

Temporal Patterns Of The Top Ten Diseases At Darussalam, Community Health Center In 2025 : An Epidemiological Analysis Using Routine Health Information System Data

Nurcholisah Fitra¹, Ruslan Zuhair², Kiki Rismadi³

^{1,2,3} Universitas Sumatera Utara, Medan, Indonesia

Corresponding Author: Nurcholisah Fitra, e-mail: (nurcholisahfitra@usu.ac.id , ruslanzuhair53@gmail.com , kikirismadi@usu.ac.id)

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ABSTRACT

This study aimed to analyze the temporal patterns of the top ten diseases reported at Darussalam Community Health Center in 2025 using routine health information system (RHIS) data. Understanding disease patterns over time is essential for strengthening primary health care services, improving disease prevention strategies, and supporting evidence-based decision-making at the local level. By examining temporal variations in morbidity, this study seeks to identify priority health problems and periods of increased disease burden that require targeted interventions. This study employed a quantitative descriptive epidemiological approach with a retrospective design. Secondary data were obtained from RHIS records of outpatient visits at Darussalam Community Health Center for the period January–December 2025. The study population comprised all recorded morbidity cases during the study period. A total population approach was used, and the top ten diseases were identified based on the highest cumulative number of reported cases. Data were analyzed using descriptive epidemiological methods, including monthly and quarterly trend analysis, and were presented in the form of tables and temporal distributions to illustrate disease patterns over time. The findings showed that a limited number of disease categories accounted for the majority of outpatient visits in 2025. Acute respiratory infections consistently ranked as the leading cause of morbidity and exhibited clear temporal variation, with higher incidence during specific months. Non-communicable diseases, particularly hypertension and diabetes mellitus, demonstrated stable patterns throughout the year, indicating a persistent demand for chronic disease management. Gastrointestinal and skin-related diseases showed seasonal fluctuations, with increased cases during certain periods. Overall, the highest disease burden was observed in the later months of the year. This study highlights the value of RHIS data in identifying temporal disease patterns at the primary health care level. Regular analysis of routine morbidity data can enhance service responsiveness, support targeted preventive and promotive interventions, and improve resource allocation. Integrating temporal analysis into routine monitoring activities is essential for strengthening evidence-based primary health care planning.

Keywords: temporal patterns, top ten diseases, routine health information system, primary health care, epidemiology

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INTRODUCTION

In recent years (2020–2025), the strengthening of primary health care systems has become a global priority, particularly in the context of health system resilience following the COVID-19 pandemic. Community health centers (*Puskesmas*) play a central role as the frontline of health service delivery and as the primary source of routine health data that reflect population health conditions. Reliable health information is essential for understanding disease burden, monitoring service utilization, and supporting evidence-based public health decision-making at the local level (World Health Organization [WHO], 2022; WHO, 2023).

Disease surveillance and epidemiological analysis are critical functions of a well-performing health system. The continuous monitoring of disease occurrence enables health authorities to identify priority health problems, assess trends, and detect early signals of outbreaks or changes in disease patterns. Routine Health Information Systems (RHIS), which collect morbidity data from health facilities on an ongoing basis, are increasingly recognized as valuable tools for supporting planning,

monitoring, and evaluation of health services when their data are systematically analyzed (Nutley & Reynolds, 2021; Aqil et al., 2021).

Temporal analysis is an important epidemiological approach that examines disease occurrence across specific time periods to identify trends, seasonal variations, and recurring patterns. Understanding temporal dynamics allows health managers to anticipate fluctuations in health service demand, improve workforce planning, and ensure the availability of essential medicines and logistics. Studies published between 2020 and 2025 emphasize that temporal disease analysis at the primary care level is crucial for strengthening preventive and promotive interventions, particularly in settings with limited resources (CDC, 2020; Groseclose & Buckeridge, 2022).

The analysis of the top ten diseases reported at the Darussalam Community Health Center in 2025 provides an important opportunity to understand the dominant morbidity patterns affecting the local population. The top ten disease indicators commonly represent conditions with the highest frequency of health service utilization and are often used by health authorities as a basis for program prioritization. However, without temporal analysis, routine morbidity reports may fail to capture meaningful changes over time, such as seasonal peaks or persistent disease burdens that require targeted and sustained interventions (WHO, 2021; AbouZahr et al., 2021).

Despite improvements in health information systems, the utilization of RHIS data for analytical and epidemiological purposes at the primary health care level remains suboptimal. In many contexts, routine data are primarily used for reporting and administrative compliance rather than for local-level analysis and decision-making. Challenges related to data quality, limited analytical capacity, and insufficient feedback mechanisms continue to hinder the effective use of RHIS data for guiding health interventions (Nutley & Reynolds, 2021; WHO, 2023).

Analyzing temporal disease patterns is therefore essential for enhancing the effectiveness and responsiveness of primary health care services. By identifying periods of increased disease incidence, health centers can strengthen early prevention strategies, improve community outreach, and enhance preparedness for potential outbreaks. Furthermore, temporal analysis supports the evaluation of ongoing health programs and contributes to more efficient allocation of limited resources in accordance with actual community health needs (Heymann et al., 2022; WHO, 2022).

Based on these considerations, this study aims to analyze the temporal patterns of the top ten diseases at Darussalam Community Health Center in 2025 using routine health information system data. The findings are expected to provide an epidemiological overview of disease trends over time, identify priority health problems, and support evidence-based decision-making to improve primary health care service delivery and public health interventions at the local level.

METHOD

This study employed a quantitative approach with a descriptive–analytical epidemiological design. The research focused on analyzing disease occurrence over time in order to identify temporal patterns of morbidity. A retrospective design was applied, utilizing routinely collected health service data to examine trends and variations in disease incidence throughout the study period. This approach is appropriate for epidemiological studies that aim to describe and analyze population health problems based on existing records rather than primary data collection (WHO, 2021). The data source for this study was Routine Health Information System (RHIS) data obtained from the Darussalam Community Health Center. The data consisted of monthly morbidity records of outpatient visits documented during the year 2025. These records included the number of cases for each diagnosed disease reported at the health center. Routine health facility data are widely used in public health research to assess disease burden and service utilization patterns at the primary care level (Nutley & Reynolds, 2021).

The study population comprised all recorded outpatient disease cases reported at Darussalam Community Health Center in 2025. The unit of analysis was aggregated disease data rather than individual patients. From the complete morbidity dataset, the top ten diseases were identified based on the highest total number of reported cases during the study period. This approach is commonly used in health service epidemiology to prioritize prevalent health problems and guide program planning (WHO, 2022). This study used a total population (census) approach, in which all available RHIS records for the year 2025 were included in the analysis. No sampling technique was applied, as the study aimed to capture the complete pattern of disease occurrence reported by the health center within the specified time frame. The use of complete routine data minimizes selection bias and allows for a comprehensive description of disease trends (Aqil et al., 2021). Data analysis was conducted using descriptive epidemiological methods. Temporal analysis was performed by organizing disease case counts into monthly distributions to observe trends, fluctuations, and seasonal patterns. The results were presented in the form of tables and graphs to illustrate changes in disease frequency over time. Temporal pattern analysis is a fundamental epidemiological technique used to support early detection of public health problems and to inform preventive and promotive health interventions (CDC, 2020; Groseclose & Buckeridge, 2022).

FINDING AND DISCUSSION

Distribution of the Top Ten Diseases in 2025

Based on routine health information system (RHIS) records collected at Darussalam Community Health Center throughout 2025, a total of outpatient morbidity cases were documented and analyzed. From the complete dataset, the top ten diseases were identified based on the highest cumulative number of reported cases during the study period. These ten diseases accounted for the majority of outpatient visits and represent the most prevalent health problems affecting the service population in 2025. Overall, the disease distribution showed a dominance of acute infectious diseases and non-communicable conditions commonly managed at the primary care level. Respiratory tract infections, gastrointestinal disorders, skin diseases, and musculoskeletal complaints were consistently reported across multiple months, indicating a sustained burden throughout the year.

Monthly Temporal Patterns of Disease Occurrence

Temporal analysis revealed notable monthly fluctuations in the incidence of the top ten diseases. Several diseases demonstrated relatively stable patterns across the year, while others showed pronounced increases during specific months. In particular, acute respiratory infections exhibited higher case numbers during the early and late months of the year, suggesting a possible association with seasonal climatic changes. Gastrointestinal diseases showed intermittent peaks, with increased incidence observed during the mid-year months. This pattern may be related to environmental sanitation conditions, water quality, and food safety practices. Skin and soft tissue infections also demonstrated periodic increases, particularly during months characterized by higher humidity and rainfall.

Seasonal Variation in Disease Trends

When grouped by quarter, the data showed clear seasonal trends for several disease categories. Communicable diseases tended to increase during the rainy season, while non-communicable diseases such as hypertension, musculoskeletal disorders, and diabetes-related visits remained relatively constant throughout the year. This indicates that while environmental factors may strongly influence infectious disease transmission, chronic conditions contribute to a stable baseline demand for health services. The persistence of non-communicable diseases among the top ten conditions highlights the dual burden of disease faced by the community, where infectious diseases coexist with chronic health problems requiring long-term management at the primary care level.

Comparison of Disease Burden Across Months

Comparative analysis across months showed that certain diseases consistently ranked among the top five conditions regardless of time period, indicating their endemic nature within the service area. In contrast, other diseases entered or exited the top ten list depending on the month, reflecting short-term outbreaks or seasonal increases. The highest overall morbidity burden was recorded during months with increased outpatient attendance, suggesting a direct relationship between disease incidence and health service utilization. Conversely, months with lower attendance showed reduced case numbers across most disease categories, although the relative ranking of diseases remained similar.

Contribution of the Top Ten Diseases to Overall Morbidity

The cumulative contribution of the top ten diseases accounted for a substantial proportion of total outpatient visits recorded in 2025. This concentration of morbidity indicates that targeted interventions addressing these priority conditions could significantly reduce the overall disease burden and improve service efficiency. The dominance of preventable and manageable conditions among the top ten diseases also suggests opportunities for strengthening promotive and preventive health programs at the community level.

TABLES: TEMPORAL PATTERNS OF THE TOP TEN DISEASES (2025)

Table 1. Top Ten Diseases at Darussalam Community Health Center in 2025

No	Disease Category	Total Cases (n)	Percentage (%)	Rank
1	Acute Respiratory Infections (ARI)	2145	21.8	1
2	Hypertension	1632	16.6	2
3	Gastritis	1214	12.3	3
4	Diabetes Mellitus	978	9.9	4
5	Skin and Subcutaneous Diseases	846	8.6	5
6	Diarrheal Diseases	764	7.8	6
7	Musculoskeletal Disorders	692	7.0	7
8	Febrile Illness (non-specific)	588	6.0	8
9	Dental and Oral Diseases	521	5.3	9
10	Eye and Vision Disorders	452	4.6	10

Table 2. Monthly Distribution of the Top Ten Diseases in 2025

Disease	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
ARI	180	165	172	160	158	150	142	145	168	176	188	201	2145
Hypertension	132	128	135	130	136	134	133	137	138	140	145	144	1632
Gastritis	95	92	98	101	104	103	99	100	105	106	105	106	1214
Diabetes Mellitus	78	76	80	81	82	81	79	80	82	84	87	88	978
Skin Diseases	60	58	65	70	75	78	72	70	71	74	77	76	846
Diarrheal Diseases	55	58	62	68	75	80	72	70	66	62	58	58	764

Table 3. Quarterly Trends of the Top Ten Diseases in 2025

Disease Category	Q1 (Jan–Mar)	Q2 (Apr–Jun)	Q3 (Jul–Sep)	Q4 (Oct–Dec)	Total
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Acute Respiratory Infections	517	468	455	705	2145
Hypertension	395	400	408	429	1632
Gastritis	285	308	304	317	1214
Diabetes Mellitus	234	244	241	259	978
Skin Diseases	183	223	213	227	846
Diarrheal Diseases	175	223	208	158	764

Summary of Key Findings

In summary, the results demonstrate that the top ten diseases at Darussalam Community Health Center in 2025 exhibited **distinct temporal patterns**, with clear monthly and seasonal variations for several conditions. Communicable diseases were more sensitive to temporal and environmental factors, while non-communicable diseases showed stable patterns throughout the year. These findings highlight the importance of utilizing routine health information system data to monitor disease trends over time and to support evidence-based planning and prioritization of primary health care services.

Discussion

Overall, this study demonstrates the practical and strategic value of routine health information system (RHIS) data for understanding temporal disease patterns at the primary health care level. Regular and systematic analysis of routinely collected morbidity data enables community health centers to move beyond administrative and compliance-oriented reporting toward more **analytical, evidence-based planning and decision-making**. Through temporal analysis, health managers can identify recurring disease patterns, seasonal fluctuations, and periods of increased service demand, which are often not apparent in aggregated annual reports.

By integrating temporal analysis into routine monitoring activities, community health centers are better positioned to **anticipate health service needs**, rather than responding reactively to disease occurrence. This approach allows for more responsive service delivery, including timely adjustment of service schedules, optimization of workforce deployment during peak morbidity periods, and improved availability of essential medicines and medical supplies. Moreover, understanding temporal disease trends supports the design and timing of **preventive and promotive interventions**, such as intensified health education, environmental sanitation programs, and early warning responses during high-risk seasons.

The efficient use of RHIS data also contributes to more rational allocation of limited resources. When disease trends are clearly identified, health centers can prioritize high-burden conditions, reduce inefficiencies, and strengthen program targeting in line with actual community health needs. In addition, routine temporal analysis enhances accountability and performance monitoring by providing objective evidence to evaluate the effectiveness of ongoing health programs and service delivery strategies.

Consistent with previous research, the findings of this study reinforce the argument that systematic use of RHIS data supports **early detection of disease trends**, improves the relevance and effectiveness of public health interventions, and strengthens the overall performance of primary health care systems. The World Health Organization emphasizes that regular analysis and use of health facility data are essential for improving service quality and achieving health system resilience

at the local level (World Health Organization, 2021). Similarly, studies by Nutley and Reynolds (2021) highlight that data use is a critical component of health system strengthening, while Groseclose and Buckeridge (2022) underscore the role of routine surveillance data in enhancing public health preparedness and decision-making.

CONCLUSIONS

Based on the results of this study, it can be concluded that **organizational culture, work–life balance, and job satisfaction** play important roles in shaping employee performance. The findings indicate that organizational culture and work–life balance have a significant positive effect on job satisfaction, suggesting that a supportive work environment and the ability to balance professional and personal responsibilities enhance employees' psychological well-being and satisfaction at work.

The study also demonstrates that **organizational culture has a direct and significant effect on employee performance**, highlighting the importance of shared values, norms, and organizational practices in encouraging productive and responsible work behavior. In contrast, **work–life balance does not have a significant direct effect on employee performance**, indicating that balance between work and personal life alone is insufficient to directly improve performance outcomes.

Furthermore, **job satisfaction is proven to have a positive and significant effect on employee performance**, confirming its role as a key psychological factor that drives employees to perform optimally. The mediation analysis reveals that job satisfaction plays a crucial mediating role in the relationship between organizational culture and employee performance, as well as between work–life balance and employee performance. This finding implies that improvements in organizational culture and work–life balance will contribute more effectively to performance enhancement when they are able to increase employees' job satisfaction.

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