

Evaluation of Oral Health Status and Quality of Life of Head and Neck Cancer Patients after Radiation Therapy

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SUMMARY

Introduction Neoplasm of the head and neck can be treated surgically, by radiation, chemotherapy, or using combination of these methods. In contrast to surgical and radiation treatment which mostly have a local effect, chemotherapy in addition to local have also a systemic effect. Both XRT in oral region and chemotherapy can affect oral health. The aim of this study was to assess the oral health status and quality of life in patients with head and neck cancer after receiving radiation therapy.

Material and Methods Quantitative, analytical and cross-sectional research methods along with the application of UW-QOL questionnaire version 4, were used. Seventy one patients of the outpatient facilities at two cancer hospitals in the state of Paraíba, Brazil, were included in the study. Oral health status was evaluated using the Lockhart and Clark criteria. Linear Poisson and Logistic Regression tests were applied to assess associations between the variables using a significance level of 5%.

Results Of the total number of patients, 71.83% were male, the average age was 62 years and 57.74% were non-Caucasian. The group that received dental monitoring and follow-up attained the highest (830.13) Quality of life scores, including: "pain" (93.13) and "taste" (83.07). The highest score for oral health in the group that did not receive dental monitoring and follow-up treatment was 4.08 for "oral hygiene".

Conclusion Dental monitoring and follow-up should begin before radiation therapy, given that both the illness and methods used for the treatment negatively affect patients' quality of life.

Keywords: neoplasm; radiotherapy; quality of life; head; neck; oral health

INTRODUCTION

It is estimated that 13% of deaths in 2007 were caused by some form of cancer and 80% of those deaths occurred in countries with low or middle income per capita. The World Health Organization estimates that by 2030, 27 million new cases of cancer will be diagnosed, 17 million people will die of cancer related causes and 75 million people will be living with cancer [1].

Head and neck cancer can be treated by: surgery, radiation therapy (XRT), chemotherapy (chemo) or a combination of the three depending on the definitive diagnoses, the stage and location of cancer; patient's overall health and healthcare services available (physical and human resources). Each of the above treatment methods involves distinct procedures. Surgery is performed directly in the area afflicted by cancer and may result in functional and/or aesthetic limitations. XRT has a location-specific effect while chemo has a systemic effect. These last two treatment methods impair the integrity and functioning of oral cavity because they destroy not only neoplastic cells, but also normal cells at the same time [2, 3].

Most patients diagnosed with head and neck cancer are submitted to high doses of XRT in broad radiation fields that include oral cavity, maxilla, mandible and salivary

glands. Antineoplastic therapy is therefore associated with various adverse reactions which may occur in both, acute phase (during the treatment or in the weeks immediately after) or chronic phase (months or years after XRT). The severity of acute oral complications will depend on how much these structures are included in the radiation field. The main side effects of XRT are: radiodermatitis, mucositis, xerostomia, opportunistic infections (viral, bacteria and fungicidal), dysgeusia, dysphagia, trismus, radiation tooth decay and osteoradionecrosis [4, 5].

Even though technological advances in cancer treatment now offer the possibility of a cure, the mortality and morbidity of malign neoplasms raise questions about humanization of this type of care and its repercussion on the patients' quality of life (QOL), inviting to study not only its role as a procedure to prolong life but also how life can be lived better [6].

The definition of QOL has changed over the years and its precise meaning is now more subjective and multi-dimensional [7]. In 1994, the WHOQOL Group established a concept that defined quality of life as "individuals' perceptions of their position in life in the context of culture and value systems in which they live and in relation to their goals, expectations, parameters and social relationships". It is a broad concept with complex rami-

fications that include individuals' physical health, their psychological state, level of independence, social relationships and relationship with their surroundings [6].

The active and early participation of oral health professionals aiming to develop preventive and therapeutic strategies and involvement in education and rehabilitation of these patients is indispensable when considering questions related to the quality of life during and after XRT [8].

This study aimed to assess oral health status and quality of life in two groups of head and neck cancer patients who completed radiation therapy treatment. One group received monitoring and dental guidance before radiation therapy and the other group did not receive any monitoring.

MATERIAL AND METHODS

The project was sent to the Research Ethics Committee at the Paraíba State University (UEPB), where it was approved and registered under number 0039.0.133.000-12. The patients signed the Informed Consent Form (TCLE), authorizing their participation in accordance with the Resolution No. 196/96 of the Ministry of Health, which regulates research on humans (Brazil, 1996). All information collected was treated as confidential maintaining patients' privacy.

A quantitative, analytical and cross-sectional study was performed by applying the Quality of Life Questionnaire elaborated by the University of Washington (UW-QOL), Version 4. This version was valid at the time of application.

The sample of patients with malign neoplasms in the area of head and neck who underwent XRT was chosen and included 71 patients who received exclusively external radiation therapy treatment, or in conjunction with surgery and/or chemotherapy, treated at the outpatient facilities at the Napoleão Laureano Hospital (HNL) and the Paraíba Assistance Foundation (FAP).

The following selection criteria were applied: both genders and >18 years who underwent external radiation therapy for malign tumor treatment in the region of head and neck, exclusively or in conjunction with surgery and/or chemotherapy and were done with prescribed antineoplastic treatment.

Data were collected between February and November 2012 at both cancer reference hospitals in the state of Paraíba (Brazilian Northeast): at the HNL Stomatology outpatient facility in the city of João Pessoa, Paraíba and the outpatient facility assigned to the Oral Health Program Applied to Oncology (SBOnco), a service devoted to providing dental treatment to patients undergoing antineoplastic treatment at the FAP in the Dr. Ulisses Pinto Oncology Center in the town of Campina Grande, Paraíba.

The data were recorded in the validated Portuguese language version of the questionnaire known as UW-QOL version 4, prepared by the Department of Otolaryngology, Head and Neck Surgery at the University of Washington (2003) to assess the QOL of head and neck cancer patients. This questionnaire was widely used in a variety of studies. The questionnaire consists of 12 specific ques-

tions about different aspects of QOL: pain, appearance, activity, recreation, swallowing, chewing, speech, shoulder, taste, saliva, mood and anxiety [7]. Oral health status was measured according to the Lockhart and Clark criteria [9], assessing teeth, periodontal status and oral hygiene.

The data were statistically analyzed using the R software version 2.15.1 (The R Foundation for Statistical Computing, Vienna, Austria). Two regression models were used: the Poisson Linear Regression model and the Logistic Regression Model (using a 5% significance level as the parameter).

RESULTS

The sample consisted of 71 patients with average age of 62 years who underwent head and neck radiation therapy. The variable "age" was grouped "less than 60" and "60+ years old" for the statistical test only and 60.56% of those interviewed were 60+ years old. Fifty-one patients (71.83%) were male, among which 41 (57.74%) were married and 57.74% were non-Caucasian (Table 1).

Given that none of the patients underwent cervical lymphadenectomy, the questionnaire variable "shoulder" was excluded from the study, thus leaving 11 of 12 categories. The patients' general quality of life was assessed by totaling the score of each one of the remaining 11 variables (total score) which ranged between 0 and 1,100. Composite score was calculated using the mean of the 11 variables ranging between 0 and 100, with 0 representing the worst quality of life and 100 the best. The patients were split into two groups, those who did not receive dental monitoring and follow-up and those who had monitoring and follow-up. The highest value of the total score was 830.13, pertaining to patients who had dental follow-up whereas the same group showed the highest composite score of 74.56 (Table 2).

Individual analysis of each one of the eleven UW-QOL questionnaire variables showed that patients who did not

Table 1. Socio-demographic characteristics of the respondents
Tabela 1. Sociodemografske odlike ispitanika

Variable Varijabla	Number of respondents (%) Broj ispitanika (%)	
Gender Pol	Male Muški	51 (71.83)
	Female Ženski	20 (28.16)
Marital status Bračno stanje	Single Samac	9 (12.67)
	Married Oženjen/udata	41 (57.74)
	Divorced Razveden(a)	11 (15.49)
	Widow Udovac/udovica	10 (14.08)
Skin Koža	White Bela	30 (42.25)
	Non white Nije bela	41 (57.74)
Age (years) Starost (godine)	<60	28 (39.43)
	≥60	43 (60.56)

Table 2. Distribution of UW-QOL scores according to dental monitoring**Tabela 2.** Raspodela vrednosti ocena prema upitniku UW-QOL u zavisnosti od stomatološkog nadzora

Parameter Parametar	Dental monitoring Stomatološki nadzor	
	Yes/Da	No/Ne
Number of patients Broj bolesnika	51	20
Total mean score Ukupna srednja vrednost	830.13	633.40
Average score compound Srednja ocena	74.56	57.58

Table 3. Assessment of dental health according to the Lockhart and Clark criteria (1994) [9]**Tabela 3.** Procena oralnog zdravstvenog stanja prema kriterijumima Lokharta i Klarka (1994) [9]

Dental status Stanje zuba	Dental monitoring Stomatološki nadzor	Score Ocena	SD
Caries Karijes	Yes/Da	3.31	1.64
	No/Ne	3.80	1.40
Periodontal condition Stanje parodontijuma	Yes/Da	3.50	1.24
	No/Ne	3.75	1.08
Oral hygiene Oralna higijena	Yes/Da	3.60	1.40
	No/Ne	4.08	1.35

SD – standard deviation

SD – standardna devijacija

receive dental follow-up had the lowest score for the variable "recreation" (65.68) while the highest score was for "pain" (93.13). For the group that did not receive dental follow-up, the variable with the lowest mean score was "saliva" and the highest mean score was for "pain" (32.4 and 85, respectively).

Assessment of oral health based on the Lockhart and Clark criteria [9], where the scores ranged between 1 and 5 (5 representing the worst oral health status) showed that patients who did not receive dental follow-up had the highest (the worst oral health) score in the three analyzed variables. The same group scored 3.8 for carious lesions meaning "visible" to "generalized extensive" decay. Their periodontal status showed score of 3.75 representing minimum dental mobility to advanced pathology (generalized mobility). Oral hygiene score of 4.8 represented precarious oral hygiene (Table 3).

The significant correlation between variables in patients who received dental treatment and those who did not receive dental monitoring was found for "saliva" ($p < 0.001$) and "the presence of problems over the seven days prior to the interview" ($p = 0.0245$). Regarding socio-biological-demographic conditions, no variables presented a statistically significant correlation ($p < 0.05$) regardless of dental monitoring during radiation therapy.

DISCUSSION

This study assessed 71 patients who underwent radiation therapy in the region of head and neck; male patients outnumbered female patients by a factor of approximately 2.5:1. The average age was 62 years with majority of patients ≥ 60 years old and of non-Caucasian ethnicity.

Ângelo et al. [7] reported the average age for head and neck cancer patients 63.5 years, ranging between 40 and 83 years old, 73.2% were male, 56.1% were non-Caucasian and 46.3% were married. These results also corroborated with other studies [10, 11].

Assessing the quality of life through the application of the UW-QOL questionnaire is a complex process, involving general and specific questions about different variables that affect head and neck cancer patients. Analysis of the results showed that the total UW-QOL mean score for those patients who did not receive dental monitoring or follow-up was relatively low – approximately half the maximum score possible – 633.4 and a composite score was 57.58. Similar results were found in the study carried out by Lima et al. [12]. A Brazilian study on laryngectomized patients undertaken in the city of Curitiba, in which all patients received dental monitoring and follow-up presented a total UW-QOL mean score of 900.25 [13].

Weymuller et al. [14] in a prospective study on 549 patients with head and neck cancer who underwent XRT showed that in the first three months after the treatment the quality of life score was significantly lower. After six months the quality of life was improved with a tendency to improve for up to one year, attaining stability between one and three years after the treatment, as patients learn to live with treatment sequelae. Therefore both the post-radiation therapy and pre-operative periods are critical phases when patients are in very vulnerable stage and their quality of life is compromised.

Upon analysis of the mean scores for each individual UW-QOL variable for both groups, it was observed that the variables "saliva", "taste" and "chewing" presented the worst scores for the group that did not receive dental monitoring and follow-up. These results also affected the total mean score for this group because "saliva" and "taste" were among best scored in the group that received dental monitoring and follow-up and the variable "chewing" received much higher score than the same variable in the other group.

UW-QOL questionnaire was used to assess the quality of life in 143 patients with oral cavity and oropharyngeal squamous cell carcinoma in the study conducted by Matias [15] who identified variables "chewing", "anxiety" and "swallowing" as the worst scored. On the other hand, the most relevant variables over the last seven days prior to application of the questionnaire were "pain", "swallowing", "chewing" and "saliva". These results were also observed in the study done by Ângelo et al. [7], where the variables "chewing" and "saliva" were among the worst scored, however the most relevant QOL variables over the previous seven days were "chewing" followed by "saliva" and "speech".

"Chewing" was factor that reduced the QOL scores in the study conducted by Rogers et al. [16] and Andrade [17] which also proved relevant in our study. Similar results were obtained by other studies [18, 19]. Even though interviewed patients in our study were not significantly affected by cancer the variables "anxiety", "appearance" and "activity" appeared to contribute to difficulties in their recovery and return to normal social activity [17-20].

Application of the Lockhart and Clark criteria [9] resulted in relatively high scores that were close to the maximum of 5, especially for oral hygiene where the group that did not receive dental follow-up scored 4.08 (5 = worst oral hygiene); high scores were observed for both groups in regards to tooth decay and periodontal status whereas the group that received dental monitoring and follow-up showed slightly better scores. These results were similar to the study performed by Gomes [21] where the majority of patients presented optimal oral hygiene (41.2%), precarious lesions (35.3%) and significant bone loss (41.2%) suggesting that cancer patients should be monitored by a dentist not only during and after antineoplastic therapy, but also before the beginning of this therapy.

There was a positive correlation between those patients who had and those who did not have dental monitoring before and during radiation therapy in relation to the variable "saliva" ($p=7.85 \cdot 10^{-5}$). A positive correlation was also found between the group that received vs. the group that did not receive dental monitoring before and during radiation therapy in self-perception of oral health status ($p=0.0245$) due to the fact that patients who were monitored also received instructions how to deal with xerostomia. This correlation was also confirmed in the study done by Matias [15]. According to Kielbassa et al. [8], to combat mucositis, hyposalivation, trismus, loss of taste, tooth decay and osteoradionecrosis - the most common oral clinical consequences of irradiation - active and early involvement of oral health professionals, in order to develop preventive and therapeutic strategies, is of vital importance to improve patients' quality of life during and after the radiation therapy.

It was observed that periodontal as well as dental status and/or use of implants are present as significant data in nearly all correlations, with significance levels varying between ($p < 2 \cdot 10^{-16}$) and ($p=0.030$) because they are directly related to chewing. Therefore, oral health status directly influenced the quality of life of patients that underwent head and neck radiation therapy, as observed in the study of Angelo et al. [7], where the variable "chewing" showed the lowest mean scores but it was also the most relevant variable during the week prior to the interview. This fact illustrates the importance of "chewing" in the QOL assessment and points out the need for dental monitoring and follow-up during all stages of cancer treatment [21].

CONCLUSION

In general, the quality of life of all cancer patients was negatively affected both by the cancer and the treatment methods used to treat this condition. The most affected QOL variables vary greatly in different study groups with higher values obtained in the group that received dental monitoring and follow-up before, during and after the radiation therapy in both individual variables and total score. Since both the disease and therapeutic methods used to treat it compromise patients' and their families' quality of life, dental care should start even before the first application of radiation therapy.

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Procena stanja oralnog zdravlja i kvalitet života osoba obolelih od karcinoma glave i vrata nakon terapije zračenjem

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KRATAK SADRŽAJ

Uvod Neoplazme glave i vrata se mogu lečiti hirurški, zračenjem, hemioterapijom ili kombinacijom ovih metoda. Za razliku od hirurške i terapije zračenjem, koje imaju lokalno dejstvo na oboleli deo tela, hemioterapija ima i sistemski efekat. Ipak, zračenje u predelu usne šupljine i hemioterapija mogu uticati na stanje oralnog zdravlja bolesnika. Cilj ove studije bio je da se proceni stanje oralnog zdravlja i kvalitet života bolesnika s karcinomom glave i vrata nakon lečenja zračenjem.

Materijal i metode rada U istraživanju su korišćene kvantitativne, analitičke i metode preseka uz primenu upitnika UW-QOL, verzija 4. Ispitan je 71 ambulanti pacijent u dvema onkološkim bolnicama u državi Paraiba u Brazilu. Stanje oralnog zdravlja je ocenjeno na osnovu Lokhartovih (*Lockhart*) i Klarkovih (*Clark*) kriterijuma. Da bismo utvrdili odnos ispitivanih varijabli, primenjeni su linearni Poasonov (*Poisson*) test i logistička regresija sa nivoom značajnosti od 5%.

Rezultati Od ispitanih bolesnika 71,83% su bili muškarci prosečne starosti od 62 godine, dok je 57,74% bolesnika bilo nekavkaskе rase. Grupa ispitanika kod koje je postojala stomatološka kontrola pokazala je najviši kvalitet života (830,13) uključujući „bol“ (93,13) i „ukus“ (83,07). Najviša ocena za oralno zdravlje u grupi ispitanika koji nisu odlazili na redovnu stomatološku kontrolu bila je 4,08, i to za stavku „oralna higijena“.

Zaključak Stomatološku kontrolu bolesnika treba vršiti pre početka primene terapije zračenjem zato što sama bolest, kao i metode korišćene u lečenju karcinoma, loše utiču na kvalitet života ovih bolesnika.

Ključne reči: neoplazma; radioterapija; kvalitet života; glava; vrat; oralno zdravlje

UVOD

Procenjuje se da je 13% smrtnih slučajeva u 2007. godini nastalo kao posledica nekog oblika kancera, a od toga se čak 80% smrti dogodilo u zemljama s niskim ili srednjim prihodima po glavi stanovnika. Svetska zdravstvena organizacija procenjuje da će do 2030. godine biti dijagnostikovano 27 miliona novih slučajeva kancera, 17 miliona ljudi će umreti, a 75 miliona osoba će živeti s kancerom [1].

Kancer glave i vrata se može lečiti hirurški, zračenjem, hemioterapijom ili kombinacijom ovih metoda, u zavisnosti od konačne dijagnoze, faze i lokalizacije neoplazme, opšteg zdravstvenog stanja bolesnika i dostupnih zdravstvenih usluga (fizičkih, ljudstvo). Svaka od navedenih metoda lečenja uključuje različite procedure. Hirurško lečenje kancera vrši se direktno na obolelom području i može dovesti do funkcionalnih i/ili estetskih ograničenja. Zračenje deluje na posebnoj lokaciji, dok hemioterapija ima sistemski efekat. Ove dve metode lečenja narušavaju integritet i funkcionisanje usne šupljine, jer uništavaju ne samo neoplastične ćelije, već u isto vreme i normalne ćelije [2, 3].

Većina bolesnika sa dijagnozom kancera glave i vrata izložena je visokim dozama zračenja u delovima organizma koji uključuju usnu šupljinu, gornju i donju vilicu i pljuvačne žlezde. Antineoplastična terapija je stoga povezana s različitim neželjenim reakcijama koje se mogu javiti u akutnoj fazi (tokom terapije ili u nedeljama neposredno nakon lečenja) ili hroničnoj fazi (mesecima ili godinama posle zračenja). Težina akutnih oralnih komplikacija će zavisiti od toga koliko su se ove strukture našle u području zračenja. Glavni neželjeni efekti terapije zračenjem su: radiodermatitis, mukozitis, kserostomija, oportunističke infekcije (virusne, bakterijske i gljivične), poremećaj ukusa i gutanja, trizmus, karijes i osteoradionekroza [4, 5].

Iako je tehnološki napredak u lečenju kancera doveo do mogućnosti izlečenja, mortalitet i morbiditet kao posledica neopla-

zmi dovode do novih pitanja o humanosti ove terapije, odnosno njenih posledica na kvalitet života bolesnika. Potrebno je uraditi još dosta studija koje razmatraju ne samo produženje života obolelih osoba, već i kako poboljšati njihov kvalitet života [6].

Definicija kvaliteta života se promenila tokom godina i njeno precizno značenje je sada subjektivno i višedimenzionalno [7]. Godine 1994. grupa VHOQOL je definisala kvalitet života kao „percepciju pojedinca o njegovom položaju u životu u kontekstu kulture i sistema vrednosti u kojem živi u odnosu na svoje ciljeve, očekivanja, parametre i socijalne odnose“. To je širok pojam koji uključuje fizičko zdravlje pojedinca, njihovo psihičko stanje, nivo nezavisnosti, društvene odnose i odnos s okruženjem [6].

Veoma je značajno aktivno i rano uključivanje stomatologa i drugih stručnjaka stomatološke profesije u rehabilitaciju ovih bolesnika zbog razvoja preventivnih i terapijskih strategija, kako bi se poboljšao kvalitet života nakon zračne terapije [8].

Cilj ove studije je bio da proceni stanje oralnog zdravlja i kvalitet života osoba obolelih od karcinoma glave i vrata nakon terapije zračenjem. Jedna grupa ispitanika je dobila određene smernice od stomatologa pre lečenja zračenjem, dok druga grupa nije dobila nikakva uputstva.

MATERIJAL I METODE RADA

Za izvođenje studije dobijena je saglasnost Etičkog komiteta na državnom Univerzitetu Paraiba (UEPB), gde je projekat registrovan pod brojem 0039.0.133.000-12. Ispitanici su dali pisani pristanak (TCLE) za učešće u studiji, u skladu s Rezolucijom br. 196/96 Ministarstva zdravlja, koja reguliše istraživanja na ljudima (Brazil, 1996). Svi podaci dobijeni od bolesnika tretirani su kao poverljivi, čime se štitila njihova privatnost.

Kvantitativna, analitička i studija preseka je izvedena korišćenjem posebnog upitnika koji se odnosi na kvalitet života, a

koji su osmislili stručnjaci Univerziteta u Vašingtonu (*University of Washington Quality of Life – UW-QOL*), verzija 4.

Ispitanike su činili oboleli od malignih neoplazmi u predelu glave i vrata koji su bili podvrgnuti terapiji zračenjem. U studiju je uključen 71 bolesnik sa dijagnozom neoplazme u predelu glave i vrata koji je ambulantno primio zračnu terapiju, bilo samu ili u kombinaciji s hirurškim lečenjem i/ili hemioterapijom, u Bolnici „Napoleão Laureano“ (HNL) i Fondaciji za pomoć brazilske države Paraiba (FAP).

Za odabir bolesnika korišćeni su sledeći kriterijumi: bolesnici oba pola, stariji od 18 godina koji su primili zračnu terapiju u svrhu lečenja neoplazme u predelu glave i vrata, isključivo ili u kombinaciji s operacijom i/ili hemioterapijom, i koji su završili prepisanu zračnu terapiju.

Podaci su prikupljeni od februara do novembra 2012. godine u obe bolnice u državi Paraiba (severoistok Brazila) i uključivali su ambulantne bolesnike HNL u gradu Žoao Pessoa (*João Pessoa*), kao i ambulantne bolesnike koji su bili upućeni na specijalni program (SBOnco) namenjen pacijentima podvrgnutim antineoplastičnoj terapiji u FAP, u okviru Onkološkog centra „Dr. Ulisses Pinto“ u gradu Kampina Grande (*Campina Grande*), u državi Paraiba.

Podaci su prikupljeni pomoću upitnika UW-QOL (verzija 4) na portugalskom jeziku, koji je pripremila Odeljenje za otorinolaringologiju, hirurgiju glave i vrata Univerziteta u Vašingtonu 2003. godine. Ovaj upitnik je korišćen u mnogim studijama. Sastojao se od 12 pitanja o različitim aspektima kvaliteta života bolesnika: bol, izgled, aktivnost, rekreacija, gutanje, žvakanje, govor, rama, ukus, pljuvačka, raspoloženje i anksioznost [7]. Stanje oralnog zdravlja je procenjeno na osnovu Lokhartovih (*Lockhart*) i Klarkovih (*Clark*) kriterijuma [9], kojima se procenjuju stanje zuba, stanje parodonticijuma i higijena usne duplje.

Dobijeni podaci su statistički obrađeni korišćenjem R verzije softvera 2.15.1 (*The R Foundation for Statistical Computing*, Beč, Austrija). Korišćeni su Poasonov (*Poisson*) model linearne regresije i model logističke regresije (5% je bio nivo značajnosti).

REZULTATI

Studija je obuhvatila 71 bolesnika prosečne starosti od 62 godine koji je bio podvrgnut terapiji zračenjem u predelu glave i vrata. Ispitanici su svrstani u dve grupe: prvu su činili bolesnici mlađi od 60 godina, a drugu stariji od 60 godina (60,56%). Muškaraca je bilo 51 (71,83%), 41 (57,74%) ispitanik je bio oženjen, a 57,74% njih bilo je nekavkaskе rase (Tabela 1).

S obzirom na to da nijedan bolesnik nije imao uklonjene limfne žlezde na vratu, pitanje o „ramenu“ je isključeno iz studije, čime je ostalo 11 kategorija od prvobitnih 12. Opšti kvalitet života bolesnika analiziran je sabiranjem bodova svakog pitanja iz upitnika, a ukupan rezultat je bio u rasponu od 0 do 1.100. Kompozitni rezultat je takođe izračunat kao srednja vrednost svih 11 grupa, a skor je bio između 0 i 100 bodova, gde 0 predstavlja najgori kvalitet života, a 100 najbolji. Ispitanici su tokom istraživanja podeljeni u dve grupe: na one koji su imali stomatološki nadzor i koji su klinički praćeni i na one koji nisu. Najveći prosečan ukupni rezultat bio je 830,13, koji je dobijen kod nadgledanih bolesnika, dok je najveći kombinovani rezultat bio 74,56, takođe kod ovih ispitanika (Tabela 2).

Pojedinačna analiza svakog odeljka upitnika pokazala je da je kod bolesnika koji su nadgledani domen s najmanjim rezultatom bio „rekreacija“ (65,68 bodova), dok je najbolji rezultat bio za „bol“ (93,13 bodova). U grupi ispitanika koji nisu imali stomatološku kontrolu domen s najmanjom srednjom ocenom bio je „pljuvačka“ (32,4 boda), a s najvišom takođe „bol“ (85 bodova).

Procena oralnog zdravstvenog stanja na osnovu Lokhartovih i Klarkovih kriterijuma [9], gde su rezultati bili u rasponu od 1 do 5 (pet predstavlja najgore stanje oralnog zdravlja), pokazala je da su bolesnici koji nisu bili klinički praćeni imali najveći skor (najgore stanje) u tri oblasti. U pogledu karijesa, ista grupa dobila je ocenu 3,8, što označava postojanje karijesa kategorizovanog između „vidljiv“ i „generalizovano opsežan“; stanje parodonticijuma dobilo je rezultat 3,75, što predstavlja mobilnost u rasponu od minimalne do uznapredovale, dok je prosečna ocena od 4,8 za oralnu higijenu označavala lošu higijenu usta i zuba (Tabela 3).

Test korelacije između bolesnika koji su imali stomatološku kontrolu i onih koji nisu pokazao je statističku značajnost u oblastima „pljuvačka“ ($p < 0,001$) i „problemi tokom sedam dana pre intervju“ ($p = 0,0245$). U korelaciji sa sociobiološko-demografskim odlikama, nijedna varijabla nije pokazala statistički značajnu korelaciju ($p < 0,05$).

DISKUSIJA

Ova studija je uključila 71 bolesnika koji je lećen zračenjem u predelu glave i vrata, među kojima je muškaraca bilo dva i po puta više nego žena. Ispitanici su u proseku imali 62 godine, a većina je bila starija od 60 godina i nekavkaskе rase. U studiji Anžela (*Angelo*) i saradnika [7] prosečna starost bolesnika bila je 63,5 godina (raspon 40–83 godine), muškaraca je bilo 30 (73,2%), 23 ispitanika su bila nekavkaskе rase (56,1%) i 19 u braku (46,3%). Slični nalazi zabeleženi su i u drugim studijama [10, 11].

Procena kvaliteta života kroz primenu upitnika UW-QOL je složen proces koji uključuje opšta i specifična pitanja u različitim oblastima koje utiču na život osoba obolelih od neoplazmi glave i vrata. Analiza je pokazala da je ukupan rezultat na ovom upitniku nizak za bolesnike koji nisu bili stomatološki nadzirani: oko polovine vrednosti najvećeg mogućeg rezultata – 633,4 bodova, kao i kompozitni rezultat od 57,58. Slični rezultati su dobijeni u studiji Lime (*Lima*) i saradnika [12]. Brazilska studija urađena u gradu Kuritiba (*Curitiba*) [13], koja je obuhvatila bolesnike podvrgnute laringektomiji i gde su svi ispitanici bili stomatološki nadgledani i klinički praćeni, zabeležila je ukupan rezultat od 900,25.

Vejmiler (*Weymuller*) i saradnici [14] u prospektivnoj studiji na 549 bolesnika s neoplazmom glave i vrata koji su prošli terapiju zračenjem pokazali su da je tokom prva tri meseca nakon lećenja rezultat koji meri kvalitet života znatno niži. Poboljšanje počinje posle šest meseci do jedne godine, kada se postiže stabilnost, te do treće godine posle terapije, kada bolesnici nauče da žive s posledicama lećenja. Dakle, periodi pre i odmah nakon primenjene terapije zračenjem su kritične faze, kada su bolesnici vrlo osetljivi, a njihov kvalitet života na najnižem nivou.

Nakon analize prosečnih rezultata izračunatih za svaku oblast u okviru upitnika UW-QOL za obe grupe, najgori rezultati

ustanovljeni su za „pljuvačku“, „ukus“ i „žvakanje“ kod ispitanika koji nisu stomatološki nadgledani, što je uticalo na ukupnu srednju ocenu za ovu grupu bolesnika, s obzirom na to da su prve dve oblasti dobile najviše ocene u grupi koja je bila nadzirana i klinički praćena, dok je za oblast „žvakanje“ rezultat bio mnogo viši nego u prvoj grupi.

Primenom upitnika UW-QOL na 143 bolesnika sa skvamoznim karcinomom usne duplje i orofarinksa, Matijas (*Matias*) [15] je zapazio da su najgore oblasti bile „žvakanje“, „uznemirenost“ i „gutanje“, dok su najrelevantniji delovi upitnika tokom poslednjih sedam dana bili „bol“, „gutanje“, „žvakanje“ i „pljuvačka“. Slične rezultate dobili su i Anželo i saradnici [7], gde su „žvakanje“ i „pljuvačka“ dobili najgore prosečne ocene, a najrelevantniji delovi bili su „žvakanje“, zatim „pljuvačka“ i „govor“.

„Žvakanje“ je faktor koji je smanjio kvalitet života svojim rezultatom u studijama Rodžersa (*Rogers*) i saradnika [16] i Andrada (*Andrade*) [17] i koji se takođe pokazao relevantnim u našoj studiji u poslednjih sedam dana pre intervjuisanja ispitanika. Slični rezultati su dobijeni i u drugim istraživanjima [18, 19]. Iako ispitanici naše studije nisu imali značajna oštećenja kao posledicu neoplazme, faktori kao što su „anksioznost“, „izgled“ i „aktivnost“ bili su značajni tokom oporavka i povratka normalnim društvenim aktivnostima [17-20].

Primena Lokhartovih i Klarkovih kriterijuma [9] dovela je do relativno visoke ocene, koje su bile blizu maksimalnih 5, posebno za faktore u vezi s oralnom higijenom, gde je grupa koja nije bila stomatološki kontrolisana imala ocenu 4,08 (ocena 5 označava najgoru oralnu higijenu). Visoke ocene su dobijene u obe grupe kod faktora koji su u vezi s karijesom i parodontopatijom, gde je grupa koja je nadgledana imala neznatno bolje rezultate. Ovi rezultati su bili slični i u studiji Gomesove (*Gomes*) [21], u kojoj je zapaženo da većina bolesnika održava redovnu higijenu usta i zuba (41,2%), ima prekarijesne lezije (35,3%) i znatan gubitak koštane mase (41,2%), što pokazuje da osobe obolele od neoplazme treba da prati stomatolog ne samo tokom i nakon zračne terapije, već i pre početka lečenja.

Utvrđena je pozitivna korelacija između ispitanika koji su stomatološki nadgledani i onih koji nisu pre i tokom lečenja

zračenjem u vezi s faktorom „pljuvačka“ ($p=7,85^{05}$). Takođe je potvrđena pozitivna korelacija između bolesnika koji su stomatološki nadzirani i onih koji nisu pre i tokom terapije zračenjem u samopercepciji oralnog zdravstvenog stanja ($p=0,0245$), zbog činjenice da su ispitanici koji su kontrolisani dobili instrukcije kako da se bore protiv kserostomije. Ova korelacija je takođe utvrđena u studiji Matijasa i saradnika [15]. Prema istraživanju Kilbasa (*Kielbas*) i saradnika [8], da se sprovela efikasna borba protiv mukozitisa, hiposalivacije, trizmusa, gubitka osećaja ukusa, karijesa i osteoradionekroze (najčešće posledice zračenja u usnoj šupljini), aktivno i rano uključivanje stomatologa – kako bi se delovalo preventivno, ali i terapijski – veoma je značajno za poboljšanje kvaliteta života bolesnika tokom i nakon lečenja zračenjem.

Primećuje se da su parodontalni, kao i stanje čvrstih zubnih tkiva i/ili upotreba implantata, zastupljeni gotovo u svim korelacijama s nivoima značajnosti između $p<2^{-16}$ i $p=0,030$, jer su direktno povezani sa žvakanjem. Dakle, oralno zdravstveno stanje direktno utiče na kvalitet života bolesnika koji su bili podvrgnuti zračenju glave i vrata, što potvrđuju i rezultati studije Anžela i saradnika [7], gde je faktor „žvakanje“ dobio najnižu srednju ocenu od svih analiziranih obeležja, a takođe je bio najrelevantniji faktor tokom nedelje pre intervjuja. Ova činjenica ilustruje važnost „žvakanja“ za kvalitet života bolesnika i jasno naglašava potrebu za stomatološkim nadgledanjem i kliničkim praćenjem u svim fazama lečenja neoplazme [21].

ZAKLJUČAK

Uopšteno govoreći, kvalitet života svih osoba obolelih od neoplazme je poremećen, što samom neoplazmom, što primenjenim metodama lečenja. Faktori koji su najviše pogođeni, a koji su važni za procenu kvaliteta života, variraju između studijskih grupa i imaju veće vrednosti kod bolesnika koji su stomatološki nadgledani pre, tokom i posle lečenja zračenjem. S obzirom na to da i bolest i metode koje se koriste za lečenje utiču na kvalitet života bolesnika i njihovih porodica, nega zuba treba da počne i pre prve terapije zračenjem.