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Analysis of patients hospitalized by Covid-19 regarding oral care during hospitalization

Abstract:

Oral health interferes with the general condition of the individual, because the oral cavity is a gateway and habitat for pathogens, especially in hospitalized people. There are several diseases that directly interfere in the oral cavity, such as Covid 19. Studies report oral changes in patients infected by SARS-CoV2 and point to the need for satisfactory oral hygiene during hospitalization in order to avoid the occurrence of oral lesions that increase the risk for the individual. The objective of this research is to emphasize the importance of the dentist in hospitals, pointing out the oral diseases that can be caused by poor oral hygiene during hospitalization. For the execution of the work, a questionnaire was carried out with patients who were hospitalized in Covid-19, clarifying if, during the hospitalization period, these patients received help in oral hygiene and if they noticed oral changes. The results achieved are in accordance with the literature, taking into consideration the age range of those affected by covid, over 50 years old, and the length of hospitalization, ranging from 10 days. Many hospitals still neglect the dental service and the patient himself performs the oral hygiene. The most common lesions reported by those infected by the virus were taste alteration, xerostomia and thrush, besides caries and dental calculus. We concluded the relevance of the odontologist far beyond the prevention of lesions, but in contributing to the recovery of the individual and the importance of adopting measures for the oral adequacy of hospitalized patients.

Keywords: Dentists. COVID-19. Oral Hygiene. Hospitalization

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INTRODUCTION

The hospital environment is a place that, despite treating diseases, may cause secondary problems to the individual, which may affect the patient's healing process. From the young to the old, the neglect of oral health in the hospital environment may cause the accumulation of dental biofilm, making the patient susceptible to several oral diseases, such as caries and periodontal problems. Moreover, infectious conditions in the oral cavity, generated by poor hygiene, can worsen the individual's systemic health. This is because the presence of bite strips, tubes and blocks, makes the dental biofilm the habitat of pathogenic microorganisms that do not belong to the oral microbiota, leading to and aggravating distant infections¹.

Cardiovascular diseases, atherosclerosis, diabetes, premature birth of babies and with low weight and respiratory problems may be related to poor oral hygiene of hospitalized individuals¹. One of the major concerns in hospitals is the worsening in cases of pneumonia, causing a condition known as nosocomial pneumonia, because this disease affects 10% to 15% of infections in hospitals, and 20% to 50% of affected individuals die².

In healthy individuals who have a regular oral hygiene, the composition of the biofilm remains stable, basically composed of gram-positive bacteria, but an instability in the environment can cause changes in the oral microbiota and cause oral diseases. According to a study conducted by Vidal et al. (2017)³, after 48h of stay in an Intensive Care Unit (ICU), the patient's oral microbiota undergoes changes and starts to present gram-negative bacteria, such as *Enterobacter* spp., *Pseudomonas aeruginosa*, *Klebsiella pneumoniae*, *Acinetobacter* spp. in addition to bacterial endocarditis and meningitis.

The oral cavity is the place in the body that presents a greater colonization of microorganisms, due to the amount of oxygen, temperature, exposure to immune factors, and the availability of nutrients. The imbalance of these factors combined with poor oral hygiene, allows the oral cavity to become susceptible to pathogens and their products, responsible for the formation of bacterial plaque, which contributes mainly to the emergence of caries and injuries to the protective tissue and support, besides lesions on the mucosa and fungal diseases. These factors intensify when the individual has some pathogenicity that acts directly in the oral cavity, as is the case of the SARS-CoV-2 virus, which causes Covid-19⁴.

Recent studies state that, in patients hospitalized for covid, poor oral hygiene, linked to periodontitis, can indirectly worsen the recovery of the individual, this is

because, according to Longevity Institute Mag (2021)³ patients who have periodontitis usually have a greater amount of bacteria in the oral cavity, generating pictures of secondary infections and hindering the treatment of Covid-19. Moreover, according to the Federal Council of Dentistry (2021)⁵, Covid-19 enters through the airways and passes through the oral cavity, a place that harbors a huge amount of microorganisms. If care of the oral cavity is insufficient and bacteria are not removed, they can reach the lung and cause complications, possibly leading the individual to death. The protocol of hygiene of the oral cavity in hospitalized patients is able to reduce by 60% the cases of pneumonia⁵.

Therefore, it is of great relevance the multidisciplinary work in the hospital environment, aiming at the patient's recovery and reducing the length of hospital stay. There is also, to emphasize this importance, a bill 883/19 that makes mandatory the presence of dental professionals in the multidisciplinary team in hospitals, whether public or private².

As a result, it seems of high clinical interest to improve the oral condition of hospitalized patients, especially during the pandemic. This work aims to highlight the importance of the dental surgeon in hospital settings, through a form of patients who were hospitalized by covid-19 emphasizing whether there was oral hygiene during hospitalization, analyzing the oral diseases caused by lack of oral hygiene during hospitalization, in addition to identifying oral changes in patients hospitalized by Covid-19.

METHODOLOGY

The study, registered in the Brazil platform (CAAE 60815122.4.0000.5496), qualifies as a descriptive and exploratory research, which analyzed a questionnaire (attachment 1) applied to individuals who required hospitalization due to Covid-19 in the Google workspace forms program, checking whether during this period they received guidance and assistance to perform oral hygiene. The questionnaire had closed questions in order to analyze whether there were changes in the oral cavity of the hospitalized individual due to poor oral hygiene during hospitalization, in addition to mouth lesions during the period of Covid-19 disease. It is worth mentioning that the identification of the individuals was totally preserved, by marking on the electronic form itself the acceptance to participate in this work.

In addition, the research relied, for information purposes, on studies of articles already published in order to enrich the knowledge of the research. After the orga-

nization of the questionnaires, notes were made of the pertinent considerations and comments exposed, aiming to relate them to each other, and to bibliographic reviews and published scientific articles.

The data were collected from the forms and tabulated in the Google program where the analysis of the data obtained was presented by means of absolute frequencies and percentages.

RESULTS

Twenty individuals who required hospitalization as a result of Covid-19 contributed by answering the questionnaire for the development of this study. It should be noted that all respondents agreed to participate in the survey.

As for age, the highest prevalence was above 50 years old (65%), followed by individuals from 20 to 30 years old (15%). The numbers were evened out with respondents aged 31 to 40 years and 41 to 50 years, with 2 respondents (10%) in each age group.

Regarding hospitalization, of the 20 interviewees, 70% used the Public Health System and 30% were hospitalized in private units. Regarding the length of hospitalization, 8 interviewees (40%) stayed less than 10 days, 5 interviewees (25%) stayed in a period of 10 to 20 days, 15% of the interviewees needed hospitalization for a period between 20 to 30 days and 4 (20%) interviewees remained under hospital care for more than 30 days. 50% of the study subjects required ICU admission (Table 1).

Another point raised was the role of the Dental Surgeon during hospitalization, 85% of the interviewees claimed that they did not have any type of care needed for oral hygiene, 10% said they had dental assistance and 5% could not answer. The interviewees who received dental care reported that the help for oral hygiene occurred 1 to 2 times a week. Regarding help with oral care from other health professionals, 95% of the participants claimed not to receive any help for oral hygiene and 5% of the participants received help from another health professional (Table 2).

Interviewees were asked about who performed their oral hygiene, 75% reported that they performed their own oral hygiene, 15% said their hygiene was performed by a nurse, 5% by a family member and 5% reported that another health professional performed their oral hygiene. When questioned if the hospital provided oral hygiene material for inpatients, 78.9% claimed not to have received any type of material for oral hygiene, 21.1% had materials provided by the hospital to perform their oral hygiene and 1 participant of the study did not answer this question (Table 3).

Table 1. Variables related to the respondents' age, place of hospitalization, length of hospitalization by covid, and need for ICU admission

Variables	%
Age of respondents	
20 to 30 years	15%
31 to 40 years	10%
41 to 50 years	10%
Over 50 years old	65%
Place of hospitalization	
Private Hospital	30%
Public Hospital	70%
Hospitalization time by covid	
Less than 10 days	40%
10 to 20 days	25%
20 to 30 days	15%
More than 30 days	20%
Need for ICU admission	
Needed ICU	50%
No need for ICU	50%

Table 2. Variables of the dental surgeon's help during hospitalization, frequency of care, and guidance from another health care professional.

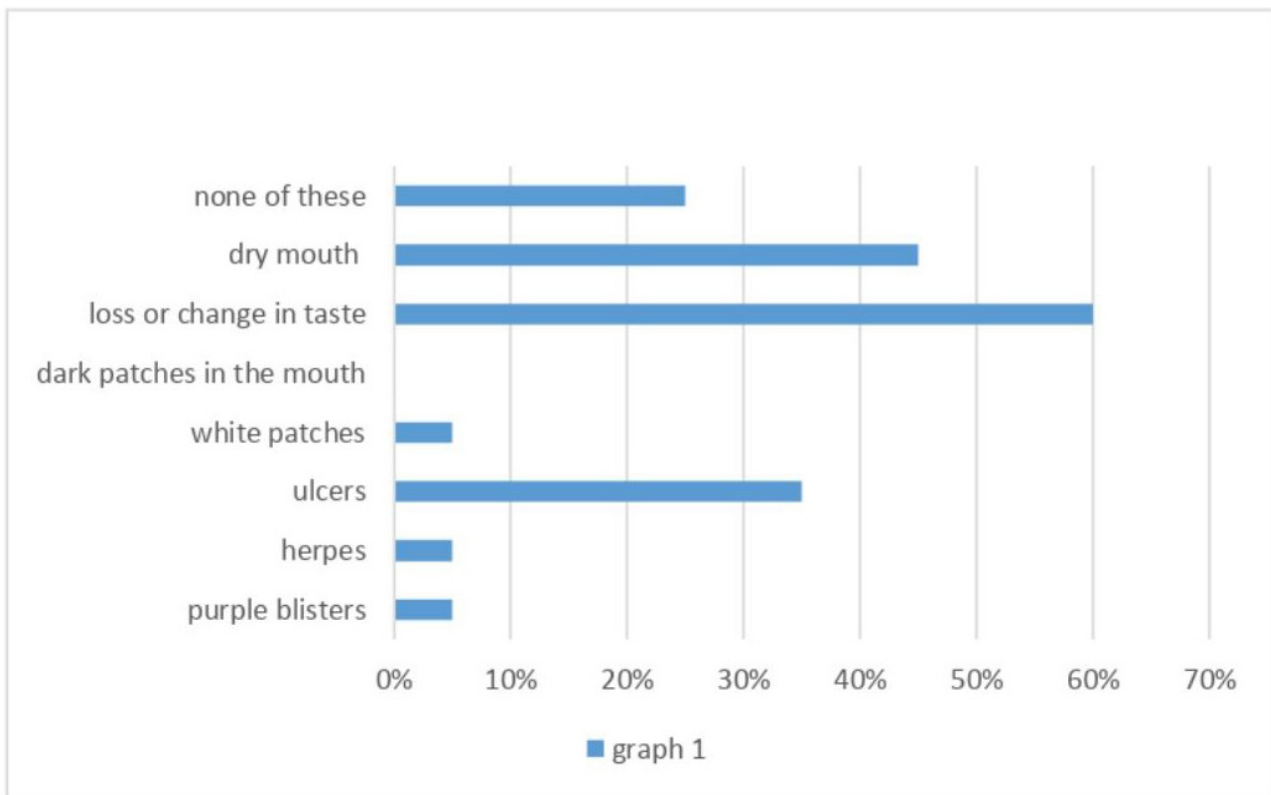
Variables	%
Care by the dental surgeon during hospitalization	
Yes	10%
No	85%
Don't know	5%
For those who received care, how many times a week	
1 to 2 times	100%
3 to 4 times	0%
5 to 6 times	0%
Everyday	0%
Have you received guidance from another health professional?	
Yes	5%
No	95%

Table 3. Variables of those responsible for performing oral hygiene care and providing materials for oral hygiene.

Variables	%
Responsible for performing oral hygiene care	
Myself	75%
A relative	5%
A dental surgeon	0%
A nurse	15%
Other professional	5%
Did the hospital provide material for oral hygiene?	
Yes	21,1%
No	78,9%

The respondents pointed out some oral manifestations after Covid-19 infection, among them loss/change in taste (60%), dry mouth (45%), thrush (35%), purple

blisters (5%), herpes (5%) and thrush (5%) and 25% of the respondents reported not manifesting any of these oral diseases (Graph 1).



Graph 1. As a result of Covid-19 disease, did you manifest any of the following mouth diseases?

Of the 20 interviewees, 15 said they did not notice any changes in the oral cavity after hospitalization and 5 reported changes in the oral cavity. Faced with the oral changes presented, the participants reported the appearance of tartar (60%), and in 40% of the interviewees reported: halitosis, lesions in the mucosa and caries (Graph 2).

At the end of the questionnaire, the interviewees were asked about the need for the presence of a dentist in hospitals. 80% agreed and emphasized the importance of the dentist in hospital centers (Graph 3).

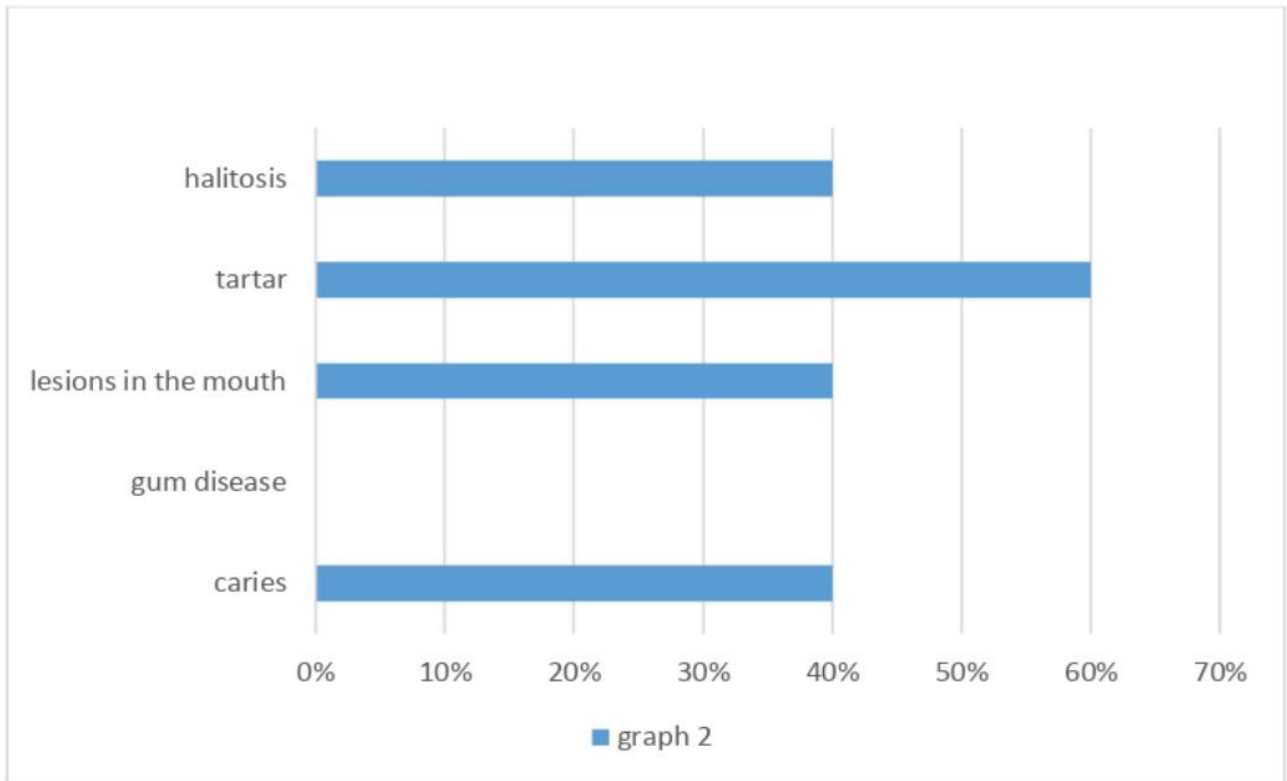
DISCUSSION

It is known that the oral cavity is habitat for several species of pathogenic microorganisms, capable of contributing to an imbalance in the oral microbiota, especially in hospitalized individuals who are in poor general health. An aggravating factor of this factor is the presence of diseases as a gateway to the oral cavity, such as the recent Covid-19, still the subject of several researches. For this reason, the

study around the importance of oral care in hospitalized patients has become essential in order to avoid worsening of the case and secondary infections⁶.

The present study analyzed the oral conditions of patients hospitalized by covid, among the respondents, 65% are over 50 years old. Although the chances of contamination are equal at all ages, older people were the most affected due to the vulnerability of the immune system⁷. The respondent was asked about the place of hospitalization, 14 of the 20 individuals were hospitalized in the public health network and 6 in the private network. Moreover, the hospitalization time of 40% of the individuals was less than 10 days, which concurs with Conceição's study, in which the time was around 6 days⁸.

According to studies, individuals hospitalized and requiring care in Intensive Care Units have from 5 to 10 times more chances of manifesting infectious conditions, due to the immunological deficiency of the individual. In this research, 50% of the interviewees reported needing ICU care. To assist in their survival, mechanisms such as



Graph 2. If yes, what were the changes?



Graph 3. In your opinion, is the presence of the Dental Surgeon in hospitals necessary?

orotracheal intubation and the use of invasive mechanical ventilation are used, which causes poor oral hygiene, increasing the risk of complications in the systemic health of the individual, such as ventilator-associated pneumonia⁸.

The need for hospitalization generates, in the individual, a change in hygiene habits, especially regarding oral care, which is often neglected. According to research conducted by Fernandes et al. (2016)⁹ the lack of dental surgeons in hospitals generates a negligence in the maintenance of patients' oral health, which corroborates with the present study, which verified that 85% of respondents claimed that they did not have any type of care by dentist necessary for oral hygiene and only 10% obtained care during this period. The study showed that of the patients who received assistance in oral hygiene, the frequency was 1 to 2 times a week, a small period since 12 hours without performing oral hygiene makes the cavity prone to colonization of cariogenic bacteria⁹.

Moreover, it is extremely important the stimulation of such care by the patient himself, since poor oral hygiene, combined with the health condition of the hospitalized individual, contribute to the evolution of infectious conditions and secondary complications. If it is physically or mentally impossible for the patient, the healthcare team must be trained by dental surgeons to perform oral hygiene frequently. For patients who are debilitated, the ideal is to perform oral hygiene 4 times a day. Besides the dentist being the professional who reinforces oral hygiene measures he identifies early injuries caused by tubes and medications¹⁰. According to the study, 75% of the individuals performed their own oral hygiene and 15% claimed to receive help from a nurse, 5% of the interviewees claimed to receive help from a family member and 5% from another health professional. Furthermore, of the individuals interviewed, 78% claimed not to have received any material to perform their oral hygiene.

Covid-19 is an infectious disease, caused by the SARS-CoV-2 virus, capable of generating manifestations in the oral cavity of infected individuals. According to the literature, the tongue, lip, mucosa, and gums are the main sites for oral lesions. These lesions can manifest as aphthous ulcers, usually in younger patients, and herpetic lesions, commonly seen in older patients. In addition, taste changes, xerostomia, white plaques, and dark pigmentation have been observed in the oral cavity^{11,12}. In the present study, the respondents most often reported taste alteration/loss of taste (60%), xerostomia (45%) and presence of thrush (35%), in addition to purple blisters (5%), herpes (5%) and white patches (5%).

The interviewees scored, after the hospitalization period, the presence of dental calculus (60%), halitosis (40%), caries (40%) and lesions on the mucosa (40%). The precariousness in the oral hygiene of hospitalized patients makes the oral cavity susceptible to pathogenic microorganisms, especially in individuals who require mechanical ventilation, because they are sedated, with decreased motor activity and mouth opening for a long period, which causes dehydration of the oral mucosa, decreased salivary flow and decreased cough reflex, predisposing the cavity to ulcers, site of bacteria that cause dental biofilm and caries⁸. In the pandemic situation that the world has witnessed, the role of the dental surgeon has become even more notorious, since hospitalizations for long periods of time increase the risk of oral lesions and infections. Besides contributing to the preservation of infections, the dental surgeon assists in the rehabilitation of hospitalized individuals affected by Covid-19.

CONCLUSION

There is negligence of oral hygiene of patients in the hospital environment, generated mainly by the absence of the dental surgeon in the health team. The deficiency of adequate hygiene added to the particularities of each disease that led to hospitalization leads to oral changes such as lesions, caries and gingival alterations. With this, this work showed the importance of the dentist in the hospital environment, contributing not only to the prevention but also to the recovery of individuals who have been hospitalized for a period of time.

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