

Self-reported oral health status: Perspectives of patients undergoing therapy for cancer of the head and neck region, in the eThekweni District, KZN

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ABSTRACT

Background

There is a dearth of published evidence related to understanding oral health needs for patients undergoing therapy for cancer of the head and neck region in South Africa.

Aim and objectives

This study aimed to assess perceived oral health status of patients undergoing therapy for cancer of the head and neck region, in eThekweni district, KwaZulu-Natal.

Methods

This was a cross-sectional case study using quantitative data to determine patients' perspectives of oral health status and need. The study population comprised 235 voluntary patients (aged between 20-70 years old), undergoing treatment or follow up for cancer therapy of the head and neck region, in a public tertiary referral hospital in the eThekweni district, KwaZulu-Natal. Purposive sampling technique was used for participant selection. The research instrument comprised a combination of two previously validated questionnaires: a core questionnaire (EORTC QLQ-C30, Version 3.0) and the head and neck cancer specific module (EORTC H&N-35). Data was analysed using the statistical package for software sciences (SPSS), version 24.

Results

More than half of the study population were male (60%; n= 141). The mean age was 54.38 (SD= 12.30). The results indicate that 14.5% (n=34) were employed, 46.4% (n=109) were unemployed because of cancer and 39.1% (n=92) were unemployed due to other reasons (old age, housewife). Oral cavity cancer was the most common (n=91; 38.7%), followed by laryngeal cancer (n= 53; 22.6%) among all the other head and neck cancers. Males (n=50; 21.3%) were more affected by oral cavity cancer as compared to females (n=41; 17.4%). With reference to treatment, 20.4% (n=48) were on radiotherapy, 28.5% (n=67) were on chemotherapy and 9.8% (n=23) were on CCRT, 17.4% (n=41) had surgery, 8.5% (n=20) were recently diagnosed with cancer of the head and neck and 23.4% (n=55) were on follow up. Oral health-related symptoms were experienced to varying degree by the participants.

The majority of participants (n=125; 53.2%) did not report any pain and discomfort. More female participants (n=7; 7.4%) in the age group of 41-60 reported of severe difficulty in swallowing liquids than males of the same age group. Most participants (n=148; 63.0%) had difficulty in swallowing solid foods. Similarly, the majority of participants experienced problems with their teeth (n=162; 69.0%), reported xerostomia (n=159; 67.7%). With reference to trismus, a higher proportion of females (n=27; 28.7%) reported severe trismus compared to male participants (n=33; 23.4%). With reference to increased viscosity of saliva, 34.0% (n=32) of females reported extremely sticky saliva as compared to 29.8% males (n=42).

CONCLUSION

It is apparent from the findings that oral health-related complications are present in varying degrees in the study participants with head and neck cancer. It is important to educate patients to seek treatment for these complications. It is equally important that dentists and dental health care providers with specific skills-mix, assess and manage such complications efficiently and timely so as to improve the quality of life of patients with head and neck cancer.

INTRODUCTION

The head and neck region is a complex anatomical structure¹. This region and its physiological functions are

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both affected by cancer or its multimodality treatment¹. Head and neck cancer (HNC) is a complex disease extending from the skull base to the clavicles, comprising different subsites namely, pharynx (including hypopharynx, nasopharynx and oropharynx), larynx, paranasal sinuses and nasal cavity, minor and major salivary glands, oral cavity (including lip, alveolar ridge, buccal mucosa, gingiva, oral tongue, retromolar trigone and floor of mouth), ear, skin and neck^{2,3}. Cancer of the eye was also included besides that of oral cavity, pharynx, larynx, nasal cavity, paranasal sinuses and salivary glands since it is also found in the head and neck region⁴.

Radiotherapy (RT), chemotherapy (CT), concurrent chemoradiotherapy (CCRT), and surgery are the different treatment modalities employed in the management of head and neck cancer⁵. The oral cavity, its subsites and dental hard tissues are some of the vital structures which get affected either directly or indirectly by effects of radiotherapy, chemotherapy, concurrent chemoradiotherapy and surgery of any head and neck cancer⁶. Thus, oral health support and maintenance is of dynamic importance before, during and even after therapy since multimodal treatment-related oral complications like radiation caries, oral mucositis, xerostomia, osteoradionecrosis, periodontal disease, trismus, hypersensitivity and infections, pose a challenge for optimum oral health care⁷. The motor functions including mastication, deglutition, speech and sensory functions of the gustatory, olfactory and auditory systems are disturbed⁸. Disfigurement of the facial appearance is also a challenging complication because of the highly conspicuous nature of this region⁹.

Poor oral health is linked to poorer quality of life and increased mortality¹⁰. Therefore, assessment of the oral health of patients with cancer of the head and neck is an important form of support in oral health care since the head and neck region comprise of vital organs which, when affected, unfavourably impact on the overall well-being.

Oral health services are delivered via the public and private sector in South Africa¹¹. The public sector caters for 80% of the population of South Africa by providing primary preventive and restorative care¹¹. The rural areas of KwaZulu-Natal comprise of almost 62% of the total population. However, an unequal distribution of services is present since the urban areas are more privileged in terms of oral health care access¹². Inadequate and unequal distribution of dental health care providers and dental professionals is one of the reasons contributing to this unequal trend in service delivery^{11,12}. Delivering oral health care through an integrated approach is incessantly and persuasively mentioned in policy planning documents but research demonstrated that this approach is not fully translated into actions and hence a lack in meaningful content is observed¹³. A qualitative component of this present study also showed that there is a significant gap in service delivery for patients undergoing treatment for head and neck cancer since there is no specific oral health policy for this population group.

This study arose as a need to assess the perceived overall well-being and oral health status of patients undergoing therapy for cancer of the head and neck so as to empower

patients to identify their own needs which will subsequently provide a contribution to provincial oral health planning.

For ease of analysis, cancer of the lip, buccal mucosa, anterior two thirds of tongue, floor of mouth, maxilla, mandible, hard palate, gingiva and retromolar trigone were grouped under oral cavity cancer^{4,14}. Similarly, cancer of the base of the tongue, soft palate and tonsils were categorised under oropharyngeal cancer¹⁴. Salivary gland cancer consisted of only parotid and submandibular gland cancer. There were no other cancers of the salivary gland like sublingual gland and minor salivary gland cancer.

METHODS

This was a descriptive cross-sectional case study conducted between April to August 2017 to determine the perceptions of overall well-being and oral health status in patients undergoing treatment for head and neck cancer using quantitative methods. The study site was a public tertiary central referral hospital for the management of cancer, located in the Ethekwini Metropolitan Municipality within the province of KwaZulu-Natal. The sample population consisted of 235 voluntary adult patients of both sexes who were undergoing therapy exclusively for cancer of the head and neck region (active treatment, prior to treatment, or follow up). Purposive sampling technique was used for participant selection.

The sample size was calculated by taking into consideration the proportion of population in KZN, using a uniform distribution to have an estimate of the head and neck cancer cases in KZN and assuming that 65% of head and neck cancer patients attend public hospitals. The required sample size according to the calculation was 147. However, it was agreed that 250 participants would be included in the study instead of 147 so as to have more conclusive and accurate results and increase the statistical power. However, the final sample size was 235, given that fifteen patients did not consent. A total of 250 patients were approached either from the waiting room or radiotherapy or chemotherapy departments of the Oncology Unit of the hospital and explicit information about the study and time commitments were given verbally. All interested persons were given a participant information sheet to allow voluntary informed decisions to be made before consenting. The information sheets contained full details about the nature, purpose and any potential benefits and risks of the study in a simple, concise and easily understandable language. Participants were also informed of their right to withdraw from the study at any time they wish so without incurring any penalty or loss of treatment benefits to which they are entitled to receive. The inclusion criteria were histologically diagnosed head and neck cancer participants undergoing therapy, aged between 20-70 years old.

The research instrument comprised of a combination of two different validated questionnaires: A core questionnaire (EORTC QLQ-C30, Version 3.0) and the head and neck cancer specific module (EORTC QLQ-H&N35). A total of 30 and 35 questions respectively were answered in a four-point likert type scale format with responses such as 1 (Not at all), 2 (A little), 3 (Quite a bit) and 4 (Very much) for all questions but 2 items related to global health and quality of life in EORTC QLQ-C30 where there is a scale of 1-7 and

5 items of EORTC QLQ-H&N35 where there is a choice between yes or no.

The EORTC QLQ-C30 is known as the core questionnaire and was chosen because its reliability and validity have been researched and implemented using a modular and integrated approach for over a decade and is used in numerous international clinical trials and is reported to be accurate, valid and reliable¹⁵. The newer version, that is version 3.0, was used in this research as it was shown to be more reliable than previous versions based on the physical functioning scale¹⁶. This questionnaire consists of 30 questions with both single item and multi item scales, out of which 5 cover the functional scales (physical, role, cognitive, emotional and social),⁹ cover the symptom scales (pain, fatigue, nausea, vomiting, diarrhoea, constipation, loss of appetite, financial difficulties and insomnia) and one scale being related to global health status and quality of life¹⁵.

EORTC QLQ- H&N35 is a specific module for head and neck cancer and has been field tested in more than ten countries and was found to possess robust psychometric validity, although some minor modifications were intended to be made^{15,17}. It has to be used together with the core questionnaire. It is composed of 35 questions containing both single and multiple item scales to assess treatment side effects and symptoms¹⁵. There are 11 single item questions (like mouth opening, dry mouth, sticky saliva, teeth problems, feeling ill, cough, pain killers, nutritional supplements, use of feeding tube, weight loss/gain) and 7 multiple item questions on pain, swallowing, sexuality, social contact, social eating, speech and senses¹⁵.

The English and IsiZulu versions of the questionnaires are both available. Permission from the EORTC Data Centre was obtained prior to using both questionnaires in both languages in this research project. The questionnaires were administered by the researcher (for English-speaking participants) and a research assistant (for IsiZulu-speaking participants).

Approval from the KwaZulu-Natal Department of Health and ethical clearance from the Biomedical Research Ethics Committee of the University of KwaZulu-Natal were given prior to the commencement of the study (BREC Ref: BE041/17). Ethical principles were strictly adhered to.

Demographic details including gender, race, age, municipality, employment history, cancer site and treatment history were recorded. The cancer site was confirmed with the oncologist or oncology nurse from the participants' medical files. The other details were obtained verbally from the participants prior to administering the questionnaires.

The data set was captured on Microsoft excel spreadsheet on a password-protected computer and imported onto IBM Statistical Package for Social Sciences (SPSS) Version 24. Demographic details of the participants were calculated using descriptive statistics (mean, frequency, percentages, standard deviation). Pearson Chi-Square test was used to assess possible relationship between the independent and dependent variables. The p-value was set to less than 5% (< 0.05) to be significant.

Both questionnaires have been validated in previous studies¹⁶. The questionnaires (EORTC QLQ-C30 and EORTC QLQ-H&N35) used were aligned to the aims and objectives of this study and this added to the internal validity. The generalisability of this study is limited to the study site which is a tertiary hospital. Reliability was maintained by double checking the data during data entry and eliminating all outliers.

RESULTS

The study population consisted of 235 patients undergoing treatment for cancer of the head and neck. The sample population comprised of 60% (n= 141) male and 40% (n=94) female. The mean age was 54.38 (SD= 12.30). The majority of participants was from Ethekwini municipality (n=175; 74.5%). Amajuba district recorded the least number of participants (n=1; 0.4%). Concerning employment history, 14.5% (n=34) were employed, 46.4% (n=109) were unemployed because of cancer and 39.1% (n=92) were unemployed due to other reasons (old age, housewife). As for treatment history, currently (at the time of data collection) 20.4% (n=48) were on radiotherapy, 28.5% (n=67) were on chemotherapy and 9.8% (n=23) were on CCRT. Participants who were recently diagnosed with cancer of the head and neck (treatment not yet started) accounted for 8.5% (n=20), while 23.4% (n=55) were on follow up.

The oral cavity cancer was found to be the most common (n=91; 38.7%), followed by laryngeal cancer (n= 53; 22.6%) among all the other head and neck cancer. Males (n=50; 21.3%) were mostly affected by oral cavity cancer as compared to females (n=41; 17.4%). Our study also showed that laryngeal cancer was three times more common in males (n=40; 17%) than in females (n=13; 5.5%). A significant relationship was found between laryngeal cancer and Coloured male and female, Indian male and female and White male. A significant statistical difference for Indian with cancer site variable was found ($p < 0.05$).

The findings (Table 2) indicate that the majority of participants (n=125; 53.2%) did not experience any pain in the jaw (maxillary and/or mandibular) while the rest of the participants (n=110; 46.8%) had varied responses to perceived pain. Among those who had pain in the jaw, a greater number of males (n=26; 18.4%) than females (n=10; 10.6%) reported minimal/negligible ("a little") pain in the jaw, while more females (n=24; 25.5%) reported severe ("very much") pain in the jaw than males (n=22; 15.6%). The results also demonstrated that perceived intra-oral discomfort ("soreness in the mouth") was statistically significant ($p=0.010$). The majority of participants (n=135; 57.4%) did not experience any intra-oral related pain and discomfort (soreness of the mouth). The results indicate that only 13.8% females (n=13) and 7.8% males (n=11) experienced severe intra-oral related pain and discomfort. With reference to swallowing liquids, 10.6% females (n=10) and 5.7% males (n=8) indicated severe difficulty in swallowing. The findings further demonstrate that more female participants (n=7; 7.4%) in the age group of 41-60 reported of severe difficulty in swallowing liquids than males of the same age group. Male participants who perceived

Table 1: Demographic and clinical characteristics of all participants		
Variable	n	%
Gender		
Male	141	60
Female	94	40
Age range		
20-30	13	5.5
31-40	24	10.2
41-50	38	16.0
51-60	74	31.5
61-70	86	36.6
Employment history		
Employed	34	14.5
Unemployed because of cancer	109	46.4
Unemployed because of other reasons (old age, housewife)	92	39.1
Cancer site		
Oral cavity	91	38.7
Oropharynx	22	9.4
Nasopharynx	5	2.1
Hypopharynx	12	5.1
Larynx	53	22.6
Salivary gland	15	6.4
Nasal cavity	16	6.8
Paranasal sinuses	2	0.9
Eye	13	5.5
Ear	6	2.6
Treatment history		
Treatment not yet started	20	8.5
Actively on radiotherapy**	48	20.4
Actively on chemotherapy**	67	28.5
Actively on CCRT**	23	9.8
Surgery	41	17.4
Follow up	55	23.4
(** includes those who had undergone surgery also)		

severe difficulty to swallow liquids were all in the age group of 51-70. Only one female in the age group of 31-40 reported severe difficulty in swallowing liquids. The majority (=135; 57.4%) of participants did not experience any problem in swallowing pureed foods. Among those who did have difficulty (n=100; 42.6%) to swallow pureed food, equal proportion of males (n=27; 19.1%) and females (n=18; 19.1%) experienced minimal difficulty to swallow pureed foods. However slightly more females (n=13; 13.8%) experienced severe difficulty in swallowing pureed foods than males (n=17; 12.1%). Most of the participants (n=148; 63.0%) experienced difficulty to swallow solid foods, among whom 65 participants (27.7%) comprising 26.2% (n=37) males and 30% (n=28) females reported severe difficulty in swallowing solid foods. The results indicate that the majority of participants experienced

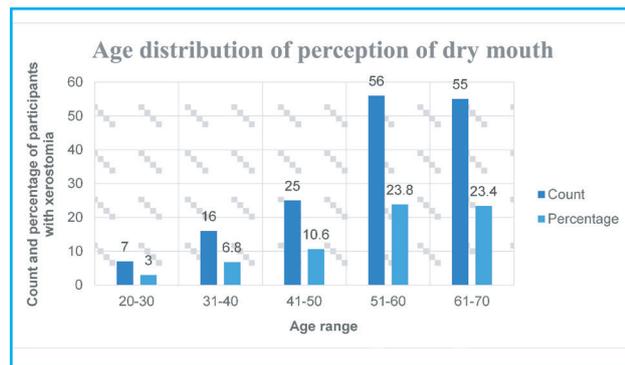


Figure 1: Age distribution of patient-reported xerostomia

problems with their teeth (n=162; 69.0%).

With reference to trismus (difficulty to open the mouth wide), the majority of participants (n=141; 60%) reported difficulty to open their mouth completely and there was a higher proportion of females (n=27; 28.7%) who reported severe trismus compared to male participants (n=33; 23.4%). A significant number of participants experienced xerostomia, ("dry mouth") (n=159; 67.7%). Almost 28% of participants (n=65) experienced severe xerostomia. More females (n=33; 35.1%) than males (n=32; 22.7%) experienced severe xerostomia. Increased viscosity of saliva ("sticky saliva") was also reported by the majority of participants (n=157; 66.8%).

Thirty four percent (34.0%) of females (n=32) reported extremely sticky saliva as compared to 29.8% males (n=42). Further, 44.3% (n=104) participants did not experience dysgeusia (taste alteration/taste distortion), while the majority of participants (n=131; 55.7%) had varied responses to the severity dysgeusia. Among those who perceived dysgeusia, less females (n=13; 13.8%) reported negligible dysgeusia than males (n=25; 17.7%) while 22.3% females (n=21) reported severe dysgeusia as compared to 19.1% males (n=27). The findings also indicate that 41.3% participants (n=97) did not experience any difficulty to eat while the majority of participants (n=138; 58.7%) had varied responses with respect to difficulty in eating. Among those who had difficulty to eat, 35.1% females (n=33) had severe problem in eating as compared to 23.4% males (n=33).

DISCUSSION

This study examined the reported oral-health related symptoms among patients with cancer of the head and neck.

A higher percentage of men were found to be affected by head and neck cancer than women in the ratio of 1.5:1. This is consistent with the literature which reports that head and neck cancer is 2-5 times more prevalent in males than in females globally, depending on the geographical location¹⁸. The results indicate that head and neck cancer was most common in the 61-70 (n=86; 36.6%) age group followed by the 51-60 age group (n=74; 31.4%). This finding is in contrast with previous studies which reported of the commonest head and neck cancer cases in the age group 51-60^{4,19}.

Table 2: Respondents' reported oral health related symptoms						
Questions	Responses	Male, n (%)	Female, n (%)	Total, n (%)	χ^2	p-values
Have you had pain in your jaw?	Not at all	74 (52.5)	51 (54.3)	125 (53.2)	5.835	0.120
	A little	26 (18.4)	10 (10.6)	36 (15.3)		
	Quite a bit	19 (13.5)	9 (9.6)	28 (11.9)		
	Very much	22 (15.6)	24 (25.5)	46 (19.6)		
Have you had soreness in your mouth?	Not at all	79 (56.0)	56 (59.6)	135 (57.4)	11.372	0.010*
	A little	36 (25.5)	9 (9.6)	45 (19.1)		
	Quite a bit	15 (10.6)	16 (17.0)	31 (13.2)		
	Very much	11 (7.8)	13 (13.8)	24 (10.2)		
Have you had problems swallowing liquids?	Not at all	92 (65.2)	59 (62.8)	151 (64.3)	2.068	0.558
	A little	26 (18.4)	15 (16.0)	41 (17.4)		
	Quite a bit	15 (10.6)	10 (10.6)	25 (10.6)		
	Very much	8 (5.7)	10 (10.6)	18 (7.7)		
Have you had problems swallowing pureed food?	Not at all	81 (57.4)	54 (57.4)	135 (57.4)	0.306	0.959
	A little	27 (19.1)	18 (19.1)	45 (19.1)		
	Quite a bit	16 (11.3)	9 (9.6)	25 (10.6)		
	Very much	17 (12.1)	13 (13.8)	30 (12.8)		
Have you had problems swallowing solid food?	Not at all	50 (35.5)	37 (39.4)	87 (37.0)	1.634	0.652
	A little	33 (23.4)	16 (17.0)	49 (20.9)		
	Quite a bit	21 (14.9)	13 (13.8)	34 (14.5)		
	Very much	37 (26.2)	28 (29.8)	65 (27.7)		
Have you had problems with your teeth?	Not at all	45 (31.9)	28 (29.8)	73 (31.1)	0.775	0.855
	A little	27 (19.1)	15 (16.0)	42 (17.9)		
	Quite a bit	35 (24.8)	27 (28.7)	62 (26.4)		
	Very much	34 (24.1)	24 (25.5)	58 (24.7)		
Have you had problems opening your mouth wide?	Not at all	60 (42.6)	34 (36.2)	94 (40.0)	5.929	0.115
	A little	16 (11.3)	19 (20.2)	35 (14.9)		
	Quite a bit	32 (22.7)	14 (14.9)	46 (19.6)		
	Very much	33 (23.4)	27 (28.7)	60 (25.5)		
Have you had a dry mouth?	Not at all	47 (33.3)	29 (30.9)	76 (32.3)	4.809	0.186
	A little	32 (22.7)	18 (19.1)	50 (21.3)		
	Quite a bit	30 (21.3)	14 (14.9)	44 (18.7)		
	Very much	32 (22.7)	33 (35.1)	65 (27.7)		
Have you had sticky sali-va?	Not at all	45 (31.9)	33 (35.1)	78 (33.2)	3.222	0.359
	A little	23 (16.3)	17 (18.1)	40 (17.0)		
	Quite a bit	31 (22.0)	12 (12.8)	43 (18.3)		
	Very much	42 (29.8)	32 (34.0)	74 (31.5)		
Have you had problems with your sense of taste?	Not at all	64 (45.4)	40 (42.6)	104 (44.3)	1.285	0.733
	A little	25 (17.7)	13 (13.8)	38 (16.2)		
	Quite a bit	25 (17.7)	20 (21.3)	45 (19.1)		
	Very much	27 (19.1)	21 (22.3)	48 (20.4)		
Have you had trouble eating?	Not at all	63 (44.7)	34 (36.2)	97 (41.3)	5.554	0.135
	A little	23 (16.3)	18 (9.1)	41 (17.4)		
	Quite a bit	22 (15.6)	9 (9.6)	31 (13.2)		
	Very much	33 (23.4)	33 (35.1)	66 (28.1)		

* means statistically significant, (p<0.05)

The reason for a higher predominance in the 61-70 age group in this study might be due to illiteracy and lack of awareness among older people about the side effects of lifestyle risk factors²⁰. Strong cultural beliefs that cancer is a "curse" or a "punishment" might also be another reason for preventing people from seeking treatment and thus presenting late. Further, we found that cancer of the oral cavity was more predominant among all the other head and neck cancer subsites (larynx, pharynx, nasal cavity, paranasal sinuses, salivary gland, ear, eye). This finding is consistent with the literature¹⁹. It was also the most common cancer among both gender, a finding which is equally

consistent^{4,20}. However, the results indicate that males were more affected by cancer of the oral cavity than females. This is in agreement with previous studies conducted among head and neck cancer patients which also found that cancer of the oral cavity was higher among males^{4,9}. However, the study by Shinde and Hashmi reported of a higher male to female ratio (1.9:1) of oral cavity cancers⁴, while the male to female ratio was lower 1.2:1 in our study.

Laryngeal cancer (n=53; 22.6%) was the second most prevalent cancer in our study and it was three times more common in males than in females (n=40 versus

n=13 respectively). The National Cancer Registry in South Africa also reported of a higher male predominance for this cancer type²¹. Further, it is also reported to be more prevalent in males than in females globally but with a higher sex ratio of 7:1²². Concerning unemployment, our study demonstrated that 46.4% of the participants were unemployed due to their present state of health as related by them. The majority of them originated from Ethekewini municipality. Added complication like unemployment is reported to be common in cancer²³. A study reported that 45,149 out of 236 993 (19.1%) of cancer participants suffered unemployment after active treatment²³. Our study however, indicated a much higher unemployment ratio.

Cancer of the head and neck or its multimodality treatment often leaves patients with several side effects and support needs. The support needs are purely subjective. The oral health of this population group is affected in a number of ways including difficulty to eat, dysphagia, odynophagia, gustatory and auditory disturbances due to a number of complications like oral mucositis, xerostomia, osteoradionecrosis, periodontal disease, trismus, hypersensitivity and infections, thus compromising the quality of life^{7,8}.

Soreness in the mouth, difficulty in swallowing and dry mouth are common perceived symptoms which patients often complain of. Cancer therapy can directly affect teeth, tongue and other structures of the oral cavity which very often alter the eating and swallowing patterns¹⁴. Soreness occurs due to oral mucositis which is characterised by atrophy of the oral mucosa resulting in ulceration and accompanied by dysphagia and pain²⁴. It is a dose-dependent toxicity and developing in the first week after the initiation of radiotherapy and having the potential to last approximately up to 3 months²⁵. Oral mucositis is one of the most common disturbing patient-reported oral toxicity, accounting for an incidence of 85%-100%²⁶.

Dysphagia is characterised by fibrosis of the muscles of deglutition and is a major stressful and challenging treatment sequelae which patients are concerned about and like to discuss with their doctors²⁷. A recent update suggests that the assessment of the swallowing pattern and swallowing therapy as a prophylaxis by a swallowing therapist prior to radiation exposure is essential²⁷.

Trismus, as reported by the majority of participants, is evident when the interincisal distance is less than 35 mm due contraction of the masticatory muscles after radiotherapy, chemotherapy or surgery of the head and neck region²⁸. The presence of temporomandibular joint, masseter and pterygoid muscles within the radiation field is a cause for trismus^{27,28}. Surgical intervention involving the retromolar trigone, buccal mucosa and tonsillar fossa is another etiological factor for trismus^{27,28}. Varied responses with respect to the degree of trismus were reported among the participants. One factor which determines the varying degree of severity of trismus is the stage of the malignancy. It is further reported that the difference in severity of trismus is also associated to the dose and field of radiation^{29,30}.

Higher radiation doses contribute to greater reduction of the interincisal distance²⁹. Trismus occurs at around two months after radiation, progresses rapidly over 9 months

before it starts to resolve²⁹. Trismus is treated by initiating exercise therapy shortly after treatment is over³⁰.

Sticky saliva and dry mouth (xerostomia) were perceived to different extent by the majority of the participants. Xerostomia is one of the most common reported side effect of radiotherapy. Xerostomia was perceived by more people from the older age group as compared to the younger counterpart. This observation corresponds to an earlier report which also found that the risk of xerostomia was greater as the age advances³¹. Xerostomia occurs when the unstimulated and stimulated flow rate of saliva are reduced well below the normal level of 0.3-0.4 ml/min and 1.5-2.0 ml/min respectively³². Reduction in the flow of saliva is significant in the first week of radiotherapy with 60-70 Gy irradiation³³. Radiation doses above 52 Gy causes severe dysfunction of the salivary gland while permanent salivary gland damage can occur with a minimum single radiation dosage of 20 Gy³³.

Our study shows that more than half of the study population (55.7%) perceived an altered taste ranging from "a little" (16.2%), to "quite a bit" (19.1%) to "very much" (20.4%) while the rest (44.3%) did not perceive any taste impairment at all. This might be due to the fact that recent diagnosis was made and treatment had not yet started or they were on follow up and radiotherapy or chemotherapy which are both responsible for taste impairment were not being administered³⁴. Taste alteration is also a significant patient-reported symptom in head and neck cancer³⁵. It is, however, dependent on the stage of the cancer and the type of treatment that patients are undergoing³⁶. Taste impairment is more evident by the 3rd or 4th week of radiotherapy with a minimal dose of 30 Gy³⁴. Taste alteration usually resolves completely after 2-4 months of treatment but can still linger on for more than a year in those who had had high dose irradiation³⁴.

Limitations of the study

This was a single site hence the results can only be generalised to the site. Moreover, there was no control group of patients with other cancers, while this could have helped to ascertain whether certain oral health-related conditions are unique to head and neck cancer patients. Despite these limitations, the study makes a substantive contribution to understanding patients' self-reported oral health status. The study can make important contributions to oral health planning in the province.

CONCLUSION

It is apparent from the findings that oral health-related complications are present to varying degrees in head and neck cancer. It is important to educate patients to seek treatment for these complications. Oral health care support including patient counselling is strongly recommended as it is pivotal to psychologically prepare them to cope with any side effect.

Conflict of interest

Both authors consent to publication and declare that there are no conflicting interests.

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