

Research Article

Depression and Oral Manifestations Post-COVID19

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Abstract

Introduction: The need for scientific literature relating post-COVID19 oral manifestations with depressive symptoms and the need to structure the variety of these and identify risk factors to prevent serious mental health affectations. **Objective:** To determine the relationship between oral manifestations and levels of depression in patients with post-COVID-19 sequels. **Methods:** A descriptive longitudinal study was carried out on 32 patients with mild COVID19 diseases, who persisted in their oral manifestations three months after diagnosis in the health area of the Marta Abreu Polyclinic, applying the Zung and Conde test to know their levels of depression. The statistical package SPSSv 21.0 and the chi-square test were used to process the data. **Results:** In the research 81.2% of the patients present some level of depression, intervening the sociodemographic variable and if there is a significant relationship between the post-covid19 oral manifestations such as taste alteration and xerostomia with the appearance of emotional states such as depression. **Conclusion:** Post-COVID19 oral sequel can affect the emotional states influencing the level of depression of those who suffer from it.

Keywords

Depression, Oral Manifestations, Post-COVID19

1. Introduction

On October 6, 2021, the World Health Organization (WHO) issued the first official clinical definition of post -COVID19 disease, agreed upon after a global consultation "Post-COVID19 disease occurs in individuals with a history of probable or confirmed SARS -Cov -2 infection usually three months of COVID-19 onset with symptoms that for at least two months and that cannot be explained by an alternative diagnosis." [1].

The battle against COVID-19 does not seem to end with its

detection and treatment of acute disease. The persistent symptoms described by survivors, although heterogeneous, show a high incidence. [2].

The most frequent sequel described are respiratory, cardi-ological, psychiatric and neurological, but other sequels such as oral sequel are described with few studies.

Since June 9, 2020 in Cuba, the Ministry of Public Health (MINSAP) disseminated for its implementation a protocol of actions for the Management of the Convalescent Patient of

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COVID19 from the Primary Health Care (PHC), taking advantage of the universal accessibility of our National Health System, with multidisciplinary teams that treat the patient integrally. [2].

Several studies have been carried out on psychiatric and psychological sequel confirming that the pandemic can affect the mental health of patients. It has not been possible to prove that the etiology is associated to the inflammatory process of the virus or to the effects of post-traumatic stress or to the effects of the treatments used. [3].

For example, depression, one of the sequel left by the pandemic, is defined by the American Psychological Association as a group of symptoms of alterations in the effect of sadness, lack of motivation or enthusiasm, apathy, hopelessness, not knowing what to do in the face of the demands of daily life. [4] Before the pandemic of COVID19, according to Santomauro the global prevalence of depressive disorder in 2020 was 193 million people worldwide, according to the same author this prevalence has increased during the pandemic to 246 thousand people which translates into an increase of 27.6%. [5].

Therefore, it is a challenge for science and within it for Stomatology to follow up the post COVID19 syndrome.

Historical antecedents such as the consequences of the Spanish flu of 1918-1919 determined by meta-analysis: "[6], weeks, months or even years after the pandemic disappeared, the scarce scientific literature on the impact on mental health of patients with oral sequel post COVID19, the presence of depressive symptoms in patients in the follow-up consultation of oral sequel post covid summons us to carry out the present investigation with the purpose of having structured the variety of oral manifestations and their repercussion on mental health, that occur once the infection has been cured and to broaden our knowledge of the possible factors that can identify the most at-risk populations for the prevention of medium and long-term effects on the general health of the post COVID19 dental patient and to be used in PHC and in the multidisciplinary teams that exist in the health areas, as a specialist in oral health.

The aim of the present study is:

To determine the relationship between oral manifestations and levels of depression in patients with post-covid-19 sequels.

2. Method

A descriptive study of longitudinal cut was carried out from March to August 2021, in the health area of the Marta Abreu Polyclinic, in the city of Santa Clara to determine the levels of depression in patients who suffered oral manifestations post-covid-19, that is, three months after being diagnosed as positive.

For this purpose, an epidemiological study was carried out in patients who had suffered from mild forms of the disease and who in all cases had been hospitalized as established by the Cuban protocol at the time.

In active research in field visits and in weekly consultations in the Stomatological Department for the care of patients with oral manifestations. It was determined that there were 114 patients with such manifestations in the period.

When these patients were followed up, 32 of them persisted three months after diagnosis. All of them were over 18 years of age and none of them met the exclusion criteria for the study, so informed consent was requested, after explaining the objective of the research, so that a non-probabilistic sample was obtained for the convenience of the authors.

An interview of the signs and symptoms they suffered from the stomatological and emotional point of view was carried out with the evaluation of stomatologists and psychologists.

Oral manifestations:

-Taste alteration: defined as the reduced or distorted ability to receive flavors and encompassing ageusia, hypogeusia, dysgeusia and phantogeusia.

-Xerostomia: sensation of dry mouth.

-Oral lesions: any lesion in the oral cavity referred by the patient including ulcers, vesicles, aphthae, nodules, macules.

-Burning Mouth Syndrome: painful, burning, stinging and tingling sensation affecting the entire oral mucosa.

-Depression: disease characterized by persistent sadness and loss of interest in activities normally enjoyed, as well as the inability to carry out daily activities.

Variables

-Sociodemographic:

Age

Sex

Marital status (accompanied: married, cohabiting, unaccompanied: single, separated and widowed).

Employment status (employed, employed, not employed, student, housewife, retired).

Depends on your income (yes, no).

-Oral sequels:

Taste alteration, xerostomia, oral lesions, burning mouth syndrome.

Levels of depression:

Mild, moderate, severe and very severe; attending to the psychological evaluation after the realization of the semi-structured interview.

Therefore, it was decided to apply the Zung and Conde Depression Test, taking into account the Likert-type scale of four values (range of 1 to 4 referred to the frequency of the presentation of symptoms. A total severity score was given as the sum of the scores on the 20 items. For the negative items, the higher the frequency of presentation, the higher the score, and the positive items received a lower score the higher the frequency. Scoring was carried out on the established scale.

Normal Range 25-49 points

Mild Depression 50-59 points

Moderate Depression 60-69 points

Severe Depression < 70 points

Statistical Analysis

The Statistical Package for the Social Sciences SPSS version

21.0 was used to perform the statistical analyses. Potential associations between epidemiological, clinical and chi-square test results. Incomplete responses were excluded from the analysis. A multivariate logistic regression model was applied to estimate

the association between oral manifestations and level of depression with a set of independent variables. A level of $p < 0.05$ was determined as statistically significant.

3. Results and Discussion

3.1. Results

Table 1. Sociodemographic characteristics of patients with oral manifestations at the Marta Abreu Polyclinic.

Sociodemographic Variables		n=32		Oral Sequels							
				Alt. taste		Xerostomia		Oral Injuries		S. Burning Mouth	
		No	%	No	%	No	%	No	%	No	%
Sex	masculine	17	53,1	10	58,9	5	29,4	2	11,8	0	0,0
	femenine	15	46,9	4	26,7	5	33,3	3	20,0	3	20,0
Age	20-29	5	15,6	2	40,0	3	60,0	0	0,0	0	0,0
	30-39	8	25,0	4	50,0	3	37,5	1	12,5	0	0,0
	40-49	7	21,9	2	28,6	2	28,6	2	28,6	1	14,3
	50-59	5	15,6	3	60,0	0	0,0	1	20,0	1	20,0
	60-69	4	12,5	1	25,0	2	50,0	0	0,0	1	25,0
	70-79	2	6,3	1	50,0	0	0,0	1	50,0	0	0,0
	< 80	1	3,1	1	100,0	0	0,0	0	0,0	0	0,0
Marital status	accompanied	16	50,0	8	50,0	6	37,5	2	12,5	0	0,0
	unaccompanied	16	50,0	6	37,5	4	25,0	3	18,7	3	18,7
Employment status	employed	13	40,6	8	61,5	3	23,1	2	15,3	0	0,0
	not employed	19	59,4	6	31,5	7	36,8	3	15,7	3	15,7
Depends on your income	yes	14	43,8	7	50,0	2	14,3	4	28,6	1	7,1
	no	18	56,3	7	38,8	8	44,4	1	15,6	2	11,1

Table 2. Socio-demographic characteristics and their relationship with the level of depression.

Sociodemographic Variables n= 32		Levels of depression							
		Normal		Mild		Moderate		Severe	
		No	%	No	%	No	%	No	%
Age	20-29	1	3,1	4	12,5	0	0,0	0	0,0
	30-39	1	3,1	4	12,5	2	6,2	1	3,1
	40-49	2	6,2	2	6,2	2	6,2	1	3,1
	50-59	1	3,1	2	6,2	2	6,2	0	0,0

Sociodemographic Variables n= 32		Levels of depression							
		Normal		Mild		Moderate		Severe	
		No	%	No	%	No	%	No	%
	60-69	1	3,1	0	0,0	1	3,1	2	6,2
	70-79	0	0,0	0	0,0	1	3,1	1	3,1
	< 80	0	0,0	0	0,0	0	0,0	1	3,1
	Subtotal	6	18,7	12	37,5	8	25,0	6	18,7
Marital status	accompanied	2	6,2	2	6,2	4	12,5	3	9,4
	unaccompanied	4	12,5	5	15,6	4	12,5	3	9,4
	Subtotal	6	18,7	7	21,8	8	25,0	6	18,7
Employment status	employed	3	9,4	6	18,7	3	9,4	1	3,1
	not employed	3	9,4	6	18,7	5	15,6	5	15,6
	Subtotal	6	18,7	12	37,5	8	25,0	6	18,7
Depends on your income	yes	4	12,5	7	21,8	2	6,2	1	3,1
	no	2	6,2	5	15,6	6	18,7	5	15,6
	Subtotal	6	18,7	12	37,5	8	25,0	6	18,7

Table 1 shows the socio-demographic factors associated with the presence of sequels related to covid-19 in the post-covid period, four weeks and more after diagnosis, with a mean in relation to age of 45.3. In relation to sex there are no significant differences, the marital status with the highest percentage is married with 8.8%, although the cohabitant and divorced behave with equal figures 7.9%, prevailing in the study group. 18.4% of their families depend on their income and 14.0% continued to work. 18.4% of the patients' families

depended on their income and 14.0% continued to work. Regarding the post-covid oral sequels, the highest incidence was taste alteration with 68.7%, followed by xerostomia 59.3%, oral lesions with 15.6% and Burning Mouth Syndrome 9.4%.

Table 2 shows that 81.2% of the patients studied presented levels of depression in relation to the socio-demographic variables in the post-covid-19 period.

Table 3. Relationship between oral manifestations and level of depression post covid-19.

Oral sequels	Total injuries		Levels of depression								p*
			Normal		Mild		Moderate		Severe		
	No	%	No	%	No	%	No	%	No	%	
Alt. Taste	14	43,8	4	12,5	6	18,7	3	9,4	1	3,1	0,025
Xerostomia	10	31,3	2	6,2	6	18,7	2	6,2	0	0,0	0,031
Oral Injuries	5	15,6	0	0,0	0	0,0	3	9,4	2	6,2	0,652
S. Burning Mouth	3	9,3	0	0,0	0	0,0	0	0,0	3	9,4	0,700

More than one oral manifestation was present in several patients, although the one with the greatest impact is shown.

Table 3 shows that there is a significant association between taste alteration, xerostomia and levels of depression, mainly

mild in the sample studied, although oral lesions and burning mouth syndrome do not show statistically significant frequencies, they present the highest levels of moderate and severe depression and in the case of burning mouth syndrome all cases presented levels of severe depression, so that in both cases they had a greater impact on the severity of depression of those affected.

3.2. Discussion

On October 30, 2020, the Director General of the WHO appeared at a press conference warning of the importance of the long-term sequels of COVID19. These persistent manifestations affect several organs and systems [1] and depend both on the pathophysiological mechanisms of the virus and the patient's immune response, as well as the development of the disease in the acute process and the drugs and techniques used in it. [7].

Carrasco Rueda [8] in a follow-up of patients with oral manifestations, at the beginning of the diagnosis of COVID19 and three months later, reports 24.0% of oral manifestations, with 9.4% of patients presenting dysgeusia, 6.7% with xerostomia and 3.4% with oral lesions, with data relatively similar to our study, that after three months 28.1% presented oral manifestations, The data is relatively similar to our study, where 28.1% presented oral manifestations, but not in the presence of oral manifestations, where dysgeusia exhibits results of 43.8%, xerostomia 31.3% and oral lesions 15.6%, all results higher than those of the reference study, however Herrera Garcia [9] in a study conducted between 30 and 60 days after diagnosis obtained a result of people with dysgeusia of 42.0%. Nguyen [10] in a follow-up of 125 patients reported the persistence of anosmia/ageusia up to 7 months later in 30 of them, representing 24.0%. The studies carried out in the world on post COVID19 sequel are mostly heterogeneous and taste dysfunction is predominant in post COVID19 oral sequel, where at 12 weeks a persistence of this symptom of 4.0% to 46.0% is reported [11], coinciding with the result of the present investigation of 43.8%.

The post COVID19 oral sequel present in the study, according to patients' references, caused changes in their eating habits, not perceiving adequately the taste of food, adding too much or too little salt or sugar to them, dry and sticky mouth sensation, cracking of the lips, difficulty in swallowing, speaking, oral hygiene, burning and burning in the oropharynx, causing discomfort, despair, sadness, lack of motivation to perform daily life activities. This situation is aggravated in the context of a pandemic never experienced by mankind in this century, which in itself represents death and loss of loved ones, identifying a cost in mental health mainly of those who suffered from the disease and even more of those who have persistent symptoms. [11].

In the dental field we have not found research that relates oral manifestations with mental health, but we have found studies that describe the levels of depression in patients with

other persistent symptoms.

In the present study we agree with Amdal [12] who from his systematic review states that most of the organs of the body can be affected and the disease can be associated with extremely unfavorable consequences on the quality of life for prolonged periods after the acute infection.

In a study carried out on post COVID19 patients in 13 Chacarato Health Center [13], depression reached 86.6%, higher than the result of the research which was 62.5%, coinciding that the highest levels of severe depression were in adults over 60 years of age in 35.7% and in ours of 66.7%, 7% and in ours of 66.7% and the marital status the widowed with 46.6% and in the divorced with 18.5%, being the results of the present research the highest in the unaccompanied, who conform the previous states with 34.4% of depression among the participants.

Buncer [14] includes in his study of revision of the effects after COVID19, where he describes among the most frequent symptoms the alteration of taste and smell, he points out that an important factor that affected psychologically was the economic situation of the family, the increase of unemployment, mainly in the axes of family, contrasting with the present investigation, where depression predominated in those who did not constitute axes of family. In Cuba no worker was unemployed during the pandemic and even mothers with small children and vulnerable personnel were offered salary guarantees to protect them from being infected, so it does not constitute a main factor in their psychological affection in the study. Li [15] in the results of his study found a prevalence of depression of 39.3% and among the factors associated with depression was the female sex, coinciding with the present investigation which is 34.4%, depression in the same sex. As has been reflected in other countries, women were much more likely to suffer more lasting symptoms. [16].

In Cuba, several follow-up projects are carried out on patients infected with SARS-Cov -2, as in the Pedro Kouri Institute of Tropical Medicine [16] where they have been carried out since 2020, proving that 42.0% of the patients infected with the virus developed a post covid syndrome, of which 85.2% had a mild disease, lower than the result of the present study where 100.0% of the participants suffered mild forms of the disease. Neurological diseases were the most frequent in more than 300 recovered patients, many of them presented sleep disorders, adaptation, nervousness, anxiety and depression.

In a study carried out in Hermanos Amejeiras Hospital [17], in 80 convalescents residing in Central Havana who had suffered from covid -19 among the most frequent symptoms that could last up to 6 months, anxiety, depression and sleep disorders were found, for a longer period than those reported in this study.

The results of the study coincide with those of Andrade

Tobar's study [18] where he demonstrated that not sharing an emotion socially, not talking about what happened, fears and worries about the pandemic were related to greater problems that in addition to the oral sequel, housewives, retired, separated, widowed, that is, those unaccompanied and those not incorporated to work with fewer social relations, reach the highest levels of depression.

Research shows us that depression has no single cause in its etiology and that it is made up of several risk factors, so that the specialists of stomatology are called to follow up the post-covid-19 syndrome, the oral manifestations have been underestimated, not participating the specialists of the oral cavity in the multidisciplinary teams that have been established in Cuba since the beginning of the pandemic, when it has been reported to refer it to different specialties and levels of care for their assistance. [19] The stomatological area of the health area has had a scarce link with these work teams, so we consider that the follow-up of patients with oral sequel is indispensable and this is demonstrated by a systematic review of 57 published studies, which included 250 351 survivors of covid-19, within the sequel beyond 6 months, loss of taste 23 is frequently reported, so they can present affectations in their mental health, many of them, like those observed in this research.

4. Conclusion

Post-COVID19 oral sequels can affect emotional states, influencing the level of depression of those who suffer from it, for which reason it should be followed up by the stomatologists of Primary Health Care, linking them to the care groups for post-COVID19 patients, so that the oral cavity specialists can participate in the recovery of patients with oral sequels and avoid affecting their mental health.

Abbreviations

MINSAP	Ministry of Public Health
PHC	Primary Health Care
WHO	World Health Organization

Author Contributions

Ismaray Contreras Cobas: Investigation
Madalaime Garcia Diaz: Investigation
Surisaday Almeida Perez: Investigation

Conflicts of Interest

The authors have no conflicts of interest.

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Research Field

Ismaray Contreras Cobas: Autoimmune diseases, Covid-19 and taste, Psychodentistry, Chronic non-communicable diseases Older Adult, Oral Health of children with disabilities.

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