Epidemiological Profile of Oncology Patients Followed Up at a Reference Dental Service in the State of Ceará: a Retrospective Study

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Perfil Epidemiológico de Pacientes Oncológicos Atendidos em um Serviço Odontológico de Referência do Estado do Ceará: Estudo Retrospectivo

Perfil Epidemiológico de Pacientes Oncológicos Atendidos en un Servicio de Odontología de Referencia en el Estado de Ceará: Estudio Retrospectivo

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ABSTRACT

Introduction: Cancer patients need personalized dental care due to antineoplastic therapies to minimize the occurrence or severity of adverse effects caused on oral tissues. **Objective:** Design the epidemiological and dental profile of cancer patients followed up at a reference dentistry service in the State of Ceará. **Method:** Cross-sectional observational retrospective study, based on medical records of patients with special needs followed up at an outpatient clinic from 2017 to 2021. The variables were tabulated using Fisher's or Pearson's chi-square tests, with a confidence level of 95% with the software SPSS version 20.0 for Windows. **Results:** The majority of patients evaluated were males (55.8%), aged between 51 and 60 years (39.0%) with head and neck cancer as the most prevalent (37.7%). The main reasons for seeking dental care were pretreatment oral examination (36.4%), post-cancer treatment (22.05%) and pain (15.6%), with the majority in post-chemotherapy phase (42.9%) and after radiotherapy (39.0%). Restorative dentistry (64.9%), periodontics (59.7%) and surgery (48.1%) were the dental procedures most performed. Regarding oral hygiene, 49.2% brushed their teeth once a day and 54.5% did not use dental floss, 47.8% of these patients had a DMFT Index (decayed, missing, filled teeth) greater than 20. **Conclusion:** Approximately half of the patients sought dental care for pretreatment oral examination, however, the majority sought care post-chemotherapy and radiotherapy, which may be associated with high DMFT index.

Key words: dental care for chronically ill; patient care team; oral health.

RESUMO

Introdução: Pacientes com câncer necessitam de atendimento odontológico personalizado em virtude das terapias antineoplásicas para minimizar a ocorrência ou a gravidade dos efeitos adversos causados por essas terapias nos tecidos bucais. **Objetivo:** Traçar o perfil epidemiológico e odontológico de pacientes oncológicos acompanhados em um serviço de referência em odontologia do Estado do Ceará. **Método:** Estudo retrospectivo observacional transversal, baseado em prontuários de pacientes com necessidades especiais atendidos ambulatorialmente entre 2017 e 2021. Tais variáveis foram analisadas utilizando os testes exato de Fisher ou qui-quadrado de Pearson, adotando um nível de confiança de 95% com o *software SPSS* versão 20.0 para *Windows*. **Resultados:** A maioria dos pacientes avaliados era do sexo masculino (55,8%), com idade entre 51 e 60 anos (39,0%), sendo o câncer de cabeça e pescoço o mais prevalente (37,7%). Os principais motivos de procura por atendimento odontológico foram adequação bucal pré-tratamento de câncer (36,4%), tratamento pós-câncer (22,05%) e dor (15,6%), a maioria em fase pós-quimioterapia (42,9%) e pós-radioterapia (39,0%). Os procedimentos odontológicos mais realizados entre os pacientes foram dentística (64,9%), periodontia (59,7%) e cirurgia (48,1%). Em relação à higiene bucal, 49,2% escovavam os dentes uma vez ao dia e 54,5% não utilizavam fio dental; 47,8% desses pacientes apresentaram índice CPO-D (dentes permanentes cariados, perdidos e obturados) superior a 20. **Conclusão:** Aproximadamente metade dos pacientes procurou atendimento odontológico para adequação pré-tratamento oncológico, entretanto, a maior parte deles buscou atendimento após o fim da quimioterapia e radioterapia, o que pode estar associado ao elevado índice de CPO-D.

Palavras-chave: assistência odontológica para doentes crônicos; equipe de assistência ao paciente; saúde bucal.

RESUMEN

Introducción: Los pacientes oncológicos necesitan una atención odontológica personalizada debido a las terapias antineoplásicas, con el objetivo de minimizar la aparición o severidad de los efectos adversos que estas terapias provocan en los tejidos orales. **Objetivo:** Trazar el perfil epidemiológico y odontológico de pacientes oncológicos seguidos en un servicio de referencia en odontología en el estado de Ceará. **Método:** Estudio retrospectivo observacional transversal, basado en historias clínicas de pacientes atendidos ambulatoriamente para pacientes con necesidades especiales de 2017 a 2021. Dichas variables se tabularon mediante las pruebas de Fisher o ji-cuadrada de Pearson, adoptando un nivel de confianza del 95% en el software SPSS v20.0 para Windows. **Resultados:** La mayoría de los pacientes evaluados fueron del sexo masculino (55,8 %), con edad entre 51 y 60 años (39,0 %), siendo el cáncer más prevalente entre ellos, los de cabeza y cuello (37,7%). Los principales motivos de búsqueda de atención odontológica fueron tratamiento precanceroso de adecuación oral (36,4%), tratamiento poscanceroso (22,05%) y dolor (15,6%), siendo la mayoría en fase posquimioterapia (42,9%) y después radioterapia (39,0%). Los procedimientos odontológicos más realizados entre los pacientes fueron odontología restauradora (64,9%), periodoncia (59,7%) y cirugía (48,1%). En cuanto a la higiene bucal, el 49,2% se cepillaba los dientes una vez al día y el 54,5% no utilizaba hilo dental, donde el 47,8% de estos pacientes presentaba un índice de CPOD (dientes permanentes, con caries, perdidos y curados) superior a 20. **Conclusión:** Aproximadamente la mitad de los pacientes buscó atención odontológica para ajustar el tratamiento preoncológico, sin embargo, la mayoría de los pacientes buscó atención después del final de la quimioterapia y radioterapia, lo que puede estar asociado con la alta tasa de CPOD.

Palabras clave: atención odontológica a enfermos crónicos; grupo de atención al paciente; salud bucal.

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INTRODUCTION

Odontology for patients with special needs (PSN) has the objective to diagnose, prevent, treat and control any problem affecting the buccal health of normosistemic patients[1]. This specialty offers customized treatment to patients needing care beyond the general surgeon clinical dentist routine matched to the patients' structural, psychological, physiologic or anatomic issues[2,3].

Several etiological factors may be involved in the development of these disabilities like genetic disorders and others acquired during the life span as communicable, chronic diseases, psychiatric problems, drugs use and cancer patients[4,5].

Despite the high number of individuals needing centered-patient care due to multiple conditions, odontology courses did not include this specialty (PSN), but the Ministry of Education determined its inclusion in 2021[7].

Cancer patients submit to therapies that directly or indirectly affect the buccal cavity requiring customized care during and after the treatment[8-11].

The incidence of malignant neoplasms increases worldwide associated with high mortality rate[12], possibly deriving from lifestyle changes[13]. In the State of Ceará, malignant neoplasms were responsible for 9,766 deaths, representing 17.2% of 2018-2019 State's mortality, according to the last update of the Mortality Information System (SIM) in 2019[15].

Schilithz[16] estimated the incidence of 625,000 new cases of malignant neoplasms annually in Brazil between 2020 and 2022, the most common being skin cancer, followed by breast, prostate, rectum, colon, lung and stomach[16].

In 2019, the National Health Research (PNS) conducted by "*Instituto Brasileiro de Geografia e Estatística* (IBGE)", found 4,072 cases of cancer in Brazil for older than 18 years old adults[17]. The World Cancer Report 2014[18] published by the International Agency for Research on Cancer (IARC) estimated more than 20 million new cases of cancer in 2025, a world public problem mainly in developing countries[19-21].

Malignant neoplasms are treated with surgery, chemotherapy, radiotherapy, bone marrow transplantation, targeted molecular therapy, immune therapy or a combination of all[21].

Head and neck chemotherapy and radiotherapy usually cause adverse events on oral tissues[22]. Chemotherapy effects depend on the type, dose and frequency[23] and radiotherapy's, on local, dimension of the tissue irradiated, dose of radiation and dose fractioning[24].

The most prevalent complications are mucositis, trismus, xerostomia, dysphagia, dysgeusia, carious lesions, osteonecrosis and opportunistic infections[25-27]; the high cellular proliferation of the oral mucosa facilitates its fast compromise because antineoplastic therapies target fast growing cells mainly[24].

Ideally, the dental-surgeon should provide care to cancer patients prior to antineoplastic treatment[25], attempting to treat pre-existing oral problems to avoid complications during and after the treatment[21]. The aim is to eliminate oral infections foci, prevent and alleviate pains, reduce the severity of possible complications and provide instruction on oral hygiene[28,29]. The objective of this study is to design the epidemiologic, clinical and odontology profile of cancer patients followed-up at a reference center from 2017 to 2021.

METHOD

Observational, cross-sectional, retrospective study with data collected from patients' charts of a reference odontology service from 2017 to 2021.

Sex, age, occupation, main complaints, comorbidities, medications, frequency of tooth brushing and dental flossing, DMFT Index (decayed, missing, filled teeth) and dentistry data conducted at the university clinic have been collected.

654 charts were evaluated of which 77 met the study criteria: chart's correct completion and consultation during the study period. Incomplete charts, missing treatments data and patients consulted elsewhere were excluded.

Upon data collection, the quantitative variables were analyzed and expressed as absolute and relative (%) frequency after application of Fisher's exact test for samples with less than five elements or Pearson's chi-square test for samples with more than five with confidence interval of 95% with the software SPSS[30] version 20.0 for Windows.

The Institutional Review Board of "*Centro Universitário Christus*" report number 4.836.355/2021 (CAAE (submission for ethical review): 47560621.7.0000.50.49) approved the study in compliance with Directive 466/12 of the National Health Council (CNS)[31].

RESULTS

Of the 77 patients with cancer, 43 (55.8%) were males and 34 (44.2%), females. Of these, 30 (39.0%) were in the age range of 51-60 years old, 21 (27.3%) between 41 and 50 years and 11 (14.3%) between 61 and 70 years, the mean age was 51.81 (±11.92 years). 33 (42.9%) were active workers and 23 (29.9%) were retired (Table 1).

The most common malignant neoplasm for 15 (19.5%) study patients was oral cancer followed by breast cancer in ten patients (13.0%). Other malignant

neoplasms were pharynx and larynx cancers (11.7%) and multiple myeloma (11.7%) (Table 1).

During anamnesis, it was found that 28 (36.4%) patients had some type of cancer only, 33 (42.9%) had cancer and other systemic comorbidity and 16 (20.8%) had more than one comorbidity in addition to cancer (Table 1). The most prevalent comorbidity in cancer patients was hypertension (23.4%) followed by diabetes (11.7%).

16 cancer patients (20.8%) did not use any medication, 18 (23.4%), only one, 17 (22.1%), two medications and 26 (33.8%), three or more. The medications most utilized were antihypertensive (29.9%), antineoplastic (19.5%) and gastric antiacids (14.3%) (Table 1).

28 (36.4%) patients sought the dental-surgeon for pretreatment oral examination, 17 (22.0%) for post-treatment oral examination and 12 (15.6%) due to pain as main complaints. (Table 2).

Table 2 shows the patient's antineoplastic treatment phase when seeking dental care: 33 (42.9%) were in post-chemotherapy, 30 (39.0%) in post-radiotherapy and 33, more than one type of treatment.

The odontogram guided the treatment plan for each patient: 30 (54.5%) had between four and nine consultations scheduled, 14 (25.5%), up to three and 11 (20.0%), more than ten. Of these, 50 (64.9%) consultations were for dentistry procedures, 46 (59.7%), periodontics and 37 (48.1%), surgical procedures (Table 2).

Previous antibiotic prophylaxis before dental treatment was performed for 20 (26.0%) patients and 31 (40.3%) needed antibiotics during treatment initiating the medication before the procedure and continuing with the regular dose for seven days or regular use to treat some bacterial infection.

The patient's decayed, missing, filled teeth were registered based in the odontogram and a DMFT index for each patient was calculated. A large portion of the sample represented by 33 individuals (47.8%) presented DMFT higher than 20 and for 29 (42.0%), the index was between 10 and 19 and only seven (10.1%), the DMFT was lower than ten (Table 3). The mean of DMFT for cancer patients was 19.57 (±8.56).

Most of the patients (49.2%) claimed they brushed their teeth once a day and 23 (35.4%), twice. 42 (54.5%) patients did not floss once a day, 30 (39.9%), once a day and five (6.5%), twice (Table 4).

The relation between the patient's DMFT and oral hygiene habits (brushing and flossing) was analyzed and revealed that DMFT higher than 20 could possibly be associated with not flossing (p = 0.040) (Table 5).

Table 1. Distribution of cancer patients clinical data

	n (%)
Age	
0 to 10 years	0 (0%)
11 to 20 years	0 (0%)
21 to 30 years	3 (3.9%)
31 to 40 years	7 (9.1%)
41 to 50 years	21 (27.3%)
51 to 60 years	30 (39.0%)
61 to 70 years	11 (14.3%)
71 to 80 years	4 (5.2%)
80 years or more	1 (1.3%)
Sex	
Female	34 (44.2%)
Male	43 (55.8%)
Occupation	
Not informed	4 (5.2%)
Student	2 (2.6%)
Active worker	33 (42.9%)
Unemployed	15 (19.5%)
Retired	23 (29.9%)
Malignant neoplasm	
Oral cancer	15 (19.5%)
Breast cancer	10 (13.0%)
Larynx and pharynx cancer	9 (11.7%)
Multiple myeloma	9 (11.7%)
Non-Hodgkin's lymphoma	7 (9.1%)
Thyroid cancer	5 (6.5%)
Comorbidities	
Only oncology	28 (36.4%)
Oncology with comorbidity	33 (42.9%)
Oncology with more than one comorbidity	16 (20.8%)
Medications	
None	16 (20.8%)
One	18 (23.4%)
Two	17 (22.1%)
Three or more	26 (33.8%)

DISCUSSION

Cancer patients need dental follow-up to keep their quality-of-life. Although only 77 patients were investigated, 123 cancer cases in adults older than 18 years of age were found in Ceará in 2019[16], an expressive result.

Of the 123 cases diagnosed in Ceará, 62.6% were females and 38.2%, males, at the age range of 30-59 years old (40.5%) as the most affected, followed by 65-74 years old (25.19%). For the current investigation, 55.8% were males and 44.2%, females, corroborating the findings of

Table 2. Cancer patients motive for dental consultation and procedures

Main Complaint	n (%)
Pretreatment oral examination	28 (36.4%)
Post-treatment oral examination	17 (22.0%)
Pain	12 (15.6%)
Evaluation	8 (10.4%)
Esthetics/Rehabilitation	6 (7.8%)
Extraction	4 (5.2%)
No complaint	2 (2.6%)
Antineoplastic Treatment	
Pre-chemotherapy	8 (10.4%)
Trans chemotherapy	13 (16.9%)
Post-chemotherapy	33 (42.9%)
Pre-radiotherapy	9 (11.7%)
Trans radiotherapy	2 (2.6%)
Post-radiotherapy	30 (39.0%)
Pre-bone marrow transplantation	14 (18.2%)
Post-bone marrow transplantation	1 (1.3%)
Dental procedures performed	
Periodontic	46 (59.7%)
Dentistry	50 (64.9%)
Endodontics	29 (37.7%)
Surgery	37 (48.1%)
Prosthesis	15 (19.5%)
Laser therapy	13 (16.9%)
First consultation	3 (3.9%)

Table 3. Cancer patients' DMFT Index extracted from charts

	Mean (±)
Decayed teeth	3.46 (±4.97)
Missing teeth	10.05 (±8.78)
Filled teeth	6.05 (±5.74)
DMFT	**n (%)**
<10	7 (10.1%)
10-19	29 (42.0%)
20+	33 (47.8%)

Table 4. Frequency of daily brushing and flossing

	n (%)
Daily brushing	
0	7 (10.8%)
1	32 (49.2%)
2	23 (35.4%)
3+	3 (4.6%)
Daily flossing	
0	42 (54.5%)
1	30 (39.0%)
2	5 (6.5%)

the study by Bispo et al.[32], where 65.6% were males and 34.4%, females. The most prevalent age ranges for the study sample were 41-50 years (27.3%) and 51-60 years (39.0%), consistent with the three most prevalent age ranges of the aforementioned study: 40-49 years (18%), 50-59 years (29.5%) and 60-69 years (34.4%).

The National Cancer Institute (INCA)[33] estimated that prostate cancer was the most prevalent malignant neoplasm for the State in 2023 with 3,120 cases in males, followed by breast cancer in 3,080 females. The other most prevalent neoplasms were trachea/bronchus/lung (1,400 cases), stomach (1,460 cases), colon/rectum (1,210 cases), cervix (1,030), thyroid (1,190 cases) and oral cavity (760 cases)[33].

Oral cancer (19.5%) was the most prevalent among dental patients according to the current investigation, with pharynx and larynx cancers accounting for 11.7% of the sample, an expressive result for head and neck cancers considering these three types. Specialized care should be provided by dental-surgeons referred by head and neck physicians.

Breast cancer was the second most prevalent in Ceará and Brazil according to IBGE[17] and INCA[18,33]. Multiple myeloma was found in 11.7% of the patients analyzed although rare (1% of the malignant neoplasms)[34], a significant result because of the oral manifestations as increase of bleeding, more susceptibility to infections and risk of osteonecrosis due to bisphosphonates[35]. These patients should submit to dental examination for diagnostic and treatment of oral problems if they underwent previous preparation with possible immunosuppression[36].

79.3% of the sample used one or more systemic continuous use drugs. Pinto et al.[37] concluded that 67.9% of cancer patients used one or more medications, with antipsychotic representing 22.9% and anticonvulsants, 13.2%. For the current study sample, antihypertensive (29.9%), antineoplastic (19.5%) and antiacids (14.3%) were the most utilized.

Most of the patients sought dental care for pretreatment oral examination (36.4%) and 35.13% were in pre-treatment phase for bone marrow transplantation, 18.91%, in pre-chemotherapy and 18.91%, in pre-radiotherapy.

Head and neck radiotherapy causes dental morbidities depending on patient's history and cancer treatment, but most of the complications can be avoided with previous dental care before, during and after radiotherapy. Pre-

Table 5. Relation of DMFT with oral hygiene

	DMFT			
	<10 (%)	**10-19 (%)**	**20+ (%)**	***p***
Frequency of daily brushing				
1	0 (0.0%)	2 (7.7%)	5 (18.5%)	0.839
2	4 (57.1%)	12 (46.2%)	12 (44.4%)	
3	3 (42.9%)	10 (38.5%)	9 (33.3%)	
4	0 (0.0%)	1 (3.8%)	0 (0.0%)	
6	0 (0.0%)	1 (3.8%)	1 (3.7%)	
Frequency of daily flossing				
0	2 (28.6%)	13 (44.8%)	23 (69.7%)*	0.040
1	5 (71.4%)*	16 (55.2%)*	8 (24.2%)	
2	0 (0.0%)	0 (0.0%)	2 (6.1%)	

*$p < 0.05$, Pearson's chi-square or Fisher's exact test.

radiotherapy oral examination is able to detect potential risks and define the best moment for the intervention and reduce late morbidities[38].

Pain was the third major complaint to seek dental care. Exams and curative procedures were the main motives for 32.8% of the patients as concluded by Rolim et al.[39], followed by pain (22.4%); this is also corroborated by the literature that to minimize adverse effects of antineoplastic treatments on the oral cavity, mainly those causing pain, pretreatment cancer care is required to stabilize oral health before initiating antineoplastic treatments to avoid complications that may discontinue the treatment[25].

Pretreatment cancer care is the ideal phase for oral procedures[22] because it can eliminate potential future oral complications from antineoplastic therapies and interrupt the therapy[10]. Even though, only 10.4% sought dental care pre chemotherapy and 11.7%, before radiotherapy. However, the patients were not interviewed to know whether those in trans chemotherapy or radiotherapy or who had completed cancer treatment have submitted to pretreatment oral examination, which is a limitation of the study.

Seeking dental care before the antineoplastic treatment is relevant to detect potential oral problems with evaluation of carious, endodontic and periapical lesions, radicular resorption, periodontal diseases, furcation lesions, dental mobility, dental impactation and oral pathologies[22].

13 of the study patients (16.9%) were in chemotherapy treatment and two (2.6%) in radiotherapy, suggesting that referral for dental care by the oncologist may not be at required levels. If the patient has not been submitted to previous follow-up, pre-existing infection foci may induce intraoral complications and development of infection, potentially discontinuing the treatment[35].

Dental follow-up during cancer therapies is intended to keep buccal health, treatment of side effects and strengthening the importance of oral hygiene[25]. Side effects treated during cancer therapy are mucositis, xerostomia, trismus and opportunistic infections mainly[28], however, cases of oral infections should be treated urgently.

Patients should continue being followed-up by dental team upon completion of cancer therapy because of late complications as caries, trismus and osteonecrosis[10], to control side effects and prevent or reduce the onset of other complications and to keep buccal health[28].

Most of the patients consulted at the clinic were in post-chemotherapy (42.9%) and post-radiotherapy (39.0%), suggesting they might have been submitted to previous dental care and guided to continue dental follow-up or sought dental care due to late side effects. At this phase of antineoplastic treatment, oral complications are common affecting their quality-of-life[25].

A systematic review and meta-analysis by Haynes et al.[29] pointed out the articles that associated dental care to cancer patients with improvement of survival and satisfactory consultations were associated with best 5-year survival rate.

Chemotherapy, radiotherapy and surgery are the main oncologic treatments, in addition to bone marrow transplantation, the two first may cause side effects to oral tissues due to toxicity and impacting the quality-of-life of cancer patients[23].

Acute and chronic side effects may appear during or after antineoplastic treatment in patients with head and neck cancer and other sites treated with systemic procedures[10]. Acute side effects occur in the course of the treatment and are usually reversible and chronic side

effects, after the end of the treatment, are often irreversible or difficult to treat[10].

Nearly 80% of the patients receiving radiotherapy of head and neck develop mucositis because epithelium basal cells are affected by radiation[10]. Methotrexate, fluorouracil, doxorubicin, dactinomycin and bleomycin are associated with chemotherapy with their effects potentialized when floxuridine, mitomycin, vincristine and vinorelbine[23] are utilized

Mucositis is a painful inflammation and ulceration of the buccal mucosa with erythema[24] due to the death of oral epithelium basal cells caused by radiotherapy or chemotherapy[20]. It is the most frequent acute reaction of these treatments and bone marrow transplantation on oropharynx, floor of the mouth, jugal mucosa, tongue and lips caused by chemotherapy[20].

Another common complication is xerostomia defined as dry mouth associated or not with the reduction of the salivary flow[10,24]. It can be caused either by chemotherapy or radiotherapy because both cause dysfunction of salivary glands[23,25]. Doxorubicin is the drug mostly associated with this side effect from chemotherapy[10]; in radiotherapy, salivary glands are affected[33] if the gland's Gray (Gy) threshold of radiation supported is surpassed.

Dysgeusia and dysphagia are often found. Dysgeusia is a taste disorder, one of the first changes occurred during head and neck radiotherapy due to the atrophy of taste buds associated with xerostomia[26]. Dysphagia is defined as difficulty to swallow, possibly associated with odynophagia, a painful symptom while swallowing[10].

Pseudomembranous candidiasis is the most common fungal infection caused by *Candida albicans*[10] found in these patients[24] as removable white plaques causing pain and sensation of local burn[26] often detected in the tongue and lips[20].

Herpes simplex (HSV-1) is the most common viral infection for cancer patients with the appearance of ulcers and blisters[26], in addition to multiple ulcers on buccal and perioral mucosa[20].

Dental caries is a chronic side effect caused by radiotherapy of head and neck, developing within three to six months after the end of radiotherapy and are able to destroy dental elements in one year[20]. The prevalence in irradiated patients is between 25% and 30%, often associated with dysfunction of the parotid gland[35]. This type of caries is aggressive and fast growing[28], initiating in vestibular facies and teeth cervical region[10].

Trismus appears in nearly 45% of the patients irradiated, it is a limitation of the buccal opening due to the contraction of mastication muscles[12] caused by radiation ionizing exposure[26]. It onsets in average in three days after the first radiotherapy session[10].

Maxillary osteonecrosis is one of the most severe oral manifestations potentially caused by radiotherapy and chemotherapy. It is the exposure of the devitalized bone in the irradiation site that does not heal within at least three months[20]. The necrosis occurs by hypocellularity, hypovascularization and hypoxia caused by radiotherapy, leading to the reduction of osteoblastic and osteoclastic activities, mostly affecting the mandibula[12]. This complication affects 10% of the patients irradiated spontaneously or due to trauma, endodontic and periodontal infections, most common when the radiation dose is high than 60 Gy[33]. It may appear during radiotherapy but is more common from two to five years after the end of the treatment post teeth extraction[10].

Because of innumerous antineoplastic therapy side effects affecting the patients, no specific field in the dental chart was found to evaluate these oral effects.

Since this population is expressive at the clinic, it is suggested to include a dental field in the charts to collect information about the changes the patients underwent and to what extent their quality-of-life is compromised. As enforced by the new resolution of the Ministry of Education of 2021[5], odontology courses will include classes addressing patients with special needs.

64.9% of the study patients needed dentistry procedures, 59.7%, periodontic procedures, 48.1%, surgical procedures and 37.7%, endodontic procedures. In addition, 16.9% of the patients submitted to laser therapy. Low-level laser therapy or photobiomodulation is the application of relatively low-level diode laser that stimulates the activity of the cells, promoting the production of growth factors, proliferation of keratin and local angiogenesis[23]. It is effective to prevent and repair some oral manifestations caused by oncologic treatments[25].

The application of low-level laser is beneficial with the activation of local microcirculation, angiogenesis, anti-inflammatory and analgesic effects, stimulation of the growth and cellular regeneration, production of collagen and reduction of edema[23]. Laser therapy can be applied mainly in mucositis, xerostomia, dysgeusia, trismus and osteonecrosis of the maxilla, the side effects caused by radiotherapy and chemotherapy[26].

26.0% of the study patients needed antibiotic prophylaxis and 40.3%, antibiotic therapy in some moment of the dental treatment. The use of antibiotic in cancer patients is based in the immunosuppression caused by antineoplastic treatments that leaves the patient susceptible to infections[27]. Since most of dental procedures caused temporary bacteremia, the use of antibiotic prophylaxis or antibiotic coverage can be prescribed for these patients.

Irradiated patients may develop osteoradionecrosis. In case of invasive procedures as teeth extraction, endodontic procedures and implants, preventive antibiotic therapy is recommended[10]. Studies suggest that antibiotics reduce the risk of osteoradionecrosis compared with osteoradionecrosis without antibiotics and the most utilized are penicillin and clindamicine[20].

Antibiotic resistance is a significant threat to global public health, but efforts have been made to develop public policies to ensure the restricted use of these medications as some studies identified strains with reduced sensitiveness to some antibiotics. Its prophylactic use is beneficial if correctly prescribed and selected[40].

The buccal health of oncologic patients is a determinant of adverse events caused by chemotherapy and radiotherapy. According to World Health Organization – WHO, DMFT index evaluates dental decay in grades of severity: very low (0 to 11), low (1.2 to 2.6), moderate (2.7 to 4.4), high (4.5 to 6.5) and very high (6.6 onwards)[27].

Rolim et al.[39] obtained a mean DMFT index of 11.46 in cancer patients, and 47.8% of the patients had DMFT higher than 20 followed by 42.0% with an index between 10 and 19 and only 10.1% reached an index lower than10. It is quite clear that buccal health of cancer patients need more attention.

In the same study[39], 34.5% of the patients brushed their teeth at least once a day as opposed to the present study, where 49.2% brushed the teeth at least once a day and 54.5% had ever flossed daily, a possible motive for the high DMFT index. Most of the patients (69.7%) who had ever flossed had DMFT index higher than 20 and for those who flossed at least once a day the index was within 10 and 19.

In addition, the DMFT index of the age range 65-74 years in the Northeast Region was 27.73, for the age range 35-44 years, 17.23 and for the age range of 15-19 years, 5.01 according to the last national dental health study conducted in 2010. Huang et al.[41] noticed that cancer patients irradiated presented high DMFT index while patients in chemotherapy, more cases of dental infection.

Studies point out the influence of buccal health deficiency on cancer progression by the change in the development of the tumor and host immune response because it stimulates the chronic inflammation, activation of neutrophils, inhibition of cellular apoptosis and bacterial production of cancerigenous substances as sulfur volatile compounds[29].

CONCLUSION

Most of the oncologic patients consulted at the PSN clinic were males in the age range of 51-60 years old. Nearly half of them sought dental care for pretreatment oral examination while in the phase of pre bone marrow transplantation. Head and neck cancer (including oral, pharynx, larynx and thyroid) was the most prevalent and the majority of the study population sought dental care post chemotherapy and radiotherapy, possibly associated with high DMFT index.

This type of dental care is paramount for a successful antineoplastic treatment. The rising number of malignant neoplasms worldwide pushed dental-surgeons to meet this demand, an important step during the academic formation.

CONTRIBUTIONS

Clarissa Pessoa Fernandes Forte contributed substantially to the study design, acquisition, analysis and/or interpretation of the data, wording and critical review. Evllen do Vale Castro, Ana Beatriz Torres Cavalcante and Paulo Goberlânio de Barros Silva contributed to the acquisition, analysis and/or interpretation of the data, wording and critical review. Thinali de Sousa Dantas and Anderson Maia Meneses contributed to the wording and critical review. All the authors approved the final version to be published.

DECLARATION OF CONFLICT OF INTERESTS

There is no conflict of interests to declare.

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