American Journal of Multidisciplinary Research & Development (AJMRD)
*Volume 08, Issue 02 (**February - 2026**), PP 01-11*
ISSN: 2360-821X
www.ajmrd.com

Research Paper **Open Access**

Community Awareness, Knowledge, Attitude, and Practices on Prevention of Mosquito-Borne Diseases among the Densely Populated Barangays of Ozamis City, Philippines

[1-4]Louhar V. Penales, Shenny Lou C. Orong,
Veah Marie A. Tagama, and Nelfa D. Canini
[1-4]*Department of Natural Sciences, College of Arts and Sciences, Misamis University, Ozamis City, Philippines*

ABSTRACT:- *The escalating prevalence of mosquito-borne diseases poses challenges worldwide, resulting in considerable human mortality and morbidity. This issue has emerged as a severe threat to public health in Ozamis City. A survey examined the awareness, knowledge, attitude, and preventive practices related to mosquito-borne diseases within the densely populated barangays of Ozamis City. A cross-sectional study was undertaken in the three densely populated Barangays. Sixty-two percent (62%) of the respondents indicated that barangay health workers frequently visited the three communities, with 55% experiencing irregular visits as the majority. Additionally, respondents reported engaging in practices like covering water storage and emptying standing water, both garnering a 47% response. Most respondents (67%) sought information for proactive engagement in preventive measures, while 33% exhibited moderate awareness of inconsistent practices. Thirty-eight percent (38%) of the respondents identified drains/polluted water as potential breeding sites of mosquitoes. Sixty-eight percent (68%) reported having no standing water in their vicinity. However, 89% were already aware that mosquito causes mosquito-borne diseases before participating in the survey, and 71% were familiar with mosquito-borne diseases. Addressing specific gaps, such as varied vaccine awareness and misconceptions, requires collaborative efforts between healthcare providers, local authorities, and the community.*

Keywords *–Attitude, Community awareness, Knowledge, Mosquito-borne diseases, Preventive measures*

I. INTRODUCTION

Insects, renowned for their remarkable diversity, play a pivotal role in ecosystems by providing essential services such as seed dispersal, pollination, organic matter decomposition, nutrient cycling, and water filtration (Crespo-Pérez et al., 2020). However, it's imperative to acknowledge the dual nature of their impact on human well-being. The impact of these roles extends beyond those already mentioned, as their presence can directly influence public health by serving as vectors and pests, transmitting diseases to both humans and animals, with biting insects playing a significant role in this regard (Belluco et al., 2023). Furthermore, vector-borne illnesses (VBDs) refer to infections resulting from pathogens transmitted by arthropods, including mosquitoes, triatomine bugs, blackflies, tsetse flies, sand flies, lice, and ticks (Wilson et al., 2020). By 2050, it is anticipated that almost half of the world's population will be vulnerable to arbovirus transmission (Kraemer MUG et al. 2019). Mosquitoes, in particular, stand out as notable carriers of diseases such as malaria, dengue, and Zika virus (Jones et al., 2020). Diseases transmitted by mosquitoes impose a considerable health and economic burden on cities globally (De Jesús Crespo et al., 2019).

Stagnant circumstances and standing water attract these small but dangerous creatures, which are attracted to urban areas and human activity. As stated by the World Health Organization (WHO), vector-borne diseases (VBDs) account for 17% of all infectious diseases and result in over 700,000 annual deaths, with 80% of the global population being susceptible (Aerts et al., 2020). Worldwide, there are over 3000 species of mosquitoes across 34 genera; however, only 300 of these mosquito species are responsible for transmitting diseases (Manikandan et al., 2023). Furthermore, arboviruses such as dengue, Zika, yellow fever, and chikungunya are spread by Aedes mosquito species, with Aedes albopictus (the Asian tiger mosquito) and Aedes aegypti (the yellow fever mosquito) considered their primary competent vectors (Caminade et al., 2019).

Additionally, Malaria continues to pose a significant threat to life as the most severe vector-borne disease. Globally, there were around 240 million documented cases of malaria and 620,000 reported deaths in 2020 (Sa-Ngamuang et al., 2023). According to Saha et al. (2019), malaria is the primary cause of malaria epidemics in Southeast Asia and a significant public health concern in India. Lack of information, ignorance of

the disease's mode of transmission, accessibility issues to healthcare facilities, inadequate treatment, and an environment conducive to mosquito activity are all factors contributing to the risk of malaria in our area (Rajvanshi et al., 2021). In the Philippines in 2022, a total of 3,157 verified cases of native malaria were reported (Gita-Carlos, 2023).

Moreover, in tropical areas, illnesses transmitted by mosquitoes remain a significant source of sickness and death. Apart from malaria, the Philippines also deals with endemic cases of dengue, a vector-borne disease for which Aedes aegypti serves as the main carrier (Edillo et al., 2022). Arboviruses, particularly dengue, are causing a growing health problem, even in countries with moderate incomes that have made substantial progress in controlling malaria, which was once almost eliminated (Rajput et al., 2023). Predominantly found in tropical regions, dengue fever is a mosquito-borne illness, with an annual hospitalization rate ranging from 50 to 100 million patients and more than 3 billion people residing in dengue-endemic countries (Dey et al., 2022).

Before 1970, major dengue epidemics were confined to nine countries. However, the disease has now become endemic in over 100 nations, with Asia carrying 70% of the global disease burden. Southeast Asia, particularly the Philippines, bears a substantial share of the worldwide dengue burden, contributing to 18% of the total dengue disease burden in Southeast Asia (Xu et al., 2020; Manna et al., 2022). For the first time in this century, the Philippines government has officially declared a national epidemic of dengue fever due to a significant increase in infections, reaching twice the number reported last year. The outbreak has resulted in 622 fatalities, with a notable impact on young children. Between January and 20 July of the current year, the country documented 146,062 dengue cases, marking a substantial 98% rise compared to the corresponding period in 2018 (Dyer, 2019). In 2022, approximately 226,497 cases of dengue fever were reported, while the figures stood at around 78, 208 in 2021 and approximately 90,135 in 2020, as per official reports (Crisis, 2023).

Additionally, the World Health Organization states that dengue, also known as break-bone fever, is a viral infection transmitted by mosquitoes, primarily prevalent in tropical and subtropical regions. Many individuals infected may not exhibit symptoms, but for those who do, common signs include elevated fever, headaches, body aches, nausea, and a rash. Typically, recovery occurs within 1–2 weeks; however, severe cases may necessitate hospital care, and in extreme instances, dengue can be fatal. Currently, there is no specific treatment, and pain medicine is used to manage symptoms (World Health Organization: WHO, 2023).

Furthermore, the frequency of diseases carried by mosquitoes becomes a growing issue as ecosystems continue to be altered by urbanization, population increase, and climate change. The increasing incidence of dengue in the Philippines can be attributed to various factors, including rapid urbanization, inadequate sanitary practices, and improper waste disposal management (Sy et al., 2023). The Philippines took the pioneering step of implementing Dengvaxia on a large scale, specifically in selected highly endemic regions, with a focus on approximately 1 million children aged 9-10 years (Wilder-Smith et al., 2019).

In Zamboanga Peninsula, a total of 4,258 dengue cases were reported by various Disease Reporting Units from January 1 to June 3, 2023. This marks a significant increase of 242% compared to the same timeframe in 2022, during which 1, 244 cases were recorded, as disclosed by the Department of Health (DOH)-9 (Carbayas, 2023). The local climate has an impact on the geographical distribution of diseases like dengue and malaria, influencing their prevalence (Rocklöv & Dubrow, 2020). Climate change could potentially cause an increased geographical spread of certain vector-borne illnesses like Zika virus disease (Ryan et al., 2020).

Moreover, dengue fever cases in Cagayan de Oro have surged by 170% over an almost eight-month period in 2021, extending a trend observed throughout the year. In the province of Bukidnon, which has recorded over 2, 400 cases since January 2022, there has been a remarkable 335.9% increase compared to the cases reported during the same period in 2021. Notably, Bukidnon has taken the lead in Northern Mindanao in terms of the number of dengue cases, surpassing the city itself. However, Cagayan de Oro currently holds the highest number of dengue infections among Northern Mindanao cities, reporting 1,028 cases since January (Galves et al., 2023).

Besides, the majority of vector-borne diseases cannot be prevented through vaccines and require a comprehensive set of interventions for control. This includes measures such as vector control, timely detection and treatment of cases, and community health awareness campaigns (Pley et al., 2021). Due to their ability to spread disease, it is critical to address vector management tactics, public health initiatives, community engagement, and the development of innovative technology to lessen the effects of diseases carried by mosquitoes. Therefore, it's crucial to raise awareness among the community and implement preventive actions like routine clean-ups, fostering collaboration among health authorities, government, private sector, academia, and other relevant sectors (Demecillo et al., 2023).

Moreover, according to Ravi (2020), control of vector-borne diseases relies on the knowledge and awareness of people. The World Health Organization places a strong emphasis on raising awareness and educating people about these disease-causing vectors so they can safeguard their communities and themselves. Mosquito control is primitive for preventing the transmission of malaria, lymphatic filariasis, dengue fever,

Yellow fever, Zika virus infection, West Nile fever, and chikungunya virus infection in the human population (Anoopkumar & Aneesh, 2021). Hence, community awareness, knowledge, and practice play a crucial role in the prevention of mosquito-borne diseases.

Additionally, the province of Misamis Occidental is grappling with a rapid surge in mosquito-borne diseases, placing numerous residents at the mercy of illnesses such as malaria, dengue fever, and various other conditions for which mosquitoes serve as the primary vectors. The prevalence of these diseases has prompted a series of both published and unpublished studies, shedding light on the alarming situation and seeking solutions to control the escalating health crisis. The affected residents find themselves vulnerable to the relentless onslaught of these diseases, emphasizing the urgent need for comprehensive intervention and public health measures to mitigate the impact on the community.

Ozamis City in Misamis Occidental, Philippines, is also grappling with the pervasive threat of deadly diseases transmitted by mosquitoes, impacting various barangays. The community faces numerous cases, highlighting the urgent need for heightened awareness and effective preventive measures to address the health challenges posed by mosquito-borne illnesses. This has resulted in a significant deficiency in raising awareness, implementing preventive measures, and sharing information about these diseases. The City Health Office has identified the top three barangays with a notable increase in mosquito-borne diseases, particularly from January to October 2023. The leading barangay is Malaubang, reporting 89 cases, followed by Tinago with 60 cases and Carmen Annex with 59 cases. These figures are based on comprehensive surveys and records conducted by the health office, highlighting the urgent need for targeted interventions and preventive measures in these specific areas to control the rapid transmission of diseases carried by mosquito vectors. The data underscores the importance of community awareness and collaborative efforts to mitigate the impact of mosquito-borne illnesses in these identified hotspots. Hence, this study aims to assess the community awareness, knowledge, attitudes, and practices of the top three barangays of Ozamiz City, known for having the highest reported cases of mosquito-borne disease. The findings may highlight the importance of these aspects in making adequate long-term strategies, which are tailored to the local needs in order to promote the local population to take protective measures against mosquito-borne infection.

II. METHODS

A cross-sectional study was undertaken in the three densely populated barangays of Ozamis City, Philippines. Data were collected during the Northeast monsoon period. The selected barangays were identified as the top three with the highest cases of dengue based on recorded data from the Ozamiz City Health Office.

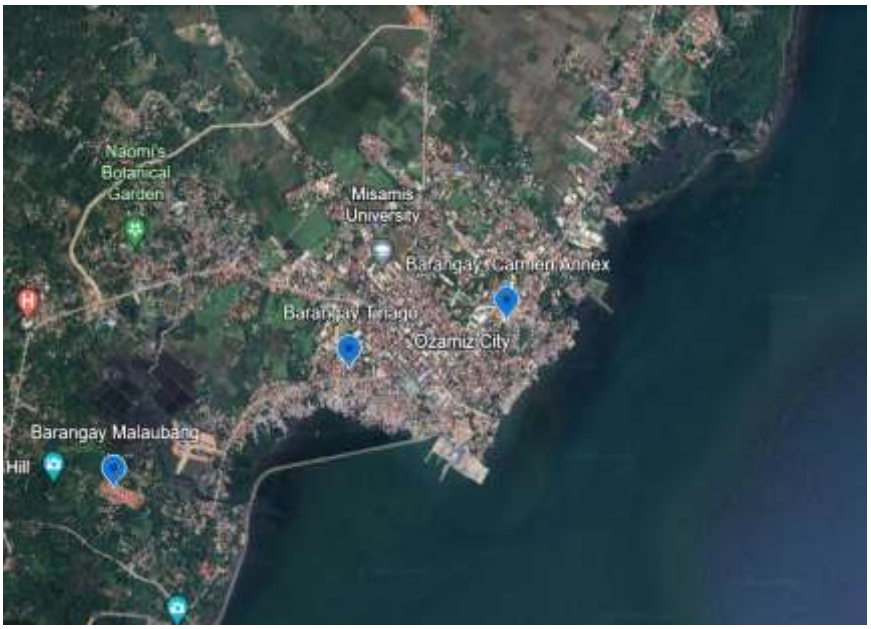

Fig.1: Locations of the Barangays in Ozamiz City

Through random sampling, a total of 300 individuals (100 from each Barangay) were chosen as the respondents of the study. In addition, respondents in this study were approached through one-on-one interviews, following informed consent procedures and ethical considerations. A modified questionnaire patterned from the studies of Bayas (2022) and Kumar (2017) was used to gather data. The questionnaire was meticulously crafted to include structured interview questions, serving as the principal tool for data collection. It includes the

respondents' sociodemographic profile, attitudes, practices and their awareness regarding mosquito-borne illnesses. The collected data were analyzed using Microsoft Excel, and the results were tabulated.

Results

The current study reported that of 300 respondents, 71% were women, and 29% were men. The predominant age group was 45-60, with all individuals in this category identifying as Christians and possessing a high school educational background in majority (Table 1).

Table 1: Respondent's Profile.

Socio-Demographic Variables	Variables	Total Respondents	Percentage (%)
Gender	Female	212	71%
	Male	88	29%
Age Group (Years)	15-25	14	5%
	25-30	117	39%
	45-60	169	56%
Religion	Christian	299	100%
	Muslim	1	0.3%
Education	Illiterate	2	0.7%
	Primary School	59	20%
	High School	144	48%
	College	95	32%

Sixty two percent (62%) of respondents indicated that barangay health workers frequently visited the three communities, with 55% experiencing irregular visits as the majority. Various preventive measures against mosquito-borne diseases were implemented in these communities, such as using mosquito coils (39%) and smoke and dhoop (30%). Additionally, respondents reported engaging in practices like covering water storage and emptying standing water, both garnering a 47% response. The majority of respondents (67%) actively sought information for proactive engagement in preventive measures, while 33% exhibited moderate awareness with inconsistent practices (Table 2).

Table 2: Respondents' awareness of mosquito-borne diseases in the three barangays

	Responses	Total Respondents	Percentage (%)
Presence of larvae in standing water	Yes	95	32%
	No	205	68%
Climate and weather conditions influence the prevalence of mosquito-borne disease	Hot Temperature	25	8%
	During Rainfall	231	77%
	During Wet Season	45	15%
Awareness of the availability of a vaccine for mosquito-borne diseases	Yes, I am aware of the dengue vaccine.	111	37%
	No, I did not know there was a vaccine for dengue.	150	50%
	I have heard about it but don't have detailed information.	35	12%
	I am unsure about the existence of a dengue vaccine.	3	1%

Heard about mosquito-borne diseases before	Yes, I am aware of the dengue fever.	266	89%
	No, this is the first time I've heard about dengue fever.	9	3%
	I have heard the term but don't know much about it.	24	8%
	I am unsure whether I've heard about dengue fever.	1	0.3%
Level of awareness/familiarity with mosquito-borne diseases	Very Aware	213	71%
	Somewhat Aware	87	29%
	Not sure	0	0
	Limited awareness	0	0

Majority of the respondents in this study identified drains/polluted water as potential breeding sites for mosquitoes, with 38%, followed by garbage at 28%, observed in their environment. Moreover, 24% noticed these breeding sites indoors, particularly on hanging objects inside their houses. A significant portion of respondents (45%) demonstrated awareness of the symptoms of mosquito-borne diseases, expressing the importance of an immediate response by admitting individuals experiencing these symptoms without delay. Another 26% mentioned admitting someone if the symptoms worsen or persist. The diseases known to be transmitted by mosquitoes in the three communities were predominantly dengue fever, with 97%, and malaria with 13%. The symptoms widely recognized by the majority included fever (86%) and skin rashes (15%). Almost all respondents (61%) stated that they always stayed informed about mosquito-borne diseases (Table 3).

Table 3. Respondents' knowledge about mosquito-borne diseases of the three barangays

	Responses	Total Respondents	Percentage (%)
Potential breeding grounds for mosquitoes	Drains/Polluted water	115	38%
	Garbage	84	28%
	Rainwater collected in uncovered containers	18	6%
	Clean Water	6	2%
	Stagnant water in tires	47	16%
	On hanging Object	72	24%
	I don't Know	12	4%
Diseases known to be transmitted by mosquitoes	Malaria	38	13%
	Dengue Fever	291	97%
	Zika Virus	0	0
	Chikungunya	0	0
	I don't Know	1	0.3%

Common symptoms associated with mosquito-borne diseases	Headache	23	8%
	Fatigue	22	7%
	Fever	258	86%
	Skin Rashes	45	15%
	Vomiting	7	2%
Seeking medical attention if they suspect they have been affected by mosquito-borne diseases	Immediately, without delay.	135	45%
	Within 24 hours of experiencing symptoms.	62	21%
	Within a week of experiencing symptoms.	24	8%
	Only if the symptoms worsen or persist.	79	26%
Seeking information about mosquito-borne disease	Always stay informed	184	61%
	Only when there's an outbreak or concern	60	20%
	I don't actively seek information	56	19%

The majority of respondents, comprising 68%, reported having no standing water in their vicinity, which could potentially harbor mosquito larvae. They observed that mosquitoes thrived best during rainfall, with 77% noting this as a prevalent condition. Additionally, half of the respondents (50%) were unaware of the existence of a vaccine for mosquito-borne diseases. However, 89% were already aware that mosquito-borne diseases are caused by mosquitoes before participating in the survey, and 71% were familiar with mosquito-borne diseases (Table 8).

Table 8: Respondents' attitude and practice about mosquito-borne diseases.

	Responses	Total Respondents	Percentage (%)
Regularity of active mosquito-borne diseases surveillance by health authorities	Regularly every 15 days	27	9%
	Irregularly	165	55%
	Only during the rainy season	6	2%
	Nobody comes at all	102	34%
Monitoring and assessing health-seeking behavior	Barangay Health Workers	187	62%
	City Health Workers	15	5%
	Physician/Private Hospital	1	0.3%
	Nobody comes at all	104	35%
Protective measures	Mosquito coils	116	39%
	Mosquito nets	37	12%
	Mosquito Repellent	4	1%
	Smokes and Dhoop	89	30%
	Insecticide spray	41	14%
	Screening of windows/doors	55	18%
	Not using any method	11	4%
Common activities carried out within households	Covering water storage	140	47%
	Cleaning gutters	27	9%

	Applying Larvicides	1	0.3%
	Emptying Standing water	141	47%
Perceive and approach mosquito-borne diseases	Proactively engage in preventive measures	200	67%
	Have moderate awareness but inconsistent practices	98	33%
	Lack of awareness and neglect of preventive measures	2	0.7%

III. DISCUSSION

In Ozamiz City, Philippines, this is the first study that has been carried out to provide baseline information on community awareness, knowledge, attitude, and practices on prevention of mosquito-borne diseases. The selected study areas are the top three densely populated barangays known for the highest reported cases of mosquito-borne diseases. Notably, majority of the survey subjects were females, with 212 respondents, representing a higher proportion than males, which accounted for 88 respondents. Women are generally more likely to contribute to surveys, justifying the higher female participation observed in this study. This pattern may be attributed to women often staying at home, attending to their children, while men are at work. This aligns with the prevalent role differences idealized in the at-home arrangements reported by many respondents. The favored setup involved the father working full-time for pay, while the mother stays at home (Parreñas, 2007: McKay, 2015: Donner, 2020). All participants identified as Christians, with only one respondent following the Muslim faith in terms of religion. This demographic insight adds a layer of understanding to the community profile examined in the study.

The respondents in the 25-30 age range have a higher proportion of college graduates, whereas those in the 45-60 age group tend to have a high school background, with a small percentage (0.07%) reported as illiterate (Table 1). Respondents stated that financial constraints and obstacles like road issues prevented them from attending school in the past, leading to their decision to stop studying for personal reasons. This is in obvious contrast to the present, where technological advancements have facilitated greater accessibility to education. In the past, the country's infrastructure development was hindered by a poor business environment, deficiencies in planning, coordination, and financing, as well as a decline in private sector involvement. Today, the Department of Public Works and Highways (DPWH) is actively engaged in expanding road construction in remote areas of the Philippines to enhance overall road accessibility.

In this study, approximately 55% of the total respondents expressed that health authorities conduct irregular active surveillance. This finding is rooted in people's perceptions within the community. Health workers' responsibilities are primarily to provide quality healthcare and information to individuals, family groups, and communities (Dusfour and Chaney, 2021). It is evident that some households were visited, and some were not, possibly due to the location of the houses or the absence of the resident at the time of the visit. Most of the respondents said that barangay health workers often visit them irregularly rather than the City Health Office. Based on the implemented role of CHOs, they are prompt to ask for assistance in all barangays to create their own Barangay Mosquito-Borne Viral Disease Task Force to combat the rising number of dengue cases in the city. Meanwhile, barangay officials assist in the intervention of this disease because the City Health Office cannot handle the interventions alone. Two out of all the respondents that had been interviewed were retired and currently working as BHW, helping hand in hand, especially with the residents, as the key to fighting the dengue disease. Community participation and commitment on the part of government health workers is effective in vector-borne disease control (Winch et al. 1992: Becker et al. 2022).

Furthermore, approximately 62% of the respondents indicated that Barangay Health Workers engage in monitoring and assessing health-seeking behavior. The respondents' practices vary based on the environment they inhabit. For example, individuals residing in areas without surrounding water predominantly engage in activities such as covering water storage (47%). Conversely, some opt for emptying standing water containers. Considerably, 34% use mosquito coils for protective measures, while others resort to smoke and dhoop. This is particularly evident in households situated close to others, where limited space separates their locations. This current study documented that the connection between respondents and their environment extends to the measures they adopt to control and eradicate mosquitoes. Transmissions of mosquito-borne diseases depend on complex interactions between the environment and the susceptibility, exposure, and adaptive capacity of populations (Gonzalez et al. 2021). Unfortunately, there is no easy solution for managing mosquitoes. Research suggests that mosquito-borne diseases face new struggles and challenges with the emergence, re-emergence, and

spread of arboviruses transmitted by various mosquitoes (Chala & Hamde, 2021; Vega Rúa & Okech 2019; Watentena et al. 2020)

The present study reported that the respondents knowledge on the potential breeding grounds for mosquitoes are drains and polluted water which obtained the highest percentage (38%), garbage, (28%), on hanging object (24%) and stagnant water in tires (16%) (Table 7). Similar result was reported by Bermond (2023) in which water bodies receiving inputs from sewage-contaminated sources can lead to elevated nutrient levels, providing favorable conditions for mosquito development and survival. More specifically, there may be an increase in the concentration of reduced biological forms of nitrogen, such as NH4+ (ammonium) (Bermond, 2023). The presence of nutrients supports the growth of microorganisms, algae, and other food sources for mosquito larvae. Drains play a significant role as potential breeding grounds for *Aedes aegypti* mosquitoes (Chandrasiri et al. 2020). This underscores their importance in the transmission of mosquito-borne diseases within urban environments.

Mosquito breeding habitats across various locations predominantly arise from human activities and factors associated with urbanization Alkhayat et al. (2020). Specifically, diverse environments, including drainage systems, pools of drinking water, flooded sewage areas, fountains, irrigation water pools, artificial containers (both metallic and plastic), pools resulting from rising water tables, streams, treated sewage swamps, and tire deposits, are identified as highly conducive larval breeding grounds for mosquitoes. Several studies suggest that there is a connection between the incidence of mosquito-borne diseases and the presence of water management systems (Seidahmed et al. 2018; Marti et al. 2020). These findings underscore the importance of enhancing drainage infrastructure to address both flooding issues and implement effective preventive measures against mosquito-borne diseases. The findings from Onodua et al. (2020) study reveal that inadequate sanitation practices, encompassing improper disposal of solid waste and sewage, play a significant role in the substantial contribution to the larval development of mosquitoes. In contrast, clean water, representing a mere 2% of the 6 respondents, is identified as the least favorable environment. This observation aligns with the geographical proximity of most households to surrounding waters, resulting in standing water after rainfall—an ideal breeding ground for mosquitoes.

Among the illnesses carried by mosquitoes, dengue fever stands out as the most widespread, with 97% of total respondents recognizing its prevalence. Additionally, 86% of respondents identified fever as a common symptom associated with mosquito-borne diseases. These findings are reflective of the experiences and observations of the participants within their communities, where instances of children, including their own, being admitted for dengue fever or succumbing to high fever were reported. The main vector, *Aedes aegypti*, has become increasingly prevalent, posing significant health challenges for the residents. It has been found that dengue fever has significantly surged in Asian countries, with almost 50 million people getting infected annually, highlighting the considerable burden of the disease in the region (Umakanth & Suganthan, 2020). A similar study conducted by Abualamah et al. (2020) concluded that Dengue fever (DF) is a virus transmitted by mosquitoes, resulting in flu-like symptoms and, in some cases, progressing to a potentially life-threatening complication known as severe dengue.

Furthermore, 61% expressed a desire to stay informed about such diseases. Staying informed about mosquito-borne diseases at any reliable sources could be a great help for the residents in the communities for early recognition of symptoms, facilitating prompt medical attention, and conducting community-wide efforts to prevent and manage these potentially serious health threats. These results have been supported by the study of Duval et al. (2023) that individuals who are both attentive and well-informed regarding mosquito-borne diseases are likely to adopt more effective measures in combating them, emphasizing the essential role of knowledge in promoting responsible practices through widespread awareness and information campaigns (Duval et al., 2023).

The study also reveals that 71% of respondents are very familiar with mosquito-borne diseases and the majority were proactive in adopting preventive measures and were eager to acquire knowledge, awareness, and behavioral insights to address the challenges posed by these diseases. Hence, there could be a collective commitment among respondents to address the challenges they may encounter, reflecting a proactive and informed community response. This could be implied that they were now aware of the health impacts and effects brought by mosquitoes and their eagerness to acquire knowledge, awareness, attitudes, and appropriate practices would be a great help to avoid threats and diseases. It has been found that effective control of mosquito breeding sites necessitates ongoing efforts and collaboration from the local community (Ahmed et al., 2020). Moreover, Fatima et al. (2023) stated in their study that the battle against mosquito-borne diseases requires steadfast commitment from the government, healthcare professionals, and communities, and with sustained dedication and collaboration, communities can contribute to forging a healthier, more resilient future in the

ongoing fight against these diseases.

IV. CONCLUSION

The current study offers a baseline data into the awareness, knowledge, attitude and practices of the respondents relating to the dynamics of mosquito-borne diseases. The socio-demographic distribution of the participants suggests specific vulnerabilities, with a majority of females in the 45-60 age group. Despite a commendable level of awareness and proactive attitudes in certain areas, the study reveals variations in preventive practices and knowledge gaps. The reported reliance on Barangay Health Workers for health monitoring and the inconsistent active surveillance by health authorities highlight the need for targeted interventions. The differences in preventive practices among barangays indicate the necessity for community-specific strategies to standardize approaches and the importance of community engagement and tailored public health education. Addressing specific gaps, such as varied vaccine awareness and misconceptions, requires collaborative efforts between healthcare providers, local authorities, and the community.

The identified strengths and weaknesses provide a foundation for strategic planning to mitigate the impact of mosquito-borne diseases in these barangays, fostering a healthier and more resilient community in Ozamis City.

REFERENCES

[1] Crespo-Pérez, V., Kazakou, E., Roubik, D. W., & Cárdenas, R. E. (2020). The importance of insects on land and in water: a tropical view. Current Opinion in Insect Science, 40, 31–38. Retrieved from https://doi.org/10.101/j.cois.2020.05.016

[2] Belluco, S., Bertola, M., Montarsi, F., Di Martino, G., Granato, A., Stella, R., Martinello, M., Bordin, F., & Mutinelli, F. (2023). Insects and Public Health: An Overview. Insects, 14(3), 240. Retrieved from https://doi.org/10.3390/insects14030240

[3] Wilson, A. L., Courtenay, O., Kelly-Hope, L. A., Scott, T. W., Takken, W., Torr, S. J., & Lindsay, S. W. (2020). The importance of vector control for the control and elimination of vector-borne diseases. Retrieved from PLoS neglected tropical diseases, 14(1), e0007831.

[4] Kraemer MUG et al. (2019). Past and future spread of the arbovirus vectors. Aedes aegypti and Aedes albopictus. Nat. Microbial. 4, 854–863. Retrieved from https://doi:10. 1038/s41564-019-0376-y.

[5] Jones, R. T., Ant, T. H., Cameron, M. M., & Logan, J. G. (2020). Novel control strategies for mosquito-borne diseases. Philosophical Transactions of the Royal Society B, 376(1818), 20190802. Retrieved from https://doi.org/10.1098/rstb.2019.0802

[6] De Jesús Crespo, R., Méndez Lázaro, P., & Yee, S. H. (2019). Linking wetland ecosystem services to vector-borne disease: Dengue fever in the San Juan Bay estuary, Puerto Rico. Retrieved from Wetlands, 39, 1281-1293.

[7] Aerts, C., Revilla, M., Duval, L., Paaijmans, K., Chandrabose, J., Cox, H., & Sicuri, E. (2020). Understanding the role of disease knowledge and risk perception in shaping preventive behavior for selected vector-borne diseases in Guyana. PLoS neglected tropical diseases, 14(4), e0008149.

[8] Manikandan, S., Mathivanan, A., Bora, B., Hemaladkshmi, P., Abhisubesh, V., & Poopathi, S. (2023). A review on vector borne disease transmission: Current strategies of mosquito vector control. Retrieved from Indian Journal of Entomology, 503-513.

[9] Caminade, C., McIntyre, K. M., & Jones, A. E. (2019). Impact of recent and future climate change on vector-borne diseases. Retrieved from Annals of the New York Academy of Sciences, 1436(1), 157-173.

[10] Sa-Ngamuang, C., Lawpoolsri, S., Yin, M. S., Barkowsky, T., Cui, L., Prachumsri, J., & Haddawy, P. (2023). Assessment of malaria risk in Southeast Asia: a systematic review. Malaria Journal, 22(1). Retrieved from https://doi.org/10.1186/s12936-023-04772-3

[11] Rajvanshi, H., Saha,K. B., Shukla, M. M., Nisar, S., Jayswar, H., Mishra, A. K., et al. (2021). Assessment of ASHA for knowledge, diagnosis, and treatment of malaria in Mandla district of Madhya Pradesh as part of the malaria elimination demonstration project. Malaria Journal, 20, 78.

[12] Gita-Carlos, R. A. (2023, July 4). DOH sees PH malaria-free 'in 2 to 3 years.' Philippine News Agency. Retrieved from https://www.pna.gov.ph/articles/1204872

[13] Edillo, F. E., Ymbong, R. R., Bolneo, A. A., Hernandez, R. J., Fuentes, B. L., Cortes, G., Cabrera, J. G., Lazaro,. E. H., & Sakuntabhai, A. (2022). Temperature, season, and latitude influence development-related phenotypes of Philippine Aedes aegypti (Linnaeus): Implications for dengue control amidst global warming. Parasites & Vectors, 15(1). Retrieved from https://doi.org/10.1186/s13071-022-05186-x

[14] Rajput, D., Patil, U. K., Chauhan, D. N., Shah, K., & Chauhan, N. S. (2023). Potentials of natural

products in vector-borne diseases management: Current and future perspectives. In Elsevier eBooks (pp. 1–25). Retrieved from https://doi.org/10.1016/b978-0-323-91942-5.00015-x

[15] Dey, S. K., Rahman, M. M., Howlader, A., Siddiqi, U. R., Uddin, K. M. M., Borhan, R., & Rahman, E. U. (2022). Prediction of dengue incidents using hospitalized patients, metrological and socio-economic data in Bangladesh: A machine learning approach. Retrieved from PLoS One, 17(7), e0270933.

[16] Xu, Z., Bambrick, H., Yakob, L., Devine, G., Frentiu, F. D., Salazar, F. V., & Hu, W. (2020). High relative humidity might trigger the occurrence of the second seasonal peak of dengue in the Philippines. Retrieved from Science of the Total Environment, 708, 134849.

[17] Dyer, O. (2019). Dengue: Philippines declares national epidemic as cases surge across South East Asia. Retrieved from BMJ: British Medical Journal (Online), 366.

[18] Crisis. (2023, March 6). Philippines: Elevated dengue fever activity reported nationwide through February. Philippines: Elevated Dengue Fever Activity Reported Nationwide Through February | Crisis24. Retrieved from https://crisis24.garda.com/alerts/2023/03/philippines-elevated-dengue-fever-activity-reported-nationwide

[19] World Health Organization: WHO. (2023, March 17). Dengue and severe dengue. Retrieved from https://www.who.int/news-room/fact-sheets/detail/dengue-and-severe-dengue

[20] Sy, A. K., Koo, C., Privaldos, K. J., Quinones, M. A. T., Igoy, M. A., Villanueva, S. Y., ... & Hapuarachchi, H. C. (2023). Genetic Diversity and Dispersal of DENGUE Virus among Three Main Island Groups of the Philippines during 2015–2017. Retrieved from Viruses, 15(5), 1079.

[21] Wilder-Smith, A., Flasche, S., & Smith, P. G. (2019). Vaccine-attributable severe dengue in the Philippines. Retrieved from The Lancet, 394(10215), 2151-2152.

[22] Carbayas. R. (2023, June 27). PIA. Retrieved from https://pia.gov.ph/news/2023/06/27/dengue-control-measures-urged-as-zampen-records-4258-cases

[23] Rocklöv, J., & Dubrow, R. (2020). Climate change: an enduring challenge for vector-borne disease prevention and control. Nature Immunology, 21(5), 479–483. Retrieved from https://doi.org/10.1038/s41590-020-0648-y

[24] Ryan, S. J., Lippi, C. A., & Zermoglio, F. (2020). Shifting transmission risk for malaria in Africa with climate change: a framework for planning and intervention. Malaria Journal, 19(1). Retrieved from https://doi.org/10.1186/s12936-020-03224-6

[25] Galvez, R. M., & Tarepe, D. A. (2023). Predicting Dengue Outbreaks in Cagayan de Oro, Philippines Using Facebook Prophet and the ARIMA Model for Time Series Forecasting. Retrieved from Journal of Advances in Mathematics and Computer Science, 38(9), 9-22.

[26] Pley, C., Evans, M., Lowe, R., Montgomery, H., & Yacoub, S. (2021). Digital and technological innovation in vector-borne disease surveillance to predict, detect, and control climate-driven outbreaks. Retrieved from The Lancet Planetary Health, 5(10), e739-e745.

[27] Demecillo, M. M. L., Padilla, R. F. Q., Trinidad, R. B., Coronado, W. A., Perpetua, A. D., Dulay, M. D., & Vedra, S. A. (2023). Occurrence and distribution of Dengue-Causing mosquito in Iligan City and its implication to environmental management. International Journal of Science and Management Studies, 52–58. Retrieved from https://doi.org/10.51386/25815946/ijsms-v6i2p107

[28] Anoopkumar, A. N., & Aneesh, E. M. (2021). A critical assessment of mosquito control and the influence of climate change on mosquito-borne disease epidemics. Environment, Development and Sustainability, 24(6), 8900–8929. Retrieved from https://doi.org/10.1007/s10668-021-01792-4

[29] Bayas, R., Pilankar, S., Shinde, L., Goyal, M., & Panwale, S. (2022). Community awareness, knowledge, and practice on prevention of mosquito-borne diseases in the state of Maharashtra. *International Journal of Mosquito Research*, *9*(2), 37–43. https://doi.org/10.22271/23487941.2022.v9.i2a.599

[30] Kumar, S., Hegde, R. J., & Badiger, S. (2017). A study of mosquito borne diseases awareness, attitude and practices among the rural population in Karnataka, India. *International Journal of Community Medicine and Public Health/International Journall of Community Medicine and Public Health*, *4*(11), 4178. https://doi.org/10.18203/2394-6040.ijcmph20174824

[31] Royall Kristine. (2021, October 6). A woman's perspective - a look at gender and survey participation - Culture Counts. Culture Counts. Retrieved from https://culturecounts.cc/blog/a-womans-perspective-a-look-at-gender-and-survey-participation

[32] Donner, F. (2020, February 12). The Household Work Men and Women Do, and Why. Retrieved from https://www.nytimes.com/2020/02/12/us/the-household-work-men-and-women-do-and-why.html

[33] McKay, S. (2015). "So they remember me when I'm gone": Remittances, fatherhood and gender relations of Filipino migrant men. In Transnational labour migration, remittances and the changing

family in Asia (pp. 111-135). London: Palgrave Macmillan UK.

[34] Parreñas, R. S. (2007). New Household Forms, Old Family Values. Contemporary Asian America: A Multidisciplinary Reader, 206.

[35] Dusfour, I., & Chaney, S. (2021). Mosquito control. In Routledge eBooks (pp. 213–233). https://doi.org/10.4324/9781003056034-19

[36] Becker, N., Langentepe-Kong, S. M., Tokatlian Rodriguez, A., Oo, T. T., Reichle, D., Lühken, R., ... & Bellini, R. (2022). Integrated control of Aedes albopictus in Southwest Germany supported by the Sterile Insect Technique. Parasites & vectors, 15(1), 1-19.

[37] Winch, P., Kendall, C., & Gubler, D. (1992). Effectiveness of community participation in vector-borne disease control. Health policy and planning, 7(4), 342-351.

[38] Gonzalez, et al. (2021). Projecting the risk of mosquito-borne diseases in a warmer and more populated world: a multi-model, multi-scenario intercomparison modelling study. Retrieved from https://www.thelancet.com/journals/lanplh/article/PIIS2542-519621001327/fulltext

[39] Chala, B., & Hamde, F. (2021). Emerging and re-emerging vector-borne infectious diseases and the challenges for control: a review. *Frontiers in public health*, *9*, 715759.

[40] Vega Rúa, A., & Okech, B. A. (2019). The spread of mosquito-borne diseases: a major and global public health problem. Olfactory Concepts of Insect Control-Alternative to insecticides: Volume 1, 1-27.

[41] Watentena, A., Okoye, I. C., & Onah, I. E. (2020). Dengue Reemergence: The Challenges Ahead. *International Annals of Science*, *9*(1), 132-140.

[42] Bermond, C. D. (2023). How Sewage Pollution Affects Distribution and Life History Traits of The Southern House Mosquito, Culex quinquefasciatus.

[43] Alkhayat, F. A., Ahmad, A. H., Rahim, J., Dieng, H., Ismail, B. A., Imran, M., ... & Munawar, K. (2020). Charaterization of mosquito larval habitats in Qatar. Saudi journal of biological sciences, 27(9), 2358-2365.

[44] Seidahmed, O. M. E., Lu, D., Chong, C. S., Ng, L. C, & Eltahir, E. A. B. (2018). Patterns of urban housing shape dengue distribution in Singapore at neighborhood and country scales. GeoHealth, 2, 54–67. Retrieved from https://doi.org/10.1002/2017GH000080

[45] Onodua, E., Odo, P. E., & Egwunyenga, A. O. (2020). Mosquito Species Abundance, Distribution and Diversity in Ughelli North Local Government Area, Delta State, Nigeria. Retrieved from *Nigerian Annals of Pure and Applied Sciences*, *3*(1), 42-51.

[46] Umakanth, M., & Suganthan, N. (2020). Unusual Manifestations of dengue fever: A review on Expanded dengue syndrome. *Curēus*. https://doi.org/10.7759/cureus.10678

[47] Abualamah, W. A., Akbar, N. A., Banni, H., & Bafail, M. (2021). Forecasting the morbidity and mortality of dengue fever in KSA: A time series analysis (2006–2016). *Journal of Taibah University Medical Sciences*, *16*(3), 448–455. https://doi.org/10.1016/j.jtumed.2021.02.007

[48] Duval, P., Aschan-Leygonie, C., & Moro, C. V. (2023). A review of knowledge, attitudes and practices regarding mosquitoes and mosquito-borne infectious diseases in nonendemic regions. *Frontiers in Public Health*, *11*. Retrieved from https://doi.org/10.3389/fpubh.2023.1239874

[49] Ahmed, R., Dey, D., & Tyagi, V. (2020). Mosquito vector borne disease-malaria and public awareness in Sonitpur and Udalguri districts of Assam, India. *International Journal of Mosquito Research*, *7*(5), 26–31. Retrieved from https://doi.org/10.22271/23487941.2020.v7.i5a.475

[50] Fatima, T., Habib, A., Khan, A., Riaz, R., Haq, M., & Raufi, N. (2023). Mosquito-borne diseases in Pakistan: challenges, strategies, and future prospects. *International Journal of Surgery Global Health*, *6*(6). Retrieved from https://doi.org/10.1097/gh9.0000000000000385