

## Therapy, incidence and trend of head and neck malignancies in Yazd, Iran

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### ABSTRACT

In this study, we investigated the incidence and trend of head and neck malignant tumors between 2004 and 2015 in Yazd, Iran. A database study was conducted using the tumor registry data which was taken from Shahid Sadoughi hospital in Yazd. This study consisted of 824 patients that 57.9 % were men and 42.1 % were women. The mean age of patients was  $54.31 \pm 17.18$  years. Thyroid, larynx and skin cancers were the most common cancers. The most frequent malignancy was Laryngeal carcinoma in men and thyroid carcinoma in women. The age distribution of patients showed a higher peak in men than women and also the median age in women was lower in men. Overall the trend in male and female patient number was ascending. According to the increasing trend of head and neck cancers in Yazd, it is recommended that to identify risk factors and vulnerable groups in order to reduce the burden of these types of cancers. It is necessary to inform the trend of incidence for health planning.

**Keywords:** Head, neck, malignancy, trend

## **INTRODUCTION**

Head and neck malignancies are an inharmonious group of malignant tumors, affecting various anatomical sites, but with various etiology and histology. Overall head and neck malignancies are concertedly the sixth most common cancers worldwide creating over 500,000 incident cases yearly [1]. The incidence and trend of head and neck malignancies vary depends on the geographical location, organ involved and gender. The incidence and mortality of this tumor is higher in the third world countries [2]. Although these tumors are more frequent in men, the sex ratio is by geographical area and the anatomical site which is involved [3]. Different genetic and environmental agents, containing tobacco, alcohol utilization, human papilloma virus, and diet, are effective in developing head and neck malignancies [4]. The majority of all head and neck cancers are squamous cell carcinomas [5]. During the recent years, a reduction in the overall incidence of head and neck malignancy has been detected in the western world. This is due to the reduction of smoking and alcohol consumption. However, there is a mild yearly increasing in the incidence of some subtypes of head and neck malignant tumors, especially HPV-related cancers [6]. Increased risky sexual behavior

could be culprit. Treatment modalities are very important. Radiation therapy is the mainstay of treatment in many malignant head and neck tumors, and chemoradiation is the preferred method for advanced stages. Comprehension the burden of head and neck malignancies could play an important role in the schematization of better cancer control schedule policy. Data on the epidemiology of head and neck malignancies in Iran are more limited. Considering distinct epidemiology of the tumors in different regions. The present study aimed to investigate therapy, incidence and trend of head and neck cancers in Yazd during from 2004 to 2015.

## **MATERIALS AND METHODS**

This study was approved by local ethics committee. The current study was a cross-sectional study in which the target population was the patients with head and neck malignancies who were admitted at Shahid Sadoughi hospital, Yazd from 2004 to 2015. Sampling was done by taking a census.

Data including sex, age at diagnosis, primary site of tumor, year of diagnosis, and residential area were collected. The medical records of identified patients were reviewed to obtain needed information. The record information of patients was incomplete or the patients who were not accessible to complete their records were excluded. Lymphomas and

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other hematologic cancers were excluded from the analysis.

Study protocol was in accordance with the latest declaration of Helsinki for medical research involving human subjects and was approved by local ethics committee. This article did not contain any studies with animals performed by any of the authors.

To analyze the data, descriptive and inferential statistical methods using SPSS 16 software were used. According to the chi-square test, there was a significant difference in the number of male and female patients between different years ( $p$ -value < 0.05).

## **RESULTS**

Table 1 shows the frequency and the percentage of head and neck cancer sites.

This study included 824 patients. Minimum age and maximum age of these patients were 7 and 93, respectively. From 824 patients, 477 (57.9 %) were men and 347 (42.1 %) were women as is shown in figure 1.

The 3 most common diagnoses were thyroid, larynx and skin cancers with the frequency of 233, 230 and 164, respectively. The results showed that the most prevalent malignancies were squamous cell carcinoma, papillary thyroid carcinoma and basal cell carcinoma with the frequency of 350, 189 and 146,

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respectively. The mean age for male patients was  $62.6 \pm 16.2$  years. The mean age for female patients was  $49.9 \pm 17.4$  years. According to the amounts of standard deviation in men (16.2) and women (17.4), it could be concluded that the age distribution of patients shows a higher peak in men than women. Figure 2 shows total process of head and neck cancers incidence according to anatomical site. Figure 3 shows the frequency of patients in years between 2004 and 2015. According to this figure, the highest frequency was reported in 2015. According to the above figure, the trend in male patient number was ascending from 2004 to 2010 and the trend in female patient number was also ascending from 2004 to 2008. The number of males had an upward trend from 2011 to 2014 and a descending trend from 2014 to 2015, whereas the number of females had a descending trend from 2013 to 2015. Overall the trend in male and female patient number was ascending. Larynx malignancies had upward trends from 2006 to 2014 and they decreased slightly in 2015. Thyroid malignancies had ascending trends from 2004 to 2014 and they decreased in 2014 and then increased in 2015. Skin cancer had a steady trend from 2013 to 2015 and it increased strongly in 2014. The results showed that laryngeal carcinoma was the

most frequent malignancy in men and thyroid carcinoma in women.

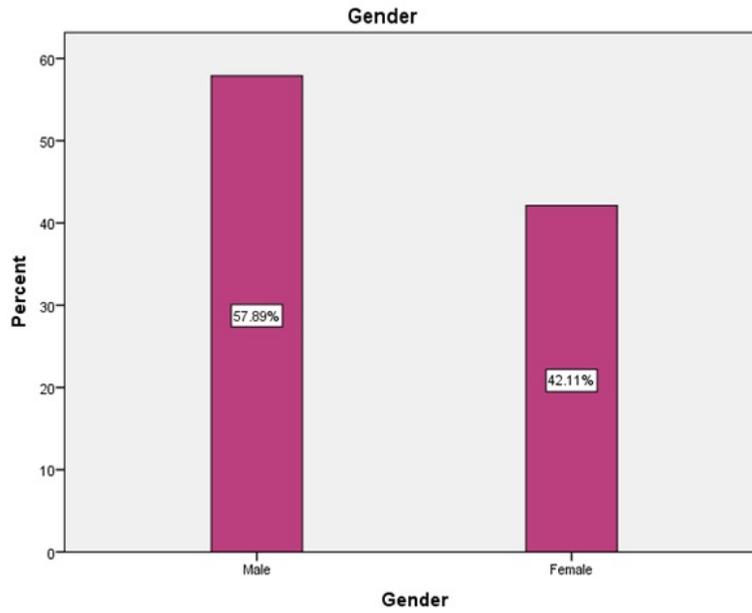


Figure 1. Distribution of patients with head and neck cancers by gender.

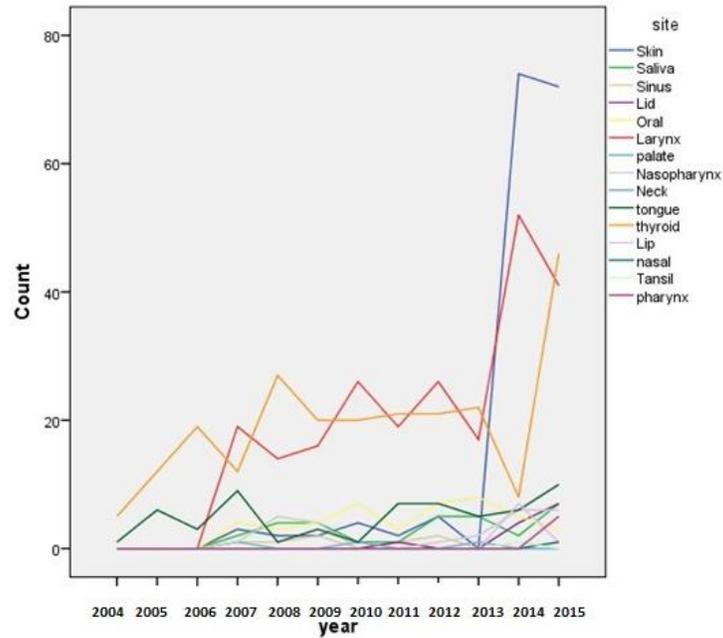
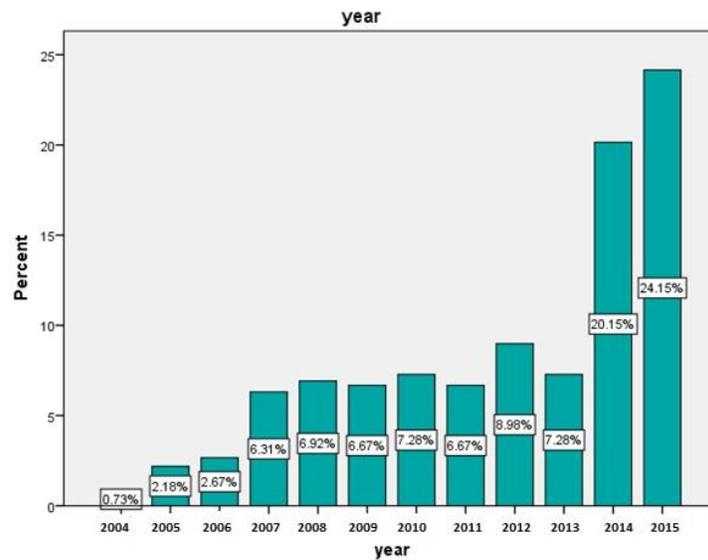


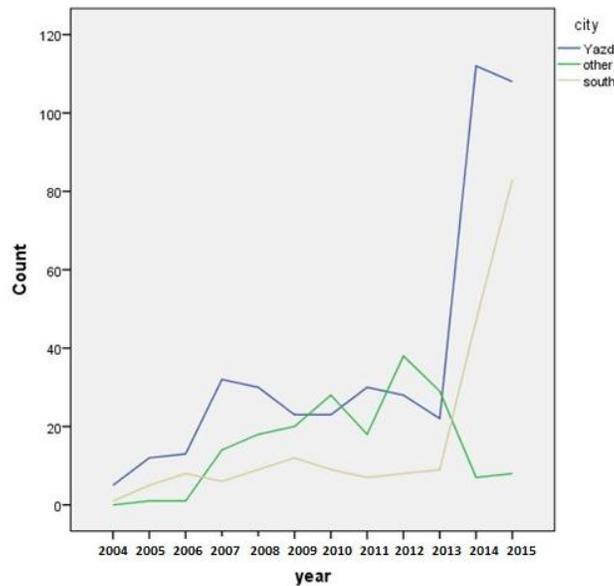
Figure 2. Total process of H&N cancers incidence according to anatomical site.

**Table 1:** Frequency and the percentage of head and neck cancer sites

site	Frequency	Percent	Valid Percent	Cumulative Percent
Skin	164	19.9	19.9	19.9
Saliva	31	3.8	3.8	23.7
Sinus	8	1.0	1.0	24.6
Lid	12	1.5	1.5	26.1
Oral	44	5.3	5.3	31.4
Larynx	230	27.9	27.9	59.3
palate	1	.1	.1	59.5
Nasopharynx	25	3.0	3.0	62.5
Neck	2	.2	.2	62.7
tongue	59	7.2	7.2	69.9
thyroid	233	28.3	28.3	98.2
Lip	8	1.0	1.0	99.2
nasal	1	.1	.1	99.3
Tansil	1	.1	.1	99.4
pharynx	5	.6	.6	100.0
Total	824	100.0	100.0	



**Figure 3.** Distribution of patients with head and neck cancers by year of diagnosis.



**Figure 4.** Total process of head and neck cancers incidence according to location.

In the present study, the patients were divided into Yazdi (people from Yazd, a city in the center of Iran), the southern and patients from other regions (figure 4). The most frequent malignancy in Yazdi and southern patients was thyroid carcinoma and in other regions was laryngeal carcinoma. Figure 4 shows the trend in the number of patients with head and neck cancer according to their dwellings during from 2004 to 2015. There was a drastic increase in the number of Yazdi patients and patients who dwelled in the south. On the other hand, the number of patients in the other regions had a descending trend during these years. In general, based on chi-square, there was a significant difference between the number of patients in the three regions from 2004 to 2015 ( $p$ -value  $< 0.05$ ).

## DISCUSSION

This study analyzed epidemiologic characteristic, histopathologic features and trend of head and neck malignancies in a major tertiary care hospital located in central Iran. In the present study the mean age for male patients was  $62.6 \pm 16.2$  years. Compared with other studies, the patients affected by head and neck malignancies admitted to Shahid Sadoughi hospital seemed to be older [7]. As with many other studies, in the present study, there was a higher incidence of malignant neoplasms in men [5]. This difference was assumed to be driven by behavioral differences among males and females that increase the frequency of carcinogenic exposures, such as alcohol and

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tobacco use and HPV infection [8]. The mean age for male patients was  $62.6 \pm 16.2$  years. The mean age for female patients was  $49.8 \pm 17.4$  years. It is consistent with other studies [9]. However results of other studies were different from the findings of the current study [10,11]. Our study showed that the 3 most common diagnoses were thyroid, larynx and skin cancers. Laryngeal carcinoma was the most frequent malignancy in men and thyroid carcinomas in women. The frequency of tumors varies depending on the geographical location and population studied. For example outcome of a study revealed that salivary gland tumors were the most common head and neck neoplasm among pediatric patients between 1973 and 2008 [12]. The result of another study that was done in sub-Saharan Africa showed that oropharyngeal/oral cavity was the most commonly reported site of head and neck malignancies [13]. Mafi and his colleagues reported that laryngeal cancer was the most frequent type of head and neck malignancies in male and females in Iran [14]. Another study revealed a redoubling of papillary thyroid carcinoma incidence especially in females [15]. This increased incidence was due to the finding of a small tumor, especially in women. As a result we expected an epidemic of thyroid cancer in many countries, including Iran. But this epidemic

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did not seem to be real, and it was an epidemic of diagnosis. Monsjou found an increase in incidence for oral tongue squamous cell carcinoma and oral cavity squamous cell carcinoma among women [16]. Our study showed that incidence of all head and neck cancers increased in the observed period for both sexes between 2004 and 2015. In addition, it was revealed that there was a significant difference between the number of patients in the three regions studied here during the years 2004- 2015. However, we could say that the trend of incidence of the head and neck malignancies vary by the anatomic site, sex, and geographic region [2]. One can appreciate diversity in trends in different researches. One study showed that the incidence of the head and neck malignancies in Iran was increasing during 2003 to 2009 [17]. Simard revealed that incidence of head and neck cancers changed from 1983 to 2002 in five continents for both sexes [2]. Another research showed that the incidence of head and neck cancers increased among women and decreased slightly among men, and oral cavity cancers had significantly increased among women while hypopharyngeal and the laryngeal cancers had decreased among men [18]. A significant increase in trend in oral tongue malignancy has been found by Choi in the males and females of Korean [19].

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Orlando Guntinas-Lichius showed a significant increase of the incidence of oral cavity, oropharynx and upper respiratory tract cancers in both genders in Thuringia. However, hypopharyngeal cancer had only increased in females [20]. Results of a study conducted by Caroline revealed an increased incidence in oral cavity and oropharyngeal cancer in both sexes in England. The laryngeal cancer incidence was constant [21]. Again, Hwang showed that the incidence of laryngeal carcinoma was stable in Taiwan from 1995 to 2009 [22]. An increasing in the incidence of tonsil and oropharyngeal cancers has been found by Walter in the people of Peru between 1987 and 2008 [23]. Choi showed that in the Korean population, oral cavity cancer increased in females while it declined or remained fixed in males [19]. Altogether, the difference in the increase or decrease trend of head and neck malignancies could be due to variation in exposure to different environmental risk factors. The dissimilarity in the schemes of trend of head and neck malignancies in various researches could reverberate the effects of cultural habit, genetics, environmental exposures or an interplay between them. Distinctions between various communities in lifestyle agents such as alcohol and tobacco use and sexual behavior may be effective in cancer incidence. For example, people of south of

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Iran are known to have a high propagation of tobacco consumption, and tobacco is known to increase the risk of head and neck malignancies [24]. Also, differences in sexual manner might illustrate the different pattern of malignancies trends in different studies. Data on sexual behavior in the Iranian population show a rather conservative pattern compared to western countries. Most Iranians are Muslim, and they adhere to a traditional lifestyle. Extreme use of alcohol, another substantial hazardous agents for the development of head and neck cancers, is also different among countries. Drinking alcohol in Iran is unconventional, unlike western societies. Moreover eating fruits and vegetables, which are protective against malignancy, has decreased during recent years [25]. Finally difference in the consumption of tobacco and alcohol and HPV infection are the outstanding factors for the difference in the incidence of head and neck malignancies between different communities. However, further considerations are required. It should be noted that our study had some limitations: 1) The most important limitation was the lack of information about HPV infection 2) information about the use of alcohol and tobacco was not available 3), the small number of cases in some subgroups may have affected the results.

## CONCLUSION

The trend of head and neck malignancies was ascending in both sexes in our province. This may be attributable in part to more acquisitive performance of cancer registry programs in some years studied. As such, it is not clear how much of this increasing trend could be ascribed to an actual increasing in malignancy or to earlier detection of cancer. Particularly an increased knowledge of the incidence and trends, composed with a fundamental comprehension of the dispensation of the histologic type of these tumors, prepare a significant foundation for proper diagnosis. The recognition of risk factors is substantial. It seems ethnic differences in incidence rates of head and neck cancers identify national context as an important risk factor, a considerable discovery that maybe helpful in subsequent investigations.

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