



Research Article

Assessing the Knowledge, Awareness, and Preventive Practices of Dengue Fever in Beled Hawo District, Somalia

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A B S T R A C T

Dengue fever is a viral infection transmitted by mosquitoes, particularly in tropical and sub-tropical environments. The rising prevalence of the disease is posing a significant threat to public health across Sub-Saharan Africa. The primary goal of the study is to evaluate the level of knowledge and awareness as well as the preventive measures implemented in the Beled Hawo district of Gedo, Somalia.

Methodology: A cross-sectional study design was used for the investigations, and a structured questionnaire was used to gather sociodemographic data as well as knowledge-based dengue fever treatment and prevention practices among the residents of Beled Hawo District.

Findings: The results indicate that a majority of 78.1% and 86.4% of the respondents were knowledgeable and had a reasonable understanding of the disease respectively. Notwithstanding this, a majority of them were mistaken about the peak biting period of the *Aedes* mosquito. In addition, 61 percent of responses identified fever as a typical disease symptom. Furthermore, some had the wrong impression of the preventive measures as more than 17% of those surveyed failed to mention environmental cleanup as a mitigating strategy.

The study results may be useful to local authorities and healthcare institutions as it provides information on the gravity of the dengue problem in particular pockets of Beled Hawo district, thus aid in informing them on necessary mitigation measures and local health programming strategies. The study may also inform policy makers at the Ministry of health and health departments. The study shall also contribute to the academia and serve as a source of literature in guiding future researches.

Keywords: Dengue, Knowledge, Practice, Awareness

Introduction

More than 125 countries have endemic areas for dengue

fever, making them the most prevalent mosquito-borne disease globally. A moderate fever to severe symptoms like

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hemorrhaging and shocks are indicative of an acute dengue infection. The Flavivirus family, which causes dengue fever, was first discovered in 1943 and 1945, respectively, in Japan and Hawaii. Dengue disease is brought on by one of the four distinct dengue serotypes (DENV1 to DENV4). The strains differ antigenically even though they are closely related and show significant genetic variability. Serotype-specific invulnerability does not exist, nor is there cross-security between them. The number of clear dengue contaminations estimated to have occurred worldwide in 2010 was 96 million. The highest concentration was in Asia and Africa, which accounted for 70% and 16% of all reported cases, respectively. There are more than 390 million reported cases each year, 294 million of which are obvious disorders that the larger healthcare system misses.¹

The Chinese described dengue-like symptoms in 992 AD and linked them to water and flying insects. Before the 20th century, little was known about the origins of viral diseases and the part that mosquitoes played in their development. *Aedes aegypti* (A. aegypti), the main arthropod vector for dengue, is colossal in Africa and other tropical regions where it emerged.

For the past fifty years, there have been sporadic dengue outbreaks in 22 different locations throughout the Sub-Saharan Africa. In particular, dengue incidents have been reported in Cape Verde (1992-1993), Comoros (1992-1993), Réunion (1977-1978), and the Seychelles (1977-1979). The East Africa stood out as the region most affected by the disease in 2009. Between 1992-1993, Djibouti also experienced a terrible flare-up and about 300,000 cases were recorded in the 5 episodes. Dengue fever is currently widespread in 34 African nations. Transmission is suggested by local health issues, confirmed cases at research facilities, and travelers returning from places where dengue fever is not endemic.¹

Scholars believe that the first dengue outbreak occurred in Durban, South Africa, in 1927, as per a retrospective serological investigation. In addition, there have been a number of isolated dengue outbreaks reported from 1964 to 1968 in Nigeria (DENV1 and 2), 1983 to 1985 in Mozambique (DENV3), 1984 in Sudan (DENV1 and 2), and 1986 in Senegal (DENV4). Over the past five decades, dengue outbreaks have become more widespread in sub-Saharan Africa, with other cases being reported from 22 different places worldwide. As a result, the illness is a typical epidemiological condition that has emerged as one of the major public health issue. It is primarily spread by certain vectors like *Aedes aegypti* and *Aedes albopictus*, who then transmit it to humans.²

With regard to Somalia, particularly in Mogadishu, the African Union Mission in Somalia (AMISOM) peacekeepers were the target of an acute febrile illness outbreak in June

2011 that claimed three lives. All of the tests were found to be negative for malaria using the practical tool of a blood smear. Moreover, the neighboring nations of Ethiopia and Kenya, have both reported cases of dengue fever. Due to a lack of access to clean drinking water, people use tankers to pour water into swimming pools so they can use them for two to three months at a time. This serves as the primary breeding ground for mosquitoes.

The disease's scientific manifestations can also include asymptomatic infection, reasonable flu-like symptoms, and more serious cases in which victims may also deteriorate and experience circulatory shock and hypothermia, a condition known as dengue shock syndrome. If neglected, the mortality rate for this syndrome ranges from 40% to 50%. However, proper care can reduce the mortality rate to 5 percent or less. Treatment for dengue fever is largely dependent on supportive care because there is no vaccine to prevent it. As a result, prevention and control are given top priority.⁴

The study aims to assess the level of knowledge, awareness, and preventive particles in Beled-Hawo District Gedo Somalia.

Literature Review

The report by notes that the recent rapid spread of dengue across all WHO districts have been aided by a surge in mosquito populations.⁵ In particular, the female mosquitoes of the species *Aedes aegypti* and, to a lesser extent, *Ae. albopictus*, disseminate the virus. In addition, other febrile infections including Zika, yellow fever, and chikungunya are also spread by these insects. Dengue is prevalent throughout the rainforests, with localized strains perpetuated by factors such as weather conditions, temperature, and human activity caused by rapid urbanization.

According to a study by the Horn of Africa Crisis, 2,070 cases of dengue fever were reported in the Mandera region of Kenya in 2012. Further, about 40% of Mandera's 80,000 residents have experienced mild forms of the illness, of which seven severe cases resulted in deaths. Also demonstrating the cross-line nature of the flare-up, eight cases were confirmed to have been imported from Ethiopia and five from Somalia. Currently, there is no cure for dengue fever, nor is there an antibody. As a result, the patients are treated for their symptoms. Also, the primary method of control for the disease is preventing mosquito bites. The clinical staff in Mandera have received training from WHO and health services on how to manage dengue fever, and specialists at Garissa Province General Hospital have ongoing clinical training. Similar exercises are expected to take place in other areas of the Northeast Province. The number of cases being reported is steadily declining, possibly as a result of increased resistance to exposure, widespread indoor residue spraying, and

extensive community awareness campaigns that encourage personal protection.⁶

Therefore, the study highlights the level of awareness and understanding of dengue fever and precautionary behavior.

A research paper conducted by 7 examined the knowledge, attitudes, and practices regarding environmental change and dengue among metropolitan, provincial, and government authorities in Laos and Thailand. The descriptive inquiry targeted a hundred and nineteen people who were administered a questionnaire. The study's findings indicate that integrated awareness programs are urgently needed to raise people's levels of knowledge, attitude, and preventive practices in order to bring about change transformation that would alleviate dengue disease and enhance people's health and vitality in these two countries and other dengue-endemic countries. The study recommends promoting preventive behaviors and raising knowledge levels through community awareness programs.

Alam conducted a descriptive study to explain the relationship between socioeconomic factors, level of knowledge, attitude, and behavior and dengue infection among Bangladeshi citizens. A questionnaire was used to collect data on 1010 randomly selected respondents from 9 administrative regions in Bangladesh between July and November 2019. The results revealed that prevention practices were lacking among the residents despite being aware of dengue fever. Further, the analysis revealed a significant correlation ($p < 0.5$) between knowledge and preventive measures. The study suggested adoption of health promotion initiatives through advertisements to dispel misconceptions about the disease.⁸

A similarly descriptive survey study assessing the levels of understanding, perceptions, and practices of preschool teachers on dengue fever in Mandalay city, Myanmar, revealed that there is a need for awareness campaigns to improve residents' knowledge and preventive behavior. The research recommends routinely promoting training programs for dengue fever prevention among preschool teachers.⁹

A review was conducted to look into the sociodemographic status of residents of Selangor metropolitan area in Malaysia, relation to the flow status of information and dengue prevention practices. The research used Interviews to gather data from the sampled residents. The study's findings indicate that the respondents are more knowledgeable about dengue prevention techniques, and further recommend that both the community and the government educate people about the disease to lessen its incidence.¹⁰

A study by explored the issues of awareness, attitude and behavior related to dengue among the Islamic University of

Malaysia Kuantan students.¹¹ The investigations followed a descriptive survey design in which one hundred and thirty five subjects were conveniently recruited into the study. A questionnaire was used to gather data. The analysis proved that there existed a significant associated between awareness and prevention practices of dengue infection.

In a separate descriptive study 12 examined the beliefs, practices, and knowledge of adults in the Tanzanian region of Pwani regarding dengue fever. The research applied face-to-face interview method to gather the data. The result shows that there is a high risk of contracting the dengue fever among the respondents who lack knowledge about the disease transmission, symptoms, and prevention. The study suggests generating and implementing health education and educational messages in rural communities.

¹³Study aimed to describe the prevalence of dengue fever among febrile patients of the Taiz Governorate. The descriptive research used the questionnaire method to collect data from three hundred eighty-four clinically suspected patients. The results demonstrate a lack of knowledge about dengue fever and poor preventive measures against the illness as a result of Taiz's ongoing civil war, which had an impact on the country's healthcare system. The study suggested launching educational campaigns to increase awareness of dengue-related factors, promote preventive measures, and enhance knowledge of these topics.

Conducted a study to examine the knowledge of mothers; their attitudes, and practices regarding the prevention of dengue hemorrhagic fever in both endemic and non-endemic districts of Pekanbaru city, Indonesia. In this paper, one hundred responses were taken for its descriptive observational approach. The outcome demonstrate that mothers in infected areas share similar expectations and concerns in the face dengue hemorrhagic fever. Nonetheless, mothers in endemic and non-endemic areas exhibit distinct protective behavioral differences. Therefore, those who are well-versed in the prevention of dengue hemorrhagic fever have idealistic perspectives on the disease and engage in effective preventative measures.¹⁴

The study examined the connection between incidence of dengue fever cases and environmental factors from 2011 to 2016 in Delhi.¹⁵ With a descriptive methodology, this study analyzed information from a vector-borne disease MIS. The findings suggested a robust association between dengue outbreaks and climatic variables. The research recommends doing interventional events to lessen the impact of the epidemics.

⁴Study aimed to evaluate the concerns of parents bringing their children to the dental clinic at India's Seventh Dental College and Hospital in regards to dengue fever. Eighty randomly selected parents who were looking for dental

unit-related services were surveyed using a questionnaire for the descriptive survey study. The results showed that the majority of respondents knew little about how to reduce the number of dengue vectors in their area, especially when it came to measures like keeping water containers covered and treating them with insecticide.

¹⁶Study purposed to evaluate the public health workers' understanding, attitudes, and individual practices of preventing dengue fever infection in Dire Dawa, Ethiopia. The descriptive study sampled 348 healthcare professionals and collected data using a questionnaire. Findings indicated low level of prevention practice of dengue fever. Additional results revealed moderate levels of both knowledge and attitude about dengue fever. The research recommended educating frontline medical staff on how to stop the spread and transmission of dengue fever.

¹⁷Purposed to examine the prevalence of dengue fever in Vietnam and identify associated risk factors of knowledge, attitude and practices. The descriptive study used a questionnaire to gather data from three-thirty patients at Bach Mai Hospital in northern Vietnam. The results demonstrated there was a positive correlation between the scores of knowledge, attitude and practices. The research suggested generating education campaigns and programs to enhance the effectiveness preventive approaches.

Conducted a descriptive study to examine the knowledge, attitudes, and practices of communities living in dengue hotspot and non-hotspots.¹⁸ The research gathered data from four hundred and six randomly selected responses using a questionnaire. The result revealed that even though populations in hotter areas were more informed than those from colder areas, their prevention practices did not differ much. The study suggests providing public health education more often to those with low education and low household income.

Study investigated the knowledge, attitude, and practices (KAP) regarding dengue fever among residents of the India Colony, Ghaziabad.¹⁹ The descriptive survey utilized a questionnaire tool to collect data on two fifty responses. The result showed that there was a low level of knowledge about dengue fever. Contrastingly, the results showed that the preventive practice and attitude were good. The study suggests an urgent need for awareness programs to increase awareness about dengue fever to the residents of the region.

²Survey study explored the link between climate factors and dengue fever outbreaks, using the recorded meteorological data from January 2005 to March 2014. The investigations realised a positive relationship between climate and dengue infections. Further, the study revealed that livelihood activities also influenced the prevalence of dengue fever.

Study investigated the prevalence of dengue virus antibodies risk factors associated with seropositivity among residents of El-Gadarif state Sudan.²⁰ About seven hundred and one randomly selected locals filled out questionnaires for the descriptive study. The results realised that the prevalence rate of dengue virus antibodies was remarkably high (47.6%). Consequently, the study suggests looking for the mosquito vectors' habits and prevention strategies of the dengue virus. 2021 study looked into Aceh residents' of Indonesia knowledge, attitudes, and practices (KAP) surrounding dengue. Six hundred and nine participants completed a descriptive questionnaire for this study. The results show that there is a strong beneficial relationship between knowledge, attitude, and practices. The report recommends raising the degree of community understanding, attitudes and dengue practices.

Conducted a study to evaluate knowledge, attitudes, and behaviors as well as their effects on community-based vector management in rural Cambodia.²² The survey based investigations targeted 600 randomly chosen houses. The study outcome demonstrates a high degree of knowledge of dengue fever transmission, Aedes breeding, and techniques of avoiding mosquito bites. The study suggests conducting awareness campaigns on dengue transmission and prevention. In addition, the investigations recommend early testing and diagnosis practices to be enhanced.

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Performed a descriptive study to scrutinize the detection of dengue virus serotypes 1, 2, and 3 in particular locations of Kenya, on a target of 868 feverish patients.¹ The study realized that the Kenya's northern and coastal regions were home to the discovered serotypes. Based on the findings of this study, it is recommended that active dengue fever be the starting point for ongoing case detection and serotype tracking in order to calculate the national and regional burden of dengue disease.

A study by aimed to identify the types of mosquitoes responsible for the outbreak of dengue fever in Mombasa City, Kenya.⁹ The investigations focused on the adult *Ae. aegypti* mosquitoes, which were RT-PCR and culture tested for the dengue virus. The study outcome revealed that the male *Ae. aegypti* mosquitoes were found to be responsible for the transmission of dengue fever. The investigations

recommend the use of effective vector control methods, the installation of suitable water storage container coverings, the elimination of outdoor trash containers, and the implementation of environmental cleanup initiatives, as effective vector control strategies.

²⁴Performed a study to assess the knowledge, attitude, and practice regarding dengue fever among patients of rural tertiary care hospitals in Sasaram India. The study deployed survey design where data from 223 OPD patients was gathered using a questionnaire. This result demonstrates how seasonal and climatic variables contribute significantly to the fertility rates of female mosquitoes, which in turn contribute significantly to dengue epidemics. The study recommends analyzing dengue serotypes and demographic transmissions in hotspots.

²⁵Study intended to describe the KAPs of urban residents in Taiz, Yemen’s southwest region. A descriptive questionnaire survey method recruited 383 households for the investigations and realised that high levels of knowledge on dengue was essential for effective preventive practice. The study suggested that increasing the level of knowledge would enhance the efforts of vector prevention control of dengue fever.

²⁶Performed an investigative study to assess the knowledge, attitude, and practice regarding dengue infection among public sector health providers in Machala, Ecuador. The descriptive study used a questionnaire method to gather data from the employed 76 health care providers. The results of this study show that people have a good understanding of the signs and treatments for dengue fever. The study recommended additional training on dengue prevention, diagnosis, and admission criteria for the healthcare providers to boost their capabilities in handling the disease.

Methodology

The research used a cross-sectional design, meaning that data was collected from the study’s sample population at a single point in time. The quantitative methods used in the research allowed the researcher to determine the strength of the relationship between the independent variables of dengue fever knowledge and awareness and the dependent variable of prevention strategies. The design was necessitated by expenditure and time constraints.

The study area was the BeledHawo district in the Gedo region, which is the most populated area. The zone is located along the borders of Kenya to the west, Ethiopia to the northwest, Dollow to the northeast, Elwak to the southwest, Luuq to the east, and Garbaharey to the southwest. The study targeted 384 people affected by dengue fever. A simple random procedure was used to sample study participants from the main population because

every respondent in this study had an equivalent chance of being chosen. Furthermore, a questionnaire tool was used to gather data from the sample. The study outcomes were derived using quantitative analysis techniques.

Data Analysis and Interpretations

Table 1. Socio-demographic Profile

Variable	Frequency	Percentage
Gender		
Male	206	54.1
Female	175	45.9
Total	381	100.0
Age		
< 16	15	3.9
17–30	222	58.3
31–45	106	27.8
46–60	35	9.2
>61	3	.8
Total	381	100.0
Living area		
Rural	147	38.6
Urban	234	61.4
Total	381	100.0
Water source		
Water truck	188	49.3
Tap water	106	27.8
Rain	65	17.1
More than one	22	5.8
Total	381	100.0
Education		
No formal schooling	110	28.9
Primary	26	6.8
Secondary	78	20.5
Bachelor	142	37.3
Master	25	6.6
Total	381	100.0

The tabulated results indicate that 206 respondents were males, which is equivalent (54.1%) while 175 (45.9%) were female. In addition, 58.3% of the respondents were aged between 17 and 30 years, 27.8% aged between 31 and 45 years, 9.2% were of ages 46 and 60 years, and 3.9% were aged below 15 years. This shows that most of the respondents were 17-30 years old. With regard to residency, 61.4% of the respondents were from urban communities

while 38.6% from rural communities (villages). The results on water sources indicate that 49.3% of the respondents fetch water from water trucks, 27.8% from tap water and 17.1% rely on rain water. As such, water trucks were the dominant water source. Water in these trucks can stay for more than three months thus providing mosquito with a breeding ground.

Additional results on education levels indicate that 37.3% of the respondents had bachelor degrees, 28.9% had no formal education, 20.5% attained secondary level education, 6.8% had primary education and 6.6% had attained masters degree level. The analysis thus reveal

the study populace was well educated and knowledgeable.

The results in table 2 show that 86.4% of the respondents are aware of dengue fever, while only 13.6% are not. This indicates a high level of awareness about the disease. Further, 77.4% of respondents believed that the mode of transmission of dengue fever is through mosquito bites, and 8.4% believe that drinking dirty water spread the disease. Also, 7.3% of respondents indicated to be ignorant of the modes of transmission while 4.2% said the disease was spread through contaminated food. The analysis indicates that more than half of respondents had the concept of mosquito bite as the modes of spreading dengue fever.

Table 2. Knowledge Awareness and Preventive Practices of Dengue Fever

	Hear about dengue fever	Frequency	Percentage
Valid	Yes	329	86.4
	No	52	13.6
	Total	381	100.0
Modes of Spread Dengue Fever			
Valid	Mosquito's bite	295	77.4
	Dirty drinking water	32	8.4
	Contaminated food	16	4.2
	Others	10	2.6
	Don't know	28	7.3
	Total	381	100.0
Carrier of dengue fever			
Valid	Aedes mosquito	194	50.9
	Anopheles mosquito	50	13.1
	All types of mosquito	97	25.5
	Don't know	40	10.5
	Total	381	100.0
Most frequent mosquito biting time			
Valid	Sunrise/sunset	42	11.0
	Night	240	63.0
	Afternoon	33	8.7
	Day and Night	57	15.0
	Don't know	9	2.4
	Total	381	100.0
The Commonest breeding site of mosquitoes			
Valid	In clean water	50	13.1
	In unclean water	96	25.2
	In Stagnant water	206	54.1
	Don't Know	29	7.6
	Total	381	100.0

Table 2. Knowledge Awareness and Preventive Practices of Dengue Fever

Knowledge about the test is required to diagnose				
Valid		Frequency	Percent	
	Yes	300	78.7	
	No	81	21.3	
	Total	381	100.0	
Common symptoms of dengue fever				
		Responses		
		N	Percent	Percent of Cases
Valid	High fever	240	28.3%	66.1%
	Severe body aches	208	24.5%	57.3%
	Nausea and vomiting	64	7.5%	17.6%
	Red spots on the body	117	13.8%	32.2%
	Diarrhea	19	2.2%	5.2%
	Joint and Muscle pain	110	13.0%	30.3%
	All of the above	87	10.2%	24.0%
	Don't Know	4	0.5%	1.1%
Total		849	100.0%	233.9%
Awareness about Dengue Fever				
		Frequency	Percent	
Valid	Yes	300	78.7	
	No	81	21.3	
	Total	381	100.0	
Dengue fever is a treatable Disease				
		Frequency	Percent	
Valid	Yes	319	83.7	
	No	62	16.3	
	Total	381	100.0	
Knowledge of the primary treatment of dengue fever				
		Frequency	Percent	
Valid	Yes	304	79.8	
	No	77	20.2	
	Total	381	100.0	

With regard to mosquito types, one half of the respondents (50.9%) stated that Aedes mosquito was the carrier of dengue fever, 25.5% perceived all types of mosquitoes to be the carriers of dengue fever and 13.1% mentioned anopheles mosquitoes as responsible for transmitting dengue fever. As a result, the analysis indicates that most of the respondents had accurate knowledge regarding Aedes mosquito as the carrier of dengue fever.

With regard to bite time, 63.0% stated that the Aedes

mosquito bite at night, 15% stated both night and day times while 11% stated sunrise and sunset as the most common bite time for the mosquito. In addition, 8,7% indicated the bite time was afternoon and 2.4% had no idea. The analysis revealed that many respondents were misinformed on the mosquito bite time.

With regard to breeding sites of the Aedes mosquito, the majority of the respondents 54.1%, stated that stagnant water provided the breeding ground, while 25.2% stated

unclean water. Also, 13.1% mentioned clean water and 7.6% did not have a clue of mosquito breeding site. The analysis demonstrates that more than half of respondents believed that stagnant water provided the Aedes mosquito with a breeding ground.

Table 4. Prevention Practices

Preventive Measures of dengue fever?		Responses		Percent of Cases
		N	Percent	
Valid	Use mosquito net	276	28.0%	74.6%
	Use mosquito spray	235	23.9%	63.5%
	Keep closed windows & doors	113	11.5%	30.5%
	Use smoke to drive away mosquitoes	75	7.6%	20.3%
	Use mosquito repellent/cream	152	15.4%	41.1%
	Use mosquito coil	56	5.7%	15.1%
	Keep neat & clean surroundings	65	6.6%	17.6%
	Do Nothing	12	1.2%	3.2%
	Total	984	100.0%	265.9%
Test after suffering from fever				
		Frequency	Percent	
Valid	Immediately After High-grade fever	208	54.6	
	After getting the serious condition	60	15.7	
	After a few days	64	16.8	
	Never do test	26	6.8	
	Didn't face Dengue yet	23	6.0	
	Total	381	100.0	

Table 3, indicates that 52.8% of the respondents are of the opinion that dengue fever is non-transmittable disease while the remaining 47.2% said otherwise. A majority of the respondents (66.1%) also mentioned fever as the most common symptom while 57.3% stated severe body aches. In addition, 32.2% stated red spots on the body, and 30.3% said joint and muscle pain were common symptoms of dengue fever. Also, 24% of the respondents mentioned all the above, 5.2% mentioned diarrhea and 1.1% were not aware of the symptoms of dengue. The results indicate that a majority of the respondents were aware of the common symptoms of the disease.

The results also indicated that within the Beled-Hawo district, 78.7% of residents are aware of dengue fever, while 21.3% are unaware. Approximately 83.7% of respondents believed the condition was curable, compared to 16.3% who believed otherwise. About 79.8 percent of respondents were aware of the primary treatments for dengue fever, whereas 20.2 percent were not. In addition, 78.7% of survey respondents indicated that there is a test for dengue fever, whilst 21.3% answered that no test is necessary for dengue fever.

Table 4 highlights the prevention practices adopted by the respondents. The results indicate that 74.6% and 63.5% of the respondents believed that mosquito nets and sprays were effective in preventing dengue fever. Similarly, 41.1% and 30.5% also mentioned that preventive measures for dengue fever, 41.1%, and 30.5% responded using mosquito replant/crams and keeping closed windows and door are also preventive measures. Below 17.6% believed keeping neat and clean surroundings are preventive measures. This demonstrates that while some people used an insect repellent/cream as a substitute, mosquito nets and sprays were the most effective forms of prevention. The majority 54.6% of the respondents had the concept do the test immediately after high-grade fever, 16.8% responded after a few days, 15.7% believed after getting serious conditions, and 6.8% believed not to do the test at all, and below 6.0% didn't suffer dengue yet.

Discussion

The analysis shows that the respondents are knowledgeable about dengue fever disease as well as the breeding grounds. The local people mentioned stagnant dirty water and open sewer lines offered the mosquitoes breeding grounds. In addition, the study realized that the residents in Gedo district stored tap and rain water in container for domestic use, given the irregular rainfall and water supply systems. As such, the containers also acted as breeding grounds for the mosquitoes. The results support previous studies by^{27,28,29} which indicated high levels of knowledge among Ethiopian, Indian and Malaysia communities.

The analysis also indicates that 60% of the survey participants stated that dengue fever was transmitted by Aedes Mosquito. In addition, the majority had the correct impressions of the symptoms as they mentioned high body temperature and body aches as the most common symptoms of the illness. However, 63% failed to correctly state the biting time. Only 42% of the respondents made correct statements about the bites of the Aedes Mosquito as in the sunrise and sunset. As a result, the analysis shows poor understanding regarding the biting time of the dengue vector. Moreover, 54% correctly stated that mosquitoes transmitted dengue fever through bites, revealing that a substantial number of the respondents were knowledgeable about dengue fever transmission. Also, 84% stated the disease was curable and knew of the primary treatment interventions such as drinking water and taking painkillers. Seventy nine percent knew of the disease diagnosis and 50% admitted to have done necessary confirmatory tests. The results are consistent with the findings of³⁰ in Jamaica.

Regarding preventive practices, 78% mentioned adoption of mosquito nets while 17% believed that clearing bushes and keeping environment clean was a feasible preventive strategy. The results disagreed with majority of previous literature where environmental cleanliness was highly regarded as the best technique of eradicating dengue fever infections. The study showed that despite the respondents possessing correct knowledge on the relationship between dengue fever, transmission modes and mosquitoes, few were informed on the sustainable preventive steps.

In this regard, the study recommends that relevant health departments and policy makers at the state and federal level, initiate an effective control program of dengue disease. The public health practitioners must enhance and promote the preventive methods regarding transmission and prevention, and build adequate capacity to effective diagnosis and treatment, through cooperation with NGOs as well as other relevant bodies.

The Ministry of health also needs to train sufficient medical workers to enhance response capacity to outbreaks and management of the disease. They also need to promote behaviour change programs to further inform the masses on prevention. Regular educational programs need to be cultivated to ensure long term impact of all efforts undertaken by the relevant bodies, in promoting dengue fever prevention.

Conclusion

The study shows that many of the respondents possessed a high level of knowledge about dengue fever on some topics such as symptoms, transmission, diagnosis, treatment and breeding. Also, they had low awareness levels on preventive

measures that mainly focus on protection against mosquito bites.

Conflicts of Interest: None

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