

# GENDER-WISE COMPARISON OF ORAL HEALTH-RELATED QUALITY OF LIFE AMONG ELDERLY PEOPLE IN THE JEPARA DISTRICT, INDONESIA

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**Submission date:** 03-May-2023 11:05AM (UTC+0700)

**Submission ID:** 2082745479

**File name:** 1350-Article\_Text-12911-1-10-20220813.pdf (655.9K)

**Word count:** 4120

**Character count:** 20662

ORIGINAL ARTICLE

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GENDER-WISE COMPARISON OF ORAL HEALTH-RELATED QUALITY OF LIFE AMONG ELDERLY PEOPLE IN THE JEPARA DISTRICT, INDONESIA

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ABSTRACT

Elderly people have decreased physical and functional abilities, which can cause oral health problems. Men and women have different oral health conditions. Elderly men experience periodontal disease more often, while elderly women experience a higher incidence of tooth loss. Oral health can affect the quality of life of the elderly population. It means that elderly men and women also have different levels of OHRQoL. The Oral Health Impact Profile-14 (OHIP-14) questionnaire is a tool used to measure oral health-related quality of life (OHRQoL) in elderly people. This study aimed to determine differences in OHRQoL among elderly men and women in Jepara District, Indonesia. By purposive sampling method, 180 respondents aged ≥60 years were enrolled in this study. Data were collected using an online OHIP-14 questionnaire made through an online survey. A low score indicates the individual's high OHRQoL. Data were analyzed using the chi-square test followed by a logistic regression test. As result, elderly men tended to have better OHRQoL than elderly women. Elderly men and women have good OHRQoL conditions, and the lowest score was recorded in the social disability domain. No significant association was found between OHRQoL and gender ( $p = 0.051$ ; OR 1.525). However, elderly women tend to have poor psychological discomfort about their oral health condition. Further research could be carried out by using oral clinical status.

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**Keywords:** elderly, gender, Oral health-related quality of life (OHRQoL), OHIP-14

INTRODUCTION

Late adulthood is the final stage of development marked by a decline in health conditions.<sup>1,2</sup> Based on the Government Regulation of the Republic of Indonesia Number 43 of 2004, 20% of elderly are people aged 60 years and over.<sup>3</sup> The elderly population in Indonesia has doubled to 9.6% (1971-2019).<sup>4</sup> The number of elderly people in the Jepara district also increased from 7.5% in 2014 to 11% in 2018.<sup>5</sup> The increase in this population is followed by an increase in the life expectancy of elderly people, which is associated with a decrease in health conditions and quality of life (QoL).<sup>2</sup>

Elderly people have decreased physical, mental, and functional conditions that are influenced by lifestyle, environment, and systemic diseases.<sup>6,7</sup> Decreasing health conditions can lead to limited activities and health problems that affect the QoL of elderly people.<sup>6</sup>

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Poor oral health can interfere with the function and activity of the oral cavity, which affects the QoL.<sup>8,9</sup> Periodontal disease and tooth loss are oral health problems that are often experienced by the elderly.<sup>10</sup> Some of the periodontal changes are loose teeth, gingivitis, gingival recession, loss of periodontal adhesions, and tooth loss.<sup>7</sup>

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The Oral Health-Related QoL (OHRQoL) is defined as the influence of oral health on the QoL considering functional, psychological, and social factors and experiences of pain or discomfort.<sup>11,12</sup> OHRQoL can be influenced by several factors such as age, gender, education level, occupation, tooth loss, smoking, and systemic diseases.<sup>13,14</sup>

Data taken from previous research shows that women are more likely to develop calculus and lose teeth compared to men.<sup>15,16</sup> It means that elderly men and women also potentially have different levels of OHRQoL that need specific public health interventions to be considered. Therefore, this study aimed to determine the differences in OHRQoL among elderly men and women in Jepara District.

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METHODS

This study was an observational analytical study with a cross-sectional design conducted in Jepara. Purposive sampling was performed as the survey sampling method. Respondents were interviewed using a questionnaire with the consent of the respondents through informed consent. The instrument used was the Indonesian version of the Oral Health Impact Profile-14 (OHIP-14) questionnaire that was used in previous research that has been tested for validity and reliability.<sup>17</sup> The questionnaire has a

good internal consistency reliability coefficient with a Cronbach's alpha of 0.932.<sup>17</sup>

Overall, 129 respondents participated in this study. The inclusion criteria were: elderly people aged 60+ years who were willing to participate in this study. We exclude respondents who did not answer three or more questions on the OHIP-14 questionnaire. Ethical clearance was obtained from the Ethical Commission for Health Research, Faculty of Medicine, Diponegoro University No. 227/EC/KEPK/FK-UNDIP/IX/2020. The OHIP-14 questionnaire consists of 14 items covering the following dimensions: functional limitations, physical pain, psychological discomfort, physical disabilities, psychological disabilities, social disabilities, and retardation. The OHIP-14 assessment is answerable by never (0), hardly ever (1), occasionally (2), often (3), and very often (4). A low OHIP-14 score indicates good OHRQoL. In this study, scores ranged from 0 to 56 and were then categorized as good, moderate, and bad. Data from the collected questionnaire were processed and analyzed using the Chi-square test, followed by a logistic regression test, with a significance level of  $p < 0.05$ . The Chi-Square test is used to examine the differences between categorical variables in the same population.

## RESULTS

Table 1 shows 180 respondents consisting of 90 male and 90 female respondents (50%); 130 (72.2%) respondents were 60-74 years old and 50 (27.8%) were 75-90 years old. Eighty (44.4%) respondents were employed and 100 (55.6%) were not employed. Forty-four (24.4%) respondents have not gone to school, and 136 (75.5%) respondents went to school. In addition, 43 (23.9%) respondents had complete teeth, and 137 (76.1%) had lost their teeth. Twenty-four

(13.3%) respondents were smokers, and 156 (86.7%) were non-smokers. In addition, 113 (62.8%) respondents had systemic disease, and 67 people (37.2%) had no systemic disease. As regards the body and oral health aspects, the moderate category was dominant, with responses from 97 (53.9%) and 89 (49.4%) respondents, respectively.

Table 2 shows that the social disability dimension of OHIP-14 has the highest scores for elderly men and women, with as many as 81 (90%) and 74 (82.2%) respondents, respectively. The physical disability dimension has the lowest score, with 4 (4.4%) male and 10 (11.1%) female respondents. Table 3 shows that the elderly respondents have good OHRQoL. Education level ( $p = 0.046$ ) and systemic disease ( $p = 0.021$ ) showed significant differences in OHRQoL in the elderly, while age, gender, occupation, tooth loss, and smoking ( $p > 0.05$ ) did not show significant differences. Table 2 shows a significant difference in the dimensions of psychological discomfort between male and female respondents ( $p = 0.036$ ). However, no significant difference was found between elderly male and female respondents in other OHIP-14 dimensions ( $p > 0.05$ ).

Table 4 shows a logistic regression analysis that was used to analyze the relationship among several factors on the probability of having a good OHRQoL. It was found that holding employment status, education level, number of teeth loss, and systemic disease presence constant, the odds of having good OHRQoL increased by 52.5% (95% CI [-0.28, 2.24]) for elderly men compared to elderly women. However, the results are considered to be statistically non-significant ( $p=0.273$ ).

Table 1a: Respondent characteristics (n=180)

Variable	n	%	
Age (years)	60-74	130	72.2
	75-90	50	27.8
Gender	Men	90	50
	Women	90	50
Employment	Employed	80	44.4
	Unemployed	100	55.6
Education	No school	44	24.4
	Elementary	101	56.1
	Junior high	9	5
	High school	13	7.2
	University	13	7.2
Teeth lost	None	43	23.9
	1-3	54	30
	>3	83	46.1

Table 1b: Respondent characteristics (n=180)

<b>Smoking</b>		No	156	86.7
		Yes	24	13.3
<b>Systemic disease</b>		No	67	37.2
		Yes	113	62.8
<b>Body health</b>	Very good	8	4.4	
	Good	63	35	
	Good enough	97	53.9	
	Bad	9	5	
	Worst	3	1.7	
<b>Oral health</b>	Very good	16	8.9	
	Good	70	38.9	
	Good enough	89	49.4	
	Bad	5	2.8	

Table 2: OHIP-14 dimension scores based on gender (n=180)

OHIP-14 dimension	Good		Moderate		Bad		P
	n	%	n	%	n	%	
<b>Functional limitations</b>							
Men	72	80	16	17.8	2	2.2	0.155
Women	61	67.8	27	30	2	2.2	
<b>Physical discomfort</b>							
Men	56	62.2	34	37.8	0	0	0.220
Women	46	51.1	43	38.5	1	1.1	
<b>Psychological discomfort</b>							
Men	74	82.2	16	17.8	0	0	0.036*
Women	62	68.9	24	26.7	4	4.4	
<b>Physical disability</b>							
Men	51	56.7	35	38.9	4	4.4	0.241
Women	46	51.1	34	37.8	10	11.1	
<b>Psychological disability</b>							
Men	74	82.2	16	17.8	0	0	0.703
Women	72	80	18	20	0	0	
<b>Social disability</b>							
Men	81	90	9	10	0	0	0.182
Women	74	82.2	14	15.6	2	2.2	
<b>Handicap</b>							
Men	80	88.9	10	11.1	0	0	0.068
Women	71	78.9	19	21.1	0	0	

Description: \* significant (p < 0.05)

Table 3a: OHRQoL measurement based on age, gender, employment, education level, tooth loss, smoking, and systemic disease (n=180)

Variable	OHRQoL				P
	Good		Moderate		
	n	%	n	%	
<b>Age</b>					
60-74	103	79.2	27	20.8	0.300
75-90	36	72	14	28	
<b>Gender</b>					
Men	75	83.3	15	16.7	0.051
Women	64	71.1	26	28.9	
<b>Employment</b>					
Employed	65	81.3	15	18.8	0.249
Unemployed	74	74	26	26	

**Table 3b: OHRQoL measurement based on age, gender, employment, education level, tooth loss, smoking, and systemic disease (n=180)**

Category	Count	Mean	SD	Median	p-value
<b>Education level</b>					
No school	34	77.3	10	22.7	0.046*
Elementary	72	71.3	29	28.7	
Junior high school	7	77.8	2	22.2	
High school	13	100	0	0	
University	13	100	0	0	
<b>Tooth loss</b>					
None	36	83.7	7	16.3	0.094
1-3	45	83.3	9	16.7	
>3	58	69.9	25	30.1	
<b>Smoking</b>					
No	122	78.2	34	21.8	0.423
Yes	17	70.8	7	29.2	
<b>Systemic disease</b>					
No	58	86.6	9	13.4	0.021*
Yes	81	71.7	32	28.3	

Description: \* Significant (p < 0.05)

**Table 4: Variables affecting OHRQoL**

Variable	Beta	p	OR	95% CI	Description
Gender	0.422	0.273	1.525	0.717-3.246	Not significant
Employment	-0.507	0.276	0.602	0.242-1.499	Not significant
Education	-0.470	0.027	0.625	0.412-0.949	Significant
Tooth loss	0.275	0.278	1.317	0.801-2.167	Not significant
Systemic disease	0.892	0.034	2.441	1.072-5.559	Significant

**DISCUSSION**

Results of this study show that 83.3% of elderly men and 71.1% of elderly women in the Jepara District had good OHRQoL. The good OHRQoL was in line with a good perception of general health and oral health conditions among elderly men and women. The social disability dimension shows a good score for 90% of elderly men and 82.2% of elderly women. Most of the bad scores were on the physical disability dimension, which mostly affected elderly women. These results are influenced by the tendency of women to complain of pain and inability to chew.<sup>18</sup> Saintrain et al. also stated that complaints of elderly people tend to be in the dimensions of physical disability rather than social disability.<sup>19</sup>

Significant differences were found in the dimensions of psychological discomfort based on gender. The good scores in elderly men (82.2%) and elderly women (68.9%) were indicated by psychological discomfort, while poor scores were only found in elderly women (4.4%). A low psychological discomfort score in elderly women can be caused by their emotional sensitivity and social problems. Moreover, women tend to feel worried, tense, and insecure, so they complain more often about the health conditions of their oral cavity.<sup>1</sup>

Previous studies show women perceived a larger number of negative impacts<sup>20-24</sup>, dissatisfied with appearance than men<sup>25</sup>, and perceived oral impairment related to periodontal tissues or oral

2 diseases.<sup>26</sup> Another study shows that several 2 factors from early and adult life affect OHRQoL, but in elderly men, self-perceived oral health was dominantly determined by factors happening early in life. On the other hand, the number of remaining teeth in adulthood had a bigger impact among elderly women.<sup>22</sup>

Elderly people aged ≥65 years tend to have a high debris index, whereas those aged 75-84 years have deep periodontal plaques and pockets.<sup>12,16</sup> With age, poor oral health can affect the QoL of the elderly population. However, in this study elderly people aged 60-74 years (79.4%) and 75-90 years (72%) had good OHRQoL. These results can be influenced by the adequate oral health of elderly people. No significant difference was found in OHRQoL based on t<sup>41</sup> age of the respondents. Motalebnejad et al. and Leon et al. also did not find a relationship between OHIP-14 score and age.<sup>15,27</sup> These results were supported by McGrath et al. and Steele et al., as cited by Ulinski et al., who stated that an adult age had a greater effect than an elderly age on the OHRQoL, even though elderly people have worse oral health.<sup>18</sup> These results indicate that increasing age allows elderly people to become more tolerant of the health of their oral cavity.<sup>18</sup> Nevertheless, another study revealed that several factors potentially affect OHRQoL status among the elderly group. Several teeth lost tend to 7 take the elderly wear dentures thus related to functional limitation, psychological discomfort and physical discomfort.<sup>28</sup>

The pain due to toothache was also related to physical discomfort, social disability, and handicap which supports a previous study that found this as a key factor of impact on OHRQoL.<sup>29</sup> However, elderly people perceived less impact in terms of aesthetics and dental sensibility to hot, cold and sweet, whereas younger people were more concerned about their dental status.<sup>20</sup> Another study found that elderly who reported negative impacts was low and oral health was not bothersome, in particular when compared to bad life experience in the past. It was possibly due to their expected oral health seemed to be low.<sup>20</sup>

As regards employment status, employed elderly people (81.3%) tend to have a good OHRQoL than those unemployed (74%). Zhao et al. stated that employed elderly people have good OHRQoL because of their desire to maintain their appearance.<sup>13</sup> These insignificant differences in OHRQoL among those two groups in this study are similar to those of Alshammari et al., who reported no significant difference in OHRQoL based on employment status.<sup>30</sup> However, a study by Cohen-Carneiro et al. shows a positive association between socioeconomic status and OHRQoL impacts. There were more prominent negative impacts and/or severity among elderly people that got public social protection, people who were categorized as poor, having lower income, living in the deprived neighbourhood, having families with a bigger number of children, those with lower earnings and without health insurance.<sup>20</sup>

Similar to like Motalebnejad et al., we found a significant difference in the OHRQoL in elderly people based on education level.<sup>15</sup> This study also obtained similar results. Elderly men with a high level of education, namely, high school and university (100%) have better OHRQoL than elderly people who have not gone to school (77.3%). Furthermore, another study shows there was a notable education gradient in OHRQoL, with worse perceptions at each lower level of education. Elderly people with low educational level has an independent negative impact on OHRQoL.<sup>31</sup> On the contrary, elderly people with a high education level have better knowledge, pay more attention and provide better care for their oral health by utilizing dental services thus leading to good OHRQoL.<sup>15,32-33</sup>

Elderly people with complete teeth have better OHRQoL than edentulous ones.<sup>15</sup> Tooth loss can affect one's appearance and results in difficulty in chewing, thus affecting QoL.<sup>24</sup> This statement supports the results of a study by Motalebnejad et al., who found a significant difference in the OHRQoL of elderly people when analyzed based on tooth loss.<sup>15</sup> However, in this study, no significant difference was found in the OHRQoL of the respondents as regards tooth loss. This result can be attributed to the OHRQoL of

elderly people in terms of tooth loss, which is dominated by good responses: 83.7% of the respondents have complete teeth, 83.3% had lost 1-3 teeth, and 69.9% had lost >3 teeth. In the present study, tooth loss was based on the number of lost teeth, i.e., none, 1-3, and >3, whereas, in a previous study, tooth loss was identified as "edentulous."<sup>15</sup> Zhong et al., who was cited by Motalebnejad et al., reported that losing >10 teeth in each jaw had a greater influence on OHRQoL.<sup>15</sup>

Based on the logistic regression analysis, gender, as an independent variable, did not significantly influence OHRQoL. In this study, the variables that most influenced the OHRQoL of the respondents were education level and the presence of systemic disease.

This study has some limitations. First, the ratio of elderly people based on age was not evenly distributed, so researchers cannot analyze the difference in OHRQoL between elderly men and women based on age groups. Second, other variables that can indicate the clinical condition of oral health were not used. Finally, the implementation of the research during the COVID-19 pandemic limits researchers in collecting data.

## CONCLUSION

Although no statistically significant difference was found in the OHRQoL between elderly men and women, this study suggests that OHRQoL might be substantially different among elderly men and women in particular for the dimensions of psychological discomfort. The findings may have implications for promoting oral health to elderly women in Indonesia to improve their quality of life. For both genders, education level and presence of the systemic disease may potentially correlate with OHRQoL. This indicates that promoting oral to the elderly will require policies for the elderly women, the lower educated groups and those who have the systemic disease to be combined with whole-population approaches.

## Conflict of Interest

There is no conflict of interest in this study.

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