



# Incidence of head and neck cancer among Baquba Teaching Hospital Patients

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## Abstract

**Background:** Squamous cells lining the tissues of the head and neck region, such as the nasal cavity, paranasal sinuses, oral cavity, lip, salivary glands, and hypopharynx, give growth to a group of malignancies together recognized as squamous cell carcinoma of the head and neck, which is the seventh utmost communal cancer diagnosis around the world.

**Objective:** Determine the prevalence of head and neck cancer in Diyala province during 2022-2023 and their distribution according to age and gender of patients. In addition, this study aimed to identify the numbers of each type of head and neck cancer.

**Patients and Methods:** A retrospective study achieved on the prevalence of head and neck cancer in the region accomplished in oncology center of Baquba teaching hospital in Diyala province, Iraq. Head and neck cancer patients recorded from 2022 to 2023. During this dated, a total of 172 patients were recorded. A search was accomplished on numerous databases, moreover, the information evaluated by age, gender and cancer type.

**Results:** Regarding patients during 2022 (first group) which is contained of (94) patients with different head and neck cancer, 38(40.4%) were males and 56(59.6%) were females with statistically significant relationship. The patients during 2023 (second group) comprises of (78) patients with different head and neck cancer, 43(50.1%) were men and 35(44.9%) were women with statistically no significant correlation.

**Conclusion:** Oral and pharyngeal cancer is more common in men than in women. The most common age group is 4th and 5th decade for head and neck cancer.

**Keywords:** Head and neck cancer, Lymphoma, gender, and age.

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## Introduction

Head and neck cancers (HNCs) reason for over 325,000 deaths and 660,000 new cases yearly, creation them the seventh most prevalent cancer diagnosed universally (1-3). Cancers of the pharynx, larynx, nose, oral cavity, lips, and salivary glands are identified as HNCs. In the Gulf Cooperation Council countries, HNCs abundant as the 18th utmost common cancer to be diagnosed and as the  $\geq 11$ th furthest common reason of cancer deaths (1). Squamous cell carcinoma, which initiates from the epithelial lining of the pharynx, oral cavity, and larynx, comprise for about ninety percent of HNCs (1). In comparison to entirely body malignancies, the prevalence of head and neck cancer varieties from 9.8 to forty percent. Certain environmental and lifestyle risk factors, counting alcohol, tobacco, poor nutrition, smoking, and UV light, are thoroughly related to HNCs (4). Changes in factors of lifestyle, such as rising alcohol and tobacco usage in developing countries, and the cumulative incidence of oropharyngeal cancer accompanying to the human papillomavirus (HPV) are partially accountable for head and neck squamous cell carcinoma (HNSCC). Oropharyngeal HNSCC will become more public than oral cancer (which is frequently accompanying to use of tobacco) as HPV is predicted to pass tobacco as the primary reason of HNSCC cancer worldwide (1,2,5-7). While alcohol and tobacco usage were earlier thought to be the recognized danger factors, (2,8). There is no doubt that socioeconomic rank plays a role in the hazard; HNCs are documented among non-drinking, non-smoking individuals. Furthermore, it seems that oropharyngeal cancer is most possibly caused by the human papillomavirus (8,9). A massive quantity of economic straining, considerable psychological distress, and distinguished functional impairments are being located on people, communities, and healthcare systems due to the growing incidence of cancer (counting HNCs) (10,11). Inadequate oral hygiene, insufficient diet, exposure to environmental or occupational carcinogens (such as wood dust or asbestos), and genetic vulnerability are further risk factors for carcinoma (squamous cell) in head and neck. Chronic oral inflammation and infections, like chronic periodontitis, have also been associated to a higher danger of HNC (12-15). Radiation therapy in the past, for whichever benign or malignant diseases, has been accompanying to an increased risk of

sarcomas, salivary gland tumors, squamous cell carcinomas, and thyroid cancer. However, there is a relationship, it should be remembered that there is a long period of time before any probable negative consequences appear, and the hazard is still rather low overall (16). Malignant tumors of the lymphocyte cell lines are recognized as lymphomas. The spleen, lymph nodes, and other non-hemopoietic tissues are mostly affected. They are mainly categorized as either non-Hodgkin's lymphoma (NHL) or Hodgkin's lymphoma (NHL), and as initiating from B or T lymphocytes. After the gastrointestinal system, the head and neck are the second most prevalent location for extra-nodal lymphomas. The oral and paroral areas are the place of around 2.5% of malignant lymphomas, which primarily evident as Waldeyer's ring (i.e., tonsils, base of the tongue and nasopharynx) (17). Amongst primary oral and paroral NHL, diffuse large B-cell lymphoma (DLBCL) looks to be the most dominant kind (17,18). Lymphatic tissue is rich in the head and neck region, mainly in the salivary glands, oral cavity, Waldeyer's ring, and thyroid. Due to the 200–300 lymph nodes that surround the head and neck, these areas are perfect anatomical places for the appearance of lymphoproliferative disorders (19). Malignant lymphomas make for 5% of all malignancies in the head and neck (20). Therefore, the present study was designated to determine the prevalence of head and neck cancer in Diyala province during 2022-2023 and distribution according to age, gender and cancer type.

## Patients and Methods

A retrospective study achieved on the prevalence of head and neck cancer in the region accomplished in oncology center of Baquba teaching hospital in Diyala. Head and neck cancer patients recorded from January/ 2022 to December/ 2023. During this dated, a total of 172 patients were recorded. A search was accomplished on numerous databases, moreover, the information evaluated by age, gender and cancer type. This study comprised collecting all types of cancer in the head and neck area, including lymphomas that have symptoms in the head and neck area. The Scientific and Ethical

Committee of the College of Medicine at the University of Diyala approved this study. Code No. (2024HMI867).

### Statistical Analysis

Two programs were used to find the influence of different elements in research parameters: Statistical Analysis System- SAS (2018) program and the Graphpad Prism program (Graphpad, California, United States). In this study Chi-square test was employed to significant comparison between percentage (0.05 and 0.01 possibility).

### Results

It was collected 94 patients with different head

and neck cancer during 2022 (first group) which is contained of 38 (40.4%) males and 56 (59.6%) females with statistically significant relationship as shown in table (1). The patients during 2023 (second group) comprises of 78 patients with different head and neck cancer types, including 43 (50.1%) men and 35 (44.9%) women with statistically no significant correlation as shown in table (1). It was shown that the total of head and neck cancer patients was 172 in Diyala province during these two years.

**Table 1:** Distribution of sample study according to difference gender in difference groups.

Factors		Male No. (%)	Female No. (%)	Total No.	P-value
Groups	2022	38(40.4%)	56 (59.6%)	94	0.0457 *
	2023	43 (55.1%)	35(44.9%)	78	0.365 NS
	<b>Total No. (%)</b>	81(47.1%)	91(52.9%)	172	0.445 NS
<b>P-value</b>		0.578 NS	0.0272 *		---
* (P≤0.05), NS: Non-Significant.					

In this study, it was demonstrated that head and neck cancer patients increased in the ages from 41 to 60 years old, which contain 62 cases (36.04%) followed by the patients in ages from 20 to 40, and

more than 60 years old with 47 (27.33%). It was shown that the numbers of head and neck cancer patients decreased in the ages less than 20 years old with 16 cases (9.3%) with statistically highly significant correlation.

**Table 2:** Distribution of sample study according to age group distributed by gender.

Age (Years)	Male No (%)	Female No (%)	P-value	Total No (%)
< 20	6 (3.49%)	10 (5.81%)	0.384 NS	16 (9.3%)
20-40	25 (14.53%)	22 (12.8%)	0.697 NS	47 (27.33%)
41-60	25 (14.53%)	37 (21.51%)	0.0498 *	62 (36.04%)
> 60	25 (14.53%)	22 (12.8%)	0.697 NS	47 (27.33%)
<b>Total</b>	81 (47.10%)	91 (52.9%)	0.445 NS	172 (100%)
<b>P-value</b>	0.0074 **	0.0069 **	---	0.0001 **
** (P≤0.01).				

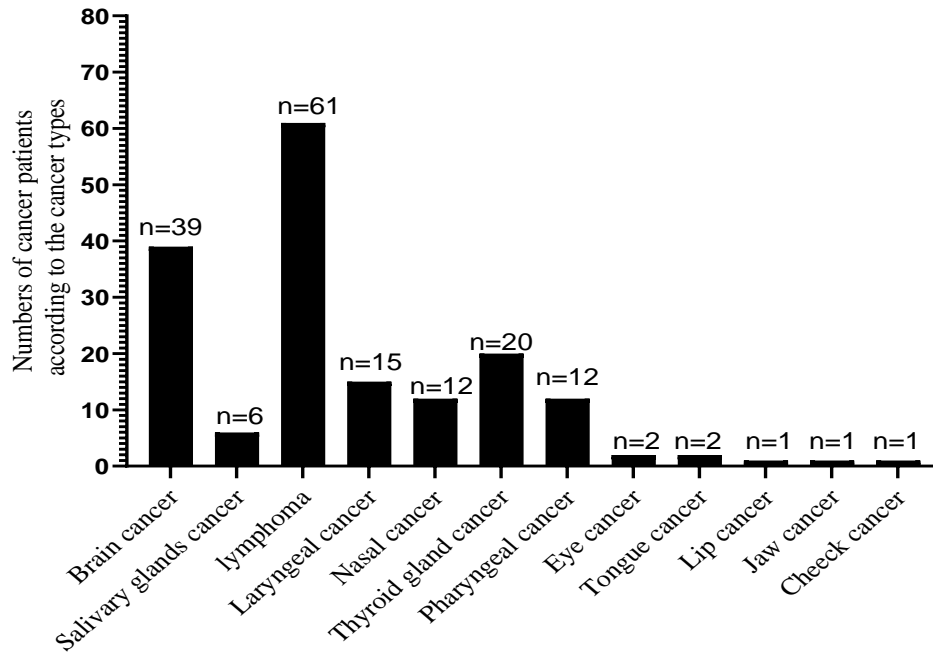
The study found that tongue cancer, pharyngeal cancer, throat cancer, lip cancer and jaw cancer in male more than female as shown in table (3). Furthermore, it was determining the most prevalent type of cancer was lymphoma

61(35.47%) followed by brain tumor 39 (22.67%). However, it was found that the less common type was lip cancer, jaw cancer and cheek cancer with 1 case for each of these type (0.58%) as shown in table (3).

**Table 3:** Distribution of sample study according to age group distributed by gender with difference parameters.

Parameters	Age group distributed by gender								C.S. P-value	Total N %
	<20		20-40		41-60		>60			
	M	F	M	F	M	F	M	F		
	N	N	N	N	N	N	N	N		
Brain tumor	1	4	9	4	6	11	2	2	0.0084 **	39 (22.67%)
Lymphoma	3	5	11	9	3	11	6	13	0.0051 **	61(35.47%)
Tongue cancer	0	0	0	0	0	0	2	0	0.287 NS	2(1.16%)
Pharyngeal cancer	0	0	1	1	4	1	4	1	0.0497 *	12(6.98%)
Eye cancer	0	1	0	0	0	0	1	0	0.877 NS	2(1.16%)
Throat cancer	1	0	1	1	4	4	3	1	0.0497 *	15(8.72%)
Nose cancer	1	0	1	2	3	2	2	1	0.096 NS	12(6.98%)
Thyroid cancer	0	0	2	5	3	6	2	2	0.0317 *	20(11.63%)
Salivary gland cancer	0	0	0	0	2	2	1	1	0.766 NS	6(3.49%)
Lip cancer	0	0	0	0	0	0	1	0	0.902 NS	1(0.58%)
Jaw cancer	0	0	0	0	0	0	1	0	0.902 NS	1(0.58%)
Cheek cancer	0	0	0	0	0	1	0	0	0.902 NS	1(0.58%)
<b>Total</b>	6	10	25	22	25	38	25	21	0.0001 **	172
* (P≤0.05), ** (P≤0.01), NS: Non-Significant.										

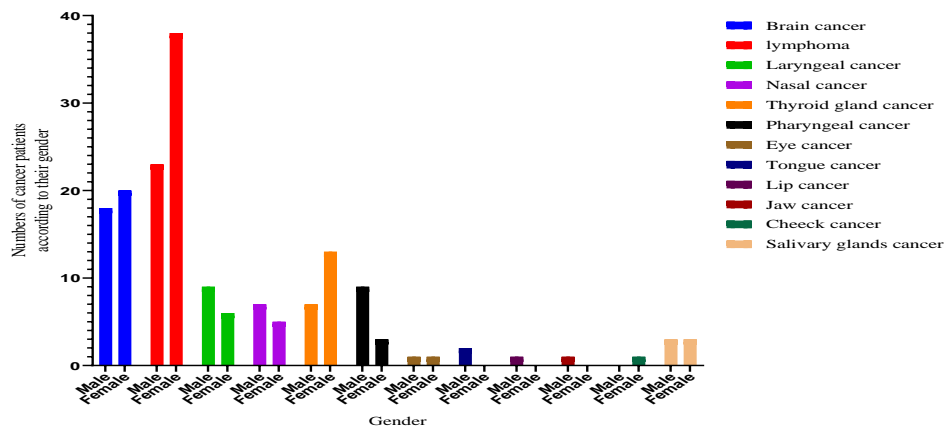
In the current study, it was determining the number of cancer patients according to the cancer types in Diyala province. It was found that the most common type was lymphoma with 61 cases during 2022 and 2023, and the less common type was lip cancer, jaw cancer and cheek cancer with one case for each of these types (Figure 1).



**Figure (1):** Numbers of head and neck cancer patients according to the cancer types.

It was identifying the numbers of males and females of head and neck cancer patients for each type of this cancer, and it was shown that the cancer cases in female more than in male especially in lymphoma and thyroid

gland cancer that occur in 38 and 14 females, respectively compare with 23 and 6 males, respectively. However, the pharyngeal cancer found in males more than in females with numbers 9 and 3, respectively (Figure 2).



**Figure (2):** Numbers of each type of head and neck cancer patients according to their gender.

To determine the ages of each type of head and neck cancer patients, it was divided the cancer patients according to their ages to specify the risk ages for occurring each cancer type. It was shown that all the types of head and neck cancer in Diyala province, which were 12 types occurred in the age more than 60 years old. In addition, it was shown that the ages less than 20 years old and

from 20 to 30 years old were the less common ages for head and neck cancer occurring. Interestingly, it was demonstrated that the lymphoma, laryngeal cancer, and laryngeal cancer occurred in high numbers in the patients in ages more than 60 years old. On the other hands, thyroid cancer occurred more in patients in the ages from 40-50 years old (Figure 3).

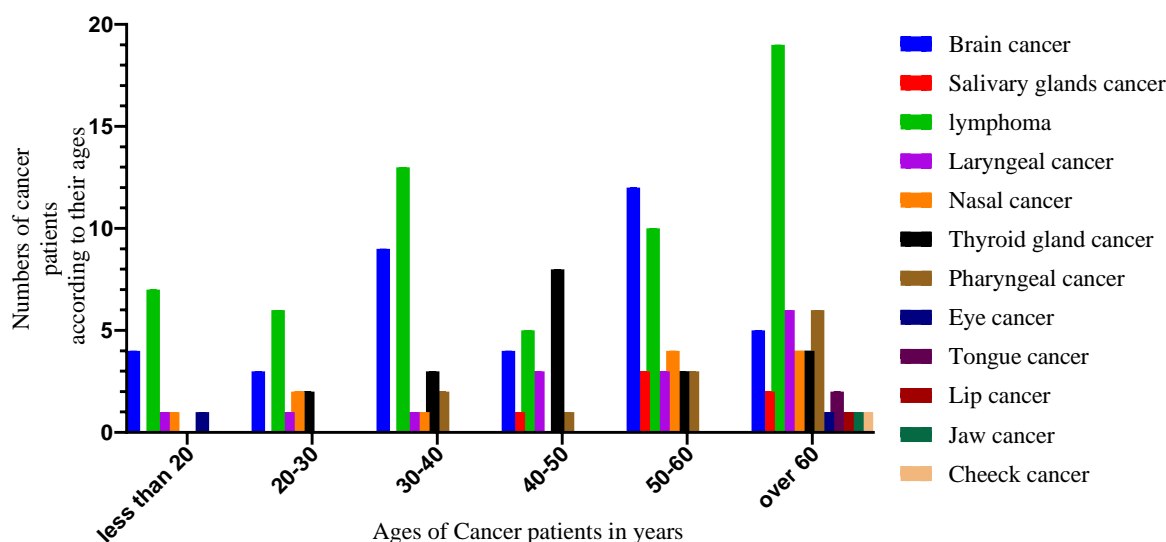


Figure (3): Distribution of head and neck cancer patients according to their ages in each cancer types.

## Discussion

In this study found that tongue cancer, pharyngeal cancer, throat cancer, lip cancer and jaw cancer in male more than female. This agree with many studies, in India, both men and women are at markedly high risk of receiving HNC. On the other hand, the incidence of HNC is three times higher in male than in female (21). Around the world, the incidence of head and neck squamous cell carcinoma is higher in males than in women, with a male: female ratio of nearly 2:1, and in individuals over 50 (1).

The present study showed patients increase in (41-60)

age group with 62 (36.04%), this agrees with study in India, in relations of age, those 40 years of age and older had a higher incidence of HNC (21). It is anticipated that by 2030, there will be a 30% annual rise in the incidence of head and neck squamous cell carcinoma around the world. This growth has been detected in many nations, particularly in younger populations (1). Shunyu and Syiemlieh supposed that the fourth decade is the greatest common age group, mainly for male patients with oropharyngeal, oral, and hypopharyngeal cancer (4). The variances in



rates of the incidence may be partially clarified by that variance in exposure to a variety of risk factors, such as use of tobacco (22) and consumption of alcohol, (23) human papillomavirus (HPV) incidence increased, (24) and familial and diet risk. (25) Additional factors of risk that have a positive connection with cancers (oral and oropharyngeal), such as bacterial infection, poor oral hygiene, and genetics predispositions. (26). The fourth and fifth decade is the most common age group in our study. The significant incidence of HNC in the young population permits careful consideration. The probably explanation for this could be that a someone who subsequently customs alcohol and tobacco in their lifetime may get an early habit that causes cancer. Males are more likely than females to consume alcohol and tobacco, which may be one cause why HNC is more common in young people, mainly in men (4). Many carcinogenic constituents, including aldehydes, aromatic amines, nitrosamines, and polycyclic aromatic hydrocarbons, are found in tobacco. These elements are generated through high temperature burning and are recognized to damage DNA in oropharyngeal cells, which can consequence in cancer. Compared to smokeless individuals, heavy smokers have a (5–25) fold higher risk of HNSCC (27). Since alcohol is a solvent, it makes mucosal tissue more susceptible to toxins like smoking and food nitrites. It has also been established that alcohol dehydrogenase, which alters ethanol to acetaldehyde, is mutagenic. Many of the symptoms of extreme alcohol use, like headaches and flushing, are triggered by acetaldehyde, whose conversion is repressed by disulfiram and other medications that have similar effects, like abacavir or metronidazole, which reasons reactions when drinking (28). When compared to males, female see a distinguished rise in the number of new HNC cases or death rates. These results may be explained by its distinct demographic composition, which includes a large variety of ethnic backgrounds accompanying to various health-related behaviors (29). Additionally, there has been a rise in

female HPV infections (24), and these results disagree with the current study. The enhanced prognosis and better response to radiation and immunotherapy may be clarified by the fact that HPV-positive HNSCCs display less genetic mutations, additional B-cell infiltration into the tumor microenvironment, and an intact apoptotic response (30).

## Conclusions

Oral and pharyngeal cancer is more common in men than in women. The most common age group is 4th and 5th decade for head and neck cancer.

## Recommendations

It is important to raise public awareness of tobacco use and to facilitate better access to medical facilities, early cancer detection, treatment, and palliative care. In addition, more genetic studies are required about the factors that play a role to increase the cancer cases in Diyala province, Iraq.

## Source of funding

No source of funding

## Ethical clearance

Official approval has been obtained to use data and data were analyzed without the names to protect privacy. This study was conducted according to the approval of College of Medicine/ University of Diyala and in accordance with the ethical guidelines of the Declaration of ethical committee of the College (Document no. 2024HMI882).

## Conflict of interest

The author acknowledges no conflict of interest in this study.

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## نسبة الإصابة بسرطان الرأس والرقبة بين مرضى مستشفى بعقوبة التعليمي

حيدر مهدي عيدان<sup>١</sup>, انفال شاكر متعب<sup>٢</sup>

### الملخص

**الخلفية الدراسية:** الخلايا الحرشفية المبطنة لأنسجة منطقة الرأس والرقبة، مثل تجويف الأنف والجيوب الأنفية وتجويف الفم والشفة والغدد اللعابية والبلعوم السفلي، تعطي نموًا لمجموعة من الأورام الخبيثة المعروفة معًا بسرطان الخلايا الحرشفية في الرأس والرقبة، وهو سابع أعلى تشخيص لسرطان الشائع في جميع أنحاء العالم.

**الهدف من الدراسة:** تحديد مدى انتشار سرطان الرأس والرقبة في محافظة ديالى خلال الأعوام ٢٠٢٢-٢٠٢٣ وتوزيعهم حسب العمر والجنس. بالإضافة إلى ذلك، هدفت هذه الدراسة إلى التعرف على أعداد كل نوع من سرطان الرأس والرقبة.

**المرضى وطرق العمل:** دراسة استرجاعية أجريت على مدى انتشار سرطان الرأس والرقبة في المنطقة في مركز الأورام في مستشفى بعقوبة التعليمي في محافظة ديالى، العراق. تم تسجيل سرطان الرأس والرقبة في الفترة من ٢٠٢٢ إلى ٢٠٢٣. خلال هذا التاريخ تم تسجيل ١٧٢ مريضاً. تم إجراء البحث على العديد من قواعد البيانات، علاوة على ذلك، تم تقييم المعلومات حسب العمر والجنس ونوع السرطان.

**النتائج:** فيما يتعلق بالمرضى خلال عام ٢٠٢٢ (المجموعة الأولى) والتي تتكون من (٩٤) مريضاً يعانون من سرطانات الرأس والرقبة المختلفة، ٣٨ (٤٠,٤٪) ذكور و ٥٦ (٥٩,٦٪) إناث مع وجود علاقة ذات دلالة إحصائية. يتكون المرضى خلال عام ٢٠٢٣ (المجموعة الثانية) من (٧٨) مريضاً يعانون من سرطانات الرأس والرقبة المختلفة، ٤٣ (٥٠,١٪) كانوا رجالاً و ٣٥ (٤٤,٩٪) نساء مع عدم وجود علاقة ذات دلالة إحصائية.

**الاستنتاجات:** سرطان الفم والبلعوم أكثر شيوعاً عند الرجال منه عند النساء. الفئة العمرية الأكثر شيوعاً هي العقد الرابع والخامس للإصابة بسرطان الرأس والرقبة.

**الكلمات المفتاحية:** سرطان الرأس والرقبة، سرطان الغدد الليمفاوية، الجنس، والعمر.

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تاريخ استلام البحث: ٨ تموز ٢٠٢٤

تاريخ قبول البحث: ١٨ أيلول ٢٠٢٤

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