CANCER MORTALITY IN BASRAH

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ABSTRACT

This study aimed at determining the burden of cancer as a cause of death in Basrah over three selected years; namely 1989, 1997 and 2005. All death registries in Basrah city, Districts and sub districts were used as sources of information for data compiling. Every death recorded in the three years was checked for cause of death and all cases for which any type of cancer written as the cause of death were identified. Data related to age, sex, place of residence, type of cancer, place where death was certified and year of death were obtained. In addition, the numbers of total deaths due to all causes in each year were also recorded. The results indicate a total of 297 deaths in 1989, 499 deaths in 1997 and 649 deaths in 2005 could be attributed to cancer. Regarding sex distribution of deaths, slightly more deaths occurred in males (53.8%) than in females (46.2%) with significant rise of cancer in females in 2005. Cancer as a cause of death represents about 5% of all deaths with some degree of increase in 1997 and 2005 as compared to 1989, but no major change in the cancer specific death rates among different years. Geographically, the distribution shows significant but not substantial variation with years. The mean age of dead persons was similar in the three years. The leading cancer deaths were those of lung, urinary bladder, blood, breast, lymphomas and CNS. The overall risk of death is not much different in different years except for a slight increase in 1997 and 2005 in comparison to 1989. Most cancers show stable or slightly fluctuating level of risk of death with time. Slight rise in the risk of death may be noticed in cancers of CNS, blood (leukemia), Bones, lymphomas and Colon-rectum. The researchers suggest that the stable level of mortality could reflect some improvement in treatment based on early diagnosis of many cancers. A study covering at least ten years is highly recommended to establish more sound time trend in cancer mortality.

INTRODUCTION

Cancer is a growing health problem at global level in terms of number of new cases, cost of care and the toll of death. It is estimated that the global annual number of new cases of cancer is more than 10 millions and the annual number of deaths is about 6 million deaths. In addition, more than 24 million people are living with cancer[1,2]. In the part of the world where Iraq is located, cancer seems a growing health problem. Incidence rates, though still lagging behind those in industrialized countries, are steadily increasing For example, The annual estimated incidence rates of all sites in Western Asia in 2002 was 149.5 per 100 000 for males and 125.7 per 100 000 for females. The mortality rates were 108.7 and 74.0 per 100 000 for males and females respectively[1]. Despite the great advances in science and technology, the aetiology of many types of cancer is still obscure and the role of specific risk factors in the causation of certain cancers is unresolved with substantial variation across the world[1-3]. The distribution of almost all diseases including cancer is not random neither across nations nor within individual nations, yet in many instances, the reasons behind such non-randomness are not always clear and the exact nature of geographical variation is hazy[4]. Iraq as whole and the southern region including Basrah in particular has been subjected to massive environmental damage as a consequence of wars, economic embargo and lack of resources to protect or restore safe environment. As a result, the health status of the population was under high risk of various diseases including cancer. A number of researchers carried out research work on cancer incidence and mortality in Basrah during the last ten years and reported some increase in both of these two indicators[5-7]. However, these research works have been under criticism by local researchers[8] and international authors[9] for possible bias in their results. The critics suggest that the apparent increase could have been artificial due to better diagnosis, improved reporting and registration or the rise reflects changes in population size and age structure. In a previous paper, we reported some results on the extent of cancer in Basrah [10]. However, mortality from cancer did not receive sufficient attention in scientific research in Basrah. Apart from unpublished data on mortality from all cancers in Basrah for selected years[5,8], no sound comprehensive study handled this aspect of cancer. This study is an attempt to make critical analysis of cancer mortality in Basrah

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governorate. The study is part of a comprehensive research project on cancer and environment in Basrah[11].

MATERIALS AND METHODS

The study is a routine data-based cross-sectional study covering all deaths and deaths due to cancer registered in Basrah governorate during three years; 1989, 1997 and 2005 and involved seven death registries. Two available sources of data on deaths in Basrah governorate were explored; the offices of death certificates, which compile all death certificates in the governorate and the office of death registration, which keeps an inventory on all deaths, registered in Basrah. The first source was abandoned for incompleteness errors. The second was used as the sole source of data in this study. Seven death registries were visited. These were the registries in Basrah city, Hartha, Qurna, Mdainah, Zubair, Abul-Khasib and Shatt Al Arab. Three years were selected for the purpose of study approximately eight years apart. These were 1989 as an example of stable status in Basrah one years after the cessation of the Iraq-Iran War, 1997 which represent the last of the worst years of economic embargo on Iraq before the adoption of the understanding memorandum *(Oil for Food)* between Iraq and United Nations and the 2005 as a point in time 8 years after 1997. For each year, the total number of deaths due to all causes and deaths due to cancer were compiled. Deaths registered in Basrah but were from other governorates were excluded from cancer deaths. One of the investigators visited all offices in Basrah governorate where death registration is maintained. Available data on every death were examined and any case for which cancer was written as the cause of death was identified and relevant data covering age at the time of death, sex, date of death, place of residence, cause of death and type of cancer and the hospital where death certificates were issued, were compiled.

Data were fed on computer and analyzed on SPSS (Statistical Package for Social Science-version 11).

Figures on the population of Basrah governorate were obtained from Basrah Health Authorities[12]

For the geographical distribution, Basrah governorate was divided into five major areas:

Basrah city

Northern Area includes the area from Hartha up to the north borders of the governorate

Western Area includes Zubair, Safwan and Um Qasr

Southern Area includes Abul-Khasib and Fao districts

Eastern Area includes Shatt Al-Arab district

RESULTS

Distribution of cancer deaths by age and years

Table-1, shows the frequency distribution of deaths due to all types of cancers in Basrah by age at the time of death for the years 1989, 1997 and 2005. Generally, the relative share by age groups increases with advancing age in the three years. The increase becomes accelerated after the fourth decade of life reaching a maximum at the age of 70 years and above. The percentage of cancer deaths among children aged less than 15 years is greater for the years 1997 (6.6%) and 2005 (6.4%) as compared to 1989 (4.0%). This gives a relative rise of children share in cancer mortality of about 60-65%. The percentages among the elderly people aged 65 years and above are 32.3%, 38.9% and 37.7% for 1989, 1997 and 2005 respectively.

Table 1. ***Distribution of cancer deaths in Basrah by age and years.***

Age in years	1989		1997		2005	
	No.	%	No.	%	No.	%
<5	5	1.7	10	2.0	13	2.0
5-9	4	1.3	16	3.2	8	1.2
10-14	3	1.0	7	1.4	21	3.2
15-19	5	1.7	7	1.4	11	1.7
20-24	5	1.7	9	1.8	10	1.5
25-29	6	2.0	11	2.2	16	2.5
30-34	5	1.7	20	4.0	23	3.5
35-39	8	2.7	19	3.8	24	3.7
40-44	14	4.7	18	3.6	35	5.4
45-49	24	8.1	40	8.0	51	7.9
50-54	38	12.8	43	8.6	69	10.6
55-59	41	13.8	52	10.4	54	8.3
60-64	43	14.5	53	10.6	69	10.6
65-69	38	12.8	68	13.6	73	11.2
70 And above	58	19.5	126	25.3	172	26.5
Total	297	100.0	499	100.0	649	100.0

Distribution of cancer deaths by type of cancer and years

Table-2 shows the frequency distribution of cancer deaths reported in Basrah governorate for the years 1989, 1997 and 2005.The ten leading cancer deaths are those of lung (15.3), urinary bladder (10.1%), blood (9.1%), breast (8.9%), lymphomas (6.4%), CNS (6.0%), stomach (5.1%), pancreas (4.3%), bones (3.6%) and liver (3.6%). These ten cancers account for an average of 72.4% of all cancer deaths in the three years together. They account for 71.7% in 1989, 72.6% in 1997 and 72.1% in 2005. Cancers, which show some relative increase in the years 1997 and 2005 as compared to 1989, are those of blood, lymphomas, CNS. bones, colon-rectum, uterus, skin, oral cavity and nose. Other cancers do not show relative increase or they show relative decrease.

Table 2. ***Distribution of cancer deaths by type of cancer and years.***

Type of cancer	1989		1997		2005		Total	
	No.	%	No.	%	No.	%	No.	%
Lung	52	17.5	76	15.2	93	143	221	15.3
Urinary Bladder	36	12.1	50	10.0	60	9.2	146	10.1
Blood (leukemias)	22	7.4	51	10.2	59	9.1	132	9.1
Breast	34	11.4	24	4.8	70	10.8	128	8.9
Lymphomas	7	2.4	40	8.0	45	6.9	92	6.4
CNS	14	4.7	30	6.0	42	6.5	86	6.0
Stomach	16	5.4	33	6.6	24	3.7	73	5.1
Pancreas	14	4.7	22	4.4	26	4.0	62	4.3
Bones	8	2.7	22	4.4	22	3.4	52	3.6
Liver	10	3.4	15	3.0	27	4.2	52	3.6
Colon Rectum	6	2.0	16	3.2	28	4.3	50	3.5
Uterus	6	2.0	15	3.0	18	2.8	39	2.7
Secondary	11	3.7	15	3.0	13	2.0	39	2.7
Prostate	6	2.0	15	3.0	12	1.8	33	2.3
Ovary	5	1.7	11	2.2	11	1.7	27	1.9
Oesophagus	5	1.7	10	2.0	9	1.4	24	1.7
small intestine	5	1.7	10	2.0	6	0.9	21	1.5
Skin	1	0.3	4	0.8	10	1.5	15	1.0
Thyroid	3	0.8	3	0.6	2	0.3	8	0.6
Kidney	4	1.3	3	0.6	12	1.8	19	1.3
Gall bladder	3	0.8	1	0.2	5	0.8	9	0.6
Oral cavity	0	0.0	0	0.0	5	0.8	5	0.3
Nose	0	0.0	1	0.2	3	0.5	4	0.3
Pharynx	4	1.3	1	0.2	3	0.5	8	0.6
All Others	25	8.4	31	6.2	44	6.8	100	6.9
Total	297	100.0	499	100.0	649	100.0	1445	100.0

Distribution of cancer deaths by geographical area and years

Table-3 shows the relative frequency distribution of all cancers together by geographical area. The overall distribution was statistically significant (P<0.05). The share of Basrah city declined while that of the Eastern area *(Shatt-Al-Arab)* increased in 2005 as compared to previous years.

Table 3. ***Comparison of cancer deaths by areas of Basrah and years.***

Area	1989		1997		2005	
	No.	%	No.	%	No.	%
Basrah city	159	53.5	279	55.9	325	50.1
Northern area	58	19.5	94	18.8	135	20.8
Western area	53	17.8	73	14.6	109	16.8
Southern area	14	4.7	37	7.4	34	5.2
Eastern area	13	4.4	16	3.2	46	7.1
Total	297	100.0	499	100.0	649	100.0

X^2 = 15.6 8df P < 0.05

Distribution of cancer deaths by sex and years

Table-4 shows a comparison of cancer deaths by sex and years. The percentages of cancer deaths are more among males as compared to females in each of the three years 1989, 1997 and 2005. However the share of females has increased in 2005 (49.9%) compared to 1989 (43.8%) and 1997 (42.7%). The over all distribution was statistically significant (P<0.05).

Table 4. ***Comparison of cancer deaths by sex and years.***

Sex	1989		1997		2005		Total	
	No.	%	No.	%	No.	%	No.	%
Males	167	56.2	286	57.3	325	50.1	778	53.8
Females	130	43.8	213	42.7	324	49.9	667	46.2
Total	297	100.0	499	100.0	649	100.0	1445	100.0

X^2= 6.8 2df P<0.05

Cancer mortality rates by type of cancer and years

Generally the mortality rates of most cancers appear to be high with advances of years i.e. it is more in 1997 and 2005 in comparison to 1989 (**Table-5**). For example, lymphomas, cancers of CNS, bones, colon-rectum, uterus, blood and skin showed some increase in mortality rates with time. Other cancers show inconclusive trends. The overall cancer mortality rates exhibit a tendency towards increase from 29.2 per 100 000 in 1989 to 33.3 per 100 000 in 1997 and 32.3 per 100 000 in 2005.

Table 5. ***Comparison of annual mortality rates/100 000 of all cancer deaths in Basrah for the years 1989, 1997 and 2005.***

Type of cancer	1989	1997	2005
Lung	5.1	5.1	4.3
Urinary Bladder	3.5	3.3	2.8
Blood	2.2	3.4	2.7
Breast	3.3	1.6	3.2
Lymphomas	1.9	2.7	2.1
CNS	1.4	2.0	2.0
Stomach	1.6	2.2	1.1
Pancreas	1.4	1.5	1.2
Bones	0.8	1.5	1.0
Liver	1.0	1.0	1.3
Colon Rectum	0.6	1.1	1.3
Uterus	0.6	1.0	0.8
Secondary	1.1	1.0	0.6
Prostate	0.6	1.0	0.6
Ovary	0.5	0.7	0.5
Oesophagus	0.5	0.7	0.4
Kidney	0.4	0.2	0.6
Skin	0.1	0.3	0.5
All Others	2.1	1.5	2.1
Total	29.2	33.3	32.3

DISCUSSION

Medical and legal bodies or personnel usually ascertain the fact of death. In countries where burial of dead persons requires officially issued death certificates, death registries can be reliable regarding the total numbers of death during a specified period of time[13]. Incompleteness in death registries may arise early in life when neonates may be borne and die without being registered as births or deaths. This is expected to be very marginal in Iraq and in Basrah for three reasons. The first is that Islamic rules require that each dead person regardless of age should be buried. The second is the socioeconomic development in the country and the wide spread education which enhance the documentation of vital events. And the third is the legal requirement for any event of death to be documented. With respect to cause of death, some degree of inaccuracy is likely[13]. People with cancer may have died because of other reasons complicating cancer itself or unrelated to it. In other instances as in the elderly for example cancer may be the cause of death but the ascertainment of cause of death is amenable to errors. It is not uncommon to find *"senility"* written as the cause of death in such very old people. In such age group, the incidence of cancer is usually high. This may mean that some cancer deaths are lost and the overall risk of death is underestimated. The investigators did their best to review carefully the death registries in Basrah. The data used in the view of the investigators is reliable. The figures are very close to the official figures issued by the health authorities on deaths in Basrah[14]. It remains a possibility however, that some errors do exist and one should admit that scientific research results are not always perfect. Cancer risk and cancer mortality affects every age but the risk of both these events increases with age as indicated by the increasing relative share in the events of death with advancing age. This reflects cumulative effect of environmentally related exposure to carcinogens. The effect of genetics and exposure to carcinogens prior to birth and even prior to conception cannot be excluded since a substantial amount of cancer deaths occur very early in life. This is true in Basrah and elsewhere as shown in this paper. The leading cancers as causes of death are not very much different from those reported in other parts of the world [1]. Some of these cancers are related to avoidable risk factors. Lung cancer for example is the prime cause of deaths related to cancer in Basrah. Most of lung cancer is related to cigarette smoking; a habit which can be avoided from the start or stopped among those who used to it. The distribution of cancer deaths though showed some significant variation with time among different geographical areas of Basrah it is more or less a stable pattern and could mean that the exposure

to the potential risk factors is uniform. The observed differences in the distribution with time can not be considered as evidence of change unless the reference populations are taken into consideration in each of the studied years. At this moment the investigators could not get detailed data on population denominators for different years for these areas and for age or sex composition. Evidence from the results in this paper and previous studies[6-8,11] suggest some degree of rise in the risk of cancer in Basrah. The cancer specific mortality rates in different years did not support the previous findings. Only small increase in the overall cancer specific death rate has occurred from 1989 to 2005. Lack of tangible increase in cancer specific mortality rates might be due to better survival among cancer cases during the last decade or so. More facilities for diagnosis and treatment became available in Basrah *(though not adequate at all)*. In addition, some screening programmes were initiated. These could have contributed to earlier diagnosis, more effective treatment and better outcome. Regardless, cancer is a real health problem in Basrah. It is a significant contributor to the toll of death and a major consumer of resources. Continuing research on cancer is vital but need support from various interested partners.

In Conclusions, cancer is a major cause of death in Basrah accounting for nearly 5% of all officially registered deaths. Five cancers *(lung, urinary bladder, breast, blood and lymphomas)* account for about 50% of all cancer deaths in Basrah.

No major rise in cancer specific death rates occurred over years, but slight shift in age at death occurred. The proportion of deaths among children in 2005 and 1997 has increased by about 60-65% in comparison to 1989.

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