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## **Epidemiological Aspects of Head and Neck Cancers Based on Radiotherapy Registry in Hospital of Hasanuddin University South of Sulawesi Indonesia**

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### **Abstract**

The aim of this retrospective study was to identify epidemiological aspect of head and neck cancer defined as reported from a hospital-based radiotherapy registry in Hospital of Hasanuddin University South of Sulawesi Indonesia. The data were collected from medical records patient who treated with radiation therapy in a period of 2014-2015 with a view toward analyzing the sex, age, and site of cancers. Results described that a total of 187 cases were collected during the study period. The mean age was 46.87 years (range 7 to 75 years old). Nasopharynx was the commonest affected site (47 %), followed by oral cavity (14%) and sinonasal (13%). The occurrence of cases under 31 year olds were 13%. The overall male more frequent than female with ratio was 2.016:1. In Conclusions, the highest incidence of head and neck cancer was nasopharynx cancer (47%), The range of age patients was suffered is 31-60 years old (70%) and ratio of male and female is 2.016:1.

**Keywords:** Epidemiology; Head and Neck Cancers; Radiotherapy.

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## **1. Introduction**

Head and neck cancers (HNCs) are the sixth most of common cancer in the worldwide. An estimated 900.000 new cases and 350.000 deaths each year have been reported. HNCs are considered as lethal diseases for approximately 50% of diagnosed cases, which is primarily due to late detection in advanced stages. The successful treatment of these patients depends on early detection and the right therapy [1]. HNCs occur in various anatomical sub sites within the head and neck region and are classified into several subtypes. Various factors have been reported as risk factors include alcohol intake, cigarette smoking, irradiation, oncogenic virus infections like Epstein Barr virus (EBV) and Human Papilloma Virus (HPV). EBV is commonly associated with nasopharyngeal carcinoma and HPV has been associated with laryngeal carcinoma. Human immunodeficiency virus (HIV) on the other hand is associated with Kaposi's Sarcoma. Oral and oropharyngeal cancers have been in particular associated with use of spices, betel nuts, recurrent oral inflammations and HPV. HNCs present a challenge due to their occurrence near vital head and neck structures. Difficult deglutition, breathing and obstructive swellings are therefore common presentations. Indeed, most of these HNCs present late due to the hidden nature of their site of occurrence thereby making screening or early diagnosis for these cancers difficult. [2].

The incidence of HNCs differ by subtype, country and sex. An incidence rate of 5%- 50% has been reported in various countries. This global variation may be due to various sociocultural characteristics, major differences in risk factors and data collection. The highest incidence of HNC is found in South Asia and South part of Europe [3].

Data on HNCs are rare in the developing countries including Indonesia. It may be caused by some factors including late detection of cases, geographical factors (health services are unaccessible by patients), some limitations of national or regional survey for cancer because most of government in developing countries pay more attention for infectious diseases and malnutrition.

Radiotherapy is one of most chosen treatment for HNCs. It may be either an effective alternative to surgery or a valuable adjuvant therapy to surgery and/or chemotherapy in treatment and locoregional control of head and neck cancers [4]. Division of Radiotherapy in Hospital of Hasanuddin University has treated cancer patients since 2014. It serves cancer patients from all district in province of South Sulawesi and some referred cases from another provinces since radiotherapy serving is not available in every hospital in East Indonesia region.

## **2. Material and Methods**

This is a retrospective study of 2 years from 2014 to 2015 was designed. Data were collected with contact sex, age and site of cancers and retrieved manually. Cancer was affecting lip, all side of tongue, mucocal of cheek, gum, floor of mouth, palatum and other unspecific site of oral cavity were classified as oral cavity cancer. Tonsil and other structure around it were grouped in oropharynx cancer. Nose cavity and paranasal sinus were named sinonasal cancer. Salivary gland cancer is cancer in major salivary gland especially parotid gland and nasopharynx cancer had noted as sole diagnose by oncologist in recording list patients. Data were analysed

using Microsoft Excel spread sheet after they were scrutinised and cleaned.

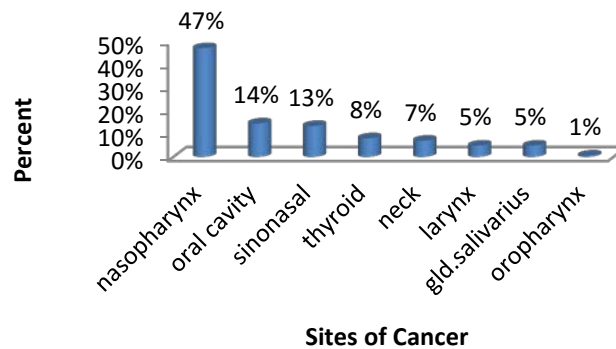
### 3. Results

A total of 187 medical records of patients of head and neck cancers who had treated by a series external beam radiation were received in division of Radiotherapy during 2014-2015.. Radiotherapy registry was maintained in division of radiotherapy and included of sex, age, diagnose with site of cancer and mode of radiation (type, schedule, fractions and doses of radiation). Data of histopatology, radiology and routine blood samples were not recorded and they were stored separately in medical records hospital of patients.

There were 125 (66.8%) males and 62 (33.8%) females, yielding a male and female ratio of 2.01:1. The youngest patient was 7 years old and the oldest one was 75 years old (mean = 46.87 years). Age distribution percentage of all cases have been presented in Table 1. The commonest age group is fourth and fifth decades comprising of 94 cases (50%). 20% cases were from 31-40 age group, and followed by 61-70 age group (13%). The lower age groups have showed in young people, 1% for first decade and 3% for second decade. Percentage of cases tend to decrease in 61-70 age group (13%) and 71-80 group (5%).

**Table 1:** Age Distribution of Head and Neck Cancers

Age Groups	Number	Percent
0 – 10	2	1%
11 – 20	5	3%
21 – 30	16	9%
31 – 40	37	20%
41 – 50	47	25%
51 – 60	47	25%
61 – 70	24	13%
71 - 80	9	5%
Total	187	100%



**Figure 1:** Site Distribution of Head and Neck Cancers

According to distribution of cancer sites (figure 1), the commonest site of involvement was nasopharynx cancer (47%), followed by oral cavity cancer (14%) and sinonasal cancer (13%). The lowest site is oropharynx cancer (1%). The mean age of patients with nasopharynx cancer was 45.96 years with range 19-70 years. It followed by oral cavity cancer was 46.11 years with range 8-68 years old, and sinonasal cancer was 50.08 years, range 23-75 years old, respectively (Table 2).

**Table 2:** Age distribution of Cancer site

Site of cancer	Mean of age	Range of age
Nasopharynx	45.96	19-70
Oral cavity	46.11	8-68
Sinonasal	50.08	23-75
All patients	46.87	7-75

Sex distribution by site of cancers is presented in Table 3. Nasopharynx cancer is the most site of cancer was affected in both of males (76.1%) and females (23.9%) with ratio 3.19:1. The second one is oral cavity site with percentage males and females is 57.7% and 42.3% . They were a little different with salivary gland cancer, females (55.6%) were greater than males (44.4%). However, there is not female has suffered larynx cancer either oropharynx cancer.

**Table 3:** Sex distribution and ratio of male to female according to site of cancer

Site of cancer	M(%)	F(%)	M/F
Nasopharynx	67(76.1)	21(23.9)	3.19
Oral cavity	16(57.7)	11(42.3)	1.45
Sinonasal	16(64)	9(36)	1.78
Thyroid	4(26.7)	11(73.3)	0.36
Neck	8(53.8)	5(46.2)	1.6
salivary gland	4(44.4)	5(55.6)	0.8
Larynx	9(100)	0(0)	100
Oropharynx	1(100)	0(0)	100
Total	125 (66.8%)	62 (33.2%)	2.01

#### **4. Discussion**

HNCs occur more frequently in males than females. In the current study percentage of males (67%) were more than twice of females (33%) with ratio is 2.01:1. Most of study have demonstrated percentage of males greater than females. Variations in ratio of males and females were showed in some studies namely 1.43:1 [5], 1.84 [6], 2:1 [2], 2.74:1 [3], 2.9:1 [7], 3.49:1 [8], and 5.1:1 [9]. It seems that men were exposed with higher rate of risk factors like tobacco smoke and alcohol consumptions.

The incidence of these cancers is high between age 41-50 years and 51-60 years . Both of groups had showed similar percentage were 25% and in the 3<sup>rd</sup> decade was 20%. A study in Meghalaya has showed 25.31% for 5<sup>th</sup> decade and 21.97% for 3<sup>rd</sup> decade but others group have seen different [8].

The differences of percentage cases HNC in some studies were strong correlated with population of samples, sampling method and scope of area of research. Our study is hospital based and not describe population based. It seems that percentage of these diseases tend to increase in productive age groups (30-50 years). Probably, these age groups were exposed to risk factors of HNC more than the lower and higher age groups. They have a lot of activities and susceptible to bad habit of life style related to HNC.

According to the site of cancers, in the recent study was found the highest is nasopharynx cancer (47%), followed by oral cavity cancer (14%) and sinonasal cancer (13%). Another site of cancer below of 10%. This study seems strong different with some similar studies. Nasopharynx was reported low percentage namely 2% (10), 5.2% [8], 6.3% [3] and 8.3% [5]. In contrary with our study where larynx cancer was the 7<sup>th</sup> rank (5%), some studies were reported in high percentages were 50.6% [5], 46.76 [3], 36.2% [9] , and 38.375% [7].

HNCs were close related to tobacco smoking, alcohol consumption, spicy food, betel nut, radiation, virus infections, lack of proper nutrition and lower socioeconomic, especially in developing countries. Recently, oral sex is established as a causing of transmission of Human Papilloma virus in oral cavity and increase of HNC risk. All of risk factors were faced in worldwide and it is different in each region. The differences site of cancer should be caused of local factors (climate, life style, social and culture), genetic and mode of viral transmission. EBV is close related to nasopharynx cancer whereas HPV was mentioned as risk factor of larynx cancer [2]. Further research should be done to understand this lethal disease.

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