

Community empowerment in preventing dental caries through education and routine examinations

Pemberdayaan masyarakat dalam pencegahan karies gigi melalui edukasi dan pemeriksaan rutin

Komang Rhismala Oktaryanti Wulan¹, Byba Melda Suhita¹, I Gusti Putu Dado Armawan³

¹Postgraduate Program in Public Health, Universitas STRADA Indonesia, Indonesia

²Omsa Medika, Indonesia



Correspondence: Komang Rhismala Oktaryanti Wulan, wulanupi26@gmail.com

Submitted: 06-03-2026

Revised: 16-04-2026

Accepted: 21-04-2026

Published: 01-05-2026

ABSTRACT

Community empowerment in preventing dental caries is a relevant and strategic approach to improving public oral health. This community service program aimed to enhance community knowledge and promote preventive behaviors through educational interventions and routine dental examinations at a clinic. The implementation method was designed to effectively achieve empowerment and prevention goals by integrating health education with direct health services. Evaluation results demonstrated a significant improvement in participants' understanding following the intervention. Prior to the educational session, only 40% of participants correctly answered questions and demonstrated adequate knowledge of basic dental caries prevention. This proportion increased to 85% after the intervention, indicating the effectiveness of the educational approach. Clinical examinations of 50 participants revealed that 18 individuals (36%) had dental caries, with varying severity. The program also demonstrated strong community engagement, as evidenced by active participation and positive responses throughout the activities. The findings suggest that community empowerment through education and routine dental checkups is effective in increasing knowledge, fostering behavioral change, and raising awareness of the importance of maintaining sustainable oral health.

Keywords: community empowerment, dental caries, health education, routine dental examination

ABSTRAK

Pemberdayaan masyarakat dalam pencegahan karies gigi merupakan pendekatan yang relevan dan strategis untuk meningkatkan kesehatan gigi dan mulut masyarakat. Program pengabdian kepada masyarakat ini bertujuan untuk meningkatkan pengetahuan masyarakat serta mendorong perilaku pencegahan melalui intervensi edukasi dan pemeriksaan gigi rutin di klinik. Metode pelaksanaan dirancang untuk secara efektif mencapai tujuan pemberdayaan dan pencegahan dengan mengintegrasikan edukasi kesehatan dan layanan kesehatan langsung. Hasil evaluasi menunjukkan adanya peningkatan signifikan dalam pemahaman peserta setelah intervensi. Sebelum sesi edukasi, hanya 40% peserta yang mampu menjawab pertanyaan dengan benar dan memiliki pengetahuan yang memadai tentang pencegahan dasar karies gigi. Proporsi ini meningkat menjadi 85% setelah intervensi, yang menunjukkan efektivitas pendekatan edukasi. Pemeriksaan klinis terhadap 50 peserta menunjukkan bahwa 18 orang (36%) mengalami karies gigi dengan tingkat keparahan yang bervariasi. Program ini juga menunjukkan keterlibatan masyarakat yang tinggi, ditandai dengan partisipasi aktif dan respons positif selama kegiatan berlangsung. Temuan ini menunjukkan bahwa pemberdayaan masyarakat melalui edukasi dan pemeriksaan gigi rutin efektif dalam meningkatkan pengetahuan, mendorong perubahan perilaku, serta meningkatkan kesadaran akan pentingnya menjaga kesehatan gigi dan mulut secara berkelanjutan.

Kata kunci: pemberdayaan masyarakat, karies gigi, edukasi kesehatan, pemeriksaan gigi rutin



INTRODUCTION

Oral and dental health is an essential component of overall public health, yet it often receives limited attention in community health priorities (Giacaman et al., 2022). Among oral health problems, dental caries remains the most prevalent disease worldwide and a primary cause of tooth decay across all age groups (Warreth, 2022). This condition not only affects individual health and quality of life but also contributes to a broader public health burden (Dimopoulou et al., 2022). Therefore, effective and sustainable efforts are required to prevent and control dental caries through appropriate community-based interventions (Tran et al., 2022).

Prevention of dental caries requires a comprehensive approach that integrates continuous dental health education with routine dental examinations (Veiga et al., 2023). Health education plays a crucial role in improving public knowledge, attitudes, and behaviors related to oral hygiene (Jiang et al., 2023). Through targeted, appropriate educational strategies, communities can better understand the risk factors for dental caries and adopt preventive practices, such as proper toothbrushing, dietary control, and regular dental visits. This approach has the potential to reduce the incidence and progression of dental caries significantly (Elsahoryi et al., 2024).

Routine dental checkups conducted by healthcare professionals are essential for early detection and management of oral health problems (Abdelaziz, 2022). Early identification of dental caries allows for timely intervention, preventing further complications and reducing the risk of tooth loss (Zou et al., 2022). However, public awareness and utilization of routine dental services remain low, particularly in communities with limited access to healthcare facilities (Crocombe et al., 2022). Many individuals tend to seek dental care only when symptoms such as pain arise, leading to delayed treatment and increased healthcare costs (Wang et al., 2025).

Community empowerment has emerged as a strategic and sustainable approach to improving public participation in maintaining oral health (Anyikwa & Ogwo, 2025). Through empowerment, communities are not only passive recipients of health services but also active participants in preventing dental diseases (Alvenfors et al., 2024). Empowered communities are more likely to support one another, share knowledge, and promote healthy behaviors, thereby fostering an environment that supports oral hygiene. This participatory approach can enhance the effectiveness and long-term sustainability of dental health programs (Mishra et al., 2025).

Healthcare facilities, such as clinics, play a vital role in supporting community empowerment initiatives. Clinics can function as accessible centers for health education, routine examinations, and preventive services (Adeghe et al., 2024). Collaboration between healthcare providers, communities, and other stakeholders is essential to ensure the success of such programs. Therefore, this community service activity was implemented through an

empowerment-based approach at the Omsa Medika Clinic, combining educational interventions and routine dental checkups to enhance community knowledge, encourage preventive behaviors, and increase the utilization of dental health services (Deghatipour et al., 2022).

IMPLEMENTATION METHOD

This community service program was implemented at the Omsa Medika Clinic, a dental health facility located in Denpasar, Bali, during July 2025. The one-month implementation period was carefully scheduled to align with clinic operations while maximizing community participation. The program targeted patients at the clinic and in the surrounding community who were at high risk for dental caries, including children, adolescents, and adults, with particular emphasis on individuals who did not routinely access dental services or had a history of oral health problems. This inclusive approach ensured that the intervention reached diverse population groups with varying needs and levels of awareness.

The implementation method was designed to effectively achieve the objectives of community empowerment and dental caries prevention through an integrated approach combining health education and clinical services. Educational activities were delivered through counseling sessions that provided accessible, easy-to-understand information on the causes of dental caries, the importance of maintaining oral hygiene, proper toothbrushing techniques, and healthy dietary habits. Various media, including presentations, brochures, posters, and live demonstrations, were used to enhance comprehension and engagement across different age groups, supported by interactive strategies that encouraged active participation.

Routine dental examinations were carried out by professional healthcare personnel at the clinic to facilitate early detection of dental caries and other oral health conditions. Each participant received an individual assessment along with recommendations for further treatment or preventive care, making the examination process both diagnostic and educational. Furthermore, discussion and question-and-answer sessions were conducted to provide participants with opportunities to address their concerns, share experiences, and identify barriers to maintaining oral health. These sessions also enabled the formulation of practical, community-based solutions and strengthened participants' motivation to adopt healthier behaviors. The program was supported by a multidisciplinary team consisting of a program coordinator, dentists, dental assistants, community health workers, administrative staff, and volunteers, each with clearly defined roles to ensure the effective implementation and sustainability of the activities.

RESULT & DISCUSSION

The community service program at the Omsa Medika Clinic in July 2025 involved 50 participants who participated in both educational sessions and dental examinations. The participants represented diverse age groups, ranging from children and adolescents to adults, reflecting the heterogeneity of the surrounding community. This level of participation indicates a strong community interest in improving dental and oral health, as well as the effectiveness of the outreach and empowerment strategies employed. In addition to registered participants, several community members attended the educational sessions without undergoing examinations, thereby contributing to the broader dissemination of oral health information within the community.

Evaluation of participants' knowledge demonstrated a significant improvement following the educational intervention. Prior to the program, only about 40% of participants could correctly answer questions about dental caries prevention, including its causes, preventive measures, and the importance of routine dental checkups. After the educational sessions, this proportion increased substantially to 85%, indicating the effectiveness of the educational methods used. The combination of interactive approaches, visual media such as brochures and posters, and practical demonstrations of proper toothbrushing techniques played a key role in enhancing participants' understanding. This improvement in knowledge is expected to translate into better oral hygiene practices and increased awareness of the importance of regular dental visits (Angarita-Díaz et al., 2024).

Findings from the dental examinations revealed that 18 of 50 participants (36%) had dental caries, ranging from early-stage lesions to more advanced conditions requiring restorative treatment. In addition to caries, several participants exhibited other oral health issues, such as mild gingivitis, which also required further attention. These findings highlight the relatively high prevalence of dental caries within the community and underscore the importance of routine dental checkups for early detection and timely intervention. Moreover, the results provided a basis for personalized education and treatment recommendations, as well as for the development of more targeted and sustainable community empowerment strategies (Cheng et al., 2026).

Community response throughout the program was highly positive, as reflected in active participation during educational sessions, question-and-answer discussions, and practical demonstrations. Participants consistently attended activities over the one month and, in many cases, encouraged family members and neighbors to join, thereby expanding the program's reach. Feedback from participants indicated that the program increased their knowledge and motivation to maintain oral health. Many also expressed interests in continuing similar programs,

suggesting a strong foundation for sustainability and long-term behavioral change within the community (Mariati et al., 2024).

Despite the program's overall success, several challenges were encountered during implementation. Initial community awareness of the importance of routine dental checkups was relatively low, resulting in limited participation at the program's early stages. This was addressed through more intensive outreach and motivational strategies. Time constraints among participants, particularly those with work and family responsibilities, also posed challenges, which were mitigated by offering flexible scheduling and shorter educational sessions. Additionally, limitations in clinic facilities and equipment occasionally affected the efficiency of examinations, especially for more complex cases. To overcome this, the team prioritized cases and scheduled follow-ups for participants requiring further treatment. Effective communication and coordination among the implementation team and clinic staff were essential in addressing these challenges, and the experiences gained provide valuable insights for improving future community service initiatives (Qu et al., 2022).

CONCLUSION AND SUGGESTIONS

The community service program implemented at the Omsa Medika Clinic in July 2025 effectively achieved its objective of enhancing public knowledge and awareness of dental caries prevention through integrated educational activities and routine dental examinations. Active participation from 50 individuals in education sessions, toothbrushing demonstrations, and clinical assessments contributed to a significant improvement in understanding, as evidenced by pre- and post-intervention evaluations. The identification of dental caries in 36% of participants further emphasizes the importance of early detection and timely management to prevent more severe complications. The positive community response and high level of engagement indicate that the empowerment-based approach was successful in fostering behavioral change and increasing awareness of the importance of maintaining oral health. Overall, this program demonstrates that community empowerment, combined with education and accessible health services, can promote sustainable improvements in oral health practices and encourage regular use of dental care services within the community.

REFERENCES

- Abdelaziz, M. (2022). Detection, Diagnosis, and Monitoring of Early Caries: The Future of Individualized Dental Care. *Diagnostics*, 13(24), 3649. <https://doi.org/10.3390/diagnostics13243649>
- Adeghe, E. P., Okolo, C. A., & Ojeyinka, O. T. (2024). Optimizing dental screening protocols for children with special healthcare needs: Enhancing access and prevention. *International Journal of Frontiers in Science and Technology Research*, 6(01), 054-061. <https://doi.org/10.53294/ijfstr.2024.6.1.0029>
- Alvenfors, A., Lingström, P., Oskarsson, E., Milton, C., & Bernson, J. (2024). Finding the person behind caries disease: The dental caregivers' experiences of empowering patients to implement beneficial behavioral changes. *Journal of Dentistry*, 145, 104990. <https://doi.org/10.1016/j.jdent.2024.104990>
- Angarita-Díaz, M. D. P., Durán-Arismendy, E., Cabrera-Arango, C., Vásquez-Aldana, D., Bautista-Parra, V., Laguna-Moreno, J., & Mondragón-López, W. (2024). Enhancing knowledge, attitudes, and practices related to dental caries in mothers and caregivers of children through a neuroeducational strategy. *BMC Oral Health*, 24(1), 60. <https://doi.org/10.1186/s12903-023-03734-0>
- Anyikwa, C. L., & Ogwo, C. E. (2025). Enhancing oral health outcomes through public health policy reform. *Frontiers in Oral Health*, 6, 1604465. <https://doi.org/10.3389/froh.2025.1604465>
- Cheng, A. Y., Zheng, F. M., Chen, J., & Chu, C. H. (2026). Addressing Research Gaps in Early Childhood Caries: A Comprehensive Review. *Dentistry Journal*, 14(4), 196. <https://doi.org/10.3390/dj14040196>
- Crocombe, L., Chrisopoulos, S., Kapellas, K., Brennan, D., Luzzi, L., & Khan, S. (2022). Access to dental care barriers and poor clinical oral health in Australian regional populations. *Australian Dental Journal*, 67(4), 344-351. <https://doi.org/10.1111/adj.12930>
- Deghatipour, M., Ghorbani, Z., Mokhlesi, A. H., Ghanbari, S., & Namdari, M. (2022). Effect of oral health promotion interventions on pregnant women dental caries: a field trial. *BMC Oral Health*, 22(1), 280. <https://doi.org/10.1186/s12903-022-02292-1>
- Dimopoulou, M., Antoniadou, M., Amargianitakis, M., Gortzi, O., Androutsos, O., & Varzakas, T. (2022). Nutritional Factors Associated with Dental Caries across the Lifespan: A Review. *Applied Sciences*, 13(24), 13254. <https://doi.org/10.3390/app132413254>

- Elsahoryi, N. A., Maghaireh, G. A., & Hammad, F. J. (2024). Understanding dental caries in adults: A cross-sectional examination of risk factors and dietary behaviors. *Clinical Nutrition Open Science*, 57, 163-176. <https://doi.org/10.1016/j.nutos.2024.08.003>
- Giacaman, R. A., Fernández, C. E., Muñoz-Sandoval, C., León, S., García-Manríquez, N., Echeverría, C., Valdés, S., Castro, R. J., & Gambetta-Tessini, K. (2022). Understanding dental caries as a non-communicable and behavioral disease: Management implications. *Frontiers in Oral Health*, 3, 764479. <https://doi.org/10.3389/froh.2022.764479>
- Jiang, R., Yu, J., Islam, R., Li, X., & Nie, E. (2023). Dental Caries Prevention Knowledge, Attitudes, and Practice among Patients at a University Hospital in Guangzhou, China. *Medicina*, 59(9), 1559. <https://doi.org/10.3390/medicina59091559>
- Mariati, N. W., Duarsa, D. P., & Pinatih, G. N. I. (2024). A Combination Intervention of Conventional Educational Models and Motivational Interviews Increased Knowledge of Dental and Oral Health and Reduced Dental Hygiene Index, Dental Care Index, and Gingiva Index In Primary School Children In Tomohon City. *Asian Journal of Engineering, Social and Health*, 3(1), 117-133. <https://doi.org/10.46799/ajesh.v3i1.226>
- Mishra, P., Devi, K. D., Chaturvedi, A., Priyadarshini, S., & Chandra, S. (2025). Approaches for imparting oral health to special groups: A literature review. *Saudi J Oral Dent Res*, 10(1), 79-85. <https://doi.org/10.36348/sjodr.2025.v10i01.011>
- Qu, X., Houser, S. H., Tian, M., Zhang, Q., Pan, J., & Zhang, W. (2022). Effects of early preventive dental visits and its associations with dental caries experience: a cross-sectional study. *BMC Oral Health*, 22(1), 150. <https://doi.org/10.1186/s12903-022-02190-6>
- Tran, T. T., Hoang, T. D., Hoang, M. V., Tran, N. T., Nguyen, N. G., Hoang, P. M., & Vo, T. V. (2022). Community-based Interventions to Prevent Dental Caries among Kindergarten Children in Vietnam: A 12-month Study of Field Trial. *The Journal of Contemporary Dental Practice*, 23(2), 135-142. <https://doi.org/10.5005/jp-journals-10024-3298>
- Veiga, N., Figueiredo, R., Correia, P., Lopes, P., Couto, P., & Fernandes, G. V. O. (2023). Methods of primary clinical prevention of dental caries in the adult patient: an integrative review. *Healthcare*, 11(11), 1635. <https://doi.org/10.3390/healthcare11111635>
- Wang, M., Zhang, Y., Li, X., & Liu, X. (2025). Understanding and reducing delayed dental care for early childhood caries: a structural equation model approach. *BMC Public Health*, 25(1), 523. <https://doi.org/10.1186/s12889-025-21701-y>

- Warreth, A. (2022). Dental Caries and Its Management. *International Journal of Dentistry*, 2023(1), 9365845. <https://doi.org/10.1155/2023/9365845>
- Zou, J., Du, Q., Ge, L., Wang, J., Wang, X., Li, Y., Song, G., Zhao, W., Chen, X., Jiang, B., Mei, Y., Huang, Y., Deng, S., Zhang, H., Li, Y., & Zhou, X. (2022). Expert consensus on early childhood caries management. *International Journal of Oral Science*, 14(1), 35. <https://doi.org/10.1038/s41368-022-00186-0>