

## Assessment of Factors that Contribute Cancer of the Larynx in Baghdad Teaching Hospitals

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### Abstract:-

**Objective:** - The study aimed to assess factors that contribute to cancer of the larynx and to identify the relationship between the variables of the study with cancer of the larynx.

**Methodology:** - A descriptive study to assess of factors that contributes cancer of the larynx. The study was carried out in Specialized Surgical Teaching Hospital, Ibin-Al Beetar Hospital and Ibin Al Nafees Hospital for the period from January 2017to February 2018. A purposive (Non- probability) sample of (70) patients with larynx cancer was selected for the study. An assessment form was employed for purpose of the study. Test-Retest reliability was employed through computation of Pearson Correlation Coefficient ( $r=0.84$ ). Content validity of the assessment was determined through a (10) panel of experts. Data were collected through the interview technique. Data were analyzed through descriptive statistical approach (frequency and percentage) and inferential statistical approach (Chi-Square).

**Results:** - The result of the study showed that the majority of the study sample were (60-69) years old and most of them were male (65.7%). The level of education was primary graduate (32.9%) and most of them were working in governmental officer.

**Conclusions:-**The study concluded that smoking was the major's factors that contribute to cancer of the larynx.

**Recommendations:** - The study recommended stopping smoking, established special center for respiratory cancer in Iraq, regular chest exam to workers in the industry and need specialist nurse for cancer in Iraq.

**Keyword:** Factors Contribute Cancer of Larynx

### INTRODUCTION

Iraq is one of the first countries in the Middle East region which gave special attention to cancer special programs including the establishment of cancer registration in 1976. After the increase cancer incidence rate, it became essential to set studies and researches in a categorized pattern and make a persistent evaluation for the cancer issue in a detailed and scientific manner to make a thorough strategy to control it. Then lead to the establishment of the Iraqi cancer board in 1985 to face cancer issues which are among the health problems in the country. Number of new cancer cases in Iraq registered 2010 are 18482 (male 8544 and female 9938) <sup>(1)</sup>.

A biostatistics assay deals with patients examined and treated in Al amal National Hospital for Cancer Management (Baghdad, Iraq) in 2015. The Total No. of Patients :4540 {Male 1759 (38.7%) female 2781 (61.2%)}, the Larynx cancer is 5% from the top (10) cancers (Breast, Lung & bronchus, Brain, thyroid, Bladder, Lymphatic system, Unknown, Larynx, Skin, and Ovary) <sup>(2)</sup>.

Laryngeal cancer is the eleventh most common type of cancer in men worldwide. Every year 52,000 cases are newly diagnosed in Europe and 10,000 in the United States <sup>(3)</sup>.

Cancer of the larynx (the voice box) usually develops in the squamous cells of the mucosal epithelium. It is evaluated based on the tumor-node-metastasis (TNM). It is most often a primary cancer and can spread to the lungs, liver, or lymph nodes. The prognosis for a patient with laryngeal cancer is good with early diagnosis but is often poor because many patients delay seeking help<sup>(4)</sup>.

Cancer of the larynx accounts for approximately half of all head and neck cancers. The American Cancer Society<sup>(5)</sup> estimates that about 11,300 new cases and 3,660 deaths occur annually, with an overall survival rate of 65%.

Cancer of the larynx is most common in people between the ages of 60 and 70 years<sup>(6)</sup> and it occurs four to five times more frequently in men than in women.

Carcinogens that have been associated with laryngeal cancer include tobacco (smoke, smokeless) and alcohol and their combined effects. Use of chewing tobacco from other countries has increased the risk of laryngeal cancer because of its stronger potency, and the risk of laryngeal cancer may be greater than that associated with cigarette smoking<sup>(7)</sup>.

Occupational exposure to coal dust, steel dust, iron compounds and fumes, formaldehyde, and dust from hard alloys (eg., still or iron compounds) is associated with hypopharyngeal or laryngeal cancer<sup>(8)</sup>. Dietary patterns of Western cultures are associated with an increased risk of supraglottic cancer of the larynx. Other risk factors include straining the voice, chronic laryngitis, nutritional deficiencies (riboflavin), and family predisposition. Almost all malignant tumors of the larynx arise from the surface epithelium and are classified as squamous cell carcinoma. Approximately 55% of patients with laryngeal cancer present with involved lymph nodes at the time of diagnosis, with bilateral lesions present in 16% of patients<sup>(9)</sup>. The lifetime survival rate for patients who have small laryngeal cancers without evidence of spread to the lymph nodes is about 75% to 95%. Recurrence occurs usually within the first 2 to 3 years after diagnosis. The presence of disease after 5 years is often secondary to a new primary malignancy. The incidence of distant metastasis with squamous cell carcinoma of the head and neck (including larynx cancer) is relatively low.

Risk Factors for Laryngeal Cancer Carcinogens are (Tobacco (smoke, smokeless, Combined effects of alcohol and tobacco, Asbestos, Secondhand smoke, Paint fumes, Wood dust, Cement dust, Chemicals, Tar products, Mustard gas, Leather and metals and Other Factors are Straining the voice, Chronic laryngitis, Nutritional deficiencies (riboflavin), History of alcohol abuse, Familial predisposition, Age (higher incidence after 60 years of age), Gender (more common in men), Race (more prevalent in African Americans), Weakened immune system)<sup>(10)</sup>

The study aimed to assess factors that contribute to cancer of the larynx and to identify the relationship between the variables of the study with cancer of the larynx.

## METHODOLOGY

A descriptive study using the assessment as an approach for the determination of the factors that contributes of larynx cancer. The study was carried out during the period of January 2017 to February 2018.

The setting of the study included the following:-

- Specialties Surgical Teaching Hospital
- Ibin Al- Beetar Hospital
- Ibin Al- Nafees Hospital.

A purposive "non probability" sample of (70) patients with larynx cancer was selected out of the three hospitals in Baghdad city.

A questionnaire was designed and constructed by the researcher to measure the variables. The questionnaire consisted of (2) parts. Part (1) demographic information sheet and part (2) factors contribute.

The data were collected through the utilization of a constructed questionnaire, and interview technique for the patients with larynx cancer who is inpatient in the hospital when selected. Interview took a timetable of (25) minutes for each patient when he stays in hospital. The assessment was conducted during the period of 15<sup>th</sup> March 2017 to 25<sup>th</sup> December 2017.

Data were analyzed through descriptive statistical approach (frequency and percentage) and inferential statistical approach (Chi-Square).

### RESULTS:-

Table (1) distribution of age and association between ages with cancer of larynx.

Age	Frequency	Percent	Cumulative percent
20-29 years	5	7.1	7.1
30-39	10	14.2	21.4
40-49	8	11.4	32.8
50-59	13	18.6	51.4
60-69	23	32.9	84.3
70-80	11	15.7	100.0
Total	70	100.0	
$\chi^2$ obs. =16.40	Df= 5	$\chi^2$ crit. =11.07	P $\leq$ 0.05

This table indicated that majority of age were range (60-69) years who were accounted for (32.9%) and there is a significant association between age and cancer of larynx

Table (2) distribution of gender and association between genders with cancer of larynx.

Gender	Frequency	Percent	Cumulative percent
Male	46	65.7	65.7
Female	24	34.3	100.0
Total	70	100.0	
$\chi^2$ obs. =6.91	Df= 1	$\chi^2$ crit. =3.84	P $\leq$ 0.05

This table indicated that majority of gender was male who were accounted for (65.7%) and there is a significant association between gender and cancer of larynx.

Table (3) distribution of educational level and association between educational levels with cancer of larynx.

Educational level	Frequency	Percent	Cumulative percent
No read & write	5	7.1	7.1
Read & write	11	15.7	22.8
Primary graduate	23	32.9	55.7
Intermediate graduate	10	14.3	70.0
Secondary graduate	14	20.0	90.0
Institute and above	7	10.0	100.0
Total	70	100.0	
$\chi^2$ obs. =17.42	Df= 5	$\chi^2$ crit. =11.07	P≤0.05

This table indicated that majority of educational level was primary graduate who were accounted for (32.9%) and there is a significant association between educational level and cancer of larynx.

Table (4) distribution of occupation and association between occupations with cancer of larynx.

Occupation	Frequency	Percent	Cumulative percent
Government officer	29	41.4	41.4
Free job	23	32.9	74.3
Housewife	6	8.6	82.9
Unemployed	8	11.4	94.3
Student	4	5.7	100.0
Total	70	100.0	
$\chi^2$ obs. =36.14	Df= 4	$\chi^2$ crit. =9.48	P≤0.05

This table indicated that majority of occupation was from government officer who were accounted for (41.4%) and there is a significant association between occupation and cancer of larynx.

Table (5) distribution of the site of occupation and association between the sites of occupation with cancer of larynx.

Site of occupation	Frequency	Percent	Cumulative percent
Tobacco factory	26	37.1	37.1
Brickyards	16	22.9	60.0
painters	11	15.7	75.7
woolen	6	8.6	84.3
Gas station	11	15.7	100.0
Total	70	100.0	
$\chi^2$ obs. =16.42	Df= 4	$\chi^2$ crit. =9.48	P≤0.05

This table indicated that majority of the site of occupation was from tobacco factory who were accounted for (37.1%) and there is a significant association between the site of occupation and cancer of larynx.

Table (6) distribution of duration of occupation and association between duration of occupation with cancer of larynx.

duration of occupation	Frequency	Percent	Cumulative percent
5 years	6	8.6	8.6
6	3	4.3	12.9
7	4	5.7	18.6
8	3	4.3	22.9
9	8	11.4	34.3
10	20	28.6	62.9
15	7	10.0	72.9
20	13	18.6	91.4
25	6	8.6	100.0
Total	70	100.0	
$\chi^2$ obs. =31.31	Df= 8	$\chi^2$ crit. =15.50	P≤0.05

This table indicated that majority of duration of occupation was (10) years which were accounted for (28.6%) and there is a significant association between duration of occupation and cancer of larynx.

Table (7) distribution of smoking and association between smoking with cancer of larynx.

Smoking	Frequency	Percent	Cumulative percent
Yes	69	98.6	98.6
No	1	1.4	100.0
Total	70	100.0	
$\chi^2$ obs. =66.05	Df= 1	$\chi^2$ crit. =3.84	P≤0.05

This table indicated that majority of the sample were smoking who were accounted for (98.6%) and there is a significant association between smoking and cancer of larynx.

Table (8) distribution of number of cigarettes per day and association between number of cigarettes per day with cancer of larynx.

number of cigarettes per day	Frequency	Percent	Cumulative percent
No smoking	1	1.4	1.4
10 cigarettes	4	5.7	7.1
20	7	10.0	17.1
30	18	25.7	42.9
40	30	42.9	85.7
60	10	14.3	100.0
Total	70	100.0	
$\chi^2$ obs. =49.14	Df= 5	$\chi^2$ crit. =11.07	P≤0.05

This table indicated that majority of number of cigarettes was (40) cigarettes per day who were accounted for (42.9%) and there is a significant association between number of cigarettes per day and cancer of larynx.

Table (9) distribution of the duration of smoking and association between the duration of smoking with cancer of larynx.

Duration of smoking	Frequency	Percent	Cumulative percent
No smoking	1	1.4	1.4
6 years	3	4.3	5.7
7	3	4.3	10.0
8	6	8.6	18.6
9	4	5.7	24.3
10	18	25.7	50.0
15	26	37.1	87.1
20	9	12.9	100.0
Total	70	100.0	
$\chi^2$ obs. =61.65	Df= 7	$\chi^2$ crit. =14.06	P≤0.05

This table indicated that majority of the duration of smoking was (15) years who were accounted for (37.1%) and there is a significant association between the duration of smoking and cancer of larynx.

Table (10) the mean of score for the items of kind of smoking.

Items	Always	Sometime	Never	M.S	Sig.
Smoking with filter	52	17	1	2.73	H.S
Smoking without filter	25	34	11	2.20	S
Manual cigarette smoke	24	32	14	2.14	S
Narghile (water pipe)	24	28	18	2.08	S
Pipe	22	26	22	2.00	S
Total	147	137	66	2.23	S

This table shows that there is highly significant association in item one and there is a significant association on remaining items.

#### DISCUSSION:-

The findings of the study revealed that age range between (20-80) years and that the majority of the study sample age was (60-69) years old who accounted for (32.9%). The table also shows that a significant association between age and cancer of larynx (Table 1).

The findings agree with study who said that most patients are 50 to 75 years of age at presentation with larynx cancer. There were 69.4 % patients in the age group of 51 to 70 years<sup>(11)</sup>.

The findings agree with study of the epidemiology of larynx cancer in Southeast England found that cancer affected predominantly males aged over 70 years, and that females represented 17.3% of larynx cancer diagnoses. The age-standardized incidence rates for cancer declined in both sexes between 1985 and 2004. The incidence of larynx cancer declined in males in all age groups over 60 years<sup>(12)</sup>.

Regarding to gender the most of the study sample were male accounted for (65.7%) and there was a significant association between genders with cancer of larynx.(Table 2).

In males over the age of 45 years, the risk of developing larynx cancer is around five times higher than in females<sup>(13)</sup>.

Laryngeal cancer is the neoplasm with the largest male to female sex ratio in most populations. There were 88 (81.5 %) male and 20 (18.5 %) female patients, and the male: female ratio was 4.4:1<sup>(11)</sup>.

The findings is agree with this study indicated that head and neck cancers (HNCs) are a major form of cancers in India, accounting for 23% of all cancers in males and 6% in females<sup>(14)</sup>.

Incidence and mortality rates for head and neck cancers (HNC), including cancers of the oral cavity, oropharynx, hypopharynx, and larynx, are higher in men than women<sup>(15)</sup>. Male-to- female ratios vary widely.

Relative to educational level, (55.7%) from the study sample were had low level of education and there was a significant association between educational level with cancer of larynx (Table 3).

The findings is agree with results individuals with lower education had a higher risk of larynx cancer. However, 54% of the associations with lower education and socioeconomic status remained significantly associated with disease when adjusted for smoking and alcohol consumption<sup>(4)</sup>.

A higher risk of HNC was indicated for less educated individuals and those performing primarily manual labour<sup>(16)</sup>.

The majority of the study sample was working in the government officer accounted for (41.4%) and there was a significant association between occupations with cancer of larynx (Table 4).

These findings are consistent with previous studies performed in Brazil, which also reported a higher burden of HNC on poorer socioeconomic strata<sup>(17)</sup>.

In the Brazilian context only assessed the association between SES (income, education, household crowding, unemployment rate) and HNC incidence<sup>17</sup> and mortality<sup>(18)</sup>.

In India, the disproportionately higher incidence of HNC compared to other common malignancies may be due to excessive consumption of tobacco in various forms with and without alcohol, low socioeconomic status leading to poor oral and dental hygiene, poor diet, and infections of viral origin<sup>(19)</sup>. The spectrum of HNC varies from place to place within the country because of significant variation in regional risk factors<sup>(20)</sup>.

This finding presented that most of the study sample working in tobacco industry and brickyards accounted for (37.1%, 22.9%) and there was a significant association between the sites of occupation with cancer of larynx (Table 5).

Poor diet, human papillomaviruses (HPVs), and exposure to asbestos and other occupational hazards have also been implicated, but the evidence is less conclusive<sup>(15)</sup>.

A significant association was found between laryngeal cancer and unfavorable working conditions<sup>(11)</sup>.

Occupational exposure to substances such as asbestos, wood, cement, solvents, nickel. Those working in the railway and lumber industry, sheet-metal workers, grinding wheel operators, and car mechanics are also said to have a higher incidence of laryngeal cancer<sup>(11)</sup>.

Regarding to duration of occupation range between (5-25) years most of them were working (10) years in his work and there was a significant association between duration of occupation with cancer of larynx (Table 6).

Low socioeconomic position was largely prevalent in the sample: 79.5% of cases held manual occupations; 79.6% of cases had up to 8 years of formal education<sup>(16)</sup>.

The study in Athens (Greece) indicated that findings provide evidence that long-term exposure to air pollution is an important factor in the development of chronic respiratory diseases such as larynx cancer<sup>(21)</sup>.

The majority of the study was smoking accounted for (98.6%) and there was highly significant association between smoking with cancer of larynx (Table 7).

Smoking, particularly of cigarettes, is a well-established risk factor for both larynx and lung cancer<sup>(22)</sup>.

Another risk factor for larynx cancer is gastro-oesophageal reflux disease (GORD), especially in heavy smokers<sup>(23)</sup>.

Our data show that current smokers run about 15 times higher risk of laryngeal cancer than never-smokers. Furthermore, the number of cigarettes and duration of smoking were strongly related to laryngeal cancer risk<sup>(21)</sup>.

At least 75% of head and neck cancers are attributable to a combination of cigarette smoking and alcohol drinking. A precise understanding of the independent association of each of these factors in the absence of the other with the risk of head and neck cancer<sup>(24)</sup>.

Relative to number of cigarettes per day, most of them were smoking (40) cigarettes per day accounted for (42.9%) and there was highly significant association between number of cigarettes with cancer of larynx (Table 8).

The relative risk was 4.4-fold for patients who smoked up to half-a-pack per day, and 10.4-fold for those smoking more than two packs per day<sup>(11)</sup>.

Cigarette smoking was associated with an increased risk of head and neck cancer, and there were clear dose-response relationships for the frequency, duration, and number of pack-years of cigarette smoking was associated with increased risks of cancers of the oropharynx, hypopharynx and larynx<sup>(25)</sup>.

Regarding to duration of smoking, range between (6-20) years most of them were smoking from (10) years accounted for (37.1%) and there was highly significant association between duration of smoking with cancer of larynx (Table 9).

In a study performed the OR for smoking for more than 10 years was 7.29. And they observed a dose-dependent relationship between smoking and laryngeal squamous cell carcinoma<sup>(11)</sup>.

The results of this pooled analysis confirm previous findings that cigarette smoking is a strong risk factor for head and neck cancer independent of alcohol drinking. Seven of the 15 studies we included showed a statistically significant association between ever having smoked cigarettes and the risk of head and neck cancer<sup>(26)</sup>.

The findings revealed that highly significant association on item one (smoking with filter) and there was a significant association on the remaining items (Table 10).

The study in the United State indicated that most of the study sample was smoking cigarettes with filter and the same thing in the United Kingdom<sup>(27)</sup>.

Laryngeal cancer was strongly associated with cigarette smoking (OR=15.09, p=0.000). Ninety-seven patients (89.8 %) were smokers and six were ex-smokers (5.5 %). They found a statistically significant difference for cigarette smoking for over 20 years, 30 years and 40 years, for smoking over 20 cigarettes per day, 30 cigarettes per day, and 40 cigarettes per day, and for the starting age before 21 years. Passive smoking was also a risk factor for laryngeal cancer (OR=4.47, p=0.000)<sup>(11)</sup>.

## CONCLUSION

The results of the study concluded that the majority of the age group were (60-69) years and married with low level of education and most of them was working in government officers in tobacco factory more than ten years also of the patients with larynx cancer were smoking more than forty cigarettes since fifteen years, with

highly smoking of cigarette with filter and moderate others type of smoking. The study indicated that there is a significant association between larynx cancer and (age, gender, educational level, occupation, site of occupation, duration of occupation, smoking, number of cigarettes, and duration of smoking)

#### RECOMMENDATION:

- 1- Stop smoking.
- 2- Establishing special center about larynx cancer or respiratory cancer in Iraq.
- 3- Educational program for workers working in tobacco and brickyards factories.
- 4- Periodic exam for workers.
- 5- Need of specialist nurse for cancer in Iraq

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