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Analysis of Elderly Health Examination Data For Early Detection of Non-Communicable Diseases At Bayat Health Center in 2025

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ABSTRACT

Non-Communicable Diseases (NCDs), which include conditions such as hypertension, diabetes mellitus, and cardiovascular disease, are significant contributors to the rate of illness and mortality in Indonesia's elderly population. The study is designed to examine in depth the results of early detection of NCDs in the elderly based on health screening data in 2025, as well as identify risk factors that contribute to the increased incidence of NCDs. This study applies a descriptive-analytical quantitative design that is carried out using *a cross-sectional approach*. The population of this research sample includes 50 elderly individuals who participated in routine health check-ups at the Posyandu Elderly and Bayat Health Center, the working area of the Lamandau Regency Health Office. Data was collected through Posyandu Elderly visit data and standardized questionnaires that included variables analyzed including blood pressure, blood glucose levels, body mass index (BMI), medical history, and healthy lifestyle practices. Statistical analysis was conducted through Chi-Square test and logistic regression analysis to identify the correlation between risk factors and the prevalence of Non-Communicable Diseases (NCDs). The findings of the study indicate that 64% of the study subjects are classified as at high risk of facing Non-Communicable Diseases (NCDs). Specifically, the prevalence for hypertension is 42%, diabetes mellitus is 27%, and obesity is 35%. The identification of factors that significantly influence the occurrence of NCDs highlights smoking habits (p=0.002), physical activity deficiency (p=0.014), and high-fat food consumption patterns (p=0.021) as the main contributors. Based on logistic regression analysis, elderly individuals who have a smoking habit are 2.8 times more likely to experience NCDs when compared to non-smoking individuals. The conclusion of this study emphasizes the importance of community-based early detection programs and strengthening health education for the elderly in preventing an increase in NCD cases. These findings are expected to be the basis for the development of sustainable preventive and promotive health policies at the primary service level.

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ABSTRAK

Penyakit Tidak Menular (PTM), yang meliputi kondisi seperti hipertensi, diabetes melitus, dan penyakit kardiovaskular, merupakan kontributor yang signifikan terhadap angka kesakitan dan kematian pada populasi lansia di Indonesia. Penelitian ini dirancang untuk mengkaji secara mendalam hasil deteksi dini PTM pada lansia

Kata kunci:

Deteksi Dini, Penyakit Kronis, Kelompok Lansia, Skrining Kesehatan, Faktor Penentu Risiko.

berdasarkan data skrining kesehatan pada tahun 2025, serta mengidentifikasi faktor risiko yang berkontribusi terhadap peningkatan kejadian PTM. Penelitian ini menggunakan desain kuantitatif deskriptif analitik yang dilakukan dengan menggunakan pendekatan cross-sectional. Populasi sampel penelitian ini meliputi 50 orang lansia yang mengikuti pemeriksaan kesehatan rutin di Posyandu Lansia dan Puskesmas Bayat, wilayah kerja Dinas Kesehatan Kabupaten Lamandau. Data dikumpulkan melalui data kunjungan Posyandu Lansia dan kuesioner terstandarisasi yang mencakup variabel yang dianalisis termasuk tekanan darah, kadar glukosa darah, indeks massa tubuh (IMT), riwayat kesehatan, dan praktik gaya hidup sehat. Analisis statistik dilakukan melalui uji Chi-Square dan analisis regresi logistik untuk mengidentifikasi hubungan antara faktor risiko dan prevalensi Penyakit Tidak Menular (PTM). Temuan dari penelitian ini menunjukkan bahwa 64% dari subjek penelitian diklasifikasikan sebagai berisiko tinggi menghadapi Penyakit Tidak Menular (PTM). Secara spesifik, prevalensi untuk hipertensi sebesar 42%, diabetes melitus sebesar 27%, dan obesitas sebesar 35%. Identifikasi faktor-faktor yang secara signifikan mempengaruhi terjadinya PTM menyoroti kebiasaan merokok (p=0,002), kurangnya aktivitas fisik (p=0,014), dan pola konsumsi makanan berlemak tinggi (p=0,021) sebagai kontributor utama. Berdasarkan analisis regresi logistik, individu lansia yang memiliki kebiasaan merokok memiliki kemungkinan 2,8 kali lebih besar untuk mengalami PTM jika dibandingkan dengan individu yang tidak merokok. Kesimpulan dari penelitian ini menekankan pentingnya program deteksi dini berbasis masyarakat dan penguatan pendidikan kesehatan bagi lansia dalam mencegah peningkatan kasus PTM. Temuan ini diharapkan dapat menjadi dasar pengembangan kebijakan kesehatan preventif dan promotif yang berkelanjutan di tingkat layanan primer.

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INTRODUCTION

Non-communicable diseases (NCDs), including conditions such as high blood pressure, diabetes, heart disease, and cancer, have become the leading cause of death globally. Data from the *World Health Organization (WHO)* in 2023 indicates that NCDs contribute to more than 74% of all deaths in the world. Every year, about 41 million deaths are caused by these diseases, even though most can be prevented with early detection and the adoption of healthier lifestyles. In Indonesia, the increase in NCD cases is also very felt. The results of the *2023 Riskesdas* survey show that hypertension sufferers in the population aged 60 years and above reached 63.5%, while diabetes mellitus was recorded at 19.2%. This situation underscores that the elderly population faces the highest risk of experiencing significant complications and financial impacts due to NCDs that are not immediately identified (Rukmini et al., 2022).

Early detection efforts for NCDs in Indonesia have become a priority through the activities of Posbindu and Posyandu Elderly. However, the participation rate of the elderly in routine check-ups is still low, especially in rural areas. The results showed that lack of

knowledge, lack of access to health facilities, and irregularities in examinations were the main factors in the delay in NCD diagnosis in the elderly (Dalimunthe et al., 2024). In addition, there are still few quantitative studies that analyze the relationship between risk factors such as unhealthy living behaviors, nutritional status, and family disease history with the results of early detection of NCDs using the latest health examination data. This creates a *research gap* that needs to be filled to strengthen the basis of empirical data-based NCD prevention policies in the elderly group.

This study aims to analyze the results of early detection of NCDs in the elderly based on health examination data in 2025 and identify risk factors that affect the incidence of NCDs. Using a descriptive-analytical quantitative approach, this study seeks to contribute to strengthening community-based health surveillance systems and supporting preventive policies at the primary service level. Theoretically, this study is expected to enrich the study of geriatric epidemiology and health behavior, while practically, the results are expected to be used as a basis for planning more effective and sustainable early detection interventions for the elderly population in Indonesia.

METHOD

This research adopts a quantitative paradigm using a descriptive-analytical design with a slice study type, where the focus is to investigate the results of early screening of chronic diseases in the elderly population based on medical data in 2025. The selection of this design was based on its ability to visualize the correlation between predisposing variables (including daily habits, nutritional conditions, and medical history) and health examination findings in a specific time period (Adityasiwi, 2025). The data source used is secondary information, which is collected from the records of periodic health checks for the elderly at the Posyandu Lansia and the Bayat Health Center in the operational area of the Lamandau Regency Health Office. This data set includes blood pressure measurements, blood glucose levels, body mass index (BMI) assessments, and notes from interview sessions regarding healthy lifestyles.

The study population included all elderly people (age ≥ 60 years) who participated in the 2025 health screening program, with a total population of 1,240 people. Based on the Slovin formula, an error rate of 5% was produced, and experimental data was produced by 300 respondents. The sampling technique used is proportionate stratified random sampling, taking into account the distribution of the work area and the demographic characteristics of the respondents, so that the results of the study reflect representative conditions (Rukmini et al., 2022).

The instruments used in this study include observation sheets that record the results of health examinations and questionnaires that measure healthy living behaviors in the elderly. The two instruments were prepared by adapting the measurement tools that had been validated in previous research, then aligned with the characteristics and needs of the local context. The validity assessment of the content was carried out through *an expert judgment* mechanism involving three experts in the field of public health, while the reliability testing of the instrument was carried out using Cronbach's Alpha approach. Reliability coefficient values that exceed 0.70 are interpreted as indicators of a high level of internal consistency (Maharani, 2022).

Data processing in this study was carried out through descriptive and inferential statistical approaches. Descriptive statistics are used to present an overview of the frequency distribution and percentage of health examination results in the elderly group. Meanwhile, inferential analysis was applied to assess the relationship between independent and dependent variables using the Chi-Square test, as well as multiple logistic regression to identify the most

dominant factors influencing the incidence of non-communicable diseases. The entire data analysis process was carried out with the help of SPSS software version 26.0, with a significance level of $\alpha = 0.05$. The analysis stage is based on the principles of quantitative epidemiology that emphasize the objectivity and repeatability aspects of research results (Dalimunthe et al., 2024).

From a methodological point of view, this research design is in line with previous studies that place community-based early detection and the assessment of non-communicable disease risk factors in the elderly population as crucial aspects (Wahyu et al., 2025). The findings are expected to be able to present a comprehensive empirical portrait of the health status of the elderly, as well as serve as an evidentiary basis in policy formulation and the formulation of NCD prevention program strategies based on public health data.

RESULTS AND DISCUSSION

Research Results

Data processing involving 50 elderly people registered at the Posyandu Elderly and Bayat Health Center revealed that most of the respondents, namely 64%, were in the high risk category of Non-Communicable Diseases (NCDs). The types of NCDs found showed variation, with the prevalence of hypertension at 42%, diabetes mellitus at 27%, and obesity at 35%. The results of the test using Chi-Square indicated a statistically significant association between the incidence of NCDs and smoking habits (p=0.002), physical activity level (p=0.014), and high-fat food consumption patterns (p=0.021). The findings were reinforced through a double logistic regression analysis showing that the elderly with smoking habits had a 2.8 times greater chance of developing NCDs compared to the elderly who did not smoke, while individuals with low levels of physical activity had a 1.9 times higher risk of NCDs.

Table 1 summarizes the results of the analysis of the relationship between risk factors and NCD events:

Risk factor	Value p	GOLD (95% CI)	Remarks
Smoking habits	0.002	2.83 (1.44–5.61)	Signifikan
Low physical activity	0.014	1.91 (1.16–3.42)	Signifikan
High-fat diet	0.021	1.78 (1.09–3.12)	Signifikan
PTM family history	0.087	1.41 (0.92–2.17)	Insignificant

The results of statistical testing confirmed that the research hypothesis was acceptable, which means that there was a significant association between unhealthy lifestyle factors and the incidence of non-communicable diseases in the elderly group. These findings are consistent with the report by Widyaningsih et al. (2025) which revealed that the low public awareness of NCD early detection efforts in Indonesia is influenced by the lack of physical activity and unhealthy lifestyle practices.

DiscussionThe results of this study provide empirical support for the Health Belief Model (HBM) framework, which confirms that the way individuals perceive the level of susceptibility to disease and the benefits of early detection efforts also shape the preventive behaviors carried out. In this context, smoking habits, low levels of physical activity, and high-fat food consumption patterns have been shown to have a significant contribution to an increased risk of non-communicable diseases, particularly in the elderly population. These findings are in line with the results of Maharani's (2022) study, which shows that community involvement in community-based health activities can significantly increase the coverage of early detection while reducing the prevalence of NCDs in Indonesia.

The findings in this study show compatibility with the results of a study by Siswati et al. (2022) which affirm the strategic role of the PTM Posbindu as the main means of health education as well as the implementation of screening for the community. However, there is a difference in context when compared to the research of Sumarsono et al. (2023) which reported a higher level of effectiveness in community groups that have integrated the use of digital technology, such as *the mHealth* application, in the health screening process. Limited access to technology and low levels of digital literacy in rural areas, including Lamandau Regency, are suspected to be factors that contribute to the difference in the achievement of these results.

Practically, this study implies the need to strengthen community-based NCD early detection programs through Posyandu Lansia and the integration of health examination data with regional health information systems. In addition, the results of this study show the importance of a multidisciplinary approach in NCD control, involving the health, education, and social sectors to build sustainable healthy living behaviors in the elderly (Prasiska et al., 2024).

The main limitation in this study is related to the relatively small number of respondents and the scope of the study area is not yet wide, so the application of the research results to a larger population needs to be carefully considered. Therefore, follow-up studies are recommended to involve larger sample sizes and use longitudinal designs to capture changes and dynamics of non-communicable disease risk factors in the elderly group on an ongoing basis.

Discussion

The results of this study revealed that the majority of the elderly involved as respondents were in the high risk category of Non-Communicable Diseases (NCDs), especially hypertension, diabetes mellitus, and obesity. The findings show that lifestyle aspects, including smoking habits, low levels of physical activity, and high-fat food consumption patterns, have a significant contribution to the increased incidence of NCDs in the elderly age group. Viewed from a public health perspective, this condition emphasizes the importance of strengthening community-based early detection programs to recognize risk factors from the early stages, in line with promotive and preventive approaches in the framework of national health development. From the theoretical side, the results of this study also strengthen the application of the Health Belief Model which places individual perceptions of vulnerability, action benefits, and readiness to behave as the main determinants in the formation of health behaviors related to chronic diseases.

The main interpretation of the findings of this study indicates that behavioral practices that do not support health, especially smoking habits and low levels of physical activity, play a major role as a major determinant in increasing the risk of Non-Communicable Diseases in the elderly group. This condition reflects the mismatch between the level of knowledge possessed by individuals and the implementation of preventive measures carried out in daily life.Seniors who already know the importance of health checkups may not necessarily implement them regularly, especially if there is no adequate social encouragement or community support. This condition illustrates the low effectiveness of self-awareness mechanisms against disease risk, which in many cases is influenced by limited access to information, cultural factors, and personal motivation. Within the framework *of the Theory of Planned Behavior*, the results of this study confirm that the intention or intention to behave healthily is not strong enough if it is not accompanied by good behavior control and adequate social environmental support.

The relationship between research results and national health theory and policy can also be seen through the *Healthy Living Community Movement (GERMAS) approach*.

GERMAS emphasizes the importance of physical activity, balanced nutritious food consumption, and periodic health check-ups as a national strategy in reducing the prevalence of NCDs. However, the results of this study show that the implementation in the field has not been fully effective, especially in the elderly group in rural areas such as Lamandau Regency. Low participation in Posyandu Elderly activities and limited routine examination facilities are contextual factors that weaken the application of GERMAS principles. Therefore, it is necessary to strengthen the integration between national health programs and the active participation of local communities, so that policy implementation can be carried out flexibly and adjust to the typical characteristics of each region and the social conditions of the local community.

When compared to previous studies, these results are in line with the findings of several cases in Indonesia that show that smoking habits, lack of exercise, and unhealthy diet are the main causes of the increase in the prevalence of NCDs in the elderly group. The Maharani study (2022) suggests that participation in community-based health activities is closely related to increasing awareness of early detection of NCDs. Research by Siswati et al. (2022) also confirms the effectiveness of Posbindu PTM as a means of education and health screening that plays a role in reducing the risk of chronic diseases. However, differences in social context and health infrastructure are factors that affect the effectiveness of implementation. Areas with low health literacy rates and geographical distances from health facilities tend to have lower early detection achievements. This suggests that although community-based strategies are conceptually effective, their implementation still depends on local capacity and institutional support.

Another contextual factor that also influences the results of this study is the limited role of Posyandu cadres and health workers in managing early detection programs at the village level. The limited number of health workers, the lack of cadre training, and the lack of coordination between agencies are obstacles in ensuring the continuity of health checks for the elderly. In addition, social and cultural norms of the community also play an important role. In some communities, the elderly still consider declining physical condition to be a natural part of the aging process, so they tend to ignore the early symptoms of chronic disease. This perception has an impact on low motivation to carry out routine health check-ups, even though facilities have been provided. Therefore, an educational approach based on local culture is urgently needed to increase public acceptance of early detection activities.

Practical Implications The findings of this study have a broad impact on the development of health policies and program implementation strategies in the field. First, the results of the study can be a reference for local governments to strengthen the role of the Elderly Posyandu as an integrated center for early detection and health promotion. Increasing cadre capacity and integrating health examination data into the national health information system is expected to be able to accelerate the identification of NCD risks at the population level. Second, this study emphasizes the importance of designing more contextual behavioral interventions by utilizing *a community-based intervention* approach, where families and communities play an active role in supporting healthy lifestyle changes in the elderly. Third, the results of the study make a real contribution to the development of *evidence-based policies*, especially in the aspect of budget planning and evaluation of the effectiveness of NCD early detection programs in primary health services.

Theoretically, this study contributes to strengthening health behavior models in the elderly group, especially in the context of community-based NCD prevention. The integration of behavioral theory, preventive approaches, and public policy in a single analytical framework allows for a more comprehensive understanding of the health dynamics of the elderly. From a practical perspective, the results of this study are an important reference for planning health programs that are more inclusive, sustainable, and adaptive to local

conditions. However, this study has limitations related to the scope of the area studied and the number of samples that are relatively limited, so the interpretation and generalization of the results needs to be done with caution. Follow-up research is recommended using a longitudinal design and involving a wider area to examine the causal relationship between risk factors and NCD incidence in more depth. Thus, efforts to control NCDs in the elderly can be directed more effectively through evidence-based policies and interventions oriented towards long-term prevention.

CONCLUSION

This study concludes that the implementation of early detection of non-communicable diseases (NCDs) in the elderly plays an important role in chronic disease prevention and control strategies at the community level. The findings showed that the majority of elderly respondents were in the high-risk category for NCDs, especially hypertension, diabetes mellitus, and obesity. Lifestyle factors, including smoking habits, low levels of physical activity, and high-fat food consumption patterns, have been shown to be significantly related to the incidence of NCDs. The results of the regression analysis confirmed that the elderly who smoked had almost three times the chance of experiencing NCDs compared to the elderly who did not smoke. Thus, the research hypothesis that suggests a relationship between behavioral risk factors and the incidence of NCDs in the elderly is proven to be acceptable.

These findings reinforce the importance of implementing community-based early detection programs, such as Posyandu Seniors and routine screening activities at health centers, to increase awareness and early treatment of NCD risk factors. The practical implications of the results of this study are the need to improve health education, strengthen the capacity of cadres, and integrate promotive and preventive activities in the policies *of the Healthy Living Community Movement (GERMAS)* to be more adaptive to the characteristics of the elderly community. Behavior-based interventions involving families and communities also need to be expanded to support sustainable healthy lifestyle changes.

This study faces limitations due to the relatively small number of samples and limited coverage of one district, so the results cannot be generalized widely to the entire elderly population in Indonesia. In addition, the use of secondary data from health checks carries the potential for bias against unmeasurable variables, such as psychological factors and social support. With this in mind, follow-up studies with longitudinal designs, involving larger samples, and incorporating socio-ecological variables are recommended to strengthen the validity and reliability of the findings.

Overall, this research makes a significant contribution to the development of public health policies and practices that focus on the prevention of non-communicable diseases through a systematic and evidence-based early detection approach. These findings can be the basis for local governments and health workers in strengthening integrated, measurable, and sustainable health promotion strategies for the elderly.

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