Oncology and need of oral care for older persons

Oncologia e necessidade de cuidados orais para pessoas idosas

Received: 2023-07-16 | Accepted: 2023-08-18 | Published: 2023-08-21

Alexandre Franco Miranda
ORCID: https://orcid.org/0000-0002-9965-1406
Dental Service, Hospital - Hospital Sírio-Libanês, Brasília; Postgraduate Program in Gerontology and Faculty of Dentistry - Universidade Católica de Brasília (UCB), Taguatinga; Faculty of Dentistry - Centro Universitário do Planalto Central Apparecido dos Santos (UNICEPLAC), Gama, Brazil
E-mail: alexandrefmiranda@gmail.com

ABSTRACT
The promotion of oral health is essential for excellent care support for older people with cancer. Educational, preventive and interventional measures based on interdisciplinary planning, with a focus on oral health, minimize the direct and indirect effects of antineoplastic treatment. This non-systematic review aims to address clinical guidelines and the dentist's performance in the treatment of older persons with cancer (chemotherapy, radiotherapy, bone marrow transplantation, oral cancer and palliative care), contributing with clinical guidelines and information to oncologists and the multidisciplinary team. The effective participation of the dentist in assisting the aging adult with cancer is very important, with the main focus on adapting the oral cavity and minimizing the effects of antineoplastic treatment on systemic health and quality of life.

Keywords: Medical Oncology; Health of Elderly; Oral Health; Dental Service, Hospital; Quality of Life

RESUMO
A promoção da saúde oral é essencial para um suporte de cuidado de excelência ao idoso com câncer. Medidas educativas, preventivas e intervencionistas baseadas em planejamento interdisciplinar, com foco na saúde oral, minimizam os efeitos diretos e indiretos do tratamento antineoplásico. Esta revisão não sistemática visa abordar orientações clínicas e de atuação do cirurgião dentista no tratamento de idosos com câncer (quimioterapia, radioterapia, transplante de medula óssea, câncer bucal e cuidados paliativos), contribuindo com orientações clínicas e informações aos oncologistas e equipe multidisciplinar. A participação efetiva do cirurgião dentista na assistência da pessoa idosa com câncer é muito importante, tendo como foco principal adequar a cavidade oral e minimizar os efeitos do tratamento antineoplásico na saúde sistêmica e na qualidade de vida.

Palavras-chave: Oncologia; Saúde do Idoso; Saúde Bucal; Unidade Hospitalar de Odontologia; Qualidade de Vida
INTRODUCTION

Dental care support is essential for educational, preventive and interventionist assistance based on multi-disciplinary strategies and conducts focused on well-being and quality of life, demanded by older persons undergoing cancer treatment (Oncogeriatrics) (Yuwanati et al., 2021; Lee et al., 2021).

Dental care actions must be constant and aim at providing adequacy to oral health before, during and after anti-cancer treatment. Thus, surgeon/dentist integration to support aging adults under treatment for several clinical conditions, in hospital environment (outpatient centers, surgical centers) during hematopoietic cells’ (bone marrow) transplantation, intensive care units and palliative care, is essential (Sroussi et al., 2017; Dhaliwal et al., 2022; Gobbi et al., 2023).

Is important highlighting that cancer treatment (chemotherapy, radiotherapy, immunotherapy) can interfere with oral health, depending on the toxicity of medicines and/or radiation doses (whenever it involves the oral cavity area). Accordingly, it is very important for the medical team, involved health professionals, patients and their families, caregivers and dentists to acknowledge the relevance of the oral-systemic health and oncology relation (Daugèlaité et al., 2019; Yuwanati et al., 2021).

Older persons must be referred to detailed oral condition evaluation, demanded by elderlies undergoing cancer treatment (Oncogeriatrics), to rule out likely infectious points, inflammation processes, or any factor capable of interfering with systemic health and cancer treatment. Thus, the medical and multi-disciplinary teams in charge must have such a knowledge in order to provide excellency-level care (Dibello et al., 2021; Gobbi et al., 2023).

Extraction of both root remains and teeth seen as infectious points must be carried out; moreover, restorations of decayed teeth with composite resin and/or glass ionomer, sub and supragingival scaling, endodontic treatment of teeth with periapical lesions or of lesions associated with pulpitis, adjustments in dental prostheses and restorations/teeth that may traumatize soft tissues are some clinical recommendations for adequacy to oral medium, prior to cancer treatment. It is quite important having a good professional relationship with the medical team in charge in order to better determine the right moment for a clinical intervention (Sroussi et al., 2017; Chen, 2021; Dibello et al., 2021; Yuwanati et al., 2021; Gobbi et al., 2023).

The older population undergoing cancer treatment oftentimes suffer with other comorbidities, such as diabetes, high blood pressure, lung disorders, kidney diseases, other heart diseases, neurological disorders and neurodegenerative issues. Therefore, dentists must have a broader perception of their interventionist clinical conducts, as well as open dialogue with the whole professional team, geriatric patients and their family members, in order to provide the best care possible (Yuwanati et al., 2021; Lee et al., 2021; Dibello et al., 2021; Sedrak et al., 2021).
METHODS

A non-systematic review was performed with articles published in the Pubmed database only. Articles published between the years 2017 to 2023 were selected.

The search strategy with the following word associations was used: cancer and oral health; oncogeriatrics and oral health; oral health and oncology; oral care and oncology; oral problems and oncology; cancer and elderly and oral health; oral problems and oncology and elderly; totaling 22 articles related to the theme.

LITERATURE REVIEW AND DISCUSSION

Chemotherapy and oral care in older persons

Chemotherapy type and dose set the main toxicity effects on the oral cavity of older patients undergoing cancer treatment (Elad et al., 2022). Dental surgeons must be aware of it and have open dialogue with the medical team in charge to plan and perform educational, preventive and interventionist measures, based on the individuality of each patient (Lee et al., 2021).

Geriatric patients must be subjected to dental actions aimed at oral health adequacy; Thus, infectious points, inflammatory processes and oral issues that might interfere with both the systemic conditions and the planned oncology strategy must be ruled out (Dibello et al., 2021; Gobbi et al., 2023).

Oral mucositis, stomatitis, mucosal bleeding, lichenoid reactions, xerostomia, dysgeusia and the emergence of opportunistic infections caused by immunosuppression resulting from medication are the main oral issues associated with chemotherapy, target therapy and immunotherapy (Sroussi et al., 2017; Hong et al., 2019; Elad et al., 2022).

Fungal candidiasis can be related to cancer treatments. Intense oral hygiene care associated with the administration of topical (oral cavity) and systemic antifungals (wider systemic drug action) help treatment, in many cases (Hong et al., 2019).

Laser-therapy must be carried out to minimize radiotherapy effects and mucositis development, given its photobiomodulation, anti-inflammatory, analgesic action and support for healing processes (Zadik et al., 2019; de Lima et al., 2019).

Care prescriptions, such as the use of artificial saliva, lip balm, mouthwash with concentrated iced chamomile tea, mouthwash with glutamine and iced saline solution, can be measures to promote relief during the most critical moments of treatment, when there is straight interference with the oral cavity (Sroussi et al., 2017; Yarom et al., 2020; Lee et al., 2021; Alsubaie et al., 2021; de Lima et al., 2022).

Radiotherapy and oral care in older persons

Older patients often suffer with collateral effects of radiotherapy on the oral cavity, mainly because of the administered radiation doses. It is essential emphasizing that damage bond to
radiotherapy is cumulative; it emerges from 14 to 21 days after treatment (Sroussi et al., 2017; Daugėlaitė et al., 2019; Elad et al., 2020).

The most harming clinical effects can be immediate (they emerge during treatment and recede a few weeks after it is over) or late, when they emerge after treatment is over and last longer, besides the possibility of being irreversible (de Lima et al., 2020; Elad et al., 2020).

Xerostomia (“dry mouth feeling”), oral mucositis and dysgeusia (taste disturbance) are the main collateral effects related to radiation. On the other hand, xerostomia, dysgeusia, trismus (difficulty opening the mouth), osteoradionecrosis and radiation caries develop after radiotherapy is over (Chen, 2019; Yarom et al., 2019; Lee et al., 2021; Davies et al., 2021).

It is important highlighting that geriatric patients often present saliva-production reduction, and this sensation can increase due to treatment. Artificial saliva prescription and the ingestion of liquids can minimize these main effects (Sroussi et al., 2017; Yarom et al., 2020).

Oral and prostheses hygiene measures must be effectively followed to minimize biofilm accumulation and oral pH drop. These conducts can mitigate the development of opportunistic infections, such as candidiasis (Lee et al., 2021; Dibello et al., 2021).

Laser-therapy must be applied to minimize radiotherapy effects and the development of mucositis, given its photobiomodulation, anti-inflammatory, analgesic action and support to the healing process (Sroussi et al., 2017; Daugėlaitė et al., 2019; Hong et al., 2019; Zadik et al., 2019; Elad et al., 2020; Lee et al., 2021).

Thus, dental care must be provided before, during and after radiotherapy, mainly in the region involving head and neck (oral cavity) (Sroussi et al., 2017; Elad et al., 2020; Davies et al., 2021).

**Hematopoietic Stem Cell Transplantation (HSCT) – Bone Marrow Transplantation (BMT)**

Adequacy to oral health is the number one priority before bone marrow transplantation. In other words, it is necessary ruling out likely infectious points, inflammation processes, pain and oral lesions that have direct systemic influence on patients’ quality of life (Yuwanati et al., 2021; Gobbi et al., 2023).

It is very important to provide dental support to influence the main effects of a specific treatment, as well as the likely occurrence of associated oral issues, with emphasis on reduced saliva flow and/or sensation of dry mouth (xerostomia), change in taste and the emergence of oral mucositis (Sroussi et al., 2017; Hong et al., 2019).

Laser therapy starts right at hospitalization for BMT purpose, in order to bio-stimulate oral mucosa areas, and preserve them from, or minimize, the emergence of oral mucositis, since it can cause pain and discomfort (Zadik et al., 2019).

Routine conducts focused on adequacy of oral health must be implemented before, during and after hospitalization. The use of artificial saliva, toothbrushes with extra-soft bristles, prophylactic paste with fluoride and 0.12% chlorhexidine, associated with mouthwash with 0.12%
chlorhexidine (twice a day - morning and night), and proper dental prostheses cleaning are some of the essential recommendations during BMT (Chen, 2019; Gobbi et al., 2023).

The dental team must join the multi-disciplinary team involved in BMT, and its activities must be planned with rigor, along with the caregiving team, during and after treatment, to contribute to a more effective care provision to older patients (Daugėlaitė et al., 2019; Yuwanati et al., 2021; Lee et al., 2021; Davies et al., 2021).

Graft versus host disease (GVHD) can occur after BMT. It is featured by the emergence of lichenoid lesions that, oftentimes, need proper clinical and pharmacological support by the medical team in charge (Gobbi et al., 2023).

**Figure 1** - Oral mucositis on the lateral border of the tongue in an older woman. **Figure 2** - Oral mucositis on the lips and tongue of older patient undergoing cancer treatment - difficulty eating and pain.

*Figures 1 and 2 - ethical and professional responsibility - Prof Dr Alexandre Franco Miranda, Brasilia, Brazil.*
**Figure 3** - Oral dryness and decreased salivary flow in geriatric patient undergoing antineoplastic treatment. **Figure 4** – Oral candidiasis associated with older person undergoing cancer treatment - after 25 radiotherapy sessions in the oral region - low immunity and interference in quality of life.

*Figures 3 and 4 - ethical and professional responsibility - Prof Dr Alexandre Franco Miranda, Brasilia, Brazil.*

**Figure 5** - Dental caries by radiation in older patient. **Figure 6** – Clinical situation after the geriatric patient underwent 33 sessions of radiotherapy in the oral region - lateral tongue.

*Figures 5 and 6 - ethical and professional responsibility - Prof Dr Alexandre Franco Miranda, Brasilia, Brazil.*
Figure 7 - Radiodermatitis associated with radiotherapy in the neck region in older woman undergoing antineoplastic treatment. Figure 8 - Osteonecrosis associated with the use of medication after tooth extraction in the posterior region - bone exposure – geriatric patient.

*Figures 7 and 8 - ethical and professional responsibility - Prof Dr Alexandre Franco Miranda, Brasilia, Brazil.

Palliative care

Dignity and support with care aimed at the well-being and quality of life of older adults must drive actions focused on adequacy of the oral health. And less invasive clinical conducts must be prioritized to minimize physical and psychological pain of weakened older persons (Venkatasalu et al., 2020; Dhaliwal et al., 2022; de Arruda et al., 2022).

Oral hygiene measures, laser therapy, oral and lip moisture, and clinical conducts aimed at providing comfort to patients can be prioritized as strategies implemented for multi-disciplinary care involving medical team, geriatric patients and their family members (Zadik et al., 2019; Lee et al., 2021).

Knowing the death process and the broadest forms to promote care provision must be part of the routine of dentist who work with older patients. Personal values, family members, religiosity-spirituality, and the medical history are important elements to be learned during clinical practices (Venkatasalu et al., 2020; Dhaliwal et al., 2022; de Arruda et al., 2022).

Oral cancer and older person

Regular visits to the dentist and self-examination are preventive measures capable of favoring the early diagnosis of oral cancer. It is essential to analyze oral lesions with irregular borders that take longer than 2 weeks to heal. Dentists must guide elderlies, and other caregiving professionals, about these issues (Lima et al., 2021).

Dentists are also in charge of making a biopsy and of sending the collected material for proper histopathological analysis of suspicious oral lesions. It is worth highlighting that surgical and
safety conducts, in cases of malignant lesions, can be resective and interfere with psychological, self-esteem, functional skills and quality of life of older persons (Yuwanati et al., 2021; Lee et al., 2021; de Arruda et al., 2022).

Keeping the routine of oral care is essential, besides avoiding of negative conditions that could have systemic interference (Lee et al., 2021; Dibello et al., 2021; Gobbi et al., 2023).

**Figure 9** - Oral dryness, accumulation of biofilm and mucus in the palate of older person under palliative care - oncology. **Figure 10** - Advanced oral cancer - posterior region and oropharyngeal limit.

*Figures 9 and 10 - ethical and professional responsibility - Prof Dr Alexandre Franco Miranda, Brasilia, Brazil.

**Geriatric dentistry and strategies in Oncology**

It is essential to maintain the oral health of older adults throughout all clinical stages (before, during and after) of treatment, regardless of cancer type (Daugėlaitė et al., 2019; Lee et al., 2021; Lima et al., 2021; Gobbi et al., 2023).

Acting in geriatric dentistry based on gerontology strategies is a great differential for dental surgeons working with older adults who undergo cancer treatment. Having the ability to fully observe patients by associating empathy, humanized perception and dialogue are some of the differentials for the clinical practice (Davies et al., 2021; Dhaliwal et al., 2022).

Clinical guidelines at all stages of antineoplastic treatment can contribute to better oral care support for older patients with cancer (Table 1).
Table 1 - Clinical guidelines at all stages of antineoplastic treatment - contribute to better oral care support for older patients with cancer.

<table>
<thead>
<tr>
<th>Oral care support for older patients with cancer</th>
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</thead>
<tbody>
<tr>
<td><strong>Pre-treatment</strong> (Sroussi et al., 2017; Hong et al., 2019; Yuwanati et al., 2021; Lee et al., 2021; Gobbi et al., 2023)</td>
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<tr>
<td>- Need for detailed clinical and radiographic assessment of oral health (investigation and indication of treatment);</td>
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<td>- Eliminate oral problems with infectious, inflammatory, pain and other complaints that interfere in the systemic conditions and in the evolution of the antineoplastic treatment;</td>
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<tr>
<td>- The main dental treatments involve the areas of periodontics, stomatology, endodontics, restorative dentistry, dental prosthesis and oral surgery;</td>
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<tr>
<td>- Maintain a daily routine of oral hygiene, with emphasis on the teeth, back of the tongue and dental prostheses;</td>
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<tr>
<td>- Adjustments of dental prostheses to minimize trauma and oral lesions;</td>
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<tr>
<td>- Manufacture of individualized oral devices in the case of treatment of mouth/head and neck cancer to help protect healthy tissues during radiotherapy.</td>
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<td><strong>Throughout treatment</strong> (Sroussi et al., 2017; Hong et al., 2019; Daugelaitė et al., 2019; Chen, 2019; Hong et al., 2019; Zadik et al., 2019; Yarom et al., 2019; Yarom et al., 2020; Yuwanati et al., 2021; Lee et al., 2021; Lima et al., 2021; Davies et al., 2021; Gobbi et al., 2023)</td>
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<tr>
<td>1 - Effective and daily actions of oral hygiene and prostheses are essential throughout the entire treatment;</td>
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<td>2 - Positive reinforcement (motivation) and explanation of relevance contribute to satisfactory oral health;</td>
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<tr>
<td>3 - The lack of effective oral hygiene measures, unsatisfactory salivary flow and low immunity are factors that favor the appearance of fungal oral lesions (candidiasis);</td>
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<tr>
<td>4 - Guidance on oral hygiene and prescription of local (nystatin) and systemic (fluconazole) antifungals can minimize these negative effects on health;</td>
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<tr>
<td>5 - Photodynamic therapy (PDT) is another antifungal strategy associated with low-intensity laser therapy combined with methylene blue (0.005% or 0.01%). It must be carried out by qualified professionals;</td>
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<tr>
<td>6 - It is important to have a multidisciplinary dialogue with the medical team in case of pain and odontogenic infection;</td>
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<tr>
<td>7 - Adequate drug prescription according to the individuality of each clinical case (antimicrobials, anti-inflammatory, analgesics and corticoids);</td>
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<tr>
<td>8 - Carrying out elective surgical procedures, when necessary - multidisciplinary planning together with the responsible medical team and stable systemic condition;</td>
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Oral mucositis and inflammatory lesions are painful and related to the toxicity of chemotherapy drugs and radiotherapy—they interfere with daily activities and quality of life;

The main areas affected by mucositis are: lips, buccal mucous membranes (cheeks), palate, tonsillar pillars, lateral borders of the tongue, tip of the tongue, among other regions;

Mouthwash with concentrated chamomile tea and/or with glutamine can help to attenuate the anti-inflammatory process of oral mucositis;

The use of anesthetics (Lidocaine 2% or 5%) can relieve pain and local discomfort caused by oral mucositis;

The use of lozenges and spray with anti-inflammatory and analgesic action can provide relief from pain and discomfort caused by oral mucositis—benzydamine hydrochloride;

Maintain dialogue with the nutrition team, family members and caregivers in the most acute stages of oral mucositis—avoid acidic, citrus, sticky and seasoned foods;

The use of artificial saliva can help reduce the feeling of discomfort such as dry mouth (xerostomia), in addition to favoring the comfortable use of dental prostheses;

Use of regenerative lip balms based on vitamin E—provide comfort and favor the healing process.

**Post-treatment** (Sroussi et al., 2017; Daugėlaitė et al., 2019; Chen, 2019; Yarom et al., 2019; Yarom et al., 2020; Elad et al., 2020; Lima et al., 2021; Gobbi et al., 2023)

Clinical follow-up with the dentist to maintain satisfactory oral health;

Carrying out necessary and rehabilitating dental treatments (depending on the individuality of each patient and their systemic condition);

It is recommended to carry out elective dental treatments to complete the clinical procedures previously carried out, as well to solve new clinical needs.

Radiotherapy applied in the head and neck region may contribute to post-radiation xerostomia, radiation caries, osteoradionecrosis and trismus.

Clinical follow-up by the dentist and the entire care team is important.

More complex and invasive treatments involving dental implantations must be evaluated in a multi-disciplinary way, based on patients’ systemic conditions, in order to avoid future oral issues and quality of life loss.

*Elaborated by the author.*
FINAL CONSIDERATIONS

Geriatric dentistry, hospital dentistry and oncologists integration leads to integral and multi-disciplinary assistance to older persons before, during and after cancer treatment.

It is essential to have effective dentists’ participation in assistance provided to older people undergoing cancer treatment, based on educational, preventive, interventionist and oral health preservation activities. It must be done in order to minimize direct and indirect effects on this population’s systemic health and quality of life.

Source of Funding

FAPDF (Foundation for Research Support of the Federal District), Brasilia, Brazil – Process n. 00193-00001773/2022-71.
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