INDIKATORI ORALNOG ZDRAVLJA KAO PROGNOSTIČKI FAKTOR ZA KVALITET ŽIVOTA PACIJENATA SA KARCINOMOM GLAVE I VRATA U GUDŽARATU U INDIJI

ORAL HEALTH INDICATORS AS A PREDICTIVE FACTOR FOR THE QUALITY OF LIFE AMONG HEAD AND NECK CANCER PATIENTS IN GUJARAT IN INDIA

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Sažetak

Ciljevi *ove studije bili su procena veličine različitih indikatora oralnog zdravlja i određivanje indikatora oralnog zdravlja, kao prognostičkog faktora za kvalitet života pacijenata sa karcinomom glave i vrata.*
Metode. *Studija preseka sprovedena je među 400 pacijenata sa karcinomom glave i vrata, koji su zbrinuti u zdravstvenom centru na onkološkom odeljenju. Model specifičan za glavu i vrat (EORTC KLK H&35), Evropske organizacije za istraživanje i lečenje raka, korišćen je za procenu kvaliteta života pacijenata. Indikatori oralnog zdravlja (praktikovanje oralne higijene, oralne komplikacije, posete stomatologu, oralna rehabilitacija) evidentirani su pomoću pregleda usne duplje i upitnika, odnosno razgovorom sa pacijentom. Spearmanov koeficijent korelacije korišćen je za procenu odnosa između indikatora oralnog zdravlja i različitih skala kvaliteta života. Za procenu uticaja indikatora oralnog zdravlja, kao prognostičkog faktora za kvalitet života, primenjena je multivarijantna linearna regresija.*
Rezultati. *Od 400 pacijenata, 54,25% pacijenata prijavilo je jedan ili drugi oblik oralnih komplikacija. Parodontalni problemi bili su česta oralna komplikacija među pacijentima. Postojala je slaba korelacija između indikatora oralnog zdravlja i većine skala EORTC KLK-H&35. Utvrđeno je da su teoretski povezani indikatori oralnog zdravlja značajni prognostički faktori.*
Zaključak. *Rezultati pokazuju prisustvo visokog stepena indikatora lošeg oralnog zdravlja. Indikatori oralnog zdravlja takođe su delovali kao značajan prediktor kvaliteta života. U cilju poboljšanja oralnog zdravlja poželjan je multidisciplinarni pristup, čime bi bio poboljšan i kvalitet života pacijenata sa karcinomom glave i vrata.*

Ključne reči: *karcinom glave i vrata, oralne komplikacije, oralno zdravlje, kvalitet života*

Abstract

Aim: *The aim of this study wasto assess themagnitude of various oral health indicators. Further, toidentify the oral health indicators as a predictive factor forthe quality of life among head and neck cancer patients.*
Methods: *A cross-sectional studywas conducted among400 head and neckcancer patients attending tertiary cancer center. The European Organization for Research and Treatment of Cancer and Head and Neck specific(EORTCQLQH&N35)modulewas used to assess the patient's quality of life. Oral health indicators (oral hygiene practices, oral complication, dental visits, oral rehabilitation) were recorded through oral examination and personal interviews. Spearman's correlation coefficient was used to assess the correlation between oral health indicators and different scales of QoL. Multivariate linear regression by a backward stepwise methodwas applied to assess the influence of oral health indicators as a predictive factor forQoL.*
Results: *Out of 400 patients, 54.25% of patients reportedhaving one or another form of oral complication. Periodontal problems were the common oral complication among the patients. There was a weak correlation between oral health indicators and most of the scales of EORTC QLQ-H&N35. Theoretically, linked oral health indicators were found to be significant predictive factors.*
Conclusion: *The results show thatthere was a high magnitude of poor oral health indicators.Oral health indicators also acted as a significant predictor of quality of life. A multi-disciplinary approach is desirable for the improvement in oral health thus improving the overall quality of life among head and neck cancer patients.*

Key words: *head and neck cancer, oral complications, oral health, quality of life*

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Uvod

Preživljavanje pacijenata najveći je prioritet za osobe koje boluju od nekog oblika karcinoma. Uprkos savremenijim terapijskim tehnologijama, preživljavanje karcinoma glave i vrata (KGV) nije se poboljšalo. KGV i njegov tretman utiču na izgled, funkciju, psiho-socijalni i ekonomski status pacijenta. Kao rezultat toga, kada se odlučuje o dobrobiti preporučenog tretmana vezano za pacijenta, kvalitet života (KŽ) tog preživljavanja postaje glavna tema prilikom razmatranja[1]. Dakle, podaci o kvalitetu života postaju važan aspekt pružanja informacija o ishodima lečenja za pacijente obolele od KGV[2]. KGV zahvata skvamozni epitel ćelija usne duplje, ždrela, larinksa, paranazalnih sinusa i nosne šupljine. Ove kraniofacijalne strukture igraju glavnu ulogu u vitalnim aktivnostima, kao što su fonetika, žvakanje i gutanje. Dakle, pacijentima koji pate od KGV-a potrebna je intenzivnija nega i održavanje prihvatljivog oralnog zdravlja u poređenju sa pacijentima koji imaju karcinom druge lokalizacije[3]. Kako navode Hashim i sar.[4], različiti indikatori oralnog zdravlja kao što su oralna higijena, karijes, parodontitis, nedostatak zuba, kserostomija, upala sluzokože, protetska nadoknada i poseta stomatologu imali su značajan uticaj na kvalitet života kod pacijenata sa KGV. Postoje čvrsti dokazi koji sugerišu da su ovi pokazatelji pogođeni usled hirurške intervencije, radioterapije, hemoterapije i/ili kombinacije lečenja karcinoma[5]. Preživeli pacijenti posle tretmana prijavili su oralne komplikacije kao što su loša oralna higijena[6], smanjeno lučenje pljuvačke[7], mukozitis[8], zubni karijes[9], parodontitis[10], i smanjena mastikacija[11]. Kao rezultat toga, preživeli imaju bolove, fizičku i emocionalnu nelagodnost, deformitete, zavisnost, promene navika u ishrani i gubitak samopoštovanja, što na kraju pogoršava kvalitet života[12].

Prognostička uloga gorepomenutih indikatora oralnog zdravlja za smanjen kvalitet života među pacijentima obolelih od KGV bila je neuverljiva, zbog nedostatka informacija o indikatorima oralnog zdravlja u većini studija[13,14]. Nema dovoljno objavljenih podataka u literaturi, koji procenjuju prognostičku ulogu indikatora oralnog zdravlja o kvalitetu života pacijenata sa KGV, što je otežavalo izradu i sprovođenje plana lečenja. Zbog toga, sprovedena je ova studija procene važnosti indikatora oralnog zdravlja (praktikovanje oralne higijene, oralne komplikacije, posete stomatologu, kao i oralna rehabilitacija) među pacijentima sa KGV.

Introduction

The survival of patients is the topmost priority for patients suffering from any form of cancer. Despite recent therapeutics technologies, survival from Head and Neck Cancer (HNC) has not improved. HNC and its treatment affect the patient's appearance, function, psycho-social and economic status. As a result, when deciding on the desirability of a recommended treatment for any patient, the quality of life (QoL) of that survival becomes a major consideration[1]. Hence, QoL data is becoming an important aspect of providing information on treatment outcomes for HNC patients[2].

HNC involves the squamous cell epithelium lining of the oral cavity, pharynx, larynx, paranasal sinuses, and nasal cavity. Thesecraniofacial structures play a major role in vital activities, such as phonetics, mastication, and deglutition. Hence, the patients suffering from HNC need definite care and maintaining acceptable oral health as compared to the patients having cancers of other sites[3]. As reported by Hashim D. et al., various oral health indicators like oral hygiene, dental caries, periodontitis, missing teeth, xerostomia, mucositis, dental prosthesis, and the dental visit had a significant impact on QoL among HNC patients[4]. There is sound evidence suggesting that these indicators areunfavorably affected because of the surgical, radiotherapy, chemotherapy, and/or combination of treatment of cancer[5]. Survivorsfrom HNC treatment reported oral complications like poor oral hygiene[6], decrease salivary flow[7], mucositis[8], dental caries[9], periodontitis[10], anddecrease masticatory function[11]. As a result, the survivors suffer from pain, physical and emotional discomfort, disfigurement, dependence, change in dietary habits, and loss of self-esteem which allultimately deteriorate the QoL[12].

The predictive role of the aforementioned oral health indicators for deprived QoL among HNC patients has been inconclusive because of the lack of information on over one oral health indicator for most studies[13,14]. There is a real scarcity of published literature evaluating the predictive role oforal health indicators of HNC patient's QoL. So, the planning and intervention of treatment outline resulting in a favorable outcome might get compromised. Thus, this study was conducted to assess the magnitude of the oral health indicators (oral hygiene practices, oral complication, dental visits, oral rehabilitation) among the HNC patients.

U ovoj studiji bavili smo se procenom korelacije između indikatora oralnog zdravlja i skale kvaliteta života i indikatora oralnog zdravlja, kao prognostičkih faktora za kvalitet života kod pacijenata sa KGV. Podaci prikupljeni u ovoj studiji pomoći će da se uspostavi efikasan sistem pružanja oralne zdravstvene nege, uključivanjem stomatologa, sa ciljem sprečavanja i lečenja mogućih oralnih komplikacija tokom faze lečenja, pre i posle prisutnog karcinoma i na taj način poboljša ukupni kvalitet života pacijenata sa KGV.

Metode

Dizajn studije i etičko odobrenje

Studija preseka sprovedena je u onkološkom centru tercijarne zdravstvene zaštite u državi Gudžarat, Indija. Pre početka studije, protokol studije dostavljen je institucionalnom odboru tercijarnog centra za onkologiju. Dobijeno je odobrenje za sprovođenje studije (odobrenje etičkog komiteta: ADC/EC/13/108). Studija je sprovedena u skladu sa principima Helsinške deklaracije. Pacijentima je objašnjena svrha studije, a popunjavanje potpisanog upitnika bio je uslov za uključenje u studiju. Prema godišnjem izveštaju centra za onkologiju, stopa prevalencije KGV iznosila je 35,80%. Uzevši u obzir ovu stopu prevalencije, dozvoljenu grešku od 5% i stopu bez odgovora od 10%, sačinjen je uzorak od 400 pacijenata. Obuhvaćeno je 400 pacijenata obolelih od KGV-a u onkološkom centru tercijarne zdravstvene zaštite, koji zadovoljavaju kriterijume:

Kriterijumi za uključivanje u studiju bili su: histo-patološki potvrđeni slučajevi KGV, pacijenti oba pola i starosti preko 18 godina, pacijenti koji su imali Karnofskijev Status Skor (KSS) preko 60; pacijenti koji su dali pismeni pristanak za učešće u studiji. Kriterijumi isključenja iz studije bili su: pacijenti stariji od 65 godina, pacijenti sa kliničkim recidivom bolesti ili pojavom sekundarnog tumora i periodom preživljavanja većim od 18 meseci nakon lečenja. *Prikupljanje podataka*: Unapred testirana, samostalno dizajnirana forma u vidu razgovora ,upotrebljena je za prikupljanje demografskih detalja (starost, pol, socio-ekonomski status (SPS), prebivalište, bračni status, vrsta porodice. SPS pacijenata procenjen je prema Kupusvamijevoj skali.[15] Glavni istraživač je sproveo oralni pregled i lične intervjue pacijenata, kako bi prikupio informacije o statusu oralnog zdravlja (praktikovanje oralne higijene, oralne komplikacije, posete stomatologu i oralna rehabilitacija). Medicinski detalji kao što su stadijum raka, lečenje su preuzeti iz medicinske dokumentacije pacijenata.

This study further evaluates thecorrelation between oral health indicators and the scales of QoLand also evaluates the oral health indicators as a predictive factor for QoL among HNC patients. The data gathered in this studywill help to establish an effective oral health care delivery system by involving dental professionals to prevent and treat oral complications duringthe preand post-cancer treatment phase and thus improving the overall QoL among HCN patients.

Methods

Study design and ethical permission

A cross-sectional study was conducted at the tertiary cancer care center in the state of Gujarat, India. Before initiating the study, the study protocol was submitted to the institutional review board of the tertiary cancer center.The protocol was reviewed and approval to conduct the study was obtained (ethical approval code: ADC/EC/13/108). The study was conductedper the Declaration of Helsinki. The purpose of the study was explained to patients and the completion of the questionnaire was a condition for entering the study and was regarded as written consent.

Study subjects and eligibility criteria

As per the annual report of the cancer centre the prevalence rate of HNC reported was 35.80%, considering this prevalence rate, allowable error of 5% and 10% non-response rate, a sample of 400 patients of HNCwas considered. Totalof 400HNC patients attending tertiary cancer center and satisfying the following eligibility criteria were enrolled:

Inclusion criteria: histopathologically confirmed cases of HNC, patients of both gender and above 18 years of age, patients who had Karnofsky's Performance Status score (KPS) over 60, and those patients who gave written consent to take part in the study.

Exclusion criteria: patients above 65 years of age, had clinical evidence of disease recurrence or a secondary tumor and had survived for over 18 months after treatment in any form. *Data collection*:A pretested self-designed proformawas used to collect the demographic details (age, gender, socioeconomic status (SES), residence, marital status, type of family) through a personal interview. The SES of the patients was assessed as per Kuppuswamy's scale[15]. The principal investigator conducted an oral examination and personal interviews among the patients to gather information regarding oral health status (oral hygiene practices, oral complications, dental visits, and oral rehabilitation).

Kvalitet života pacijenata je procenjivan korišćenjem prilagođenog upitnika za procenu kvaliteta života pacijenata po specifičanom modelu Evropske organizacije za istraživanje i lečenje karcinoma glave i vrata (EORTC KLK-H&N35)[16]. Korišćena je prethodno upotrebljavana gudžarati verzija ovog upitnika[17]. EORTC KLK-H&N35[16] je tumor-specifičan model koji se koristi za procenu kvaliteta života kod pacijenata sa KGV. Ovaj model upitnika sadrži sedam skala simptoma sa više stavki i jedanaest skala simptoma sa jednom stavkom. Pacijenti su morali da odgovore na pitanja na Likertovoj skali sa odgovorom u rasponu od '1=ni malo' do '4=veoma'. Dok je poslednjih pet stavki EORTC KLK-H&N35 imalo dihotomnu skalu sa formatom ne/da.

Analiza podataka:

Demografske i kliničke karakteristike sumirane su kao učestalost i % starosti. Spearmanov koeficijent korelacije korišćen je za procenu korelacije između indikatora oralnog zdravstvenog statusa i različitih skala kvaliteta života. Uticaj indikatora oralnog zdravlja kao prediktivnog faktora kvaliteta života ispitan je primenom multivarijantne linearne regresije. Korišćena je metoda korak po korak sa eliminacijom unazadza P = 0,05 i P = 0,10 za izbor nezavisnih promenljivih. Za analizu podataka korišćen je statistički paket softver društvenih nauka (SPSS® verzija 22; IBM Corp., Armonk NI, SAD). Nivo značajnosti ograničenja je na P<0,05.

Rezultati

Demografske i kliničke karakteristike pacijenata prikazane su u tabeli 1. Prosečna starost bolesnika bila je 45,47 godina ± 10,31 godina. Pacijenti muškog pola (n = 354, 87,50%) oboleli su u većem broju, u poređenju sa pacijentima ženskog pola, od KGV. Polovina pacijenata (n = 214, 53,50%) pripadala je seoskim zajednicama sa nižim socio-ekonomskim statusom (57,50%). Broj pacijenata koji su se prijavili sa uznapredovalim stadijumom bolesti (III/IV) bio je visok. Kod većine pacijenata primenjena je kombinovana terapija, a kod manjeg broja monoterapija. Četkica za zube bila je najpopularnije sredstvo za oralnu higijenu (n = 1, 20 pacijenata, 30%). Skoro polovina pacijenata (n = 190, 47,50%) nikada u životu nije posetila stomatologa. Više od polovine pacijenata (n = 217, 54,25%) prijavilo je oralne komplikacije (Tabela 2), bilo samo zbog karcinoma ili zbog lečenja. Samo 11% (n = 44) pacijenata imalo je dobro oralno zdravlje. Parodontalni problemi (n = 109, 27,25%) i ograničeno otvaranje usta (n = 9, 8 pacijenata, 24,50%) bile su uobičajene oralne komplikacije pacijenata.

Medical details like the stage of cancer, treatment of cancer, and KPSwere retrieved from patient medical records. The QoL of patients was assessed by using aself-administeredquestionnaire-European Organization for Research and Treatment of CancerHead and Neck specific module (EORTCQLQ-H&N35)[16] was used to assess the QoL of patients. Thepre-validated Gujarati version of this questionnaire was used[17].

The EORTC QLQ-H&N3516 is a tumor-specific module used for the assessment of QoL in HNC patients. It contains seven multi-item symptom scales and eleven single-item symptoms scales. The patients have to answer the questions on a Likert scale with a response ranging from '1=not at all' to '4=very much.' Whereas the last five items of EORTC QLQ-H&N35 have a dichotomous scale having a no/yes format.

Data Analysis

The demographic and clinical characteristics were summarized as frequencies and %ages. Spearman's correlation coefficient was used to assess the correlation between oral health status indicators and different scales of QoL. The influence of oral health indicators as a predictive factor on QoLwas examined using multivariate linearregression.The backward stepwise method was used as having entry with P=0.05 and removal with P=0.10 to select independent variables. Statistical Package for Social Science software (SPSS® version 22; IBM Corp., Armonk NY, USA) was used for data analysis. The level of significance was kept at P<0.05.

Results

The demographic and clinical characteristics of the patients are shown in Table 1. The mean age of the patients was 45.47±10.31 years. Male patients (n=354, 87.50%)outnumbered their female counterparts, showing the predominance of HNC among male subjects. Half of the patients (n=214, 53.50%) belonged to rural communities and had lower socioeconomic status (57.50%). The number of patients reporting at the advanced stage (III/IV) was high. Most of the patients received combined treatment modalities as compared to the single-modality treatment. A toothbrush was the most popular means of oral hygiene aid used (n=120, 30%). Nearly half of the patients (n=190, 47.50%), had never visited the dentist in their lifetime. More than half (n=217, 54.25%) of patients reported oral complications (Table 2) either due to cancer alone or because of its treatment.

Tabela 1. Demografske i kliničke karakteristike pacijenata sa karcinomam glave i vrata
Table 1. Demographic and clinical characteristics of head and neck patients

Variables/Varijable	Number (n=400)/	Variables/Varijable
Mean age (in years)/Prosečna starost(u godinama)	45.47 ± 10.31	
Gender(Pol)		
Men/Muški	350	87.50
Women/Ženski	50	12.50
Location/Lokalizacija		
Urban/Gradsko područje	186	46.50
Rural/Seosko područje	214	53.50
Marital status/Materijalni status		
Unmarried/Neoženjeni	35	8.75
Married/Oženjeni	357	89.25
Divorced/Widow/Razvedeni/Udovci	8	2.00
Socio-economic status/Socio ekonomski status		
Upper/Višisloj	7	1.75
Upper middle/Srenji ka višem	45	11.25
Lower middle/Srednji	80	20.00
Upper lower/Srednji ka nižem	230	57.50
Lower/NIži	38	9.50
Family type/Tip porodice		
Nuclear family/Uža porodica	82	20.50
Joint family/Šira porodica	318	79.50
Site of Tumour/Lokalizacija tumora		
Oral cavity/Usna duplja	340	85.00
Pharynx/hypopharynx /Ždrelo ili hipofarings	26	6.50
Larynx/Grkljan	34	8.50
Stage of cancer/Stadijum karcinoma		
I/ II	122	30.50
III/ IV	278	69.50
Treatment Modalities/Načini lečenja		
No treatment (newly diagnosed)Bez tretmana/ upravo dijagnostikovan	80	20.00
Only surgical/Samo hirurški	39	9.75
Only radiotherapy/Samo radioterapija	25	6.25
Only chemotherapy/Samo hemoterapija	28	7.0
Surgical + Radiotherapy/Hirurški i radioterapija	92	23.00
Radiotherapy + Chemotherapy/Hirurški i hemoterapija	65	16.25
Combination of all/Kombinacija svih terapija	71	17.75

Devijacija otvaranja usta i kserostomija takođe su prijavljeni kao neželjeni efekti operacije i radioterapije. Nakon hirurškog lečenja, skoro polovina pacijenata imala je deformitete. Veoma mali broj pacijenata (n = 38, 9,50%) bio je rehabilitovan uz pomoć maksilofacijalnih proteza, u vidu obturatora i pločastih proteza. Uočena je slaba korelacija između indikatora oralnog zdravlja i većine teorijski povezanih skala EORTC KLK-H&N35 (Tabela 3). Kako bi se procenili prognostički znaci za kvalitet života, primenjena je multivarijantna linearna regresija (Tabela 4). Teoretski povezani indikatori oralnog zdravlja imali su značajan uticaj i zadržani su u modelu posle "backward stepwise" eliminacije.

Only 11% (n=44) of the patients had good oral health. Periodontal problems (n=109, 27.25%) and restricted mouth opening (n=98, 24.50%) were the common oral complications of the patients. Deviated mouth opening and xerostomiawere also reported as the side effects of surgery and radiotherapy, respectively. Following surgical treatment, nearly half of the patients had adisfigurement. Very few patients (n=38, 9.50%) had received rehabilitative service asmaxillo-facial prostheses like obturators and guiding plates.

A weak correlation was observed between oral health indicators and most of the theoretically linked scales of EORTC QLQ-H&N35 (Table 3). To evaluate the predictors for QoL, multivariate linear regression was applied (Table 4).Theoretically linked oral health indicators had significant influence and were retainedin the model after doing backward stepwise elimination.

Tabela 2. Indikator iralnog zdravlja kod pacijenata
Table 2. Oral health indicatorsof patients

Variables/Varijable	Number (n)/Broj(n)	Percent (%)/Procenat(%)
Oral hygiene aids/Sredstva za oralnu higijenu		
None/Ne koristi	10	2.50
Toothbrush/Četkica za zube	120	30.00
Datun/Neem stick/Štapići	26	6.50
Finger/Prst	41	10.25
Mouthwash/Oralni rastvor	76	19.00
Tooth brush + mouthwash/Četkica za zube + oralni rastvor	127	31.75
Dental Visit/Posete stomatologu		
Before diagnosis/Pre dijagnoze	33	8.25
During treatment/U toku tretmana	121	30.25
After diagnosis/Posle dijagnoze	56	14.00
Never/Nikada	190	47.50
Oral complications/Oralne komplikacije		
Yes/Da	217	54.25
No/Ne	183	45.75
Oral health status/Status oralnog zdravlja		
Good oral health/Dobro oralno zdravlje	44	11.00
Periodontal problems/Periodontalni problemi	109	27.25
Mucositis/Mukozitis	41	10.25
Restricted mouth opening/Otežano otvaranje usta	98	24.50
Deviated mouth opening/Devijacija pri otvaranju usta	25	6.25
Edentulous/Bezubi	13	3.25
Pain in mouth/Bol u ustima	20	5.00
Xerostomia/Kserostomija	25	6.25
Dental caries/Karijes	25	6.25
Type of disfigurement /Tip narušavanja izgleda		
Single/Jedna	183	45.75
Multiple/Multile	8	2.00
None/Nema	209	52.25
Rehabilitation /Rehabilitacija		
Yes/Da	38	9.50
No/Ne	362	90.50

Tabela 3. Korelacija između indikatora a oralnog zdravlja i EORTC QLQ H&N35 skala
Table 3. Correlation between the oral health indicators and scales of EORTC QLQ H&N35

Scales/Skale	Dental visit/ Posete stomatologu	Oral complication/Oralne komplikacije	Disfigurement/ Narušavanje izgleda	Rehabilitation/ Rehabilitacija
Pain/Bol (HNPA)	0.04	-0.18**	0.04	0.06
Swallowing/Gutanje (HNSW)	0.11*	-0.06	0.02	0.07
Senses/Čula (HNSE)	0.07	-0.07	-0.02	0.04
Speech/Govor (HNSP)	0.07	-0.02	0.04	0.007
Social eating/Društvena ishrana (HNSO)	0.08	-0.14**	-0.12*	-0.06
Social contact/Društveni kontakti (HNSC)	0.03	-0.11*	-0.24**	-0.05
Sexuality/Seksualnost (HNSX)	-0.13*	0.01	-0.006	-0.11*
Problem in Teeth /Problemi sa zubima(HNTE)	-0.21**	0.01*	-0.11*	-0.07
Opening mouth /Otvaranje usta(HNOM)	0.09	-0.42**	-0.27**	-0.05
Dry mouth/Suvoća usta (HNDR)	0.17**	-0.13*	-0.10*	-0.02
Sticky saliva/Lepljiva pljuvačka (HNSS)	0.12*	-0.17**	-0.13*	0.05
Coughing/Kašalj (HNCO)	0.01	0.03	0.10*	0.13**
Felt ill/Osećaj bolesti (HNFI)	0.08	-0.08	0.04	0.07
Pain Killers /Analgetici(HNPK)	0.25**	-0.09	-0.008	0.18**
Nutritional supplement /Dodaci ishrani(HNNU)	-0.09	0.001	-0.04	-0.04
Feeding tube/Ishrana preko cevi (HNFE)	0.02	-0.15**	-0.21**	-0.13*
Weight loss/Gubitak težine (HNWL)	0.10*	-0.07	-0.09	0.05
Weight gain /Dodavanje težine(HNWG)	-0.14**	0.05	0.05	-0.10*

Spearmanov rank koeficijenta koleracije
Spearman's Rank correlation co-efficient, *Significant $P<0.05$, **Significant $P<0.01$

Tabela 4 Multivarijantna linearna regresija između indikatora oralnog zdravlja i EORTC KŽ H&N35
Table 4 Multivariate linear regression between oral health indicators and EORTC QLQ H&N35

Dependent Variables	Predictors	β coefficient	SE	95% CI	P value
Pain (HNPA)	Constant	24.41	5.15	14.27 to 34.54	<0.001**
	Dental visit	3.73	1.99	-0.55 to 7.29	0.09
	Oral complication	-7.83	2.05	-11.86 to -3.79	<0.001**
	Disfigurement	3.90	2.04	-0.10 to 7.90	0.05*
Swallowing (HNSW)	Constant	-71.09	193.72	-451.93 to 309.76	0.71
	Dental visit	-142.99	86.43	-312.91 to 26.94	0.09
	Disfigurement	150.64	86.41	-19.24 to 320.52	0.08
Senses (HNSE)	Constant	8.99	3.31	2.48 to 15.51	0.01*
	Dental visit	3.70	2.13	-0.48 to 7.89	0.08
Speech (HNSP)	Constant	13.02	4.04	5.08 to 20.96	0.001*
	Dental visit	5.39	2.59	0.29 to 10.48	0.04*
Social eating (HNSO)	Constant	46.67	5.05	36.74 to 56.59	<0.001**
	Oral complication	-5.85	2.63	-11.03 to -0.67	0.03*
	Disfigurement	-5.15	2.63	-10.32 to 0.02	0.05*
Social contact (HNSC)	Constant	23.07	3.14	16.89 to 29.24	<0.001**
	Disfigurement	-6.35	1.96	-10.20 to -2.50	0.001*
Sexuality (HNSX)	Constant	-338.66	516.17	-1353.43 to 676.11	0.51
	Disfigurement	-546.07	322.14	-1179.37 to 87.23	0.09
Problem in Teeth (HNTE)	Constant	149.23	274.51	-390.44 to 688.89	0.59
	Oral complication	-308.19	178.22	-658.56 to 42.17	0.08
Opening mouth (HNOM)	Constant	86.66	6.08	74.69 to 98.62	<0.001**
	Oral complication	-27.01	3.17	-33.26 to -20.77	<0.001**
	Disfigurement	-10.31	3.17	-16.54 to -4.09	0.001*
Dry mouth (HNDR)	Constant	47.06	8.96	29.43 to 64.68	<0.001**
	Dental visit	6.09	3.47	-0.73 to 12.92	0.08
	Oral complication	-6.52	3.56	-13.53 to 0.49	0.07
	Disfigurement	-6.32	3.54	-13.29 to 0.63	0.07
Sticky saliva (HNSS)	Constant	48.11	4.58	39.10 to 57.12	<0.001**
	Oral complication	-10.94	2.97	-16.79 to -5.09	<0.001**
Coughing (HNCO)	Constant	-8.85	8.57	-25.69 to 7.98	0.30
	Disfigurement	4.35	2.55	-0.67 to 9.37	0.09
	Rehabilitation	9.61	4.35	1.06 to 18.16	0.03*
Felt ill (HNFI)	Constant	9.10	4.04	1.17 to 17.04	0.02*
	Dental visit	5.97	2.59	0.88 to 11.07	0.02*
Pain Killers (HNPK)	Constant	21.06	12.19	-2.90 to 45.02	0.08
	Dental visit	25.39	3.77	17.99 to 32.80	<0.001**
	Rehabilitation	12.06	6.41	-0.55 to 24.67	0.06
Nutritional supplement (HNNU)	Constant	9.42	2.75	4.01 to 14.84	<0.001**
	Dental visit	-4.18	1.77	-7.67 to -0.71	0.02*
Feeding tube (HNFE)	Constant	70.48	13.02	44.89 to 96.08	<0.001**
	Oral complication	-8.19	3.71	-15.51 to -0.89	0.03*
	Disfigurement	-12.35	3.77	-19.76 to -4.94	0.001*
	Rehabilitation	-12.19	6.26	-24.51 to 0.12	0.05*
Weight loss (HNWL)	Constant	42.15	7.57	27.27 to 57.04	<0.001**
	Dental visit	12.61	4.86	3.05 to 22.16	0.001*
Weight gain (HNWG)	Constant	30.07	4.78	20.67 to 39.48	<0.001**
	Dental visit	-12.93	3.07	-18.97 to -6.89	<0.001**

*P<0.05 significant; **P<0.001 highly significant, CI= confidence interval

Diskusija

Pacijenti sa KGV žive pod stalnom pretnjom razvoja fizičkih, emocionalnih i funkcionalnih komplikacija tokom lečenja, što na kraju utiče na njihov kvalitet života. Kvalitet života je važan za onkološka i psiho-socijalna istraživanja o bitnim parametrima, kao što su ishodi lečenja, preživljavanje, mortalitet i stopa komplikacija[18]. Utvrđeno je to da oralne komplikacije vezane za govor, unos hrane, fizički izgled, kserostomiju i bol najviše utiču na kvalitet života[19]. Fokus je stavljen na procenu indikatora oralnog zdravlja i perspektivu pacijenta, vezanu za kvalitet života u ovoj studiji. Nalazi ove studije pokazali su to da je većina pacijenata koristila četkice za zube za održavanje oralne higijene. Mali broj pacijenata koristio je prst za čišćenje zuba, a razlog koji su pacijenti naveli tokom intervjua je nemogućnost upotrebe četkica za zube zbog ograničenog otvaranja usta, izazvanog karcinomom ili hirurškim lečenjem. Određeni broj pacijenata (31,75%) u ovoj studiji koristi vodice za ispiranje usta, kao pomoćno sredstvo, uz četkicu za zube. Razlog ovome je propisivanje ove metode za održavanje oralne higijene, kao redovne terapije kod pacijenata podvrgnutim radioterapiji. U ovoj studiji, većina pacijenata pripada ruralnim zajednicama i ima niži socio-ekonomski status, pa stoga mogu zanemariti svoje oralno zdravlje i na taj način izbegavati posete stomatologu. Osim toga, u zemljama u razvoju, kao što je Indija, oralno zdravlje smatra se veoma zanemarenim za razliku od oralnog zdravlja u zapadnim zemljama, gde je oralno zdravlje od najveće važnosti, kao i zdravlje svakog drugog dela tela. Zbog neredovnih poseta stomatologu i nedovoljnoj svesti o oralnom zdravlju, većini pacijenata dijagnostikovana je terminalna faza KGV[20]. Parodontalni problemi bili su uobičajene oralne komplikacije u ovoj studiji, te je rezultat predstavljen u ovoj studiji bio sličan rezultatima predstavljenim u prethodnim studijama[4,9,21]. Loša oralna higijena povezana sa KGV-om dovodi do trauma i inflamacije. Uzroci traume i zapaljenja posledica su koegzistirajuće bolesti i/ili zanemarivanja oralne higijene. Dakle, ovi indikatori mogu pokazati promenu u oralnoj flori[22], abraziju zuba[23], mehaničku traumu[24] i zanemarivanje opšteg zdravstvenog stanja. Hemoterapeutski lekovi menjaju protok i viskozitet pljuvačke i količinu antikariogenih enzima, kao što su lizozim, laktoperoksidaza, imunoglobulini, histamin i laktoferin[25]. Ove promene mogu izazvati poteškoće prilikom gutanja, formiranje plaka i posledične promene u ishrani bogatoj ugljenim hidratima, kao i povećanje učestalosti karijesa zuba.

Discussion

Both the HNC patients and the survival patients are living under constant threat of developing physical, emotional, and functional complications during the treatment,which ultimately affects their QoL.QoL is important for oncological as well as psycho-social research about important parameters like treatment outcomes, survival, mortality, and complication rates[18]. The oral complicationsrelated to speech, food intake, physical appearance, xerostomia, and pain have been found to bear on QoL[19]. Thus, a focus was made on the assessment of oral health indicators and the patient's perspective on QoL in this study.

Thefindings of this study showed mostof the patientsused toothbrushesfor maintaining their oral hygiene. Few patients usedthe finger to clean their teeth. The reason given by the patients during the interview was their inability to use toothbrushesbecause of restricted mouth opening due to cancer or after surgical treatment. A good number of patients (31.75%) in the present study used mouthwashes as an adjuvant with a toothbrush. This is because themouth wash was prescribed regularly to the patients undergoing radiotherapy for an effective means for oral hygiene maintenance. In the present study, most of the patients belonged to rural communities and had lower socioeconomic status hence, they may have neglectedtheir oral health and thus avoided dental visits. Besides, in developingcountries like India,the oral cavity is considered a highly neglected part of the body in contrast with western countries where the oral cavityis paramount important like any other part of the body. Because of the lack of dental visits and unawareness regarding oral health,the majority of the patients were diagnosed at the terminal stage ofHNC[20].

Periodontal problems were common oral complicationsin the present study, this result was similar to the previous studies[4,9,21]. Poor oral hygiene associated with HNC falls into categories of trauma and inflammation.

Causes of trauma and inflammation are due to coexisting disease and/or negligence of oral hygiene. Thus, these indicators may show the shift in the oral flora[22], tooth wear[23], mechanical trauma[24], and general health maintenance, all of which are linked to cancer. Chemotherapeutic drugs alter salivary flow and viscosity and the amount of anti-cariogenic enzymes like lysozyme, lactoperoxidase, immunoglobulins, histamine, and lactoferrin[25].

Redovne posete stomatologu igraju značajnu ulogu u gubitku zuba tokom lečenja karcinoma, pa je bezubost pacijenata manja nakon lečenja. Zbog toga je dentalna rehabilitacija parcijalnom protezom bila moguća[9]. Rogers i sar.[26] prijavili su značajno gori kvalitet života pacijenata sa potpunom bezubošću u poređenju sa pacijentima kod kojih postoji parcijalna bezubost. Izrada maksilofacijalne proteze najbolja je alternativa za hiruršku rekonstrukciju posle operacije za poboljšanje oralne funkcije[27] i kvaliteta života[28,29]. Nažalost, rezultati pokazuju loš odziv posetama stomatologu i lošu rehabilitaciju.

U ovoj studiji, indikatori oralnog zdravlja i većina skala EORTC KLK-H&N35 pokazuju značajnu korelaciju. Ovaj rezultat bio je očigledan, pošto je EORTC KLK-H&N35 upitnik specifičan za bolest i mesto (glava i vrat) karcinoma. Prema istraživanjima MacEntee i sar. [30], oralno zdravlje proističe od tri faktora: udobnost (uključujući bol i ishranu), oralna higijena i opšte zdravlje. Ovo je potkrijepljeno nalazima ove studije. Postojala je značajna korelacija između bola, problema u socijalnoj interakciji i oralnih komplikacija. Kao što je očigledno, u studiji je prijavljena značajna korelacija između oralnih komplikacija i simptoma povezanih sa suvoćom usta, lepljivom pljuvačkom i poteškoćama pri otvaranju usta. Uočena je značajna korelacija između prisustva deformiteta, kao posledice hirurškog zahvata i problema sa otvaranjem usta i socijalnom interakcijom. Hirurška resekcija često dovodi do značajne estetske deformacije i pacijenti se suočavaju sa ograničenim otvaranjem usta i postaju socijalno hendikepirani. Usluge rehabilitacije, kao što su obturatori i druge maksilofacijalne proteze poboljšavaju funkcionalnost, estetiku i emocionalni status pacijenta, koji se leče od karcinom. Međutim, rezultat pokazuje to da je vrlo mali broj pacijenata (9,50%) imao stomatološku rehabilitaciju u bilo kom obliku. Zbog toga, preporučeno je da se pacijentima promoviše zdravlje i upoznavanje sa mogućnošću korišćenja maksilofacijalne proteze pre hirurškog lečenja. Takođe, potrebno je obezbediti rehabilitacione usluge u postoperativnom periodu. Rezultati ove studije pokazali su to da postoji značajna zabrinutost za kvalitet života među pacijentima koji pate od KGV. Neophodno je formirati multidisciplinarni tim sa širokim spektrom specijalista za dijagnostiku, planiranje lečenja i praćenje svih pacijentata tokom bolesti i rehabilitacije.

Thesechanges can cause difficulty in swallowing, plaque formation, and consequent changes to a pasty carbohydrate-rich diet, increasing the incidence of dental caries. Regular dental visits play a significant role in teeth loss during cancer treatment, and thus the edentulousness of the patient is less post-treatment. Therefore, dental rehabilitation with a partial prosthesis was possible[9]. Rogers SN[26] reported significantly poor QoL among fully edentulous patients as compared to partially edentulous patients. The fabrication of maxillofacial prosthesis is the best alternative for surgical reconstruction post-operatively for the improvement in oral function[27] and QoL[28,29]. Unfortunately, the results show poor compliance with dental visitsand poor rehabilitation.

In the present study, the oral health indicators and most of the scales of EORTCQLQ- H&N35 show a significant correlation. This result was obvious, as the EORTC QLQ-H&N35 is a disease and site-specific (head and neck) questionnaire. According to MacEntee et al. [30], oral health is a mixture of three themes: comfort (including pain and eating), oral hygiene, and general health. This was supported by the present findings. There was a significant correlation between the pain, problems in social interaction, and oral complications. As obvious,a significant correlation between the oral complication and symptoms related to dryness of the mouth, sticky saliva, and difficulty in mouth openingwas reported in the study. A significant correlation was observed between the disfigurement and the problems with mouth opening and social interaction. The disfigurement was associated with the surgical procedure. This might be because surgical resection often leads to a considerable estheticdeformation andpatients experience restricted mouth opening hence, they become socially handicapped. The rehabilitative services like gliding flange, obturators, and other maxillo-facialprostheses will enhance the functionality, esthetics, and sense of well-being among the patients receiving cancer treatment. However, the result shows that very few patients (9.50%) were having dental rehabilitation in any form. Hence, it hasbeen recommended that the patients should be given health promotion and made aware of themaxillo-facial prosthesisbefore the surgical treatment. Also, provision should be made as a part of rehabilitative services postoperatively.

Preporučuju se savetovanje, edukacija i podrška preživelima. Poseban naglasak treba staviti na odgovarajuću stomatološku procenu za: a) ranu dijagnozu bilo kakvih stomatoloških promena, koje treba identifikovati i odmah tretirati, pre nego što počne lečenje karcinoma; b) selektivno vađenje zuba treba uraditi pre radioterapije i omogućiti dovoljno vremena za izlečenje; c) oralni higijeničar treba da radi sa ovim pacijentima, kako bi postigao visoke standarde oralne higijene, u cilju smanjenja komplikacija posle tretmana; d) stomatolog treba da proceni bezubo područje (ako ga ima), kao i postoperativne defekte. U ovu studiju uključen je veliki broj uzoraka pacijenata sa KGV-om, koji su bili podvrgnuti hirurškoj intervenciji, hemioterapiji, zračnoj terapiji i/ili kombinaciji modaliteta lečenja. Međutim, treba uzeti u obzir nekoliko ograničenja i rezultate treba tumačiti sa oprezom. Prvo, studija je dizajnirana kao studija preseka, tako da se ne može utvrditi uzročna-posledična veza. Zato je potrebna longitudinalna studija sa ciljem daljeg istraživanja problema kvaliteta života. Drugo, procena indikatora oralnog zdravlja bila je subjektivna. Bilo bi bolje kada bi se neki indeksi (OHI-S, DMFT, indeks pljuvačke i indeks mukozitisa) uzeli u obzir za objektivnu procenu različitih problema oralnog zdravlja. Ovo bi pomoglo za tačno tumačenje stanja oralnog zdravlja i kvaliteta života pacijenata. Konačno, ova studija bila je ograničena na samo jedan institut. Međutim, to je regionalni bolničko-tercijarni centar za karcinome i smatra se jednim centrom za registraciju karcinoma, što utiče na poboljšanje eksterne validnosti studije.

The results of thepresent study showed that there was a significant concern for QoL among the patients suffering from HNC. A multidisciplinary team with a wide range of specialists has to be established for diagnosis, treatment planning, and management of all patients throughout their disease and rehabilitation.Their advice, education, and support to the survivor are recommended. Special emphasis should be made by proper dental assessment by the dentist fora) Early diagnosis of any dental problems needs to be identified and should be treated promptly before cancer treatment begins, b) Selective dental extraction should be done beforeradiotherapyallowing sufficient time to heal, c) A dental hygienist should work with these patients to achievehigh standards of oral hygiene, toreduce complication after treatment,d) The prosthodontist should assessthe edentulous area (if any) and the postoperative defects.

This study enrolled a good number of samples of HNC patients who underwent surgical, chemo-radiation, and/or a combination of treatment modalities. However, few limitationsshould be considered and results should be interpreted with caution. First, the study design was cross-sectional, and thus a causal relationship cannot be established. Hence, a longitudinal study is required to further investigate the QoL issues. Second, the assessment of oral health indicators was subjective.It would have been better if some indices (OHI-S, DMFT, index for salivary flow, index for mucositis) have beentaken into account for assessing various oral health problemsobjectively. This would have helped theaccurate interpretation ofthe oral health status and QoL of the patients. Finally, the present study was limited to only one institute. However, it is the regional hospital-tertiary cancer center and considered as one centerfor registration of cancer, which thus improves the external validity of the study.

Zaključak

U okviru ograničenja ove studije, može se zaključiti da je intenzitet loših pokazatelja oralnog zdravlja bio veoma visok. Uočena je slaba korelacija između indikatora oralnog zdravlja i skala kvaliteta života pacijenata sa KGV. Indikatori oralnog zdravlja bili su značajani u prognozi kvaliteta života pacijenata sa KGV. Dakle, treba osmisliti i primeniti različite strategije, kako bi se sprečile oralne komplikacije i održalo dobro stanje oralnog zdravlja. Multidisciplinarni pristup, koji uključuje onkološko, medicinsko, stomatološko, fizioterapeutsko i medicinsko osoblje bio bi efikasan. Ovakav tim imaće vitalnu ulogu, ne samo u dijagnostici karcinoma i tokom njegovog lečenja, već i tokom perioda rehabilitacije i na taj način poboljšati kvaliteta života ovakvih pacijenata.

Conclusion

Within the limitation of this study, it can be concluded that the intensity of poor oral health indicators was very high. Weak correlation between oral health indicatorsand scales of QoLin the HNC patientswas observed. Oral health indicators werea significant predictor ofQoL among HNC patients. So, different strategies should be framed and implemented to prevent oral complications and to maintain good oral healthstatus. A multi-disciplinary approach involving the oncology, medical, dental, physiotherapist, and nursing staff would be effective. This team will play a vital role not only during the diagnosis of cancer, during its treatment but also during the rehabilitative treatment andthus improving the quality of life.

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