Comparison of Ohip-14 and Gohai Measures in Relation to Sociodemographic Factors in Older People

OHIP-14 *versus* GOHAI measures

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Abstract:

Objective: *To compare the OHIP-14 and GOHAI measures in relation to sociodemographic factors in older people.*

Methodology: *Quantitative, descriptive and analytical cross-sectional research represented by the universe of older people aged 60 and over living in the municipality of Fortaleza – Ceará. We applied: a) a structured questionnaire on sociodemographic data (age, sex, race, marital status, education, occupation and income), general health (current health status and the comparison between current health and health in the past year, presence of systemic diseases), b) OHIP-14 (Oral Health Impact Profile), and c) GOHAI (Geriatric Oral Health Assessment Index). Results: In the analysis of the two questionnaires, OHIP and GOHAI, sociodemographic factors presented statistical significance regarding marital status (p=0.034 and p=0.017, respectively) and race (p=0.035 and p=0.005, respectively), with no statistical significance between the other variables. There was a strong relationship in the dispersion between the two measures (p<0.001).*

Conclusion: *The results of the inferred variables indicate that the two indexes have the same assessment capacity and can be used as oral health indicators in the context of public health, serving as a social framework for the development of better public policies on the oral health of older people.*

Descriptors: *Quality of Life; Oral Health; Elder.*

1. INTRODUCTION

The world population is experiencing an unprecedented age transition; because of that, the World Health Organization predicts that soon the world will have more older people than children and more people of very old age [1].

The growth of the Brazilian elderly population – defined as people aged 60 and over [2] – is becoming more significant as 650,000 new elderly people are incorporated into the population every year [3].

This process of rapid and intense population aging indicates the need for developing a health policy designed to meet the needs of the older population [4].

It is known that the longer the average life expectancy of the population, the more important it is the concept of quality of life, with oral health playing an important role within this context [5].

In this context, the 2nd National Conference on Oral Health [6] considers *"Oral health as an integral and inseparable part of an individual's general health"*. However, only the clinical assessment is not enough to know how patients perceive their oral health and what effect this condition has on their quality of life.

Among the systems designed to answer these questions are the Oral Health Impact Profile – OHIP [7], its short form – the OHIP-14[8], and the Geriatric Oral Health Assessment Index – GOHAI [9], which contain important questions to assess the impact of oral health on quality of life considering physical, social and psychological aspects.

It is worth considering that Berkey, Call and Loupe [10] have highlighted that self-reported symptoms, oral health status and perceived treatment needs are important and measurable dimensions of oral health-related quality of life. Therefore, a good oral health is essential to general health, well-being and quality of life, bringing significant benefits to self-esteem, dignity, social integration and nutrition in general.

When it comes to quality of life, one should take into account not only the physical health and the presence or absence of diseases, but also the implications of the social context in which individuals are embedded, being important to consider the psychological state, the level of independence, social relationships, environmental factors, and the personal beliefs [11].

This study aimed to compare the OHIP-14 and GOHAI measures in relation to sociodemographic factors in older people.

2. METHODS

This is a quantitative, descriptive and analytical cross-sectional research conducted with elderly individuals living in the city of Fortaleza, capital of the State of Ceará, located in Northeastern Brazil. Older people are those aged 60 or above according to the National Policy for the Health of the Elderly People [2].

The municipality of Fortaleza, in the state of Ceará, is divided into six Regional Executive Secretariats (*Secretarias Executivas Regionais – SER*), with a total of 93 Primary Health Centers (*Unidades Básicas de Saúde – UBS*). The research took place in two UBS of each region, which were selected at random.

Sample size was calculated using the 2012 data from DATASUS [12] (the Brazilian Health System Database) on the total number of older inhabitants of the municipality of Fortaleza (N= 242,430). The minimum sample size was calculated based on an expected maximum proportion of 22%, a significance level of 5% and a maximum permissible error of 5%. Thus, the sample size was 264 older people [13]. Older people from all health administrative regions of the city were investigated based on a sample stratified proportionally to the number of older people in each region.

The study was conducted using interviews, a) questionnaire on sociodemographic data (age, sex, race, marital status, education, occupation and income), general health (current health status and the comparison between current health status and health in the past year, presence of systemic diseases), b) OHIP-14 questionnaire (Oral Health Impact Profile), and c) GOHAI index (Geriatric Oral Health Assessment index).

The OHIP-14 consists of a questionnaire with 14 items with responses scoring 0-4, where: never = 0; rarely = 1; sometimes = 2; repeatedly = 3; always = 4. The GOHAI index consists of 12 multiple-choice questions about dental problems that assess three domains: physical, psychosocial and pain/discomfort.

For each question there are three possible answers: always; sometimes; and never – scoring 1, 2 and 3, respectively. The sum of all scores of each question comprises the index value for the individual, ranging from 12 to 36; these values are classified as: high (34 to 36), moderate (31 to 33) and low (less than or equal to 30) [14]. The two indexes have the power to assess the oral health-related quality of life.

The researcher and the person taking notes were duly trained in order to standardize data collection.

Data were analyzed statistically using the Statistical Package for the Social Sciences Software (SPSS version 15, SPSS Co, Chicago, USA).

The descriptive and analytical analyses were performed according to the objectives of this study. For the analysis of the OHIP-14 and GOHAI indexes, data were initially tested for normality using Kolmogorov-Smirnov test. Normality was not present in both indexes ($p<0.001$). To facilitate understanding, the GOHAI scale was reversed so that the higher the value of the sum of the scores, the lower the quality of life of respondents, which allowed a direct comparison of the two indexes.

Inferences about both indexes were made based on the mean value of its scores, considering statistically significant the inferential analyses with p-value below 0.05 (p<0.05).

To determine the existence of significant differences between the groups of the dependent variable, the Mann-Whitney U Test was used to compare two categories and the Kruskal-Wallis Test for more than two categories. The Spearman's Correlation Coefficient was also used.

The study inclusion criteria were people aged 60 and over who were aware of the Free Informed Consent Form and agreed to participate.

The study protocol complied with the ethical principles of autonomy, non-maleficence, beneficence and justice in research involving human beings, as stated in Resolution No. 466/12 of the National Health Council, and was approved by the Research Ethics Committee of the University of Fortaleza – UNIFOR under the No. 745.659/2014.

3. RESULTS

In all, 264 older people aged 60-88 years, mean age of 68.5 (SD ± 6.8 years), were interviewed in the period from July to September 2015.

With regard to sociodemographic data, the sample was predominantly: female [187 (70.8%)], married [120 (45.5%)], had an income of one minimum wage [194 (73.5%)], incomplete primary education [124 (47%)], uneducated [54 (20.5%)], and retired [179 (67.8%)]. (Table 1).

Regarding self-reported health, 209 (79.2%) of the respondents rated their health as excellent or fair, 81 (30.7%) considered their health better than it was in the past year, and 224 (84.8%) had systemic diseases, including Diabetes mellitus (45.5%), hypertension (62.1%) and osteoporosis (27.3%). (Table 2).

The comparison of the oral health-related quality of life measured by the OHIP-14 and the GOHAI took into consideration the median and the mean plus the standard deviation. Thus, with regard to sociodemographic factors, statistical significance was found for marital status (p=0.034 and p=0.017, respectively) and race (p=0.035 and p=0.005, respectively), with no statistical significance between the other variables. (Table 3).

As for the degree of dispersion, there was a correlation of 76.3%, indicating a strong relationship between the two measures that could be confirmed by the significance test (p<0.001). (Graph 1).

The results shown in Table 1 identify the frequency distribution of sociodemographic data on older people.

Table 2 shows the frequency distribution of data on the general health of older people.

Table 3 shows the results of the comparative analysis of the sociodemographic data of the older people and the median of the OHIP-14 versus GOHAI.

Graph 1 shows the degree of dispersion between the OHIP-14 versus GOHAI. The Spearman's Correlation Coefficient showed a strong relationship between the two measures (p<0.001).

Table1. *Frequency distribution of sociodemographic data on older people. (N=264). Fortaleza-Ceará, 2015*

Variables	n	%
Age group		
60-69 years	160	60.6
70-79 years	77	29.2
80-88 years	27	10.2
Gender		
Female	187	70.8
Male	77	29.2
Marital status		
Single	64	24.2
Married	120	45.5
Divorced	28	10.6
Widowed	52	19.7
Race		
White	149	56.4
Black	51	19.3
Brown	61	23.1

Other	3	1.1
Retired Yes	179	67.8
No	85	32.2
Employed Yes	78	29.5
No	186	70.5
Income 1 wage	194	73.5
2-5 wages	68	25.8
5 wages or more	2	0.8
Education None	54	20.5
Incomplete primary education	124	47.0
Complete primary education	40	15.2
Incomplete secondary education	11	4.2
Complete secondary education	32	12.1
Higher education	3	1.1

Source: *research data*

Table2. *Frequency distribution of data on the general health of older people. (N=264). Fortaleza-Ceará, 2015*

Variables	n	%
Current health Excellent	63	23.9
Fair	146	55.3
Poor	54	20.5
Health in the past year Better	81	30.7
The same	124	47
Worse	59	22.3
Systemic diseases Yes	224	84.8
No	40	15.2
Diabetes mellitus Yes	120	45.5
No	144	54.4
Hypertension Yes	164	62.1
No	100	37.9
Osteoporosis Yes	72	27.3
No	192	72.7
Cancer Yes	9	3.4
No	255	96.6
Rheumatism Yes	27	10.2
No	237	89.8
AIDS Yes	2	0.8
No	262	99.2
Tuberculosis Yes	1	0.4
No	263	99.6
Hansen's disease Yes	2	0.8
No	262	99.2
Nephritis Yes	1	0.4
No	263	99.6

Source: *research data*

Table3. *Comparative analysis of the sociodemographic data of the older people and the median of the OHIP-14 versus GOHAI. Fortaleza-Ceará, 2015*

Variables	n	OHIP-14 Median	OHIP-14 Mean+SD	p	GOHAI Median	GOHAI Mean+SD	p
Age group							
60-69 years	160	12	13.8 ± 10.1		31	17.6 ± 4.5	
70-79 years	77	12	15.4 ± 11.9	0.799**	30	17.8 ± 4.4	0.577**
80-88 years	27	10	15.7 ± 14.6		30	18.7 ± 5.1	
Gender							
Female	187	12	14.2 ± 11.1	0.622*	31	17.8 ± 4.3	0.703*
Male	77	12	15 ± 11.4		31	17.8 ± 5	
Marital status							
Single	64	10.5	13.8 ± 11.1		31	17.6 ± 4.5	
Married	120	11	12.8 ± 10.3	0.034**	32	17 ± 4.2	0.017**
Divorced	28	14	15 ± 9.3		30	18.7 ± 4.7	
Widowed	52	14	18.8 ± 13.1		29	19.3 ± 4.8	
Skin color							
White	149	11	13.2 ± 10.7	0.035*	32	17.2 ± 4.5	0.005*
Non-white	115	14	16.1 ± 11.6		29	18.6 ± 4.4	
Retired							
Yes	179	12	14.5 ± 12	0.466*	31	17.8 ± 4.8	0.500*
No	85	12	14.5 ± 9.3		31	17.8 ± 3.8	
Income							
1 wage	194	11	14.1 ± 10.8		31	17.8 ± 4.4	
2-5 wages	68	12	15.5 ± 12.5	0.842**	31	17.7 ± 4.8	0.923**
5 wages or more	2	11	11 ± 1.4		30.5	17.5 ± 6.4	
Education							
None	54	13	15.7 ± 10.2		31	18.3 ± 4.5	
Incomplete primary education	124	12	15.4 ± 11.9		31	18 ± 4.7	
Complete primary education	40	9	12.4 ± 12.4	0.274**	32	16.7 ± 4.5	0.473**
Incomplete secondary education	11	14	13.1 ± 5.4		30	17.6 ± 3.4	
Complete secondary education	32	9	12.5 ± 9.9		31.5	17.7 ± 4.4	
Higher education	3	9	8 ± 3.6		33	15.3 ± 2.5	

*Research data: * Mann-Whitney U Test; ** Kruskal-Wallis Test.*

Variable	Spearman's Correlation	p
OHIP x GOHAI (reversed)	0.765 or 76.5%	<0.001
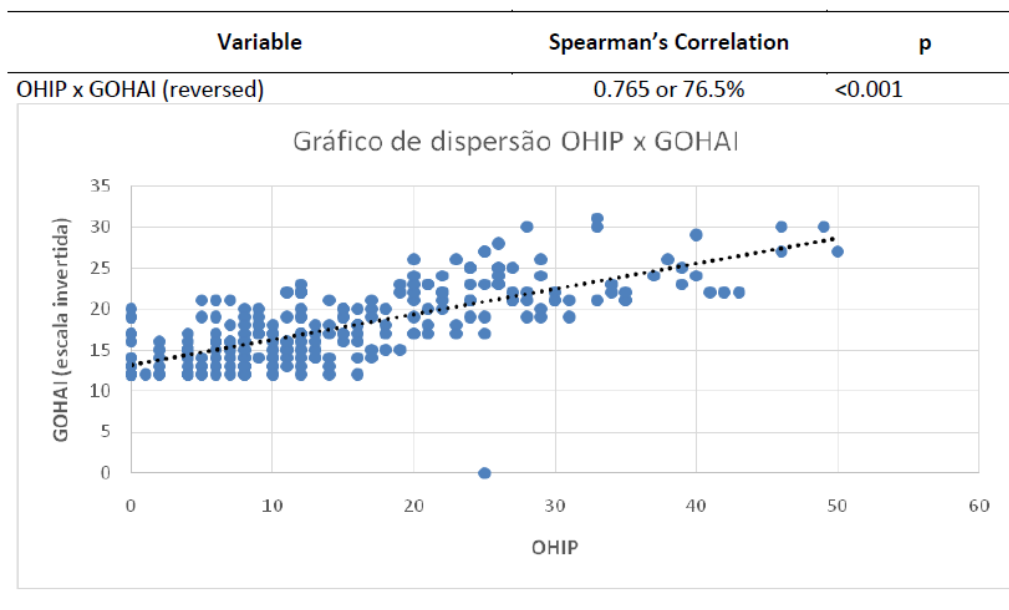
Graph1. *Dispersion of OHIP-14 versus GOHAI*

4. DISCUSSION

The subjective evaluation of quality of life refers to what people think and how they feel about their lives [15].

Based on this concept, we sought to compare the results related to the quality of life of older people using the OHIP-14 and the GOHAI taking into consideration sociodemographic factors. The authors of the present research believe that this is a unique study due to the lack of comparative analyses to simultaneously assess these indexes and their relationship to sociodemographic variables of older people.

The characterization of the sample revealed a predominance of women (70.8%), a result that is similar to that observed in other studies [16,17,18,19]. This fact may be explained by the longer life expectancy of women, which highlights the feminization of old age [20]. In addition, there is an increased frequency and participation of women in primary health centers – the locale where the present research took place.

The fact that older people had "no or low education" (67.5%) is supported by an epidemiological survey on oral health carried out in Brazil by the Ministry of Health, in which 35% of the older people were illiterate and 44.2% had less than four years of education [21].

In addition, the majority of the respondents (73.5%) reported having a low income, revealing a population with scarce educational and financial resources. In the analysis of income and education, the median values were similar in the two instruments, suggesting the same assessment capacity of both indexes.

In this context, Sanders, Slade, Lim and Reisine [22], who assessed the OHIP-14 scores in the US and Australian population, considered the magnitude of the effect of income. They found a significant difference ($p < 0.005$) between people with the lowest income and those with the highest income in the two populations, respectively.

As for self-reported health, although the majority (84.8%) of the older people presented systemic diseases, 79.2% rated their health as excellent or fair and 30% reported their health was better than it was in the past year. The fact that older people have different systemic diseases does not mean they have a poor health.

Provided that there is a balanced control of diseases, these people may feel healthy. The same applies to oral health. According to some studies, older people have a good self-perception [14,23] and a positive self-evaluation of their oral health status [24,25] even when, in most cases, their clinical condition is not satisfactory. This indicates that a poor oral health is being considered something "natural" by older people [26], highlighting a cultural attitude of resignation in the face of old age that leads one to believe that the presence of disease is part of the aging process.

Older patients with these pathological conditions usually use a large amount of medications, which can influence the decrease of saliva. This fact, in most cases, generates harmful events such as lack of taste and dry mouth, leading to oral discomfort [27,28].

All these aspects may have an impact on the quality of life as life satisfaction – determined by the physical, social and psychological satisfaction, gender, age, socioeconomic status, educational level, among others – is recognized as a strong indicator of quality of life [29].

Studies comparing the GOHAI and OHIP-14 have been conducted with older people living in Canada, Japan, Poland, Germany and Lebanon [19,30,31,32,33]. However, none of them aimed to relate the scores of the indexes to the sociodemographic conditions of the population studied.

Although some studies have correlated variables such as gender, education and income of participants, their main objective has been to compare the OHIP-14 and the GOHAI in terms of oral health in order to identify the best oral health indicator for the older population.

Most (60%) of these studies highlight that the GOHAI is more accurate to assess the oral health-related quality of life of older people, although both indexes present similar results [19,30,31].

Noteworthy, the satisfaction with oral health is influenced by the respondent's memory, physical and psychological characteristics, and contextual and cultural aspects of each population group [34], standing out as important contextual variables to be investigated; however, some authors report that little is known about the effects of these variables [35,36].

The social context is considered a potential determinant of the attitudes of individuals. However, one cannot generalize a single perception of oral health to all the people inserted in the same social, economic and cultural context, for there are individual variables that appear to be more relevant to research on perceived oral health [37].

In the present study, when analyzing the comparative relationship between sociodemographic conditions and the OHIP-14 and GOHAI indexes, the variables marital status and race were statistically significant in both indexes, showing, therefore, the same assessment capacity. Additionally, no significance was found in other variables in both indexes, reinforcing its power of equality, which is well analyzed by the dispersion graph obtained by the Spearman's Correlation test.

The fact that the research universe is focused on a single municipality stands out as one limitation of the present study, which prevents the extrapolation of results.

However, because it is a large municipality in Brazil, it is expected that the findings are also true elsewhere, showing that both the OHIP-14 and the GOHAI have the capacity to measure the impact of socioeconomic status on oral diseases and quality of life of older people. Also, the findings may form the basis of equity in public health care policies. Further studies should improve research in this area.

Given the above, it is possible to point out that although the GOHAI is specifically used to assess older people and the OHIP-14 can be used for all ages, this research demonstrated that both have the same capacity to assess the oral health-related quality of life of older people when related to sociodemographic conditions.

5. CONCLUSION

The comparative analysis of the OHIP-14 and the GOHAI with sociodemographic factors revealed that both questionnaires have the same capacity to assess the self-reported oral health-related quality of life of older people.

The measures obtained in the two indexes indicate that both can similarly assess the relationships between sociodemographic variables and quality of life, pointing out significant relationships in the same comparisons, confirming these indexes as oral health indicators in research in the context of public health, serving as a social framework for the development of better public policies on the oral health of the older population.

AUTHOR CONTRIBUTIONS

Freitas SKS, MV L Saintrain and LL Pequeno devised the research project, performed data collection, literature review, and analysis, wrote the first draft of the article and final revision. Dias AA and Freitas LP performed data analysis and literature review, and contributed to the final version of the article.

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