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Healthy Living Starts with a Smile: Oral Health Promotion and Early Detection of Degenerative Diseases among Community Members

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Abstract: Healthy living begins with maintaining oral health and preventing chronic diseases through early detection and lifestyle modification. Oral health problems and degenerative diseases remain major public health challenges in Indonesia. This community empowerment program aimed to improve community awareness regarding oral health and to conduct early screening for degenerative diseases among residents of RW 15, Pandu Raya Residential Area, Bogor. The program employed a participatory approach involving community representatives, security personnel, cleaning staff, and local administrators. Activities included oral health education, dental examinations, screening of blood pressure, blood glucose, total cholesterol, and uric acid levels, as well as assessment of participants' knowledge regarding non-pharmacological management of degenerative diseases using a structured questionnaire. A total of 23 participants attended the program. Dental examinations revealed that 22 participants (95.65%) had dental caries, while 9 participants (39.13%) required root canal treatment. Screening results showed elevated cholesterol levels in 11 participants (47.83%), elevated blood pressure in 8 participants (34.78%), elevated blood glucose levels in 7 participants (30.43%), and elevated uric acid levels in 6 participants (26.09%). Participants generally demonstrated good to very good knowledge regarding non-pharmacological management of hypertension, diabetes mellitus, and hyperuricemia, although misconceptions regarding cholesterol management remained evident. The program successfully increased community awareness of oral health and highlighted the importance of early detection and lifestyle modification for preventing degenerative diseases.

Keywords: degenerative diseases; early detection; health promotion; lifestyle modification; oral health

1. INTRODUCTION

Oral health is an integral component of overall health and well-being because it influences essential daily functions, including eating, speaking, breathing, and social interaction. Among oral health problems, dental caries remains the most prevalent condition worldwide and continues to affect individuals across all age groups. Untreated dental caries may progress to deeper tooth structures, resulting in pulp infection, pain, tooth loss, and reduced quality of life. According to the World Health Organization (WHO), oral diseases

affect approximately 3.5 billion people globally, making them among the most common non-communicable diseases worldwide [WHO], 2022). Recent global estimates indicate that oral disorders remain among the most prevalent health conditions worldwide (GBD 2021 Oral Disorders Collaborators, 2024; WHO, 2024). Therefore, improving oral health should be considered a fundamental strategy for promoting healthy and productive communities.

In addition to the global burden of oral diseases, preventive oral health promotion remains an important public health priority. A review by Petersen et al. (2020) demonstrated that community-based oral health promotion and disease prevention strategies can substantially improve oral health outcomes when implemented consistently and supported by public health policies. Therefore, strengthening preventive education at the community level is essential for reducing the long-term burden of dental caries and other oral diseases. The importance of oral health becomes even more apparent when viewed within the broader context of public health. In addition to causing pain and discomfort, poor oral health can lead to substantial economic burdens through treatment costs, reduced work productivity, and decreased social participation.

The Indonesian Health Survey (Survei Kesehatan Indonesia/ SKI) 2023 reported that 56.9% of Indonesians aged three years and older experienced oral health problems, indicating that oral diseases remain a significant public health challenge in the country (Kementerian Kesehatan Republik Indonesia, 2023). These findings suggest that preventive efforts and community-based oral health promotion programs are still urgently needed to reduce the burden of oral diseases in Indonesia. Beyond oral health problems, Indonesia is currently facing a growing burden of non-communicable diseases (NCDs), particularly degenerative diseases such as hypertension, diabetes mellitus, dyslipidemia, and hyperuricemia. Globally, NCDs account for the majority of global mortality and continue to represent a major public health challenge worldwide (WHO, 2024). These conditions arise from complex interactions among genetic, physiological, environmental, and behavioral factors and frequently develop gradually over a long period.

The SKI 2023 reported that the prevalence of hypertension among individuals aged 15 years and above reached 30.8%, while diabetes mellitus affected 11.7% of the population in the same age group

(Kementerian Kesehatan Republik Indonesia, 2023). The increasing prevalence of these diseases highlights the need for preventive strategies that target modifiable lifestyle-related risk factors. The growing burden of degenerative diseases emphasizes the importance of early detection and health promotion as complementary public health interventions. Many individuals with hypertension, diabetes mellitus, dyslipidaemia, or hyperuricemia remain asymptomatic during the early stages of disease progression, resulting in delayed diagnosis and treatment. Among these conditions, diabetes remains one of the fastest-growing chronic diseases worldwide and continues to affect millions of adults, increasing the risk of cardiovascular disease, kidney disease, and other long-term complications (WHO, 2025; American Diabetes Association, 2024).

Previous studies have demonstrated that routine screening and lifestyle modification can significantly reduce disease-related complications and improve long-term health outcomes (Perkumpulan Endokrinologi Indonesia [PERKENI], 2021; Kementerian Kesehatan Republik Indonesia, 2021). In particular, early identification and management of hypertension are essential because elevated blood pressure is a major contributor to cardiovascular morbidity and mortality worldwide (WHO, 2023). Consequently, community-based screening programs provide valuable opportunities to identify individuals at risk and encourage early preventive actions. The prevalence of hypertension in West Java was recorded at 34.4%–39.6%, based on data from the 2023 Indonesian Health Survey (SKI). West Java ranks first or second highest in Indonesia, with the total number of affected individuals exceeding 3.2 million. According to the 2023 health profile data from the Bogor City Health Office, the number of hypertension cases in 2023 increased by 18,616 compared to 2022.

Lifestyle modification represents one of the most effective approaches for preventing and controlling degenerative diseases. Evidence consistently shows that healthy dietary patterns, regular physical activity, smoking cessation, stress management, and routine health monitoring contribute substantially to reducing cardiovascular and metabolic risk factors (PERKENI, 2021; Perhimpunan Reumatologi Indonesia, 2024). In addition, increasing public knowledge regarding non-pharmacological disease management is essential because informed individuals are more likely to adopt healthy behaviours and participate actively in disease

prevention efforts. Therefore, health education should be integrated with screening activities to maximize community empowerment and health awareness.

The integration of oral health promotion and degenerative disease screening offers a comprehensive approach to community health improvement. Oral health education encourages preventive behaviors that support overall well-being, while early screening enables the identification of individuals who may require further medical evaluation or lifestyle interventions. Such integrated programs are particularly relevant in community settings where access to preventive health services may be limited. Furthermore, combining educational and screening activities can strengthen public awareness regarding the interconnected nature of oral and systemic health.

Based on these considerations, a community empowerment program was conducted among residents of RW 15, Pandu Raya Residential Area, Bogor, which Apotek Pakuan Farma located. The target participants was based on the community service team's concern for providing healthcare attention to administrative, security, and cleaning staff, who may have limited access to healthcare services. In order to achieving this objective, the community service team met with the community leader to gain support and receive recommendations for the successful implementation of the program. The program was implemented through collaboration among pharmacists, pharmacy students, local community leaders, and a licensed dentist practicing at Apotek Pakuan Farma. The rapid response provided by these volunteers and local security personnel requires optimal health to ensure they can effectively carry out their duties. The objectives of the program were to improve community awareness regarding oral health, conduct early screening for degenerative diseases, and evaluate participants' knowledge regarding non-pharmacological management of hypertension, diabetes mellitus, hyperuricemia, and dyslipidemia. The findings of this program are expected to provide useful information for developing future community-based health promotion and disease prevention initiatives.

2. METHOD

This community empowerment program was conducted in RW 15, Pandu Raya Residential Area, North Bogor, Indonesia. The activity employed a participatory community-based approach involving local community representatives, security personnel, cleaning staff, and neighborhood administrators. Participants were recruited through voluntary participation and community invitation distributed by local administrators. A total of 23 participants attended the program.

The program consisted of four stages:

1. Oral health education and dental examination conducted by a licensed dentist.
2. Early screening of degenerative diseases through measurement of blood pressure, random blood glucose, total cholesterol, and uric acid levels.
3. Healthy lifestyle education focusing on the principles of the Healthy Community Movement (GERMAS), including healthy diet, physical activity, smoking cessation, and routine health monitoring.
4. Assessment of participants' knowledge regarding non-pharmacological management of hypertension, diabetes mellitus, hyperuricemia, and dyslipidemia using a structured questionnaire consisting of 20 statements.

The questionnaire was developed based on national clinical guidelines for hypertension, diabetes mellitus, hyperuricemia, and dyslipidaemia management and consisted of dichotomous (true/false) statements assessing participants' knowledge regarding lifestyle modification. Data were analyzed descriptively using frequencies and percentages and presented in tabular form.

3. RESULT AND DISCUSSION

The community empowerment program entitled *"Healthy Living Starts with a Smile: Oral Health Promotion and Early Detection of Degenerative Diseases"* was successfully conducted among residents of RW 15, Pandu Raya Residential Area, Bogor. The activity involved oral health education, dental examinations, early screening for degenerative diseases, and assessment of participants' knowledge

regarding non-pharmacological disease management. A total of 23 participants attended the program, including community representatives, neighbourhood administrators, security personnel, and cleaning staff. Through a participatory approach, the program sought to increase public awareness of preventive health practices while simultaneously identifying health risks requiring further attention.

3.1 Oral Health Examination

Oral health promotion was delivered through educational sessions and direct dental examinations performed by a licensed dentist (**Figure 1**). The examination revealed that 22 of 23 participants (95.65%) had dental caries, while 9 participants (39.13%) required root canal treatment. These findings indicate a substantial unmet need for oral healthcare services within the target community. The high prevalence of dental caries observed during this program suggests that oral health problems remain common despite increasing public awareness regarding healthy living practices.

Figure 1. Implementation of the Community Empowerment Program, Including Oral Health Education, Dental Examination, Early Screening for Degenerative Diseases, and Participant Engagement Activities

The high prevalence of dental caries identified in this community exceeds the national prevalence of oral health problems reported by the Indonesian Health Survey (SKI) 2023, which documented oral health complaints among 56.9% of the population aged three years and older (Kementerian Kesehatan Republik Indonesia, 2023). Dental caries develops through a multifactorial process involving bacterial biofilm, dietary carbohydrates, inadequate oral hygiene, and limited access to preventive dental care (WHO, 2022). These

findings highlight the importance of strengthening oral health promotion programs that encourage proper tooth brushing, regular dental examinations, and early treatment of oral diseases.

The burden of oral disease extends beyond the oral cavity and may affect overall health and quality of life. Untreated dental caries can impair chewing ability, nutritional intake, communication, and social interaction, while severe infections may contribute to systemic health complications (WHO, 2022). Therefore, improving oral health should be considered an essential component of broader health promotion initiatives. This perspective supports the integration of oral health education with screening activities targeting other chronic health conditions.

3.2. Screening of Degenerative Diseases

In addition to dental examinations, participants underwent screening for several degenerative disease risk factors, including blood pressure, blood glucose, total cholesterol, and uric acid levels. The screening results showed that 11 participants (47.83%) had elevated cholesterol levels, 8 participants (34.78%) had elevated blood pressure, 7 participants (30.43%) had elevated blood glucose levels, and 6 participants (26.09%) had elevated uric acid levels. These findings demonstrate that metabolic and cardiovascular risk factors remain prevalent within the target population despite the absence of obvious clinical symptoms among many participants.

The identification of elevated blood pressure among more than one-third of participants is particularly important because hypertension is often referred to as a “silent disease” due to its asymptomatic nature during the early stages. According to the Indonesian National Guideline for Adult Hypertension Management, uncontrolled hypertension substantially increases the risk of cardiovascular disease, stroke, chronic kidney disease, and premature mortality (Kementerian Kesehatan Republik Indonesia, 2021). Early detection through community-based screening therefore provides an important opportunity for risk identification and timely intervention.

The cardiovascular implications of uncontrolled hypertension and dyslipidaemia are substantial. According to Tsao et al. (2023), cardiovascular disease remains one of the leading causes of morbidity and mortality worldwide, and major modifiable risk factors include hypertension, dyslipidaemia, diabetes mellitus, smoking, obesity, and physical inactivity. Consequently, community-based screening programs such as this initiative may contribute to earlier identification of individuals at risk for future cardiovascular events.

Similarly, the presence of elevated blood glucose levels among nearly one-third of participants indicates a potential risk for diabetes mellitus or impaired glucose regulation. Diabetes mellitus is a chronic metabolic disorder associated with microvascular and macrovascular complications that can significantly reduce quality of life if left unmanaged (PERKENI, 2021). Lifestyle interventions, particularly dietary modification, weight management, and regular physical activity, have been shown to reduce the progression of diabetes and improve glycaemic control. Consequently, screening activities play a critical role in identifying individuals who may benefit from further medical evaluation and preventive counseling.

The high proportion of participants with elevated cholesterol levels also deserves attention because dyslipidaemia is a major contributor to atherosclerotic cardiovascular disease. Elevated cholesterol frequently develops without noticeable symptoms and may remain undetected until serious complications occur (PERKENI, 2021). Furthermore, elevated uric acid levels identified among participants indicate the presence of another modifiable risk factor associated with gout and metabolic disorders. Together, these findings reinforce the importance of periodic screening and continuous health promotion as preventive strategies for non-communicable diseases.

Elevated uric acid levels identified among participants also deserve attention because hyperuricemia and gout have shown a growing global burden over recent decades. A systematic analysis by Safiri et al. (2020) reported increasing trends in the prevalence and burden of gout worldwide, emphasizing the importance of early prevention through dietary management, weight control, and healthy lifestyle practices. These findings

support the inclusion of hyperuricemia education within community-based non-communicable disease prevention programs.

3.3. Knowledge Regarding Non-Pharmacological Disease Management

To evaluate participants' understanding of healthy lifestyle interventions, a structured questionnaire assessing knowledge regarding non-pharmacological management of hypertension, hyperuricemia, diabetes mellitus, and dyslipidaemia was administered. Overall, participants demonstrated moderate to very good knowledge across most disease categories (**Table 1.**). Nevertheless, several misconceptions remained evident, particularly regarding physical activity and cholesterol management, suggesting that additional educational efforts are still required.

Table 1. Participants' Knowledge Regarding Non-Pharmacological Management of Hypertension, hyperuricemia, Diabetes Mellitus, and Dyslipidaemia

No	Statement	Correct (n)	Correct (%)	Incorrect (n)	Incorrect (%)
	Hypertension				
1	Reducing salt intake can help lower blood pressure.	22	95.65	1	4.35
2	Smoking and alcohol consumption can increase blood pressure.	10	43.48	13	56.52
3	Managing stress may contribute to blood pressure control.	21	91.30	2	8.70
4	Regular aerobic exercise can help lower blood pressure.	23	100.00	0	0.00
5	The DASH (Dietary Approaches to Stop Hypertension) diet is beneficial for individuals with hypertension.	22	95.65	1	4.35
	Hyperuricemia				
1	Adequate water intake may help reduce uric acid levels.	16	69.57	7	30.43
2	Organ meats and certain seafood are high in purines and may increase uric acid levels.	21	91.30	2	8.70
3	Maintaining an ideal body weight may help prevent hyperuricemia.	12	52.17	11	47.83
4	Regular moderate-intensity physical activity can help reduce the risk of hyperuricemia.	22	95.65	1	4.35
5	Consumption of sugar-sweetened beverages may increase uric acid levels.	23	100.00	0	0.00
	Diabetes Mellitus				
1	Limiting excessive sugar intake helps control blood glucose levels.	12	52.17	11	47.83
2	Consuming vegetables and fruits rich in dietary fibre may help regulate blood glucose levels.	23	100.00	0	0.00
3	Regular physical activity contributes to blood glucose control.	23	100.00	0	0.00
4	Maintaining a healthy body weight can reduce the risk of diabetes mellitus.	16	69.57	7	30.43
5	Individuals with diabetes should follow a balanced and healthy diet.	20	86.96	3	13.04
	Dyslipidaemia				
1	Reducing saturated fat intake may help lower cholesterol levels.	14	60.87	9	39.13
2	Regular physical activity may improve lipid profiles.	16	69.57	7	30.43
3	Increasing dietary fibre intake can help lower blood cholesterol levels.	13	56.52	10	43.48
4	Smoking can negatively affect cholesterol levels&cardiovascular health.	18	78.26	5	21.74
5	Lifestyle modification is an important component of dyslipidaemia management.	20	86.96	3	13.04

Regarding hypertension, most participants correctly recognized the importance of reducing salt intake, managing stress, engaging in regular physical activity, and following the Dietary Approaches to Stop Hypertension (DASH) eating pattern. More than 90% of participants answered these items correctly. However, only 43.48% correctly recognized that smoking and alcohol consumption can increase blood pressure. This finding suggests that although participants generally understood dietary and lifestyle approaches to hypertension management, additional education regarding behavioral risk factors remains necessary. Previous studies have consistently demonstrated that smoking and excessive alcohol consumption contribute to elevated blood pressure and increased cardiovascular risk (Kementerian Kesehatan Republik Indonesia, 2021).

Knowledge regarding hyperuricemia management was generally moderate to good. Most participants correctly recognized the importance of limiting high-purine foods and engaging in regular physical activity, whereas understanding regarding adequate water consumption and maintenance of an ideal body weight was comparatively lower. Nevertheless, misconceptions persisted regarding dietary purine sources, particularly concerning organ meats and seafood. Similar misunderstandings have been reported in other community settings, where dietary restrictions are often interpreted too broadly or inaccurately (Perhimpunan Reumatologi Indonesia, 2024). These findings indicate that targeted nutrition education remains necessary to improve public understanding of hyperuricemia prevention.

Participants demonstrated strong knowledge regarding several aspects of diabetes prevention and management. All participants correctly identified the importance of dietary fiber consumption and regular physical activity in supporting blood glucose control. Nevertheless, only 52.17% correctly recognized the importance of limiting excessive sugar intake, indicating that misconceptions regarding dietary management of diabetes still exist. These findings suggest that nutrition-focused education should remain a priority within community health promotion programs.

Compared with the other disease categories, knowledge regarding dyslipidemia management was relatively lower. Several participants believed that cholesterol levels could only be reduced through

medication, while fewer participants recognized the role of dietary fibre and saturated fat restriction in improving lipid profiles. This misconception may contribute to an overreliance on pharmacological treatment while underestimating the effectiveness of lifestyle modification. Current evidence indicates that dietary improvement, smoking cessation, weight management, and regular physical activity can significantly improve lipid profiles and reduce cardiovascular risk (PERKENI, 2021).

3.4 Implications of the Community Empowerment Program

Although participants generally demonstrated satisfactory knowledge regarding healthy lifestyles, screening results revealed that many individuals still exhibited risk factors for degenerative diseases. This discrepancy suggests that health knowledge alone may not automatically translate into sustained healthy behaviours. Similar observations have been reported in previous public health studies, which found that behavioural change is influenced not only by knowledge but also by motivation, environmental factors, social support, and access to healthcare services.

The findings of this program therefore highlight the importance of continuous community-based health promotion rather than one-time educational interventions. Integrating oral health promotion, lifestyle counseling, and routine screening activities may provide a more comprehensive strategy for improving community health outcomes. By increasing awareness, identifying health risks at an early stage, and encouraging healthy behaviour adoption, community empowerment programs can contribute to the prevention of chronic diseases and the improvement of overall quality of life (Yusefzadeh et al., 2022). Adopting a healthy diet, limiting the intake of cholesterol-rich foods, avoiding alcohol, and losing excess weight are among the objectives of the Healthy Living Community Movement (GERMAS), which seeks to cultivate a healthy lifestyle to improve quality of life and curb both communicable and non-communicable diseases. The Ministry of Health's (Kemenkes) CERDIK movement for preventing degenerative diseases focuses on: **C**hecking health regularly, **E**liminating cigarette smoke, **R**egular physical activity, **D**iet with balanced nutrition, **I** for Adequate rest, and **K** for managing stress.

4. CONCLUSION

The community empowerment program successfully integrated oral health promotion with early screening for degenerative diseases among residents of RW 15 Pandu Raya Residential Area, Bogor. The findings revealed a high prevalence of dental caries and a considerable proportion of participants with elevated cholesterol levels, blood pressure, blood glucose levels, and uric acid levels, indicating the presence of important risk factors for non-communicable diseases within the community. Although participants generally demonstrated good knowledge regarding non-pharmacological management of hypertension, diabetes mellitus, and hyperuricemia, misconceptions related to physical activity and dyslipidemia management were still identified. These findings suggest that continuous community-based health education and periodic screening programs are necessary to strengthen preventive behaviors, improve early detection, and reduce the burden of chronic diseases. Integrating oral health promotion with lifestyle-focused interventions may provide an effective strategy for supporting healthier and more productive communities.

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CONFLICT OF INTERESTS

The authors declare that there are no conflicts of interest regarding the publication of this article.

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