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Prevalence of The Most Common Disease Among the Community in Gili Iyang, Sumenep, Madura Island

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ABSTRACT

Indonesia is currently experiencing a shift in disease trends, this is marked by an increase in the prevalence of non-communicable diseases (NCDs). The prevalence of these NCDs is also increasingly observed among younger age groups due to rising risk factors such as overweight and obesity. This study aimed to determining the prevalence of the most common diseases and the health profile of the community in Gili Iyang, Sumenep. The samples included in this study were participant in Airlangga Community Hub 2024 in Gili Iyang Island, Sumenep Regency. There were several services in this community development including anthropometry measurement, physical examination and simple lab test. Data was collected and processed using a data processing application, Microsoft Excel. A total of 114 participant were included in this study, hypertension was the most prevalent disease during the community development program 30.1%, followed by hypercholesterolemia as the second most common condition 28.16%, and myalgia as the third leading cause of illness 17.48%. Urgent need for comprehensive health interventions, including routine screening, early management, and targeted health education programs to address the growing burden of NCDs.

***Keywords**: Most Common Disease; Gili Iyang; Community Development; NCD*

INTRODUCTION

Indonesia is currently experiencing a shift in disease trends, commonly referred to as an epidemiological transition (Muharram et al., 2024; Schröders et al., 2017; Utama et al., 2019). This is marked by an increase in the prevalence of Non-Communicable Diseases (NCDs), which have become the leading cause of death (Wang W. J., 2020). Riset Kesehatan Dasar (RISKESDAS) reports that during the period 2013–2018, the prevalence of NCDs dominated by cardiovascular diseases (hypertension, stroke, and heart disease), diabetes, cancer, and chronic obstructive pulmonary diseases (asthma) has shown an upward trend. The prevalence of these NCDs is also increasingly observed among younger age groups due to rising risk factors such as overweight and obesity (Patimah, 2021).

Gili Iyang Island is one of the islands located in Sumenep Regency (Zulfah et al., 2024). Known as the island with high oxygen levels in Indonesia, it faces unique challenges in public health management due to limited access to healthcare facilities and a lack of epidemiological data related to diseases on the island (sumenep, 2019). Thus, with this background, to gather epidemiological data related to diseases on this island and to provide healthcare services to the community, community empowerment is considered the primary and effective approach that can be implemented in Gili Iyang, Sumenep Regency. This study aimed to determining the prevalence of the most common diseases and the health profile of the community in Gili Iyang, Sumenep (Alim, 2024; Wantara & Tambrin, 2020).

The increasing prevalence of non-communicable diseases (NCDs) in low- and middle-income countries (LMICs) has become a major public health challenge. In Indonesia, a large portion of the population faces the growing burden of NCDs, with risk factors such as poor diet, physical inactivity, and smoking contributing to the rise in conditions like hypertension, diabetes, and heart disease. The trend is especially alarming in rural areas, where access to healthcare services is limited, and health awareness remains low. As the country undergoes an epidemiological transition, it is imperative to implement strategies that focus on disease prevention, early detection, and effective management to address this emerging crisis.

One such area in need of attention is Gili Iyang, a small island located in the Sumenep Regency on Madura Island. Despite its renown for having some of the highest oxygen levels in Indonesia, the community here faces significant public health challenges (Ramdlany, 2024). Limited access to healthcare facilities and a lack of epidemiological data make it difficult to address health concerns effectively (Abdul-Rahman et al., 2023). Furthermore, the island's isolation from mainland healthcare services exacerbates the residents' vulnerability to chronic diseases and other health complications. These factors highlight the urgency of gathering detailed health data from the local population to tailor interventions that are both appropriate and sustainable.

In response to these challenges, the Airlangga Community Hub 2024 program was initiated to provide healthcare services and gather epidemiological data on the health status of Gili Iyang's residents. Through this community development program, various services such as anthropometric measurements, physical examinations, and basic laboratory tests were offered to the participants. The study sought to identify the most common diseases affecting the community and to provide insights into the broader health issues at play. Understanding the prevalence of specific conditions would help guide future interventions aimed at improving the overall health of the population.

The prevalence of non-communicable diseases in Gili Iyang was a major focus of this study. Conditions like hypertension, hypercholesterolemia, and myalgia emerged as some of the most common diseases observed among the adult population. These findings align with trends observed in other parts of Indonesia, where NCDs have become leading causes of morbidity and mortality. The growing prevalence of these diseases among younger

populations, potentially linked to lifestyle factors such as diet and physical activity, underscores the need for targeted health education and preventative measures.

In addition to addressing NCDs, the study also highlighted concerns related to childhood stunting and overweight. Despite the island's relatively small sample size, the results revealed a concerning rate of stunting among children under five years old. Stunting, a condition resulting from chronic malnutrition, has far-reaching consequences for a child's physical and cognitive development. This condition is closely linked to poverty, inadequate maternal nutrition, and limited access to quality healthcare, all of which contribute to the prevalence of stunting in rural areas like Gili Iyang.

To combat these health challenges, the study emphasizes the importance of comprehensive health interventions. These include routine screenings, early diagnosis, management programs, and the implementation of health education initiatives that focus on lifestyle changes. By raising awareness about the risks of NCDs and improving access to healthcare, it is possible to mitigate the adverse effects of these diseases on the community. Collaborative efforts between local healthcare providers, government agencies, and academic institutions will be critical to the success of these interventions.

The research on the health conditions of Gili Iyang's population has highlighted several concerns regarding the prevalence of non-communicable diseases (NCDs) such as hypertension, hypercholesterolemia, and myalgia. The study aimed to provide a clearer picture of the health status of the community, but the absence of detailed epidemiological data in the region posed significant challenges in addressing health concerns effectively. Previous reports have indicated that Gili Iyang, a relatively remote island in the Sumenep Regency, lacks sufficient healthcare infrastructure, leaving the population vulnerable to a variety of diseases. This is particularly evident with the rising cases of hypertension and obesity, conditions that often go undiagnosed in areas with limited healthcare access.

Moreover, the lack of health education and screening programs in the region further exacerbates the situation. With an increasing trend of lifestyle-related diseases, especially among younger populations, the urgency for preventive healthcare strategies has become more pronounced. Despite these challenges, the research presented an opportunity to build a foundation for future health interventions. By understanding the common diseases and their prevalence, it becomes possible to implement targeted health programs that address the specific needs of the community.

The urgency of addressing health challenges in Gili Iyang cannot be overstated. Non-communicable diseases (NCDs) are emerging as leading causes of morbidity and mortality across Indonesia, and the situation in Gili Iyang mirrors this national trend. With limited healthcare infrastructure and rising incidences of diseases such as hypertension and obesity, the community is at an increased risk of severe health complications. Implementing public health interventions, such as routine screenings, health education, and lifestyle modifications, is necessary to combat the growing burden of NCDs in the region. Moreover, such

interventions would promote long-term sustainability in managing health issues, which is crucial for the well-being of the community.

Several previous studies have documented the prevalence of NCDs in rural Indonesian populations. For instance, a study by Lima et al. (2024) revealed an alarming increase in adult obesity rates in Indonesia, with significant implications for cardiovascular health and diabetes. Another study conducted by Manapurath (2024) on the prevalence of childhood obesity noted similar trends of rising overweight rates in rural areas. Additionally, Suwarni et al. (2023) examined the prevalence of stunting in children under five years old in Pontianak, revealing that malnutrition-related stunting remains a critical issue in Indonesian rural communities. These studies indicate a broader trend of NCDs and malnutrition issues that affect underserved regions in Indonesia, underscoring the importance of conducting research and implementing health strategies in these areas.

However, despite these findings, a significant gap exists in the epidemiological data specific to the health conditions of Gili Iyang, an island with its own set of challenges, including geographical isolation and limited healthcare access. No previous research has comprehensively analyzed the specific health challenges facing this island's population, particularly the prevalence of NCDs and the relationship between risk factors like obesity and hypertension in this context. This gap highlights the need for localized health research that considers the unique socio-economic and environmental factors affecting the population of Gili Iyang.

The novelty of this study lies in its focus on Gili Iyang, a community that has been largely overlooked in epidemiological research, despite facing pressing health challenges. The integration of community empowerment initiatives with health data collection provides a unique model for addressing public health issues in remote areas. Furthermore, the study introduces the concept of combining healthcare services with active community involvement, an approach that could be replicated in other similar rural areas across Indonesia.

The primary objective of this study is to identify the most common diseases in Gili Iyang and determine the overall health profile of its population. By identifying the prevalence of specific conditions, such as hypertension, hypercholesterolemia, and stunting, the study aims to provide actionable data for policymakers and healthcare providers to design targeted interventions. Additionally, the study intends to raise awareness about the importance of routine health screenings, early detection, and lifestyle modifications in preventing the onset of NCDs in this vulnerable community.

The benefits of this study extend beyond just understanding the current health conditions. By presenting the findings, the study encourages the development of healthcare infrastructure and public health policies that are tailored to the needs of Gili Iyang's residents. Furthermore, it highlights the importance of community-based healthcare programs in bridging the gap between health services and underserved populations. The findings will serve as a

foundation for future interventions and provide a model for similar initiatives in other remote regions of Indonesia.

MATERIALS AND METHODS

The method used in this study is a cross-sectional study. In this study, data were collected at a single point in time (on October 19, 2024) to identify the prevalence of the most common diseases in the Gili Iyang community, Sumenep. This approach allows researchers to describe the health status of the population at a specific moment without following long-term developments.

The samples in this study were participants from the Airlangga Community Hub 2024 on Gili Iyang Island, Sumenep Regency. The inclusion criteria were: residents of Gili Iyang Island, ability to communicate or accompanied by a parent if the participant was a child, and willingness to participate. Total sampling was used, and informed consent was obtained. The community service included anthropometric measurements, physical examination, and simple lab tests. Anthropometric measurements included weight, height, and body mass index (BMI). Weight was measured using a SECA scale, height with a GEA or One Med stadiometer, and BMI was calculated by dividing weight (kg) by height squared (m^2). Blood pressure was measured using a sphygmomanometer. Simple lab tests included random blood sugar, uric acid, and cholesterol measurements. Data were processed using Microsoft Excel to compile, filter, and identify the top five diseases.

RESULTS AND DISCUSSION

The community development was carried out well and smoothly because of the good teamwork between the Community Development team and health workers, illustrated in Figure 1.

Figure 1. Community Development Team in Gili Iyang, Sumenep, Indonesia

A total of 114 participant were included in this study and most of them were female 63.16% (72/114) and the largest population in this study were adults (19-59 yr) 56.14% (64/114). Subject characteristics were detailed in table 1.

Table 1. Subject Characteristics

Subject Characteristics	Population
Gender	
Male	42 (36.84)
Female	72 (63.16)
Age (year)	
≤ 5 years	3 (2.63)
6 – 9 years	4 (3.51)
10 – 18 years	6 (5.26)
19 – 59 years	64 (56.14)
> 60 years	37 (32,46)

Source: Data processed

A total of 3 participant in ≤ 5 years whose weight for height measurements were assessed using the WHO chart curve were included in this study 33.34% (1/3) were normal, 33.34% (1/3) were possible risk of overweight and 33.34% (1/3) were overweight. Weight for age measurements were also assessed in this study and all of them were normal 100% (3/3).

Height for age measurements were also assessed in this study and most of them were severely stunted 66.67% (2/3). Subject height for age measurement were detailed in table 2.

Table 2. Height for age based WHO chart

Categorized	Population	Z-Score
Severely Stunted	2 (66.67)	<-3SD
Stunted	0 (0)	-3SD - <-2SD
Normal	1 (33.34)	-2SD - +3SD
Tall	0 (0)	>+3SD

Source: Data processed

10 participant in 6 – 18 years whose body mass index for age measurements were assessed using the CDC 2000 chart curve were included in this study 80% (8/10) were healthy weight. Subject body mass index for age measurement were detailed in table 3.

Table 3. Body mass index for age based CDC 2000

Categorized	Population	Percentile
Severely Obesity	1 (10)	>10% of 95th
Obesity	0 (0)	95th or greater
Overweight	0 (0)	85th - <95th
Healthy Weight	8 (80)	5th - <85th
Underweight	1 (10)	<5th

Source: Data processed

101 adults from 114 participant were included in this study and most of them were obese grade I 35.64% (36/101) based on WHO body mass index criteria. Subject body mass index were detailed in table 4.

Table 4. Body mass index WHO

Categorized	Population	Percentile
Obese grade II	27 (26.73)	≥ 30kg/m^2
Obese grade I	36 (35.64)	25 - 29.9kg/m^2
Overweight at Risk	14 (13.86)	23 - 24.9kg/m^2
Normal	21 (20.79)	18.5 - 22.9kg/m^2
Underweight	3 (2.97)	< 18.5kg/m^2

Source: Data processed

Here are the results of reporting the 5 most common diseases identified during the community development activities conducted in Gili Iyang, Sumenep Regency.

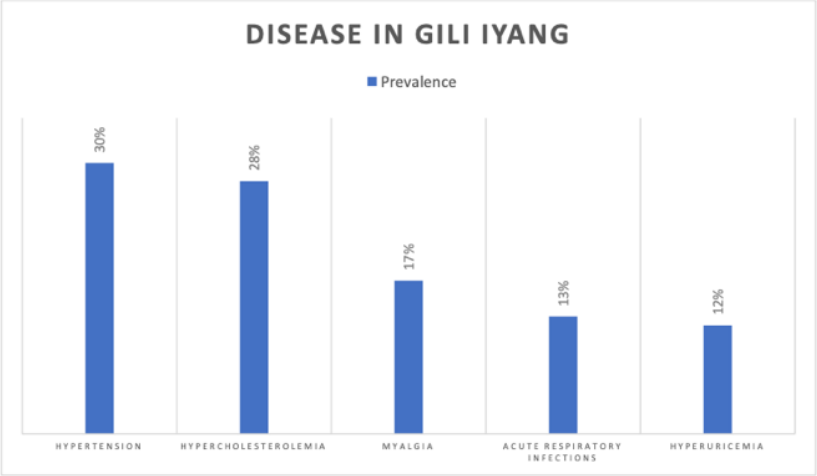

Figure 2. Diagram Chart of 5 Most Common Disease in Gili Iyang, Sumenep Regency

Based on the diagram, from 101 adults in this study, hypertension was the most prevalent disease during the community development program 30.1%, followed by hypercholesterolemia as the second most common condition 28.16%, and myalgia as the third

leading cause of illness 17.48%. Acute respiratory infections was 13% as the forth disease during the community development program and hyperuricemia as the fifth problem in this program with 12%.

All adults participant were included in this study with indications of metabolic symptoms were asses with basic laboratory test including random blood sugar, uric acid, cholesterol and all of them were normal. Subject basic laboratory test results were detailed in table 5.

Table 5. Basic Laboratory Test

Categorized	Population	Range
Random Blood Sugar		
Normal	32 (68.09)	<140mg.dl
Prediabetes	11 (23.4)	140-199mg/dl
Diabetes	4 (8.51)	>200mg/dl
Cholesterol		
Normal	19 (36.54)	<200mg/dl
Borderline	15 (28.85)	200-239mg/dl
High	18 (34.62)	>240mg/dl
Uric acid		
Male		
Normal	10 (55.56)	3.5-7mg/dl
High	8 (44.44)	>7mg/dl
Female		
Normal	16 (59.26)	2.6-6mg/dl
High	11 (40.74)	>6mg/dl

From the results, after completing community development activities from Medical Faculty of Universitas Airlangga Surabaya 33.34% participant ≤ 5 years whose weight for height measurements were possible risk of overweight and overweight. This has the same results as the research conducted by Manapurath (2024) which shows that the prevalence of overweight children aged 0–59 months, as reported in the fifth round of the NFHS (NFHS-5), from 1.9% in the third round to 4.0%. The results were same in adults, based on WHO body mass index criteria, 35.64% adults in the results were obese grade I. This has the same results as the research conducted by Lima (2024) which shows that the prevalence of adult obesity significantly increased from 11.1% in 2006 to 19.8% in 2019, regardless of age, sex, physical activity practice, and presence of diabetes or hypertension, except for people aged 55–64 y, working people, and smokers (Lima, 2024).

Obesity has become a worldwide concern because of its rapidly increasing prevalence, which affects not only individuals but also society. It is associated with numerous health complications, including cardiovascular diseases, metabolic and endocrine dysfunction in adipose tissue, gastrointestinal physiological changes, and more (Athiyyah, 2024).

From the results, 66.67% participant ≤ 5 years in the result of height for age measurements were severely stunted. This has the same results as the research conducted by

Suwarni et al, (2023) which shows that 75.98% children aged 2 – 5 years in Potianak, Indonesia were stunted and 24.2% were severe stunted (Suwarni et al., 2023). Stunting in children under the age of five remains a major public health concern worldwide, particularly in Indonesia and other Asian countries (Correa, 2022). Various clusters can be utilized to categorize factors linked to stunting, including environmental influences, fetal growth restriction and preterm birth, adolescent motherhood and short birth intervals, maternal nutrition and infections, as well as child nutrition and infections. Stunting is further associated with long-term effects, such as impaired cognitive development, a heightened risk of chronic diseases, and diminished economic productivity (Ekholuenetale et al., 2020; Soliman et al., 2021; Woldehanna et al., 2017).

NCD remain the predominant contributor to the global disease burden, with 78% of NCD-related deaths occurring in low-and middle-income countries (LMICs) (WHO, 2018). Based of the results on reporting the 5 most common diseases identified during the community development activities conducted in Gili Iyang, Sumenep Regency top 3 of the disease were NCD, hypertension was the most prevalent disease during the community development program 30.1%, hypercholesterolemia as the second most common condition 28.16%, and myalgia as the third leading cause of illness 17.48% and 12% as the fifth most common were hyperuricemia. Indonesia, the third most populous low- and middle-income country (LMIC) after China and India, with a population of 270 million, has experienced significant demographic and epi-demiological transitions in recent decades. The burden of NCDs is anticipated to increase as the proportion of older adults (aged 65 and above) grows, with this age group projected to constitute one-quarter of the population by 2070. The prevalence of NCD multimorbidity defined as the coexistence of two or more non-communicable diseases is anticipated to increase significantly in LMICs due to rising life expectancy and greater exposure to risk factors (Marthias, 2021).

As reported in Indonesia's Basic Health Research 2018, non-communicable diseases (NCDs), including cancer, stroke, kidney disease, joint disease, diabetes mellitus, heart disease, hypertension, and overweight/obesity, have shown an upward trend compared to the 2013 findings. NCDs are typically chronic, often asymptomatic, and progressive, leading to delayed diagnosis until complications manifest. This highlights the importance of early screening for high-risk populations, timely intervention, and regular monitoring (Lipkin et al., 2020).

CONCLUSION

This study highlights the significant prevalence of NCDs among the population of Gili Iyang Island, Sumenep Regency, with hypertension, hypercholesterolemia, and myalgia emerging as the most common conditions. The findings underscore the urgent need for comprehensive health interventions, including routine screening, early management, and targeted health education programs to address the growing burden of NCDs and associated risk factors such as obesity and stunting. Collaboration between local healthcare providers and academic institutions, as demonstrated in this community development initiative, can serve as

a model for improving health outcomes. For future research, it is crucial to conduct longitudinal studies to monitor the progression of NCDs and their risk factors over time in Gili Iyang. Exploring the effectiveness of lifestyle interventions, such as dietary modifications and physical activity programs, would be valuable in understanding how to reduce NCD prevalence. Additionally, expanding research to include a broader demographic, particularly children and the elderly, would help better address specific health challenges within these age groups. Finally, assessing the local healthcare infrastructure's ability to manage the rising NCD burden is essential for implementing practical solutions to improve healthcare services and ensure sustainable health outcomes in the region.

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