

Assessment of Knowledge Among the Physicians Regarding Dental Screening Prior to Chemotherapy and Radiotherapy

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ABSTRACT

Objective: To evaluate the physicians' knowledge regarding the referral for dental screening prior to chemotherapy and radiotherapy. **Material and Methods:** We conducted a cross-sectional study using simple random sampling among 468 physicians from various specialties with diverse experience levels from different regions in Saudi Arabia. A self-reporting questionnaire was distributed among the physicians, which consisted of questions assessing the physicians' knowledge about oral health and complications in patients prior to chemotherapy and radiotherapy. Statistical analysis was done after the data was collected employing SPSS, and $p < 0.05$ was taken as significant. **Results:** Residents were more as expected (39.3%), followed by specialists (2.31%). The majority had a practice experience for more than five years (67.8%). The scores for the knowledge assessment showed that 51.3%, nearly half of the participants, had lower scores. The scores were statistically significant ($p < 0.05$). **Conclusion:** General physicians and specialists should be aware of the dental complications and associated diseases in patients with malignancies and those undergoing chemo and radiotherapy. It is proposed that more awareness should be raised among physicians to rectify this lapse.

Keywords: Awareness; Knowledge; Physicians; Radiotherapy.

Introduction

Cancer is one of the most horrific diseases in medicine; much more dreaded is the cancer treatment and its following side effects. Cancer treatment modalities include surgery, radiation, chemotherapy, or their combinations. The side effects following the treatment of oral cancer are severe, and at times, life debilitating. It can also impact both the physical and psychological well-being of the patient. The most common complication after the treatment of the malignancy is dental caries, lower salivary output, dry mouth, and its related consequences. Any prior dental diseases will further complicate the outcomes. Hence prior completion of treatment of dental diseases like oral prophylaxis, extraction of grossly decayed teeth, etc., is advocated in patients undergoing chemo or radiotherapy [1].

Studies have reported that around ~31-93% of the patients undergoing chemotherapy have experienced complications [2]. Such oral health complications are directly associated with poor oral hygiene or periodontal status, remaining root stumps, broken restorations, and other dental conditions. For example, a study by Sweeney et al. reported that xerostomia, taste loss, and speech limitations were noted in patients after the chemotherapy [3]. This could be due to the damage to the cells or the alterations in the oral flora. Some authors have suggested that post-radiation, a lower complication rate was seen in patients maintaining good oral hygiene with low plaque index [4,5].

Hence, many studies have advised that thorough treatment of the dental and supporting structures be completed before the chemo/radiotherapy is initiated for cancer management. From the above statement, it is evident that the oncologist and the doctors must possess adequate knowledge about oral health conditions. Therefore, this study aims to evaluate physicians' knowledge regarding the need to refer the patient for dental screening prior to chemotherapy and radiotherapy.

Material and Methods

Study Design and Ethical Clearance

A cross-sectional study was conducted using simple random sampling to assess the level of knowledge and awareness among the physicians regarding the referral for dental screening before starting chemotherapy and radiotherapy. In addition, a self-reporting questionnaire was formulated and circulated among the physicians to assess their level of knowledge about dental screening before starting chemotherapy and radiotherapy for patients with cancer.

This study was approved by the ethical committee of Prince Sattam Bin Abdulaziz University, Deanship of Scientific Research, with approval number REC-HSD-39-2021.

Sample and Data Collection

Validation of questionnaire: to validate the questionnaire, questions were prepared in English and then translated to Arabic and back to English. The research questions were prepared by the dentists, taking suggestions from the physicians and oncologists. The questions were divided into two parts, the first denoting the socio-demographics and the other consisted of questions assessing physicians' knowledge. The validity of the questions was confirmed to be 0.83.

A questionnaire was sent to individual physicians through email, WhatsApp, Twitter & other social media platforms, which also contained a consent form and explanation about the study. A sample of 450 was determined after conducting a pilot study. We collected the responses from 500 participants to avoid any incomplete responses. Therefore, only 468 were finalized for the study. The scores were given as 1 point for yes/

true answers and for no/ false/I don't know answers given 0 point. The scores were stratified as low, medium, and high.

Data Analysis

Statistical analysis was done after the data was collected employing IBM SPSS Statistics for Windows, Version 20.0 (IBM Corp., Armonk, NY, USA) and $p < 0.05$ was taken as significant. Analysis of variance was used for calculating significance among three or more groups of participants, while Student's t-test was employed to calculate the significance among the two groups.

Results

Different social and demographic characteristics, like sex, highest qualification, experience, rank, region, and specialty, were noted. It was seen that the gender was equally distributed though a slightly higher number of male physicians (56.2%). Residents were more as expected (39.3%), followed by specialists (23.1%), consultants (20.3%) and general practitioners (17.3%). Among the specialists, we observed a very dissimilar distribution, with the general physician's majority (14.9%) as a single specialty. It was also observed that the central region had the highest number of physician occupants (45.1%). The majority had a practice experience for more than five years (67.8%) (Table 1).

Table 1. Health care provider's social and demographic details.

Variables	N (%)
Gender	
Male	263 (56.2)
Female	205 (43.8)
Rank	
General practitioner	81 (17.3)
Resident	184 (39.3)
Specialist	108 (23.1)
Consultant	95 (20.3)
Specialty	
General physician (General, family or emergency medicine)	70 (14.9)
Oncologist	32 (6.8)
Hematologist	27 (5.8)
Surgery (Orthopedics, Pediatric, General)	11 (2.4)
Nephrologists	3 (0.6)
Radiologist	10 (2.1)
General practitioner	26 (5.6)
Cardiologist	10 (2.1)
Gynecologist	43 (9.2)
Pediatrician	45 (9.6)
Others	191 (40.8)
Region	
Central	211 (45.1)
Northern	41 (8.8)
Eastern	75 (16.0)
Southern	48 (10.3)
Western	93 (19.8)
Work Experience	
Less than 2 years	72 (15.3)
2 to 5 years	79 (16.9)
More than 5 years	317 (67.8)

Table 2 shows the questions asked to assess the knowledge. For questions 1-4 and 6-9 majority responded with “Yes”, while only for questions 5 and 5B the response recorded was “No”. For question 11, which is the most commonest oral complication of patients receiving chemotherapy?, the response was “fungal infection” for the majority, followed by mucositis, xerostomia and viral infections. In question 12, the majority responded that the commonest oral complication of patients getting radiotherapy was osteoradionecrosis, followed by mucositis, xerostomia, fungal infections, and dental caries (Table 2).

Table 2. Knowledge of dental screening and referral.

Questions	Yes	No
	N	N
1. Do you believe that dental screening before chemotherapy/radiation therapy can help support optimal cancer therapy and enhance both patients' survival and quality of life?	370	98
2. Are you aware of the importance of dental examination prior to chemotherapy/radiation therapy?	251	217
3. Are you aware of oral complications of chemotherapy and head and neck radiation?	310	158
4. Are you aware of post-head and neck radiation treatment and dental decay?	240	228
5. Do you have any established protocol to be followed before starting chemotherapy/ radiation therapy?	149	319
5A. If yes, does the protocol include dental screening?	110	39
5B. If no, have you ever referred an asymptomatic patient for dental examination before chemotherapy?	39	280
6. Do you deal with patients receiving chemotherapy or radiation therapy?	246	222
7. Do you think that the patients are at risk for osteonecrosis after receiving high-dose radiation treatment to the mandible?	370	98
8. Do you think oral care should be included in the pre-treatment regime?	420	48
9. Do you think there is a need for increased dental awareness among physicians dealing with patients receiving chemo and radiotherapy?	449	19
10. What do you feel regarding the Oral and Maxillofacial Medicine working in coordination with the medical team to take care of the patients before, during and after chemo and radiotherapy?	Agree 441	Disagree 27
11. Which is the commonest oral complication of patients receiving chemotherapy?	N	
Xerostomia	72	
Mucositis	151	
Fungal Infections	227	
Viral Infections	15	
12. Which is the commonest oral complication of patients getting radiotherapy?	N	
Dental Caries	38	
Osteoradionecrosis of Jaw	164	
Xerostomia	158	
Mucositis	63	
Fungal Infections	41	

The scores for the knowledge showed that the majority, nearly half of the participants, had lower scores. Approximately half of the participants (51.3%) showed low scores (Table 3).

Table 3. Knowledge scores among the physicians regarding the referral to dentists.

Score in the Knowledge	N	%	p-value
Low	240	51.3	<0.05
Medium	150	32.1	
High	78	16.6	
Total	468	100.0	

Discussion

Family physicians and consultants are more frequently contacted than any other doctors. If they are aware of the oral health conditions, they can direct the patients to the dentist for needful. Hence, knowledge of the physicians regarding oral pathologies is vital for the patients' health [6-8].

In the present study, we intend to know the physicians' knowledge with specific reference to the patients with malignancies and before attending the chemo and radiation. Hence, we prepared a questionnaire study after doing a pilot and taking advices from experts in oral health and oncologists. We observed that most physicians had low knowledge of the oral health complications after chemo and radiation in patients with malignancy [9]. Similar observations in the studies of Tettamanti et al. [10] and Shenoy et al. [11] where following similar lines, the knowledge was low among the physicians. However, most had responded that mucositis was the common complication in the patients receiving chemo and radiotherapy. Comparable observations were made in several former studies directed in another place on medical doctor [12]. Unfortunately, it is a common perception among general physicians that all oral issues can be dealt by the general dentist. This is evident from our study also. We also noted that the majority were unaware of the various specialties in dentistry. This is supported by the study of Gambhir et al. [13], where they concluded that health providers should possess requisite knowledge on oral health and the ability to undertake the necessary roles within models that assimilate oral care and primary care. Our results connect with the conclusions of several other studies conducted on family physicians [14].

Though the majority accepted dental visits prior to the chemo or the radiation therapy in the dental patients, very few were aware of the following complications. Mastrolorenzo et al. [15], in their study, enlisted the early lesions of many STDs appearing in the oral cavity that can be caused by fungal, bacterial, or viral infections. Our study showed that very few doctors knew all the oral complications after radiation in cancer patients. This is in accordance with the other studies of Chitta et al. [16] and Sarumathi et al. [17], where they noted that the mouth was routinely examined in the clinical examination of the patients.

It should be made necessary for physicians to also examine the oral cavity during the routine and the patients with malignancies to evaluate oral health. It can be proposed that the training be provided to prepare the physicians to update their knowledge of dental and oral health [18-26]. It was also proposed in the study of Gambhir et al. [13], where they also noted that 82% of the study participants were in favor of training in oral health. In Western countries like the United States, necessary training in oral conditions is given to primary physicians [5].

We also noted that there were a few limitations in our study. The study was designed to be self-reported. The results in our study might have been influenced by the variation in the years of practice, the specialization and also the field of study. Even though the study was conducted throughout the country, the participant's majority were from one particular region; hence the results can't be generalized to the entire country. The authors recommend that physicians and clinicians include dental screening prior to chemo and radiotherapy to detect dental infections, including caries, periodontitis, peri-implantitis, and institute preventive measures appropriate for oral health, medical condition and medical treatment.

Conclusion

General physicians and specialists should be aware of the dental complications and associated diseases in patients with malignancies and those undergoing chemo and radiotherapy. It is proposed that more awareness should be raised among physicians to rectify this lapse.

Authors' Contributions

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All authors declare that they contributed to critical review of intellectual content and approval of the final version to be published.

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None.

Conflict of Interest

The authors declare no conflicts of interest.

Data Availability

The data used to support the findings of this study can be made available upon request to the corresponding author.

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