

A STUDY ON THE EPIDEMIOLOGY OF CANCER IN AL-MUTHANNA GOVERNORATE

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SUMMARY

This retrospective study analyzed cancer cases in Al-Muthana governorate, Iraq, from 2004-2008, totaling 1113 cases and 107 deaths. The annual incidence rate showed slight fluctuations, ranging from 33.1/100000 in 2005 to 40.7/100000 in 2006. The occurrence of cancer increased with age for both sexes, with higher rates observed in males, except in the 25-59 age group where females were more affected. Compared to Iraq and surrounding countries, Al-Muthana had lower age-standardized incidence rates. Leading cancers included lung, breast, bladder, leukemia, lymphoma, brain, larynx, and colon-rectum, with a higher incidence in Al-Samawa district. The majority of female cancer patients were housewives, while privately employed men had higher percentages. The highest cancer death rates were seen in the 45-64 age group, with leukemia as the leading cause. Breast cancer accounted for 14.7% of female cancer deaths. Most cancer deaths (57.9%) were from Al-Samawa. The study concluded that Al-Muthana had a lower cancer burden than other parts of Iraq and neighboring countries, but suggested improvements in cancer registration, research on risk factors, and implementation of preventive programs involving diet, smoking cessation, and physical activity.

KEYWORDS: Epidemiology, Cancer, Al-Muthanna, governorate.

INTRODUCTION

Cancer, an umbrella term for over 200 distinct diseases affecting various body parts, is a major global health crisis leading to significant mortality and morbidity.^[1] Even with monumental advancements in science and technology, the causative factors and etiology of many cancer types remain enigmatic, with conspicuous variations in risk factors and occurrences across different geographical locations.^[2] Over the past three decades, the global cancer burden has more than doubled. The statistics are alarming, with one in two men and one in three women being diagnosed with some form of cancer in their lifetimes.^[3] In 2008, the number of newly diagnosed cancer cases exceeded 12 million, with cancer causing 7 million deaths and affecting the lives of 25 million people worldwide. The most prevalent types of cancer in terms of incidence were lung (1.52 million), breast (1.29 million), and colorectal (1.15 million).^[4] By 2030, the projected estimates show 27 million new cancer cases, 17 million annual cancer deaths, and a staggering 75 million people living with cancer within five years of diagnosis. The surge in the global cancer burden is influenced by the continued growth and ageing

of the global population.^[5] Despite a decline in cancer incidence and mortality rates in many parts of the developed world, the rising global cancer burden is driven by an uptick in economically developing nations. These regions are grappling with an increase in cancer due to an aging and growing population, and the adoption of unhealthy lifestyle choices like smoking, lack of physical activity, and poor dietary habits.^[5,6] Additionally, these countries often have limited health care budgets, high levels of communicable diseases, and inadequate access to cancer treatment facilities. This combination of factors places a higher burden of cancer on these regions as compared to their high-resource counterparts. Furthermore, the socio-economic impact of cancer in these areas is substantial as it often affects the primary income earners of the family, potentially leading to economic hardship for the entire family.^[5] Cancer is the second leading cause of death in developed countries and ranks among the top three in developing countries. Globally, one in eight deaths is due to cancer, a figure that exceeds the combined deaths from AIDS, tuberculosis, and malaria. The disease not only poses a substantial burden on patients but also has profound

impacts on families and societies, with many sufferers experiencing a significant decline in their quality of life due to physical pain, mental distress, and economic difficulties.^[1,7] In Iraq, cancer is the third most common cause of death, following cardiovascular diseases and accidents, and is a significant health concern for the Iraqi population.^[8] The aim of study is to measures of incidence and death from cancer in the Al-Muthana governorate. The goal of this study is to look at the pattern of cancer deaths through time. The goal is to classify the most common cancers diagnosed.

METHOD

This retrospective descriptive study, conducted in Al-Muthana governorate with the Ministry of Health/Iraqi Cancer Board, examined all registered cancer cases from 2004-2008. A year-long data collection was performed from December 2011 to December 2012, following approvals from the Ministry of Health/Iraqi Cancer Board and Al-Muthana Health Directorate. A total of 1113 cases were included in the study. Data were collected using a checklist detailing patient name, age, sex, diagnosis year, residence, cancer type, and outcome. These data, sourced from both governmental and non-governmental health facilities, were input into an SPSS

file for statistical analysis after multiple checks for accuracy and removal of duplicate entries. Demographic data for Al-Muthana, including age, sex, and residence structure for the period 2004-2008, were sourced from the Ministry of Planning/Central Statistical Organization and Al-Muthana Statistical Office. The variables studied included age at diagnosis (classified into sixteen 5-year age groups), sex, residence (classified into four regions), diagnosis year (2004-2008), cancer type, and patient fate (alive or deceased). Statistical analysis was performed using SPSS version 19 and Microsoft Excel 2010. Categorical data were described as frequencies and percentages, compared using the Chi-squared or Fisher's exact test when appropriate. Age-standardized incidence rate per 100,000 was calculated using the direct standardization method to the world population. A p-value of < 0.05 was used as the level of significance.

RESULTS

As shown in table 3.1, the annual incidence rate of cancer for the studied period (2004-2008) was nearly steady with slight fluctuation. It ranges from (33.1/100000 population in the year 2005 to 40.7/100000 population in the year 2006).

Table 1: Total population, cancer cases and estimates of annual incidence rates of all cancers of years (2004-2008) in Al-Muthana governorate.

Variable	2004	2005	2006	2007	2008
Total population	559224	576518	594350	614997	633448
Total registered cases	215	191	242	221	244
Incidence rate/ 100 000	38.4	33.1	40.7	35.9	38.5

The distribution of cancer by age and sex is shown in table 2, the frequency of cancer cases for both sexes are increasing with age with a highly significant difference. The frequency of cancer cases among males are higher

than females in (< 25 and ≥ 60 years) age groups, while for the age group (25-59 years) the frequency among females were higher than males.

Table 2: Age and sex frequency distribution of total cases in 2004-2008 in Al-Muthana province.

Age	Sex				Total	%
	Male	%	Female	%		
<5	19	3.2	10	2	29	2.6
5-9	17	2.8	9	1.8	26	2.3
10-14	16	2.7	13	2.5	29	2.6
15-19	28	4.6	9	1.8	37	3.3
20-24	27	4.5	22	4.3	49	4.4
25-29	22	3.6	21	4.1	43	3.9
30-34	19	3.2	34	6.7	53	4.8
35-39	22	3.6	45	8.8	67	6.1
40-44	25	4.1	44	8.6	69	6.2
45-49	24	4	35	6.9	59	5.3
50-54	63	10.4	80	15.6	143	12.8
55-59	53	8.8	53	10.4	106	9.5
60-64	97	16.1	47	9.2	144	12.9
65-69	55	9.1	32	6.3	87	7.8
70-74	60	10	31	6.1	91	8.2
75 & >	56	9.3	25	4.9	81	7.3
Total	603	100	510	100	1113	100

$$X^2=74.6 \quad df=15 \quad P<0001.$$

As shown in Table 3 male with private work had a higher percentage of cancers as compared with patients with

other types of occupations whereas female housewives form the majority of cancer cases.

Table 3: Total cancer cases distribution according to Occupation and Sex.

Occupation	Male	%	Female	%	Total	%
House wife	0	0	382	74.9	382	34.3
Manual	4	0.7	4	0.8	8	0.7
Farmer	20	3.3	2	0.4	22	2
Technical	1	0.2	0	0	1	0.1
Office worker	20	3.3	10	2	30	2.7
Teacher	7	1.2	7	1.3	14	1.3
Professional	1	0.2	0	0	1	0.1
Private work	291	48.2	10	2	301	27
Other	259	42.9	95	18.6	354	31.8
Total	603	100	510	100	1113	100

Table 4. shows the distribution of total cancer deaths according to age group and sex. The highest frequency of cancer deaths in both males and females was in the age group (45-64) which was (33.4% & 42.8% respectively)

and the frequency of cancer deaths among males was more than that in females in all age groups except for the age group (45-64) in which cancer deaths was higher among females without a significant difference.

Table 4: Total cancer deaths distribution by age and sex.

Age group	Male	%	Female	%	Total	%
0-14	10	13.9	3	8.6	13	12.1
15-44	23	31.9	10	28.6	33	30.8
45-64	24	33.4	15	42.8	39	36.5
≥ 65	15	20.8	7	20	22	20.6
Total	72	100	35	100	107	100

$$X^2=3.127 \quad df=3 \quad P=0.372$$

Table 3.9. shows the top ten cancer deaths distribution according to cancer type and sex (2004-2008). Leukaemia ranks first as a cancer-caused death in both males and females (23.3% and 14.7% respectively). Breast cancer was also responsible for (14.7%) of cancer

deaths in females. Both males and females shared the same types of cancer as cause of death like lung, lymphoma, urinary bladder, brain and stomach but differed in ranking.

Table 5: Top ten cancer deaths distribution by type and sex 2004-2008.

Cancer type	Male	%	Cancer type	Female	%
Leukaemia	17	23.3	Leukaemia	5	14.7
Lung	11	15.1	Breast	5	14.7
Lymphoma	8	11	Lymphoma	3	8.8
Urinary bladder	7	9.6	Lung	2	5.9
Brain	5	6.8	Urinary bladder	2	5.9
Stomach	5	6.8	Brain	2	5.9
Unknown primary site	4	5.5	Liver	2	5.9
Larynx	3	4.1	Ovary	2	5.9
Colon-rectum	3	4.1	Pancreas	2	5.9
Bone	2	2.7	Stomach	1	2.9
Subtotal	65	89	Subtotal	26	76.5
Others	8	11	Others	18	23.5
Total	73	100	Total	34	100

Table 5 shows cancer deaths distribution according to residence. Of all registered cancer deaths, 57.9% were

from Al-Samawa district, 31.8% were from Al-Rumaiitha district, and 10.3% were from Al-Khidir district.

Table 5: Cancer deaths distribution according to place of residence.

Residence	Cancer death	%
Al Samawa District	62	57.9
Al Rumaitha District	34	31.8
Al Salman District	0	0
Al Khidhir District	11	10.3
Total	107	100

Table 6, shows cancer deaths distribution according to their occupation, (68%) of deaths among males were private workers while (63%) of deceased females were housewives with a highly significant difference.

Table 6: Cancer deaths according to occupation.

Occupation	Male	%	Female	%	Total	%
House wife	0	0	22	63	22	20.6
Farmer	0	0	1	2.8	1	0.9
Office worker	2	2.8	1	2.8	3	2.8
Private worker	49	68	1	2.8	50	46.7
Other	10	13.9	3	8.6	13	12.2
Unknown	11	15.3	7	20	18	16.8
Total	72	100	35	100	107	100

Fisher's Exact test = 60.22 P<0.0001

DISCUSSION

This retrospective study analyzed cancer incidence, demographics, and mortality in Al-Muthana governorate from 2004 to 2008. The annual incidence rate of cancer during this period remained relatively stable, suggesting no major changes in risk factors over time^[9] Cancer occurrence increased with age, and the frequency was higher in males, except for the 25-59 age group, where females were more affected, due to breast cancer.^[10-14] Al-Muthana's age-standardized incidence rate was lower than Iraq and neighboring countries, attributed to possible inaccuracies in registration or fewer risk factors in the province.^[15] Top cancers were lung, breast, urinary bladder, leukaemias, lymphomas, brain, larynx, and colon-rectum, differing in order annually. Skin cancer was reported in 2004, prostate cancer in 2007, and uterine cancer in 2008, exhibiting a pattern similar to Missan, Thi-Qar, Basrah governorates, and Jordan, but different from global patterns, USA, Oman, Bahrain, Kuwait, Saudi Arabia, and Iran.^[12-19] The cancer incidence was highest in Al-Samawa district, possibly due to urbanization, pollution, western lifestyle, and industrial factors.^[20] The most cancer cases were found among males with private work and female homemakers, indicating lifestyle and demographic influences.^[10] Mortality increased with age and was more frequent in males, except for the 45-64 age group, where female mortality was higher due to breast cancer incidence.^[18-22] Cancer-specific death rates increased until 2007 and then declined in 2008. Leukaemia was the leading cause of cancer death for both sexes, differing from patterns in Far South of Iraq, Middle East, UK, Europe, USA, and globally, where lung cancer in males and breast cancer in females were predominant.^[15,22,23-27] Deaths were mostly registered in Al-Samawa district, reflecting the higher incidence in this area. Most cancer-related deaths were among private workers for males and homemakers for females, indicating occupational influence on mortality.

CONCLUSION

Cancer incidence in Al-Muthana governorate from 2004 to 2008 showed fluctuations, and the actual incidence rate is likely higher than reported. The local cancer pattern aligns with national trends and is similar to Basrah governorate, yet it diverges from most neighboring countries. Both incidence and mortality rates are generally lower in Al-Muthana compared to Iraq and neighboring countries. Leading cancer types for both sexes in Al-Muthana include lung, breast, urinary bladder, leukaemia, lymphoma, brain, larynx, and colon-rectum. The risk of cancer-related death seems lower in Al-Muthana than in other Far South Iraqi governorates, such as Basrah, Missan, and Thi-Qar, but caution is required when interpreting these patterns.

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