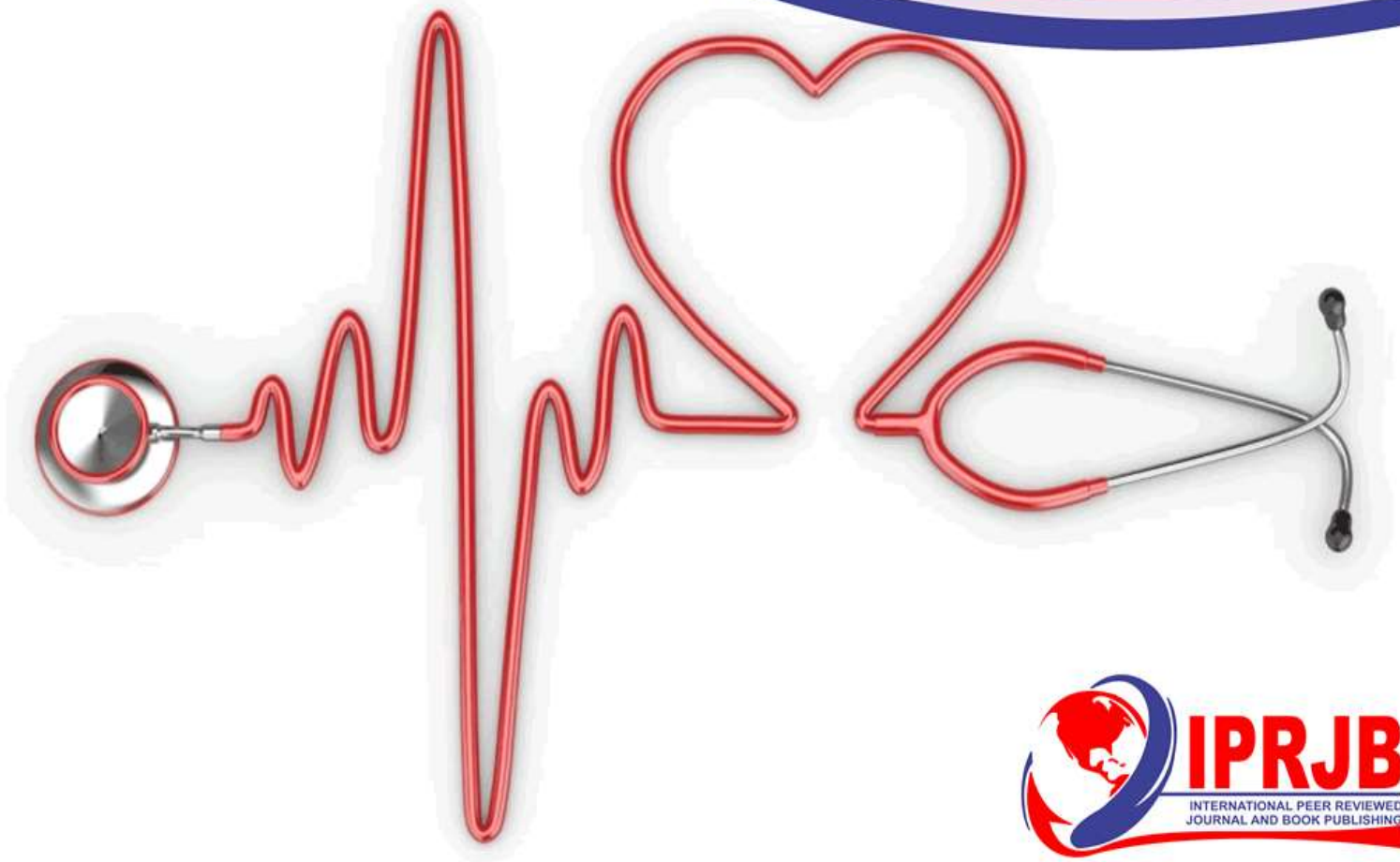



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**Caregivers' Knowledge Level of Trachoma Control among Children Aged 1-9 Years in
Kajiado County**


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Abstract

Purpose: This study sought to investigate the caregiver's level of knowledge of trachoma control among children aged 1-9 years in Kajiado County.

Methodology: Cross-sectional analytical research design was used. 428 participants were selected from the study area. The survey encompassed the gathering of quantitative as well as qualitative data. Multi-stage sampling was used to select the study area and the research participants. Data was analyzed using both descriptive and inferential statistics. Regression analysis, chi square test and correlation analysis was used to determine the significance of the study variables and in hypothesis testing. The study will be useful in policy formulation on Trachoma programs.

Findings: The mean knowledge level of the caregivers was 6.73 with a standard deviation of 1.50. Notably, 63.1% (n=270) had good knowledge level of trachoma because they scored above the mean while 36.9% (n=158) scored below the mean (low knowledge level).

Unique Contribution to Theory, Practice and Policy: To eliminate trachoma, the government and policy makers should not only invest in awareness creation on the disease but also focus on reducing the barriers to access of safe water and sanitation facilities.

Keywords: *Caregivers' Knowledge, Trachoma Control, Child Health, Community Health*

JEL Codes: *I12, I10, I14, I13*

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INTRODUCTION

Globally, trachoma remains the leading cause of avoidable blindness, with nearly 8 million people visually impaired and over 500 million at risk in 57 endemic countries (CDC, 2022; Mered Tilahun et al., 2024). The disease, caused by *Chlamydia trachomatis*, is highly infectious and spreads through personal contact with eye discharges, contaminated clothing, or bedding, particularly among children (WHO, 2022). Despite being preventable, trachoma continues to affect 150 million people across 48 nations, with six million already visually impaired. Approximately 125 million individuals live in endemic regions, underscoring the urgent need for effective control strategies (WHO, 2022).

In Africa, the burden of trachoma is disproportionately high. An estimated 88% of those at risk reside on the continent (Asmare et al., 2025). Africa accounts for about 4 million blinding trachoma cases and 28 million active infections (Asgedom et al., 2024). Sub-Saharan Africa alone contributes 44% of global trachoma cases, with East and Central Africa recording the highest prevalence (Basha et al., 2020). The persistence of trachoma in these regions is closely linked to poverty, inadequate sanitation, and limited access to clean water, which hinder the adoption of preventive measures.

In Kenya, trachoma is a major public health concern and the second leading cause of preventable visual impairment. It is endemic in twelve counties, affecting approximately 11 million people (Parsimei et al., 2021). Of the estimated 270,000 blind individuals in the country, 19% attribute their condition to trachoma. Pre-school children are particularly vulnerable, serving as reservoirs for infection due to poor hygiene and frequent eye contact. The World Health Organization's SAFE strategy (Surgery, Antibiotics, Facial cleanliness, and Environmental improvement) has been adopted as a key elimination framework (WHO, 2022). However, its success depends heavily on caregivers' knowledge and ability to implement hygiene and sanitation practices.

Kajiado County, one of Kenya's trachoma-endemic regions, records a prevalence of 17.3%, far above the national average of 2.66% and the WHO threshold of $\leq 5\%$ (KNBS, 2023). The high burden is attributed to arid climatic conditions, widespread open defecation, low sanitation coverage, and limited access to water. Cultural practices, such as building homesteads (Manyattas) near livestock sheds, further exacerbate poor waste management and hygiene. This proximity creates favorable breeding grounds for *Musca sorbens*, the fly species that transmits trachoma by feeding on ocular and nasal secretions. Caregivers, who are primarily responsible for children's hygiene, therefore play a pivotal role in trachoma control. Their knowledge of the disease, its causes, transmission, and prevention, is critical in shaping household practices and reducing infection rates. Without adequate caregiver awareness, interventions risk being undermined by misconceptions, traditional beliefs, and poor adherence to recommended practices.

Problem Statement

Effective trachoma control programs rely on the expectation that caregivers, who are primarily responsible for children's hygiene, possess adequate knowledge of the disease, its transmission, and prevention strategies. Without this knowledge, interventions such as the WHO-recommended SAFE strategy (Surgery, Antibiotics, Facial cleanliness, and Environmental improvement) risk being undermined by poor understanding and misconceptions at the household level. However, available data show that trachoma remains a significant public health problem in Kenya. Nationally, 270,000 people are blind, with 19% of these cases

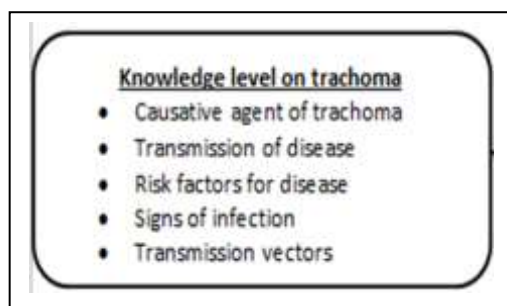
attributed to trachoma (Parsimey et al., 2021). Despite ongoing SAFE interventions, the persistence of high prevalence suggests a disconnect between clinical outreach and household-level implementation. In Kajiado County, the situation is particularly severe: trachoma prevalence stands at 17.3%, far above the national average of 2.66% and the WHO threshold of $\leq 5\%$ (KNBS, 2023). Among children aged 1–9 years, surveys report active trachoma prevalence of 20%, with potentially blinding trachoma (PBT) reaching 44.5% (Chweya et al., 2024). Sub-county data further highlight the burden, with Kajiado South recording 10.7%, Kajiado West 8.4%, and Kajiado East and Central each at 7.2% (MoH, 2021). These figures demonstrate that children are disproportionately affected.

Previous studies in Kenya and neighboring countries have shown that caregivers often hold misconceptions about trachoma. Some attribute the disease to witchcraft, heredity, or old age rather than bacterial infection and poor hygiene (Tsang et al., 2021; Churko et al., 2021). While some caregivers recognize the role of flies and sanitation, many lack comprehensive knowledge of risk factors and effective control measures. Such gaps in understanding hinder the adoption of preventive practices, including proper waste disposal, face washing, and latrine use. This study therefore seeks to fill the gap by specifically investigating caregivers' knowledge level of trachoma control among children aged 1–9 years in Kajiado County. By assessing the extent of caregiver awareness and identifying misconceptions, the study aims to provide evidence that can guide targeted health education interventions and strengthen trachoma elimination strategies in endemic regions.

Conceptual Framework

The framework below shows the interrelationship between the independent variables (knowledge level of trachoma control) and the dependent variable (trachoma prevention practices).

Independent variables



Dependent variable

Figure 1: Conceptual Framework

Empirical Review

A study that was carried out in Tanzania established that majority of people lack adequate knowledge on the disease. Studies revealed that the majority of respondents misunderstood the disease element such as causes, mode of transmission and control. Specifically, > 50 percent of the respondents suggested that patients never understood that the disease was due to an infection transmitted by flies and assumed that trachoma was caused by witchcraft or hereditary (Tsang et al., 2021). Such misunderstandings render prevention practices more challenging. Similarly, the study noted that the respondents did not believe in the treatments given by some programs, serving as a deterrent in seeking treatment (Tsang et al., 2021).

A research investigation carried out in Kajiado, Kenya indicated that most participants were aware of trachoma disease and understood it was an eye disease caused by poor hygiene and sanitation (Parsimei *et al.*, 2021). The findings indicated that participants knew trachoma as *enkoe* while trichiasis was referred to as *isarik*. However, some research participants had poor knowledge about the disease because they reported that trachoma was an infection for the *Imolelian* clan succeeding to it from the ancestors. When people suffering from trichiasis (stage of trachoma where the eyelashes have turned inward scratching the eye cornea) were interviewed, 60 percent of them had no information as to what caused the diseases while 40 percent were aware that the disease was as a result of dirt and flies were responsible for the disease transmission (Parsimei *et al.*, 2016).

Besides, an Ethiopian survey revealed that the majority of those taking part had poor knowledge regarding trachoma causes. Essentially, 76.8 percent had inadequate knowledge regarding disease infection. Some of the participants argued that the disease was caused by old age and smoke with others saying that infections were inherited while others suggesting that they did not know the sources (Churko *et al.*, 2021). On whether rearing domestic animals outside the household helped in preventing trachoma transmission, most respondents knew that construction for the domestic animals far from their *manyattas* assists in controlling trachoma (Parsimei *et al.*, 2021). However, they suggested that while it was wise to rear animals away from their *manyattas* to help in reducing flies, it was not practical since they had to safeguard their domestic animals from wild animals, raiders, rain and cold. Keeping cattle close to their homestead was convenient for them as they could do the milking early in the morning (Churko *et al.*, 2021).

An further investigation carried out in northern Tanzania assessed the knowledge level of the research participants in terms of the link between disease transmission and flies. The results indicated that the majority had poor knowledge level on the mechanism of transmission of the disease through the flies (Mtuy *et al.*, 2019). Some of the participants assumed that flies had to bite a body part or the eyes or the flies get into the nose and later to the eyes leading to trachoma. Some of the respondents argued that infected children had dead flies in their eyes at birth, which led to eye disease. Besides, others narrated that during the rainy season, there is adequate milk during calving season; thus, the number of flies increase hence more kids got trachoma (Mtuy *et al.*, 2021).

Research Gaps

Many studies, including those in Tanzania and Ethiopia, reveal that a substantial proportion of participants lack a clear understanding of how trachoma is transmitted, especially through flies. In northern Tanzania, respondents demonstrated misconceptions about the transmission process, such as assuming that flies need to bite a body part or enter the nose to cause the disease (Mtuy *et al.*, 2019). This knowledge gap is a major barrier to effective prevention strategies. The current study will focus on identifying caregivers' understanding of how flies transmit trachoma and address these misconceptions to improve preventive practices. While previous studies have primarily focused on the general population's knowledge about trachoma, limited attention has been given to caregivers' specific knowledge level regarding the disease, especially in the context of children aged 1-9 years. The caregivers play a pivotal role in ensuring that children receive timely treatment and preventive care. The current study will address this gap by focusing specifically on caregivers in Kajiado County, assessing their knowledge of trachoma control and the practical implications for children's health. The study

in Kajiado revealed that while participants were aware of trachoma as an eye disease, 60% of individuals suffering from trichiasis (a severe stage of trachoma) had no knowledge about the disease's cause (Parsimej et al., 2016). By addressing these gaps, the current study will contribute to a more comprehensive understanding of caregivers' knowledge levels regarding trachoma control, offering practical insights for improving prevention and treatment strategies in Kajiado County, Kenya.

METHODOLOGY

A community-based cross-sectional, analytical research design was used in this study. This investigation was conducted in Kimana Sub-location, Kajiado South Sub-County which has an approximate land area of 21,871 KM². Population included all caregivers (13-49 years) of children aged 0-9 years in Kajiado South. The research participants and investigation region were chosen using a multistage sampling method with multiple phases. First, Kajiado County was selected because it is a trachoma endemic area and because it has one of the highest prevalence of the disease. Second, considering Kajiado South Sub-County possesses one of the largest illness incidence rates in Kajiado County, purposive sampling was utilized to choose it. Thirdly, simple random sampling was selected one ward in the sub-county. At this point, Kimana Ward was selected. To select the household, the researcher used systematic sampling. Every third household was selected. The sample size determination formula by Fisher *et al.* (1998) was utilized. Due to non-responsive rate or missing values, more than 10% was added

However, the researcher collected a sample size of 428 people. Guided questionnaires were designed in a manner that it contained both inquiries that were open and closed-ended. FGDs were conducted in the study areas targeting caregivers of children between 1 and 9 years old. Key Informants Interviews were used to collect more information from government officials (medical officers, the ophthalmic officers, nurses, public health officers, WASH officers) from the county government of Kajiado and National government especially those dealing with trachoma control and elimination in the Division of Neglected Tropical Diseases. The research gathered both qualitative and quantitative data from caregivers. Qualitative was gathered through the KIIs and FGDs. The researcher gathered data through recording of audios and taking notes from the interviews. For quantitative data, investigator administered questionnaire.

The process of data analysis started with cleaning, coding, and analyzing of data collected. The quantitative information was evaluated using SPSS version 25.0. Inferential and descriptive statistics was analyzed. Descriptive statistics, standard deviation, percentages, median, mean, and frequencies. Other descriptive statistics that were used were Chi square test. Inferential statistics included logistic regression analysis. On the other hand, qualitative data was evaluated through thematic analysis. Recorded audio information was transcribed into words, translated into English, then coded and structured into themes then presented into research objectives. Before the data collection, research approval was provided by the researcher from relevant institutions such as Kenyatta University Graduate School while KU Ethical Review Committee provided Ethical clearance certificate. NACOSTI provided research permit.

Table 1: Criterion for Determining Knowledge Level

Knowledge level	Indicator
Above mean	Highest/Good
Below mean	Lowest/poor

RESULTS

The majority (94.6%) of the respondents knew that observing personal hygiene such as washing face was important in the control of trachoma. Besides, 92.3% knew that avoiding sharing of towels and bathing water helps in preventing trachoma infections. The majority of those who participated (90.2%) were aware of the indications of trachoma illness, which include itchy, red, and tear-filled eyes in children, while 88.1% were aware that the disease was indicated by irritated eyes and inward-spinning eyelashes. Furthermore, 91.8% of those who took part were aware that sorcery does not constitute the origin of the sickness, although 83.6% were aware that flies can spread the infection from person to person. The majority 68.5 percent knew that trachoma is not an inherited disease while 63.6% knew that trachoma-infected children were not born with it as highlighted in Table 2.

Table 2: Knowledge Scores of Study Participants

Questions	Correct Answer	Frequency	Percent (%)
Observing personal hygiene including face washing control trachoma infection	Yes	405	94.6
Not sharing towels and bathing water helps to control trachoma transmission	Yes	395	92.3
Teary, itchy, and red eyes among children is a sign of trachoma infection	Yes	386	90.2
Irritated eyes with eyelashes spinning inward and inflaming the eyeballs is a sign of infection	Yes	377	88.1
Flies are responsible for trachoma disease transmission	Yes	358	83.6
Trachoma is caused by witchcraft	No	393	91.8
Trachoma is caused by hereditary	No	293	68.5
Trachoma-infected children were born with eye disease	No	272	63.6

Mean knowledge level = 6.73 ± 1.50 (standard deviation). The mean knowledge level of the caregivers was 6.73 with a standard deviation of 1.50. High knowledge level (above the mean) while those with poor knowledge level (were below the mean score). Notably, 63.1% of the respondents scored above the mean while 36.9% scored below the mean (low knowledge level). Table 3 highlights this information.

Table 3: Knowledge Level

Knowledge level	Frequency	Percent
Low knowledge level (below mean score 6.73)	158	36.9
High knowledge level (above mean score 6.73)	270	63.1
Totals	428	100.0

On knowledge level, caregivers with high knowledge level of trachoma were 0.163 less probable to follow effective trachoma preventative measures, given a likelihood ratio of 0.163 and 95 CI ranging from 0.075 to 0.353. This meant that more people with high knowledge level on trachoma had poor prevention practices.

Association between Caregivers' Knowledge level and practices towards trachoma control and prevention

A substantial statistical disparity in the investigation's individuals' expertise and trachoma preventive measures was found using the Chi square test (P-value = <0.001, Chi Square (χ^2) (df=5) = 31.68). Thus, as shown in Table 4, the investigation's respondents' understanding of the topic had a substantial impact on the trachoma preventive activities of caregivers.

Null hypothesis: there is no significant association between knowledge level and trachoma prevention practices.

Null hypothesis was rejected because chi square test result indicated an association between knowledge level and prevention practices (P<0.001).

Table 4: Association Level between Practices and Knowledge Level on Trachoma

Variables	Poor Practice n(%)	Good Practice n(%)	Chi-Square (χ^2)	P-value (0.05)
No. of Participants	96 (22.4)	332 (77.6)		
Knowledge level			$\chi^2=31.68$	<0.001
Low knowledge level	12 (7.6)	146 (92.4)	df=1	
High knowledge level	84 (31.1)	186 (68.9)		

DISCUSSIONS, CONCLUSION AND RECOMMENDATIONS

Discussion

The investigation showed that 63.1% of respondents had high knowledge levels of trachoma prevention practices, scoring above the mean (6.73 ± 1.50). These findings are consistent with studies in rural Tigray, Ethiopia, where 51% of participants scored above the mean (6.79), and in South Gondar, Northwest Ethiopia, where 71.5% of primary school learners demonstrated strong knowledge of trachoma transmission and prevention (Yirdaw & Tegegne, 2024). Similarly, a Nigerian study reported that 57.4% of participants scored above the mean, indicating high knowledge levels (Yafanna et al., 2022).

However, despite this relatively high knowledge, the study revealed that knowledge alone did not consistently predict good preventive practices. This Knowledge–Action Gap suggests that structural and cultural barriers play a significant role. For instance, limited access to clean water, long distances to health facilities, and inadequate sanitation infrastructure constrain caregivers' ability to translate knowledge into action. Cultural practices, such as keeping livestock close to Manyattas, further perpetuate fly breeding and increase transmission risk, even when caregivers are aware of the dangers. In addition, entrenched beliefs and social norms may resist behavioral change, undermining the effectiveness of health education.

Therefore, while awareness campaigns remain essential, they must be complemented by interventions that address these systemic barriers. Strengthening water, sanitation, and hygiene (WASH) infrastructure, improving access to clinics, and engaging communities to challenge cultural practices that sustain transmission are critical to bridging the gap between knowledge and practice. This underscores that trachoma elimination requires not only education but also structural and cultural transformation to enable caregivers to act on what they know.

Conclusion

This investigation established that while the majority of caregivers of children aged 1–9 years in Kajiado County demonstrated high knowledge of trachoma causes, transmission, and risk factors, this knowledge did not consistently translate into effective preventive practices. The significant association between knowledge and practice underscores that awareness is necessary but insufficient for disease control. The persistence of poor practices despite high levels of knowledge highlights a Knowledge–Action Gap, driven by structural barriers such as limited access to clean water, inadequate sanitation facilities, and long distances to health services, as well as by cultural practices that sustain transmission.

These findings suggest that trachoma elimination strategies must move beyond education alone. Interventions should integrate health education with systemic improvements in WASH infrastructure, community engagement to challenge entrenched cultural norms, and policies that reduce environmental risk factors. By addressing both the informational and structural dimensions of trachoma control, caregivers can be empowered not only to know but also to act, thereby strengthening the effectiveness of the SAFE strategy and accelerating progress toward trachoma elimination in endemic regions.

Recommendations

To effectively translate caregiver knowledge into sustainable trachoma control, interventions must prioritize the creation of enabling environments. Beyond awareness campaigns, policies should focus on expanding access to clean water, improving sanitation infrastructure, and reducing environmental risk factors that sustain transmission. Strengthening WASH facilities in schools and communities, ensuring proximity of clinics and eye care services, and supporting households with practical solutions for waste management are critical. In addition, culturally sensitive community engagement is needed to address practices such as keeping livestock near Manyattas, which perpetuate fly breeding. By combining education with structural improvements and cultural adaptation, caregivers can be empowered not only to know but also to act, thereby bridging the Knowledge–Action Gap and accelerating trachoma elimination in endemic regions.

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