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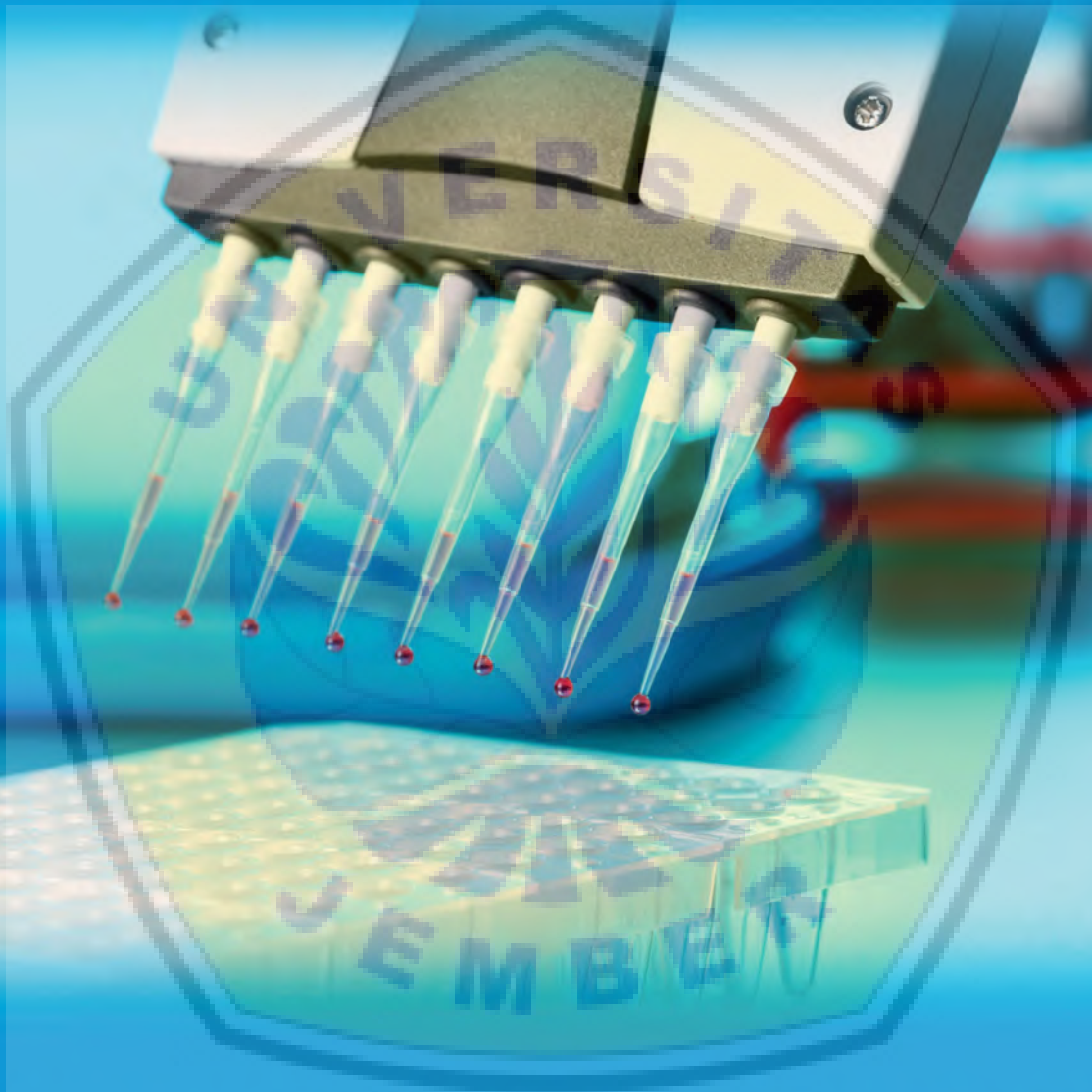
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Research Report

Oral health profile of the elderly people in the Pandalungan community

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ABSTRACT

Background: *The Pandalungan community is a unique community established through the assimilation of two dominant cultures: the Javanese and Madurese. Both of these communities created a community with a new culture called the Pandalungan community culture. The people of this community live in coastal, rural and urban areas. Generally, research on the uniqueness in the oral health behaviour of the Pandalungan community has not been conducted since the oral health practices of the Pandalungan community are considered to be the same as that of the Javanese community.* **Purpose:** *In order to develop programmes for oral health prevention, this research aims at comparing the oral health profiles of the elderly (classified as per age) living in the rural and urban areas in the Jember Regency.* **Methods:** *The research employs a cross-sectional approach. The subjects of the research were selected on the basis of the total number of elderly people who attended the monthly meetings of the Karang Werda (those not willing to participate in the study were excluded). The study was conducted by organising extensive interviews, performing observations and intraoral examinations. Each group was classified into three subgroups on the basis of age: pre-elderly, elderly and high-risk elderly. The intraoral examination conducted included the oral hygiene index-simplified (OHI-S), the number of teeth missing, the depth of the pocket and the number of all functional tooth units (all-FTU).* **Results:** *The oral health profile of people in the rural community was poor when compared to the oral health profile of people living in the urban community (by accounting for nearly all the variables in the examination).* **Conclusion:** *The oral health profile of the elderly people in the Pandalungan community was poor. Adequate prevention and care are essential to maintain the oral health of people in the Pandalungan community.*

Keywords: elderly; Javanese; Madurese; oral health; Pandalungan

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INTRODUCTION

The Pandalungan community was established with the combination of two dominant cultures: Javanese and Madurese cultures.[1] Both cultures have different characteristics. The Javanese community is widely known as a community in which people speak softly and politely and live in harmony.[2,3] The Madurese community is known for being more religious and tough on defending dignity, even resorting to violence to resolve problems.[4] Both of these communities mingled and established a new culture called the Pandalungan community culture. Administratively, the Pandalungan community lives in the Eastern part of the East Java province, which includes districts and cities, such as Pasuruan, Probolinggo, Lumajang, Jember, Bondowoso, Situbondo and North and South Banyuwangi.[1] Some people live in coastal, urban and rural areas. Many people from this community lack education and have inadequate financial assistance. In general, the elderly in the rural areas work as farm workers, gardeners and fishermen,[5] while those who live in the urban areas work in many sectors.[1,6,7]

Cultural behaviour has important implications for human health. The role of culture in a social system is shared among individuals and groups by sharing knowledge, beliefs and/or different practices between group members.[8] Thus, occasionally, a new behaviour is formed. Several aspects can affect the speed and change the way a new behaviour is formed, such as socioeconomic status, gender, religion and moral values. These factors play a role in changing dynamically the behavioural patterns pertaining to health among community members.[9–12]

Culture plays a crucial role in promoting health among the elderly. Foster and Anderson[13] state that culture might influence the health of an individual through many ways, including (1) influence through traditions (2) ethnocentric attitude (an attitude that regards one's own culture as the best), (3) values and norms in the community that influence and set out what is considered as the best behaviour, (4) pride in the group's status, (5) the influence of values that are inherited by the members in a community as part of socialisation, (6) fatalistic attitude (an attitude where members do not seek immediate help or treatment and instead give up) and (7) the consequences of innovation on healthy behaviour.[13] Changing the dental and oral health practices of a community is difficult. Additionally, what makes the change even more difficult is that these behaviours are tied to a culture that has existed for a long time.

Annually, there has been an increase in the number of elderly people in Indonesia. The percentage of elderly in the Jember District in 2010 was 10.85%. In 2020, this percentage reached 14.30%.[14] If a large number of elderly people are not taken care of properly, it will have an impact through an increase in the morbidity rate and an increase in the cost of health care services (individual, family and government funds). On the basis of this reasoning, the elderly would burden those who are young.[15,16] Although age restrictions are placed in research and health planning, there is no general agreement about age limits.[17] Generalised age thresholds are used as an indicator for deciding old-age thresholds and also making biological age assumptions. However, until now, there has been no definite agreement in any country to mark an old-age threshold. This is, presumably, because the development of old age is not always proportional to biological age.[18] Therefore, in this study, we have employed some modifications to decide on the age limit among the elderly in Indonesia.[17,18] The elderly were classified into the young elderly (middle age, ages between 45 and 59 years), elderly (ages between 60 and 74 years), old elderly (ages between 75 and 90 years) and the very old elderly (over 90 years of age).[19,20]

Dental problems in the elderly are different from those found in other ages.[21] Usually, elderly people have poor oral health status. Oral health cannot be separated from the overall health of the body. Poor oral health may cause difficulty during chewing and lead to nutritional disturbances (which leads to diseases all over the body).[22–24]

This research focused on the study of oral health status among the elderly in the Pandalungan community. The examination was conducted using the modified oral hygiene index-simplified (OHI-S),[25] the depth of the pocket,[26,27] the number of teeth missing[17] and the number of all-FTU.[13] These important indicators influence the function of mastication.[28] In order to develop programmes for oral health prevention and care, this research aims at comparing the oral health profiles of the elderly (classified as per age) who live in the rural and urban areas of the Jember Regency. The findings from the study will provide basic data for providing optimal oral healthcare (based on the special needs of the elderly community).

MATERIALS AND METHODS

The research employs a cross-sectional descriptive approach to verify the oral health profile and treatment needed for elderly people in the rural and urban areas of the Pandalungan community. The area where the elderly people lived was randomly assigned to reduce bias. The research subjects arrived at on the basis of the total number of elderly people who attended the monthly meetings of the Karang Werda (a platform to support the welfare needs and accommodate the activities of the elderly). Those who were not willing to participate in the study were excluded. The study was conducted by organising extensive interviews and performing observations and intraoral examinations. The elderly in the Pandalungan community were classified based on the location where they lived: rural or urban areas in the Jember District. Each group was further classified into three subgroups on the basis of age: pre-elderly, elderly and high-risk elderly.[16] The rural areas comprised the Puger-Grenden village and the Sucopangepok village (n = 90). The urban areas comprised the Kaliwates sub-district and Sumbersari (n = 78). The elderly respondents in each area were arrived at by using a total sampling technique in which all of the elderly who attended the Karang Werda meetings willingly took part in the research and were categorised into three sub-groups based on their ages: (1) pre-elderly, ages between 45 and 59 years old (n = 66); (2) elderly, ages between 60 and 74 years old (n = 87); and (3) elderly at high risk ≥ 75 years old (n = 15). All of the respondents completed the informed consent form. Ethical clearance was carried out by the Ethics Commission of the Faculty of Dentistry at the University of Jember (number 924/UN25.8/KEPK/DL/2019).

The respondents for this research were interviewed by employing the interview guidelines provided by the Center of Environment, Ageing and Health 2018.[21] The interviews were conducted to examine oral hygiene habits, including tooth brushing frequency and methods as well as other procedures related to the risk of tooth loss. Oral health practices (guided by oral health surveys from the World Health Organization, 2013[16]) were examined, such as dental and oral hygiene using OHI-S based on the

Greene–Vermillion index,[25] pocket depth,[26,27] the number of teeth lost[17] and the number of all-FTU.[28] Teeth in the elderly were measured by examining 28 teeth in their mouth cavities and by removing the wisdom molar teeth. The measurement of OHI-S was obtained by the addition of index debris and calculus covering the tooth's surface (with some modifications, such as tooth loss, remaining tooth, edentulous and extruded tooth). Considering the criteria for OHI-S, a good score of oral hygiene ranged between 0.0–1.2, a moderate score of oral hygiene ranged between 1.3–3.0, and a poor score of oral hygiene ranged between 3.0–6.0.[15] The criteria for a healthy pocket depth was ≤ 3 mm, medium criteria was 4–5 mm and heavy criteria was ≥ 6 mm.[28]

All-FTU estimations were based on the total number of functional tooth units (FTU), defined as a similar, natural tooth pair and/or the opposite of a replaced tooth (anterior and posterior) that could be supported by an implant, dental bridge pontics or removable prosthetics.[28] The total FTU was divided into six categories: natural to natural teeth (nt-FTU), natural teeth to fixed prosthetic (nf-FTU), natural teeth to removable prosthetic (nr-FTU), fixed prosthetic to fixed prosthetic (ff-FTU), fixed prosthetic to removable prosthetic (fr-FTU) and removable prosthetic to removable prosthetic (rr-FTU). This estimation did not include the third molar teeth, a tooth with wide coronal destruction, tooth loss and a tooth that had contact with a non-similar tooth (the latter three aforementioned categories of tooth were categorised as non-functional). The molar tooth was considered as two units, and, thus, right–left was eight units. The premolar and anterior teeth were considered as one unit. The premolar right–left was considered as four units. Therefore, the total number of FTU in the mouth cavity was 18 units/intact dentition.[28]

Data analysis was conducted using a statistical product and service solutions (SPSS, version 22) (IBM, New York, USA). The data was tabulated and tested for homogeneity using the Levene test, followed by a t-test to determine differences in oral health profiles between the elderly people (based on age group) residing in the urban and rural areas of the Pandalungan community.

RESULTS

The data presented in Figure 1 pertains to respondents who willingly joined the research. The percentage of female and male respondents was 83.93% and 16.07%, respectively. Based on this data, it can be observed that the Karang Werda monthly meetings were predominantly attended by elderly women.

Additional, the elderly in rural areas had a poor OHI-S score (Table 1), pocket depth (Table 2), tooth loss (Table 3) and all-FTU (Table 4) when compared to the elderly in urban areas (considering all ages). The result of the t-tests revealed a significant difference, especially in the pocket depth and all-FTU among the elderly (ages between 60 and 74 years) in urban and rural areas (p < 0.05).
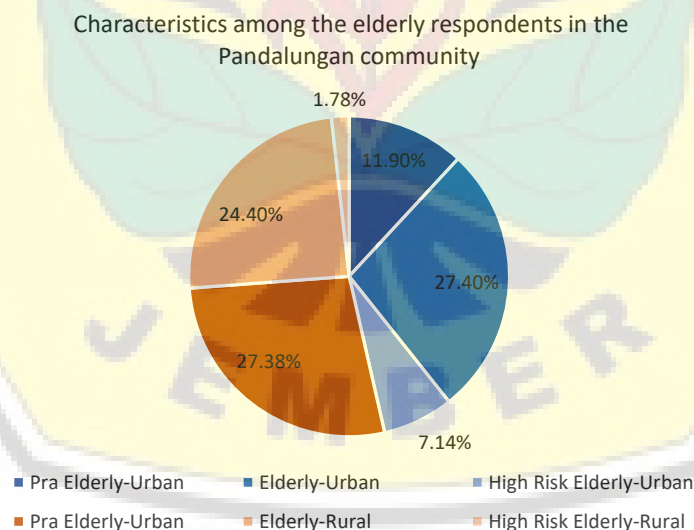

Figure 1. Characteristics among the elderly respondents in the Pandalungan community.

Table 1. Average OHI-S among the elderly in the rural and urban areas in the Pandalungan community.

Elderly Groups	Urban		Rural		p-*value*
	n	X ± SD	n	X ± SD	
Pre-Elderly	20	1.56 ± 1.45	46	1.70 ± 1.30	0.720
Elderly	46	0.94 ± 5.15	41	2.67 ± 1.75	0.189
High-Risk Elderly	12	1.28 ± 0.93	3	1.67 ± 1.53	0.900
Total	78		90		

DISCUSSION

The elderly women in the Pandalungan community (rural and urban areas) were more active in joining the Karang Werda monthly meetings when compared to the elderly men. This is because the number of elderly women was higher than the number of elderly men.[29] Mamai-Homata et al.[30] stated that women are more concerned about their health than men. Hamzah et al.[31] also declared that a person who is concerned about their health adopts healthy behaviour. Elderly men were more inclined to passively partake in activities conducted during the Karang Werda monthly meetings; the reason for this could be due to a smaller percentage of elderly men attending the Karang Werda monthly meetings.

The elderly people in the rural areas had a higher OHI-S score, indicating that their oral hygiene was poor when compared to the elderly from the urban areas (considering all ages). However, no significant difference was observed in the OHI-S scores among the elderly in the rural and urban areas. The reason for this could be due to the improved dental facilities and better dental information provided in the urban areas when compared to the rural areas. Based on the interviews, pre-elderly people in rural areas brushed their teeth twice a day and used mouthwash; however, there was no improvement in their oral hygiene. An assumption that could be made from this finding is that their toothbrushing technique

was not effective. In addition, some elderly and high-risk elderly people mentioned that they did not brush their teeth, as they encountered pain while brushing (because of the high number of tooth loss). These concerns of the elderly and high-risk elderly are supported by a previous study that found that the elderly people who had a high number of missing teeth had difficulties in cleaning the remaining tooth root.[32] Furthermore, on the basis of the findings from the interview, these two groups (elderly and high-risk elderly) said that they only rinsed their mouth when performing wudu (an Islamic procedure for washing parts of the body prior to salah) and had been following instructions handed over to them by their parents for years. From these findings, it is essential to devise a suitable and novel method for cleaning the oral cavities in the elderly who have a lot of missing teeth.

With the passage of time, the culture in the Pandalungan community is undergoing both social and cultural changes in families and societies due to improvements and changes in the educational, economic and health sectors, as evidenced by the practices followed by the present generation of family members in both rural and urban areas. The social and cultural values that have been maintained in the Pandalungan community are also undergoing more positive changes,[33] particularly in the urban areas. These findings are indicated in the t-test results of oral hygiene among the elderly people (between 60 and 74 years of age in the urban areas).

Table 2. Average pocket depth among the elderly in the rural and urban areas in the Pandalungan community.

Elderly Groups	Urban		Rural		p-*value*
	n	X ± SD	n	X ± SD	
Pre-Elderly	20	0.80 ± 0.89	46	0.91 ± 0.83	0.900
Elderly	46	0.59 ± 0.65	41	1.02 ± 0.69	0.007*
High-Risk Elderly	12	0.55 ± 0.69	3	0.33 ± 0.58	0.660
Total	78		90		

* significant different

Table 3. Average of tooth loss among the elderly in the rural and urban areas in the Pandalungan community

Elderly Groups	Urban		Rural		p-value
	n	X ± SD	n	X ± SD	
Pre-Elderly	20	3.50 ± 2.50	46	4.37 ± 5.17	0.536
Elderly	46	4.67 ± 4.11	41	6.07 ± 6.38	0.216
High-Risk Elderly	12	9.36 ± 7.67	3	15.67 ± 7.77	0.005*
Total	78		90		

* significant different

Table 4. Average of all-FTU among the elderly in the rural and urban areas in the Pandalungan community

Elderly Groups	Urban		Rural		p-value
	n	X ± SD	n	X ± SD	
Pre-Elderly	20	8.74 ± 3.77	46	8.00 ± 5.73	0.558
Elderly	46	7.59 ± 5.15	41	5.12 ± 4.38	0.023*
High-Risk Elderly	12	4.91 ± 5.65	3	2.00 ± 2.89	0.320
Total	78		90		

* significant different

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As per the findings in the periodontal pocket depth examination (Table 2), the elderly people in the rural areas had a significantly deeper pocket depth compared to those in the urban areas. Razak et al.[32] explained that an increase in age has a bearing on the duration of the periodontal tissue that is exposed to the dentogingival bacterial plaque (which indicates a history of individual oral cumulative). Accumulation of bacterial plaque can cause mild to moderate alveolar bone resorption, resulting in deeper periodontal pockets, tooth mobility and can eventually lead to tooth loss.[34]

Table 3 indicates that tooth loss is directly proportional to age among elderly people. A higher incidence of tooth loss is observed in rural areas than in urban areas. These findings may be related to the data shown in Tables 1 and 2, which indicates poor oral hygiene and deeper periodontal pockets. The results of the t-test indicate there is no significant difference in the pre-elderly and elderly groups in both rural and urban areas. The average number of tooth loss in rural areas is significantly more (twice than the average number of tooth loss in urban areas). A higher number of tooth loss leads to progressive changes in the structure and function of the oral cavity, including masticatory efficiency, and can thus affect the general health.[21–23,32,33]

With regards to tooth loss, elderly people can undergo a reduction in all-FTU, which plays an important role in mastication. Based on the measurements carried out on all-FTU, the number of all-FTU among the elderly is smaller in rural areas than in urban areas (considering all ages) (Table 4). The findings reveal that the number of teeth used for mastication decrease, which leads to a decline in masticatory efficiency. These findings correspond with a study conducted by Shinsho[35], who revealed that a minimum of 20 healthy, natural teeth are required for avoiding masticatory difficulty among the elderly people.

Table 4 indicates that there is no significant difference in measurement of all-FTU in the pre-elderly and high-risk elderly in both rural and urban areas, while there is a significant difference in the elderly people. This difference could be attributed to a high number of the crown, or tooth loss or changes in tooth position. To obtain a higher number of all-FTU, dental filling and tooth replacement with a dental fix or a removable denture is required.[32] Elderly people who live in rural areas, usually, prefer to opt for the services of an illegal dental practice, offering a direct, partial or a full denture and a door to door service (despite the quality of the treatment being poor and not in accordance with health standards) than visit a licensed dentist. The elderly also do not need to stand in queues to obtain treatment, which is more convenient.

Based on the above results, it appears that the dental and oral health of the elderly in the Pandalungan community is still poor. Findings from researches conducted in several countries indicate that the dental health services among the elderly are still inadequate, especially the elderly who lack education and are facing socio-economic limitations.[36]

The elderly, usually, possess physical disabilities that make it difficult for them to brush their teeth thoroughly and effectively.[32,37] The elderly also face difficulties in grasping the handle of a conventional toothbrush.

The findings from this study present a big challenge for dental care among the elderly, especially the elderly, in the Pandalungan community. The elderly need support to practise oral health procedures that take into account the actual oral health of the elderly. Self-care related to oral hygiene for the elderly is challenging and includes multiple factors, including cultural values that have long influenced the health and behaviour of the elderly. Therefore, the data pertaining to the oral health profile of an elderly person must be accessed in order to develop future plans for dental and oral health services among the elderly. This study has not identified all the factors that could affect the ability of the elderly in the Pandalungan community to carry out comprehensive oral care.

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