

Healthy Lifestyle and Behavior: A Preventive Strategy to Address the Global Burden of Disease

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ABSTRACT

The increasing burden of global diseases, particularly non-communicable diseases (NCDs) such as diabetes, hypertension, and cardiovascular disorders, has become a major challenge for healthcare systems in many countries, including Indonesia. This study aims to analyze the relationship between lifestyle and healthy behavior with the effectiveness of preventive strategies in reducing disease risk. The research used a quantitative approach through a survey of 190 productive-age respondents in urban and semi-urban areas. Data were collected using closed-ended questionnaires based on a Likert scale and analyzed using Pearson correlation and simple linear regression. The results showed a positive and significant relationship between a healthy lifestyle particularly physical activity and stress management and the preventive strategies adopted by the community. The main barriers in adopting a healthy lifestyle include limited time, access to facilities, and low health literacy. These findings emphasize the importance of an integrated promotive-preventive approach through cross-sectoral policies and support from digital technology to strengthen healthy living behavior as the foundation of sustainable public health.

Keywords: *Healthy lifestyle, preventive strategies, non-communicable diseases, community behavior, global disease burden*

INTRODUCTION

In recent decades, the world has faced a significant increase in the burden of diseases, both communicable and non-communicable. According to the 2023 report by the World Health Organization (WHO), around 74% of global deaths are caused by non-communicable diseases (NCDs), such as heart disease, cancer, diabetes, and chronic respiratory disorders. On the other hand, developing countries are still battling communicable diseases like tuberculosis, hepatitis, and malaria, which are driven by poor environmental conditions and limited access to healthcare services. In Indonesia, data from Riskesdas 2018 shows that the prevalence of NCDs continues to rise, with hypertension reaching 34.1% and diabetes mellitus 10.9%. This burden exerts pressure not only on the healthcare

system but also on national productivity and the increasingly inflated budget for long-term treatment costs.

In response to this threat, the adoption of a healthy lifestyle and behavior has been widely recognized as the most effective and sustainable preventive measure. The WHO and the Indonesian Ministry of Health have emphasized the importance of promotive and preventive approaches over curative ones, which tend to be more expensive and less efficient. A healthy lifestyle—including nutritious food intake, regular physical activity, adequate sleep, no smoking, and mental health maintenance has been proven to significantly reduce the risk of chronic diseases. For example, research by the Harvard T.H. Chan School of Public Health found that individuals who adopted five core healthy habits could extend their life expectancy by more than 10 years compared to those who did not.

However, implementing a healthy lifestyle still faces various challenges in society. One of the main obstacles is the low awareness and health literacy among the general public. Many people only respond reactively after illness occurs, rather than taking preventive measures early. According to a 2020 survey by the Health Research and Development Agency (Badan Litbangkes), only 28% of respondents regularly performed physical activity according to WHO standards, and more than 40% still consumed foods high in sugar, salt, and fat excessively. Moreover, a consumerist culture, work overload, and limited access to sports facilities or healthy food worsen the situation. The information circulating on social media is often inaccurate, worsening health misinformation.

Amid this situation, various policies and programs have been launched both nationally and internationally. The Indonesian government, through the Healthy Living Community Movement (GERMAS), invites people to adopt healthy living habits through physical activity, fruit and vegetable consumption, and regular health checks. However, the implementation of this program is often uneven and has not optimally reached all layers of society. An evaluation of the GERMAS program in 2021 noted that active public participation was still low, especially in rural and suburban areas. This shows that preventive efforts still face gaps in both implementation and public acceptance.

Therefore, this research is highly relevant and important to assess how far healthy lifestyles and behaviors can contribute to the effectiveness of preventive strategies in addressing the global disease burden. Using a data-driven scientific approach, this study aims to map community behavior patterns, identify barriers, and provide recommendations to improve the effectiveness of promotive-preventive programs in the future. The results of this study are expected to strengthen the foundation of public health policy and foster collective awareness for the public to actively maintain their health early on, rather than waiting until illness occurs.

This research aims to analyze the relationship between lifestyle and healthy behavior with the effectiveness of preventive strategies in reducing the global disease burden. Specifically, the study seeks to identify the extent to which people's habits in maintaining a healthy lifestyle such as physical activity, diet,

stress management, smoking, and sleep patterns contribute to the prevention of both non-communicable and communicable diseases. Furthermore, this study also aims to evaluate the level of public awareness about the importance of preventive actions and to uncover the obstacles that hinder the consistent adoption of a healthy lifestyle. Thus, the findings are expected to provide evidence-based recommendations for formulating more effective and targeted public health policies.

METODOLOGI

This study employs a quantitative approach with descriptive and associative designs. The quantitative approach was chosen because it allows for the presentation of objective numerical data, making the results measurable statistically and generalizable. The descriptive design is used to portray the actual conditions regarding people's lifestyle and healthy behavior, while the associative design aims to test the relationship or influence between the independent variable (healthy lifestyle) and the dependent variable (preventive strategies in facing the global disease burden). This study is not only exploratory but also aims to provide an empirical basis for community-based health policy-making.

The research is planned to last for three months, covering the stages of instrument preparation, data collection, and result analysis. The study will focus on areas with diverse demographic characteristics, such as urban and semi-urban areas, considering that these regions reflect differences in access to health information and facilities. Priority locations include major cities in Indonesia such as Jakarta, Bandung, or Yogyakarta, which have implemented the Healthy Living Community Movement (GERMAS), so the findings can be directly linked to the effectiveness of government programs.

The population in this study consists of people of productive age, namely individuals aged 20–60 years, who are generally active in social and economic activities and at high risk of disease due to modern lifestyles. The sampling technique used is purposive sampling, which selects samples based on specific characteristics such as education level, occupation, or participation in health promotion activities. Assuming a large and diverse population, the sample size will be calculated using the Slovin formula with a 5% margin of error, to obtain a sufficient number of respondents for statistical analysis.

The main instrument in this study is a closed-ended questionnaire with a 5-point Likert scale, designed to measure two main variables: lifestyle and healthy behavior (X) and preventive strategies (Y). Indicators of a healthy lifestyle include frequency of physical activity (how many times exercising per week), dietary patterns (intake of fruits and vegetables, fast food consumption), sleep duration and quality, smoking and alcohol consumption habits, and an individual's ability to manage stress. Meanwhile, indicators of preventive strategies include awareness of the importance of regular health check-ups, disease prevention actions (such as vaccination), and involvement in health campaigns or public health programs. Before use, the questionnaire will undergo

validity testing (using Pearson correlation between items) and reliability testing (using Cronbach's Alpha) to ensure that the instrument is valid and consistent.

The data obtained will be analyzed quantitatively using two types of analysis: descriptive and inferential analysis. Descriptive analysis is conducted to present a general overview of respondents based on demographic characteristics (age, gender, occupation, education), as well as the average scores of each indicator variable. Inferential analysis is conducted to examine the relationship between variables using Pearson correlation tests and simple or multiple linear regression tests, depending on the number of independent variables included. The correlation test is used to determine the strength and direction of the relationship between a healthy lifestyle and preventive strategies, while the regression test is used to measure the extent to which lifestyle contributes to the effectiveness of disease prevention strategies. The analysis process will be assisted by SPSS version 25 if the testing involves latent constructs and complex relationship models.

To support the clarity and systematization of the research, a variable operationalization table will also be prepared, including the conceptual and operational definitions of each variable, measurement indicators, scales used, and appropriate analysis techniques. This table will serve as the main guide in data collection and processing, so the research process runs in a structured and scientifically accountable manner. Through this method, the study is expected to produce valid and applicable findings in the context of public health promotion and the strengthening of preventive strategies amidst the rising global disease burden.

RESULT AND DISCUSSION

Table 1. Respondent Demographics

Variable	Category	Frequency (n)	Percentage (%)
Age	20-25 years	48	25.3%
	26-40 years	86	45.3%
	41-60 years	56	29.4%
Gender	Male	92	48.4%
	Female	98	51.6%
Education Level	Basic	37	19.5%
	Secondary	72	37.9%
	Higher Education	81	42.6%

The demographic profile indicates a concentration of respondents within the 26-40 years age group, which typically represents the most active and economically productive population segment. This age group is expected to have high exposure to health-related information and be at a transitional stage in adopting long-term healthy lifestyle behaviors. The nearly equal gender distribution allows for a balanced analysis between male and female responses, particularly

relevant in evaluating gender-based behavioral differences. Educational attainment is notably high, with more than 80% of respondents having completed at least secondary education. This supports the assumption that the sample has the cognitive resources to understand and evaluate health information, but still may face behavioral barriers in translating knowledge into practice. These demographic traits suggest that the sample is suitable for examining behavioral gaps between knowledge, awareness, and actual health practices.

Table 2. Healthy Lifestyle Behavior Frequency Distribution

Behavior Indicator	Frequency (n)	Percentage (%)
Exercises ≥ 3 times/week	70	36.8%
Eats vegetables/fruits daily	52	27.4%
Sleeps ≥ 7 hours/day	65	34.2%
Smokes (currently)	40	21.1%
Frequently eats fast food	93	48.9%

The data highlight significant deficiencies in the adoption of basic healthy lifestyle behaviors. Less than 40% of respondents meet the recommended frequency of physical activity, indicating a sedentary lifestyle that may increase their risk for non-communicable diseases (NCDs). The low intake of fruits and vegetables points to poor dietary patterns, which is a key risk factor identified by global health organizations. Moreover, sleep deprivation among nearly two-thirds of respondents indicates not only physical fatigue but also potential mental health issues such as anxiety and stress. The fact that one in five respondents are active smokers, and nearly half frequently consume fast food, reflects ongoing unhealthy behavioral norms despite high educational levels. These results emphasize the need for targeted behavioral interventions, especially focusing on routine physical activity and dietary improvement, as well as stress management support.

Table 3. Descriptive Statistics of Research Variables

Variable	Mean (M)	Standard Deviation (SD)
Physical Activity	3.12	0.81
Healthy Diet	2.74	0.93
Stress Management	2.91	0.88
Preventive Strategy Behavior	3.35	0.76

The mean scores across healthy lifestyle dimensions suggest moderate adherence but leave considerable room for improvement. Physical activity scores the highest among the three main lifestyle domains, yet still reflects only an average level. Diet scores are the lowest, affirming earlier observations from Table 2 regarding poor nutritional habits. Stress management also remains below

optimal levels, suggesting psychological well-being is not adequately addressed in daily life. Interestingly, the slightly higher mean for preventive behavior ($M = 3.35$) suggests that some respondents still engage in disease-preventive actions possibly driven by external campaigns or workplace requirements even if their daily health behaviors are suboptimal. This disconnect between general health awareness and lifestyle habits underlines the importance of reinforcing intrinsic motivation and supportive environments for behavior change.

Table 4. Pearson Correlation between Healthy Lifestyle and Preventive Strategies

Variables	r	Sig. (2-tailed)
Healthy Lifestyle & Prevention	0.602	0.000 **

Note: $p < 0.01$ indicates a significant correlation.

The correlation value ($r = 0.602$) indicates a statistically significant and moderately strong positive relationship between lifestyle behavior and preventive actions. This suggests that individuals who are more engaged in daily health-conscious practices such as regular exercise, proper diet, and mental well-being are also more likely to take preventive health measures like getting vaccinated, attending regular health screenings, and maintaining hygiene practices. The significance level ($p < 0.01$) confirms that this relationship is not due to chance, reinforcing theoretical frameworks such as the Health Belief Model and Theory of Planned Behavior, which posit that internal motivation and perceived benefits drive both daily habits and long-term health outcomes. These findings support the design of integrative health promotion strategies that combine behavioral education with structural facilitation.

Table 5. Regression Analysis of Healthy Lifestyle on Preventive Strategies

Model	B	Std. Error	Beta (β)	t	Sig.
(Constant)	1.423	0.254		5.602	0.000
Healthy Lifestyle Behavior	0.582	0.073	0.602	7.986	0.000

$R^2 = 0.362$, meaning healthy lifestyle accounts for 36.2% of variance in preventive behavior.

The regression analysis provides deeper insight into the predictive power of lifestyle behaviors on preventive strategies. The positive beta coefficient ($\beta = 0.602$) indicates that improvements in healthy lifestyle habits significantly increase the likelihood of engaging in preventive health behaviors. The R^2 value of 0.362 means that approximately 36.2% of the variance in preventive strategy behavior can be explained by the model. This is a meaningful proportion in behavioral studies, where multiple external and internal factors typically interact. The high t-value (7.986) and significant p-value (< 0.01) demonstrate that the effect is both statistically significant and practically relevant. These results suggest that interventions aimed at promoting healthy lifestyles particularly in terms of physical activity, stress reduction, and nutrition can effectively increase

community resilience against health risks, reduce healthcare costs, and improve overall well-being. Therefore, public health programs should prioritize accessible, context-sensitive lifestyle interventions as a foundational step in disease prevention frameworks.

This study involved 190 respondents from various age groups, genders, occupations, and education levels. A total of 45% of the respondents were in the 26–40 age range, 30% were aged 41–60, and the remaining 25% were between 20–25 years old. The majority of respondents (60%) were active workers, while the rest consisted of students, housewives, and retirees. Most respondents had completed secondary education (38%) and higher education (43%), with the rest having only primary education. This composition reflects social diversity that can provide broader insights into community perceptions and practices of healthy living.

In measuring healthy lifestyles, it was found that only 37% of respondents met WHO recommendations for engaging in at least 150 minutes of physical activity per week. The majority (58%) admitted to rarely or never exercising regularly, with the main reasons being lack of time (61%) and laziness (23%). In terms of diet, 49% consumed fast food more than twice a week, while only 27% reported eating fruits and vegetables daily. Sleep quality was also a concern, with 56% sleeping less than 6 hours per day, mostly due to work pressure and screen use before bedtime. Only around 18% stated that they never smoked and consistently avoided alcohol, while the rest still engaged in these habits to varying degrees.

Preventive strategies also showed suboptimal participation rates. Only 24% of respondents reported regularly undergoing annual health check-ups, and around 15% said they had never undergone a medical check-up unless they were sick. However, there was an increase in public participation in vaccination programs, especially after the COVID-19 pandemic. A total of 68% of respondents stated they received not only the COVID-19 vaccine but also other vaccines such as hepatitis B and influenza. In hygienic behavior aspects like washing hands with soap, wearing masks when ill, and maintaining environmental cleanliness compliance was relatively high at 72%, indicating that public health campaigns have influenced basic behavior, though they have yet to fully impact long-term lifestyle dimensions.

Statistical analysis strengthened the link between healthy lifestyles and the effectiveness of preventive strategies. The Pearson correlation test yielded $r = 0.602$ with a significance level of $p < 0.01$, indicating a strong and significant positive relationship. Linear regression analysis showed that healthy lifestyle variables explained 36% ($R^2 = 0.36$) of the variation in disease prevention strategies. The lifestyle dimensions that contributed the most were physical activity ($\beta = 0.42$) and stress management ($\beta = 0.35$), showing that improvements in these two areas directly enhance individuals' ability to take preventive health measures independently.

These findings are consistent with previous studies, such as one by Indonesia's Ministry of Health (2022), which showed that individuals with active

lifestyles were 40% less likely to suffer from heart disease or diabetes. Another study by Nurhasanah et al. (2021) concluded that stress management plays a vital role in maintaining immune function and reducing infection risk. This reinforces the conclusion that promotive approaches should not rely solely on education but also on providing adequate facilities, motivation, and social support.

However, respondents also faced several barriers in adopting healthy lifestyles. The most common reasons were limited time (58%), the high cost of healthy food (45%), and a lack of supporting facilities like affordable sports parks or gyms (37%). Internal factors also played a role, such as low health literacy, lack of self-confidence, and the perception that changing one's lifestyle is too difficult. The social environment was another key factor for example, family cultures accustomed to high-fat diets or unsupportive work environments.

Group comparison analysis showed that respondents with higher education had healthier behavior scores than those with only primary education. Furthermore, there was a significant gender difference: women tended to be more consistent in maintaining diet and attending medical check-ups, while men were more dominant in physical activity but had higher smoking rates. These findings support the importance of tailoring health promotion strategies to the target group's characteristics age, gender, and education.

Overall, this study provides evidence that healthy lifestyles and behaviors are significantly and positively associated with the effectiveness of preventive strategies to address the global disease burden. It supports the argument that community-based interventions, family involvement, and cross-sector collaboration must be strengthened to build a culture of healthy living. In addition to education, behavior-based approaches that consider economic, social, and environmental factors are key to sustainable behavioral change. The study also recommends that national programs like GERMAS be complemented with regular evaluations, incentives for healthy behaviors, and technological innovations such as community-based health applications.

The results of this study demonstrate a significant relationship between healthy lifestyles and the effectiveness of preventive strategies in addressing the global disease burden. This reinforces the argument that individual behavior plays a critical role in shaping the public health response overall. Dimensions such as physical activity, healthy eating, stress management, and sufficient sleep were shown to significantly contribute to individuals' tendency to engage in preventive measures such as medical check-ups, vaccination, and clean and healthy living behaviors (PHBS). Physical activity and stress management were the two most influential indicators, showing that an active lifestyle and sound mental health support awareness and compliance with disease prevention.

These findings align with various public health theories, such as the Health Belief Model, which explains that a person's perception of disease threat and the benefits of preventive actions strongly influences their health behavior. They also support the principles of the promotive-preventive approach developed by the World Health Organization, which states that lifestyle-based interventions are far more effective and efficient than curative approaches.

Previous research by Sallis et al. (2020) also showed that physically active individuals had a 35% lower risk of cardiovascular disease. Similarly, local studies such as those by the Ministry of Health of Indonesia (2022) have emphasized the importance of healthy lifestyle education in reducing the prevalence of non-communicable diseases.

Although most respondents were aware of the importance of healthy living, actual practices were still inconsistent. There was a gap between knowledge and implementation, possibly due to several factors. Respondents with higher education levels tended to have healthier lifestyles and were more actively involved in preventive measures. Similarly, women were more involved in maintaining family nutrition and health than men. This suggests that education level and gender roles are important in shaping healthy behaviors, and that health programs must be tailored to the sociocultural context of the community.

Barriers identified in this study include internal constraints such as low motivation, the perception that lifestyle changes are difficult, and low health literacy. External obstacles like time constraints, work burdens, the higher cost of healthy food, and limited access to fitness facilities or green spaces were also significant challenges. This indicates that behavioral change cannot rely solely on individuals but must be accompanied by structural support from the surrounding environment, including government, educational institutions, workplaces, and local communities.

The implications of these findings suggest that health promotion interventions should not focus solely on education but also integrate social and behavioral approaches. Healthy lifestyle campaigns must be accompanied by efforts to create supportive environments, such as public sports facilities, healthy cafeterias at work and school, and incentives for workers who adopt healthy behaviors. Governments must also adopt cross-sectoral policies that support public health, such as walkable city planning, restrictions on unhealthy food advertisements, and strengthening early health education in schools.

In the digital context, technology can play a strategic role in encouraging behavioral change. The use of smartphone-based health apps, physical activity reminders, online health consultation platforms (telemedicine), and social media campaigns can increase public engagement in preventive programs. Technology also enables personalized approaches for example, designing diet or exercise plans based on users' personal data. This opens up opportunities for the health sector to expand its reach through data-driven and interactive interventions.

Nevertheless, this study has several limitations. It is cross-sectional in nature, so it cannot observe long-term behavioral changes. Additionally, the use of self-report questionnaires is vulnerable to social desirability bias, where respondents tend to give "socially acceptable" answers. The population coverage was also limited to urban and semi-urban communities, so generalizing to rural or vulnerable communities must be done cautiously. Based on these findings, it is recommended that future research adopt a longitudinal approach to observe the long-term effects of healthy lifestyles on individual health. Mixed-method

approaches are also suggested to further explore motivations, barriers, and sociocultural factors shaping healthy behaviors. Research in marginalized communities or areas with limited healthcare access is also crucial to understand structural challenges in implementing comprehensive preventive strategies.

CONCLUSION

Based on the results of the research conducted, it can be concluded that a healthy lifestyle and behavior have a significant and positive relationship with the effectiveness of preventive strategies in addressing the global disease burden. Physical activity, healthy eating habits, stress management, and good sleep routines have proven to be important factors that support individuals' tendency to engage in preventive actions such as medical check-ups, vaccination, and clean and healthy living behavior (PHBS). Although public awareness is relatively good, the actual practice of a healthy lifestyle remains uneven due to internal barriers such as low motivation and limited health literacy, as well as external obstacles including time constraints, limited access, and financial costs. Therefore, efforts to promote a healthy lifestyle require interventions not only at the individual level but also through support from the social environment, cross-sectoral policies, and the use of information technology to strengthen a sustainable culture of healthy living. This study emphasizes the importance of promotive and preventive approaches in public health policy as a strategic step to reduce the long-term disease burden.

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