

## Knowledge, practices and perception on trachoma and its influence on health seeking behaviour of the pastoralist patients in Kajiado Central Division, Kenya

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### Abstract

**Background:** Trachoma is an infection of the eyes caused by bacterium *Chlamydia trachomatis* and it is a major cause of blindness in the world especially in developing countries. It is endemic in over 30 districts in Kenya including Kajiado. This study aims at assessing the influence of knowledge, practices and community perception on health seeking behavior of patients and caretakers of children.

**Objectives:** To determine the knowledge, disease preventive practices, perception on trachoma and the factors that influence health seeking behaviour of the pastoralist patients in Kajiado Central Division

**Methods:** This was a descriptive cross-sectional study conducted in Kajiado Central Division in 2011 among 230 children aged 0-17 years old with infectious trachoma. Structured questionnaire interview administered to the caretakers of the minors (parent/guardian), focused group discussion and key informant interview guide were used to obtain the survey information.

**Results:** Data for a total of 230 caretakers with children aged 0 –17 years with infectious/active trachoma was analyzed. Health care seeking behaviour by the caretakers was significantly associated with knowledge on linkage between trachoma and animals (AOR=2.80; 95% CI: 1.07 – 7.33; p=0.036), spending 2 hours or more to the water source (AOR=3.85; 95% CI: 1.85 – 7.69; p<0.001), and having a clean compound (AOR=4.25; 95% CI: 1.32 – 13.68; p=0.015); A large number of caretakers sought health care within a period of two months or more from the onset of symptoms. Seeking health care within one month was significantly associated with; being single or widowed (AOR=3.62; 95% CI: 1.58 – 8.26; p=0.002), not being trained on trachoma (AOR=50.00; 95% CI: 7.14 – 333.33; p<0.001).

**Conclusion:** Poor social economic factors, lack of education and poor knowledge on trachoma, poor environmental sanitation

and poor practices are important risk factors that sustain the infection in Kajiado Central Division in Kajiado County. There is a dire need to enhance and strengthen the existing programmes on prevention and control of the infection.

### Introduction

Trachoma is an infection of the eyes caused by bacterium *Chlamydia trachomatis* that results in blindness after repeated infections. Currently the disease is a public health concern especially in Kenya where it is endemic in over 30 districts located in dry areas with scarcity of water, Kajiado District included [1]. The disease is characterized by swelling of the eyelids, sensitivity to light and eventual scarring of the conjunctivae and cornea of the eyes and spreads easily from an infected person to un-infected person and disease is categorized mainly as active/infectious, affecting minors and blinding trachoma in adults [1].

A previous study reported trachoma prevalence of 17.4% for infectious trachoma and 3.3% for blinding trachoma in Kajiado county in 2009 [2] which was high compared to WHO manageable levels of 10% and 1%, respectively [1]. The aim of the study was to determine the knowledge, practices and perception of trachoma and its influence on health-seeking behaviour of the patients in Kajiado central division. The findings provide valuable information on the existing gaps, to projects targeting prevention and elimination of the disease.

### Materials and Methods

The study was a cross sectional descriptive survey among trachoma patients with active/infectious in minors aged 1 to 17 years in Kajiado central division in Kajiado central district. The area was selected purposively based on the high prevalence of trachoma published in a previous study [2]. Trachoma patients were randomly selected from 7 of the 18

infected clusters registered in the division under AMREF trachoma control programme, which included; Enkaroni, Ortarikati, Emuktani, Kiroyian, Oltanai, Paranai and Oletepesi [2].

Both qualitative and quantitative data collection methods were applied to determine the levels of knowledge, practices and perception on trachoma and its influence on the health seeking behaviour of the caretakers (parents or guardians) of the infected children. The study population comprised of caretakers of children aged 1 to 17 years with active/infectious trachoma. A structured questionnaire, FGD and key informant interview guide written in English and translated to Maasai language were used to collect data

A written informed consent was obtained from the caretakers to the minors and adult patients with trachoma before administering the tools. AMREF trachoma control health monitors from the area were recruited as research assistants and trained on how to collect data prior to the start of the study.

The respondents were asked about their demographics including; age, gender, education background, marital status, family monthly income, occupation, knowledge, perception and practices on trachoma and the influence this has on their health seeking behaviour.

Data collected in the questionnaires was entered in MS Access and cleaned before transferring to SPSS version 12.0 (statistical Package for Social Sciences). Six FGDs and ten key informant interviews were done, transcribed and categorized thematically based on emerging themes to triangulate the information.

Observational check list method was used to record environmental cleanliness around the compound of the interviewed households, latrine coverage and use, distance to water sources, cleanliness of the children's faces and size of the containers used for collecting and storing water at household level.

Approval to carry out the study was sought from Kenya Medical Research Institute (KEMRI) Scientific Steering Committee and National Ethical Review Committee. Further approval to carry out the study was sought from the AMREF trachoma control unit in Kajiado, from the Medical Officer of Health (MOH) Kajiado and from the district ophthalmologist's in charge of the study area. Children with infectious trachoma whose care takers consented to participate were interviewed

## Results

*Socio demographic characteristics of the caretakers of the infected minors:* Data for caretakers of 230 minors aged between 0-17 years with infectious trachoma was

analyzed for this study. The ratio of infected minors was 48.7% males and 51.3% females. Social demographic characteristics of the caretakers of the infected minors (parents and guardians) were examined, 75.1% were married and 22.2% were single. The predominant occupation of the caretakers was housewife (41.6%), and some form of business (41.6%). Teaching profession was recorded in 45.8% of the husbands of the care takers while 33.5% did some form of business. A large number of the caretakers (73.1%) did not have any formal education, 24.2% reported to have primary level of education. Over half of them (55.2%) earned not more US\$28 per month.

**Table 1:** Socio demographic characteristics of trachoma infected children (n=230)

Characteristics	Variables	(%)
Marital status	Single	22.2
	Married	75.1
	Widowed	2.6
Occupation	Housewife	41.6
	Business	41.6
	Farmer	7.5
	Teacher	8.0
	CHW *	1.3
Education level	No education	73.1
	Primary	24.2
	Secondary	1.8
	Tertiary	0.9
Monthly income (US\$)	<12	14.8
	12>28	40.4
	≥28 -56	19.6
	>56	20.9
	Don't know	4.3

\*= Community health workers

*Knowledge on trachoma:* About two thirds of the respondent caretakers of the infected minors (65.7%) reported to have heard about trachoma and indicated the main signs to be: red eyes (34.8%), watery eyes (26.5%), and poor eye sight (20.5%). Most reported causes of trachoma among children were contact with flies (33.5%) and dirty faces (23.0%). Majority (70.0%) reported to have a local name for trachoma and 43% reported to have a local treatment for trachoma. Children aged less than 10 years were reported to be the most affected by 81.7% of the respondents (Table 2).

**Table 2:** Knowledge on trachoma among child care takers (n=230)

Characteristics	Variables	(%)
Heard of trachoma		65.7
Knowledge of signs of trachoma	Red eyes	34.8
	Eye rashes	6.1
	Watery eyes	26.5
	Poor eye sight	13.9
	Don't know	18.7
Causes of trachoma	Flies	33.5
	Dirty face	23
	Contact with infected persons	1.3
	Don't know	42.2
Have local name for trachoma		70
Have traditional treatment		43
Most affected by trachoma	Children <10 years	81.7
	Teens 13-17 years	3
	Adults (over 18 years)	5.6
	Everybody	4.8
	Older people	2.6
	Don't know	2.1

*Practices on trachoma:* Data on practices and perception of the children caretakers indicated that 31.7% of the caretakers knew the link between flies and trachoma and only 16% of them knew the link between trachoma and animals/livestock (Table 3). Water pools and streams were the main source of water for 72.2% of the respondents for which 48.7% spend 2-4 hours at the water source and 97% fetched it in one 20 liter jerrican per day. Over two thirds of the caretakers washed their face once a day and 35.2% reported to be washing or cleaning their children of whom 62.6% did it only once a day. The number with households pit latrine was only 2.2% and the most commonly reported ways of domestic waste disposal was by burning (45.2%) and throwing it in the bush (44.3%).

**Table 3:** Practices and perception of the children caretakers (n=230)

Characteristics/Links	Variables	(%)
Trachoma and flies		31.7
Trachoma/animals		16.1
Water source	River	13.9
	Borehole	12.6
	Well	1.3
	Pool	25.2
	Stream	47.0
Time taken to fetch water	30 mins	5.7
	1 hour	14.8
	2-4 hours	48.7
	≥5 hours	29.6
Amount of drinking water	5 litres	1.3
	10 litres	1.7
	20 litres	49.6
	>20 litres	47.4
Frequency of washing face	Once	67.4
	Twice	17.8
	Thrice	3.1
	None	6.5
	Others	5.2
Child washed		35.2
Have pit latrine		2.2
Times face washed	Once	62.6
	Twice	17.0
	Thrice	8.7
	None	5.2
	Others	6.5
Waste handling	Pit	2.6
	Latrine	7.8
	Burn	45.2
	Bush	44.3
Trained on trachoma		13.5
Clean compound		13.0
Rituals for trachoma		6.1
Traditional believes		10.9
Food restrictions		1.3

Comparison of different factors that influenced the caretakers' choice for health care (Table 4) revealed significant increase in the proportion of caretakers seeking healthcare at health facilities among those who spent 2 hours or more to the water source (72.7%) compared to those spending one hour and below (48.9%), (OR=2.78; 95% CI: 1.43 – 5.26; p=0.002), those whose compound

was clean (86.7%) compared to those whose compound was not clean (65.0%), (OR=3.50; 95% CI: 1.17 – 10.43; p=0.018) and significance difference among those who washed or cleaned their children (77.8%) compared to those who did not (62.4%), (OR=2.11; 95% CI: 1.13 – 3.92; p=0.017).

**Table 4:** Comparison of different risk factors in relation to health care seeking behaviour

Variables /Links	Health facility(n=156)		Other (n=74)		OR	95% CI		p value
	n	%	n	%		Lower	Upper	
<b>Trachoma and flies</b>								
Yes	49	67.1	24	32.9	0.95	0.53	1.73	0.876
No	107	68.2	50	31.8	1.00			
<b>Trachoma and animals</b>								
Yes	30	81.1	7	18.9	2.28	0.95	5.46	0.060
No	126	65.3	67	34.7				
<b>Time to water source</b>								
≤1 hour	23	48.9	24	51.1	1.00			
2 hours or more	133	72.7	50	27.3	2.78	1.43	5.26	0.002
<b>Times they wash face</b>								
Once	103	64.0	58	36.0	0.54	0.28	1.02	0.056
Twice or more	53	76.8	16	23.2	1.00			
<b>Have pit latrine</b>								
Yes	2	40.0	3	60.0	0.31	0.05	1.88	0.331
No	154	68.4	71	31.6	1.00			
<b>Compound clean</b>								
Yes	26	86.7	4	13.3	3.50	1.17	10.43	0.018
No	130	65.0	70	35.0	1.00			
<b>Heard of trachoma</b>								
Yes	100	66.2	51	33.8	0.81	0.45	1.45	0.472
No	56	70.9	23	29.1	1.00			
<b>Marital status</b>								
Single/widowed	35	74.5	12	25.5	1.84	0.88	3.85	0.101
Married	87	61.3	55	38.7	1.00			
<b>Gender</b>								
Female	83	70.3	35	29.7	1.27	0.73	2.21	0.402
Male	73	65.2	39	34.8	1.00			
<b>Level of education</b>								
No education	110	65.1	59	34.9	0.61	0.31	1.18	0.139
Primary and higher	46	75.4	15	24.6	1.00			
<b>Trained on trachoma</b>								
Yes	19	61.3	12	38.7	0.72	0.33	1.57	0.402
No	137	68.8	62	31.2	1.00			
<b>Washed or cleaned</b>								
Yes	63	77.8	18	22.2	2.11	1.13	3.92	0.017
No	93	62.4	56	37.6	1.00			

From the multivariate analysis, significance differences were observed in: the knowledge on linkage between trachoma and animals (AOR=2.80; 95% CI: 1.07 – 7.33; p=0.036), spending 2 hours or more to the water source

(AOR=3.85; 95% CI: 1.85 – 7.69; p<0.001), and having a clean compound (AOR=4.25; 95% CI: 1.32 – 13.68; p=0.015), were significantly associated with where the caretaker sought health services.

**Table 5:** Timing for seeking health care at the health facilities in relation to different characteristics

Variables/Links	≤1 month (n=120)		>1 month (n=110)		OR	95% CI		p value
	n	%	n	%		Lower	Upper	
Link between trachoma and flies								
Yes	25	34.2	48	65.8	1.00			
No	95	60.5	62	39.5	2.94	1.64	5.26	<0.001
Link between trachoma and animals								
Yes	12	32.4	25	67.6	1.00			
No	108	56.0	85	44.0	2.63	1.25	5.56	0.009
How long to water source								
≤1 hour	12	25.5	35	74.5	1.00			
2 hours or more	108	59.0	75	41.0	4.17	2.04	8.33	<0.001
Times they wash face								
Once	82	50.9	79	49.1	0.85	0.48	1.49	0.565
Two or more	38	55.1	31	44.9	1.00			
Have pit latrine								
Yes	1	20.0	4	80.0	0.22	0.02	2.02	
No	119	52.9	106	47.1	1.00			
Compound clean								
Yes	16	53.3	14	46.7	1.05	0.49	2.28	0.892
No	104	52.0	96	48.0	1.00			
Heard of trachoma								
Yes	81	53.6	70	46.4	1.19	0.69	2.05	0.538
No	39	49.4	40	50.6	1.00			
Marital status								
Single/widowed	32	68.1	15	31.9	1.91	0.95	3.82	0.067
Married	75	52.8	67	47.2	1.00			
Gender								
Female	60	50.8	58	49.2	0.90	0.53	1.50	0.679
Male	60	53.6	52	46.4	1.00			
Level of education								
No education	85	50.3	84	49.7	0.75	0.42	1.36	0.343
Primary and higher	35	57.4	26	42.6	1.00			
Trained on trachoma								
Yes	3	9.7	28	90.3	1.00			
No	117	58.8	82	41.2	12.50	3.85	50.00	<0.001
Children washed or cleaned								
Yes	70	86.4	11	13.6	12.60	6.13	25.91	<0.001
No	50	33.6	99	66.4	1.00			

Bivariate analysis of the factors associated with health care seeking behaviour (Table 5) revealed that significantly high number of those who were likely to seek health care in the health facilities within one month of initial symptoms were those who reported not to know the link between trachoma and flies (60.5%) compared to those on the affirmative (34.2%), (OR=2.94; 95% CI: 1.64 – 5.26;  $p<0.001$ ), among those who did not know the link between trachoma and animals (56.0%) compared to those who did (32.4%), (OR=2.63; 95% CI: 1.25 – 5.56;  $p=0.009$ ). Those who spend 2 hours or more to reach the water source (59.0%) compared to those who spent 1 hour or less (25.5%), (OR=4.17; 95% CI: 2.04 – 8.33;  $p<0.001$ ), those who washed or cleaned their children (86.4%) compared to those who did not (33.6%), (OR=12.60; 95% CI: 6.13 – 25.91;  $p<0.001$  and those who did not have education on trachoma (58.8%) compared to those who were trained (9.7%), (OR=12.50; 95% CI: 3.85 – 50.00;  $p<0.001$ ).

## Discussion

The finding in this study demonstrated a wide distribution of infectious trachoma in Kajiado Division Central despite strong coordinated campaign by AMREF/Ministry of Health to prevent and control the infection. Significantly low levels of knowledge ( $P=0.045$ ) perception about trachoma and practices among infected persons were important factors in the transmission and sustaining of the infection in the community. The present study did not collect data from none infected persons but there were significant links between trachoma low socio-economic status ( $P=0.000$ ), long distance to water source, inadequate amounts of water used per family, washing of face of the children, health seeking behaviour absence of latrines and poor practices ( $p=0.004$ ).

This study did not consider the number of minors infected in each household but data from caretakers of 230 children with infectious trachoma was analyzed. According to the caretakers, children less than 10 years of age were the most infected. Similar observations were made in a study conducted in Turkana, which recorded low knowledge on signs and symptoms of trachoma and significantly high cases of trachoma among children less than 10 years of age compared to other ages [6].

Two thirds of the respondents among child caretakers in our study reported to have heard about trachoma, but four out of ten of them did not know the causes of trachoma. Flies as a major cause of trachoma were mentioned by 33.5% and 23% for dirty faces. Knowledge about contact with flies and dirty faces was significantly associated with those with primary level of education and beyond (39.3% and 28%) compared to those with no education (30.9% and 22%) respectively. Only one third of them knew the link between flies and trachoma ( $P<0.001$ ). Flies are important agents in the transmission of the infectious trachoma [10]. Flies covered faces were common sights in children under five years (personal observation). About 35% of the caretakers reported not

to wash faces of the children and this could attract a host of flies on the face thus a rise in transmission potentials.

Data on knowledge in the current study gave low results compared to the qualitative report in Turkana which indicated that majority of the respondents could associate trachoma with some of the known causes like; dirt, flies, dust, lack of water and latrines [5]. Knowledge of signs and symptoms of trachoma among the respondents in our study was low where 26.5% of child caretakers did not know signs and symptoms of trachoma. However, majority of the respondents (70%) had a local name (Enkoe) for the infection and about half of them (46%) of the respondents knew local treatment (Oseki and Ortikariti) for trachoma. Identification of the disease by local language could translate into increased knowledge of the symptoms [5]. No data was collected to compare the distribution of infection based on different social demographic characteristics of caretakers but the fact that there was a recognized local name and treatment for the disease was an indication that trachoma is a recognized problem in the community. It could be of interest to study the effectiveness of local treatment and potentials of promoting it to reduce transmission of the infection.

Water availability and safety was reported as important factors in the transmission of trachoma [10]. Significantly high number (47%) among the caretakers of the infected minors collected domestic water from water pools and streams and about half of them collected less than 20 liters a day to be shared among the family members ( $P<0.001$ ). Among the caretakers (49.6%) fetched water in one 20-liter container per day, 48.7% of whom walked for over 2 hours to fetch water for the family. Previous studies in pastoralist communities in Turkana region Kenya [4] Gambia and Northern Tanzania reported large families as a major risk factor in the transmission of trachoma [6, 7]. Such could be associated with the amount of water available to each family member each day. Long distance to water source, low, inadequate amounts of water used per family to clean, lack of latrines and poor hygiene behaviour and practices were major contributing factors to high transmission rate of trachoma [7].

Education levels of the caretakers influenced the practices towards transmission of trachoma. The practice of washing face was significantly higher in those with primary and higher level of formal education (61.2%) than those with no education ( $p=0.031$ ) in the current study. The results of this study concur with studies done in Gambia and Tanzania that showed a direct association between improved act of washing of face among children and adults with trachoma infection [3].

Caretakers also tended to seek treatment when signs and symptoms become critical (27%). The husband or partner of respondents was the first contact person notified when symptoms were noted (52%), followed by a visit to the health facility (33.5%) ( $P=0.019$ ). However, 20% of them sought treatment after failure of traditional methods.

Long distance to health facilities could be a deterrent to seeking health attention early. Majority (81.7%) of the respondents of the caretakers walked for over 2 hours to the nearest health care centre for treatment. An earlier study in Mali reported a direct association between proximity to health clinics and reduced levels of trachoma [8].

Traditional believes and culture were reported to influence health seeking behaviour of the caretakers some of whom attributed the cause of infection to a generational curse, family inheritance from ancestors and a disease of the poor people who live with livestock. Consequently, 10% of the caretakers sought treatment from a traditional healer ( $P = 0.009$ ). Our observation could be compared with the report in a study in Turkana, Kenya which associated trachoma to people with livestock where the administrative regions with high prevalence of active and potentially blinding trachoma were the main grazing areas for cattle [6]. More studies to establish the role of domestic animals in the transmission of the infection are needed in the grazing communities.

The caretakers who were able to link trachoma with animals, those taking 2 or more hours to fetch water, those with no pit latrine, were more likely to seek health care at a health facility. It is not clear how the observed trend takes place. However, such an explanation could be related to the intensity of infection, chronicity or constant re-infection due to high risk factors. Self medication could also play a role in the observed delays to seek medical care especially for the enlightened group who could be more aware of some other conventional remedies and would be ready to try them before seeking medical attention. Failure of such home remedies could resort to exacerbation of the symptoms. This study did not examine the intensity of infection in relation to different characteristics of the respondents. Such studies could shed some light on the causes of delays especially in the enlightened group in the community.

Poor sanitation is important in the transmission of trachoma [10]. Only 2.2% of the caretakers reported to have household latrines, which could be attributed to traditional believes that it is a taboo to mix men and women faeces and that there is enough bush around for one to hide for excretor disposal hence no energy should be wasted digging and building latrines. It was established that the few latrines in existence are as a result of organizations' efforts on awareness on the importance disposing human excreta in pit latrines. Further studies could be conducted to examine the rate of faecal contamination in the region and the effects not only in the domestic animals but also in the wild animals including rats, which are common pests in the human habitat.

Traditional believes could influence transmission of infections especially if there are no proven local remedies. Over 5% of the caretakers reported having rituals related to trachoma such as smoking of the patients eyes with burned cow dung and application of "Oseki" and about 1% reported having food restriction such as eggs for trachoma patient's especially in expectant women.

The practices and believes were similar for those with primary education and those with no education. These findings support similar observations in an earlier study on the traditional believes in the same community [3].

Health seeking behaviour were significantly affected by knowledge on the link between trachoma and animals, the time it took them to a water source, the compound cleanliness, the frequency of washing their faces and presence of pit latrine ( $P = 0.002$ ). Seeking health care within a month was significantly associated with their knowledge on the link between trachoma and animals link between trachoma and flies, time it took them to water source, cleanliness of their compound, frequency of washing their faces ( $P < 0.001$ ) and if they were trained on trachoma. This concurs with a study done in Tigray, Northern Ethiopia in 2004 on prevalence and risk factors in which it was indicated that poor health seeking behaviour and lack of access to eye care services could be responsible for the high prevalence of trachoma in the study districts [9].

Prolonged delays in care seeking among respondents with infectious trachoma could affect prevention and control programmes. Early detection and treatment reduces the burden of blindness while treatment of active trachoma reduces the incidence of the infection (9). Our study concurred with the Ugandan study, which advocated behavioural changes that could reduce the transmission. Rapid spread of the infection was attributed to the tendency of many community members to seek treatment from traditional healers or self-medications in response to the initial symptoms instead of going to health centres, only to go to the centers when the former failed [4].

## Conclusion

Health seeking behaviour against infectious trachoma was poor in all the study villages in Kajiado Central Division as a result of which transmission is high. Numerous environmental and human factors contributed to the transmission and delayed health seeking behaviour. Initial tendency to consult traditional healers deterred early medical care attention a situation that could play a significant role in the spread of the infection. Concerted efforts are required to address the problem of transmission by all stakeholders especially those directed to behavioural change for early diagnosis and treatment of the infection.

## Declaration

The authors declare that there is no conflict of interest in this work.

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