Jurnal Kesehatan Akimal
e-ISSN: 2963-3338
Volume 5 No. 2 Edisi Oktober 2026
https://jurnal.akimal.ac.id/index.php/jka

Analysis of Cholesterol Levels and the Incidence of Hypertension among Adults of Productive Age at Jangka Public Health Center Bireuen

Dwi Amalia Sari[1], Hernita[2], Mahadzir Z.A[3]
Universitas Muhamamdiyah Mahakarya Aceh
email : dwiamaliasari@ummah.ac.id

ARTICLE INFO

Received 14 Oct 2026
Accepted 21 Oct 2026
Published 31 Oct 2026

Keywords:
Cholesterol Levels; Hypertension; Productive; Age Adults;

ABSTRACT

Background: Hypertension and elevated cholesterol levels are common health problems among productive-age adults and are often associated with unhealthy lifestyles, physical inactivity, stress, and excessive consumption of fatty and salty foods. Objective: This study aimed to describe cholesterol levels and the occurrence of hypertension among productive-age adults in the working area of Jangka Public Health Center, Bireuen Regency. Methods: A quantitative descriptive study with a cross-sectional approach was conducted involving 30 respondents selected through total sampling. Data were collected from August 6 to 10, 2026, using a cholesterol meter and a sphygmomanometer to measure cholesterol levels and blood pressure, respectively. Data were analyzed using univariate analysis and presented as frequency distributions, percentages, means, standard deviations, medians, and interquartile ranges. Results: The findings showed that 18 respondents (60.0%) had high cholesterol levels, while 12 (40.0%) had normal levels. Regarding blood pressure, 17 respondents (56.7%) had hypertension, whereas 13 (43.3%) did not. The mean cholesterol level was 207.10 ± 32.017 mg/dL. The median systolic and diastolic blood pressure values were 142 mmHg and 90 mmHg, respectively. Conclusion: High cholesterol levels and hypertension were relatively common among productive-age adults in the study area. Regular health screenings, healthy dietary habits, reduced fat and salt consumption, and increased physical activity are recommended to support the prevention and early detection of these conditions.

How to cite: Sari, D. A., Hernita, & Mahadzir Z.A. (2026). Analysis of Cholesterol Levels and the Incidence of Hypertension among Adults of Productive Age at Jangka Public Health Center Bireuen . *Jurnal Kesehatan Akimal*, *5*(2), 192–199. https://doi.org/10.58435/jka.v5i2.283

This is an open-access article distributed under a Creative Commons Attribution-ShareAlike 4.0 International License, that allows others to share the work with an acknowledgement of the work's authorship and initial publication in this journal.

* *Corresponding author: dwiamaliasari@ummah.ac.id*

INTRODUCTION

Public health is currently facing increasingly complex challenges, particularly with the growing burden of non-communicable diseases (NCDs), including diabetes mellitus, hypertension, cardiovascular diseases, obesity, and cancer. The

rising prevalence of these conditions is closely associated with changes in lifestyle and daily habits, such as physical inactivity, unhealthy dietary patterns, excessive consumption of ultra-processed foods, and sedentary behavior. These factors contribute not only to the increasing burden of disease but also to higher healthcare costs in many countries (Romanello et al., 2025).

The productive-age period is an important stage of life when individuals are generally engaged in various occupational, social, and daily activities. However, busy schedules and work-related demands may cause individuals to pay less attention to their health, making them more vulnerable to various health problems (Marlita et al., 2022). In fact, many health conditions can be identified at an early stage through routine health examinations and appropriate preventive measures (Pobas et al., 2025). Maintaining good health during this period is essential not only for supporting work productivity but also for preserving overall quality of life. Healthy lifestyle practices, including a balanced diet, regular physical activity, and effective stress management, play an important role in maintaining health among productive-age adults (Mayzarah et al., 2023).

One health concern among productive-age adults is the increased risk of elevated cholesterol levels. Individuals in this age group often face demanding work schedules and daily responsibilities that may encourage unhealthy habits, including limited physical activity, frequent consumption of fast food, inadequate rest, and prolonged stress. These lifestyle patterns may contribute to increased blood cholesterol levels (Rizkiriani Annisa et al., 2025). In addition, productive-age adults are not exempt from degenerative diseases, including hypertension. Although hypertension is commonly associated with older age, it can also affect younger adults and individuals in their productive years. When left undetected and untreated, hypertension may interfere with daily activities and increase the risk of serious health complications (Mira Otovia et al., 2024).

Unhealthy lifestyle patterns are among the factors associated with hypertension in productive-age adults. High salt consumption, smoking, insufficient physical activity, and poor dietary habits may contribute to elevated blood pressure. Work-related stress and demanding family responsibilities may also influence health behaviors, particularly among individuals who have limited time for exercise and adequate rest. In addition, excessive coffee consumption and irregular sleeping patterns may further contribute to unhealthy lifestyle practices. Physical inactivity is particularly concerning because it is associated with an increased risk of cardiovascular problems and may worsen the overall metabolic profile of individuals with hypertension (Gina Nafsah Mutmaina et al., 2025).

Although hypertension is more frequently identified among older adults, its occurrence in younger and productive-age populations has become an important public health concern. Work-related demands and other daily responsibilities may limit opportunities to maintain healthy habits. Inadequate physical activity, insufficient consumption of fruits and vegetables, smoking, alcohol consumption, and diets high in salt and fat are among the lifestyle factors associated with hypertension. These habits may gradually increase cardiovascular risk, particularly when maintained over an extended period (Fiana & Sofyan, 2024).

Cholesterol levels are also an important modifiable risk factor associated with hypertension. Elevated total cholesterol may contribute to the development of atherosclerosis, a condition characterized by the accumulation of fatty deposits or plaques along the arterial walls. As these deposits increase, blood vessels may become narrower and less flexible, resulting in greater peripheral vascular resistance and potentially increasing blood pressure. Hypercholesterolemia is

therefore an important cardiovascular risk factor that requires attention, particularly among individuals who already have hypertension. The interaction between abnormal cholesterol levels and changes in blood vessel function may further increase the risk of cardiovascular complications (Suci Leonita et al., 2020).

Furthermore, persistently elevated blood cholesterol levels, particularly those associated with excessive consumption of foods high in saturated fat, may contribute to plaque formation in blood vessels. This process can restrict blood flow and increase the risk of cardiovascular events, including heart attacks and strokes. Abnormal blood lipid levels, commonly referred to as dyslipidemia, are recognized as major risk factors for cardiovascular disease. Individuals with elevated cholesterol levels are more likely to develop cardiovascular complications, especially when other risk factors are also present. Globally, approximately one-third of ischemic heart disease cases have been attributed to elevated cholesterol levels, highlighting the importance of early detection and appropriate management (Mach, 2020).

METHOD

This study employed a quantitative approach with a descriptive design to describe cholesterol levels and the occurrence of hypertension among productive-age adults. The research was conducted from August 6 to 10, 2026, in the working area of Jangka Public Health Center, Bireuen Regency, Indonesia. The study population consisted of 30 productive-age adults with hypertension and elevated cholesterol levels. Since the entire population was included, a total sampling technique was applied, resulting in 30 respondents.

Data were collected through direct measurements of blood pressure and total cholesterol levels. A manual or digital sphygmomanometer was used to measure blood pressure and determine the respondents' hypertension status, while a cholesterol meter was used to measure total cholesterol levels. Cholesterol measurements were subsequently classified into normal and high categories based on the established reference values.

RESULT AND DISCUSSION

Table 1. Frequency Distribution of Respondents

No	Characteristics	Category	Frequency (n)
1	Gender	Male	11
		Female	19
2	Age	≤30 years	5
		>30 years	25
3	Educational level	Junior high school	2
		Senior high school	10
		Bachelor's degree	18
4	Occupation	Trader	10
		Self-employed	8
		Civil servant	5
		Farmer	7

Table 2. Distribution of Respondents Based on Cholesterol Levels (n = 30)

Cholesterol Level	Frequency (n)	Percentage (%)
High	18	60.0
Normal	12	40.0
Total	30	100.0

Table 3. Distribution of Respondents Based on Hypertension Status (n = 30)

Hypertension Status	Frequency (n)	Percentage (%)
Hypertension	17	56.7
No hypertension	13	43.3
Total	30	100.0

Table 4. Distribution of Cholesterol Levels among Respondents (n = 30)

Variable	Mean ± SD (mg/dL)	Min–Max (mg/dL)
Total cholesterol level	207.10 ± 32.017	150–265

Table 5. Distribution of Blood Pressure Measurements among Respondents (n = 30)

Blood Pressure	Median (mmHg)	IQR (mmHg)
Systolic	142	123–155
Diastolic	90	80–95

Cholesterol Levels among Productive-Age Adults in the Working Area of Jangka Public Health Center, Bireuen Regency

Based on the findings presented in Table 4, the mean cholesterol level among the 30 productive-age respondents was 207.10 mg/dL, with a standard deviation of 32.017 mg/dL. The cholesterol levels ranged from 150 to 265 mg/dL. These findings indicate that the average cholesterol level among respondents was above the desirable level. Cholesterol is a complex lipid compound that plays several essential roles in the body, including maintaining cell membrane structure and serving as a precursor for steroid hormones, bile acids, and vitamin D. Approximately 80% of blood cholesterol is produced naturally by the liver through endogenous synthesis, while the remaining 20% comes from dietary intake (Reza Diko et al., 2023).

From a pathophysiological perspective, elevated cholesterol levels are an important modifiable risk factor associated with vascular disorders, including hypertension. When blood cholesterol levels exceed normal limits (hypercholesterolemia), excess cholesterol, particularly low-density lipoprotein (LDL), may accumulate along the inner walls of the arteries. This process contributes to atherosclerosis, which is characterized by the formation of plaques that gradually narrow and stiffen the arterial lumen. As the peripheral blood vessels become narrower and less elastic, blood circulation may be impaired, affecting the delivery of oxygen and essential nutrients throughout the body (Libby, 2021).

To maintain adequate blood circulation and meet the body's oxygen requirements, the heart must work harder to pump blood through increasingly resistant blood vessels. This increased cardiac workload, combined with higher peripheral vascular resistance, may contribute to elevated blood pressure and the development of hypertension (Nathan A, 2025). Therefore, elevated cholesterol levels are an important cardiovascular risk factor that deserves attention, particularly among productive-age adults.

Although cholesterol is essential for normal physiological functions, excessive levels, especially LDL cholesterol, can pose a serious threat to cardiovascular health. High LDL levels increase the likelihood of cholesterol accumulating along arterial walls, gradually contributing to plaque formation. Over time, this accumulation can narrow and stiffen blood vessels, restricting peripheral blood flow and increasing the risk of vascular complications (Sumarni et al., 2023).

The relatively high proportion of respondents with elevated cholesterol levels in this study may be related to lifestyle changes commonly experienced during the productive-age period. Individuals aged 15–64 years are generally engaged in various occupational and daily activities, which may leave limited time for maintaining healthy habits. Irregular eating patterns, insufficient physical activity, prolonged stress, and frequent consumption of fast foods containing high levels of saturated fat may contribute to increased blood cholesterol levels (Marlita, 2022).

These findings are consistent with the study conducted by Rizkiriani Annisa et al. (2025), who reported that demanding daily activities among productive-age adults often contribute to unhealthy lifestyle patterns, including inadequate exercise and frequent consumption of fast food, which may increase blood cholesterol levels. Similarly, Lydia Ernawati Rahayu (2025) reported that elevated cholesterol levels are strongly influenced by dietary patterns, particularly high saturated fat intake, insufficient physical activity, and chronic psychological stress.

Another aspect worth considering is the gender distribution of the respondents, as most participants in this study were women. Changes in estrogen levels associated with increasing age may influence lipid metabolism and cardiovascular health. Estrogen has a protective role in maintaining a favorable lipid profile. As estrogen levels decline, particularly during the transition toward menopause, this protective effect may decrease, potentially contributing to higher LDL cholesterol levels and an increased risk of cardiovascular problems. This hormonal change may partly explain the susceptibility of women to elevated cholesterol levels as they age.

Hypertension among Productive-Age Adults in the Working Area of Jangka Public Health Center, Bireuen Regency

Regarding blood pressure, the findings presented in Table 5 showed that the median systolic blood pressure among respondents was 142

mmHg, with an interquartile range (IQR) of 123–155 mmHg. The median diastolic blood pressure was 90 mmHg, with an IQR of 80–95 mmHg. These findings indicate that the median blood pressure measurements were within the hypertensive range. Hypertension among productive-age adults may be associated with lifestyle changes and various behavioral factors that contribute to the increasing burden of degenerative diseases.

The findings are consistent with the study conducted by Samsudrajat and Hersa (2022) in the working area of Sepauk Public Health Center, which involved 152 respondents. Their results showed that 76 respondents (50%) had a history of hypertension. The occurrence of hypertension among productive-age adults is often associated with lifestyle patterns and levels of physical activity. Hypertension is also widely known as the silent killer because it frequently develops without noticeable symptoms. Among productive-age individuals, several contributing factors include demanding work schedules, work-related stress, smoking habits, and excessive consumption of sodium-rich foods (Resyah et al., 2025).

During the productive-age period (15–64 years), individuals generally experience high levels of mobility and work-related responsibilities. These demands may limit opportunities to engage in regular physical activity, maintain a balanced diet, and consume sufficient fruits and vegetables. Prolonged exposure to environmental and occupational stress may further contribute to unhealthy lifestyle patterns and increase the risk of hypertension.

The demographic characteristics of the respondents may also provide additional context for interpreting these findings. Women accounted for the largest proportion of participants (63.3%). According to Nana Istiqomah et al. (2025), estrogen plays an important role in maintaining vascular elasticity and supporting cardiovascular health among women of reproductive age. However, as women grow older and approach the premenopausal period, estrogen production gradually declines. This hormonal change may reduce its protective effects on blood vessels and contribute to an increased risk of hypertension, particularly during the transition toward menopause.

The findings are also in line with the study by Rahmi Aulia Safriana et al. (2024), which reported that the increasing prevalence of hypertension among productive-age adults is associated with demanding daily activities and unhealthy lifestyle patterns. These include insufficient physical activity, low consumption of fruits and vegetables, and dietary habits characterized by excessive salt and fat intake. Similarly, Mira Otovia Lingga et al. (2024) emphasized that hypertension is increasingly recognized among younger adults and productive-age populations. If not identified and managed early, this condition may lead to serious health complications.

Finally, these findings on cholesterol levels and blood pressure highlight the importance of cardiovascular risk prevention among productive-age adults. Elevated cholesterol may contribute to

atherosclerotic changes in blood vessels, while unhealthy dietary habits, physical inactivity, and stress may further increase cardiovascular risk. Age-related hormonal changes among women may also influence these conditions. Nevertheless, because this study used a descriptive design and univariate analysis, the findings cannot establish a direct statistical relationship between cholesterol levels and hypertension. Rather, they provide an overview of the occurrence of these two cardiovascular risk factors within the study population.

CONCLUSION

Based on the findings and discussion of cholesterol levels and hypertension among productive-age adults in the working area of Jangka Public Health Center, Bireuen Regency, several conclusions can be drawn. Most respondents had high cholesterol levels, accounting for 18 individuals (60.0%), while 17 respondents (56.7%) were classified as having hypertension, with blood pressure of at least 140/90 mmHg. The mean total cholesterol level was 207.10 mg/dL, with a standard deviation of 32.017 mg/dL and a range of 150–265 mg/dL. Meanwhile, the median systolic blood pressure was 142 mmHg (IQR: 123–155 mmHg), and the median diastolic blood pressure was 90 mmHg (IQR: 80–95 mmHg). These findings highlight the need for greater awareness of cardiovascular health among productive-age adults. Regular health examinations, balanced dietary habits, reduced consumption of foods high in fat and salt, regular physical activity, and appropriate stress management are important measures to support the prevention and early detection of elevated cholesterol levels and hypertension.

REFERENCES

Dwi Ajeng Mayzarah, dkk (2023). Pengaruh Gaya Hidup Sehat Terhadap Produktivitas Pegawai Kantor Badan Pengelolaan Keuangan Daerah Luwu. Window of Public Health Journal, Vol. 4 No. 3 (Juni, 2023) :439-448 ttp://jurnal.fkm.umi.ac.id/index.php/woph/article/view/woph4311

Fiana Fika Khikma & Indarjo Sofyan. (2024). Analisis Faktor-Faktor yang Memengaruhi Kejadian Hipertensi. Higeia Journal Of Public Health Research And Development DOI: https://doi.org/10.15294 /higeia.v8i1.67857

Gina Nafsah Mutmaina, dkk. (2025). Aktivitas fisik dan hipertensi pada usia produktif. Jurnal Kesehatan Olahraga, 10(1), 25–33.

Istiqomah, N., Mulyani, S., & Hidayah, N. (2025). Pengaruh penurunan hormon estrogen terhadap risiko hipertensi pada perempuan usia produktif menjelang menopause. *Jurnal Keperawatan dan Kesehatan Indonesia*, 13(2), 115–124.

Libby, P. (2021). *The changing landscape of atherosclerosis*. Nature, 592(7855), 524–533.

Mach, F., et al. (2020). *2019 ESC/EAS Guidelines for the management of dyslipidaemias: lipid modification to reduce cardiovascular risk*. European Heart Journal, 41(1), 111–188

Marlita, dkk. (2022). Kesehatan usia produktif. Jurnal Kesehatan Komunitas, 6(1), 22–29.

Mira Otovia Lingga, dkk. (2024). Prevalensi hipertensi pada usia produktif. Jurnal Kesehatan Masyarakat Indonesia, 13(2), 66–74.

Nathan A. Koessoy, dkk. (2025). Pemeriksaan profil lipid. Clinical Lipid Journal, 9(1), 15–23.

Pobas, S., dkk (2025). *Edukasi Tentang Pentingnya Skrining dan Kontrol Rutin Terhadap Pencegahan Penyakit Tidak Menular pada Usia Produktif*. BESIRU: Jurnal Pengabdian Masyarakat.

Rahayu, L. E., Liana, & Novasyra, A. (2025). Faktor yang berhubungan dalam peningkatan kadar kolesterol. *Jurnal Kedokteran Ibnu Nafis*, 14(1), 103–110.

Resyah, A. A., Fahdhienie, F., & Zahara, M. (2025). *Faktor Risiko Kejadian Hipertensi pada Usia Produktif di Puskesmas Lampaseh Kota Banda Aceh Tahun 2025*. Jurnal Kesehatan Tambusai, 6(4), 14780–14790.

Reza, D., Setiawan, A., & Kurnia, R. (2023). Peran Kolesterol Endogen dan Eksogen dalam Metabolisme Tubuh Manusia. *Jurnal Biomedis dan Kesehatan*, 6(1), 45–52.

Rizkiriani Annisa, dkk. (2025). Pola hidup usia produktif. Jurnal Promosi Kesehatan, 7(1), 30–38.

Romanello, M., di Napoli, C., Green, C., Kennard, H., Lampard, P., Walawender, M., & Hamilton, I. (2025). The 2025 report of the *Lancet* Countdown on health and climate change. *The Lancet*, *406*(10515), 1825–1864. https://doi.org/10.1016/S0140-6736(25)01823-1

Safriana, R. A., Mutia, C., & Fitri, Y. (2024). Gaya hidup, pola makan, dan kejadian hipertensi pada penduduk usia produktif. *Jurnal Kesehatan Masyarakat Indonesia*, 12(1), 45–53.

Samsudrajat, A., & Hersa, A. P. (2022). Faktor determinan kejadian hipertensi usia produktif (15-59 tahun) di wilayah kerja Puskesmas Sepauk Kabupaten Sintang tahun 2022. *JUMANTIK (Jurnal Mahasiswa dan Peneliti Kesehatan)*, 9(2), 183–194.

Suci Leonita, dkk. (2020). Kolesterol dan aterosklerosis. Jurnal Kedokteran Indonesia, 6(2), 45–52.

Sumarni, dkk. (2023). LDL dan risiko kardiovaskular. Jurnal Lipidologi, 7(1), 28.