Health Gate
Volume 4 Number 2 April 2026 ISSN 2986-1098
Homepage: https://healthgate.ppnikotablitar.com

DOI : http://dx.doi.org/10.70111/hg4211
Submitted : November , 11 2025
Reviewed : January , 17 2026
Accepted : April, 21 2026

Analysis of Dengue Fever Incident in Kendari Based on People, Place and Time

La Ode Liaumin Azim[1*], Agnes Mersatika Hartoyo[2], La Ode Ahmad Saktiansyah[3]

[1,2,3] Faculty of Public Health, Halu Oleo University, Kendari City, Indonesia
Coresponding author : alymelhamed09@uho.ac.id

ABSTRACT

The number of dengue fever cases tends to increase every year, especially during the rainy season when the spread of this disease increases. This study was conducted to provide an overview of the endemicity and incidence of dengue fever based on human, place, and time variables in the working area of the Benu-Benua Community Health Center from April to June 2025. The study was conducted from May 20 to June 21, 2025. This study used a survey design with a descriptive observational approach. The approach used was exploratory descriptive, with the aim of systematically describing and explaining various facts and data from the investigation, so as to provide an accurate picture of the conditions in the field. The results of the study showed that the evaluation of the accuracy and completeness of surveillance at the Benu-Benua Community Health Center was accurate and complete. Dengue fever cases in weeks 14-24 appeared in weeks 15, 18, and 19 with a total of 1 case, while there were no dengue fever cases in the other weeks (0 cases). Dengue fever cases were found in the 10-14, 25-29, and 40-44 age groups, which had the same number of cases, namely 1 case. The male gender had the highest number of cases, while no DBD cases were found in females. The highest number of DBD cases was found in the Tipulu work area (2 cases), followed by Sodohoa (1 case), and no DBD cases were found in other work areas.

Keywords: Dengue fever, population density, environment, surveillance

Background

Dengue hemorrhagic fever, or DHF, can be caused by the transmission of the dengue virus by Aedes Aegypti mosquitoes (1). Several factors can contribute to the occurrence of dengue hemorrhagic fever or DHF, including the home environment, where overcrowded and congested residential areas are more likely to become breeding grounds for mosquitoes. There are many possible effects of DHF (2).Mild DHF can cause high fever, rash, and muscle and joint pain. Severe dengue hemorrhagic fever, also known as dengue hemorrhagic fever, can cause serious bleeding, a sudden and drastic drop in blood pressure, and even death. Dengue fever can affect anyone, and its spread increases during the rainy season. Symptoms typically appear around 2–7 days after being bitten by a mosquito (3).The main symptoms of this disease are high fever, muscle pain, headache, and in severe cases, it can cause internal bleeding, shock, and even death if not treated immediately (4).

The spread of dengue fever during 2022, among Asian countries, the highest number of reported dengue fever cases was in Vietnam with 145,536 cases, the Philippines with 52,597, and Indonesia with 68,903 cases. The only country outside Asia with a higher incidence of dengue fever was Brazil. As of July 27, 2023, the European Center for Disease Prevention and Control has reported more than three million cases and more than 1,500 dengue-related deaths globally (4).According to WHO data, as of April 2024, more than 7.6 million dengue fever cases have been reported, including 3.4 million confirmed cases, more than 16,000 severe cases, and more than 3,000 deaths (6). There were 73,518 cases of dengue fever in Indonesia based on data from the 2021 Indonesian Health Profile. This number increased in 2022 to 143,266 cases. In 2023, it decreased to 114,720 cases. However, in the 22nd week of 2024, there was an increase in dengue fever cases, with 119,709 cases, which is higher than the number of cases in the previous year (6).In 2024, there were 88,593 cases of dengue fever with 621 deaths in Indonesia. According to the report, out of 456 districts/cities in 34 provinces, DBD-related deaths occurred in 174 districts/cities across 28 provinces (2).

Publisher: Regional Representative Council of the Indonesian National Nurses Association of Blitar City
Correspondent*

Volume 4 Number 2 April 2026 ISSN 2986-1098
Homepage: https://healthgate.ppnikotablitar.com

According to data from the Southeast Sulawesi Provincial Health Office (2024), the number of dengue fever (DF) cases and deaths due to DF in Southeast Sulawesi Province in 2023 amounted to 1641 cases with an IR reaching 59.69 per 100,000 population and a CFR of 0.85%. Based on data from the Kendari City Health Office (2024), during the period January-May 2024, there were 1,663 cases of dengue fever in Kendari City with 11 deaths due to DBD. Kendari City is the capital of Southeast Sulawesi Province and one of the regions with the highest number of DBD cases in the province. The average number of Dengue Hemorrhagic Fever cases in Kendari City during that period was 450 cases, 307 cases, and 211 cases (7).

The success of dengue fever case management can be seen from two indicators, namely dengue incidence or morbidity rate (Incidence Rate or IR) and dengue mortality (Case Fatality Rate or CFR). Based on the Ministry of Health's Strategic Plan for 2020-2024, the government has set a target of 80% of districts/cities having an IR ≤ 10/100,000 by 2022, increasing to 85% in 2023, and reaching 95% in 2024. The CFR target set based on the National Dengue Control Strategy is 0.7% for the 2020-2022 period and 0.6% for the 2023-2024 period. CFR is categorized as high if the percentage exceeds 1%, and conversely, if the value is below 1%, it is categorized as low (9)

One of the efforts to prevent extraordinary events caused by dengue is to continue promoting a culture of mosquito breeding site eradication by implementing the "one house, larva monitors" movement. The Ministry of Health has issued a national dengue prevention strategy for 2021 to 2025 with six strategies. First, strengthening effective, safe, and sustainable vector management. Second, improving access to and quality of dengue treatment. Third, strengthening comprehensive dengue surveillance and responsive outbreak management. Fourth, increasing continuous community involvement. Fifth, strengthening government commitment, program management policies, and partnerships. Sixth, developing studies, inventions, innovations, and research as the basis for evidence-based policies and program management (8).

The Benu-Benua Community Health Center, as one of the health service centers in Kendari City, has recorded a number of alarming cases of dengue fever. The spread of this disease is influenced by various factors, including individual characteristics (people), environmental conditions (place), and time patterns (time) related to the epidemiology of the disease. Therefore, epidemiological surveillance that examines these three factors is very important to understand the distribution pattern of dengue fever, which in turn can support more effective prevention and control efforts.

Person-based epidemiological surveillance provides a clear picture of who is most at risk of contracting the disease, where it occurs most frequently, and when it tends to increase. Person-based analysis involves examining age groups, gender, health status, and other social factors that influence vulnerability to dengue. Place-based analysis examines the geographic distribution of the disease, such as densely populated areas or areas with inadequate sanitation, which can be breeding grounds for Aedes mosquitoes. Time-based analysis includes seasonal or annual patterns that affect the number of dengue cases (9).

Research Objectives

Based on this, this study aims to conduct epidemiological surveillance of dengue fever cases in the working area of the Benu-Benua Community Health Center by identifying and analyzing the distribution of cases based on people, place, and time factors. The results of this study are expected to provide useful information for formulating more targeted prevention strategies to reduce the burden of dengue fever in the region.

Methods

This study used a survey design with a descriptive observational approach aimed at exploring information related to health issues. The approach used was descriptive exploratory, with the aim of systematically describing and explaining various facts and data from the investigation, thereby providing an accurate picture of the conditions in the field. This study was conducted to provide an overview of the endemicity and incidence of dengue fever based on person variables, place variables, and time variables in the working area of the Benu-Benua Community Health Center from April to June 2025. The research was conducted from May 20, 2025, to June 21, 2025.

The population in this study was all cases of dengue fever recorded in the Benu-beua community health

Publisher: Regional Representative Council of the Indonesian National Nurses Association of Blitar City
Correspondent*

Volume 4 Number 2 April 2026 ISSN 2986-1098
Homepage: https://healthgate.ppnikotablitar.com

center working area at the time of the study. The study sample was all dengue fever case data that met the criteria and were available in full in the records. The sampling technique used was total sampling (data census), which involved collecting all DHF case records listed in the register/surveillance report during the observation period. If there were duplicate data, deduplication was performed based on minimum identity (e.g., medical record number/date of visit/name–address) in accordance with the recording rules applicable at the facility.

The instruments used are data extraction forms or checklists prepared by researchers to copy variables from data sources (surveillance registers, medical records, or program reports). The "person" variables include age/age group, gender, and other available characteristics; the 'place' variables include the subdistrict or specific work area according to the level of data aggregation; and the "time" variables include the date of the event/visit/diagnosis.

Data collection was carried out by searching and copying information from health center records (Dengue fever registers, surveillance report summaries, and/or medical records) into extraction sheets, followed by coding (e.g., age group, subdistrict code, and time period). The analysis was descriptive, presenting the frequency and proportion of cases based on variables such as person (age/age group, gender), place (subdistrict), and time (month/week/quarter). For the time component, trend patterns (e.g., increase in cases in certain months) and identification of peak periods were presented.

Results

Table 1. Data on the Number of Cases Reported by SKDR for Potentially Epidemic Diseases in Weeks to 24 of 2025

Disease	This Week			Weeks 14-24		
	Number of Cases New	Number of Deaths	Number Tested Lab	Number of Cases New	Number of Deaths	Number Tested Lab
Acute Diarrhea	7	0	0	44	0	0
Confirmed Malaria	0	0	0	0	0	0
Suspected Fever Dengue	0	0	0	3	0	1
Pneumonia	0	0	0	0	0	0
Bloody Diarrhea or Dysentery	0	0	0	0	0	0
Suspected Typhoid Fever	0	0	0	14	0	3
Acute Jaundice Syndrome	0	0	0	0	0	0
Chikungunya Suspect	0	0	0	0	0	0
Suspected Bird Flu in Humans	0	0	0	0	0	0
Measles Suspects	0	0	0	0	0	0
Diphtheria Suspect	0	0	0	0	0	0
Pertussis Suspect	0	0	0	0	0	0
AFP (Acute Flaccid Sudden)	0	0	0	0	0	0
Animal Bite Cases Rabies Transmission	0	0	0	0	0	0
Anthrax Suspect	0	0	0	0	0	0
Leptospirosis Suspect	0	0	0	0	0	0
Cholera Suspects	0	0	0	0	0	0
Uncommon Disease	0	0	0	0	0	0

Publisher: Regional Representative Council of the Indonesian National Nurses Association of Blitar City
Correspondent*

Health Gate
Volume 4 Number 2 April 2026 ISSN 2986-1098
Homepage: https://healthgate.ppnikotablitar.com

Disease	This Week			Weeks 14-24		
	Number of Cases New	Number of Deaths	Number Tested Lab	Number of Cases New	Number of Deaths	Number Tested Lab
Cluster Uncommon Suspect Increasing/Encephalitis	0	0	0	0	0	0
Tetanus Suspect Neonatal	0	0	0	0	0	0
Tetanus Suspect	0	0	0	0	0	0
ILI (*Influenza-like Illness*)	2	0	0	11	0	0
HFDM suspect	0	0	0	0	0	0
ISPA	56	0	0	479	0	0
COVID-19 Suspects	0	0	0	0	0	0
TOTAL (NUMBER OF VISITS)	**469**	**0**	**0**	**4357**	**0**	**4**

Source: Secondary Data from BLUD UPTD Benu-Benua Community Health Center, 2025

Based on Table 1, it can be seen that the potential epidemic diseases reported by the Benu-Benua Community Health Center UPTD BLUD in 2025 this week include 7 cases of acute diarrhea without deaths, 2 cases of ILI without deaths, and 56 cases of ARIwithout deaths. Meanwhile, during the period from week 14 to week 24, there were 44 cases of acute diarrhea without deaths, 3 suspected cases of dengue fever without deaths, 14 suspected cases of typhoid fever without deaths, 11 cases of ILI without deaths, and 479 cases of ISPA without deaths.

Table 2. Accuracy of Health Facility Reports from Benu-Benua Health Center

Health Facility	Cumulative (%)
Cluster 1 Management	100
Cluster 2 Mothers and Children	100
Cluster 3 Adults and Elderly	100
Cluster 4: Infectious Disease Control	100
PKPR Services	100
Emergency Unit	100
Auxiliary Health Center	100
Mobile Health Center	100
Integrated Health Service Post	100

Source: Secondary Data from BLUD UPTD Benu-Benua Community Health Center, 2025

Based on Table 2, it shows the accuracy of the health facility reports of the Benu-Benua Community Health Center UPTD in weeks 14 to 24 of 2025, all health facilities covering Cluster 1 Management, Cluster 2 Mothers and Children, Cluster 3 Adults and the Elderly, Cluster 3 Communicable Disease Control, PKPR Services, Emergency Units, Auxiliary Health Centers, Mobile Health Centers, and Posyandu successfully reported on time with a cumulative accuracy rate of 100%. This demonstrates consistent commitment to timely reporting from these facilities.

Publisher: Regional Representative Council of the Indonesian National Nurses Association of Blitar City
Correspondent*

Health Gate
Volume 4 Number 2 April 2026 ISSN 2986-1098
Homepage: https://healthgate.ppnikotablitar.com

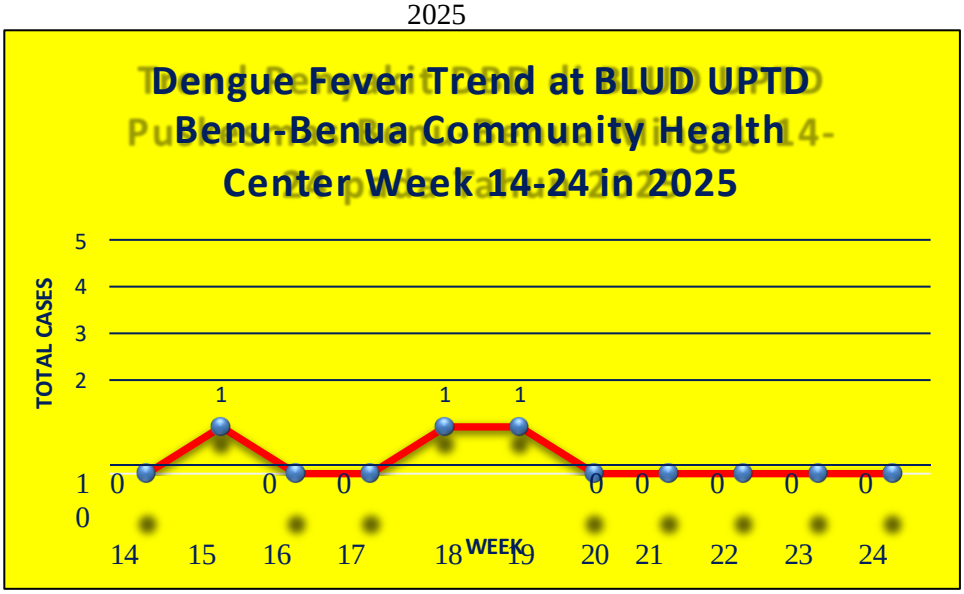
Table 3. Completeness of Health Facility Reports for Benu-Benua Health Center

Health Facility	Cumulative (%)
Cluster 1 Management	100
Cluster 2 Mothers and Children	100
Cluster 3 Adults and Elderly	100
Cluster 4: Infectious Disease Control	100
PKPR Services	100
Emergency Unit	100
Auxiliary Health Center	100
Mobile Health Center	100
Integrated Health Service Post	100

Source: Secondary Data from BLUD UPTD Benu-Benua Community Health Center, 2025

Based on Table 3 above, which shows the accuracy of the health facility reports of the Benu-Benua Community Health Center (UPTD Puskesmas) from week 14 to week 24 of 2025, all health facilities covering Cluster 1 Management, Cluster 2 Mother and Child, Cluster 3 Adults and Elderly, Cluster 3 Communicable Disease Control, PKPR Services, Emergency Unit, Auxiliary Health Center, Mobile Health Center, and Posyandu show 100% reporting completeness, which means that all data required in the SKDR report has been filled in completely by each health service facility without any deficiencies.

Figure 1. Trend of Dengue Fever at BLUD UPTD Benu-Benua Health Center Week 14-24 in 2025



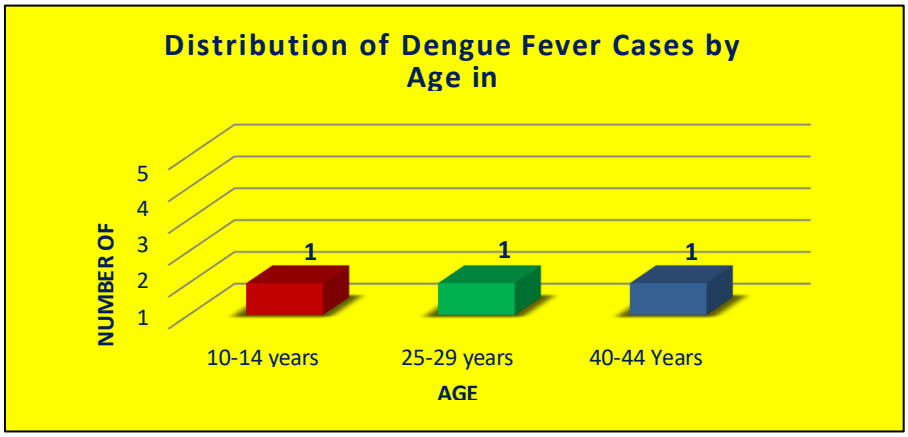
Source: Secondary Data, 2025

Based on graph 1, the number of dengue fever cases at the Benu-Benua Community Health Center during weeks 14-24 in 2025 tended to be stable. The highest number of DBD cases occurred during weeks 15, 18, and 19, each with 1 case. Meanwhile, no DBD cases were reported during weeks 14, 16, 17, and from week 20 to 24 (0 cases).

Publisher: Regional Representative Council of the Indonesian National Nurses Association of Blitar City
Correspondent*

Volume 4 Number 2 April 2026 ISSN 2986-1098
Homepage: https://healthgate.ppnikotablitar.com

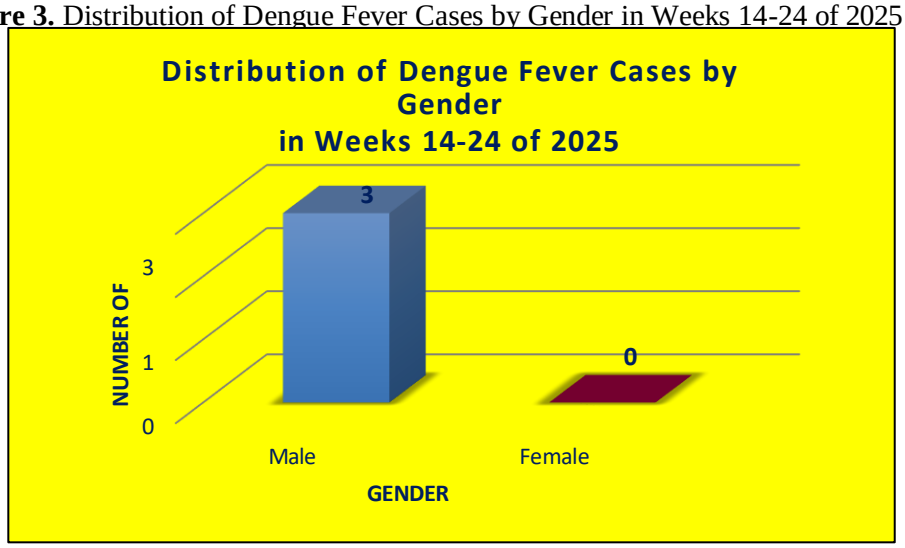
Figure 2. Distribution of Dengue Fever Cases by Age During Weeks 14-24 in 2025



Source: Secondary Data, 2025

Based on graph 2, it can be seen that the 10-14, 25-29, and 40-44 age groups have the same number of dengue cases, namely 1 case. From the data obtained by researchers during their observation at the Benu Benua Community Health Center, it was found that the ages of the three dengue fever patients varied, leading to the conclusion that dengue fever can affect anyone and does not discriminate based on age.

Figure 3. Distribution of Dengue Fever Cases by Gender in Weeks 14-24 of 2025



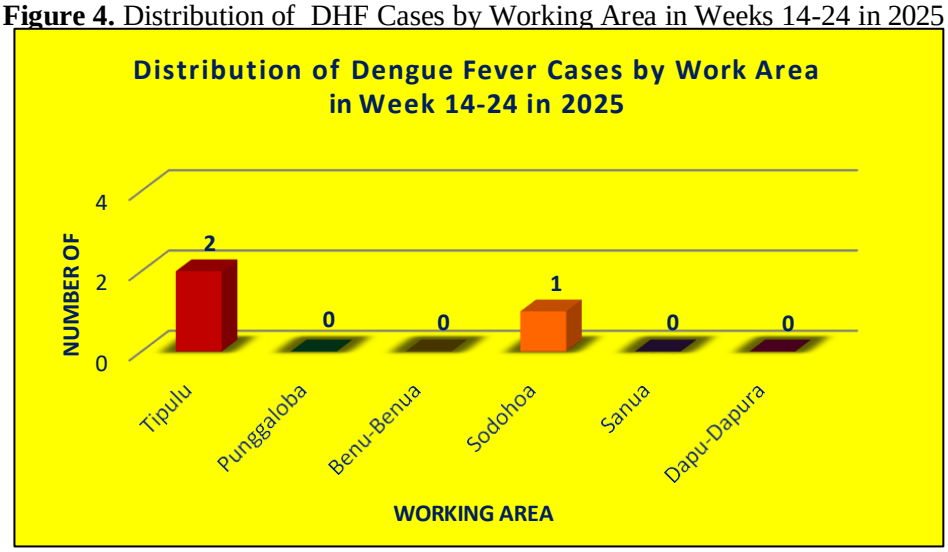
Source: Secondary Data, 2025

Based on graph 3, it can be seen that males have the highest number of dengue fever cases (3 cases). Meanwhile, no dengue fever cases were found among females (0 cases). From the researcher's observations at the Benu Benua Community Health Center, the researcher obtained information that all dengue fever patients were male.

Publisher: Regional Representative Council of the Indonesian National Nurses Association of Blitar City
Correspondent*

Health Gate
Volume 0 Number 0 Month 000 ISSN XXXX-YYYY
Homepage: https://healthgate.ppnikotablitar.com

Figure 4. Distribution of DHF Cases by Working Area in Weeks 14-24 in 2025



Source: Secondary Data, 2025

Based on graph 4, it can be seen that the Tipulu area has the highest number of dengue fever cases (2 cases), while the Sodohoa area has the lowest number of dengue fever cases (1 case). From the results of the researcher's observations at the Benu-Benua Community Health Center, it was found that the sub-district with the highest number of dengue fever cases in the Benu-Benua Community Health Center working area was the Tipulu sub-district.

Discussion

Paying attention to the cleanliness around the house. Aedes Aegypti mosquitoes like to rest on hanging objects such as clothes, mosquito nets, or plants near their breeding grounds and in rooms that are somewhat dark and humid. Aedes Aegypti mosquitoes usually rest or sleep indoors, especially in dark places or on hanging clothes. The habit of hanging clothes inside the house is an indication that it is a favorite resting place for Aedes Aegypti mosquitoes. The presence of water storage areas contributes to the presence of Aedes Aegypti larvae, as the existence of landfills around residential areas has the potential to become breeding grounds for Aedes Aegypti mosquitoes and increases the potential for contact with humans (12).

Based on graph 3, it can be seen that males have the highest number of dengue fever cases. Many (3 cases). Meanwhile, no cases of dengue fever were found among females (0 cases). From the results of the researcher's observations at the Benu Benua Community Health Center, the researcher obtained information that all dengue fever patients were male. This is due to differences in the frequency of activities between males and females. Men are more often outside the home than women, so the active time of the Aedes Aegypti mosquito in the morning and evening makes it more likely to bite men than women. Additionally, there are differences in protective clothing. This is related to the previous discussion that the condition.

The environment surrounding the homes of dengue fever patients is unclean and littered with trash, so when male dengue fever patients are around their homes, they are less likely to wear clothing that covers their entire bodies and are more susceptible to being bitten by Aedes Aegypti mosquitoes. Men are more susceptible to dengue virus infection because the production of immunoglobulin and antibodies as an immune response is better in women than in men. The immune systems of men and women show differences when they enter reproductive age. This difference is caused by the hormone estrogen in women, which can significantly increase IgG and IgA synthesis. This increase in synthesis is what gives women a better immune response to viruses. Gender is one of the factors that can increase the risk of DHF. Men have higher morbidity and mortality rates because they show a greater tendency toward severe infectious diseases due to a weakened humoral and cellular immune response (Taufik et al., 2024). This study is in line with research conducted by Elizabeth & Yudhastuti (2023), which states

that the highest number of DHF cases in West Java Province occurred in 2016. The majority of people who suffered from DHF from 2016 to 2020 were men (13).

Based on graph 4, it can be seen that the Tipulu area has the highest number of dengue fever cases (2 cases), while the Sodohoa area has the lowest number of dengue fever cases (1 case). From the results of the researcher's observations at the Benu-Benua Community Health Center, it was found that the sub-district with the highest number of dengue fever cases in the Benu-Benua Community Health Center working area was the Tipulu sub-district. This is due to the dense population in the Tipulu sub-district, which is also supported by poor environmental sanitation. In addition, the Tipulu sub-district has a strategic location and public facilities that allow for high levels of outdoor activity, which is a triggering factor for dengue fever. Awareness of the 3M habit (draining, covering, and recycling) is still low, so diseases caused by environmental factors can occur in this sub-district. High population density in urban areas, especially with unplanned urbanization, can create ideal conditions for the breeding of Aedes aegypti mosquitoes, the main vector of dengue fever (DF). This is due to the increasing number of man-made water reservoirs, poor waste management systems, and limited access to clean water, which are often found in densely populated areas. Increased population density coupled with population growth can lead to an imbalance between community needs and the availability of natural resources. This imbalance often results in declining environmental sanitation quality, which ultimately can facilitate the spread of various diseases .

This study is in line with research result, states that population density is closely related to the number of dengue fever cases in Bali Province in 2022, as evidenced by a p-value of 0.02139. With a correlation coefficient of 0.766667, this relationship is considered very strong. The positive direction of the relationship indicates that the more densely populated an area is, the higher the incidence of dengue fever, and vice versa. This study is also in line with research result, conducted states that environmental sanitation variables are related to mobility and population density as well as urban residential location, waste disposal and management, water storage, PSN and the use of mosquito repellents, the existence of SPAL, and behavior as social environmental factors (14).

Based on graph 1, the number of dengue fever cases at the Benu-Benua Community Health Center during weeks 14-24 in 2025 tended to be stable. The highest number of dengue fever cases occurred in weeks 15, 18, and 19, with 1 case each. Meanwhile, no DHF cases were found at all (0 cases) during weeks 14, 16, 17, and weeks 20 to 24. Based on data collected by researchers after conducting fieldwork at the Benu-Benua Community Health Center, it was found that DHF cases appeared during weeks 15, 18, and 19. Respondent 1 was in week 15 on April 9, 2025, and Respondent 2 was in week 18 on April 30, 2025. However, Respondent 3's reporting did not align with the data researchers obtained from the Benu Benua Health Center, because according to the records from the Benu Benua Community Health Center, there were cases in week 19, but based on patient data, they should have been recorded in week 17.

This study is in line with research result, which states that dengue fever cases tend to appear in clusters in certain weeks, while other periods are relatively free of cases. Although this is on a district scale, the weekly pattern strongly supports the statement that there can be zero cases in certain weeks. The Ministry of Health emphasizes a dengue incidence prediction model based on weekly and monthly cycles, which is recommended as an early warning effort through the analysis of stable and fluctuating trends. This implicitly supports the need for accurate weekly reporting so that prediction models (including periods with zero cases) are not disrupted by misplaced data (10).

Based on graph 2, it can be seen that the 10-14, 25-29, and 40-44 age groups have the same number of dengue cases, namely 1 case. From the data obtained by researchers during their observation at the Benu Benua Community Health Center, it was found that the ages of the three dengue fever patients varied, leading to the conclusion that dengue fever can affect anyone and knows no age limits. Age is one of the factors that influence susceptibility to dengue virus infection. All age groups can be infected with the dengue virus, even those who are only a few days old (11).

There are many factors that can cause dengue fever cases among people of all ages. The first is not maintaining environmental hygiene, such as leaving clothes hanging for a long time after wearing them, leaving puddles of water outside the house that are not cleaned up immediately, littering, and not

Health Gate
Volume 0 Number 0 Month 000 ISSN XXXX-YYYY
Homepage: https://healthgate.ppnikotablitar.com

Conclusions and Recommendations

Based on the human aspect, dengue fever cases tend to occur more frequently in males. Based on the location aspect, the distribution of cases is uneven and concentrated in the Tipulu sub-district/area, indicating that there are areas with the potential to become control focal points. Based on the time aspect, dengue fever cases show fluctuations with increases in certain periods/months, indicating a seasonal pattern.

Therefore, it is important for the community and relevant parties to continue to increase promotion and prevention efforts, especially through the implementation of the 3M Plus program, as well as strengthening the monitoring system so that extraordinary events can be anticipated more quickly and effectively.

Acknowledgment

We would like to express our gratitude to the Benu-Benua Community Health Center in Kendari City for granting permission and providing full support during the implementation of this epidemiological surveillance, as well as to all staff who assisted in collecting data and information related to dengue fever cases.

References

1. Safaei S, Derakhshan-sefidi M, Karimi A. Wolbachia: A bacterial weapon against dengue fever-a narrative review of risk factors for dengue fever outbreaks. New Microbes New Infect [Internet]. 2025 Jun 1 [cited 2025 Nov 11];65:101578. https://doi.org/10.1016/j.nmni.2025.101578
2. Chayany R, Akbar Y, Rahmi A, Hanum F, Nurlis. Pengetahuan dan Perilaku Masyarakat dalam Pencegahan Demam Berdarah Dengue. Jurnal Assyifa' Ilmu Kesehatan. 2024;9(1):69–76. https://doi.org/10.54460/jifa.v9i1.65.
3. Septiani Y, Sabilu Y, Nurmaladewi. FAKTOR YANG BERHUBUNGAN DENGAN KEJADIAN DEMAM BERDARAH DENGUE (DBD) DI KECAMATAN BARUGA KOTA KENDARI TAHUN 2025. Jurnal Kesehatan Unggul Gemilang. 2025;9(3):7–15.
4. Defrianti F, Hanifa F, Jayatmi I. Hubungan Sikap Ibu, Dukungan Suami, Dan Status Imunisasi Terhadap Kejadian Infeksi Saluran Pernapasan Akut (Ispa) Pada Balita. Jurnal Penelitian Perawat Profesional [Internet]. 2024;6(4):1799–808. Available from: http://jurnal.globalhealthsciencegroup.com/index.php/JPPP
5. Samad AMuhAS, Nurwijayanti I. UPAYA PENCEGAHAN DAN PENGENDALIAN PENYAKIT DBD DITINJAU DARI MANAJEMEN LINGKUNGAN DAN PERATURAN PEMERINTAH. Jurnal Ilmiah Permas: Jurnal Ilmiah STIKES Kendal. 2025;15(3):75–82.
6. Khan H, Khurshid A, Qureshi HAI, Malik R. Atypical presentation of dengue fever with unilateral massive hemothorax: A case report. Medical Reports [Internet]. 2025 Dec 1 [cited 2026 Feb 17];14:100366. https://doi.org/10.1016/j.hmedic.2025.100366
7. Kemenkes. Jakarta: Kementrian Kesehatan Republik Indonesia. Profil Kesehatan Indonesia 2023. 2024;
8. Dinkes Provinsi Sulawesi Tenggara. Profil kesehatan Provinsi Sulawesi Tenggara. In kendari: Dinas kesehatan Provinsi Sulawesi Tenggara; 2024.
9. Kemenkes RI. Riset kesehatan dasar 2023. Jakarta: Kementerian Kesehatan RI; 2023.
10. Engka MDA, Anggara A, Towidjojo VD, Syamsi N, Agni F. Demam berdarah dengue: laporan kasus dengue hemorrhagic fever: case report. Jurnal Medical Profession (MedPro). 2024;6(9):236–40.
11. Annan E, Guo J, Angulo-Molina A, Yaacob WFW, Aghamohammadi N, C. Guetterman T, et al. Community acceptability of dengue fever surveillance using unmanned aerial vehicles: A cross-sectional study in Malaysia, Mexico, and Turkey. Travel Med Infect Dis [Internet]. 2022 Sep 1 [cited 2025 Nov 11];49:102360. Available from: https://doi.org/10.1016/j.tmaid.2022.102360
12. Sutriyawan A, Suherdin. Method Study: Epidemiological Description and Surveillance System Analaysis of of Dengue Haemorrhagic Fever (DHF) in Bandung City. 2024;8(2):15–29.

13. Wadoe CM, Manurung IFE, Limbu R. Gambaran Pelaksanaan Surveilans Demam Berdarah Dengue (DBD) di Kabupaten Sabu Raijua. Malahayati Nursing Journal. 2023 Nov 1;5(11):3856–68. https://doi.org/10.33024/mnj.v5i11.10088
14. Anas AS, Wulandari NA, Anas HR. Faktor Risiko Penyakit Demam Berdarah Dengue Risk Factors for Dengue Fever Artikel Review. Jurnal Kolaboratif Sains [Internet]. 2025;8(6):3169–76. Available from: https://jurnal.unismuhpalu.ac.id/index.php/JKS
15. Homer P, Setiani O, Budiyono B. Faktor Risiko Lingkungan dan Perilaku Terhadap Kejadian DBD di Kecamatan Ambarawa. JIK JURNAL ILMU KESEHATAN. 2025 Apr 30;9(1):221–8. https://doi.org/10.33757/jik.v9i1.1299
16. Putri nas DSI. Analisis Hubungan Kepadatan Penduduk dengan Kasus DBD di Provinsi Bali Tahun 2025. Jurnal Kesehatan Tambusai. 2025;6(1):2219–24. https://doi.org/10.31004/jkt.v6i1.42352