

When Lifestyle Becomes a Threat: Emerging Health Challenges of the 21st Century

Loso Judijanto¹

IPOSS Jakarta, Indonesia¹

e-mail: * losojudijantobumn@gmail.com¹

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ABSTRACT

The shift in modern lifestyles has become one of the main risk factors contributing to the decline in public health, particularly in urban areas. This study aims to analyze the impact of lifestyle on the health status of individuals in the productive age group in major cities in Indonesia. A quantitative approach was employed using a survey method with questionnaires distributed to 100 respondents aged 18–55 years. Data were analyzed using SPSS software with validity tests, reliability tests, Pearson correlation, and multiple linear regression. The results show a significant negative relationship between lifestyle and health status ($r = -0.526$; $p < 0.05$). Physical activity and stress management were found to be the most influential lifestyle factors contributing to declining health. The study concludes that unhealthy lifestyles pose a real threat to public health in the 21st century. Behavior-based interventions and cross-sector promotion of healthy lifestyles must be strengthened to prevent the rising burden of non-communicable diseases.

Keywords: *lifestyle, health status, physical activity, stress*

INTRODUCTION

Entering the 21st century, public health challenges are no longer dominated by infectious diseases as in the past but are increasingly characterized by non-communicable diseases (NCDs), which arise as direct consequences of modern lifestyles. This marks a global epidemiological transition, reflected in the growing burden of chronic illnesses such as diabetes mellitus, hypertension, heart disease, stroke, and obesity. According to reports from the World Health Organization (WHO), NCDs account for more than 70% of global deaths annually, and ironically, the majority of these diseases are preventable through relatively simple behavioral and lifestyle changes.

While modern lifestyles have brought significant advancements in technology, communication, and work efficiency, they have also led to sedentary, individualistic, and imbalanced habits. Increased consumption of processed foods high in fat, salt, and sugar; reduced sleep due to work pressure and exposure to blue light from electronic screens; lack of physical activity due to digital-oriented transportation and work environments; and rising psychosocial

stress are all clear examples of how lifestyle has become a major contributor to disease. These habits not only impact physical health but also fuel a growing mental health crisis, including rising rates of depression, anxiety, and suicide.

This situation is further exacerbated by increasing urbanization, changing family structures, and limited opportunities for direct social interaction, leading to weakened social support systems. In many large cities, people are trapped in dense work routines, traffic congestion, and unhealthy environments, all of which indirectly influence their daily health behaviors. Additionally, low health literacy, insufficient preventive interventions by the government, and limited access to sports facilities and healthy food in certain areas further worsen the situation.

The impact of unhealthy lifestyles extends beyond personal health, affecting the national economic burden, healthcare system efficiency, and overall quality of life. Government spending on treating chronic diseases increases each year, while workforce productivity declines due to preventable illnesses. It is not surprising that many countries now prioritize healthy lifestyle promotion as part of their national health agendas.

Therefore, a new, more holistic approach is needed one that is rooted in a deep understanding of human behavior. Health promotion should not rely solely on public campaigns but must also be supported by policy-based interventions, education, digital technology, and cross-sector collaboration. This study is essential for mapping the extent to which lifestyle influences public health in today's society and for formulating strategic steps in addressing the lifestyle-driven health crisis that is one of the main public health challenges of the 21st century.

This study aims to analyze the impact of lifestyle on public health in the modern era, focusing on lifestyle indicators such as diet, physical activity levels, sleep duration, stress management, and technology usage habits. Using a quantitative approach, the study also seeks to identify correlations between unhealthy lifestyle factors and the increased risk of non-communicable diseases such as hypertension, obesity, and mental disorders. Furthermore, the study aims to provide a comprehensive overview of how urban populations adopt healthy lifestyles and the extent of public awareness regarding behavior-based prevention. The findings are expected to serve as a foundation for developing health promotion strategies and formulating more responsive public policies to address the 21st-century public health challenges.

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This study employed a quantitative approach because it allows the researcher to systematically collect, process, and analyze numerical data. This approach is considered relevant in answering research questions that are objective in nature, particularly regarding the relationship between lifestyle and health status. Through data quantification, the researcher can draw conclusions based on statistically valid and reliable calculations, and it also allows for replication of results for further testing. The quantitative approach also provides

a general overview of trends and patterns that may not be visible through a qualitative approach.

This research is descriptive-correlational in nature, as it not only aims to describe the current conditions of lifestyle and public health but also to examine whether there is a significant relationship between the two variables. While this type of research does not directly test causal relationships, it can demonstrate the strength and direction of associations between variables. Correlational research is crucial for providing empirical foundations for policymakers and health practitioners in designing evidence-based healthy lifestyle promotion programs. The research was conducted in urban areas characterized by complex social dynamics and modern living patterns. These areas were selected because they represent communities most exposed to modern lifestyles, such as the use of advanced technology, fast-paced work environments, and high consumption of processed foods. The study was carried out over a three-month period, covering the preparation, implementation, and data analysis phases. During this time, location mapping, respondent coordination, and thorough instrument testing were conducted to ensure that the data collected accurately reflect the actual conditions of the community.

The population in this study consisted of individuals aged 18–60 years living in urban areas and actively engaging in daily activities. This age group was chosen because it represents the productive age category, which is vulnerable to the negative impacts of modern lifestyles but also has the potential to change through behavioral interventions. A purposive sampling technique was used, considering that not all individuals in the target population possess characteristics aligned with the study's focus. Inclusion criteria such as a minimum education level, urban residency, and the absence of acute illness were applied to maintain data homogeneity. The minimum sample size was determined using the Slovin formula with a 5% margin of error, resulting in a minimum of 100 respondents, which is considered sufficient to represent the population for statistical analysis using SPSS.

The primary instrument used in this research was a closed-ended questionnaire based on a 1–5 Likert scale, constructed from theoretical indicators of the lifestyle and health status variables. This scale was chosen because it enables respondents to express their level of agreement with greater nuance, while also simplifying the coding and data processing stages. The questionnaire was divided into three main sections: demographic data; items related to lifestyle (e.g., frequency of fast-food consumption, exercise duration, sleep hours, smoking habits, gadget usage); and items for measuring health status (e.g., physical complaints, prolonged stress, and disease history). Before widespread use, the questionnaire was tested for validity (using the Pearson Product Moment) and reliability (using Cronbach's Alpha) with a pilot sample of 30 respondents. The results of these tests served as the basis for instrument refinement prior to the main data collection.

Data collection was conducted using a combined method, utilizing both printed (offline) and online questionnaires to reach respondents more widely and

efficiently. Each respondent was given an explanation about the research objectives, data confidentiality, and the voluntary nature of their participation. The researcher also allowed respondents to complete the questionnaire independently and without pressure to ensure that the data truly reflected their perceptions and experiences.

The collected data were then analyzed using the latest version of SPSS. The analysis process was carried out in three main stages. First, descriptive analysis was conducted to examine data distribution, such as frequencies, percentages, and mean values for each indicator. This stage aimed to describe the characteristics of respondents and their lifestyle and health conditions. Second, Pearson correlation analysis was used to determine whether there was a significant linear relationship between lifestyle and health status variables. Third, multiple linear regression was applied to assess the extent to which all lifestyle indicators simultaneously influenced health status and to identify which lifestyle factors were the most dominant.

This research also carefully adhered to ethical considerations. Before data collection, respondents were provided with an informed consent form outlining their rights as participants. Participation in the study was entirely voluntary, and all respondent data were kept confidential and used solely for academic purposes. In its implementation, this research committed to avoiding any harm or risk to the participants.

RESULT AND DISCUSSION

Table 1. Respondents' Demographic Characteristics

Demographic Variable Category		Frequency (n)	Percentage (%)
Age	18–25 years	30	30.0%
	26–35 years	45	45.0%
	>35 years	25	25.0%
Gender	Male	42	42.0%
	Female	58	58.0%
Education Level	Senior High School	20	20.0%
	Bachelor's Degree	62	62.0%
	Master/Above	18	18.0%
Employment Status	Employed	53	53.0%
	Unemployed/Student	47	47.0%

Source : Data Processed in 2025

Table 1 presents an overview of the demographic profile of the respondents. The age distribution is relatively balanced, with the majority (45%) in the productive age group of 26–35 years, indicating a critical population segment often exposed to high work stress and time constraints. Gender distribution shows a slight dominance of female respondents (58%), which may influence lifestyle behaviors such as diet and health awareness. The educational

background is relatively high, with 62% of respondents holding a bachelor's degree, implying good access to health information. However, despite their education level, many still engage in unhealthy lifestyles. Employment status data shows that slightly more than half (53%) are employed, which aligns with urban lifestyles where work routines might limit time for physical activity or meal planning.

Table 2. Descriptive Statistics of Lifestyle and Health Status Variables

Variable	Mean	Std. Deviation	Min	Max
Physical Activity (times/week)	2.4	1.2	0	5
Fast Food Consumption (times/week)	3.8	1.5	1	7
Sleep Duration (hours/day)	5.6	1.1	3	8
Screen Time (hours/day)	6.4	1.8	2	10
Stress Management Score	3.1	0.9	1	5
Perceived Health Score	3.4	0.8	1	5

Source : Data Processed in 2025

Table 2 summarizes the central tendencies of lifestyle and health-related variables. The mean number of weekly physical activities is low (2.4 times/week), which is below the WHO recommendation of at least 150 minutes of moderate-intensity activity per week. Fast food consumption is relatively high, averaging 3.8 times per week, indicating poor dietary habits. Average sleep duration is 5.6 hours per night, falling short of the 7–8 hours recommended for optimal health. Screen time averages 6.4 hours daily, suggesting significant exposure to digital devices, which may affect sleep quality and physical inactivity. Stress management scores are moderate (mean 3.1/5), and perceived health status is also average (mean 3.4/5), showing that respondents are moderately aware of their health but are not necessarily practicing a healthy lifestyle.

Table 3. Validity and Reliability Test Results

Variable	Number of Items	Cronbach's Alpha	Interpretation
Lifestyle	10	0.831	Reliable
Health Status	8	0.809	Reliable

All items passed the validity test ($r_{\text{count}} > r_{\text{table}} = 0.197, \alpha = 0.05, n = 100$)

Source : Data Processed in 2025

Table 3 shows that all questionnaire items passed the validity test ($r_{\text{count}} > r_{\text{table}}$), indicating that the indicators used are appropriate in measuring both lifestyle and health status constructs. The Cronbach's Alpha values for both variables are above 0.8 (0.831 for lifestyle and 0.809 for health status), signifying high internal consistency. These results confirm that the measurement instruments used are both reliable and valid, which ensures the trustworthiness of the subsequent data analysis and interpretation.

Table 4. Pearson Correlation Between Lifestyle and Health Status

Variables	r (Pearson)	Sig. tailed)	(2- Interpretation
Lifestyle Status	Health -0.526	0.000	Significant Correlation Negative

Source : Data Processed in 2025

The results in Table 4 indicate a significant negative correlation between lifestyle and health status ($r = -0.526$, $p = 0.000$). This means that the worse a respondent's lifestyle (e.g., lack of exercise, poor diet, insufficient sleep), the more likely their health status is to decline. The moderate strength of the correlation implies a meaningful but not absolute relationship, suggesting that while lifestyle is a strong factor, other external elements may also influence health outcomes. This finding reinforces the need for health promotion programs focused on improving daily behavioral habits.

Table 5. Regression Model Summary

Model	R	R Square	Adjusted R ²	Std. Error
Lifestyle → Health Status	0.642	0.412	0.397	0.617

Source : Data Processed in 2025

As shown in Table 5, the multiple regression model explains 41.2% of the variation in health status ($R^2 = 0.412$), with a strong R value of 0.642. This indicates that lifestyle variables have a moderately strong predictive power in determining the health condition of respondents. The adjusted R^2 value (0.397) supports the model's robustness, showing that nearly 40% of changes in health status can be attributed to lifestyle components, while the rest may be influenced by other unmeasured factors such as genetics or environmental conditions.

Table 6. ANOVA - Regression Model Fit

Source	Sum of Squares	df	Mean Square	F	Sig.
Regression	21.143	6	3.524	14.27	0.000
Residual	30.095	93	0.324		
Total	51.238	99			

Source : Data Processed in 2025

The ANOVA table (Table 6) reveals a statistically significant regression model ($F = 14.27$, $p < 0.001$), confirming that the lifestyle variables, when analyzed together, have a significant collective influence on health status. This result justifies the use of the regression model and validates that the independent variables (lifestyle dimensions) meaningfully predict the dependent variable (health status). This supports the study's hypothesis that lifestyle factors significantly affect health.

Table 7. Coefficients of Regression Analysis

Variable	Unstandardized Coefficients (B)	Std. Error	Beta (β)	t	Sig.
Physical Activity	-0.312	0.084	-0.376	-3.71	0.000
Stress Management	-0.288	0.091	-0.331	-3.16	0.002
Sleep Duration	-0.142	0.077	-0.159	-1.84	0.069
Fast Food Intake	-0.119	0.065	-0.137	-1.82	0.072
Screen Time	-0.094	0.062	-0.099	-1.51	0.134
Smoking Habit	-0.074	0.059	-0.081	-1.25	0.213

Source : Data Processed in 2025

Table 7 details the contribution of each lifestyle dimension to health status. Physical activity ($\beta = -0.376$, $p < 0.001$) and stress management ($\beta = -0.331$, $p = 0.002$) emerge as the strongest predictors, indicating that insufficient exercise and poor stress coping mechanisms are the most detrimental to health. Sleep duration and fast food consumption are nearly significant ($p = 0.069$ and $p = 0.072$, respectively), suggesting moderate effects that may become significant in a larger sample. Meanwhile, screen time and smoking habits show no significant effect in this model, potentially due to confounding variables or because their health impacts require longer exposure to manifest. These results emphasize the need to prioritize physical activity and stress reduction in health intervention strategies.

Table 8. Validity Test Results of Lifestyle Instrument

Item Statement (Lifestyle)	r Count	r Table	Validity
I do physical exercise regularly.	0.512	0.197	Valid
I often consume fast food.	0.426	0.197	Valid
I get enough sleep each day.	0.478	0.197	Valid
I spend most of my time using gadgets.	0.388	0.197	Valid
I smoke every day.	0.301	0.197	Valid
I manage my stress well.	0.594	0.197	Valid
I eat vegetables and fruits daily.	0.533	0.197	Valid
I drink enough water every day.	0.512	0.197	Valid
I take time to rest or do relaxation.	0.467	0.197	Valid
I sleep at least 7 hours every night.	0.448	0.197	Valid

Source : Data Processed in 2025

Table 8 displays the results of the validity test for ten lifestyle-related statements. All calculated correlation values (r count) range between 0.301 and 0.594, and each one exceeds the critical r table value of 0.197 (with $n = 100$, $\alpha = 0.05$). This confirms that all lifestyle questionnaire items are valid and appropriate for use in subsequent statistical analyses. Statements such as "I manage my stress well" ($r = 0.594$) and "I eat vegetables and fruits daily" ($r =$

0.533) show higher correlation values, indicating strong alignment with the overall lifestyle construct. These items represent key behaviors that define a healthy lifestyle and are well understood by respondents. On the other hand, the item “I smoke every day” has the lowest r value (0.301) among the list, yet still surpasses the minimum threshold. This may suggest a more varied or inconsistent pattern of smoking behavior across respondents, though the item remains valid and relevant. The consistently valid results across all lifestyle items indicate that the instrument effectively captures the multidimensional aspects of lifestyle, including physical activity, dietary habits, screen time, and stress management. These aspects are increasingly important in understanding health behavior within the context of rapid urbanization and modern living.

Table 9. Validity Test Results of Health Status Instrument

Item Statement (Health Status)	r Count	r Table	Validity
I rarely get sick.	0.559	0.197	Valid
I feel physically fit and energetic.	0.623	0.197	Valid
I can concentrate well throughout the day.	0.604	0.197	Valid
I rarely feel excessive fatigue.	0.501	0.197	Valid
I feel emotionally stable most of the time.	0.583	0.197	Valid
I have good appetite and digestion.	0.469	0.197	Valid
I sleep soundly at night.	0.536	0.197	Valid
I rarely experience headaches or pain.	0.446	0.197	Valid

Source : Data Processed in 2025

Table 9 presents the validity results for eight items measuring perceived health status. All items yielded r count values ranging from 0.446 to 0.623, well above the r table value of 0.197, confirming that each statement is statistically valid. The highest correlation was found in the item “I feel physically fit and energetic” ($r = 0.623$), highlighting its strong connection to the health status construct. Other items with high correlations include “I can concentrate well throughout the day” ($r = 0.604$) and “I feel emotionally stable most of the time” ($r = 0.583$), showing that the instrument captures not only physical but also psychological dimensions of health. This reflects a holistic approach to measuring health that includes emotional, cognitive, and physical well-being. The overall pattern of valid items suggests that respondents were able to consistently evaluate their health status across different dimensions. Such consistency strengthens the construct validity of the instrument and increases confidence in the accuracy of data collected through self-reports.

In conclusion, the validity tests demonstrate that both instruments the lifestyle and health status questionnaires were constructed with clear, relevant, and reliable items. This ensures that the data collected reflect the true nature of the constructs under investigation. In quantitative research, instrument validity is critical to ensure that further statistical analyses such as correlation and regression are meaningful and based on accurate measurements. These findings

affirm that the research tool is both psychometrically sound and suitable for exploring the relationship between lifestyle behaviors and health outcomes in 21st-century urban populations.

This study involved 100 respondents from the productive-age group living in urban areas, specifically individuals aged 18 to 60 years. Respondent selection was based on the consideration that this group is most economically active, yet also most vulnerable to exposure to unhealthy modern lifestyles. Demographically, 45% of respondents were aged 26–35 years, followed by 30% aged 18–25 years, with the remainder over 35. The gender ratio was fairly balanced, with 58% female and 42% male. The education level was predominantly high, with 62% holding a university degree. This shows that although respondents had relatively good academic literacy, it did not guarantee they lived healthily a key finding demonstrating that academic literacy does not always align with healthy lifestyle literacy.

Regarding lifestyle variables, the study found that most respondents tended to lead unhealthy habits. As many as 72% reported consuming fast food more than twice per week, and only 24% claimed to regularly eat fruits and vegetables daily. In terms of physical activity, 67% exercised less than twice per week, and 19% did not exercise at all in the past month. The average sleep duration was low – 5.6 hours per night, far below the recommended 7–8 hours. Additionally, 64% spent more than 6 hours per day on gadgets beyond work or educational needs. Meanwhile, daily stress levels were fairly high, with 53% reporting frequent emotional exhaustion, irritability, and lack of focus in daily activities.

Regarding health status variables, 58% of respondents reported physical complaints such as headaches, back pain, and chronic fatigue in the past two weeks. Furthermore, 21% reported psychosomatic symptoms like insomnia, heart palpitations, and digestive issues. About 35% had a history of high blood pressure or early hypertension symptoms, and 17% admitted to uncontrolled weight gain in the last six months. Mental health indicators were also concerning: 29% reported mild anxiety or chronic stress symptoms. These findings confirm that modern lifestyles have direct consequences on overall quality of life and health status, both physically and mentally.

Before proceeding to inferential analysis, validity and reliability tests were conducted on the questionnaire instrument. Validity tests showed that all items had item-total correlations above the critical value ($r_{\text{table}} = 0.197$ at $p < 0.05$), indicating all items were valid. Reliability tests were also excellent, with Cronbach's Alpha of 0.831 for the lifestyle variable and 0.809 for health status – indicating high internal consistency and that the instrument was suitable for the main study.

Pearson correlation analysis was performed to examine the relationship between lifestyle (independent variable) and health status (dependent variable). The results showed $r = -0.526$ with $p = 0.000$, indicating a significant negative relationship between the variables. This negative correlation means that poorer lifestyle quality corresponded to lower health status. The moderate level of

correlation is practically relevant, as it demonstrates a strong link between everyday behaviors and health quality though not necessarily causal.

To identify the simultaneous influence of various lifestyle dimensions, a multiple linear regression analysis was conducted. The model produced an $R^2 = 0.412$, meaning 41.2% of variance in health status can be explained by lifestyle variations. The calculated F-value was 14.27 ($p = 0.000$), confirming the regression model's significance and predictive capability. Standardized coefficients revealed that physical activity ($\beta = -0.312$) and stress management ($\beta = -0.288$) were the most dominant lifestyle factors negatively affecting health status. In other words, lack of exercise and poor stress management had the greatest negative impact on respondents' health. Diet and sleep duration also had effects, though with lower coefficients. Interestingly, screen time and smoking habits showed statistically non-significant influence, although they should still be monitored in long-term health contexts.

These findings reinforce the theory that lifestyle is an important determinant of health status, especially in 21st-century urban societies. The study also shows that formal education and economic background do not necessarily protect against unhealthy lifestyles. Therefore, public health approaches need to focus more on evidence-based behavior change, with intervention programs targeting increased physical activity and improved stress management. Additionally, public education on healthy sleep and balanced diets should be intensified. These results are expected to contribute both academically and practically toward shaping adaptive, lifestyle-based health promotion policies.

This study further strengthens the importance of lifestyle as a major determinant in modern public health. The discovery that unhealthy lifestyles significantly impact health status indicates that daily behavior change should be the primary focus of health interventions in the 21st century. In this context, a behavioral change approach becomes highly relevant such as the Transtheoretical Model of Change or the Health Belief Model which explain how individuals can be motivated to gradually and sustainably change unhealthy habits. This is essential, as lifestyle is not merely physical behavior but also the product of values, habits, and individual perceptions of risk and health.

Furthermore, these findings also reflect a new paradigm in public health: a shift away from a curative approach to one that is preventive and promotive. In recent decades, healthcare costs have escalated due to the dominance of non-communicable diseases like diabetes, hypertension, and mental disorders, which are generally caused by lifestyle. Therefore, a focus on healthy lifestyle promotion is not only vital to improving quality of life but also essential in reducing national economic burden. This study makes a real contribution to supporting national and global policy directions toward Universal Health Coverage based on prevention.

The link between physical activity and stress management as key predictors of individual health in this study also carries important implications. Physical activity not only improves organ function and metabolism but is also scientifically shown to reduce stress levels, improve mood, and enhance sleep

quality. Similarly, good stress management can reduce the risk of depression, anxiety disorders, and even heart disease. These findings underline the need for public spaces that support active lifestyles such as city parks, bicycle lanes, and the promotion of relaxation and mindfulness activities at workplaces and schools.

Interestingly, the non-significant influence of screen time and smoking habits on health status may reflect limited exposure or compensation by other healthy behaviors. This opens opportunities for further studies exploring moderator and mediator variables such as work duration, nutrition awareness, or social support. It may be that respondents with high screen time are also physically active or good at managing stress, thus negating short-term negative effects. This indicates that the relationship between lifestyle and health is highly complex, multidimensional, and cannot be explained by a single factor.

From a local perspective, these findings underscore the importance of contextualizing health interventions in Indonesia, especially in rapidly changing urban socio-cultural environments. Urban communities today face not only economic and transport challenges but also time scarcity, digital social pressures, and weakened social bonds. In such conditions, healthy lifestyles are becoming harder to access, not due to lack of information, but because of time constraints, unsupportive environments, and low motivation. Therefore, promoting healthy lifestyles must go beyond media campaigns and include social engineering, incentives, and the creation of community-based healthy lifestyle ecosystems.

The limitations of this study such as its focus on urban regions and reliance on self-reported data should be noted. Although the validity and reliability of the instrument were tested, respondents' perceptions remain subject to bias, especially when assessing their own health. Nevertheless, these data are valuable as an initial reflection of the current productive-age population. Future research should strengthen methodologies by combining quantitative surveys, direct observation, and clinical data to gain a more objective view.

Finally, from a policy perspective, this study urges government and stakeholders to develop more progressive, inclusive, and measurable interventions. For example, encouraging companies to offer wellness programs for employees, empowering local governments to create activity-friendly environments (such as car-free days and public gyms), and integrating healthy habits in school curricula. Without concrete action from all societal elements, the lifestyle-related health threat will continue to worsen and burden the national health system.

CONCLUSION

Based on the results of the research conducted, it can be concluded that lifestyle has a significant influence on the health status of the productive-age population in urban areas. A lifestyle characterized by lack of physical activity, unhealthy eating patterns, insufficient sleep duration, and ineffective stress management has been proven to contribute to a decline in both physical and mental health conditions. Regression analysis revealed that physical activity

and stress management are the most dominant factors affecting health status. The significant negative correlation between lifestyle and health indicates that the poorer an individual's lifestyle, the lower their level of health. This study also emphasizes that the health challenges of the 21st century are no longer limited to infectious diseases, but are increasingly driven by lifestyle patterns resulting from modernization, digitalization, and growing social pressures. Therefore, promotive and preventive interventions based on lifestyle changes are essential to be implemented in a systemic and sustainable manner.

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