Assessment of the oral health condition of patients admitted to the wards of the Agreste Regional Hospital of Caruaru, PE

Maurício da Rocha Costa*
Nayade Serpa Tôrres*
Amanda Nayara da Silva Ferreira*
Jaynne Karla Batista Lima*
José Eudes de Lorena Sobrinho*
Angéllica Falcão Leite*

Abstract

Hospitalized patients usually neglect oral hygiene, resulting in the accumulation of dental biofilm, which can lead to periodontal and other diseases, aggravating their health condition systemically, and consequently increasing the length of hospital stay. Thus, this study aimed to verify the oral hygiene conditions of patients admitted to the wards of the Agreste Regional Hospital (ARH) of Caruaru, Pernambuco. Data collection took place through the application of a questionnaire and intraoral examinations. In the analysis, the data were entered into an EXCEL spreadsheet and the statistical calculations were obtained using the IMB SPSS program in version 23. 13.86 DMF-T was found, considered very high, and of this total the component "missing teeth" showed a higher average. There was also a greater number of decayed teeth in the average DMF-T for those who do not have piped water, 77.4% had dental calculus, and only 3.2% had changes in their mucosa, demonstrating the importance of hospital dentistry, where dental surgeons can act from prevention to treatment.

Keywords: Dentistry; Hospital Ward; Hospitals; Patient Rooms.

INTRODUCTION

Traditionally, it is believed that the insertion of the Dental Surgeon in a hospital environment occurs only by the professional in the area of Oral maxillofacial Surgery and Traumatology - CTBMF1. In contrast, currently, the practice of Dentistry in the hospital environment, in Brazil, seems to be restricted only to the performance of conventional dental procedures under general anesthesia or just to a professional of the CTBMF area. Thus, the shortage of Oral Hygiene (OH) professionals in Intensive Care Units - ICU, contributes to the neglect of maintaining the oral health of bedridden patients, due to the poor dental care provided by the medical team (DE SAUDE)[1,2].

However, given the compromised situation of the systemic health of patients in hospital, recent studies address the importance of oral health care through the performance of Hospital Dentistry, whose discussion on its mandatory nature as an area of activity was instituted starting in 2013 with the PLC 34 Law project[3,4].

In addition, the intervention of dental

procedures in the hospital environment contributes to the guarantee of public health policies at the tertiary level of health care for the population. In addition, the Dental Surgeon (DS) intervention in the hospital is reinforced by Resolution No. 162, of 03/03/2015, of the Federal Council of Dentistry (FCD), which recognizes the practice of Hospital Dentistry in Brazil[5].

Preventive, diagnostic, therapeutic, and palliative measures should be performed upon the inpatient, with the aim of improving the patients' oral and systemic condition through a multidisciplinary team in the hospital environment[4,6].

In addition, during the hospitalization period, most patients have low immunity and, due to their health condition, are often unable to maintain oral health, resulting in risks to their general health and once again showing the need for support from an oral health professional[1,7,8].

Thus, Hospital Dentistry (HD) concerns the intervention in the most common problems of the oral (buccal) cavity to the most complex, such as the presence of biofilm, caries, periodontal disease, soft tissue lesion precursors of viral and fungal infections, and other lesions of the stomatognathic system that can interfere with the prognosis of the hospitalized patient[8].

Thus, considering the importance of oral health care for patients in a nosocomial environment, the present study aimed to verify the oral hygiene condition of patients admitted to the wards of the Agreste Regional Hospital of Caruaru, PE.

MATERIALS AND METHODS

This was an observational, quantitative, cross-sectional study with an analytical perspective, developed at the Agreste Regional Hospital (ARH), a referral center for the 4th health region and the harsh macro-region of the state of Pernambuco.

The study population consisted of 248 subjects selected for convenience, with the following inclusion criteria: age equal to or greater than 18 years and an average hospital stay of 5 days. The exclusion criteria were: patients with special needs, total edentulism, and oral examination compromised by fractures in the face that resulted in limited mouth opening or trisms (lock-jaw).

The data collection, carried out between December 2018 and February 2019, consisted of two stages: in the first, a questionnaire was applied that contained general information, housing conditions, use of dental service, oral hygiene habits, oral hygiene in the period of hospitalization, and hospitalization data. Then, intraoral examinations were performed by three previously calibrated examiners. The instruments and materials used were clinical dental tray, odontoscope, clinical forceps, an explorer probe, sterile gauze, cotton, and PPE (Personal Protective Equipment).

The registration of the data of the intraoral examinations took place in a form used and validated by the SB BRASIL 2010 Project,

using the DMF-T (Decayed, Missing, and Filled Teeth), CPI (Community Periodontal Index), and mucosal change indicators. This form also allowed the inclusion of data on the situation of the hospitalized patient, such as the frequency or not of daily brushing during hospitalization, which utensils and/or chemical solution used, and the reason for hospitalization, totaling 21 questions.

A database was created using Microsoft Excel, using the SPSS program in version 23 for statistical analysis. The tests used were the Chi-squared test and Fisher's Exact test, using a margin of error of 5% and statistical association with a value of $p < 0.001$.

The ethical principles of Resolution 466/2012 were followed with approval of the study by the Research Ethics Committee of the Centro Universitário Tabosa de Almeida, CAAE 01785418.8.0000.5203, Opinion 3.046.396/2018, with all participating subjects signing the Informed Consent Form.

RESULTS

In the demographic and socioeconomic profile of the studied population, it is highlighted that the majority, corresponding to 75.0% (n=186), were male and the age group 18 to 29 years old was the most prevalent with 31.0% of the sample, compared to 30 to 39, 40 to 49, 50 to 59, and 60 or more, which showed 19.8%, 17.3%, 11.7%, and 20.2% respectively.

Of the 248 patients, 135 were white, 63 black, and 50 brown. Regarding the basic sanitation system, 164 had access and 183 had a piped water supply system, while 36 were supplied by a water truck, 23 by wells, 5 by other sources, and 1 had no access whatsoever.

There was an association between sex and the demand for dental services, as well as oral hygiene habits related to flossing and frequency of daily brushing during hospitalization, as shown in Table 1.

The association between age group and some variables that are prevalent in oral health before and during the hospitalization period is shown in table 2, where it is seen that the percentage that had already been to the dentist was lower among those surveyed who were 18 to 39 years old (86.5%). Also, the carrying out of habits inherent to oral health represented the lowest percentages in most variables among the age group of 60 years or more.

As for the DMF-T, the average was 13.86, and of this total, the missing teeth component was the one with the highest mean (average of 10.25 with a percentage of 73.95%), followed by filled teeth (average of 2.31 with a value equal to 16.67%) and the remainder corresponded to the mean of decayed teeth (1.30 with a value of 9.38%).

There was a statistically significant association between the mean DMF-T, going to the dentist, and the female gender. To search for the relationship between social conditions and oral health, it was decided to collect data from the water supply system, verifying that the average number of decayed teeth was higher for those who did not have running water (Table 3).

Table 4 shows data on the presence of soft tissue injuries and periodontal changes, with an emphasis on the high prevalence of individuals with the presence of dental calculus.

Table 1 – Avaliação da ida ao dentista e da higiene bucal segundo o sexo – Caruaru, PE, Brasil, 2019.

Variable	Male		Famale		Group Total		P value
	N	%	n	%	n	%	
Have you been to the dentist?							p(1) = 0.013*
Yes	163	87.6	61	98.4	224	90.3	
No	23	12.4	1	1.6	24	9.7	
Total	186	100.0	62	100.0	248	100.0	
When was your last appointment?							p(1) = 0.749
Less than 6 months	48	29.4	18	29.5	66	29.5	
Between 6 months and 1 year	23	14.1	11	18.0	34	15.2	
Over 1 year	92	56.4	32	52.5	124	55.4	
Total	163	100.0	61	100.0	224	100.0	
Do you use dental floss?							p(1) = 0.026*
Yes	30	16.1	18	29.0	48	19.4	
No	156	83.9	44	71.0	200	80.6	
Total	186	100.0	62	100.0	248	100.0	
How often do you change your							p(2) = 0.828
Toothbrush?	3	1.6	1	1.6	4	1.6	
Has no brush	121	65.1	43	69.4	164	66.1	
Every 3 months	46	24.7	15	24.2	61	24.6	
Every 4 and 6 months	16	8.6	3	4.8	19	7.7	
Between 7 months and 1 year	186	100.0	62	100.0	248	100.0	
During hospitalization, is your oral hygiene performed every day?							p(1) = 0.739
Yes	162	87.1	55	88.7	217	87.5	
No	24	12.9	7	11.3	31	12.5	
Total	186	100.0	62	100.0	248	100.0	
Daily brushing frequency during hospital stay							p(1) = 0.023*
Does not perform	24	12.9	7	11.3	31	12.5	
Once a day	56	30.1	9	14.5	65	26.2	
Two to three times a day	96	51.6	45	72.6	141	56.9	
More than 3 times a day	10	5.4	1	1.6	11	4.4	
Total	186	100.0	62	100.0	248	100.0	

(*) Significant association at 5%
(1) Through the Chi-squared test
(2) Through Fisher's exact test.

Table 2 – Assessment of going to the dentist and oral hygiene according to age group - Caruaru, PE, Brazil, 2019.

Variable	Age Group in Years								P value
	18 to 39		40 to 59		60 or more		Group Total		
	N	%	n	%	N	%	n	%	
Have you been to the dentist?									p[(1)] = 0.049*
Yes	109	86.5	70	97.2	45	90.0	109	86.5	
No	17	13.5	2	2.8	5	10.0	17	13.5	
Total	126	100.0	72	100.0	50	100.0	126	100.0	
When was your last appointment?									p[(1)] = 0.150
Less than 6 months	37	33.9	22	31.4	7	15.6	37	33.9	
Between 6 months and 1 year	18	16.5	10	14.3	6	13.3	18	16.5	
Over 1 year	54	49.5	38	54.3	32	71.1	54	49.5	
Total	109	100.0	70	100.0	45	100.0	109	100.0	
Do you use dental floss?									p[(1)] = 0.160
Yes	30	23.8	12	16.7	6	12.0	30	23.8	
No	96	76.2	60	83.3	44	88.0	96	76.2	
Total	126	100.0	72	100.0	50	100.0	126	100.0	
How often do you change your toothbrush?									p[(2)] = 0.013*
Has no brush	-	-	1	1.4	3	6.0	-	-	
Every 3 months	92	73,0	48	66.7	24	48.0	92	73.0	
Every 4 and 6 months	27	21,4	18	25.0	16	32.0	27	21.4	
Between 7 months and 1 year	7	5,6	5	6.9	7	14.0	7	5.6	
Total	126	100,0	72	100.0	50	100.0	126	100.0	
During hospitalization, is your oral hygiene performed every day?									p[(1)] = 0.005*
Yes	114	90.5	66	91.7	37	74.0	114	90.5	
No	12	9.5	6	8.3	13	26.0	12	9.5	
Total	126	100.0	72	100.0	50	100.0	126	100.0	
Daily brushing frequency during hospital stay									p[(1)] = 0.008*
Does not perform	12	9.5	6	8.3	13	26.0	12	9.5	
Once a day	34	27.0	20	27.8	11	22.0	34	27.0	
Two to three times a day	70	55.6	45	62.5	26	52.0	70	55.6	
More than 3 times a day	10	7.9	1	1.4	-	-	10	7.9	
Total	126	100.0	72	100.0	50	100.0	126	100.0	

(*) Significant association at 5%
(1) Through the Chi-squared test
(2) Through Fisher's exact test.

Table 3– DMF-T and components according to sex, visits to the dentist, and water supply - Caruaru, PE, Brazil, 2019.

DMF-T and components	Sex			Visit to the Dentist			Water supply		
	Male	Famale	P value	Yes	No	P value	Piped Mean ± SD	Not Piped (Median)	P value
Number of respondents	186 1.44 ± 2.47 (0,00)	62 0.90 ± 2.17 (0.00)	p⁽¹⁾ = 0.059	224 1.28 ± 2.49 (0.00)	24 1.50 ± 1.44 (1.00)	p⁽¹⁾ = 0.039*	183 1.08 ± 2.35 (0.00)	65 1.94 ± 2.47 (1.00)	p⁽¹⁾ < 0.001*
Decayed	2.14 ± 3.24 (1.00)	2.82 ± 3.58 (1.00)	p⁽¹⁾ = 0.086	10,43 ± 9,40 (7,00)	8.54 ± 8.82 (6.50)	p⁽¹⁾ = 0.279	2.43 ± 3.57 (1,00)	1.97 ± 2.57 (1.00)	p⁽¹⁾ = 0.755
Obturados	9.25 ± 8.86 (6.0)	13.24 ± 10.15 (10.50)	p⁽¹⁾ = 0.007*	2,50 ± 3,44 (1,00)	0.50 ± 1.10 (0.00)	p⁽¹⁾ < 0.001*	10.26 ± 9.54 (7.00)	10.22 ± 8.85 (8.00)	p⁽¹⁾ = 0.657
CPO-D	12.82 ± 8.34 (11.00)	16.97 ± 8.85 (17.00)	p⁽¹⁾ = 0.001*	14,21 ± 8,59 (13,00)	10.54 ± 8.54 (9.00)	p⁽¹⁾ = 0.030*	13.77 ± 8.88 (12.00)	14.12 ± 7.98 (13.00)	p⁽¹⁾ = 0.605

(*) Significant difference at 5%

(1) Through the Mann-Whitney test.

Table 4– Evaluation of the presence of dental calculus and changes in the mucosa - Caruaru, PE, Brazil, 2019.

Variable	n	%
Total	**248**	**100.0**
Bleeding		
Yes	36	14.5
No	212	85.5
Calculus		
Yes	192	77.4
No	56	22.6
Pockets		
None	220	88.7
Shallow	27	10.9
Deep	1	0.4
Mucosal Alterations		
Yes	8	3.2
No	240	96.8
Hypothesis		
None	240	96.8
Leukoplakia	2	0.8
Fissured tongue	2	0.8
Pseudomembranous candidiasis	1	0.4
Erythematous candidiasis	1	0.4
Fibroma	1	0.4
Leukoplakia and fissured tongue	1	0.4

DISCUSSION

The present study characterized the sociodemographic and oral health conditions of patients admitted to the Agreste Regional Hospital, in addition to assessing oral hygiene habits. Most of the subjects studied at the ARH were male and were aged between 18 and 29 years old, likely due to the assistance profile aimed at meeting urgent/emergency situations arising from external causes, especially traffic accidents. The high number of male individuals in the age group found can be justified by traffic accidents involving this profile. According to data from the Ministry of Health, between 2017-2018, the death of men in traffic accidents was 80% and the death rate increased in the age group in question, showing a 10-fold increase in risk when compared to other groups[9,10].

According to the latest National Oral Health Survey[11], with regard to adults, the average DMF-T was 16.75 in the 35-44 age group and 27.53 in the 65-74 age group, with lower rates for the northeast. Thus, a similarity was found between the averages of the DMF-T of the Brazilian population and of the individuals who were admitted to the hospital that constituted the data collection for this research. Amaral *et al.* (2018) in an analogous study, carried out in a public hospital in São Paulo, also detected a similar mean DMF-T (17.9), and, like another study[12], there was a higher prevalence of "missing teeth", revealing that oral health care is still mutilating, not rehabilitating.

According to the stratification of the World Health Organization, the prevalence of caries among the subjects studied is very high[13], in association with factors such as a diet rich in sucrose, a lower degree of personal hygiene instruction, and difficulty in accessing dental treatment. One study[14] also points out associations between the prevalence of dental caries and the lack of basic sanitation and running water.

It was also possible to measure the association between prevalence of decayed teeth and a lack of running water in the sample of this study. However, it is known that the incorporation of fluoridated compounds in the water supply results in a decrease in the prevalence of caries and should, therefore, be guaranteed to all Brazilians, according to current legislation[15,16].

The number of individuals with access to dental services has increased in the country, this fact can be attributed to the progressive implementation of oral health teams in the Family Health Strategy Teams (FHS) as well as the "Brasil Sorridente" program, which institutes the National Policy of Oral Health, ensuring greater interest and financing for oral health[17,18]. On the other hand, even with these advances, there are still variations in the degrees of access related to demographic differences (sex and age)[19,20], such as those seen in the results of the present study.

Thus, women still occupy a more frequent place in visits to health services[21]. Results point to a significant association between female gender, going to the dentist, flossing, and frequency of toothbrushing during hospitalization (Table 1). Similar results are found in the studies by Pascoaloti *et al.*[22]. From this perspective Maia *et al.*[23] justifies that the DMF-T is directly related to going to the dentist, since, according to the author's study, the probability of tooth loss decreases from 65-66% when the dental visit took place annually.

Oral hygiene with a toothbrush using soft bristles and fluoride toothpaste performed 3 times a day is considered the best practice for mechanical control of biofilm. There is even greater efficacy when associated

with mouthwash for 1 minute with 0.12% chlorhexidine digluconate. For patients unable to perform mouthwashes, hygiene can be performed with gauze soaked in the same solution[24]. It is important to note that the continuous use of 0.12% chlorhexidine contributes to staining of teeth, loss of taste, and interference of bacterial flora; therefore, its use must be guided and controlled by the DS that works in the hospital[25].

Although the majority of individuals participating in this research reported that they perform oral hygiene during hospitalization, thus recognizing the relationship of this practice with the general health status[9], many neglect the adequate frequency of brushing their teeth daily[26]; especially among those over 60 years of age. Among them, there is less visit to the dentist and worse frequency of toothbrush changes per year. Such factors can represent an aggravating factor for both the recovery and success in treatment due to the presence of the most varied microorganisms[27].

Similar results on the practice of oral hygiene are found in the research by Macedo et al.[8]. Moreover, a study[28] with a pediatric sample revealed similar results, highlighting the devaluation of oral hygiene during the hospitalization period and corroborating an unfavorable prognosis of the hospitalized patient.

However, the patient must be guided and receive adequate oral hygiene even if there are no teeth. Massages are suggested, aiming at strengthening the gums and cleaning the dental prostheses to remove food debris, which can cause the patient some discomfort as well as shelter for the proliferation of microorganisms.

Hospitalized patients are more likely to develop systemic complications due to poor oral health, and the oral cavity can also be compromised by drug interactions and/or changes present. Therefore, there is a need for protocols for chemical and mechanical control of oral biofilm to prevent diseases and improve systemic and oral conditions[5,29].

Most hospitals hold oral hygiene to the technical nursing team, under the guidance of nurses and doctors, but the lack of specific knowledge contributes to the poor maintenance of oral health[25]. Therefore, this situation requires the performance of the DS in preventive activities, for example, through oral health education that is important for incorporating oral hygiene of patients into the hospital routine, aiming at reducing dental biofilm and possible infections of the oral microbiota which can worsen their clinical situation and, consequently, extend the patient's stay in the ICU[8,30].

Findings from the present study indicate that there is a high prevalence of dental calculus, understood as the result of dental biofilm mineralization. There is a direct association between the presence of biofilm and respiratory tract infections in patients admitted to hospital, since one cubic millimeter of biofilm contains millions of bacteria serving as a pathogen reservoir and can cause local damage or distance infections[8]. During this period, many are immunosuppressed and are sometimes unable to maintain oral health, with the possibility of lesions on the mucosa, such as: Candidiasis, ulcerations, gingival bleeding, and other opportunistic infections[8,31].

Similarly, Amaral et al.[9] showed that hospitalized patients needed invasive dental treatment such as tooth extractions (40.8%), endodontics (23.3%), dental pain (26.2%), and abscesses (7.8%), highlighting the need for dental intervention in hospitalized patients. A more recent study8 also observed the presence of dental biofilm (73.3%), dental calculus (70.5%), mucous pallor (32.4%), and partial (25%) or total (6.7%) edentulism. In addition, the most common oral changes in hospitalized patients were prosthetic stomatitis (8.6%), ulcerative lesions (2.9%) and leukoplakia (2.9%).

However, in the ARH sample, the field of study of this research, only 3.2% showed changes in the mucosa, with diagnostic hypotheses of: leukoplakia, fissured tongue, pseudomembranous candidiasis, erythematous candidiasis, and fibroma. The low prevalence of oral lesions identified in the present study may be a result of the length of stay of the surveyed patients being less than the time needed for the formation of changes in the mucosa and periodontal pockets, especially deep ones[32].

Previous studies[8,9,30] added to the results of the research carried out at the ARH, show the precariousness of the oral health condition of hospitalized patients and, again, the need for a Dental Surgeon (DS) concurrently with hospitalization. This would aim at the dental intervention through procedures promoting health, disease prevention, and dental treatments in the hospital environment. This will foster a faster recovery and better quality of life for inpatients.

Finally, a significant association was measured between the DMF-T and the visit to the dentist, so that the inclusion of Hospital Dentistry in tertiary care services can promote the first contact of patients with the Dental Surgeon and, consequently, treatment of their oral health; especially since 9.7% (n=24) of the sample in this study never had access to oral health services, although they needed treatment.

CONCLUSION

The results of this study indicate that the oral health condition of patients in the ARH wards is precarious with a high DMF-T index, with a higher prevalence of "missing teeth" and a high frequency of dental calculus. However, there was a low prevalence of lesions in the oral mucosa, which can be justified by the short hospital stay. The results also reveal a devaluation of oral hygiene care during the hospitalization period, which can corroborate for an unfavorable prognosis, increasing the patient's stay in the hospital.

The profile reveals the existing social inequities that interpose barriers to access dental services, partially justifying the oral health problems encountered. Furthermore, the need for intervention in hospital dentistry is emphasized, in which the dental surgeon would be responsible for the oral health of hospitalized patients, acting in measures of promotion, prevention and treatment, mitigating the impacts of the imbalance of the oral microbiota that can occur during hospitalization and, thus, promoting a period of hospitalization with better quality for the patient.

REFERÊNCIAS

1. Tunes RS, Tunes U. Odontologia Hospitalar: status atual. J Dent Pub H. 2018;9(1):5-7.

2. Fernandes AS, Emiliano GBG, Martins ARLA, Souza GCA. Conhecimentos e práticas de saúde bucal por pacientes internados e equipe hospitalar. Rev Cienc Plur. 2016;2(3):03-16.

3. Rio de Janeiro. Lei Ordinária nº 6580 de fevereiro de 2013. Dispõe sobre a participação permanente de cirurgiões-dentistas nas atividades de prevenção e controle da infecção hospitalar nos hospitais, casas de saúde, maternidades e estabelecimentos congêneres, que mantenham serviços de assistência médica sob a modalidade de internação, no âmbito do estado do Rio de Janeiro. Disponível em: [http://alerjln1.alerj.rj.gov.br/CONTLEI.NSF/f25571cac4a61011032564fe0052c89c/584ea8e60854605883257c1d0058b37b?OpenDocument]. Acesso em: 26 de fev. 2018.

4. Albuquerque DMS, Bedran NR, Queiroz TF, Salomão Neto T, Senna AA. A importância da presença do cirurgião-dentista na equipe multidisciplinar das unidades de tratamento intensivo. Rev Flum Odon. 2016;1(45).

5. Macedo MP, Souza LCD, Corrêa RGCF, Lopes FF. Aspects of dental care for patients hospitalized in a medical clinic from a university hospital. ABCS Health Sci 2020;45 https://doi.org/10.7322/abcshs.45.2020.1198

6. Silva JAS, Pasetti LA, Morais, TMN. Histórico da odontologia em ambiente hospitalar. In: Morais TMN, Silva A. Fundamentos da Odontologia em Ambiente Hospitalar/UTI. Rio de Janeiro: Elsevier; 2016. p. 1-18.

7. Blum DFC, Silva JAS, Baeder FM, Della Bona A. A atuação da Odontologia em unidades de terapia intensiva no Brasil. Rev Bras Ter Intensiva. 2018;30(3):327-332.

8. Silva CHF, Benedito FCS, Joaquim DC, Lopes KS, Martins Neto RS, Leite ACRM. Odontologia hospitalar: condições bucais e hábitos de higiene oral de pacientes internados. Braz J Surg Clin Res. 2019; 26 (1): 06-10.

9. Amaral COF, Belon LMR, Silva EA, Nadai A, Amaral Filho MSP, Straioto FG. The importance of hospital dentistry: oral health status in hospitalized patients. Rev Gaúch Odontol. 2018; 66(1): 35-41.

10. Brasil. Ministério da Saúde. Saúde Brasil 2017: uma análise da situação de saúde e os desafios para o alcance dos objetivos de desenvolvimento sustentável [recurso eletrônico]. Secretaria de Vigilância em Saúde. Departamento de Vigilância de Doenças e Agravos não Transmissíveis e Promoção da Saúde. Brasília, 2018. p. 298.

11. Brasil. Ministério da Saúde. Secretaria de Atenção à Saúde. Secretaria de Vigilância em Saúde. SB Brasil 2010: Pesquisa Nacional de Saúde Bucal: resultados principais. Brasília: Ministério da Saúde; 2012.

12. Santos LR, Lopes FF, Neves MIR, Alves CMC. Cárie e higiene bucal em pacientes especiais de um hospital psiquiátrico do nordeste brasileiro. Rev Pesq Saúde. 2017;18(1): 45-48.

13. Agnelli PB. Variação do índice CPOD do Brasil no período de 1980 a 2010. Rev Bras Odontol. 2015;72(1);10-5.

14. Müller IB, Castilhos ED, Camargo MBJ, Gonçalves H. Experiência de cárie e utilização do serviço público odontológico por escolares: estudo descritivo em Arroio do Padre, Rio Grande do Sul, 2013. Epidemiol Serv Saúde. 2015;24(3):759-770.

15. Ferreira RGLA, Bógus CM, Marques RAA, Menezes LMB, Narvai PC. Fluoretação das águas de abastecimento público no Brasil: o olhar de lideranças de saúde. Cad Saúde Pública. 2014;30(9):1884-1890.

16. Cruz MGB, Narvai PC. Cárie e água fluoretada em dois municípios brasileiros com baixa prevalência da doença. Rev Saude Publica. 2018;52:28.

17. Schroeder FMM, Sassi RAM, Meucci RD. Condição de saúde bucal e utilização de serviços odontológicos entre idosos em área rural no sul do Brasil. Cienc & Sau Col, 2020;25(6):2093-2102.

18. Herkrath FJ, Vettore MV, Werneck GL. Contextual and individual factors associated with dental services utilisation by Brazilian adults: A multilevel analysis. PloS One. 2018;13(2):e0192771.

19. Bulgareli JV, Faria ET, Cortellazzi KL, Guerra LM, Meneghim MC, Ambrosano GMB, et al. Fatores que influenciam o impacto da saúde bucal nas atividades diárias de adolescentes, adultos e idosos. Rev Saúde Púb. 2018;52(44):1-5.

20. Teixeira AKM, Roncalli AG, Noro LRA. Iniquidades na assistência odontológica ao longo do curso de vida de jovens: um estudo de coorte. Ciên & Saú Colet. 2018;23(1):249-258.

21. Botton A, Cúnico SD, Strey MN. Diferenças de gênero no acesso aos serviços de saúde: problematizações necessárias. Mudan – Psicolo da Saú. 2017;25(1):67-72.

22. Pascoaloti MIM, Moreira GE, Rosa CF, Fernandes LA, Lima DC. et al. Odontologia hospitalar: desafios, importância, integração e humanização do tratamento. Rev. Ciênc. Ext. 2019;15(1):20-35.

23. Maia FBM, Sousa ET, Sampaio FC, Freitas CHSM, Forte FDS. Tooth loss in middle-aged adults with diabetes and hypertension: Social determinants, health perceptions, oral impact on daily performance (OIDP) and treatment need. Med Oral Patol Oral Cir Bucal. 2018; 23(2):203-210.

24. Nogueira JWS, Jesus CAC; Higiene bucal no paciente internado em unidade de terapia intensiva: revisão integrativa. Rev Eletr Enf. 2017;19:1-5.

25. Miranda AF. Odontologia Hospitalar: Unidades de Internação, Centro Cirúrgico e Unidade de Terapia Intensiva. Rev Ciênc Odont. 2018;2(2):5-13

26. Lages VA, Moita Neto JM, Mello PMVC, Mendes RF, Prado Júnior RR. O efeito do tempo de internação hospitalar sobre a saúde bucal. Rev Bras Pesq Saúde. 2014;16(2):30-38.

27. Pyysalo MJ, Mishra PP, Sundstrom K, Lehtimäki T, Karhunen PJ, Pessi T. Increased tooth brushing frequency is associated with reduced gingival pocket bacterial diversity in patients with intracranial aneurysms. Perr J. 2019;7:1-13.

28. Lima MCPS, Lobo INR, Leite KVM, Muniz GRL, Steinhauser HC, Maia PRM. Condição de saúde bucal de crianças internadas no Hospital Municipal Infantil de Imperatriz – Maranhão. Rev Bras Odontol. 2016;73(1):24-9.

29. Rocha AL, Ferreira EF. Odontologia hospitalar: a atuação do cirurgião dentista em equipe multiprofissional na atenção terciária. Arq. Odontol. 2014;50(4):154-160.

30. Silva IO, Amaral FR, Cruz PM, Sales TO. A importância do cirurgião-dentista em ambiente hospitalar. Rev Med. 2017;27:1-5.
31. Dutra CESV, Sanchez HF. Organização da atenção à saúde bucal prestada ao idoso nas equipes de saúde bucal da Estratégia Saúde da Família. Rev Bras Geriatr Gerontol. 2015;18(1):179-188.
32. Steffens JP, Marcantonio RAC. Classificação das Doenças e Condições Periodontais e Peri-implantares 2018: guia Prático e Pontos-Chave. Rev Odontol UNESP. 2018;47(4):189-197.

652