INCIDENCE OF ORAL CANCER IN HUMAN BEINGS VISITING TERTIARY CARE HOSPITALS AT JAMSHORO, PAKISTAN

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ABSTRACT: Oral cancer (OC) is an important health issue around the globe; particularly in developing countries and 2nd major disease in Pakistan after breast cancer. Study was designed to investigate the incidence of OC in human beings during 2010 to 2014 at tertiary care hospitals, Jamshoro. A Cross sectional study was conducted at Liaquat University Hospital and Nuclear Institute of Medicine and Radiotherapy, in which record of registered cancer cases from the admission registers of hospitals was collected. Year, month, age as well as gender wise incidence of OC was calculated. Total number of registered cancer cases was 7206, in which 1660 cases were of OC during five years study. Overall incidence of OC was 23% during 2010 to 2014. In which males were 60.3% and females 39.7%, making 1.5:1 male to female ratio. The June was peak month for occurrence of OC. 30-44 years in males, and 45 to 59 years in females were found to be the peak age groups for OC.

INTRODUCTION

Oral cancer (OC) is an important health issue in numerous zones around the world; particularly in developing countries. About 94% of all oral cancer types are Squamous cell carcinoma (SCC) (Falaki *et al*., 2009 and Petersen, 2009). Oral cancer ranks 4th among the prevailing cancers around the globe (Khan *et al*., 2015). Fifteen million new oral cancer cases are expected, whereas, nine million mortality in 2015 was reported by Torre *et al*. (2012). Oral cancer has been the 2nd normal harm following breast cancer in Pakistan and is essentially greater than other parts of the WHO Eastern Mediterranean Region (Bile *et al*., 2010). Incidence of OC is 10 times greater in males between 3rd and 8th decade of human life and two times higher in women between 4th and 7th decade of human life reported by (Pulino *et al*., 2011). A high incidence of OC in the 5th, 6th and 7th decade of life has been seen in the reports that contains the research of 58 patients with OC, where 46.6% of them are aged over 60 years (Pulino *et al*., 2011). In Pakistan and India form 8 to 10% of all cancers affect the oral cavity (Khan, 2012). Tobacco and alcohol consumption are the absolute risk factors for the growth of head and neck cancers, specifically for the oral cavity (Falaki *et al*., 2009 and Warnakulasuriya *et al*., 2005). Approximately, 50% cancers in men and 25% of women are associated with intake of tobacco in Pakistan reported by (Bhurgri *et al*., 2006 and Warnakulasuriya *et al*., 2005). The age and gender relationship of OC demonstrates a deliberate ascent to the most extreme extent in the 7th decade among both genders (Khan,

2012). Local variations in incidence and the site of event identify the significant causes ie. Liquor (alcohol) and

tobacco intake in many western countries and betel quid and tobacco chewing in Asia reported by (Lambert *et al*., 2011). In Hyderabad and adjoining areas, no such data is available on the incidence of OC. Hence, present study was conducted to investigate the incidence of OC in human beings during 2010 to 2014 at tertiary care hospitals, Jamshoro.

MATERIALS AND METHODS

The recorded incidence from 2010 to 2014 was listed along with the parameters of cancer including age, gender, month and year of admission at the Liaquat University Hospital, Jamshoro, and Province of Sindh Pakistan. The collected data was utilized to enumerate the incidence of OC monthly and annually, gender and age wise.

Nuclear Institute of Medicine and Radiotherapy is affiliated with Liaquat University of Medical and Health Sciences, Jamshoro in which patients of Hyderabad and adjoining areas were treated. Three questionnaires were designed to get information about the incidence of OC disease: month wise, year wise as well as age and gender wise during the study period i.e 2010 to 2014.

Statistical analysis: MS Excel 2016 was used to analyse data statistically, all the values were reported as mean and standard deviation. Ratios were estimated in each age

group and compared genderwise. The incidence was calculated as given below;

yearwise/monthwise/genderwise Incidence

$$= \frac{\text{Number of OC Cases}}{\text{Total unmber of cancers}} \times 100$$

Inclusion and exclusion criteria: All the admitted patients having cancer of lower and upper lip, lining of cheeks (buccal mucosa), hard palate, soft palate, floor of mouth (area under the tongue), gums and teeth, tongue and tonsils; were confirmed through histopathology of oral tissues, occasionally, CT scans, MRI scans and PET scans were carried out for the present study. Outdoor patients who had presented themselves at Liaquat University hospital, or Nuclear Institute of Medicine and Radiotherapy, Jamshoro, but those not registered were excluded.

RESULTS AND DISCUSSION

A total of 7206 cancer patients were treated during the study period. Among those 23% suffered from oral cancer. The OC was more prevalent in males (60.3%) as compared to females (39.7%), comprising female to male ratio of 1:1.52. This ratio was high in comparison to the ratio for other cancers in males (Figure 1).

In figure-2, during the year 2013 oral cancer was at the peak, whereas, a closer look at figure also showed 2011 and 2012 as the peak years for presentation of disease. The hottest month in Pakistan is June in which the highest incidence of disease was observed during the study period (figure-3). The highest incidence of disease was depicted in 30 to 44 years age group for males and 45 to 59 years for females (Table-1).

Overall 23% incidence of OC was found at Hyderabad and adjoining areas during five year period (Figure-1). Oral cancer was widely recognized as one of the fatal kind of carcinomas; 33% worldwide cases were reported for oral cancer frequency and mortality by (Dikshit *et al*., 2012 and Subramanian *et al*., 2009), which was higher as compared to the present study. Its growing incidence and death rates were observed specifically in European countries like Hungary, France, Spain, South-Eastern Asia and India, Bangladesh, Sri Lanka and Pakistan reported by (Warnakulasuriya *et al*., 2009). Globally, oral cancer was a critical infection with up to 400000 new cases admitted every year and almost 130000 died yearly (Ferlay *et al*., 2010). In the year 2010 more than 36000 new cases of oral cancer were reported in the United States to develop the malignancies twice as common in men than in women. It was also found that males were more prone to develop OC than females (figure-1) with female to male ratio of 1:1.52. Around 7800 individuals died because of oral cancer every year and in light of rates from year 2007, around one in each

100 men and women had oral malignancy in their lifetime reported by (Shepard *et al*., 2014) and (Shiboski *et al.* in 2005) who further stated that, globally, every year 350000 to 400000 new cases of OC were diagnosed, whereas, 22000 Americans had oral cancer, of which 90% were having squamous cell carcinoma.

Head and neck cancer (HNC) among men was around 32.6% of all cancers in Pakistan during 2000 to 2008, whereas, 2nd most common cancer with 15.1% frequency in females reported by (Hanif *et al*., 2009). This was quite low as compared to the present study as shown 39.7% in (figure-1). This frequency was entirely low during 1995 to 2002 and represented around 1/5 of all cancers in men and 1/10 in women; oral cavity was most generally affected site in men and it was also noticeable in women. A growing occurrence was seen in both genders, particularly in men, stated by (Bhurgri *et al*. 2006). Regional Cancer Centre Kerala reported around 14% cases of OC, of which 17.0% were in males and 10.5% in females reported by (Ali *et al.,* 2011), which are comparable with present findings (figure-1).

In Karachi, it positioned the second in all malignancies among both men and women. The two year information of the Karachi Cancer Registry, demonstrated that the oral cancer was about 9.8% of the total number of malignancies in Karachi south reported by (Ghantous *et al*., 2015); which was in line with present studies. Squamous cell carcinoma (SCC) of the oral cavity was the 2nd most regular cancer in District South Karachi with a yearly rate of 4.1/100000 in men and 4.0/100000 in women. The male/female ratio was same in some studies, whereas lower in others reported by (Bhurgri *et al*., 2006, Lagunova *et al*., 2007 and Robsahm *et al*., 2004). Slightly higher ratio was observed in present study (Figure-1). Highest incidence for both males and females was found in 2011 in contrast to other years (figure-1). In contradiction some researchers have explored the lowest occurrence of OC in males when compared to females for the year 2010 reported by (Lagunova *et al*., 2007 and Robsahm *et al*., 2004).

The most common affected age group of oral cancer was 60 to 69 years in the studies carried out by (Sakakibara *et al*., 2017), whereas, some researchers reported 50 to 59 years age group (Kayembe and Kalengayi, 1999). The majority of the cancer patients in present study were in young age of 31 to 40 years (32%) followed by 41 to 50 years of age group (27%) (Table-1). The reason may be the use of tobacco, pan and betalnuts, which were very commonly used by our society, reported by (Khan, (2012). During January 1992 to 2001 December, an aggregate of (723) cases of malignancies of oral cavity were enlisted by investigators. They found the top frequency in 50 to 60 years age and oral squamous cell carcinoma as the fundamental histologic type (97%) reported by (Jamal *et al*., 2006). Around 30% of head and neck cancer patients were of 40 years age

(Khan, 2012), which was in agreement with the present study (Table-1). During the last five to six years, it has been observed in one of the health facilities in Karachi that the infection was being more common in young people, most youthful being were of 12 years of age. A study in Karachi demonstrated that 36% men and 44% women in Karachi chew paan or paan with tobacco (Khan, 2012). The age specific rates demonstrated a slow rise in the seven decade in both genders (Bhurgri, 2005 and Khan, 2012). In the present study it was observed that, the year 2013 followed by 2011 and 2012 was the peak year for the occurrence of OC at Hyderabad and adjoining areas (Figure-2). No such study is reported yet for these years in Pakistan. Hence, we cannot compare our results with other parts of the country. A study in Norway revealed that more deaths were observed in winter due to cancer. In another study in UK also reported higher mortality in winter reported by (Giovannucci *et al*., 2006), whereas, in contradiction, present study showed summer season as the peak season for OC at Hyderabad and adjoining areas (Figure-3).

Table 1: Age and gender wise incidence of oral cancer patients during 2010 to 2014.

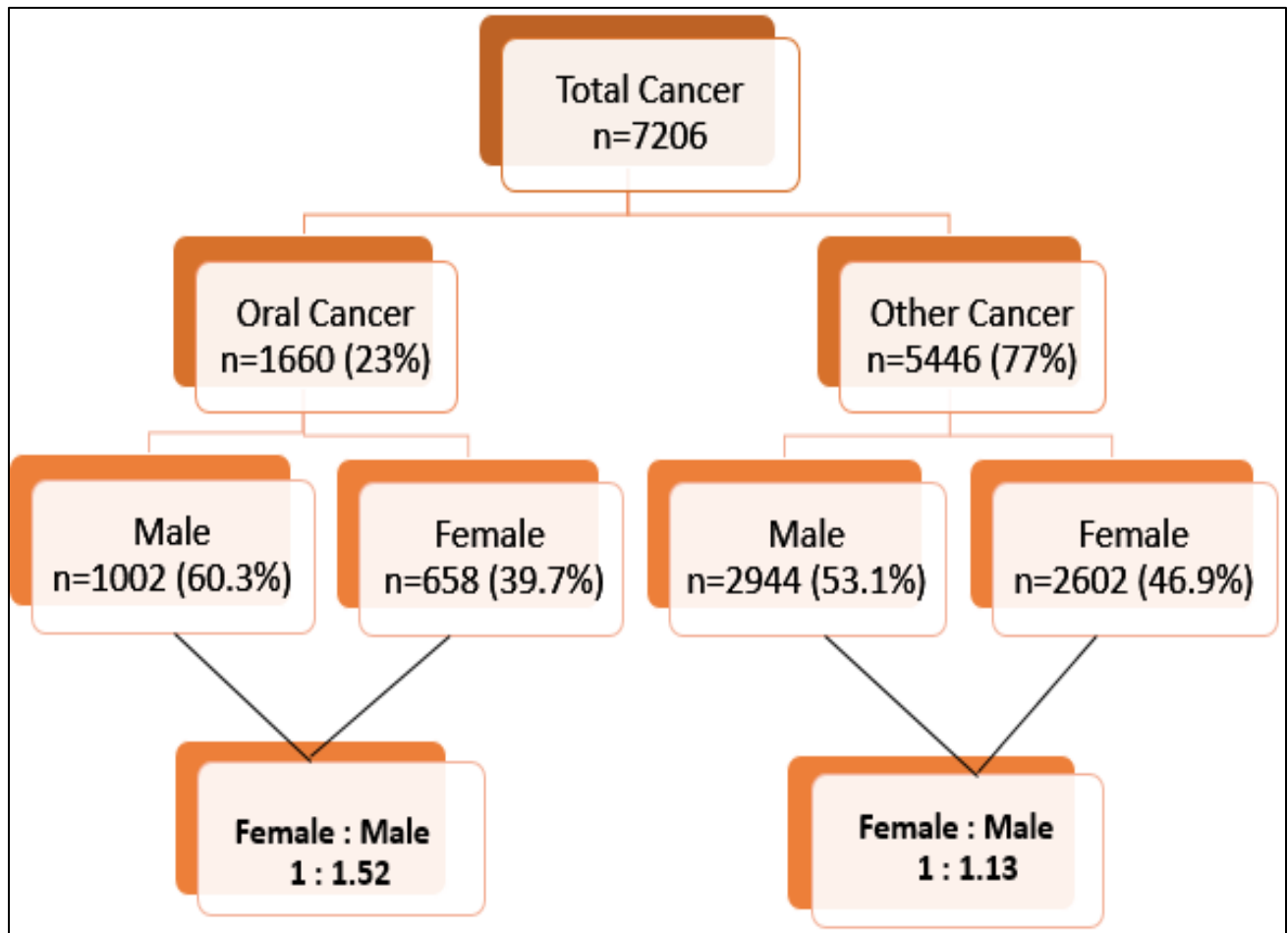| Age Group	OC Patients	Male %	Female %	Female : Male
<14	6	50	50	1:1.0
15-29	152	63.82	36.18	1:1.8
30-44	629	62.17	37.83	1:1.6
45-59	615	58.21	41.79	1:1.4
60-74	234	57.70	42.30	1:1.4
>75	24	75.0	25.0	1:3.0

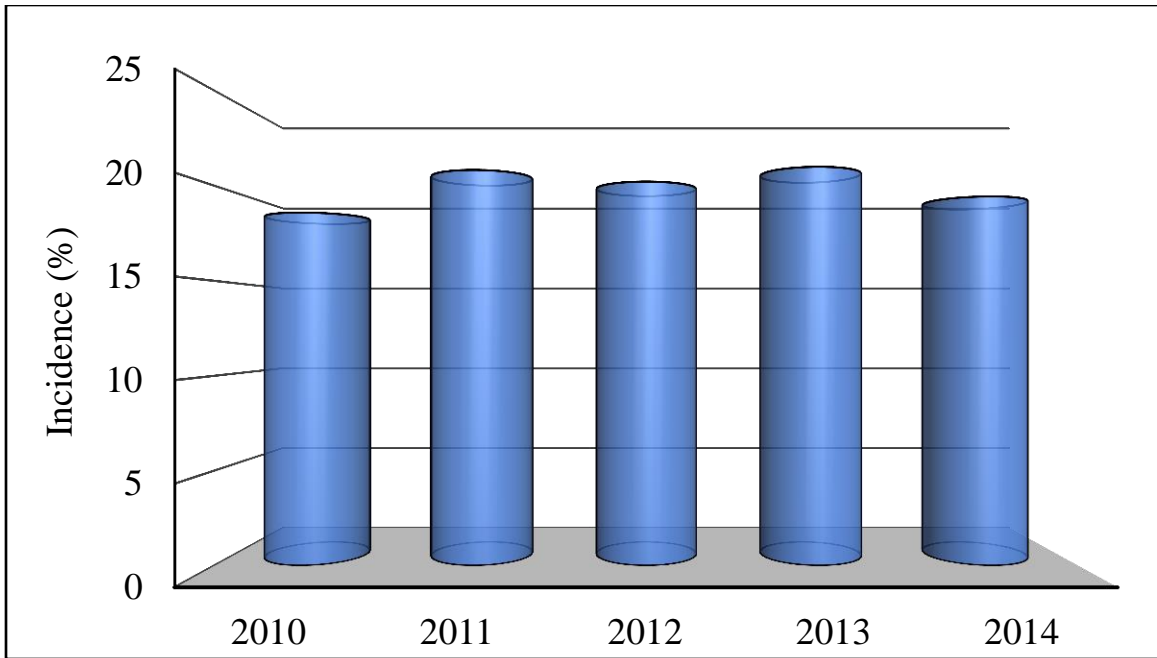**Figure 1. Statistics of oral cancer during 2010 to 2014**

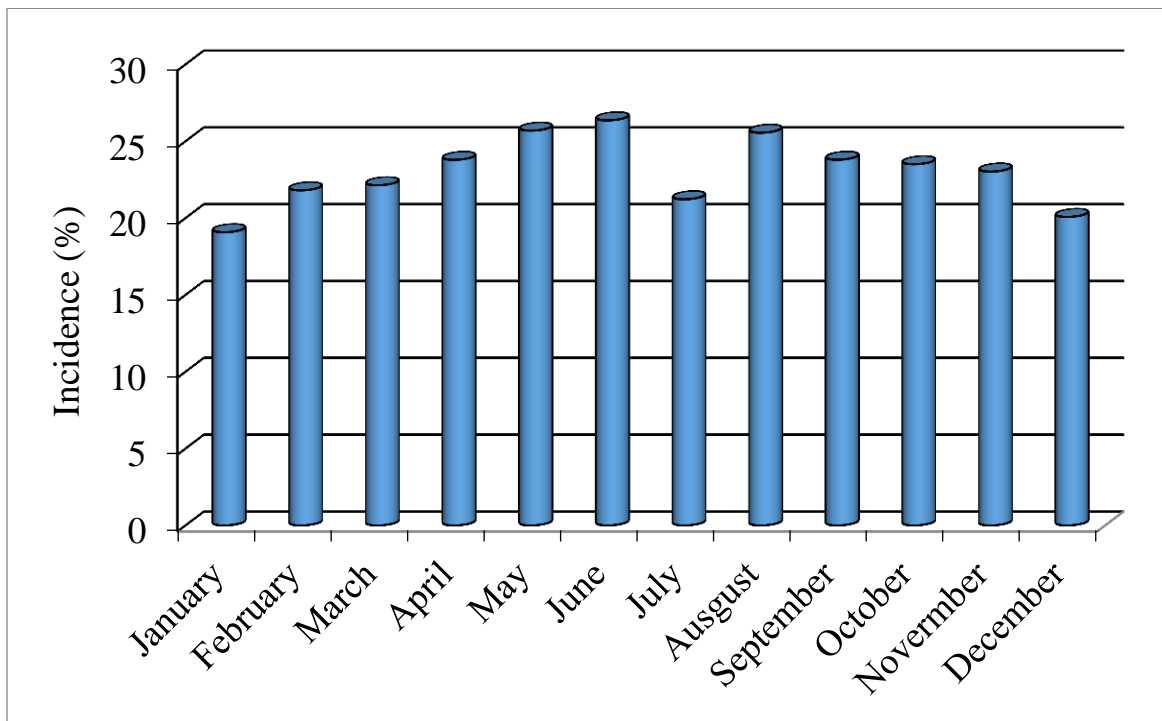**Figure 2. Year-wise incidence of oral cancer during 2010 to 2014 at Hyderabad and adjoining areas.**

Figure 3. Month-wise incidence of oral cancer during 2010 to 2014 at Hyderabad and adjoining areas

Conclusion: Incidence for oral cancer is 23% in Hyderabad and adjoining areas, with males being more prone than females during 2010 to 2014. Whereas 2011 and 2013 were the peak years and June was the peak month for the occurrence of oral cancer. 30-44 years in males and 45 to 59 years in females were the most affected age groups for oral cancer.

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