Profile of the impact on the oral health of persons with Parkinson's disease during the COVID-19 isolation

Perfil do impacto da saúde bucal de pessoas com Parkinson durante o isolamento da COVID-19

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Resumo

Introdução: a pandemia da Covid-19 impactou idosos que possuem a doença de Parkinson (DP), influenciando nas suas atividades de vida diária e qualidade de vida. **Objetivo:** avaliar o impacto da saúde bucal em pessoas com doença de Parkinson durante o isolamento da Covid-19. **Material e método:** trata-se de um estudo analítico, quantitativo e de corte transversal, com fontes de dados secundários de 115 prontuários de uma pesquisa que foi realizada no ano de 2020, no período de agosto a dezembro, por meio de telemonitoramento. Avaliou-se os aspectos sociodemográfico e a autopercepção da qualidade de vida utilizando o questionário Perfil de Impacto na Saúde Oral (OHIP-14). As variáveis estudadas na associação foram: sexo, idade, tempo da DP, estado civil, diagnóstico de Covid-19 e uso de prótese dentária. Foi utilizado o *software Statistica* 13.2 e o teste do Qui-quadrado (X^2) com nível de significância de p<0,05. **Resultado:** após análise do banco de dados a amostra final constou com 64 prontuários que responderam o OHIP-14. 61% foram do sexo masculino com média de idade de 66,6 anos, 64% faziam uso de prótese dentária, e 74% indicaram ter uma boa autopercepção da sua saúde bucal pelo OHIP-14. Não foram encontradas associações significativas entre as variáveis: Idade; Sexo; Estado Civil; Diagnóstico de Covid; Tempo de doença; Uso de prótese dentária e o OHIP-14 (p>0,05). **Conclusão:** verificou-se que pessoas com Parkinson apresentaram uma boa qualidade de vida avaliado pelo OHIP-14 e que o isolamento da Covid-19 não impactou negativamente na saúde bucal.

Descritores: Covid-19; doença de Parkinson; qualidade de vida; saúde bucal.

Abstract

Introduction: the Covid-19 pandemic impacted elderly persons with Parkinson's Disease (PD), influencing their daily activities and quality of life. **Objective:** to evaluate the impact on the oral health in people with Parkinson's Disease during the Covid-19 isolation. **Material and method:** the present analytical, quantitative, cross-sectional study uses secondary data sources from 115 health records used in a study carried out from August to December in 2020 through telemonitoring. Sociodemographic aspects and self-perception of quality of life were evaluated using the Oral Health Impact Profile (OHIP-14) questionnaire. The variables studied in the association were: sex, age, duration of PD, civil status, Covid-19 diagnosis and the use of dental prostheses. The software *Statistica 13.2* and the Chi-square (X^2) test with a significance level of p<0.05 were used. **Result:** after analyzing the database, the final sample consisted of 64 health records that responded to the OHIP-14. 61% were male, with a mean age of 66.6 years, 64% were using dental prostheses, and 74% indicated on the OHIP-14 that they had good oral health self-perception. No significant associations were found among the variables: Age, Sex, Civil Status, Covid diagnosis, Duration of illness, Use of dental prostheses and the OHIP-14 (p>0.05). **Conclusion:** it was found that people with Parkinson's Disease showed a good quality of life, as evaluated using the OHIP-14, and that the Covid-19 isolation did not impact negatively on the oral health.

Descriptors: Covid-19; Parkinson's disease; quality of life; oral health.

INTRODUCTION

In November 2019, a significant event occurred in Wuhan, in the Hubei province in China: the first appearance of what was characterized as the SARS-CoV-2 virus or, more popularly, "Coronavirus". After a series of infections in that city, the virus spread throughout China and, later, reached several countries on different continents which characterized a pandemic. Following actions taken in other countries, several Brazilian states adopted social distancing measures aimed at reducing contact between people and, consequently, controlling the rate of transmission of the virus[1,2].

Social distancing, a non-pharmacological strategy that includes isolating cases, quarantining contacts, and the voluntary practice of not entering crowded environments, proved effective in controlling the exponential growth of the disease[3]. That strategy aimed to save the health care systems from collapsing due to a much greater demand than supply, mainly when dealing with Intensive Care beds. However, it also brought emotional and financial damage to the population, imposing different impacts on each generational group[2,4].

One of the most vulnerable population groups, and that showed the highest Covid-19 lethality was the elderly, especially those with chronic diseases[5]. It is known that in aging there are greater chances of neurodegenerative disease onset, precisely because there are breakdowns at the molecular level in the nervous system, and Parkinson's Disease (PD) is one example of this. It consists of a chronic illness that has a high frequency index in Brazil, and its complications impact on both the quality of life of those affected as well as their families[6,7].

Originating in the degradation of the dopaminergic neurons in the *substantia nigra* of the basal ganglia of the brain, PD is degenerative and has no cure[8]. It evolves slowly and gradually, with the following main symptoms as: muscle rigidity, bradykinesia, tremor at rest and postural instability. It is the second most frequent degenerative disorder in the elderly and is more common in males, even though it is present among men and women of all ethnic groups[9,10].

Due to motor and non-motor disfunctions, and the side effects of medications for treating PD, persons with this disease show several orofacial complications such as dysphagia, sialorrhea (drooling), xerostomia (dry mouth), oral burning sensation, difficulty adapting to the use of dental prostheses. This makes dental care difficult, plus a great inability to carry out activities of daily life such as oral hygiene, thus harming their oral health[10-12].

In view of the implications arising from the Covid-19 context, plus the existing complications related to the oral health of people with Parkinson's, there are tools to evaluate the impact of oral health conditions[13]. Despite the existence of these tools, that contribute to the assessment of quality of life, the scientific literature is scarce regarding the impacts of the pandemic on the oral health of persons living with PD. In this context, with the implementation of measures aimed at social isolation, many of these people stopped having regular medical and dental checkups. Therefore, the aim of the present study was to evaluate the impact on oral health of people with Parkinson's Disease during the more restrictive isolation of Covid-19.

MATERIAL AND METHOD

Type of Study and Ethical Considerations

The present analytical, quantitative, cross-sectional study used the database from a study entitled: Telemonitoring of the oral health conditions in people with Parkinson's Disease during times of Covid-19[14]. That study was carried out from August to December of 2020, with people having PD who were registered in the Pro-Parkinson Extension Program at the Federal University of Pernambuco, and were treated at the *Hospital das Clínicas* (HC/UFPE) and the Parkinson's Association of Pernambuco (ASP/PE). The present study is registered with the Committee of

Ethics in Research (CER) of the Federal University of Pernambuco under protocol CAAE n° 63823322.9.0000.5208 and decision nº 5.708.784.

Data Collection Sample

Initially, the database having 115 health records of people with Parkinson's Disease was consulted. The following inclusion criteria were used for data selection: people with PD of both genders and who had responded to the sociodemographic and the Oral Health Impact Profile (OHIP-14) questionnaires in the previous study, carried out in 2020. Exclusion criteria were people with Parkinson's who were unable to communicate completely due to auditory or verbal impairment when the interview was held.

Variables of the Study

The dependent variable of the present study was the OHIP-14 questionnaire that consists of an instrument to measure people's self-perception of the impact of oral health conditions on the Quality of Life (QL). This tool covers seven dimensions of the impact: functional limitation, physical pain, psychological discomfort, physical incapacity, psychological incapacity, social incapacity and disability. The responses are coded according to a scale in which: 0 = never, 1 = rarely, 2 = sometimes, 3 = frequently and 4 = always[15]. Using the standard OHIP-14 calculation method, there is a specific weight for each question. Respectively, the weights of the 14 questions are: 0.51, 0.49, 0.34, 0.66, 0.45, 0.55, 0.52, 0.48, 0.6, 0.4, 0.62, 0.38, 0.59, and 0.41. Thus, after multiplying the value attributed by each person to the question by the weight of the question, final values are obtained which range between 0 and 28 points. According to Paraguassu et al.[16], the lower the value on the scale, the less will be the impact on oral health. Consequently, the better will be the self-perception of QL. Since the points between 0 and 9.33 indicate good self-perception, from 9.34 to 18.66 correspond to reasonable self-perception, and points from 18.67 to 38 represent worse self-perception of QL.

Sociodemographic data were use as independent variables. These data include: Age counted in complete years, from date of birth and date of data collection; Sex, male or female; Civil status, divided into: With Partner and Without Partner which included: single, widowed/widower, separated, and divorced; and, if they had Covid-19 or not. In addition, the duration of PD in years from the diagnosis of the disease until the year 2020. The use of dental prostheses was a criterion considered from the presence or absence of the prosthesis reported by the person. When present, the following classification of the types of prostheses was used: TP1 – total upper prosthesis and partial removable lower prosthesis; TP2 – partial removable upper prosthesis; TP3 – total upper prosthesis; TP4 – partial removable lower prosthesis; TP5 – partial removable upper and lower prosthesis; TP6 – total upper and lower prosthesis; TP7 – fixed upper prosthesis.

Statistical Analysis

Descriptive statistics and frequency counting were used to characterize the sample for the statistical analysis. Afterward, the sample was stratified according to the score obtained from the OHIP-14. After this, the association between the sociodemographic variables, duration of the disease and use of protheses was verified with the OHIP-14. The *Odds Ratio* (OR) of the Chi-squared (X^2) with a 95% confidence interval (CI) was applied to the analysis, using the *Statistica 13.2* software, with a $p<0.05$ level of significance. To evaluate the accuracy of the variables, analyses of sensitivity, specificity, positive predictive value (PPV), negative predictive value (NPV) and the degree of agreement using the Kappa coefficient were used. Considering the results obtained, the values for the analysis of accuracy of the variables are not presented in the present study.

RESULT

A total of 115 health records were consulted and, after excluding those that did not meet the eligibility criteria, the final sample was composed of 64 health records filled out by the individuals (Figure 1).
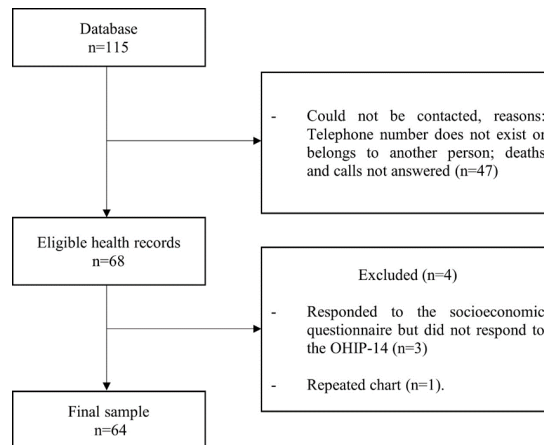
Figure 1. Flowchart of the study for the selection of the final sample. Recife, PE, 2023.

Among the health records that composed the final sample, 61% were from the male sex with a mean age of 66.6 years. These had a mean duration of 10.23 years living with Parkinson's, 72% had a partner, and only 6.25% of the people had Covid-19 in 2020 (Table 1).

64% of the participants indicated the use of dental prostheses. These were separated and grouped according to type, and it was found that the upper and lower removable partial prostheses (TP5) were the most frequently used among persons with PD, at 29%. Also, the least frequently used types were, respectively, the upper and lower total prostheses (TP6) and the upper fixed prostheses (TP7), at 5%. Tables 2 and 3 show the associations of the variables studied with the OHIP-14 that indicated self-perception of good and reasonable oral health.

Table 1. Characterization of the sample according to sociodemographic data, duration of Parkinson's Disease, Covid-19 and use of dental prostheses. Recife, PE, 2023

Variables	n=64	(%)	$\mu(\pm)$
Age (years)			66.6±8.8
<60 / years	14	22%	
≥ 60 / years	50	78%	
Sex			
Masculine	39	61%	
Feminine	25	39%	
Duration of Disease (years)			10.23±5.29
<10 / years	29	45%	
≥10 / years	35	55%	
Civil Status			
With Partner	46	72%	
Without Partner*	18	28%	
Had Covid-19			
Yes	4	6.25%	
No	56	87.5%	
Did not know	4	6.25%	
Use of Dental Prostheses			
Sim / Yes	41	64%	
Não / No	23	36%	

n: sample; μ: mean; ±: standard deviation. *Without Partner: widowed/widower, divorced, separated, single or never married.

Table 2. Association among sociodemographic variables, duration of Parkinson's Disease, diagnosis of Covid-19, use of dental prostheses with good self-perception of oral health (OHIP-14), Recife, PE, 2023

Variables	GOOD SELF-PERCEPTION			p*-value
Sex	**Present**	**Absent**	**Total**	
Masculine	31	8	39	
Feminine	17	8	25	0.37
Total	**48**	**16**	**64**	
Age	**Present**	**Absent**	**Total**	
<60	10	4	14	
>60	38	12	50	0.73
Total	**48**	**16**	**64**	
Duration of PD**	**Present**	**Absent**	**Total**	
<10	23	6	29	
≥10	25	10	35	0.56
Total	**48**	**16**	**64**	
Civil Status**	**Present**	**Absent**	**Total**	
Yes	35	11	46	
No	13	5	18	0.75
Total	**48**	**16**	**64**	
Covid-19	**Present**	**Absent**	**Total**	
Yes	3	1	4	
No	45	15	60	1.00
Total	**48**	**16**	**64**	
Use of Prostheses	**Present**	**Absent**	**Total**	
Yes	30	10	40	
No	18	6	24	1.00
Total	**48**	**16**	**64**	

*Chi-squared test (p=<0.05). **PD: Parkinson's Disease. ***Civil Status: Yes: with Partner, and No: without partner.

Table 3. Association among sociodemographic variables, duration of Parkinson's Disease, diagnosis of Covid-19, use of dental prostheses with reasonable self-perception of oral health (OHIP-14), Recife, PE, 2023

Variables	REASONABLE SELF- PERCEPTION			*p-value
Sex	**Present**	**Absent**	**Total**	
Masculine	7	32	39	
Feminine	8	17	25	0.23
Total	**15**	**49**	**64**	
Age	**Present**	**Absent**	**Total**	
<60	4	10	14	
>60	11	39	50	0.72
Total	**15**	**49**	**64**	
Duration of PD**	**Present**	**Absent**	**Total**	
<10	23	6	29	
≥10	25	10	35	0.56
Total	**48**	**16**	**64**	
Civil Status**	**Present**	**Absent**	**Total**	
Yes	11	35	46	
No	4	14	18	1.00
Total	**15**	**49**	**64**	
Covid-19	**Present**	**Absent**	**Total**	
Yes	1	3	4	
No	14	46	60	1.00
Total	**15**	**49**	**64**	
Use of Prostheses	**Present**	**Absent**	**Total**	
Yes	10	30	40	
No	5	19	24	0.76
Total	**15**	**49**	**64**	

*Chi-squared test (p=<0.05). **PD: Parkinson's Disease. ***Civil Status: Yes: with partner, and No: without partner.

DISCUSSION

The present study found that most people with PD had good self-perception of their oral health, as evaluated using the OHIP-14. Also, that the sociodemographic variables, duration of PD, diagnosis of Covid-19 and the use of dental prostheses were factors that did not impact negatively on oral health.

The OHIP-14 questionnaire makes physical, psychological and social measurements based on seven dimensions[15]. It can be seen that there were good indicators of the dimensions in the population studied. The importance of understanding QL associated with oral health consists of the fact that it is a description of a person's self-perception of health, well-being and quality of life related to oral conditions and functions[17]. This contradicts a study that evaluated quality of life related to oral health in persons with Parkinson's, in which a lower self-perception was detected in these individuals than in people without the disease. This was associated with the increased duration of the disease, presence of burning mouth syndrome and motor aspects[18].

One of the possible factors that interfered with and contributed to the result found may be explained by this group of people having participated in a multi-professional follow-up, even during the pandemic period in the remote format, which suggests that the telemonitoring satisfied the need for face-to-face follow-up and guidance regarding the relevance of treatment, enabling quality maintenance of oral health[14].

In the association of the use of prostheses versus good self-perception of oral health, the use of prostheses did not demonstrate impairment of self- perception of quality of life. This fact may be justified by the fact that the type of prosthesis most frequent in this sample was the TP5 (upper and lower removable partial prostheses). These findings support the study by Gabardo et al.[19], who stated that the use of removable prostheses may reduce the negative perception of the impacts on oral health.

The associations with reasonable self-perception of oral health showed no statistically significant results, given the non-homogenous distribution of the sample, which interfered with the relevance of the associations. No data were found in the literature that could be compared with the findings of the present study.

In regard to sex, the sample showed greater prevalence of PD among men, which is consistent with studies which have shown that Parkinson's Disease affects about one woman for every five men[20,21]. With regard to age range, there was a more notable presence among the elderly, corroborating studies that have found that the disease occurs more frequently in these individuals[9]. Regarding marital state, most of the persons had a partner. This aligns with an investigation into the clinical-epidemiological profile of people with PD in Salvador, Bahia, with 75% of married individuals[22].

Most of the interviewees who composed the sample did not have Covid-19 during the period from August to December, 2020. This result corroborates a study involving persons with Parkinson's in which there was one asymptomatic case and 6 deaths among 46 participants[23]. This shows that the precautionary measures encouraged and adopted by these persons to avoid contagion with the virus, through social distancing and isolation measures, were effective. Individuals who maintained the habit of leaving their homes during this period made use of approximately three preventive measures, the use of masks being the most common among them[24]. Such precautions are explained by the notable concern among family members with the sensitivity to contagion of the person who lives with PD[14].

With regard to the number of years that individuals live with PD, and the self-perception of oral health, there was no evidence that the increase in the number of years interferes negatively with the self- perception of quality of life. This is seen as most individuals with a good QL live with Parkinson's for 10 years or more. On the contrary, research has shown that the increased duration of Parkinson's Disease had a negative impact on the self- perception oral health[19,25].

The limitations of the present study may be attributed to the low number of individuals participating in the study and their distribution in the variables studied. This may have happened because the present study was conducted during the most restricted time of social isolation, during which the recommendation was to stay at home. This resulted in a limited number of participants, in addition to the difficulty of internet access and use of technological equipment, for the questionnaire to have been applied to more persons.

CONCLUSION

The present study found that most persons with Parkinson's had good self-perception of oral health. The variables studied: sex, age, duration of PD, Civil Status, diagnosis with Covid-19, and the use of dental prostheses were factors that were not associated with negative self-perception of oral health.

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CONFLICTS OF INTERESTS

The authors declare no conflicts of interest.

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