



Calculation the Prevalence rate of lung cancer for the period from 2012 to 2021 / Iraq /Karbala

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Abstract.

The second leading cause of death worldwide, behind cardiovascular disease, is cancer. In the body, cancer can develop everywhere. Men and women alike are significantly affected by lung cancer. The prevalence and mortality rate of cancer patients have increased in Iraq as well. The current study is an epidemiological and statistical investigation. Al-Hussein Medical City provided information on lung cancer patients in the Karbala Governorate between the years of 2012 and 2021. Age, gender, and geographic region were used to separate the data. Additionally, the prevalence rate for each district within the governorate was established. Compared to the other age categories, there were more patients in the group of those 45 and older. According to the study's findings, the numbers climbed overall, with the exception of 2013 and 2015, which were likewise high when compared to before and after the governorate of Karbala. A number of governorates that frequently visited the medical facility were also included. At a rate of 44.04 cases per 100,000 persons, there were 383 men and 201 women who had lung cancer. There was an increase in the number of patients. The Holy Karbala Center served 298 patients (190 males and 108 women), however there were remarkably few good deeds noted there. among the clients (7 injuries for mans and 3 injuries for women). Calculations of prevalence and rate of change revealed a rise in the rate. Specifically, the chi-square test for statistical significance, where the p-value was not statistically significant, was used to analyze the importance of this statistic using SPSS version 20.

Keyword: Karbala Governorate, lung Cancer, SPSS Program, Prevalence Rate, Percentage Change.

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1. Introduction

Because it is one of the primary causes of death, cancer is undoubtedly a serious and potentially fatal condition [1]. The number of cancer cases and deaths worldwide has increased to 18.1 million in the last year [2]. One in five men and one in six women will get cancer at some point in their lives, and one in eight men and one in eleven women will pass away from it [3]. The GLOBOCAN 2020 estimates of cancer incidence and mortality are provided by the International Agency for Research on Cancer[4]. Around 10.0 million cancer-related fatalities (9.9 million excluding no melanoma skin cancer) are anticipated in 2020, according to estimates of the number of

new cancer cases worldwide [5]. Breast cancer is now more commonly diagnosed in women than lung cancer, with an expected 2.3 million new cases (11.7 percent). Lung (11.4 percent), colorectal (10.0 percent), prostate (7.3 percent), and stomach (7.3 percent) are the next most common malignancies in women (5.6 percent). Lung cancer remained the leading cause of cancer death with an anticipated 1.8 million fatalities (18%), followed by colorectal (9.4%), liver (8.3%), stomach (7.7%), and breast cancer in women [4]. A group of illnesses collectively known as cancer are defined by unchecked cell division that results in immortality, the growth of malignant tumors, and infiltration of nearby



physiological organs [6]. After cardiovascular disorders, cancer ranks as the second most common cause of death worldwide [7]. In the body, cancer can develop everywhere. Men and women both frequently develop lung cancer. One of the most typical cancer diagnoses and the main reason for cancer-related death globally is lung cancer [4]. Typically, early-stage lung cancer has no visible signs or symptoms. Lung cancer symptoms and signs typically develop as the condition worsens. The survival rate for lung cancer is poor, with over 90% of patients passing away within five years of diagnosis. These symptoms include a new cough that won't go away, coughing up blood, even a little bit, shortness of breath, pain in the chest, hoarseness, lose weight without trying, and headache[8]. where it is urgently necessary to establish a reliable approach for lung cancer early detection due to the continued high incidence and mortality of the disease [9]. The two kinds of lung cancer are small-cell lung cancer (SCLC) and non-small cell lung cancer (NSCLC), with the latter making up roughly 80% of cases. Only 25% of these patients had stage I disease¹³, which, in fit patients, may be surgically cured [10]. This study aims to know the incidence of lung cancer in the past ten years during Karbala Governorate, Iraq, during the period from 2012 to 2021.

2. Analyzing Statistical Data

SPSS Statistics for Windows, Version 23.0, was used to analyze the data (IBM SPSS Statistics for Windows, Version 23.0. Armonk, NY: IBM Corp). Chi-Square and Mann-Whitney U tests were used to compare descriptive data, while Wilcoxon's and McNemar's tests were employed to compare the students' menstrual findings before and after the training. The intragroup comparison of total HLBS-II, MSQ, and sub-dimension scores was done using the Dependent Samples t-Test. The Independent Samples t-Test was used to compare the differences between groups. The link between total HLBS-II and MSQ scores was determined using Pearson's correlation analysis. [11].

3. Area of Research

This study was conducted in order to calculate the prevalence rate of lung cancer in the Karbala governorate. Data on the number of lung cancer patients and their ages according to Table 1 and 2 were collected from the imam Hussein Center for Cancerous Tumors in Karbala Governorate during the period 2012-2021. It was divided into 7 administrative regions. Where the population statistics were adopted to maintain the census for the year 2021, as shown in Figure 1.

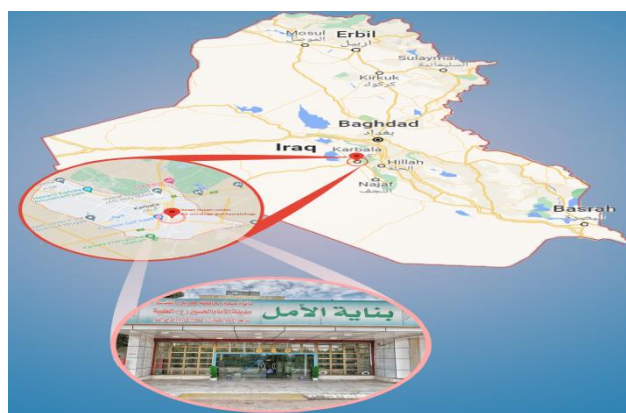


Figure 1: The location of the Karbala Tumor Center in Karbala, Iraq.

4. Result and discussion

Data on patients with lung cancer was obtained in cooperation with the staff of the imam Hussein Center for Cancerous Tumors, where data were collected for the years from 2012 to 2021, as shown in the Table1.

Table 1: the prevalence rate and the Percentage of total cases according to age groups for some township of Karbala Governorate.

Region	Karbala Population	Cases	Age Groups	Prevalence Rate (P.R)	Percentage %
Center of City	577543	298	20-90	51.6	51.37931
Al-Hur	260117	90	40-85	34.6	15.51724
Al-Husaniyah	165604	76	39-80	45.9	13.10345
Al-Hindiya	126986	84	38-84	66.16	14.48276
Al-Jadawal Al-Ghurb	93395	16	20-77	17.13	2.758621
Al-Khurat	62339	10	49-75	16.04	1.724138
Ain Al-Tamur	30766	10	52-75	32.5	1.724138
Total	1316759	580	20-90	44.04	100

From Table 1 we noted the total number of sure cases of lung cancer during the past decade in separate areas of Karbala governorate reached 580, and the number of cases per 100,000 was 44.04 for the total number of categories for (the women and man) during that period. The City Center had the largest share of injuries, reaching 298, while the lowest number of patient was 10 in Al-khairat and Ain Al-Tamur area, as shown in Figure.2. The prevalence rate values were also extracted[12], and it had the highest value 66.16 in the Al-Hindiya region and the lowest value 16.04 in the Al-Khurat region, and the percentages recorded the highest value in the center of city 51.37 and the lowest value in Al-Husaniyah area 13.1 as shown in Figure 2.

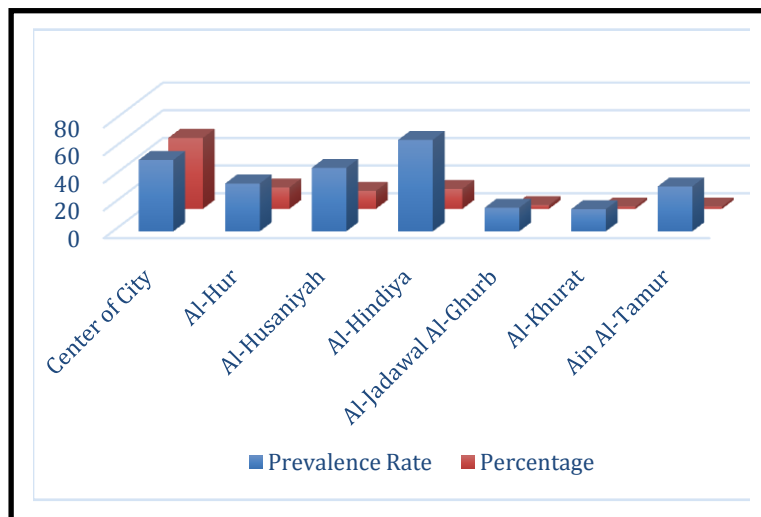


Figure 2: Percentage and prevalence rate for each region in the Karbala governorate between 2012 and 2021.

From table (2,3). we noted the cases of lung cancer patients were divided into two categories (mans and women’s). The prevalence rate and percentage of both categories were calculated, depending on the age groups. Where it was noted that the prevalence rate was highest in Al-Hussainiya area were 21.73



for women’s patients and Al-Hindiya area were 48.82 for man’s patients. while the lowest in the area of Al-Khurat were 3.2 for women’s patients, in the area of the Al-Jadawal Al-Ghurb were 11.77 for man’s patients. The percentage for two categories were also calculated, it was the highest in the city center were reaching to (53.73134,49.60836). While the lowest in the area of Al-Khurat were 0.995025 for women’s patients and in the area of the Al-Ain Al-Tamur 1.827676 for man’s patients. As shown in Figure 3.

Table 2: Cases of lung cancer according to gender, age groups and Prevalence Rate for township of Karbala governorate 2012-2021

areas	Karbala Population	Women			Man		
		Cases	Age Groups	Prevalence Rate (P.R)	Cases	Age Groups	Prevalence Rate (P.R)
Center of City	577543	108	20-90	18.7	190	33-86	32.9
Al-Hur	260117	25	40-76	9.61	65	40-85	24.9
Al- Husaniyah	165604	36	39-75	21.73	40	40-80	24.15
Al-Hindiya	126986	22	38-84	17.32	62	42-80	48.82
Al-Jadawal Al-Ghurb	93395	5	38-73	5.35	11	20-77	11.77
Al-Khurat	62339	2	60-71	3.2	8	49-75	12.83
Ain Al- Tamur	30766	3	54-73	9.75	7	52-75	22.75
Total	1316759	201	20-90	16.26	383	20-86	29.09

Table 3: Cases of lung cancer according to gender, age groups and Percentage for township of Karbala governorate 2012-2021

areas	Karbala Population	Women			Man		
		Cases	Age Groups	Percentage %	Cases	Age Groups	Percentage %
Center of City	577543	108	20-90	53.73134	190	33-86	49.60836
Al-Hur	260117	25	40-76	12.43781	65	40-85	16.97128
Al- Husaniyah	165604	36	39-75	17.91045	40	40-80	10.44386
Al-Hindiya	126986	22	38-84	10.94527	62	42-80	16.18799
Al- Jadawal Al-Ghurb	93395	5	38-73	2.487562	11	20-77	2.872063
Al-Khurat	62339	2	60-71	0.995025	8	49-75	2.088773
Ain Al- Tamur	30766	3	54-73	1.492537	7	52-75	1.827676
Total	1316759	201	20-90	100	383	20-86	100



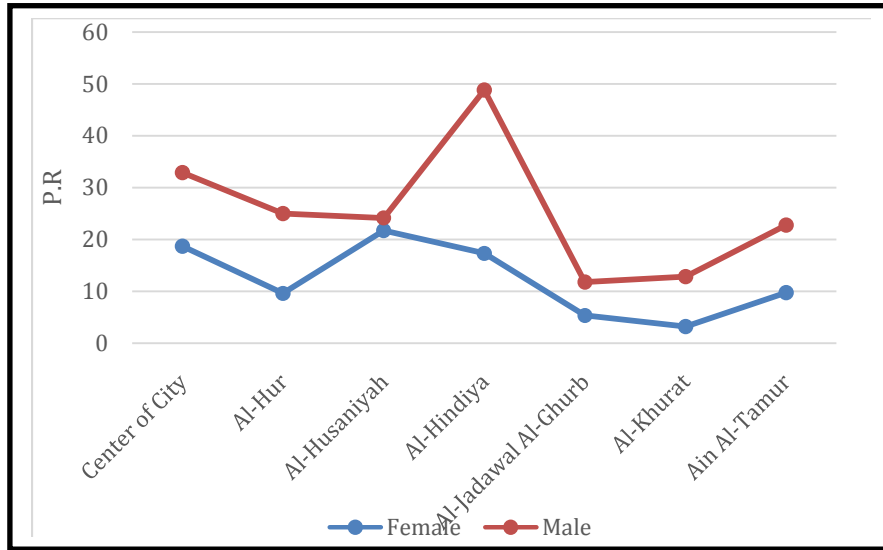


Figure 3: comparison the Prevalence Rate and the township for lung cancer patient in the Karbala governorate

From Table 4 we noted the total number of confirmed cases of lung cancer during the past decade in separate township in Karbala governorate reached 108 in the city center for women and 190 for man. while the lowest number of patient was 3 for women and 8 for man in Al-khairat.

Table 4: Number of lung cancer cases according to age group for township in Karbala governorate during 2012-2021.

Age group	City Center			Al-Hurr			Al-Husaniyah			Al-hindiya			jadaual Al-gharb			Al-khairat			Ain Al-tamr			
	woman	man	total	woman	man	Total	woman	man	total	woman	man	total	woman	man	total	woman	man	total	woman	man	total	
20-24	1	0	1	0	0	0	0	1	1	0	0	0	0	1	0	0	0	0	0	0	0	0
25-29	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0
30-34	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
35-39	2	1	3	0	0	0	1	0	1	1	0	1	1	0	1	0	0	0	0	0	0	0
40-44	4	3	7	0	2	2	0	3	3	2	5	7	0	0	0	0	0	0	0	0	0	0
45-49	13	8	21	0	4	4	1	1	2	1	3	4	0	0	0	0	1	1	0	0	0	0
50-45	12	19	31	4	6	10	3	3	6	1	4	5	2	2	4	0	2	2	0	0	0	0
55-59	15	22	37	3	4	7	6	4	10	2	3	5	0	3	2	0	1	1	1	1	1	2
60-64	16	37	53	6	11	17	8	8	16	5	9	14	0	2	2	1	1	2	1	0	0	1
65-69	22	30	52	4	17	21	8	4	12	5	12	17	1	0	1	0	1	1	0	3	3	3
70-74	14	36	50	4	10	14	7	5	12	1	15	16	1	1	1	1	1	2	1	2	2	3
75-79	5	16	21	2	10	12	1	6	7	1	9	10	0	1	1	0	1	1	0	1	1	1
80-84	2	12	14	1	0	1	1	1	2	2	2	4	0	0	0	0	0	0	0	0	0	0
85-89	2	3	5	1	1	2	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0
90<=	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
total	108	190	298	25	65	90	36	40	76	22	62	84	5	11	16	2	8	10	3	7	10	10

Table 5: Comparison of the number of cases for age groups between the living and the dead two between 2012 and 2021.

Age group ->	<=36	37-46	47-56	57-66	67-76	77-86	≥87	Total
Year								
2012	Alive	0	3	9	12	14	3	41
	Dead	0	0	0	0	0	0	0
2021	Alive	2	3	15	25	20	3	68
	Dead	0	1	2	1	3	1	8



Taking advantage of Table No. 5, it was calculated the percentage change[13]. where the value of the total cases of lung cancer patient was 68, which means that there was an increase in the percentage change.

Table 6: Lung cancer cases taken from the imam Hussein Center in some governorates of Iraq.

Year->Governorate	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	Total
Babylon	1	0	1	0	6	2	4	9	9	12	44
Baghdad	1	0	0	0	0	0	0	6	1	3	11
Dhi Qar	1	0	0	0	0	0	0	1	1	2	5
Najf	0	0	1	0	3	1	0	1	1	3	10
Anbar	0	0	1	0	0	0	0	0	0	0	1
Al-Diwaniyah	0	0	0	0	1	0	0	0	1	1	3
Wasit	0	0	0	0	1	0	0	2	2	0	5
Muthanna	0	0	0	0	0	0	0	1	3	0	4
Dyala	0	0	0	0	0	0	0	1	1	0	2
Myesan	0	0	0	0	0	0	0	0	1	1	2
Mousal	0	0	0	0	0	0	0	0	0	2	2

Some governorates close to Karbala were also compared in terms of patient, and they were documented in Table 6 for the same time period, where the highest patient were recorded in light of the studied data in the Babylon governorate and the lowest in the Anbar governorate, as shown in Figure 4.

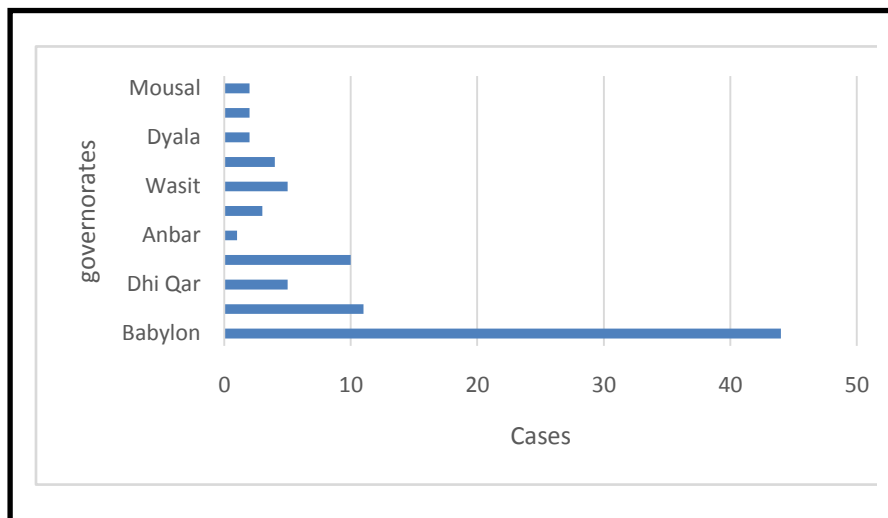


Figure 4: Lung cancer cases taken from the imam Hussein Center in some governorates of Iraq.

The SPSS statistical program was used for the purpose of knowing the relationship between the percentage, age group, prevalence factor and the number of cases through the use of the Pearson factor, where it was found that the Pearson factor* r is Strong association

positive(0.6) and has no statistical significance between cases of womens and Prevalence Rate also for man which was(0.5) , We note the relationship between the prevalence rate in the city center is greater compared to the other areas of the governorate, and this is



normal because the population number is greater, as the risk increases with the increase in population and the passage of years, There is Many factors increase the opportunities of lung cancer such as, family history and genes, mutations in DNA, exposure to environmental toxins, like certain chemicals carcinogens or radiation, smoking, ultraviolet radiation that causes sunburn, presently, the most important risk factor is age, clinical and experimental observations suggest that hormonal, genetic and environmental factors may play a role in lung cancer .Other factors associated with lung cancer include unhealthy diet (low fruit and vegetable intake, vitamins, and coffee), obesity and physical inactivity, indoor smoke from household use of solid

fuels, infections, hyperglycemia where in recent years we also notice increases When we take into account age, gender and category, there are differences as in the above tables (age groups, percentage and number of cases) the relationship was soft, weak, positive And negative negativity is weak between and has no statistical significance between the age groups and the prevalence factor as well as with the number of cases, while the positive and strong positive relationship with the ratios and as shown in Figure (5), while the Pearson chi square was 42with 0.2 (p-value), therefore, there is no statistical significance.
 **. Correlation is significant at the 0.01 level (2-tailed).

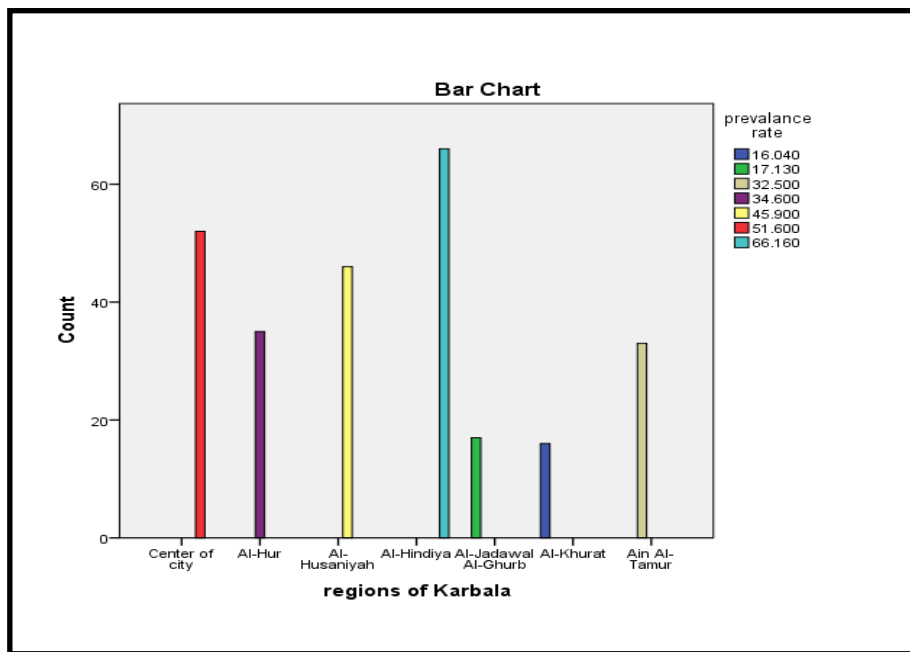


Figure 5: shown the relation between prevalence rate and count.

5. Conclusions

Data of lung cancer patients were collected from Imam Hussein Medical Center in Karbala governorate, where sex, age, and region (Center of City, Al-Hur, Al-Husaniyah, Al-Hindiya Al-Jadawal, Al-Ghurb, Al- Khurat and Ain Al-Tamur) were taken into consideration. The prevalence coefficient and relationship to

the number of cases, region, and age were studied. It was found that the numberr of man cases was higherr than women. The percentage of change or rate of change for the studied data was also studied. Unfortunately, it was Positive any increase in numbers, and using the statistical program, it was found that the Pearson coefficient has a



strong positive relationship and without statistical significance between the number of infected women and the prevalence factor as well as for men. As for the chi-square test, there was no significant among the variables, it was found from the study that the prevalence of lung cancer increases in men and women with progress. The development and improvement of services linked to cancer screening and early detection, carcinogenesis, cancer registration, and surveillance are urgent concerns that must be addressed to minimize cancer incidence and mortality in Karbala. Despite the difficulties in gathering accurate and comprehensive data, greater understanding and use of local data in Iraq for the construction of a cancer registry, as well as to evaluate and support national control efforts, is strongly recommended. We recommend that men and women undergo early screening before the age of 50 and up to the age of 70, early detection of cancer through different techniques and improved treatments to reduce the incidence of cancer over the coming decades is highly recommended.

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