GLOBAL PUBLIC HEALTH PERSPECTIVES

Overview Of Hypertension Cases In North Kalimantan Province

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ABSTRAK

Hipertensi tetap menjadi salah satu penyakit tidak menular utama yang berkontribusi signifikan terhadap morbiditas dan mortalitas di Indonesia, termasuk di Kalimantan Utara. Penelitian ini bertujuan untuk memberikan gambaran mengenai kasus hipertensi di Provinsi Kalimantan Utara berdasarkan distribusi kasus baru, kasus yang sudah ada (prevalensi), dan kasus kematian. Penelitian ini menggunakan pendekatan deskriptif dengan memanfaatkan data sekunder yang diperoleh dari laporan hipertensi di lima kabupaten/kota di Provinsi Kalimantan Utara. Hasil penelitian menunjukkan bahwa Kota Tarakan mencatat j umlah kasus baru hipertensi tertinggi, sedangkan Kabupaten Nunukan memiliki jumlah kasus yang sudah ada paling tinggi. Sementara itu, kasus kematian tertinggi tercatat di Kabupaten Bulungan. Peningkatan kasus baru dikaitkan dengan perubahan gaya hidup—seperti asupan natrium tinggi, kurangnya aktivitas fisik, kebiasaan merokok, dan stres—serta peningkatan program skrining. Kasus yang sudah ada mencerminkan sifat kronis hipertensi dan tantangan terkait kepatuhan pengobatan. Kasus kematian terutama disebabkan oleh komplikasi kardiovaskular dan serebrovaskular akibat hipertensi yang tidak terkontrol dan keterlambatan penanganan. Beberapa faktor yang memengaruhi kasus hipertensi di Kalimantan Utara meliputi predisposisi genetik, pola gaya hidup tidak sehat, terbatasnya akses layanan kesehatan di daerah terpencil, serta rendahnya kesadaran masyarakat mengenai skrining kesehatan rutin. Oleh karena itu, penguatan strategi promotif dan preventif, perluasan program skrining berbasis masyarakat, peningkatan kepatuhan pengobatan, serta peningkatan layanan kesehatan darurat sangat penting dilakukan untuk mengurangi beban hipertensi beserta komplikasinya di Provinsi Kalimantan Utara.

Keywords

hypertension; non-communicable disease; North Kalimantan; mortality; prevalence

ABSTRACT

Hypertension remains one of the major non-communicable diseases contributing significantly to morbidity and mortality in Indonesia, including in North Kalimantan. This study aims to provide an overview of hypertension cases in North Kalimantan Province based on the distribution of new cases, existing cases, and mortality cases. The study employed a descriptive approach using secondary data obtained from hypertension reports across five regencies/cities in North Kalimantan Province. The findings revealed that Tarakan recorded the highest number of new hypertension cases, while Nunukan Regency had the

highest number of existing cases. Meanwhile, the highest mortality cases were identified in Bulungan Regency. The increase in new cases was associated with lifestyle changes, including high sodium intake, physical inactivity, smoking habits, and stress, as well as improved screening programs. Existing cases reflected the chronic nature of hypertension and the challenges related to medication adherence. Mortality cases were primarily caused by cardiovascular and cerebrovascular complications resulting from uncontrolled hypertension and delayed treatment. Several contributing factors influencing hypertension cases in North Kalimantan include genetic predisposition, unhealthy lifestyle patterns, limited healthcare access in remote areas, and low public awareness regarding routine health screening. Therefore, strengthening promotive and preventive strategies, expanding community-based screening programs, improving medication adherence, and enhancing emergency healthcare services are essential to reduce the burden of hypertension and its complications in North Kalimantan Province.

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1. Introduction

Over the past three decades, Indonesia has undergone an epidemiological transition, reflected in the contribution of diseases to mortality and Disability Adjusted Life Years (DALYs). Data from the Global Burden Disease 2019 released by the Institute for Health Metrics and Evaluation (IHME) reported that between 1990 and 2019, deaths caused by communicable diseases as well as maternal, perinatal, and neonatal conditions decreased by 60%; deaths caused by non-communicable diseases increased by 82%; and deaths due to injuries decreased by 20.4%. The three leading non-communicable diseases contributing to mortality and high DALYs are stroke, ischemic heart disease, and diabetes.

The burden of non-communicable diseases (NCDs) in Indonesia continues to increase and has become a major challenge for the national health system. The 2023 Indonesian Health Survey (SKI) showed that the prevalence of hypertension based on measurements reached 29.2%, while diabetes prevalence reached 11.7% among the population aged 15 years and above. The substantial burden of NCDs contributes significantly to healthcare financing within the national health system. In 2022, four catastrophic diseases—heart disease, stroke, cancer, and kidney failure—accounted for nearly IDR 27.5 trillion of the National Health Insurance (JKN) budget.

Various non-communicable diseases are associated with unhealthy lifestyle behaviors, such as smoking, physical inactivity, and dietary patterns high in sugar, salt, and fat. In response, several efforts for early detection and management of NCDs have been implemented through strengthening promotive and preventive measures at primary healthcare services and curative interventions at secondary and tertiary healthcare facilities. In 2024, obesity screening reached 58,316,042 individuals, or 35.83% of the target population of 162,752,614 individuals. This achievement represented a 9.11% increase compared to the previous year (53,446,544 individuals in 2023). The coverage of diabetes mellitus screening also increased by 4.09% in 2024, reaching 43,159,593 individuals or 36.45% of the target population, compared to 39,116,849 individuals in 2023 or 33% of the target population.

In addition, visual acuity screening coverage increased by 38.9% compared to 2023, rising from 51.4 million to 71.4 million participants in 2024. The screening identified 2.3 million individuals (3.3%) with severe visual impairment requiring referral services. However, several programs still face challenges, including cardiac screening (684,224 individuals or

6.56% of the target), hypertension screening (58,781,793 individuals or 30.39% of the target), and stroke screening (3,266,010 individuals or 30.9% of the target). This phenomenon is commonly experienced by many developing countries due to changes in socioeconomic status, environmental development, and various aspects of life that ultimately influence lifestyle changes.

North Kalimantan faces unique challenges in controlling non-communicable diseases. Based on the 2023 Indonesian Health Survey (SKI), the prevalence of hypertension in North Kalimantan Province was 29.2%. The characteristics of hypertension cases in North Kalimantan are influenced by several determinant factors:

Consumption Patterns: Local culinary culture characterized by high salt (sodium) intake and consumption of processed or preserved foods (such as salted fish and fermented foods) constitutes a major contributing factor.

Geographical Conditions and Accessibility: The vast geographical area, including river basin regions and remote inland areas, limits the accessibility of routine early detection programs for communities living in isolated regions.

Sedentary Lifestyle: Urban modernization in North Kalimantan has altered the physical activity patterns of the population, contributing to increased body mass index (obesity) as a risk factor for hypertension.

Although the local government has intensified programs such as POSBINDU PTM (Integrated Development Post for Non-Communicable Diseases) and Free Health Check-Up programs, public awareness regarding independent health screening remains low. Many patients only become aware of their hypertensive condition after severe symptoms or complications arise, indicating gaps in the effectiveness of health education initiatives.

Based on the background above, a comprehensive overview of newly identified cases, management of existing cases, and the impact on hypertension-related mortality in North Kalimantan is required..

2. Methods

The research utilized a combined methodology. The data was analyzed using descriptive and explanatory methods.

2.1. Design and location of research **Example editor**:

The data were gathered over the course of **2025** across all regencies/cities in North Kalimantan.

2.2. Population and sample

The target population for this research was the entire community of North Kalimantan, using hypertensive patients as the sample population.

2.3. Operational variables and definitions

No	Statistical Variable	Operational Definition
1	**New Hypertension Cases (Incidence)**	The number of individuals newly diagnosed with hypertension within a specific period in each district/city of North Kalimantan Province. This variable describes the

No	Statistical Variable	Operational Definition
		incidence rate of hypertension.
2	**Existing Hypertension Cases (Prevalence)**	The number of individuals previously diagnosed with hypertension who are still undergoing treatment or monitoring during the reporting period. This variable reflects the total burden of hypertension cases recorded in the population.
3	**Hypertension Mortality Cases (Mortality)**	The number of deaths associated with hypertension or its complications, such as stroke and myocardial infarction, within a specific period.
4	**Regencies/City**	Administrative regions in North Kalimantan Province where hypertension data were collected, namely Tarakan, Nunukan, Malinau, Tana Tidung (KTT), and Bulungan. This variable is used for data classification.
5	**Hypertension Prevalence**	The percentage of the population aged ≥15 years diagnosed with hypertension based on blood pressure measurements. The article reports a hypertension prevalence of 29.2% in North Kalimantan Province.

2.4. Data Collection Techniques

Data were collected using secondary sources through the documentation of health reports issued by relevant institutions, especially the health offices of the respective Regencies/City.

2.5. Data Analysis

Data were analyzed using descriptive statistics to portray the data on prevalent hypertension cases, incident hypertension cases, and mortality hypertension cases in their raw form with no objective of deriving broadly applicable conclusions.

3. Results

No.	Regencies /City	New Hypertension Cases (Incidence)	Existing Hypertension Cases (Prevalence)	Hypertension Mortality Cases (Mortality)
1	Tarakan	17.778	11.144	1
2	Nunukan	12.045	18.587	-
3	Malinau	5.522	2.754	12
4	KTT	1.543	3.351	9
5	Bulungan	12.560	8.570	50
Total		49.448	44.397	71

Based on data collected from five Regencies/cities in North Kalimantan, the overview of hypertension cases in the region revealed 49,448 new cases, a prevalence of 8,570 cases, and a mortality of 50 cases.

4. Discussion

1. Overview of New Cases (Incidence)
Increases in new cases are typically triggered by lifestyle changes (high-sodium diets, physical inactivity, and stress). Among the three districts/cities, Kota Tarakan, Malinau Regency, and Bulungan Regency exhibited higher new cases than longstanding cases. Surges in new cases reported in health records often stem not from sudden outbreaks but from successful community health screening programs. Currently, new cases are increasingly detected at younger ages compared to a decade ago.

2. Overview of Existing Cases (Prevalence)
Existing cases encompass patients who have been diagnosed and are undergoing treatment. The primary challenge with these cases is medication non-adherence. Many patients discontinue treatment upon symptom relief, despite unstable blood pressure, leading to uncontrolled hypertension and secondary diseases. Nunukan Regency and Tana Tidung Regency (KTT) reported more longstanding cases than new cases. As hypertension cannot be fully cured (only controlled), the number of longstanding cases will continue to rise with increasing life expectancy.

3. Overview of Mortality Cases (Mortality)
Hypertension-related deaths rarely occur directly but through target organ complications (the "silent killer"). Hemorrhagic stroke and myocardial infarction (heart attack) are the leading causes of mortality among hypertensive patients. The highest mortality cases were recorded in Bulungan Regency. Elevated mortality rates often reflect delayed management or low patient awareness for routine check-ups before complications arise. Provincial reports for North Kalimantan do not yet fully capture mortality figures, as some districts, such as Nunukan Regency, have not compiled data from local hospitals.

4. Contributing Factors
Several contributing factors influencing the surge in new cases and mortality include:
a. Genetic Factors: Family history significantly elevates risk.
b. Healthcare Access: Ease of access to primary health centers (Puskesmas) and hospitals enhances new case reporting.

c. Lifestyle Factors: Excessive salt intake, physical inactivity, and smoking trigger hypertension.

5. Conclusion

Based on the analysis of new cases, longstanding cases, and hypertension mortality rates, the following conclusions can be drawn:

Increase in New Cases: This reflects shifts in community lifestyle patterns and the effectiveness of widespread early screening, while signaling a heavier future disease burden.

Dominance of Existing Cases: This indicates that hypertension is a chronic condition requiring long-term treatment. The primary issue lies in the low rate of controlled blood pressure (controlled hypertension) due to treatment non-adherence.

Case Fatality: Deaths are predominantly caused by cardiovascular and cerebrovascular complications, highlighting frequent delays in complication detection.

To mitigate these figures, ongoing efforts include:

Prevention Strategies (for New Cases)

a. Massive Health Promotion: Intensifying campaigns to limit salt, sugar, and fat consumption through socialization and education.
b. Community-Based Screening: Strengthening the role of Integrated Community Coaching Posts (Posbindu)/Community free health screening(CKG) for routine early detection in productive age groups.

Management Strategies (for Existing Cases)

a. Referral Back Program (PRB): Ensuring adequate availability of antihypertensive medications at primary health services (Puskesmas) to prevent treatment interruptions.
b. Adherence Education: Developing digital medication reminder systems for chronic patients to maintain blood pressure stability.

Mortality Reduction Strategies (for Fatal Cases)

a. Strengthened Emergency Services: Accelerating access to stroke and heart attack management at primary-level facilities.
b. Organ Damage Screening: Conducting periodic renal and cardiac function screenings for existing hypertensive patients to prevent fatal organ failure.

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