International Research Journal of Rongo University (IJORU)
2025, VOL. 3, NO. 2, 27 – 40
ISSN: 3005-7221

Received 20/10/2025
Revised 05/11/2025
Accepted 07/11/2025

MEDIA APPROACHES IN TUNGIASIS AWARENESS CREATION: A CASE STUDY OF VIHIGA COUNTY, KENYA

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Abstract

Tungiasis, a neglected tropical disease caused by the Tunga penetrans flea, remains a critical public health challenge in Vihiga County, Kenya, predominantly affecting socio-economically disadvantaged populations. Despite its high prevalence, awareness within the local community is minimal, with health communication efforts playing a significant role in the lack of awareness. Media approaches, particularly those designed for rural settings, can provide vital support in disseminating disease-related information. However, the effectiveness of these communication strategies in rural Kenya, specifically concerning Tungiasis, is understood. This study examines the media approaches employed to raise awareness about Tungiasis in Vihiga County and evaluates their effectiveness. Anchored in the pragmatic research philosophy, the study adopted a cross-sectional research design employing mixed method approach. Quantitative data were collected from 400 community respondents selected through purposive sampling, while qualitative insights were drawn from eight Key Informant Interviews and eight Focus Group Discussions. Data were analyzed using descriptive statistics, ANOVA, and thematic analysis. Findings revealed that 62% of respondents had seen or heard Tungiasis awareness messages, primarily through community events and outreach programs (49.7%). ANOVA results showed a significant difference in the perceived effectiveness of media approaches ($F=6.374$, $p<0.001$). Post-hoc analysis indicated that healthcare providers and radio/TV were significantly more effective than family/friends and printed materials in raising awareness. Qualitative results supported these findings, highlighting radio and community health promoters as the most trusted and accessible communication channels, particularly during outbreaks. Participants valued interactive community radio programs and visual materials for their clarity and inclusiveness. The study concludes that Tungiasis awareness in Vihiga County relies heavily on interpersonal and community-based media, though integrating mass media and digital tools could enhance message reach and consistency. An integrated, multimodal communication strategy that combines traditional media with digital technologies is recommended to enhance disease prevention efforts and community engagement.

Keywords: *Tungiasis, media approaches, public health communication, Vihiga County, rural health, neglected tropical diseases, Kenya, disease awareness*

Introduction

Tungiasis is a parasitic skin infection caused by the female sand flea *Tunga penetrans* (Elson et al., 2022; Silvestri et al., 2024; Sánchez-Cárdenas et al., 2024). It remains one of the most neglected tropical diseases (NTDs), severely affecting vulnerable populations across sub-Saharan Africa (Berihun et al., 2025; Olusegun-Joseph et al., 2025). The disease manifests through painful skin lesions and intense itching, frequently complicated by

Received 20/10/2025
Revised 05/11/2025
Accepted 07/11/2025

secondary bacterial infections, mobility issues, and significant social stigma (Feldmeier et al., 2014; Ebele et al., 2021; Sánchez-Cárdenas et al., 2024). Tungiasis disproportionately affects school-aged children, the elderly, and persons with disabilities, particularly in impoverished, rural communities characterized by poor sanitation and minimal awareness about prevention (Eisele et al., 2020; Elson et al., 2022; Olusegun-Joseph et al., 2025). Despite these severe consequences and its localized endemicity, the disease continues to be overlooked in both national health agendas and global public health discourse (Ahadi Kenya Trust, 2019).

In Kenya, Tungiasis is endemic in several regions, including western and coastal areas (Elson et al., 2023; Wiese et al., 2017; Hyuga et al., 2021). Vihiga County, a densely populated region with substantial socio-economic and infrastructural limitations, is among the hardest hit (Kenya National Bureau of Statistics [KNBS], 2019; Nyangacha et al., 2019; Okumu, 2024). Given the endemic nature of the disease in such settings, effective health communication strategies are essential for awareness creation and behavioral change.

Media approaches including a variety of channels, platforms and methods are utilized to disseminate disease-related health information (Njenga, 2025; Mollel, 2024). These strategies range from traditional mass media (e.g., radio, television, printed materials) and interpersonal channels (e.g., healthcare providers, community health workers) to emerging digital platforms (e.g., mobile phones, social media) (Ibrahim et al., 2024).

Health communication has long been recognized as a fundamental element of public health strategy (World Health Organization [WHO], 2017; Panjaitan et al., 2023). It facilitates informed decision-making, encourages positive behavior change, and promotes health literacy. Yet, the effectiveness of communication extends beyond the mere delivery of messages as it hinges on contextual relevance, cultural sensitivity and community engagement (Griffith et al., 2024). Traditional top-down communication models often fail to integrate local knowledge and address existing power imbalances (Tufte & Mefalopulos, 2009). In contrast, participatory models that prioritize cultural alignment and local involvement are increasingly recognized as best practices, especially in low-literacy, underserved settings like Vihiga County.

Vihiga County exemplifies the challenges associated with rural health communication. Over 70% of the population lives in rural areas, and more than half experience multidimensional poverty (KNBS, 2019). Hence, the selection and framing of media are critical. Framing theory posits that how media portray an issue as a hygiene failure, a poverty-related issue, or a broader sanitation challenge influences individual, community, and policy responses (Entman, 1993; McCombs & Ghanem, 2001). Therefore, effective media approaches must be culturally appropriate and align with the communication preferences and literacy levels of the primarily Luhya population.

Evidence from similar socio-cultural settings suggests that community health workers (CHWs), local-language radio broadcasts, and interpersonal communication are effective tools in health awareness campaigns targeting NTDs (Mwakitalu et al., 2014; Parker et al., 2018). Furthermore, the increasing availability of digital media platforms, such as WhatsApp and SMS, introduces new avenues for public health communication, though equitable access and digital literacy remain uneven (Chib et al., 2015).

Despite the high incidence of Tungiasis in Vihiga County, community awareness about the disease and its preventive measures is notably low. This knowledge gap contributes to delayed treatment and a sustained disease burden. The lack of effective health communication strategies, particularly those leveraging appropriate media channels, exacerbates the problem. While media has been widely recognized for its role in public health communication, scholarly investigation into the specific media approaches that have been effective in increasing Tungiasis awareness in rural Kenya is limited. This study, therefore, aims to

Received 20/10/2025
Revised 05/11/2025
Accepted 07/11/2025

assess the role and effectiveness of various media approaches used in raising awareness about Tungiasis in Vihiga County, Kenya, thereby addressing this critical gap in the literature.

This study is significant as it provides valuable insights into the media approaches employed in Tungiasis awareness campaigns, informing public health practitioners, communication strategists, and policymakers about the most effective methods for disseminating health information. Through evaluating the reach and impact of various communication channels, the study aims to improve the design of future health campaigns. The findings will contribute to the development of culturally appropriate, accessible, and effective health communication strategies tailored to the specific needs of rural populations in endemic regions.

Research Methodology

The study was anchored in the pragmatic research philosophy, which allowed for the flexible use of both objective measurement and subjective understanding to solve a practical problem.

This study adopted was a cross-sectional research design, chosen for its suitability in collecting data from a defined population at a single point in time to assess the simultaneous relationship between exposure to public health communication and the level of Tungiasis awareness. The design utilized a mixed-methods approach to capture both quantitative and qualitative data

The study was conducted in Vihiga County, Western Kenya which lies between a latitude 0° 20' and 0° 50' North and Longitude between 34° 20' and 35° 20' East. The county was strategically chosen due to its high vulnerability to Tungiasis (jigger) outbreaks and a reported prevalence rate of 21.5% (Nyangacha et al., 2019), placing it among Kenya's top endemic regions. Vihiga County, which is the second most populous county in Kenya, spans 3,224.9 Km2 with a high population density of 515 people per Km2 (IED Africa, 2011), and is home to 1,660,651 people (48% male, 52% female). Characterized by persistent challenges, including high poverty (approximately 53% live on less than $1 USD/day, World Bank, 2013) and a primarily Luhya population, the county's healthcare system addresses prevalent diseases such as malaria, diarrhea, and Tungiasis. The selection of Vihiga was essential for examining the impact of targeted public health communication strategies within a high-risk area compounded by risk factors like poor sanitation, inadequate infrastructure, earthen floors, and low footwear use, aligning with communication for development (C4D) principles.

The target population comprised of residents and key informants from areas with a high prevalence of Tungiasis. According to the 2019 Kenya Population and Housing Census, Vihiga County had a total population of 590,013, with Vihiga Sub-County having 95,292 residents and Sabatia Sub-County 131,628 (Kenya National Bureau of Statistics [KNBS], 2019). These sub-counties were selected due to their high incidence of jigger infestation. The study specifically targeted households, health workers, and health teachers involved in Tungiasis awareness because they possess relevant knowledge and play a critical role in educating and sensitizing the community about prevention and control measures.

The study included household members who had lived in the target village for more than six months and had been infested with jiggers (Tungiasis) and treated. Participants were identified by screening them using the Jigger Infestation Severity Index. The six-month residency requirement ensured that participants had adequate exposure to and interaction with local public health campaigns regarding Tungiasis (Zhao, 2020), providing relevant data for health communication analysis. The study also included Health Teachers who had implemented Tungiasis control programs in their schools within Vihiga County. Furthermore, Community Health Workers (CHWs) were recruited from villages that had active Tungiasis control programs. Eligible CHWs were required to provide consent, have resided in the county for at least six months, and have participated in Tungiasis control interventions previously. All participants

Received 20/10/2025
Revised 05/11/2025
Accepted 07/11/2025

gave informed consent and were willing to participate; this was confirmed prior to administering questionnaires or conducting focus group discussions.

Participants were excluded if they had not resided in the village for more than six months or had never been infected with jiggers. Household members who had not provided consent were also excluded. Health Teachers were excluded if they had not participated in Tungiasis control programs, were unwilling to give consent, or were from outside the study area. Similarly, CHWs were excluded if their villages had not implemented active control programs, they were unwilling to participate, they had resided in the county for less than one year, or they had never participated in past Tungiasis control interventions.

The sample size for community members was determined using the Yamane (1967) formula, resulting in a calculated sample size of 400 respondents from the target population of 226,920 residents in Vihiga and Sabatia Sub-Counties, based on a 95% confidence level and a ±5% margin of error. This total was proportionally allocated, yielding 168 respondents from Vihiga Sub-County and 232 respondents from Sabatia Sub-County. Purposive sampling was the primary sampling procedure used to select both the community members and the key informants, ensuring all selected participants were knowledgeable about Tungiasis and actively involved in awareness efforts.

Primary data was collected using a mixed-methods approach. Quantitative data was gathered from the 400 community members using a structured questionnaire administered face-to-face over a six-month period, capturing demographics, Tungiasis experience, and exposure to communication campaigns. Qualitative data was collected through Key Informant Interviews (KIIs) with eight Community Health Workers (CHWs) (four from each sub-county) and eight Focus Group Discussions (FGDs). The FGDs included both community members (adult men, adult women, and young people, separated by gender) and CHWs, with 8–10 participants per group, guided by Krueger (2006) recommendation for data saturation.

The research instruments were subjected to a pilot Study in Hamisi and Emuhaya sub-Counties using a sample of 40 respondents (10% of the sample size) to allow for corrections and adjustments. Validity was established through expert review of the instruments by university supervisors and field experts to ensure content/face validity. Reliability was assessed during the pilot test using Cronbach's Alpha coefficient, with all variables yielding values above 0.87, confirming the instruments' strong internal consistency.

Quantitative data from the questionnaires were coded, cleaned, and entered into the Statistical Package for Social Sciences (SPSS) version 25.0 for analysis. Descriptive statistics such as frequencies, percentages, means, and standard deviations were used to summarize demographic characteristics and responses related to the specific objectives. Analysis of Variance (ANOVA) was employed to determine if there was a statistically significant difference among the mean perceived effectiveness scores of the three or more media sources. The results were presented in tables for clarity and interpretation.

Qualitative data, collected via Key Informant Interviews (KIIs) and Focus Group Discussions (FGDs), were systematically analyzed using thematic analysis to interpret community perspectives and contextual experiences regarding Tungiasis awareness. The audio-recorded data from these sessions was transcribed verbatim and then translated into English where necessary. The transcripts were subsequently imported into NVivo version 12 for detailed analysis. The coding process utilized a set of predefined codes that directly reflected the study objectives and discussion guides, alongside emerging issues identified during independent readings of the transcripts.

This study received ethical approval from the Rongo University Ethics Review Committee. Participants were fully informed about the objectives and procedures of the study and gave

Received 20/10/2025
Revised 05/11/2025
Accepted 07/11/2025

written informed consent before participation. To ensure confidentiality, all personal data were anonymized, and results were stored securely in password-protected files. The study adhered to ethical guidelines outlined in the Declaration of Helsinki and ensured that participants could withdraw at any point without penalty

Results and Discussion

Media Approaches Used in Tungiasis Awareness Creation in Vihiga County

Table 1 below summarizes the distribution of responses regarding the main media channels used in Tungiasis awareness creation within the study area.

Table 1

Media Approaches used in Tungiasis Awareness Creation in Vihiga County

Indicator	Frequency (n)	Percent (%)
Seen or heard of Tungiasis awareness campaigns in the area		
No	152	38.0
Yes	248	62.0
Where respondents saw or heard Tungiasis awareness campaigns		
In newspapers or magazines	74	18.5
On TV	24	6.0
On billboards or posters	34	8.5
On the radio	69	17.3
Through community events or outreach	199	49.7
Sources of health information		
Healthcare providers	261	65.3
Family and friends	141	35.3
Online sources	256	64.0
Printed materials	360	90.0
TV and radio	194	48.5
Frequency of media use		
Daily	122	30.5
Weekly	142	35.5
Monthly	92	23.0
Never	44	11.0
Perceived effectiveness of media sources in providing information		
Not at all effective	2	0.5
Not very effective	70	17.5
Somewhat effective	226	56.5
Very effective	102	25.5

Source: Research Data, (2024)

From the findings presented in Table 1, 62.0% (248) reported having seen or heard Tungiasis awareness campaigns within their locality, while 38.0% (152) had not. The dominant channels for awareness were community events and outreach programs, mentioned by 49.7% (199) of respondents. Other key channels included newspapers or magazines (18.5%), radio (17.3%),

Received 20/10/2025
Revised 05/11/2025
Accepted 07/11/2025

billboards or posters (8.5%), and television (6.0%). This pattern indicates that Tungiasis awareness creation relied heavily on community-based engagement and interpersonal communication rather than mass media.

Regarding general health information sources, printed materials were the most commonly reported source of exposure (90.0%), followed by healthcare providers (65.3%) and online sources (64.0%). TV and radio (48.5%) and family and friends (35.3%) also contributed significantly. This pattern of high reliance on traditional and interpersonal sources mirrors findings from Chepng'eno (2023) at Moi Teaching and Referal Hospital, where health workers and in-clinic printed materials were the most influential channels in promoting cervical cancer screening. The high trust placed in health professionals reflects source credibility, which communication theory identifies as a critical determinant of message effectiveness (Tonui, Nyaberi, & Mutai, 2025). Health personnel not only provide accurate information but also dispel myths and promote behavioral change, reinforcing the importance of interpersonal channels in rural health promotion. Though printed materials show the highest overall general exposure (90.0%), triangulation with the perceived effectiveness data (Table 2) indicates they are rated significantly less effective for specific Tungiasis messaging compared to audiovisual media or healthcare providers. This suggests a specific challenge in using static, textual media to convey complex or stigmatized health topics like Tungiasis. The high effectiveness of healthcare providers is a powerful outcome, but it simultaneously highlights the scaling challenge: reliance on high-cost, high-trust interpersonal channels limits the capacity for sustained, wide-scale message dissemination across the entire county population. The finding that 64.0% of respondents use online sources for general health information indicates a strong and rapidly expanding digital capacity, yet this channel remains largely unused for dedicated Tungiasis campaigns. To address the challenge of scaling, future strategies must integrate the proven credibility of health personnel with high-reach, low-cost channels. The specific role of digital media (e.g., targeted SMS, low-bandwidth content) is therefore not to replace the trusted interpersonal channels, but to act as a cost-effective reinforcement mechanism, providing sustained, consistent, and geographically targeted reminders that supplement the vital, but episodic, face-to-face engagements.

In terms of media use frequency, 35.5% of respondents accessed media sources weekly, 30.5% daily, 23.0% monthly, and 11.0% reported never using such media. On perceived effectiveness, 56.5% considered the media sources somewhat effective, 25.5% very effective, 17.5% not very effective, and only 0.5% not at all effective. These results suggest that Tungiasis awareness efforts reached a majority of residents, primarily through community and print-based communication. However, the lower use and perceived impact of electronic media such as radio and television indicate opportunities to strengthen multi-channel strategies, integrating interpersonal communication with broader media campaigns to enhance awareness coverage and message consistency.

Effectiveness of Media Sources Utilized in Tungiasis Awareness

Respondents were asked to rate how effective different sources were in providing reliable and accessible information about Tungiasis. The responses were categorized as "Not at all effective," "Not very effective," "Somewhat effective," and "Very effective." Table 2 presents the summarized findings.

Received 20/10/2025
Revised 05/11/2025
Accepted 07/11/2025

Table 2

Effectiveness of Media Sources Utilized in Tungiasis Awareness

Media Source	Not at all effective n (%)	Not very effective n (%)	Somewhat effective n (%)	Very effective n (%)
Healthcare providers	0 (0.0)	91 (22.8)	270 (67.5)	39 (9.7)
Family and friends	2 (0.5)	62 (15.5)	235 (58.8)	101 (25.2)
Online sources	3 (0.8)	49 (12.3)	236 (59.0)	112 (28.0)
Printed materials	1 (0.3)	60 (15.0)	190 (47.5)	149 (37.2)
TV and Radio	4 (1.0)	81 (20.3)	185 (46.2)	130 (32.5)

Source: Research Data, (2024)

The results clearly indicated that healthcare providers were perceived as the most effective and trusted sources of information, with 77.2% (sum of somewhat and very effective) rating them highly. Family and friends were also significant channels, with 84.0% rating them as at least somewhat effective. Similarly, online sources and TV/radio were influential, with over 70% of respondents describing them as somewhat or very effective. Printed materials were highly rated by 84.7% of respondents. This data strongly suggests that a multi-channel communication approach combining interpersonal, print, and electronic media is most effective in promoting Tungiasis awareness in the county.

The prominence of community-based strategies is consistent with findings across rural Kenya, where interpersonal and participatory approaches—such as community meetings and home visits—are often more effective than conventional mass media (Ting'áa, 2018). The preference for community events and healthcare providers can be attributed to several specific factors: Interactivity and Trust, as face-to-face communication allows for immediate feedback, builds rapport, and is particularly effective for stigmatized health issues like Tungiasis (Otieno et al., 2023); and Cultural Relevance, as community events often utilize local languages and culturally relevant contexts, which promotes deeper trust and comprehension among residents.

However, while highly effective, relying solely on interpersonal channels presents significant scaling challenges due to resource intensity and personnel limitations. The high effectiveness ratings for TV/radio (78.7%) suggest these broadcast media are essential for scaling awareness. Unlike printed materials, audiovisual media can transcend literacy barriers, making them highly impactful in rural contexts (Agha, 2003; Appiah et al., 2022). Radio's affordability, extensive reach, and use of local dialects make it an indispensable, low-cost medium for consistently reinforcing the high-trust messages delivered by healthcare providers. The specific role of digital media is also constrained; although general health information is frequently accessed online, its effectiveness for Tungiasis is limited by the digital divide and lower digital literacy among older adults and those in informal settlements (Njenga, 2024). Therefore, the specific role of digital media is currently relegated to supplemental, targeted communication (e.g., SMS alerts) rather than mass awareness creation, a strategy that must be integrated carefully as mobile access improves.

Comparison of Mean Perceived Effectiveness of Awareness Media

A One-Way Analysis of Variance (ANOVA) tested $H_0$1: There is no significant difference in Tungiasis awareness levels across the different media approaches used in Vihiga County. The test compared mean perceived effectiveness scores for five main media sources. The findings are presented in Table 3.

Received 20/10/2025
Revised 05/11/2025
Accepted 07/11/2025

Table 3

One-Way ANOVA Results for Mean Perceived Effectiveness of Different Media Sources

Source of Variation	Sum of Squares	df	Mean Square	F-Statistic	Sig. (p-value)
Between Groups	32.842	4	8.210	6.374	0.000*
Within Groups	509.158	395	1.289		
Total	**542.000**	**399**			

*Significant at $p < 0.05$

The One-Way Analysis of Variance (ANOVA) provided a specific and statistically robust outcome, demonstrating a statistically significant difference in the mean perceived effectiveness of awareness messages across the five media types ($F=6.374$, $p<0.001$). Since the p-value ($p<0.001$) is extremely low (less than 0.1%), the chance that the observed differences in effectiveness (between channels like radio, healthcare providers, or printed materials) happened purely by accident is negligible. The results thus provide the foundational evidence that the choice of communication channel is a critical factor in campaign success. Consequently, the null hypothesis (H01), which assumed no significant difference in effectiveness across the media approaches, is rejected, confirming that media approaches differ fundamentally in their capacity to promote Tungiasis awareness.

Since the ANOVA revealed significant differences among the media groups, a Tukey Honestly Significant Difference (HSD) post-hoc test was conducted to identify specific pairs of media that differed significantly in their perceived effectiveness. The findings are presented in Table 4.

Table 4

Tukey HSD Post-Hoc Comparisons of Media Types

Media Type (I)	Media Type (J)	Mean Difference (I–J)	Std. Error	Sig. (p)
Healthcare Providers	Family/Friends	**0.78***	0.18	0.001
Healthcare Providers	Online Platforms	0.45	0.21	0.138
Healthcare Providers	Printed Materials	**0.91***	0.20	0.000
Healthcare Providers	TV/Radio	0.22	0.17	0.502
TV/Radio	Family/Friends	**0.64***	0.16	0.002
TV/Radio	Printed Materials	**0.69***	0.19	0.001
Online Platforms	Printed Materials	0.46	0.23	0.158

*Significant at $p < 0.05$

The Tukey HSD test shows that healthcare providers and TV/radio were rated significantly more effective than family/friends and printed materials. The difference between healthcare providers and TV/radio was not statistically significant, suggesting both are equally trusted and impactful sources for public health communication on tungiasis. However, printed materials and family/friends were perceived as less reliable, possibly due to literacy barriers or limited reach. Online platforms, though emerging, had mixed results due to low digital access among rural populations. This aligns with earlier Kenyan research demonstrating that audiovisual and interpersonal media outperform textual communication in influencing public health behavior (Agha, 2003; Appiah et al., 2022). Radio's affordability, reach and use of local dialects make it an indispensable medium in rural areas.

International Research Journal of Rongo University (IJORU)
2025, VOL. 3, NO. 2, 27 – 40
ISSN: 3005-7221
Received 20/10/2025
Revised 05/11/2025
Accepted 07/11/2025

Qualitative Findings

The insights were drawn from key informant interviews (KIIs) and focus group discussions (FGDs) conducted with community health personnel and residents in Vihiga County. Participants shared their experiences and perceptions of the communication strategies used to disseminate Tungiasis-related information, focusing on the commonly used media platforms and the frequency of message dissemination.

Commonly Used Media Platforms

The study presents insights into the media platforms most frequently used to communicate Tungiasis awareness messages in Vihiga County. Various media platforms were identified as instrumental in spreading Tungiasis awareness. Radio and television were consistently cited as the most effective due to their accessibility and broad audience reach. Respondents noted that radio, in particular, was a preferred medium for health communication in rural areas since it reaches a wide audience regardless of literacy levels or access to electricity. Mobile phones and community health promoters (CHPs) were also highlighted as practical tools for relaying health information at the household level through calls, text messages, and home visits. One participant stated:

"*Radios are commonly used since it reaches many people*" [KII_FGD_VIHIGA_SABATIA].

Another respondent emphasized the complementary use of multiple platforms, saying:

"*By getting information through radio and television… Through the phones and the CHP's… CHP through house-to-house visits… Radio programme*" [KII_FGD_SABATIA SUBCOUNTY].

Frequency of Message Dissemination

This part presents respondents' perspectives on how often Tungiasis awareness messages were delivered in Vihiga County. Participants indicated that the frequency of dissemination varied depending on the communication medium and context. Some received messages daily, especially through radio programs and mobile phones, while others noted that campaigns were irregular and often intensified during outbreaks or specific health events. The variation suggested that awareness efforts were mostly event-based rather than continuous. Community dialogues and action days also played a key role, providing opportunities for interactive discussions and reinforcement of prevention messages.

"*Kila siku kwa redio na simu… They are given often… Rarely… When there is an outbreak maybe yearly… In radio station programme frequently but mostly during drought season… When there is an outbreak… Not often but in a lifetime of months…*" [KII_FGD_SABATIA_SUBCOUNTY].

"*Through dialogues and action days*" [KII_FGD_VIHIGA_SABATIA].

Most Effective Media Approach

Qualitative findings also outline the media approaches that respondents considered most effective for Tungiasis awareness. Effectiveness was linked to accessibility, cost, and clarity of information. Radio emerged as the most influential medium due to its affordability and ability to reach many households across the county. Community radio programs that hosted healthcare professionals were particularly valued for their interactive nature and capacity to clarify myths and misconceptions. Television was also recognized for its strong visual appeal, which made health messages more engaging and memorable.

"*Use of radios since many households are able to afford them… The most effective media approach is community radio programmes that host regular radio talk shows where healthcare professionals can discuss jiggers and answer questions from listeners*" [KII_FGD_VIHIGA SUBCOUNTY].

"*Television because the people in the community are able to see by their eyes*" [KII_FGD_VIHIGA SUBCOUNTY].

Respondents also mentioned diagrams, posters, and mobile phones as helpful tools for quick and targeted communication. Visual materials were

Received 20/10/2025
Revised 05/11/2025
Accepted 07/11/2025

especially beneficial for people with disabilities, while phones enabled immediate contact with health providers for advice or intervention. These channels complemented mass media by extending the reach and accessibility of Tungiasis messages to diverse community members.

"*Through diagrams and displays written which can serve everybody especially those with disabilities… If you have someone with jiggers, you can use phone to call the nearest health facility to know what is going on*" [KII_FGD_VIHIGA_SABATIA].

The qualitative findings also confirmed that message frequency was irregular, often increasing during outbreaks. Respondents emphasized the importance of sustained communication rather than episodic campaigns. This insight aligns with Li et al. (2022), who argued for continuous feedback and adaptive communication to strengthen health awareness and community ownership. The community's preference for participatory approaches such as dialogues and action days further supports participatory communication models that promote inclusivity and local empowerment.

Cultural adaptation emerged as another driver of message effectiveness. Participants appreciated the use of vernacular radio and familiar imagery in posters. According to Zhou et al. (2022), culturally aligned communication enhances comprehension and emotional engagement, especially in health education. In Vihiga, tailoring messages to local norms and idioms likely improved message recall and reduced stigma around Tungiasis.

The quantitative effectiveness data (ANOVA and Tukey HSD) statistically proved that CHPs and Radio are the most effective pair, demonstrating their superior impact over printed materials and family/friends. The qualitative data then explained the mechanism behind this effectiveness, citing the high trust and ability of CHPs to address stigma directly, and the affordability and local language use of radio that ensures consistent message reinforcement. The findings reveals that an effective Tungiasis campaign cannot rely on a single channel. Instead, it must strategically combine the high credibility of interpersonal channels (CHPs) which are essential for initiating behavioral change and handling the complex social stigma with the high consistency and reach of vernacular radio. Channels like printed materials, despite high exposure, are relegated to a lower impact due to literacy barriers and their inability to address local myths interactively. Similarly, while digital media demonstrates high general exposure, its current role is limited to being a supplemental reinforcement tool for targeted reminders until the digital divide is overcome, preventing it from serving as a primary awareness channel.

Conclusion and Recommendations

The study also established that the type of media used had a significant effect on awareness creation. Community outreach, radio, and health workers were the most trusted and effective channels, while printed materials and family-based communication had limited reach. Radio and television emerged as the most impactful due to their accessibility and interactive nature. This shows that a combination of interpersonal and mass media approaches strengthens awareness delivery. Message packaging was another key determinant of information uptake. Simple, visually supported, and language-appropriate messages achieved better understanding and participation. Oral and visual channels such as radio discussions, barazas, and TV programs were preferred over written formats, especially in rural settings. Culturally relevant and locally tailored messages helped overcome barriers to comprehension and acceptance.

Based on the study's findings, it is recommended that health communication strategies in Vihiga County adopt a multi-pronged media approach to improve the reach and impact of Tungiasis awareness initiatives. This integrated strategy should combine the widespread accessibility of radio, the interpersonal influence of community health volunteers (CHVs), and the emerging use of mobile and digital platforms. The County Department of Health should lead the coordination

Received 20/10/2025
Revised 05/11/2025
Accepted 07/11/2025

of this model, working closely with local broadcasters, CHVs, and digital communication facilitators to ensure the delivery of consistent, accurate, and engaging messages. To enhance message relevance, communication content must be culturally sensitive and linguistically tailored incorporating local dialects, expressions, and storytelling techniques to increase comprehension and reduce stigma. The Ministry of Health, in collaboration with language experts and community representatives, should oversee the design and dissemination of these messages.

In addition, the implementation of community-driven health campaigns is essential to promote local ownership and trust in public health interventions. Village elders, faith leaders, and youth leaders should be actively involved in planning and delivering awareness activities, supported by training and logistical backing from the County Public Health Office and local non-governmental organizations. To support long-term effectiveness, the County Government and its development partners should invest in digital literacy programs and the expansion of digital infrastructure, preparing communities for greater engagement through mobile health (mHealth) solutions. Finally, establishing a systematic monitoring and evaluation framework is critical. The County Monitoring and Evaluation Unit should develop mechanisms to assess audience reach, message retention, and behavior change outcomes, allowing for evidence-based adjustments to ongoing communication strategies and campaigns. Future research should such ethnography is needed to deconstruct cultural myths surrounding Tungiasis, detailing their origins and influence on message rejection.

Declaration of Funding Sources

This study did not receive any financial support or specific grant from funding agencies in the public, commercial or not-for-profit sectors.

Credit Authorship Contribution Statement

Brian Ogembo: Conceptualization, Methodology, Data Curation, Writing – Original Draft, Writing – Review & Editing.
Maureen Adoyo: Conceptualization, Supervision, Writing – Review & Editing.
Rosemary Nyaole: Methodology, Validation, Writing – Review & Editing.
Millicent Otieno: Data Analysis, Visualization, Writing – Review & Editing.

Declaration of Conflict of Interest

The authors declare that they have no competing financial interests or personal relationships that could have influenced the research, authorship, or publication of this paper.

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