide financial security, the welfare of animals takes high priority. When not out grazing animals are kept extremely close to the household, often in enclosures within 10m. When animals are let out of the enclosures in the mornings they often defecate right next to the household. This is not cleared away. Children are involved in caring for animals from a young age, some of whom do not attend school as a result.

Communities tended to be small, with 15-20 households forming a “kraal” who live and travel together (if applicable). The structures/huts people live in Marsabit Central and Turkana are very small in relation to the household size which range from 5 to 9 or more. Due to the polygamous lifestyle, there is usually a separate hut for the male, and children sleep with their mother in the main hut on an animal skin or mat on the ground, or outside on a mat.

Security and cattle raiding are real issues in these communities hence the need for livestock to be kept close to the household for fear of theft or attack. Dogs are also important. Indeed, during one focus group discussion a participant who was asked if they had any questions responded by saying:

“My question is a bit different from eye issue. I think we are talking about human, environment and even livestock. There were some doctors who came sometime back and promised us to vaccinate our dogs in March this year and they failed. We were even told to have 100 shillings ready. Could you help us on this because dogs are also important?”

Cultural practices and differences

One of the study sites in Gadamoji (Marsabit) is primarily a Muslim area, which has a low prevalence of trachoma. These communities were not observed to keep dogs, had limited livestock (e.g. cattle) and generally had much cleaner environments which may reflect religious and cultural practices. Other study areas were either settled communities who no longer led a nomadic lifestyle or unsettled communities. Most of the study villages in Turkana were predominately of one ethnic group whilst in Marsabit Central villages were more ethnically, culturally and religiously diverse.

It is a common practice in this part of Kenya that newborn babies and their mothers are kept in seclusion for 40 days after birth. During this time and up to the age of 6 months, great emphasis is placed on keeping the child clean. However, after 6 months these practices tend to lapse. There is no defining moment when this takes place, but it appears to be linked to development of the child. Once a child can walk steadily they are given freedom to play and explore the environment, often becoming dirty in the process, particularly in Turkana where the soil is very sandy.

Although animals and their needs are reportedly prioritised over the needs of children, girls in these communities are valuable because of the bride price they bring, while boys are needed to tend animals.

Older children were observed assisting mothers/primary caregivers in caring for younger children.

OBJECTIVE 1: STAKEHOLDERS

Stakeholders working on WASH helped identify a number of Strengths, Weaknesses, Opportunities and Threats that characterise the implementation of WASH programmes in Turkana and Marsabit. The key findings are summarised in Table 4. The findings relate to experiences of working on a variety of projects including household water treatment; work with water-users' associations for all water points; hand washing (demonstrations, teaching on critical times); CLTS triggering; school WASH clubs; provision of jerry cans, soap, aquatabs; awareness creation e.g. via radio.

Table 4: Strengths, weakness, opportunities and treats of implementing WASH programmes

TURKANA	MARSABIT
Strengths	
<ul style="list-style-type: none"> ❖ Community support. High level of community support/receptiveness to programme (if correctly implemented) ❖ Existing infrastructure e.g. schools, religious institutions ❖ Land availability e.g. for infrastructure ❖ WASH coordination: All WASH organisations are members of WESTCORD 	<ul style="list-style-type: none"> ❖ Community ownership/receptiveness ❖ Programme focus/coordination: clear focus & objective. Share experiences ❖ CLTS: underway. Progress is being made but some communities have challenges e.g. they are used to subsidies. "Model villages" with people visiting where CLTS has been successful; learn from approaches used
Weaknesses	
<ul style="list-style-type: none"> ❖ Access to water e.g. distance; water needed for animals; transport difficulties due to terrain; water points (e.g. boreholes) located where water is available ❖ Prioritisation of hygiene & sanitation e.g. ranked 12th on community priorities ❖ Diversity of practices and beliefs ❖ Lack of software components ❖ Programme funding and implementation ❖ Lack of community participation and knowledge ❖ Lack of resources e.g. transport 	<ul style="list-style-type: none"> ❖ Water use prioritisation – water is prioritised for domestic use and animals ❖ Knowledge and awareness of trachoma – Low levels of awareness regarding the condition and how it is transmitted and prevented ❖ Limited hygiene promotion component in existing programmes
Opportunities	
<ul style="list-style-type: none"> ❖ Nomadic lifestyle: nomadic communities could take learning with them ❖ Water points: women interact at water sources ❖ Community entry points e.g. schools and religious establishments ❖ Increasing community participation – will help increase ownership ❖ Water trucking ❖ School WASH activities e.g. through School WASH clubs 	<ul style="list-style-type: none"> ❖ Schools: could implement WASH e.g. in health clubs ❖ School children could be "agents of change" ❖ Existing programmes – working with existing programmes and use of Community Health Workers e.g. livestock insurance programme ❖ Coordination between WASH agencies & other areas ❖ Community involvement to take ownership; involve village chiefs/ elders ❖ Educating communities on the health and social benefits

❖ Sanitation marketing creating demand for latrines	of having toilets e.g. improved health. Teaching them how to use new hardware ❖ Use social media e.g. drama for behaviour change ❖ Use of leaky tin to prioritise water for face washing of young
Threats	
<ul style="list-style-type: none"> ❖ Cultural beliefs and practices e.g. the role of women in society, gender beliefs, practise regarding use of latrine ❖ Nomadic lifestyle: challenges for MDA administration ❖ Acceptability ❖ Environmental factors e.g. drought, famine and flooding ❖ Insecurity: cannot reach all areas, need escorts ❖ Donor requirements e.g. building latrines for girls ❖ Contaminated water sources e.g. use of one source increases risk ❖ Gender roles/vulnerability ❖ Water prioritisation ❖ Rainwater harvesting unreliable, so lack of investment 	<ul style="list-style-type: none"> ❖ Nomadic lifestyle ❖ Beliefs/cultural practices e.g. trans. of trachoma due to seasons, age, beliefs. Flies reflect wealth. Cultural taboos among some ethnic groups to wash young children ❖ Water scarcity: needs to be shared with animals ❖ Illiteracy – high rates of illiteracy ❖ Deforestation ❖ Open defecation: very common practice > 80% pop. ❖ Livestock security v important: leads to conflict ❖ Geographical location/isolation: difficult to reach ❖ Difficulties / cost of accessing local materials to construct latrines

Although some programmatic solutions to intervening in communities in Turkana and Marsabit were described (e.g. putting boreholes along migratory routes, training community health workers within a *Kraal* so knowledge moves with the group when they migrate) it appears that many of the known difficulties are “solutionless” at present: work is predominantly done in settled communities although nomadic groups are predicted to have higher levels of trachoma; hygiene promotion programmes have not solved the issues of lack of water or lack of prioritisation for water, hence people are told how and when to hand (and face) wash but barriers to washing are not addressed; and many programmes go un-evaluated so their effectiveness is not known.

A summary of details of the communities visited during the field work is shown in Table 5. The prevalence of trachoma was high in all communities, apart from Quilta, in Marsabit. In each district communities varied in relation to whether they were settled or nomad pastoralists, water sources varied considerably between communities with no consistent similarities by district, whether communities had been exposed to CLTS and the number of rounds of MDA. The only notable difference between communities included in the study in Turkana and Marsabit is that in Marsabit donkeys were used for collecting water.

The finding of considerable variability between communities with no consistent differences between districts has implications for behaviour change interventions, which will be discussed.

Table 5. Summary of communities, trachoma prevalence and other key findings

	TURKANA			MARSABIT		
Study site	1	2	3	1	2	3
Division	KERIO	TURKWELL	LOIMA	CENTRAL	CENTRAL	GADAMOJI
Sub-location	Kakimat	Lorugum	Lokiriama	Songa	Hulahula	Quilta
Village	Lorengelup	Nang'oridengo and Nalepoto	Lochor Alamala	Leyai	Hulahula	Manyatta Jilo
Details	Semi-permanent structures. Keep few animals. Other income generating activity e.g. charcoal burning and basketry	Pastoralists, but grazing sites are far away. Men graze animals; women & children stay at homestead with the goats	All the family members move with animals from one place to another. Hilly and flat areas. Rely on food aid	Live in one large settlement close together. Mainly pastoralists but some subsistence farming. Hilly area.	Predominantly pastoralists.	Practice mixed farming and only keep a few animals. Very clean environment.
Prevalence of trachoma	56%	42.5%	71%	35%	45%	2.5%
CLTS	Yes	Partial	No	No	No	Partial
Rounds of MDA	2	2	2	1	1	1
Water source	Borehole and unprotected shallow well	Nang'oridengo: bore well Nalepoto: unprotected sources	Hilly area: bore well; Plains: unprotected sources	Community tap, but only for a limited time 3 days a week. Long queues.	Protected well	Dam
Use donkeys to collect water	No	No	No	No	Yes	Yes

OBJECTIVE 2a: DEFECATION & STOOL DISPOSAL

Knowledge

In Turkana and Marsabit both men and women were reasonably knowledgeable that OD could spread disease, although their knowledge was largely restricted to flies acting as disease vectors:

“We defecate in the forest, flies bring the faeces to other people’s food, diseases like diarrhoea, bilharzias, cholera” (Turkana man)

“If somebody defecates outside it will bring cholera/diarrhoea. It allows wind to blow faeces to our food and we get sick” (Turkana woman)

“Flies go to those faeces and then come to our food hence we get sick! Vomiting and diarrhoea, it also brings about eyes problems because of the flies which goes to the faeces and thereafter to the eyes” (Marsabit woman)

The focus on flies as a mechanical vector and remarks about eye diseases are not typical focus group discussion responses to questions on OD, suggesting that these communities have been sensitised to the hazards of OD. Indeed, a question featured in the household survey revealed that 28/35 (80%) of households in Marsabit reported that they or their community had received information on OD. This exposure to CLTS was also evident in focus groups in Marsabit, with comments such as:

“You know my son, it is not like before... we are now changed people we cover them [faeces] with soil!”

Attitudes

A number of reasons for not building toilets were mentioned during focus group discussions in Turkana. Issues were raised by men and women alike:

1. Lack of tools
2. Lack of materials
3. Lack of sons / experienced individuals to build the latrines
4. Physical difficulties building the latrines – *“If you dig holes wind returns back the soil and fills it”*

In Marsabit, the difficulty of building latrines was also mentioned, as did lack of security meaning they did not invest in their homes. However, as the communities visited already had some latrines and had been exposed to CLTS, different issues also emerged in the discussions (In the presence of men, women did not speak so openly about defecation). The excerpt from the focus group discussion in Box 1 below is interesting because it shows how uncomfortable people were with the topic and suggests that even when there are latrines people do not like to be seen using them. Other reasons given for not using latrines included people keeping them locked, the bad smell and the fact that they fill up rapidly.

Box 1: conversation about using a latrine, men in Marsabit

Respondent A: “Imagine we line up to enter that toilet!” (laughter).

Respondent B: “As we wait, sometimes we can’t tolerate it and therefore we are forced to run to the nearest forest to help ourselves there”. (laughter)

Respondent A: “Yes, and we even waste a lot of time in that line waiting. R1: “You run to the forest and when there, you look around you, for fear of meeting somebody else.” (laughter)

Respondent B: “Especially this side on our left, it is even shameful, you meet young and old people going there always”. (laughter)

Respondent C: “That is enough, can we keep quiet?”

Some male respondents in Marsabit suggested that they needed to be provided with more latrines, outlining how they had had many more latrines before they had resettled. Similar to the responses in Turkana where people insisted they needed tool and materials:

“Bring us latrines, some plastic ones like those the IRC give, because we have got used to receiving things from the government”. (Turkana, woman)

The discussions highlight the high level of dependency and reliance on external support in this culture, and this theme continued through other topics. Remarks were also made that “hadn’t yet been sensitised” on particular issues, demonstrating a reliance on external agencies for information.

Practices

Open defecation is the predominant practice in Turkana and Marsabit. A few study sites had gone through the initial (“triggering”) stages of CLTS which had been delivered by local District Public Health Officers (described as “partial” CLTS in table 5). However, in study sites with a very high prevalence of trachoma (acute infection >60%), CLTS had not been administered, and some community members did not received MDA, as these are highly nomadic populations. Children in these areas also do not attend school.

Five of 33 (15%) households with complete data in Turkana were observed to have a pit latrine compared with 22 (61%) of 36 households in Marsabit. The latrines in all households in Marsabit were used during the observation period, although it was not possible to determine whether a person actually defecated. Only 5 of 32 (16%) defecation events in Turkana involved use of a latrine: two (40%) involved school aged children, with other users being an adult male, mother and father. In Marsabit, OD was the predominant practice observed in 26/39 (67%) of events whilst 13 events (33%) involved latrine use. Latrines were used 4 women, 4 men, 3 school age children and 2 school age children.

Across all six study sites, OD and/or stool disposal was observed on 52 occasions. Just over half of these events took place within the compound and involved a pre-school age child, while older children and adults defecated behind a shrub or bush. In 7/12 instances when a young child defecated within the compound in Turkana and 10/17 instances in Marsabit some action was taken by the mother (i.e. roughly half of the time). The stool was usually (11/17 events) thrown into roughage or an animal enclosure, or into a latrine (4/17 in Marsabit only), and only rarely (once) was the stool covered with sand. Dogs and chickens were

observed eating faeces once, and this was also mentioned in focus group discussions when participants said this was an important source of food for chickens.

Young children occasionally used bushes nearer the home than adults. Faeces dry quickly in this environment and are not usually covered, except in communities that have been CLTS-triggered and have adopted improved practices. Faeces are not considered a problem. As one stakeholder said: “the presence of child faeces is a sign of wealth”. Where dogs were common, they ate faeces, particularly that of children. There may be some resistance to covering stool in these communities: what would animals feed on?

On 10 occasions hands were rinsed with water after defecation. Seven of these events were among a range of adults and children who used a latrine (six in Marsabit). The remaining three involved two pre-school age children (whose mothers rinsed hands after cleaning up the stool) and one mother who returned from OD. No soap use was observed.

Community Led Total Sanitation

In Turkana, one site had undergone CLTS, another had partially been through the process and the third had not had any CLTS (Table 5). An exploratory analysis assessed the relationship between CLTS and the presence of animal and human faeces and waste. Although the sample of this study is small, villages in which CLTS had been undertaken had less human and animal faeces than other villages. Of the 28 of the 36 households with full information, 13 had animal faeces in or around the compound and 62% of these households were in villages that had not undergone CLTS. The village that had undergone CLTS had the lowest presence of animal faeces in or around the compound (14% of households). However, differences were not statistically significant. The overall number of households with human faeces present was small - only four in total. Two (50%) of these households were in the village that had not undergone CLTS.

Waste was present within the compound in 14/28 households. Eight (57%) of those households were in the village that had not undergone CLTS; 28% had undergone partial CLTS and 14% of households had undergone full CLTS. Although these findings are suggestive of a beneficial effect of CLTS, there may be other explanations i.e. confounding, due to, for example, to more waste conscious communities being more willing to undergo CLTS than villages more tolerant of waste and OD.

In Marsabit, only one village had partially undergone CLTS with the other two had not had any CLTS.

Comparison with baseline data

The baseline surveys found 86 (16.2%) of households had a pit latrine in Turkana, fewer than in Marsabit 255 (29.4%). Human faeces were visible within the compound in a third of Turkana and half of Marsabit households at baseline. In this study, in Turkana, 4 (14%) out of 28 households with available data were observed to have human faeces within or outside the compound. The predominate place being within the compound on average 12 steps from the main compound. This ranged from 0 to 28 steps.

However, the baseline surveys in Turkana and Marsabit used self-report. Observational data from this study supports the baseline finding that 96% of mothers dispose of a child's faeces, predominantly in a bush. This was not captured in Marsabit at baseline. In Turkana handwashing facilities (defined as a specific handwashing place near a latrine) were almost nonexistent according to the baseline survey. Baseline surveys did not capture actual practices. We found that handwashing does take place occasionally in both districts post defecation, although soap is not used.

Table 5: Observed defecation and stool disposal behaviour

	Turkana			Subtotal Turkana	Marsabit Central			Subtotal Marsabit Central	Both sites Total
	Site 1	Site 2	Site 3		Site 1	Site 2	Site 3		
Division	Kerio	Turkwell	Loima		Central	Central	Gadamoji		
Households observed	8	8	8	24	8	8	8	24	48
Level of CLTS*	Yes	Partial	None		None	Partial	Partial		
Latrine use (possible defecation event)	0 (0%)	5 (38.5%)	0 (0%)	5 (15.6%)	6 (60%)	5 (41.7%)	2 (11.8%)	13 (33.3%)	18
Open defecation events	9 (100%)	8 (61.5%)	10 (100%)	27 (84.3%)	4 (40%)	7 (58.3%)	15 (88.2%)	26 (66.7%)	52
Location of open defecation									
Within the compound	5 (55.5%)	2 (15.4%)	3 (30%)	10 (31.2%)	3 (30%)	4 (33.3%)	11 (64.7%)	18 (46.2%)	28
Bush	4 (44.4%)	3 (23.1%)	7 (70%)	14 (43.7%)	1 (10%)	2 (16.7%)	4 (23.5%)	7 (18.0)	21
Elsewhere	-	2 (15.4%)	-	2 (6.2%)	-	1	-	1 (2.6%)	3
Hand washing after defecation									
Defecation events accompanied by hand washing (without soap)	1 (11.1%)	2 (15.4%)	0 (0%)	3 (9.6%)	7 (70%)	0 (0%)	0 (0%)	7 (18%)	10 (19%)

**"Partial" CLTS refers to communities who have undergone the initial "triggering" stage of the CLTS process only.*

Findings from the environmental spot check in Turkana, identified that 18/28 (64%) households had no specific place for handwashing. Seven (25%) washed their hands in the compound, the place was not seen in two (7%) and in one household (4%) handwashing took place immediately outside the compound. Fifteen (54%) of the 28 households had a basin and 9 (32%) had soap. Hands were said to usually be washed with only water with 19 (68%).

The findings from Marsabit showed that 27/34 households (79%) had no specific place for handwashing and the remaining seven (21%) used a place immediately outside the compound. Only five (15%) households were observed to have soap and only one had water in the designated place for washing. This finding in itself is important given the low rate of hand and face washing observed.

Although the environmental spot check showed that soap was sometimes present it was not observed to be used during washing. This indicates that soap is not routinely used for personal hygiene, which was corroborated by the household interviews.

Animal faeces

In Turkana, animal faeces were observed in 13/ 28 (46%) households. This waste was most commonly scattered throughout the compound. Ten (83%) households had waste scattered throughout the compound and the remaining 2 (17%) had waste within less than 10 steps of the compound.

Over 50% of households kept animals, the commonest being chickens and goats. On average, animals were kept 18 steps (range 3-125 steps) from the main compound.

In Marsabit, animal faeces were observed in or around the compound in 21/36 (58%) households. Faeces were usually scattered throughout the compound. This was the case in 12 (60%) of 20 households and the remaining eight households (40%) were observed to have animal waste ten steps or more outside the compound. Human faeces was observed less frequently in Marsabit, in 8/32 (22%) household. Animals were kept in the majority of households in Marsabit i.e. in 30/36 (83%) households. The most commonly kept animals were cows, goats and sheep which were kept in enclosures on average of 8.3 metres from the main sleeping hut. During the day animals are taken to graze or wander freely around the compound. The removal of animal faeces was not commonly practised.

Constant clearing up of the environment would be required to keep compounds free of animal faeces, which is not practicable. Given that *Musca sorbens* breed preferentially in human faeces, it may not make sense to focus efforts on trying to change practices.

Barriers to “E” interventions

A number of factors are predicted to be important considerations in the implementation of “E” interventions:

- Livestock are intrinsic to the livelihood and way of life in a high proportion of the population. The security of these animals is of paramount importance, meaning that animals are kept very close to compounds.
- Faeces is widespread in the environment – people are not intrinsically motivated to remove it or disgusted by it;
- Human faeces are an important source of food for animals;
- Open defecation is common, and CLTS implementation is limited to places with infrastructure, CLTS activities have not been evaluated so the extent to which behaviour has changed is not known;

- People are resistant to latrine construction and lack materials and skills to do so safely (i.e. how to reduce termite damage); some communities oppose latrines for cultural reasons and embarrassment.
- Insecurity plagues programme implementation in areas most at need, as well as affecting the behaviour of the population in these areas (they are less interested in investing in latrines);
- A culture has developed that causes communities to expect their problems to be fixed by external parties.

OBJECTIVE 2b: WASTE DISPOSAL PRACTICES

Knowledge and Attitudes

Plastic bags were commonly viewed as a threat to animals so households reported that they remove them from their compounds. Garbage is routinely swept up and transferred to a pit where it is often burnt. Despite this it is commonly seen scattered throughout the compound.

The understanding of garbage / waste does not match Western definitions:

“Everybody has the pit latrine where we burn the waste. Those few of us who have wheelbarrow could take the waste, especially the cow dung, to their farm.”

Practices

Garbage and waste disposal practices were recorded in the household survey and the environmental spot check. The household questionnaire included self reported questions on how the household usually disposed of solid and household waste and whether anything was done to dispose of animal waste in and around the compound. The environmental spot check featured observation of how the household disposed of waste and whether there was waste present in the compound at the time of observation.

Household waste tended to be natural waste or inert materials (e.g. paper, batteries etc). Some programmes have promoted mass campaigns on garbage disposal to encourage pit digging and village cleaning. Women were observed to sweep their homes and compounds, taking the waste to the central place near the home as they tidy up.

In Turkana, 14/28 (50%) households were observed to have waste present within the compound. The vast majority of this waste was scattered around the compound. The most common methods of waste disposal were burning in a pit.

In Marsabit, waste was visible within the compound in 23/36 (64%) households, usually scattered around the compound. The commonest method of waste disposal observed were use of a pit or putting in a bush. The mean distance of the waste disposal site from the compound was 7.3 metres (range 2-29 meters), so near the main doorway of the hut where children were observed to sleep.

Comparison with baseline survey

The baseline survey in Turkana also explored waste disposal sites and found about 80% of households had waste within the compound or within 20 metres of the household. Flies travel much further than 20

metres, therefore the important point from a breeding site perspective is that waste is disposed of in open pits, and even when it is burnt this does not take place immediately, giving ample opportunity for flies to breed. Scattered inert waste within a compound is probably less important as a breeding site, particularly as there is so much scattered animal faeces within the compound.

OBJECTIVE 2c: FLIES

In Marsabit and Turkana around 75% reported that flies were common. However, only 33% did anything to control flies.

In Turkana the majority of respondents reported flies to be a common problem in households, and the majority had also tried to do something to reduce the fly population. The following factors were thought to attract flies: a dirty environment, animal and human faeces, milk, having a latrine near the household and unclean water. Flies were thought to spread and cause disease although a question on their origins was not understood. Flies were thought to originate from dirty environments e.g. toilets and animal pens and from the air.

In Marsabit over 60% of mothers/primary caregivers thought there was a link between flies and diseases, including eye disease. In Turkana, a higher proportion of mothers thought there was a link. Commonly described diseases attributed to flies included malaria, diarrhoea, typhoid, cholera, HIV and eye conditions.

Flies on children's faces:

In Turkana, 38/68 (51%) children had no flies on their faces during the observation period, 21 (30%) had less than five flies and 10 (14%) had more than five flies. In Marsabit, 71/86 (83%) had no flies on their face, 11 (13%) had less than five and 4 (5%) had greater more than five flies. The proportion of children with more than five flies on their face was almost five times higher in Turkana than Marsabit.

OBJECTIVE 3a: WATER SOURCES & AVAILABILITY

Water sources

Water availability was a major problem in all study sites but particularly in Turkana as they do not typically use animals to collect water; water sources are further away and poorer (e.g. shallow wells) both during the rainy and the dry season. In Marsabit, water sources were observed to be better than in Turkana, including bore holes and dams. Shallow wells or other free sources of water are used preferentially even when boreholes are present. The main types of water sources seen were hand pumps, usually boreholes, and shallow wells, rivers and dams. Dams were more common in Marsabit than Turkana. Some areas were observed to have restrictions placed on water access e.g. in Leyai, a community in Gadamoji in Marsabit, water was available two to three times a week from a standpipe/tap that served the local community of approximately 100 households.

In Marsabit, male focus group discussion participants commented that elephants damage water pipes. All communities visited were quick to mention that water is their main problem and that new boreholes should be sunk. One of the main problems with boreholes is that they do not serve migratory, true pastoralist

communities. Stakeholders remarked that boreholes are typically placed at “safer” sites such as on the premises of a school or church. Management of these facilities requires community ownership and maintenance, and as commonly found elsewhere when hardware is provided, hand pumps break and fall into disrepair. Most households pay a fee for water if they do not use a shallow well or river: 50-100KSh (US \$ 0.59 – 1.18) per month. If a household cannot pay, the village elders may intervene to ensure that households do not go without. The issues above are illustrated by Figure 3. To avoid payment (and because in this instance the hand pump is broken), people preferentially draw water from a shallow well in a *wadi* (dry river bed) despite the risks of collapse as the wells deepen. This study was conducted shortly after the rains and water could be collected more quickly and easily from shallow wells than is likely at other times of year.



Figure 3: People drawing water from a shallow well, avoiding payment. The pump is broken

Water collection and storage

People need water to practice personal hygiene behaviours such as face washing and handwashing. It is therefore relevant to consider how much water they have available before discussing the actual practices.

Household observation

The amount of water available within a household (amount left from previous evening) was documented in the early morning at the start of each observation period (Table 6). All households in Marsabit and all but three households in Turkana had some water available at this time. The amount of water available

averaged between 30 and 70 litres, with the exception of the site in Loima in Turkana where some households had no water and where the average volume was lowest (5L)(the site where the highest prevalence of active trachoma was found).

Women and older girls usually collect water. During observation, water was collected in six households in Turkana and only 1 in Marsabit (Table 6). In Turkana water collection took 30 minutes in three households, 15 minutes in 1 household and 2 minutes in another household. One respondent did not return during the observation period in Turkana as with the respondent in Marsabit. It is possible that respondents delayed fetching water until after observation had been completed, but water point observation showed people come to the water source at different times of day so the timing of water collection may not be routine.

Women use jerry cans (usually 20L) to collect water which they carry on their head or back, and they and young children may carry a further 5 or 10L jerry can in their hand. In Marsabit donkeys are widely owned, unlike in Turkana, and one of their main functions is transporting water, using locally made saddles to carry up to six 20L jerry cans (i.e. carrying 120L). Given the limited volume of water that a woman in Turkana can carry (usually 20L at a time), the household does not store large amounts of water even if they have more jerry cans available. In Turkana, all but two surveyed households with complete data had at least one 20L jerry can (range 1 to 8, n=31). Nine of these households had additional 10L jerry cans (one or two) or 5L jerry cans (up to four). In Marsabit households only had 20L jerry cans.

Table 6: Household water availability: from observation

	Turkana			Subtotal Turkana	Marsabit Central			Subtotal Marsabit Central	Total both sites
	Site 1	Site 2	Site 3		Site 1	Site 2	Site 3		
Observation	Site 1	Site 2	Site 3		Site 1	Site 2	Site 3		
Division	Kerio	Turkwell	Loima		Central	Central	Gadamoji		
No. of households with water available very early in the morning	8	8	5	21	8	8	8	24	45
Approx. amount of water (in litres) available very early in the morning (mean, range)	45 (2-100)	30 (3-100)	5 (0-15)	27 (0-100)	71 (10-160)	38 (20-80)	40 (20-120)	50 (10-160)	38 (0-160)
No. household where water was collected during the observation period	1	3	2	6	0	1	0	1	7
Amount of water (in litres) collected	20	20 each	20 each	23.3	-	20	-	10	23
Person collecting water									
Mother	-	2	2	4	-	1	-	1	5
School-age girl	1	1	-	2	-	-	-	-	2

Water point observation

A total of 46 observations were made at water points in eight different locations in Turkana and Marsabit (Table 7). Thirty-six of these observations were of individuals, while the remaining 10 were groups: 5 groups of 2 (mix of women only, women and a child), 4 groups of 3 (women and school age children) and 1 group of 4 (woman with 3 children). Therefore 59 individuals and their activities at the water point were observed (see below for details on water use at the water point). The majority of the people observed were women (n=29) or school-age children (n=22), who were mainly female, although 7 men visited the water point independently. Of note, only one of these 59 individuals was pre-school age child.

Ten of the 46 observed individuals or groups were either at the water point at the start of observation or remained there beyond the end of the observation period. The mean time spent at the water point among all groups with complete data was 22 minutes (range 4 mins to 1 hr 11 mins). Per site (rather than water point), the mean time spent at the water point was notably high (52 minutes) in Hula Hula (n=4).

The volume of water collected varied per site, again, with the small number of observed water points strong conclusions cannot be drawn, but in these sites more water was collected per visit in Marsabit (where donkeys were used and where the mean distance to the water point was further). A number of different volume jerry cans were observed: 2L, 5L, 10L and 20L. Twelve groups used 2 or 5 L containers. These containers were generally carried by children or in the hand of a woman also carrying a 10 or 20 L container on her head, and these small volumes were used almost exclusively in the Turkana sites. At any one time an individual carried only one 10 or 20 L container themselves, however, in Marsabit larger volumes of water were collected using multiple 10 and 20 L jerry cans and a donkey.

A particular challenge observed in Turkana was the terrain, which was predominately sandy. This meant that other modes of transportation e.g. wheelbarrows were limited. Water was usually collected on foot by women and children.

Before each individual or group left the water point they were asked how far they had travelled and how many trips to the water point they made each day. Half of those asked reported visiting the water point only once per day, and the other half twice per day. Only two individuals visited the water point more frequently, both living 5 and 10 minutes from the source respectively. Other individuals travelled up to 2 hours to reach the water source, although the average time was 30 minutes one way. Travel time was longer in Marsabit than Turkana. People were observed to stay longer at water sources that were far away (measured by self-report).

Table 7: Water point observation of water collection

	Turkana						Marsabit	
	Site 1 Shallow well	Site 1 Com. tap	Site 2 Surface water	Site 2- Public tap	Site 3a Borehole	Site 3b Surface water	Site 5 Protected spring	Site 6 Surface water
Time and duration of observation (mins)	08:00 60	15:50 30	11:30 50	10:00 60	07:30 60	10:15 45	11:40 100	12:30 55
Number of "groups" observed	1	6	4	5	8	7	7	8
Number of individuals observed	1	6	4	5	8	9	14	13
Time taken to reach water source. Median (range)	15 mins (10 – 20)		5 mins (5 – 30)		20 mins (10 - 40)	30 mins (10 - 40)	40 mins (30 - 60)	60 mins (30 - 120)
Time spent at water point, mean (range)	19 mins (10 – 36)		20 mins (9 – 35)		11.5 mins (4 - 31)	14.5 mins (10-16)	52 mins (15 - 71)	28 mins (25- 40)
Amount of water collected* in litres, median (range)	10 L (7 – 60**)		20 L (10 - 20)		10 L (5 - 20)	10 L (2 - 22)	100 L (40-200)	20 L (10 - 65)

"Group" means one or more person who visited the water point together during the observation period. As several people came in small groups this explains why the number of individuals observed is greater than the number of observed "groups".

As the water points in sites 1 and 2 were very close together, data for some variables are presented for both water points together.

** Water was not collected by all groups in site 3a. The amount of water collected is therefore only presented if water was collected*

*** One man collected three 20 L jerry cans*



Figure 4: Water point observation in Turkana

Comparison with baseline

The 2010 Trachoma Baseline Survey identified through self report that the average amount of water available in households was 53 litres Turkana and 46 litres in Marsabit Central. In this study we found that households in Marsabit had more water in the household at the start of the observation period than in Turkana. Similarly, more was collected during the observation period in Marsabit. However, the context determines the water availability and amount collected per day, therefore differences between the sites are likely to be more important than between counties. The main take home message here is that sufficient water is available in the majority of settings to allow for hand and face washing, and that water is stored overnight, being available first thing in the morning.

OBJECTIVE 3B: WATER USE

Water use and prioritization:

Practices at water points

Women and older girls primarily came to the water point to collect water (Figure 5) although they were also observed to bathe themselves and sometimes their children. As noted above, pre-school age children were not brought to the water point. Other activities included doing laundry and watering animals. When men were observed at the water source they bathed and occasionally (2 of 7 men) collected water.

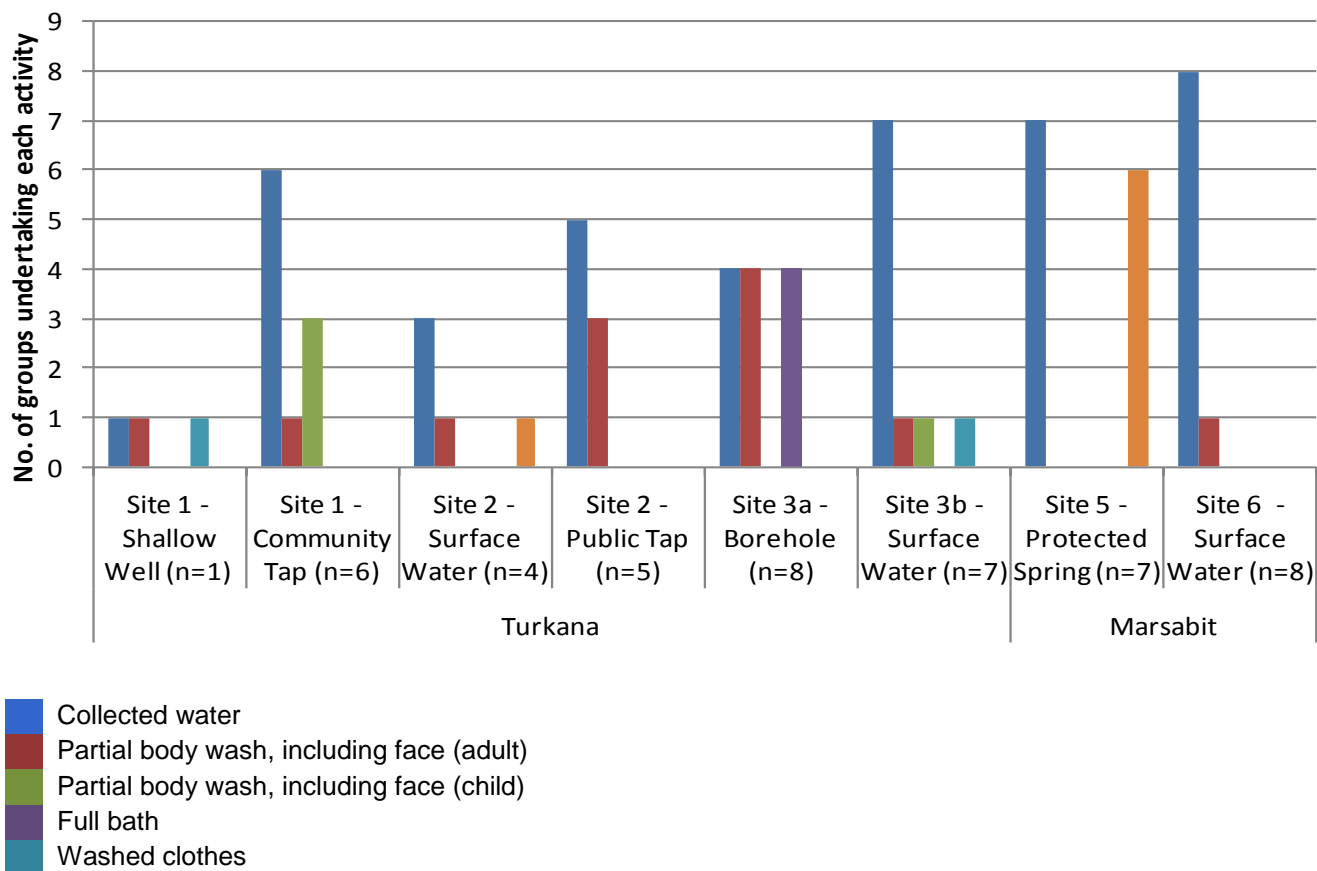


Figure 5: Activities conducted at six water points observed in Turkana and Marsabit

The use of water varied according to the how much a household had and the proximity of the household to the water source although it may also be related to the different times of day when the observation was conducted.

Practices at home

In all areas drinking and cooking were reported to be priorities for water use, with very little water being available for other uses. Any spare water was used to wash dishes, water plants, be given to animals or other domestic uses. Sometimes small amounts of water were thrown away.

Water was sometimes observed to be re-used e.g. for washing more than one child; washing dishes and then other items such as clothes.

In all focus group discussions the need to bathe young children was mentioned as a priority for water use at home even when there is limited supply:

“Water fetched during dry seasons are not used for bathing - if you have to bathe, go to the watering point. Small/young children are the only ones washed the rest of the people go to the watering point.... small children only are bathed because they are young and due to heat of the sun they are cooled” (Turkana, Man).

In Marsabit, men and women reported a number of additional, different priorities for water use:

“First [priority when there is little water available at home is] children who are responsible for cooking [i.e. for cooking?], [then] the blind people.... the women who gave birth recently to clean themselves, and that of the new born (Marsabit, Men)

Respondent A: *“Pregnant mothers, the old people, mothers with young children who have given birth recently and the remaining ones, are given one or two jericans depending on the amount of water available”.*

Respondent B: *“Yes. And those looking after animals and have no one to help at home are also given priority”.* Women (Marsabit)

Table 8 shows how water was used by participants during the observation period. 24 instances of personal washing were seen in the 24 households in Turkana and 31 personal washing events in Marsabit. Washing involved handwashing, face washing, and even full baths in several instances. The majority of these events 29 (55%) were in school children aged 5 and 15 years, followed by 14 (26%) in pre-school aged children. 40/105 children observed in Turkana had face washing events, compared with 29/90 children in Marsabit: there were no obvious differences in behaviour between Turkana and Marsabit. It was noted that in all but four households where a pre-school age child had a face washed their older siblings were also having their faces washed, or were washing their own face.

Hands were observed to be washed more frequently for food related activities which is unusual in most settings. Soap was used if available but this was not routine. Hand washing after defecation and stool disposal was not widely practised. On the occasions in which hands were washed, only water was usually used. This tended to be by mothers and older children. A total of 25 events before eating were observed in Turkana, 9 of which were accompanied by handwashing. 21 instances of eating food took place among school age or pre-school age children. Although hands were technically washed before eating, the timing of eating (after washing) explains this finding more than a desire to hand wash before touching food.

Besides personal washing, water was primarily used to wash dishes. A total of 18 events were observed in this category with mothers (n= 10, 55%), other adult females (n=4, 22%) and school aged children (n=4, 22%) commonly performing these practices. Clothes were not frequently washed.

Table 8: Water use and hygiene behaviour at home

	Turkana			Subtotal Turkana	Marsabit Central			Subtotal Marsabit Central	Total both sites
	Site 1	Site 2	Site 3		Site 1	Site 2	Site 3		Events
Households observed	8	8	8	24	8	8	8	24	48
Personal hygiene/water use events	49	43	40	132	42	29	25	96	228
PERSONAL WASHING									
Hands only	1 (5.9%)	2 (8%)	1 (9.1%)	4 (7.5%)	4 (16%)	1 (10%)	2 (18.2%)	7 (15.2%)	
Hands and face	4 (23.5%)	5 (20%)	4 (36.4%)	12 (24.5%)	19 (76%)	7 (70%)	9 (81.8%)	35 (76.1%)	
Hands, face and other	12 (70.5%)	15 (60%)	4 (36.4%)	31 (58.5%)	1 (4%)	1 (10%)	-	2 (4.4%)	
Full bath	-	3 (12%)	2 (18.2%)	5 (9.4%)	1 (4%)	1 (10%)	-	2 (4.4%)	
HAND WASHING AT KEY TIMES									
Before eating: events	7 (0)	7 (4)	11 (5)	25 (9)	3 (0)	2 (2)	0 (0)	5 (2)	30
Before feeding a child: events	3 (0)	1 (0)	1 (0)	5 (0)	0 (0)	0 (0)	1 (1)	1 (1)	6
OTHER WATER USE									
Washing clothes	1 (2%)	1 (2.3%)	2 (5.0%)	4 (3%)	1 (2.4%)	1 (3.5%)	0 (0.0%)	2 (2.1%)	6
Washing dishes	7 (14.3%)	7 (16.3%)	4 (10.0%)	18 (13.6%)	7 (16.7%)	8 (27.6%)	5 (20%)	20 (20.8%)	38
Water for animals	1 (2%)	-	-	1 (0.8%)	2 (4.8%)	0 (0.0%)	1 (4%)	3 (3.1%)	4
Water for other use	2 (4.1%)	-	-	2 (1.5%)	4 (9.5%)	2 (6.9%)	6 (24%)	12 (12.5%)	14
FACIAL WIPING									
Part of face wiped:									
Nose	8 (72.7%)	1 (50%)	6 (54.5%)	15 (62.5%)	-	5 (83.3%)	1 (100%)	6 (85.7%)	21
Eyes	1 (9.1%)	-	-	1 (4.2%)	-	0 (0.0%)	-	0 (0.0%)	1
Face in general	2 (18.2%)	1 (50%)	5 (45.5%)	8 (33.3%)	-	1 (16.7%)	-	1 (14.3%)	9
Method of face wiping:									
Hands	6 (54.5%)	2 (100%)	11 (100%)	19 (79.2%)	-	2 (33.3%)	1 (100%)	3 (42.9%)	22
Own cloth/child clothing-wet	1 (9.1%)	-	-	1 (4.2%)	-	-	-	-	1
Own cloth/child clothing-dry	1 (9.1%)	-	-	1 (4.2%)	-	4 (66.7%)	-	4 (57.1%)	5
Cloth	3 (27.3%)	-	-	3 (12.5%)	-	-	-	-	3

Bathing practices of young children varied between study households and study villages, therefore findings cannot be generalised by county. Bathing was observed to be highly dependent on access and availability of water in the household, and the habits and behaviour of the mother. When children were washed, it tended to be after water was collected from the water point after older children had left for school and while domestic activities performed by other household members took place. Bar soap or washing soap was used in some households during bathing. When soap was not available, only water was used. Other practices included grooming the child with oil or animal fat, after bathing or as an activity on its own. Particular care and attention were given to young children aged between zero and three when they were being bathed. Water was often re-used to wash other children, particularly older children aged four and above.

School going children are required to have clean faces otherwise they may be sent home. Most households had at least a couple of litres of water in the jerry can early in the morning. This is encouraging as it shows that water can be reserved for this activity when it is seen to be important.

The lack of observed face washing of younger children (at home or at the water point) indicates that mothers did not appreciate the importance of washing their children's faces in general. This may be due to local perceptions of what constitutes a "dirty" face and the value ascribed to this practice, given more pressing needs for water (see box 2 for more explanation). Caregivers interviewed said that face washing prevents the eyes from aching.

Box 2: Local perceptions of cleanliness and what constitutes a clean child

During discussion with men in Turkana they mentioned that children are bathed ahead of women when there is little water because "Children become dirty after smearing food in the body.... adults don't become dirty with food".

When asked how they ensure their children are "clean", women in a focus group in Turkana said: "We bathe children. Before we give them gee, fresh milk but now nobody does that. Breast feeding is the main food. We also take them to the clinic, isn't that cleanliness?"

In another instance, when asked "Now mother, if you wanted a child to be clean, what was done?" The reply came as "the child only received breast milk and little of the other milk".

It appears that being clean, healthy and hygienic are not understood as distinct concepts.

Findings from the knowledge, attitudes and practices survey showed that mothers/primary caregivers of young children commonly thought that the most important time to wash their young child's face was in the morning after the child had woken up, if the face was dirty. However, morning face washing was not observed if there was no or little water left over from the day before. Observation showed that face washing is not a routine behaviour, particularly amongst young children and those not going to school.

This was also mentioned during one focus group discussion with women in Marsabit:

“Even sometime those go to look after livestock go to far places without water, and sometimes when they come back in the evening, they sometimes don’t get water at home again. And we were lucky to get one jericana, and then only for cooking and drinking but not washing children’s faces.”

The practice of face wiping children/adults was observed to be more common in Turkana than in Marsabit with a total of 24 events observed across the three study sites with 16 (67%) being in children and 6 (25%) in mothers. Mothers were observed to clean discharge from their child’s nose and eyes with their fingers in almost all instances, although their clothing or a cloth were occasionally used. Discharge was more commonly cleared from the nose than the eyes (table 7), and were not aware that this practice could spread infection. However, even though discharge is cleared from the eye and nose, discharge is so common that it is seen as normal, attributed to low temperatures at night, irritation from sand or other environmental factors.

Very few households were observed to have a leaky tin, but a leaky tin was never observed being used to wash children’s faces. A few households that were followed up after the behavioural trial had made and installed a leaky tin outside their household and reported that they were now using it to wash their child’s faces.

Facial Cleanliness

Facial cleanliness of young children

A total of 169 children aged 1 to 9 years in total were included in the facial cleanliness assessment in Turkana and Marsabit, 156 of whom were present during the assessment. In Turkana, 69 children’s faces were assessed and in Marsabit, 87 children’s faces were assessed for the presence of flies, nasal and eye discharge/crusting. Each child’s face was observed for 30 seconds for the presence of flies and the number of flies were counted. Nasal discharge was assessed through signs of discharge/crusting on the opening of the nose, cheeks or lips and eye discharge/crusting was assessed as discharge/crusting on eye lashes or eyelids.

Presence of nasal and ocular discharge

The presence of nasal and ocular discharge was also higher in Turkana. Nasal discharge and or crusting was present in 3/69 (52%) children in Turkana and 30/87 (34%) children in Marsabit. Ocular discharge and or crusting on the eyelashes/eyelids was present in 62% children in Turkana and 31% children in Marsabit. Thus, the proportion of children with ocular discharge or crusting in Turkana was double that in Marsabit.

Face washing during the observation period

During the observation period, 47% of children in Turkana were observed to have washed their faces or received assistance to wash their face compared with 40% children in Marsabit. These findings are rather contradictory to the findings of nasal and ocular discharge, but the sample sizes are small.

Face washing and school attendance

In Turkana, 7/69 (10%) of the children went to school and 15/89 (19%) in Marsabit. Interestingly, all seven children that went to school in Turkana had washed their face and 13 (87%) of the 15 children in Marsabit.

Facial cleanliness of older children

The faces of 19 children aged 10 to 15 years were assessed in Turkana and 22 in Marsabit. Face washing was observed in 47% of the children in Turkana and 73% of children in Marsabit. The observed recorded whether the child went to school during the observation period. In Turkana, 7 of the 19 children were observed to go to school and 10 of the 22 children in Marsabit. Face washing was observed in all of the school going children in Turkana and 9 (90%) of the 10 school going children in Marsabit.

Practices before children went to sleep:

Mothers/primary caregivers were asked to report how they prepared their young children before they went to sleep. The most common methods were to wash the child's body including their face, or their feet only or to do nothing. However, this was not substantiated by observation.

Comparison with baseline

In Turkana at baseline, 62% of children had dirty faces and 14% of children had flies on their faces. In Marsabit at baseline only 18% of children's faces were dirty. The large sample at baseline in Turkana showed that younger children had the dirtiest faces. As these young children have the highest prevalence of active trachoma it is most important to change behaviour so that these children get their faces washed. However, the baseline survey only used mother's self-reported behaviour. In Turkana, almost all mothers (93%) said they wash their children's faces, half of whom claim to do so more than once a day. In Marsabit more mothers (15%) admitted not washing their children's faces daily. In Turkana we found that 40 face washing events took place among the 105 children observed during the early morning period which was similar to the 29 face washing events that took place among the 90 children observed in Marsabit. Although observation was only for a short period of time in the morning, this indicates that practice of face washing is less common than reported. Faces were not observed to be dried after washing, which supports the baseline self-reported findings. Observation and spot check confirmed baseline data on the lack of handwashing facilities.

This study provides rich data on actual water use and personal hygiene behaviour which is very useful as it shows that some face washing already takes place. The challenge is to shift these practices to the routine care of younger children, and to increase the frequency of face washing of all age groups of children. Mothers often removed nasal discharge with their fingers or hands, which suggests that mothers do not like to see nasal discharge on their child face, an attitude that could be built upon.

Barriers to "F" interventions

A number of factors are predicted to be important considerations in the implementation of "F" interventions:

- Increasing the amount of water available in households is a challenge as in all communities without donkeys this has to be carried on foot;
- Face and handwashing are not priorities for water use; no strong motive to be "clean"?
- In arid areas, personal washing may only take place at water points. However, young children rarely visit water points as the mother would have to carry them as well as the water;
- Women may not be able to choose to change water use;
- Intervention delivery feasibility and uptake are likely to be higher in areas with settled communities with schools

- Hygiene and health seem to be intricately interweaved concepts and not as distinct concepts, which will require careful use of terminology and expressions
- Community intervention in “hard-to-reach” areas may not be cost-effective at scale.

OBJECTIVE 4: TRACHOMA

Knowledge of active trachoma and trichiasis

Communities in had moderate knowledge of trachoma, its risk factors and mode of transmission. In Turkana more people were familiar with the disease than in Marsabit. During feedback from the baraza held during the behaviour trial, communities reported that they had never received specific information on trachoma and what they could do to prevent it in their local community. In Lorenglup, the overall feedback was that this was the first experience they had that detailed trachoma, its causes, prevention and treatment.

Trachoma is commonly thought to be the same as trichiasis. In some communities in Turkana, trachoma, particularly the active stage, was described as an itchy condition characterised by discharge from the eyes:

“Trachoma disease causes itching of the lower lid of the eye. Eyes suffer from wounds and affects even children because flies spread when faces are not washed”.... “Eye lashes get inside the eyes” (Turkana, women).

Eye diseases are common, but trachoma does not appear to be confused with other diseases:

“Eye problem and other blindness is very many, but this whereby eye lashes goes inwards is only that case” (Marsabit FGD, man).

Data from the knowledge, attitudes and practices survey gave rather different findings, showing that knowledge about trachoma was greater in Turkana than Marsabit. In Turkana all 26 mothers/primary caregivers said they had heard of the eye disease trachoma and 83% thought there was a link between trachoma and blindness. The condition was most commonly described as redness, discharge, watering, itching, pain and rubbing of the eyelashes on the eye. In contrast, in Marsabit 17/36 (47%) mothers/primary caregivers said they had heard of trachoma and a third thought there was a link between trachoma and blindness.

Treatment commonly reported for trachoma included treatment with medicine, including mass treatment and eye ointment, and observing basic hygiene, including face washing with soap. Approximately half of the mothers/primary caregivers in Marsabit and Turkana reported that they had received information from a mass distribution programme about on trachoma and 94% of mothers in Marsabit and 75% of mothers in Turkana said they had received treatment for trachoma.

Schools:

In schools great emphasis is placed on hand washing with soap for diarrhoea prevention, but face washing is currently not included.

Trachoma is not included in the national school curriculum (nor is any other eye disease) and so children are not being taught about it. Teachers knew about trachoma but other health conditions take priority in terms of what they spend time teaching.

WASH agencies have built latrines and installed water supplies and places for hand washing in schools. Posters and paintings showing the importance of hand washing with soap were commonly displayed near these water sources. Children are also told how to safely dispose of their own faeces and that of younger children at home and the importance of keeping the compound clean.

Community:

The recent MDA has increased awareness of the need to take the medication on an annual basis, and why they should take it. Many recall taking the “pink/red/brown tablets” the previous year, and many reported other health benefits e.g. less symptoms from sexually transmitted diseases.

In Turkana there are local names for active trachoma (“loupe”) and trichiasis (“lokiir”) for trachomatous trichiasis, which suggest that the condition is recognized, common and the different stages can generally be distinguished. However, they do not make the connection between the signs of active infection in children and trichiasis later in life. No such words exist in Marsabit Central.

Knowledge about transmission

People are less clear about how trachoma is spread. They are able to mention “trachoma” when asked if they have heard of an eye disease spread by flies, but are less able to answer what causes trachoma when asked the question the other way round. In some instance, people mentioned both “flies” and “dirt” as bringing trachoma, while others have some basis of understanding that “not washing your eyes” is the cause. Some people mentioned “sharing water with an infected person in the same basin”, aware that trachoma can be spread from person-to-person. Trachoma was also linked to the coming of the rains.

None of the individuals with trichiasis who were interviewed knew the cause of their illness. They believed they had been bewitched, or dated the start of the illness to a leaf or dirt from a tree falling in their eye:

“The problem of my eye came through crying and tree flower that entered my eye” (Woman 55yrs, Turkana).

Much of the health promotion messages that communities were familiar with were associated with reducing flies. They discussed the need to wash utensils and dry them in a rack (raised to avoid dogs licking them), clean their compounds, wash clothes, have latrines, and cover faeces and food. Milk is recognised to attract flies, but it is considered a fact of life rather than something that requires intervention.

Azithromycin treatment

All but one study area had undergone two or three rounds of MDA.

In all focus group discussions held with men and women in Turkana and Marsabit the reaction to azithromycin mass drug administration (MDA) was remarkably negative. Many people - in unconnected communities - reported experiencing bad side effects and many had been misinformed (or misunderstood) the purpose of the drug, thinking it would heal their eyes. Many commented that they would not take the drug again. There could well be poor uptake during future MDA rounds if these issues are not addressed. The following quotes are illustrative of the nature of the comments made on this topic:

"We saw the drug that made people [have] diarrhoea, the drugs that were four red tablets"... [!] don't remember what the drug was for, but they say it has side effects" (Turkana, man).

"The drug had side effects, some fainted and some had diarrhoea, especially those herders" (Turkana, woman).

Respondent A: "Yes we have heard of brown drugs given out all over this area!"

Respondent B: "Ooh, I have never known it was given due to trachoma!" (Marsabit, women)

"In fact we were so much affected and we felt we could die.... personally I will not take it [again]" (Marsabit, woman)

"Personally I was alright but I have eye problems. They told us it healed eye problems, but it is false because am still affected" (Marsabit, woman).

Some community members had not received antibiotics during the MDA because they were not available at the time of distribution for some reason, such as migration or other factors e.g. in one of the study villages in Loima, the kraal had migrated to the border of Uganda at the time of MDA. The prevalence of active trachoma in this community was 67%. In such communities, particularly where there is a high prevalence of active trachoma, the priority should be to ensure that communities are given accurate information in an understandable format and that annual MDA takes migration patterns into account.

Attitudes to surgery

The most common reason given for declining surgery according to focus group participants was fear that their eyes would get worse or they would lose the little sight they have left. Fear of the equipment, the distance to the hospital, lack of transport, cost, wasting time that could be spent looking after animals, and confusion about where the surgery will take place (in a hospital or in a community) were also cited as reasons for mistrusting the procedure. Individuals with trichiasis who were interviewed (10 interviews, mainly women aged 50-60 years, figure 6) reported that they couldn't go to hospital for surgery because they couldn't leave their children (who would suffer from hunger). One woman said

"What made me not go is my heart that did not believe about getting healed. But now I am starting to believe.....other people were rushing and I was kept back by the small children hence doubts that if I

go now what will happen to my children. They were coming always but my children were still very young but now they can be able to fetch water and are able now to cook food and are now able to remove thorns from their legs”.

Communities have traditional ways of dealing with eye diseases and trichiasis:

“We were removing the eye lashes. We could scrub and would also wash with local medicines (Turkana, woman).

“There is a herb called “gayer”..... we could soak it, then we always put some drops in the eyes until they get healed because we did have, or even know about any drugs to use... we could also use milk from a black goat and put in drops until it get healed. It helps a lot there was also a layer in the milk used! Something that comes on top of milk [cream]” (Marsabit, women).

“In Turkana when somebody is attacked by that disease, we slaughter a goat and then we cut some tree leaf and rub the eye until it releases blood and that person got healed. Your style of operation is spoiling people’s eyes” (Turkana, woman).

One child with advanced trichiasis was found to be blind in one eye after using herbs applied to the eye. This child was referred for treatment.

Given that they believe they have ways of dealing with trichiasis and surgery is a big, unknown black box, the mistrust of surgery is understandable. There is considerable work to be done to change these attitudes and practices.

The following interesting questions arose during a focus group discussion with men in Marsabit:

“My son, how does it happen that someone who doesn’t see well is checked and advise otherwise and operation not done to him or her?”

“My son, let me ask you this question because you are educated and you may tell us this: which is the part of eye that help us to see? Is it the small and black one or the big one?”

The men showed genuine interest and asked relevant questions which suggests that much of the fear of surgery could stem from lack of knowledge about the different types of surgery and why they are performed e.g. surgery for trichiasis and cataracts is different. As eye problems are so common in these communities, it would be interesting to explore dispelling the fear of surgery by informing men about when and why different procedures are recommended (e.g. using simple models of the eye to show trichiasis and cataracts).

Individuals identified with trichiasis were keen to have surgery. It would be interesting to follow up these individuals to see whether and why they undertook surgery. Similarly, mothers of young children with active trachoma took the antibiotic treatment given. It is not known whether this ointment was actually applied.



Figure 6: An in-depth interview with a woman with trachomatous trichiasis

OBJECTIVE 5: COMMUNITY VOLUNTEERS/WORKERS

One of the challenges faced by health and WASH programmes working in the region was highlighted during the stakeholders meeting in both districts: it is difficult to intervene in nomadic communities because of their lack of interest in permanent structures, their migratory patterns (which make it hard to locate them) and security issues. Some health/WASH programmes train community health workers within kraals or try to put water points along common migratory routes, but their reach is generally limited. Other programmes have found that provision of a meal improves attendance at community events.

In Turkana, 38% (10/26) mothers/primary caregivers reported that they had a community health worker in their community but only two said this person had ever spoken to them about trachoma. In Marsabit the figures were 60% (21/35) and 19% (6/31) respectively.

OBJECTIVE 6: COMMUNICATION CHANNELS

An impression of the access to mass media was obtained via the household survey (Table 9). Literacy levels are low (see above) and newspapers are almost never read. Listening to the radio varied by site. Those who listened often listened every day as they owned their own radios. Television is also almost never watched.

Instead, the primary mode of communication is inter-personal. Regular meetings and market days take place in all the communities observed (Table 9). Apart from internal, village level meetings, elders represent the community's needs at the chief's office, in relation to conflicts, hunger, outbreak of disease,

for example. The Chief takes appropriate action, but clearly has a considerable influence and is well-connected. Places of worship are also commonly frequented, in almost all cases on a weekly basis. Other community events also take place: women’s groups; burials; marriage ceremonies; naming ceremonies and food distribution were all listed by participants. Communication channels were very similar in all sites.

Within the districts studied there is great variation in the nature and frequency of contact with the “outside world”, probably linked to distance from the nearest town and whether they need to trade goods. Health facilities and schools were not available at all localities.

Table 9: Exposure to mass media and other communication channels

	Turkana				Marsabit			
	Site 1 (N=12)	Site 2 (N=12)	Site 3 (N=12)	Sub-total (N=36)	Site 1 (N=12)	Site 2 (N=12)	Site 3 (N=12)	Sub-total (N=36)
Ever read a newspaper	0	1	0	0	0	0	0	0
Ever listen to radio	2	5	0	7	3	4	1	8
Ever watch television	1	0	0	1	0	0	1	1
Ever attend community meetings	10	12	5	27	11	7	10	28
Ever attend church	12	12	7	31	11	11	9	31
Ever attend other community events*	9	9	2	20	7	9	8	16

*see text for details

Most programmes work with settled communities and are delivered via existing infrastructures, such as schools, places of worship or small dispensaries. Review of visitors’ books in communities and dispensaries showed frequent visits from a range of different Governmental and non-Governmental bodies. This is unsatisfactory if a programme has an equity objective, and similarly unsatisfactory in terms of potential programme impact if the hardest to reach have the greatest disease burden.

The following are mechanisms for communicating with the community:

- Community baraza are recognised means of communicating information to a large group of people. They are called by the village leadership. Many attend and what is said is listened to and respected.
- Market days: weekly. Attended by men, women and children
- Schools
- Radio: ownership of radios is relatively high, and local channels are preferred
- MDA:
- even rural communities have constructed a place of worship

See Appendix B for more details on possible modes of communication in these communities.

OTHER FINDINGS: OVERCROWDING

Overcrowding was a key issue in terms of the sleeping arrangements of mothers and their young children aged 1 to 9 years in both Turkana and Marsabit. In Turkana, the main sleeping place reported was in the main dwelling (n=23, 63.8%), outside the hut/in the compound, (n=9, 25%) followed by the area adjacent to the compound (n=4, 11.1%). The average number of individuals sleeping in this area was six (range 2-12) individuals. In Marsabit, mothers tended to sleep with their young children in the dwelling, with all households reporting that mothers and children aged 1-9 years slept in the main dwelling hut. The average number of people (mother and young children) sleeping in this area was five (range 2-10). Most sleeping areas were very small.

Mothers/primary caregivers were asked to report how they prepared their young children before they went to sleep. The most common methods were to wash the child's body including their face, or their feet only or to do nothing. However, this was not substantiated by observation.

MAIN FINDINGS, BY LOCATION

The study location which had the highest prevalence of trachoma (71%), Lokiriama sublocation in Loima division, was a truly nomadic community where families move together from one location to another (Table 10). They have a lot of livestock. This community was the only study site where some households did not have water available in the mornings, and where less than half of the households attended community events such as church or barazas. The community had not received azithromycin during the last MDA.

The study location with the lowest prevalence of trachoma (2.5%) was Quilta sub-location in Gadamoji division in Marsabit. This is a settled, Muslim community who practice mixed farming and who keep few cattle or other livestock. Even though this study site was the furthest from the water source, the use of donkeys meant that they could collect a lot of water, and all households had water available in the mornings. However, the other study areas in Marsabit had a relatively high prevalence of trachoma, and had received the first round of MDA.

Other study communities had a prevalence of active trachoma in the range 35-56%, and were partially settled or nomadic.

These findings indicate that there is much variability within Districts and between sub locations, and that any behaviour change strategy needs to respond to the local context rather than be rolled out across administrative divisions.

Table 10. Summary of main findings by study location

	TURKANA			MARSABIT		
Study site	1	2	3	1	2	3
Division	Kerio	Turkwel	Loima	Central	Central	Gadamoji
Sub-location	Kakimat	Lorugum	Lokiriama	Songa	Hulahula	Quilta
Village	Loirengelup	Nang'oridengo and Nalepoto	Lochor Alamala	Leyai	Hulahula	Manyatta Jilo
Details	Semi-permanent structures Keep few animals. Other income generating activity e.g. charcoal burning and basketry	Pastoralists, but grazing sites are far away. Men graze animals; women & children stay at homestead with the goats	All the family members move with animals from one place to another. Hilly and flat areas. Rely on food aid	Live in one large settlement close together. Mainly pastoralists but some subsistence farming. Hilly area.	Predominantly pastoralists.	Practice mixed farming and only keep a few animals. Very clean environment.
Prevalence of trachoma	56%	42.5%	71%	35%	45%	2.5%
CLTS	Yes	Partial	No	No	No	Partial
Rounds of MDA	2	2	2	1	1	1
Water source	Borehole and unprotected shallow well	Nang'oridengo: bore well Nalepoto: unprotected sources	Hilly area: bore well; Plains: unprotected sources	Community tap, but only for a limited time 3 days a week. Long queues.	Protected well	Dam
Use donkeys to collect water	No	No	No	No	Yes	Yes
Time to water source	15 mins (10-30)	5 mins (5-30)	20 mins (10-40)	In community	40 mins (30-60)	60mins (30-120)
Water available in mornings	Yes, in all households	Yes, in all households	Not in all households	Yes, in all households	Yes, in all households	Yes, in all households
Attend community events	Majority of households	Majority of households	Less than half of households	Most households	Most households	Most households

HYGIENE BEHAVIOURAL TRIAL

Using findings from observation and interviews a behavioural trial was carried out in two communities in Turkana and Marsabit (see methods for details). The behaviour trial began with a community baraza to engage the community. The community baraza was attended by 70 of the 89 households in Leyai and over 60 individuals in Lorengelup (Figure 7). The baraza took less than an hour and a half. At the end of the baraza all those present were given soap.

Both communities were greatly surprised and pleased to discover how little water could be used to wash a child's face, and that a leaky tin could easily be made and used in their own homes.



Figure 7: Behavioural trial through the use of a community baraza in Lorengelup, Turkana

Follow up in the community one week later:

Households in Leyai (x5) and Lorengelup (x4) who attended the baraza were told that the field team would visit in a week or so. At one week the following were repeated: structured observation, environmental spot checks and facial cleanliness.

Findings:

1. Two of the five in Leyai households had made and were using a leaky tin (figure 8)
2. Mothers reported that they are washing children's faces more regularly in both communities
3. There was a significant improvement in environmental hygiene, particularly in relation to the presence of animal faeces in Leyai



Figure 8: A women washing her child’s face using a leaky tin constructed following the behavioural trial in Leyai, Marsabit

CONCLUSIONS AND RECOMMENDATIONS

Summary: the “S” of the SAFE strategy

- People believe that God or other animist beliefs have led to their problems;
- People fear surgical procedures in general. They are convinced surgery will damage their eyes further;
- People are confused about:
 - where they can receive surgery (in the community or in hospital)
 - what the procedure entails
 - and what benefits they can expect to see (i.e. whether or not sight can be restored).

Consequently, the procedure is not demanded and excuses are given for avoiding surgery (e.g. the children would go hungry). Efforts need to be made to explain simply what the surgery is for, what it will entail, where it will be performed and what it can and cannot achieve.

Summary: the “A” of the SAFE strategy

Although the “A” was not specifically investigated, some relevant points emerged that would be worth considering in future MDA rounds:

- Some communities miss out on MDA due to migration;

- Side effects, particularly vomiting, were numerous - many people were vocal about not taking the tablets again;
- The purpose of taking the medication has been misunderstood, as people believed they would be “cured” and doubt the benefits of the medication as their sight does not improve. No link is made between the tablets and prevention of trachoma, or the difference between trachoma and trichiasis. Communities should be carefully sensitised before future MDA rounds are carried out so as to ensure the drugs are acceptable to the community and to reach high levels of coverage. Migration patterns and times of greatest migration need to be factored in.

Summary: the “F” of the SAFE strategy

- Some water is almost always available in households first thing in the morning;
- Face and other body washing does take place in households and at water points, although not as frequently as reported. Very young children who do not go to the water point or school may miss out on the opportunity to be bathed. During the dry season when there is little water it is likely that any personal washing that does take place is done at the water point, again, pre-schoolers miss out;
- Face and body washing is done to stop the eyes from aching or to cool the body, rather than to “clean” the body;
- Faces are not usually dried after washing;
- Mothers frequently clear discharge from their children’s’ noses and eyes using their fingers. This is likely to be a mechanism for transmission in these communities;
- Washing children’s’ faces, when practiced, tends to occur in the mornings. Children’s’ faces are not washed before sleeping, and given the overcrowding at night, this is likely to be another mechanism of transmission;
- Young children, before they become toddlers, are kept very clean, but these practices decline once a child becomes more independent and mobile. Hygiene practices could be encouraged to continue and so benefit older children
- Hygiene and health are not separate concepts.

In theory there is likely to be sufficient water available in most homes for face washing to be encouraged to take place at home if people can be motivated to wash.

Given the very high levels of poverty and the transient nature of many of the structures communities live and sleep in, reducing overcrowding at night is not practicable.

Summary: the “E” of the SAFE strategy

- Open defecation is a common practice in both Turkana and Marsabit (although latrine coverage is higher in Marsabit);
- People cite many reasons for not having or using latrines, mainly related to lack of materials and tools to build the latrine although this is most likely an excuse as in reality the demand for sanitation is low, especially in unsettled communities. However, in several communities faeces was covered, indicating this simple intervention is acceptable and taken up in these areas;

- Young children mainly defecate within the compound. Stool is removed from the compound about half of the time;
- Animal faeces are scattered throughout compounds; for security reasons animals live very close to humans.
- Garbage is swept up and placed in a pit or burnt in all visited communities.

In areas without latrines progress could be made by encouraging removal of child faeces from the area surrounding the home and the covering of all adult and child faeces not disposed of in a latrine. It may make more sense to focus on removing human faeces from the environment than animal faeces.

The need for context-dependent interventions

One thing that emerged clearly from the formative research was that practices vary by village depending on the context and setting more than they vary between Turkana and Marsabit, i.e. distance and type of water source (and time of year) determines the volume of water that can be collected, CLTS activities determine whether or not latrines are present and whether human faeces is covered with soil, and presence of a school encourages face washing among school age children. One exception is the greater amount of water collected in Marsabit as a result of using donkeys to transport water.

Table 11 shows some key factors that “F” and “E” interventions should take account of.

Table 11: Local context determines the nature of “F” and “E” behaviour change interventions

Water Availability?	CLTS?	School?
<p>People first need to be convinced that washing faces and hands is worth doing, perhaps by linking cleanliness to success and status or other community aspirations.</p> <p>The community also needs to realise that they are rarely constrained by lack of water (and that very little water is required). As most households have water available first thing in the morning, unless water availability is severely constrained a shift needs to be made so that this use of water is prioritised.</p>	<p>If CLTS is taking place then could attempt to get hands and faces washed after defecation. If defecation takes place in the early morning then could attempt to make post defecation hand and face washing part of this routine.</p> <p>A washing station could act as a cue for washing at this time and school age children could be used to help encourage this behaviour in younger siblings.</p> <p>If latrines are available / used then interventions should encourage disposal of child stools in a latrine. In their absence, appropriate disposal of all stool (child and adult) should involve moving and covering stool.</p>	<p>If there is a local school that children attend it is likely that face washing already takes place among school children, the behavioural task is to expand to pre-school age children. In other areas the behavioural challenge is to instil face washing in the first place.</p> <p>Most schools have a water supply so it may be possible to add face washing and hand washing into the daily routine, e.g. by ensuring all children leave school with 5L of water that is taken home for the purpose of personal washing of themselves and their younger siblings.</p>

Intervention design and delivery principals

- Working with **community structures**. In all communities village leaders and chiefs and religious leaders are respected, and provide a tangible means of communication between health care providers and communities. Indeed, much of the misunderstanding about polio immunization in northern Nigeria, which led to a dramatic reduction in coverage, were reversed once religious leaders understood the benefits and communicated it to their communities
- Integration into **existing infrastructures and “piggy backing” onto ongoing programmes** rather than through a stand-alone programme e.g. adding in face washing to handwashing interventions particularly in schools; incorporating trachoma as one of the diseases resulting from OD into CLTS.
- Increasing knowledge among **community health workers** about trachoma and how it can be controlled
- Recognising the nomadic lifestyle of many communities, the high prevalence of trachoma in these communities and the lower coverage of MDA and CLTS, the intervention must be designed in such a way that it **reaches true pastoralists**, e.g. by making use of the community health workers trained in kraals or by organising interventions to take place at water points along migratory routes. Stakeholders indicated that this is an on-going challenge.
- Stakeholders were unable to demonstrate that real solutions have been found for these problems so far which is intriguing. How do programmes promote handwashing with soap without addressing the water constraints? It is important that any **intervention addresses the practical difficulties that constrain practice of the target behaviours**. For example, we would not advocate for a programme that informs communities of the importance of face washing without attempting to find solutions to allow face washing to take place in areas with limited water supply and where face washing is not currently a priority for water use.
- To avoid confusion and maximise intervention impact the intervention must not conflict with, and will ideally **reinforce existing activities and messaging** in these communities related to the target behaviours and trachoma. Care will be need in conveying messages that are correctly interpreted given that communities perceive hygiene and health as the same concept.
- All **implementation must work for low/no-literacy communities**. ‘Orality’ (thought and verbal expression in non-literate communities) demands emphasis on understanding through observation and imitation, through practice and reflection, through trial and error, through narrative, rhymes, sayings, repetition, signs, etc. We anticipate an intervention being most successful if it has a highly participatory nature (which is therefore time and resource intensive).
- People in our target communities are often used to **getting things free**. Events may be better attended if lunch or food is given (although we should be aware of the detrimental effect of encouraging dependency and the affect of this on sustainability).

Pinning down the exact behaviours that need to change

Table 12 gives an overview of possible behavioural tasks that a behaviour change campaign could include. These tasks are merely a suggestion based on the authors interpretation of the findings. A workshop of all key players would be a better place to work on this more (see next steps). To avoid introducing too many behaviours to the campaign the focus here is on face washing, hand washing (to a lesser extent) and removal of human faeces as a breeding site for flies.

Other ideas could be the use of animal waste as a source of manure or fuel is an area that could be explored as animal waste was not actively used for these purposes. This could be achieved through coordination with agricultural agencies at the government, at county and village level. This could also be an area in which income-generating activities could take place e.g. women’s groups which were reported as being an active form of social interaction. Inexpensive, individual level methods to biodegrade and dispose of human faeces are now available (see PeePoo, www.peepoople.com). Small plastic bags containing urea, are used to defecate into. These are then buried and the contents biodegrades into a fertilizer. PeePoo use a social entrepreneur model, whereby the bags are locally made and sold for a small profit.

Table 12: Examples of specific behavioural tasks for an “F” and “E” intervention

Desired behaviour	Behavioural task
<p>Instil face washing several times a day as a normal, routine practice among school and pre-school age children <i>Time of day and frequency of washing need to be determined (may help prioritise water for face washing if it is to take place at a specific time).</i></p> <p>Encourage hand washing at key times <i>Need to determine whose hands need to be washed and at what times, e.g. defecation-related / food-related events</i></p>	<ul style="list-style-type: none"> • Change mothers’ perceptions about face washing e.g. via an activity that encourages the community to realise for themselves that young children miss out on being bathed and see a problem with this. The behaviour change message could build on the perceptions that a clean face causes the child less discomfort, and so a mother is demonstrating love for her child by washing his or her face. If clean faces become an outward manifestation of maternal love, then this behaviour has the potential to become a societal “norm”; • Expand face washing to pre-school age siblings in households with school going children who already wash faces, using Child-to-Child approaches. For example, school children could be encouraged to return home each day with 5L of water for washing their own faces and the faces of their younger siblings. Many households currently do not have 5L jerry cans, they could be given these for the sole purpose of face (and hand) washing, perhaps even decorated with faces and hands by children at school. Providing homes with a mirror could be interesting. Mirrors have been very popular ways of making handwashing attractive in other research in Kenya and a mirror could be a incentive for participation and compliance: it could even be hung outside the home to signify the place where faces should be washed? • Develop a new habit of face washing among all pre-school and school age children where it doesn’t already exist; • Piggy-back face washing onto existing programmes such as CLTS; • Address water availability and prioritisation issues so the environment is conducive to face washing when it needs to take place (e.g. by changing perceptions of priorities for water use or via the point below); • Have a designated place for face (and hand) washing outside the home that takes into account water constraints e.g. have the men of the community design tippy taps / leaky tins or a station for the 5L water containers; • Encourage collection of the water used for face washing for re-use e.g. for animals or crops, so it is not seen as a “wasted” water

<p>Remove all human faeces from the compound environment (i.e. remove it as a breeding site for flies).</p>	<ul style="list-style-type: none"> • Encourage school children to be agents of change in their communities, again building on Child-to-Child approaches, to reduce open defecation, or encourage safer disposal of faeces by covering it; • Encourage disposal of child stool in a latrine where it is present or by moving and covering the stool if there is no latrine; • Address community concerns that animals to feed on human faeces; • Encourage disposal of adult faeces in a latrine or encourage covering of faeces, by incorporating this into CLTS programmes.
--	--

Although discouraging overcrowded sleeping arrangements would be desirable, this is unlikely to be effective given the very limited materials for building shelters and the frequent movement of some communities. Although this was not explored, it is likely that young children sleep with their mothers for understandable reasons e.g., security, warmth and affection, and for ease of breast feeding.

The barriers identified on pages 28 and 44 in relation to the F and the E components of the SAFE strategy will need to be borne in mind when decisions are made concerning the optimal approaches to be used.

Given that particular challenges exist within the different study villages, it is appropriate to plan a behavioural intervention that contains specific targeted messages for example, face washing at critical times particularly amongst younger children but also strategies or solutions to address challenges specific to particular geographic areas. For example, in Leyai, a village in the Songa division of Gadamoji, the prevalence of active trachoma is estimated to be 35%. This village receives water from a standpipe for the whole community. Water is available twice to three times a week and as households have to queue, opportunities to store extra water are limited. With this in mind, a component that could form part of an intervention in this area would be to discuss with communities how they could solve the problem of water storage at community and household level in a way that is culturally acceptable, particularly to women whose main responsibility this is, and provide the infrastructure or expertise required (e.g. a storage Kent tank; more Jerry cans) so that water is available to the community on a daily basis in sufficient amounts for other purposes aside from the essentials (drinking, cooking, domestic activities and for animals).

Water collection could also be further explored, to find out whether donkeys would be feasible and acceptable as beasts of burden in Turkana. If they are, the UK NGO “Send a Cow” or OXFAM could become partners in the process of introducing donkeys to Turkana.

PROPOSED NEXT STEPS

The first step is to use the findings of the formative research and knowledge about other programme activities in the area to define the scale of the intervention planned for Turkana and Marsabit, the precise behavioural tasks that the campaign will aim to achieve and the target population (settled and/or unsettled communities). It is important to make decisions on these issues early on as they will determine the nature of the intervention that is subsequently developed; for example, different interventions may be appropriate / feasible in settled and unsettled pastoralist populations.

It is then important to decide how the intervention will be delivered: to what extent is it possible to “piggy-back” the intervention onto existing programmes (e.g. CLTS, School Health Clubs)? To what extent is it desirable to do this? To help answer these questions it would be important to review the nature and reach of current WASH programmes. Stratifying trachoma baseline prevalence data by type of community may also guide decision-making: if the burden of trachoma is highest in true pastoralist communities but the bulk of WASH programmes are implemented only via existing infrastructure or in settled communities, then the public health impact of the intervention would be limited if it restricted delivery to existing channels only. Or do the available resources limit the ability to reach true pastoralists in another way?

At this stage it is not possible to decide whether the intervention would best be delivered using social marketing approaches (using materials designed to tap into known drivers of behaviour) or to take a community participatory approach (such as CLTS). A combination of approaches may be required, particularly when considering working with existing community structures. Either approach could be attached to ongoing WASH programme activities as outlined above.

All of these decisions may be best made by gathering key players together for a workshop. The smaller the assembled group the easier it may be to agree on a way forward. The proposed strategy could then be fed-back to a wider group for feedback.

LIMITATIONS OF THE STUDY

Limitations of this study are that the sample size was small compared with the baseline trachoma surveys, which were quantitative. The number of households included in each setting was deemed sufficient and the maximum number possible given the resources and time available to produce a sufficient amount of data to inform the design of a behaviour change strategy. Data from many of the variables in the baseline study were mainly self reported, which is documented to be prone to over and under-reporting, depending on the area of interest, particularly for behaviours which are culturally sensitive e.g. hand washing after defecation, which tend to be over-reported. This is why the time consuming approach of structured observation and spot checks were used to validate any self-reported data. This limited the number of households included in the study.

Observations were only possible in the early morning and not for the whole day and so data presented in this report does not capture behaviours that take place after 9.45 e.g. whether a child’s face is washed in before going to bed. The KAP survey tried to address areas not captured by observation, but these data are self reported. Facial cleanliness assessment used the same criteria as other studies with respect to nasal and ocular discharge and the number of flies on the face. However, assessing multiple children’s faces, often in confined settings, was difficult and required the observer to conduct this whilst also observing other events. This was the most feasible way given that the objective was to ascertain whether the child’s face had any signs of nasal and or ocular discharge crusting.

Households had to be enumerated the day before data collection to ascertain households with children aged 1-9 years, to inform village chiefs, and to obtain consent. Although the behaviours being observed were not disclosed e.g. water use, stool and defecation practices and personal hygiene, to reduce

reactivity, change in behaviour due to the presence of an observer may have had some impact. Water availability was only assessed at the start of the observation period so although further trips may have occurred they were not captured. However the household questionnaire did ask questions on all trips made during the day to collect water and who was responsible. Security and conflict are serious issues in many of these communities which meant earlier observation, which would have meant travelling before dawn, was a security risk. Indeed, the study team was accompanied by armed police when travelling to and from one village for security reasons. In one village, a violent incident towards the end of the behavioural trial meant follow up had to be terminated.

Some communities visited had not received the full MDA due to migration. Arranging and conducting focus groups was difficult particularly in these communities, and getting people to talk in a group about their experiences was also a challenge.

The communities included were purposively selected to reflect different ethnic and cultural groups, access to water and CLTS, and areas with differing levels of trachoma. However, these areas do not represent the whole of Turkana and Marsabit and findings have to be interpreted with caution. The study was done just after the rainy season, and findings may have been very different in the dry season or periods of drought. In the dry season differences between Marsabit and Turkana in terms of water availability may be greater, but we have no way of knowing this.

Time did not permit a detailed analysis of the findings based on the Eco-Evo framework.

References

- Aunger, R. and V. Curtis (2013). "The Anatomy of Motivation: An Evolutionary-Ecological Approach." Biological Theory **7**(3).
- Cole Anthony F., and Saha Anjali. Trachoma in an Omani village. *J Family Community Med.* 1995 Jan-Jun; 2(1): 55–59.
- Ejere, H. O., M. B. Alhassan, et al. (2012). "Face washing promotion for preventing active trachoma." Cochrane Database Syst Rev **4**: CD003659.
- Emerson, P. M., R. L. Bailey, et al. (2000). "Transmission ecology of the fly *Musca sorbens*, a putative vector of trachoma." Trans R Soc Trop Med Hyg **94**(1): 28-32.
- Emerson, P. M., R. L. Bailey, et al. (2001). "Human and other faeces as breeding media of the trachoma vector *Musca sorbens*." Med Vet Entomol **15**(3): 314-320.
- Emerson, P. M., S. W. Lindsay, et al. (2004). "Role of flies and provision of latrines in trachoma control: cluster-randomised controlled trial." Lancet **363**(9415): 1093-1098.
- Evans, J. R. and A. W. Solomon (2011). "Antibiotics for trachoma." Cochrane Database Syst Rev(3): CD001860.
- Karimurio, J. and H. Rono (2010). "Survey report of baseline trachoma prevalence in the larger Turkana District, Kenya." Supported by the EU, Spanish Doctors, the Government of Kenya and partners.
- Karimurio, J. and H. Rono (2011). "ABRIDGED TRACHOMA REPORT FOR UPPER EASTERN KENYA (ISIOLO AND MARSABIT COUNTIES) ".
- Rabiu, M., M. B. Alhassan, et al. (2012). "Environmental sanitary interventions for preventing active trachoma." Cochrane Database Syst Rev **2**: CD004003.
- Taye, A., W. Alemayehu, et al. (2007). "Seasonal and altitudinal variations in fly density and their association with the occurrence of trachoma, in the Gurage zone of central Ethiopia." Ann Trop Med Parasitol **101**(5): 441-448.
- HR Taylor. Trachoma. A blinding scourge from the Bronze Age to the Twenty-first century. 2008. Pub. Center for Eye Research, Australia.
- Yorston, D., D. Mabey, et al. (2006). "Interventions for trachoma trichiasis." Cochrane Database Syst Rev(3): CD004008.



**Terms of Reference
Turkana and Marsabit Trachoma Projects, Kenya
Knowledge, Attitudes and Practices (KAP) Study**

Title	Knowledge, Attitude and Practices (KAP) study on water, sanitation and facial hygiene in relation to trachoma transmission in Turkana and Marsabit counties
Purpose	To review the available data from the trachoma baseline survey and to conduct additional formative research to establish the factors influencing community behaviour and practices that perpetuate the spread of trachoma. This information will lead to the design and execution of targeted community education campaigns aimed at influencing behaviour change to reduce trachoma transmission
Expected Fee	Budget allocation
Location	Turkana and Marsabit Counties
Duration	3 months
Start date	January 2013
Reporting to	Country Director, Sightsavers , Kenya Country Office
Budget	HECSD 21026/ 2012

1. BACKGROUND

Turkana Trachoma Project

A 2010 trachoma prevalence survey conducted in Turkana county established the average prevalence of active trachoma (TF) in the county as 42.3%, while that of potentially blinding trachoma (TT) in adults ≥ 40 years at 9%, the highest in Kenya.

Turkana West District has the highest TF and TT prevalence rates in Kenya, 67.7% and 9% respectively. The TF prevalence in Turkana Central and Loima districts is 20%, while TT in adults ≥ 40 years is 4.2%, making both active and potentially blinding trachoma issues of public health concern in all the districts. The TT backlog in the three districts is estimated at 3,068 persons. Mass Drug Administration (MDA) campaigns need to reach a population of about 300,000.

Similarly, the 2010 survey established that 61% of children in Turkana county had dirty faces and latrine coverage was low, at only 16.2%. The amount of water available for daily household use was found to be 53 litres per household. These findings confirm that trachoma is a disease of significant public health importance in Turkana county and that the population are exposed to key risk factors that are known to facilitate the spread of the infection. The results confirm the need to intervene with the full SAFE strategy in this county.

In this respect, Sightsavers, in partnership with the Ministry of Public Health and Sanitation and the Catholic Diocese of Lodwar is rolling out a five year Trachoma Project in Turkana county to:

1. To reduce the TT backlog of 3,068 amongst adults > 15 years in Turkana Central, Western and Loima districts by 90% and maintain TT recurrence below 10% by 2016
2. To reduce the overall prevalence of active trachoma (TF) in Turkana Central, Western and Loima districts from the current 20% amongst children aged 1-9 years to less than 5% by 2016
3. To promote community hygienic behavioural changes that contribute to reduction in levels of trachoma risk factors by 2016
4. To improve quantity and reduce energy spent in collection of water in Loima district, in Turkana county by 2016

5. To strengthen the capacity of the coordination and implementation structure at the district, county and national levels to facilitate effective & sustainable trachoma control and management by 2016

Marsabit Trachoma Project

Marsabit county is the second largest county in Kenya, covering 12% of the country. Marsabit is located in one of the driest regions in Kenya and is one of the poorest counties in the country, with an absolute poverty index of 88.2%. Active trachoma (TF) and trachoma trichiasis (TT) prevalence in Marsabit are 14.1% and 1.7% respectively, higher than the WHO thresholds, suggesting trachoma is a disease of public health concern in the county and that the full implementation of the SAFE strategy is justified.

Marsabit county has various risk factors that perpetuate trachoma infection. An estimated 73% of children have dirty faces while only 28.1% have latrines. 59.8% of those who do not have latrines are unwilling to construct them while 90% of the population does not have a means of garbage disposal. The practice of hand-washing before eating is done by 54.5% of the population and before feeding a child by 27.5%. Compounding poor sanitation is community ignorance on trachoma, with only 37.4% of the population understanding the disease and how its transmitted.

In this respect, Sightsavers, in partnership with the Ministry of Public Health and Sanitation and the Kenya Society for the Blind is rolling out a five year Trachoma Project in Marsabit county to:

1. To reduce the TT backlog of 2,369 amongst adults \geq 15 years in Marsabit, Isiolo and Moyale by 90% and maintain TT recurrence to below 10% by 2015
2. To reduce the overall prevalence of active trachoma (TF) in Marsabit county from the current 14.1% amongst children aged 1-9 years to less than 5% by 2015
3. To improve access to water services for 11 Primary Schools and Catchment communities around the schools in Gadamoji Division of Marsabit Central District by 2015
4. To influence community behaviour change in favour of adequate environmental sanitation/hygiene practices in respect of face and hand-washing, latrine coverage and compost pit usage
5. To strengthen capacity of the coordination and implementation structures at the national & Marsabit county levels to facilitate effective & sustainable trachoma control management

The formative research is intended to collect information on what is known, believed & done in respect to trachoma face & hand-washing, toilet usage and garbage disposal in selected parts of Turkana and Marsabit counties. The research will also help to determine the barriers and drivers to key practices aimed at preventing the transmission of trachoma.

2. PURPOSE OF ASSIGNMENT

Some useful information relating to community behaviours in respect to face and hand washing and use of latrines, has been collected during a recent trachoma baseline survey. However, more detailed, primarily qualitative, information is sought to determine the barrier and drivers to behaviour change in relation to key practices, promoted as part of the 'SAFE' strategy. This includes the knowledge of trachoma and its transmission, hand and face- washing and the barriers and drivers of this behaviour, current techniques in hand and face washing, toilet usage/waste management, water usage, collection and storage. Information gathered in the study will be used to develop a behaviour change communication strategy with key messages aimed at influencing community behaviour change in regard to the F and E component of the trachoma SAFE strategy.

It is expected that the research will be carried out in various villages, defined by their access to water ie certain villages will be purposefully selected as they are near a suitable water source and others as they are more distant. The research will help to determine how behaviour change due to face washing may alter in these different settings and if necessary how the communication strategy should alter in each circumstance.

3. SPECIFIC OBJECTIVES:

For all the objectives below, separate results are expected for each county (Turkana and Marsabit)

- To review the current information available from the trachoma baseline survey and other sources, in relation to but not exclusive of practices for face and hand washing, latrine coverage and use and knowledge on trachoma. It is expected this data will be incorporated and used to help interpret the qualitative research results and feed into the final communication strategy.
- To determine the current knowledge, attitudes, mis-conceptions, behaviours and practices in regards to hand and face washing, water usage, waste management and latrine usage, through various methodologies possibly including structured observations, focus group discussions and various participatory community research methodologies.
- To determine the barriers and drivers to hand and face washing, waste management and latrine use in the community, through various community participation and behavioural risk methodologies.
- To determine the best methods, communication channels and community resource persons for influencing behaviour change in relation to the F and E components of the SAFE strategy for trachoma.
- Give recommendations on the key issues the project needs to address in its community behaviour change (by county) and on behaviour change and communication interventions to ensure that trachoma risk factors are minimized and/or eliminated.

4. SCOPE OF WORK AND SPECIFIC TASKS

- a) Desk review of recent trachoma baseline survey and other relevant information related to behaviour change for face washing and environmental factors related to trachoma control
- b) Preparation of research protocol
- c) Define the study population and sampling strategy
- d) Preparation of research/data collection tools
- e) Present research protocol and methodology to Sightsavers for approval
- f) Obtain Ethics Approval
- g) Pre testing and translation of questionnaires/survey tools
- h) Identification and training of researchers
- i) Collect and analyse data (by county)
- j) Coordination of report writing
- k) Prepare and share with Sightsavers an initial draft report of study findings in each of the three areas – knowledge, attitude and practice/behaviours – together with recommendations on the most effective way of promoting F&E in the trachoma project in Turkana and Marsabit counties
- l) After receiving Sightsavers feedback, finalise the research report to present research findings and recommendations on the key issues to be addressed by the project in its community behaviour change interventions to ensure that trachoma risk factors are minimized and/or eliminated.

5. REQUISITE QUALIFICATIONS/EXPERIENCES FOR THE ASSIGNMENT

This assignment requires a reputable consultant with practical experience in conducting formative research using participatory research methodologies. Specifically, we are looking for a consultant with the following basic minimum qualification/experiences;

- A minimum of a Master's Degree with specialization in Social Research
- Minimum 6 years working experience in research
- Experience in analysis and interpretation of results from mixed methods methodologies, although strong experience in conducting and analysing qualitative research a priority
- Adequate and appropriate manpower (survey personnel, translators)
- Management capability to conduct the research

- Experience of work with illiterate and/or semi-literate pastoralist communities in Kenya's ASAL areas

Experience of conducting qualitative research in the areas of water and sanitation (WASH), Public Health (especially trachoma) or Behavioural Change will be a distinct advantage.

6. SCOPE AND BUDGET FOR THE STUDY

It is envisaged that the study will be carried out over 2 months, from January 2013 to the end of February 2013. The indicative budget for the work is approximately £30,000. Expressions of interest for the work will be judged on their competitive pricing and the value for money which they demonstrate in their design and proposed implementation.

7. DELIVERABLES

a) Inception Report:

After carrying out a thorough desk review, as described above, the consultant is expected to submit an inception report which will give a summary of the findings from the desk review stage, existing information gaps and a detailed outline of the focus of the work, including how the research will be carried out. The report will outline the tools to be used in the study and provide a detailed work plan for the entire exercise. The draft methodologies and tools will also be submitted for review.

b) Preliminary Report:

The consultant will prepare a report on **preliminary findings** of the research study and present this to key stakeholders in a validation workshop that will be organized by Sightsavers & partners. The consultant will incorporate the stakeholder input into the final report that he/she submits to Sightsavers.

c) Final Report:

It is expected that the consultant will submit a concise and focused report on the knowledge, attitudes, practices and behaviours of the Turkana and Marsabit community members. This will cover key areas in regard to trachoma, including latrine use, waste management and hand and face washing. The report should clearly identify the positive attitudes and best practices that need to be enhanced and the negative attitudes and poor practices that need to be addressed for improved behaviors in relation to water, sanitation and facial cleanliness. This report should also incorporate recommended Behaviour Change Communication (BCC) strategies and where possible, the most appropriate messages and means of communication that can be undertaken by the implementing partners to assist trachoma control in this region.

All data, including transcripts, must be made available to Sightsavers at the end of the research, and it is understood that this data belongs to Sightsavers.

Appendix B: Details of study communities

Turkana

Loirengelup: Loirengelup is a village in Turkana Central district within the Kerio division in the Kakimat sublocation. The population is “settled” with a population of 150 households. Communities typically live in semi-permanent housing structures with limited livestock. The main income generating activities include selling charcoal, basketry and weaving. The ethnic composition of the village is predominately Christian and the main the ethnic group and tribe is Turkana. The main water source is through a borehole and an unprotected shallow well (dry season). The prevalence of active trachoma in children aged 1-9 was estimated at 56% and the area has undergone three rounds of MDA. The village as undergone CLTS. This village was used for the behavioural trial.

Lorugum: Lorugum is a sub-location located within the Loima district and Turkwell division of Turkana. Two villages situated within this sub-location were selected for inclusion in this study, the villages of Nalepoto and Nang’oridengo. The villages are predominately comprised of approximately 150 households of Turkana people of the Turkana ethnic tribe. The area is formed of mainly partially settled pastoralist communities with livestock selling being the main income generating activity.

Animals tended to be kept away from the main dwelling, grazing on communal grazing lands. Older and young men typically resided away from the main dwelling, and households were typically headed by women living together with their children. The main religion is Christianity. The prevalence of active trachoma in children aged 1-9 was estimated at 42.5%. In the village of Nalepoto, there is not a main water source therefore people have to obtain water from shallow wells/rivers and unprotected sources.

However in Nang’oridengo, the main water source is through boreholes. One village had partially undergone CLTS (Nang’oridengo) and the other had not.

Community health workers have been trained to enforce the CLTS messages and on trachoma causes and prevention including WHO SAFE strategy, and identification of individuals with TT. Three rounds of MDA for trachoma have been undertaken.

Lochor Alomala Plain and Hills

Lochor Alomala Plain and Hills are villages located within the Loima district and division of the Lokiriama sub-location. The ethnic composition is the Turkana people of the Turkana tribe. The communities in these areas are “true nomads” typically leading a nomadic way of life, who have not settled in a particular area. The community is formed of “Kraals”.

A kraal is a group comprised of approximately 20 households, who move and migrate together with their animals. Four “Kraals” form the community of the Lochor Alomala Plain and Hills villages of approximately 90 households in total. The “Kraals” have large herds of animals and livestock selling is the main form of income. The main religion is Christianity.

This area has the highest prevalence of active trachoma in children aged 1 to 9 of 71%. Although the rest of the district has undergone the full three rounds of MDA, the annual round of 2012 was missed by

most of the population due to the migration of the “Kraal” to the Ugandan border. The community in the hills obtain their water from a borehole situated within the village, whereas those in the village have to travel some distance to the main water source which is an unprotected shallow well. The area is a Merlin food aid priority area, with families relying heavily on food aid. The area has a local church. There is a school in the Lochor Alomala Hills, however it is not operational due to staff shortages and there is no school in the Lochor Alomala Plains area. The area has not undergone CLTS.

Marsabit

Leyai:

Leyai is a village in the Central division of Marsabit, in the isolated Songa sub-location. It is over an hour’s drive from the main Marsabit town, geographically, access to the village is difficult due to its high elevation. Leyai comprises an ethnically diverse community of Christian and Muslims (the minority). The main tribes are Borana, Rendille, Samburu and Burji. The village is a highly dense “settled pastoralist community” of 89 households living closely with livestock herds of predominately cattle, goats and chickens. The main income generating activities include farming and farm-related selling through greenhouse activities. This village was used for the behavioural trial. The village had not undergone CLTS and the main access to water is through a community tap from which water is sourced. Water is accessible to the community three times a week (Monday, Wednesday and Friday) and often, large queues form for water as the tap is only available for two hours. Thus water storage is a real issue in these communities with only very few households having large storage tanks e.g. Kent tanks, and relying on jerry cans of typically 20 litres to collect and store water. The village has a local primary school and a health facility is located within the area, but at distance from the community. The village also has a community health worker. The prevalence of active trachoma in children aged 1 to 9 years within the sub-location is 35%. The village has undergone its second round of MDA for trachoma.

Hula Hula:

Hula Hula is a village also situated within the Marsabit Central division in the Hula Hula sub-location. The community is pastoralist in nature and the village has 150 households. The community is ethnic mixed but mainly comprised of Rendille with a few from the Samburu tribes. The main form of economic activity is livestock and selling crops. The prevalence of active trachoma in children aged 1-9 years is 45%. The village has not undergone CLTS and the main water source is from a protected well approximately two hour’s roundtrip from the village. The main religion is Christianity. The village has an active primary school, local church, a local dispensary but not health centre and a community health worker. The village has undergone its second round of MDA for trachoma.

Manyatta Jillo:

Manyatta Jillo is a village located within the Gadamoji division in the sub-location of Qilta. The village is a predominately Muslim community of the Borana tribe, who practice mixed farming and keep few animals. The main income generating activity is through selling crops. The village has a very low prevalence of active trachoma in children aged 1 to 9 years of 2.5%. The village has 70-80 households. The area has not fully undergone the process of CLTS, but has been “triggered”, having had the initial stages of the process. The main water source is a dam which is used in both the rainy and dry season. The distance to the water source is 2-3 roundtrip hours away from the village. The village has a local primary school, health centre and community health worker. There is also a local mosque in the village. The village has undergone its second round of MDA for trachoma.

Appendix C: Modes of communication channels for implementing F and E activities

Primary audience	Communication Channels	Opportunities for Diffusion	Special Tactics or Approaches
Mothers/Primary caregivers	<ol style="list-style-type: none"> 1. Community barazas 2. Women's groups 3. Antenatal clinics/health facilities 4. Social gathering/functions 5. Religious meetings 6. Mass distribution rounds 7. CLTS activities 8. Markets 9. Community health workers/volunteers 10. Theatre/drama e.g. song and dance 	<ol style="list-style-type: none"> 1. During meeting sessions 2. During antenatal/health visits 3. During meeting sessions 4. During meeting sessions 5. During distribution rounds 6. During CLTS activities in villages 7. During health visits 	<p>Outreach sessions Use of TBAs Women's groups Men's Groups</p>
Men	<ol style="list-style-type: none"> 1. Community barazas 2. Men's groups 3. Health promotion activities 4. Social gathering/functions 5. Religious meetings 6. Mass distribution rounds 7. CLTS activities 8. Markets 9. Community health workers/volunteers 10. Theatre/drama e.g. song and dance 	<ol style="list-style-type: none"> 1. During meeting sessions 2. During antenatal/health visits 3. During meeting sessions 4. During meeting sessions 5. During distribution rounds 6. During CLTS activities in villages 7. During health visits 	<p>Outreach sessions Use of TBAs Women's groups Men's Groups</p>
Village leaders/elders	<ol style="list-style-type: none"> 1. Community barazas 2. Town meetings 3. Women's groups/Men's groups 4. Social gathering/functions 5. Religious meetings 6. Mass distribution rounds 7. CLTS activities 8. Markets 9. Community health workers/volunteers 10. Theatre/drama e.g. song and dance 	<ol style="list-style-type: none"> 1. During meeting sessions 2. During visits to town centres 3. During meeting sessions 4. During meeting sessions 5. During meetings 6. During distribution rounds 7. During CLTS activities in villages 8. During market days 9. During health visits/meetings 	<p>Outreach sessions Women and Men's groups</p>

Primary audience	Communication Channels	Opportunities for Diffusion	Special Tactics or Approaches
School children	<ol style="list-style-type: none"> 1. Teachers 2. School health clubs 3. Health facilities 4. Community barazas 5. Markets 6. Social gatherings/functions 7. Radio 8. Theatre/drama e.g. song and dance 	<ol style="list-style-type: none"> 1. During school assembly sessions, lessons and during school health clubs 2. During health visits 3. During meetings 4. During weekly market days 5. During social functions/gatherings 6. During radio programmes 	<ul style="list-style-type: none"> • Use of head teachers • Child led through school health clubs • Open days
Religious leaders	<ol style="list-style-type: none"> 1. Community barazas 2. Women' groups/Men's groups 3. Health facilities 4. Social gathering/functions 5. Religious meetings (national and local) 6. Mass distribution rounds 7. CLTS activities 8. Markets 9. Community health workers/volunteers 10. Radio 11. Theatre/drama e.g. song and dance 	<ol style="list-style-type: none"> 1. During meeting sessions 2. During antenatal/health visits 3. During meeting sessions 4. During social functions/gatherings 5. During meetings 6. During distribution rounds 7. During CLTS activities in villages 8. During market days 9. During health visits 10. During radio programmes 	<ul style="list-style-type: none"> • Church meetings • Outreach • Through meetings with the village leader/elders • Through radio announcements/ educational materials during the mass distribution round
Teachers	<ol style="list-style-type: none"> 1. School meetings (national and local) 2. Community barazas 3. Educational materials 4. Health facilities 5. Radio 6. Theatre/drama e.g. song and dance 	<ol style="list-style-type: none"> 1. During school meetings (national and local) 2. During meetings 3. Through printed materials 4. During health facility visits 5. During radio programmes 	<ul style="list-style-type: none"> • During educational meetings • Continuing professional development • Health visits/health promotion talks e.g. through CHWs/volunteers • WASH agencies undertaken WASH activities in schools
Community health workers/volunteers	<ol style="list-style-type: none"> 1. Health facilities 2. Community barazas 3. Health meetings (local) 4. Radio 5. Theatre/drama e.g. song and dance 	<ol style="list-style-type: none"> 1. During health visits/household visits 2. During meetings 3. During staff meetings 4. During radio programmes 	<ul style="list-style-type: none"> • Household visits • Through community barazas, social functions and religious events