

Research Report

## Dental health knowledge increased as a result of dental health education on elderly denture care in Surabaya, Indonesia

Primanda Nur Rahmania<sup>1</sup>, Agus Dahlan<sup>1</sup>, Michael Josef Kridanto Kamadjaja<sup>1</sup>, Pramesti Prirastika<sup>2</sup>, Rheyana Anissa Pramesti<sup>2</sup>, Syafira Salsabila Adam<sup>2</sup>

<sup>1</sup>Department of Prosthodontics, Faculty of Dental Medicine, Universitas Airlangga, Surabaya, Indonesia

<sup>2</sup>Undergraduate Student, Faculty of Dental Medicine, Universitas Airlangga, Surabaya, Indonesia

### ABSTRACT

**Background:** Losing teeth as a result of tooth extraction is a concern since it can affect speech impairment, temporomandibular junction (TMJ) dysfunction, masticatory dysfunction, and psychological disorders, specifically aesthetics. A fixed denture or a removable denture must be made to replace missing teeth in order to preserve the quality of life of the patient. **Purpose:** to describe the improvement in oral and dental health knowledge that resulted from dental health education about how to care for dentures in the nursing home. **Methods:** The data collection was done by two surveyors. The sample size for this study was 50 individuals over the age of 50. Under the direction of Jagir Health Centre, Pelangi and Lestari nursing home to educate the elderly about the instruction on how to take care of dentures. For the pre- and post-tests, the participants were required to complete a questionnaire in order to assess how their knowledge of oral and dental health had changed. **Results:** The presentation on oral and dental health education was mostly grasped by the participants. In comparison to the pre-test rate (58%), the post-test percentage (98%) was higher. **Conclusion:** This study showed that enhancement of elderly awareness of their oral and dental health condition through dental health education was a successful approach.

**Keywords:** medicine; dentistry; dental health; education; elderly

Correspondence: Primanda Nur Rahmania, Department of Prosthodontics, Faculty of Dental Medicine, Universitas Airlangga. Jl. Mayjen Prof. Dr. Moestopo 47 Surabaya, 60132 Indonesia. Email: p.nur.rahmania@fkg.unair.ac.id

### INTRODUCTION

There are two types of causes for tooth loss: disease-related and non-disease-related.<sup>1</sup> Caries and periodontal disease are examples of disease variables, whereas lifestyle choices and socioeconomic factors are examples of non-disease factors.<sup>2</sup> One of the most prevalent reasons for tooth loss in elderly individuals and young adults is dental caries and periodontitis. A dental infection such as caries and periodontitis is contagious. Untreated dental caries can worsen, resulting in discomfort and sometimes even tooth loss.<sup>3</sup> Losing teeth as a result of extraction is a concern since it can affect speech impairment, TMJ dysfunction, masticatory function, and psychological disorders, specifically aesthetics.<sup>4,5</sup> A fixed denture or a removable denture must be made to replace missing teeth to prevent a decline in a person's quality of life. As removable dental prosthetics, dentures serve to replace the upper and lower arch's chewing surface and supporting structures. Dentures serve to restore aesthetic function, protect residual tissue, stop tooth resorption, and spread chewing loads more

evenly.<sup>6,7</sup> In Indonesia, 25.9% of the population has dental and oral problems, while 31.1% of people receive medical treatment there. The productive age groups, specifically those between 35 and 44 and 45 to 54, have the highest rates of dental and oral problems.<sup>8,9</sup>

There are several negative impact due to tooth loss, including functional, systemic, and emotional ones. Reduced ability for speaking, biting, and chewing are the functional effects. Due to poor oral health and dietary changes, systemic consequences include systemic disorders such nutritional deficiencies, osteoporosis, and cardiovascular disease. Losing teeth emotionally has an adverse effect on self-confidence, which restricts activities. Dentures are required to replace missing teeth and restore function and appearance.<sup>10-12</sup>

Loss of teeth can also have an emotional effect, namely on how patients feel or respond when they learn they have lost all of their teeth. Losing teeth can alter a person's facial features, including their height, prognathized jaw, and face shape. These changes can lead to emotions like sadness and depression, loss of confidence, feeling old, changing

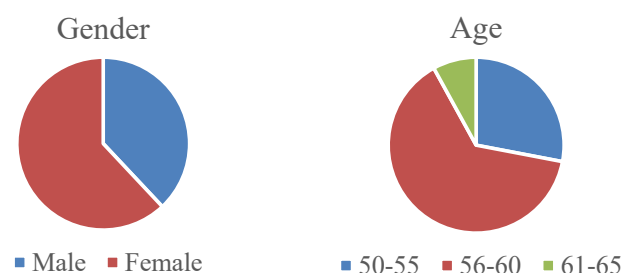
behavior, and a desire for privacy when they are not wearing their teeth.<sup>13-15</sup> Particularly in the eyes of those living in our current era, being unattractive due to tooth loss can lessen one's attractiveness. To restore mastication, speaking, and esthetic functions, lost teeth must be replaced with dentures. There are several varieties of dentures, including removable and fixed partial dentures and full dentures.<sup>16,17</sup>

This study is a part of a community service project, education regarding different denture is provided to elderly citizens. This study conducted in the Pelangi and Lestari nursing home, Surabaya City, East Java. The issue is that many elderly people in this place were unaware of the value of dentures for replacing lost teeth. Furthermore, the aim of this study is to describe the improvement in oral and dental health knowledge that resulted from dental health education about how to care for dentures in the nursing home.

**MATERIALS AND METHODS**

Under the purview of Jagir Health Centre, data for the study were gathered from Pelangi and Lestari nursing home in the Surabaya City, East Java. The data collection was done by two surveyors. The sample size was fifty participants, over the age of fifty from Pelangi and Lestari nursing home. Pre-test questionnaires were given to the participants, followed by seminars on the different types of dentures and how to care for them, and a post-test to gauge how much their knowledge of oral and dental health had improved for the dental health education evaluation. The identical questions from the pre- and post-tests include:

1. How many times do you brush your teeth a day? A. 2 times a day; B. 5 times a day
2. Can dentures be used while sleeping? A. Yes; B.No
3. Do you need to clean dentures regularly? A. Yes; B.No
4. Could you clean the dentures with toothpaste? A. Yes; B.No
5. Could you clean the dentures with hot water? A. Yes; B.No



**Figure 1.** Descriptive characteristic of respondent.

**Table 1.** Pre-test and Post-test regarding elderly's understanding of dental health status in Pelangi and Lestari nursing home.

| Knowledge       | Participants | Percentage (%) |
|-----------------|--------------|----------------|
| Pre-test score  | 50           | 58             |
| Post-test score | 50           | 98             |

**RESULTS**

Figure 1 depicts a descriptive feature of the responder. The majority of participants in oral and dental health tests had post-test percentages that were greater (98%) than pre-test percentages (58%) following an empowerment presentation to seniors on various types of dentures and how to care the dentures (Table 1).

**DISCUSSION**

Dentures must be used to replace missing teeth in order to regain the ability to eat, communicate, and facial aesthetic. Denture use may prevent experiencing sadness and depression, losing confidence, feeling old, altering one's behavior, feeling unprepared to accept losing one's teeth, and not wanting other people to see how one looks without teeth. Mastication and dental health might also be improved by dentures that replaced missing teeth.<sup>18,19</sup> There are many different kinds of dentures, including complete and partial dentures (fixed or removable).<sup>20</sup>

During denture use, it might develop plaque, stains, and calculus much like those with real teeth. Many soft tissue changes, such as denture stomatitis, inflammation, papillary hyperplasia, or chronic candidiasis, may be brought on by this plaque buildup on dentures. To avoid the re-agglomeration of microbiological plaque and to remove food particles, calculus, and external discoloration, denture users should perform frequent cleanings.<sup>21</sup>

In order to increase understanding of the significance of Quality of Life Related to Oral Health by increasing the post-test score as much as (98%) than pre-test score (58%), this community service successfully educated the elderly in Pelangi and Lestari nursing home about denture. Participants also received a brochure about how to take care of their dentures. Dental health education using leaflets media to educate people about oral health can be successful.<sup>22</sup> The elderly who participate in this community service are at least 50 years old. They have a strong commitment to the information provided on the different types of dentures and denture maintenance. Preventive dentistry includes education for the elderly, Furthermore, the education and motivation are the two parts of preventive dentistry counseling for senior patients.<sup>23</sup>

**CONCLUSION**

This study result showed that enhancing elderly people's awareness of their dental and oral health condition through education was a successful approach.

**ACKNOWLEDGEMENTS**

The authors would like to thank Faculty of Dental Medicine, Universitas Airlangga for the support and Puskesmas Jagir,

Surabaya, East Java for kind cooperation. This community service program was supported by Program Pengabdian kepada Masyarakat funding from Universitas Airlangga with appointment number 276/UN3.1.2/PM/2022.

## REFERENCES

1. Gerritsen AE, Allen PF, Witter DJ, Bronkhorst EM, Creugers NHJ. Tooth loss and oral health-related quality of life: a systematic review and meta-analysis. *Health Qual Life Outcomes*. 2010 Nov 5;8:126.
2. Kassebaum NJ, Bernabé E, Dahiya M, Bhandari B, Murray CJL, Marcenes W. Global Burden of Severe Tooth Loss: A Systematic Review and Meta-analysis. *J Dent Res*. 2014 Jul;93(7 Suppl):20S-28S.
3. Al-Nasser L, Lamster IB. Prevention and management of periodontal diseases and dental caries in the older adults. *Periodontol 2000*. 2020 Oct;84(1):69–83.
4. Saskianti T, Nugraha AP, Prahasanti C, Ernawati DS, Tanimoto K, Riawan W, et al. Study of Alveolar Bone Remodeling Using Deciduous Tooth Stem Cells and Hydroxyapatite by Vascular Endothelial Growth Factor Enhancement and Inhibition of Matrix Metalloproteinase-8 Expression in vivo. *Clin Cosmet Investig Dent*. 2022;14:71–8.
5. Saskianti T, Nugraha AP, Prahasanti C, Ernawati DS, Suardita K, Riawan W. Immunohistochemical analysis of stem cells from human exfoliated deciduous teeth seeded in carbonate apatite scaffold for the alveolar bone defect in Wistar rats (*Rattus norvegicus*). *F1000Research*. 2020;9:1164.
6. Alves AC, Cavalcanti RV, Calderon PS, Pernambuco L, Alchieri JC. Quality of life related to complete denture. *Acta Odontol Latinoam*. 2018 Aug;31(2):91–6.
7. Ali Z, Baker SR, Shahrabaf S, Martin N, Vettore M V. Oral health-related quality of life after prosthodontic treatment for patients with partial edentulism: A systematic review and meta-analysis. *J Prosthet Dent*. 2019 Jan;121(1):59–68.e3.
8. Santoso CMA, Bramantoro T, Kardos L, Szakács DF, Nagy A. Metabolic syndrome and periodontitis among adults: The 2018 Indonesia National Health Survey. *J Clin Periodontol*. 2022 Jun;49(6):562–72.
9. Santoso CMA, Bramantoro T, Nguyen MC, Nagy A. Lifestyle and psychosocial correlates of oral hygiene practice among Indonesian adolescents. *Eur J Oral Sci*. 2021 Feb;129(1):e12755.
10. Welmer A-K, Rizzuto D, Parker MG, Xu W. Impact of tooth loss on walking speed decline over time in older adults: a population-based cohort study. *Aging Clin Exp Res*. 2017 Aug;29(4):793–800.
11. Saintrain MV de L, de Souza EHA. Impact of tooth loss on the quality of life. *Gerodontology*. 2012 Jun;29(2):e632-6.
12. Veeraboina N, Doshi D, Kulkarni S, Patanapu S, Dantala S, Srilatha A. Tooth loss and oral health-related quality of life among adult dental patients: A cross-sectional study. *Indian J Dent Res*. 2022;33(1):2–6.
13. Rodrigues VP, Freitas BV, de Oliveira ICV, Dos Santos PCF, de Melo HVF, Bosio J. Tooth loss and craniofacial factors associated with changes in mandibular condylar morphology. *Cranio*. 2019 Sep;37(5): 310–6.
14. Larsson P, Bondemark L, Häggman-Henrikson B. The impact of oro-facial appearance on oral health-related quality of life: A systematic review. *J Oral Rehabil*. 2021 Mar;48(3):271–81.
15. Kudsi Z, Fenlon MR, Hill K, Baysan A. Developing a questionnaire to measure psychological disturbance associated with tooth loss. *J Dent*. 2020 Jul;98:103353.
16. Patel J, Granger C, Morrow L. The Effect of Complete Denture Occlusion on Function and Patient Quality of Life: Systematic Review. *Eur J Prosthodont Restor Dent*. 2018 Mar 1;26(1):24–30.
17. Murthy V, Sethuraman KR, Rajaram S, Choudhury S. Predicting denture satisfaction and quality of life in completely edentulous: A mixed-mode study. *J Indian Prosthodont Soc*. 2021;21(1):88–98.
18. Campos CH, Ribeiro GR, Rodrigues Garcia RCM. Mastication and oral health-related quality of life in removable denture wearers with Alzheimer disease. *J Prosthet Dent*. 2018 May;119(5): 764–8.
19. Roumanas ED. The Social Solution–Denture Esthetics, Phonetics, and Function. *J Prosthodont*. 2009 Feb;18(2):112–5.
20. Shigli K, Angadi GS, Hebbal M. Knowledge of prosthodontic treatment among denture-wearers and non-denture-wearers attending a dental institute in India: a survey report. *Gerodontology*. 2007 Dec;24(4):211–6.
21. Ari MDA, Rahmania PN, Kusumaningsih T, Nugraha AP, Ramadhani NF, Fahreza RR, et al. Denture Stomatitis in Diabetic Senile Patient: Pathophysiology and Management Review. *Biochem Cell Arch*. 2021;21(2):3223–8.
22. Al Bardaweel S, Dashash M. E-learning or educational leaflet: does it make a difference in oral health promotion? A clustered randomized trial. *BMC Oral Health*. 2018 Dec 10;18(1):81.
23. Ástvaldsdóttir Á, Boström A-M, Davidson T, Gabre P, Gahnberg L, Sandborgh Englund G, et al. Oral health and dental care of older persons-A systematic map of systematic reviews. *Gerodontology*. 2018 Dec;35(4):290–304.