

Cancer Mortality in Southern Iraq

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Abstract

In this paper, we present the results of a study that was carried out in three governorates in Southern Iraq (Basrah, Missan and Thi Qar) in 2006. The study aimed at examining the burden of cancer as a cause of death in these governorates during selected years from the 1980s, 1990s and the first decade of this century. The data were obtained from all death registration offices in the three governorates. Each death was checked and deaths for which cancer was written as the cause were compiled. The results showed that cancer is a major contributor to mortality in Southern Iraq. The share of cancer deaths among males was higher (56.3%) than females (43.7%) but a significant rise in the females share was noticed from the 1980s towards the beginning of the 21st century. The ten cancer deaths in males and females were generally similar. These were cancers of the urinary bladder (16.4%), lung (15.0%), leukaemias (8.6%), breast (7.6%), lymphomas (Hodgkin's and Non-Hodgkin's) (5.3%), CNS (5.1%), stomach (5.1%), larynx (4.5%), liver (4.1%) and pancreas (3.2%). These ten cancer deaths represented about 74.9% of all cancer deaths. The results documented some degree of increased cancer mortality during the last 20 years particularly in Missan governorate. The differential time trend in cancer mortality among the three governorates could reflect difference in the quality of medical care available for patients.

1-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 more than 6 million deaths take place annually. In addition, more than 24 million people are living with

cancer (Parkin *et al.*, 2005; Shibuya *et al.*, 2000). 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 (Parkin *et al.*, 2005). In the United Kingdom, it was reported that the annual mortality rate of cancer of all sites in the year 2002 was 261.2 per 100000 (Cancer Stat. UK, 2005). 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 (Parkin *et al.*, 2005 ; Shibuya *et al.*, 2000 ; Knok *et al.*, 1987). Great variations exist in the level of risk, distribution of risk factors and availability and effectiveness of medical care (Greenberg *et al.*, 2001).

Iraq as whole and the southern region including Basrah in particular has been subjected to massive environmental damage because of wars, economic embargo, political instability and lack of resources to protect or restore safe environment. As a result, 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 (Abood, 1999 ; Yacoub *et al.*, 1999 ; Yacoub *et al.*, 1999). However, these research works have been under criticism by local researchers (Hassan *et al.*, 2005) and international authors (Fahey, 2003) 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. Actually, two problems are facing researchers in estimation of cancer incidence and mortality in developing countries. These are related to completeness of case ascertainment and size of reference population. In a previous paper, we reported some results on the extent of cancer in Basrah (Habib *et al.*, 2007). However, mortality from cancer did not receive sufficient attention in scientific research in Basrah or in Southern Iraq. Apart from unpublished data on mortality from all cancers in Basrah for selected years (Abood, 1999 ; Hassan *et al.*, 2005), no comprehensive study handled this aspect of cancer. The present study is an attempt to make critical analysis of cancer mortality in three governorates in Southern Iraq. The study is part of a comprehensive research project on cancer and environment initiated in Basrah (Habib *et al.*, 2006) and expected to cover Southern Iraq in the near future.

2-Methods and materials

The study is a routine data-based study covering all deaths due to cancer registered in the governorates of Basrah, Missan and Thi Qar during three selected years; 1985, 1995 and 2005 and involved all death registries in these governorates.

Two available sources of data on deaths in these governorates were explored; the death certificates, which compile all death certificates in the governorate and the death registration, which keeps an inventory on all deaths, registered. The first source was abandoned for incompleteness. The second was used as the sole

source of data in this study. All death registries in the all urban centres in the three governorates were visited.

Three years were selected for the purpose of study approximately ten years apart. These were 1985, 1995 and 2005. In Basrah data were collected for 1989, 1997 and 2005. For each year, the total number of deaths due to all causes and deaths due to cancer were compiled.

One of the investigators visited all offices in each governorate where death registration is maintained. Available data on every death were examined and any case for which cancer 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.

Figures on the population of the three governorates were obtained from Health

Authorities and the Central Statistical Offices through personal communication (WHO, 1990-1998). A total of 3026 cancer deaths were identified (Basrah 1445, Missan 473 and Thi Qar 1106). Data were fed on computer and analyzed on SPSS (Statistical Package for Social Science-version 11).

3-Results

Distribution of cancer deaths by age and sex

Table 1 describes the frequency distribution of cancer mortality in southern Iraq during the last 20 years. Comparing males and females, the percentage among children is greater among males (6.2%) than females (4.9%), and then the percentages among females exceed those among males until the age of 54 years. After that age, the percentages among males are greater than among females.

Table 1 Distribution of cancer deaths by age and sex: Southern Iraq 1985-2005

Age (years)	Males	Females	Total
<15	6.2	4.9	5.5
15-24	3.3	4.6	3.8
25-34	3.6	6.5	4.9
35-44	6.9	12.4	9.3
45-54	15.5	20.8	17.9
55-64	23.6	20.8	22.4
65-74	24.3	17.3	21.3
75 & above	16.7	12.7	15.0
Total*	100.0 (1703)	100.0 (1323)	100.0 (3026)

* Numbers between brackets represent number of deaths

Distribution by cancer site

Ten cancers represent about three quarters (74.9%) of the total cancer deaths during the last two decades in southern Iraq (Table 2). These are cancers of the urinary bladder (16.4%), lung (15.0%), leukaemias (8.6%), breast (7.6%),

lymphomas (5.3%), CNS (5.1%), stomach (5.1%), larynx (4.5%), liver (4.1%) and pancreas (3.2%). Males and females share seven of these ten cancers. Lung cancer is the first cancer killer among males while breast cancer is the first killer among females.

Table 2 The ten leading cancer deaths among males, females and both sexes: Southern Iraq 1985-2005

Males		Females		Both sexes	
Type of cancer	%	Type of cancer	%	Type of cancer	%
Lung	21.2	Breast	17.1	Urinary bladder	16.4
Urinary bladder	19.7	Urinary bladder	12.2	Lung	15.0
Leukaemias	8.3	Leukaemias	9.0	Leukaemias	8.6
Lymphomas	6.2	Lung	6.9	Breast	7.6
Larynx	5.6	Uterus & cervix	6.1	Lymphomas	5.3
CNS	5.3	Stomach	5.2	CNS	5.1
Stomach	4.9	CNS	4.9	Stomach	5.1
Liver	3.9	Lymphomas	4.2	Larynx	4.5
Prostate	3.4	Colon-rectum	3.9	Liver	4.1
Pancreas	3.2	Larynx	3.2	Pancreas	3.2
All the ten	81.7	All the ten	72.7	All the ten	74.9
All other sites	18.3	All other sites	27.3	All other sites	25.1

Age specific cancer mortality rates

Age specific cancer mortality rates are shown in Table 3. Among children aged less than 15 years the rate is 4.3 per 100000 rising to 11.3 in the age of 15-44 years. After this age a sharp increase is noticed. The annual mortality rate in the age group 45-64 is 117.4 and in the age group 65 and older the rate is 340.0 per 100000. The age standardized mortality rate using age structure of World Population (Parkin *et al.*, 2005) is 52.3 per 100000.

Cancer specific mortality rates and time

Cancer specific mortality rates are shown in Table 4. The ten leading cancers deaths (urinary bladder, lung, leukaemias, breast, lymphomas, CNS, stomach, larynx, liver and colon-rectum) together account for annual mortality rates of 21.1, 22.8 and 23.5 per 100000 for the years 1985, 1995 and 2005 in that order. The annual mortality rates for the years 1985, 1995 and 2005 are 28.0, 31.1 and 30.7 per 100000. On average the annual

mortality rate has increased by 11.1% from 1985 to 1995 and by 9,6% from 1985 to 2005.

Overall mortality rate of cancers of all sites is 30.2 per 100000.

Table 3: Age specific average annual mortality rates due to cancers of all sites

Age in years	Mortality rate per 100000
<15	4.3
15-44	11.3
45-64	117.4
65 and above	340.0
Total	30.2 ASMR=52.3

Table 4: Cancer specific mortality rate of cancers of all sites per 100000 by years (The three governorates together)

Type of cancer	1985	1995	2005	Total
Urinary bladder	6.0	5.7	3.8	496 5.0
Lung	3.8	4.4	4.9	452 4.5
Leukaemias	2.3	2.5	2.8	261 2.6
Breast	2.2	2.0	2.6	230 2.3
Lymphomas	1.0	1.7	1.9	161 1.6
CNS	0.9	1.5	1.9	155 1.5
Stomach	1.3	1.4	1.8	153 1.5
Larynx	2.0	1.2	1.2	137 1.4
Liver	1.0	1.2	1.4	125 1.2
Colon-rectum	0.6	1.2	1.2	103 1.0
Pancreas	0.9	1.1	0.9	97 1.0
Bone	0.8	1.1	0.9	93 0.9
Uterus-cervix	0.6	0.9	0.9	81 0.8
Secondary of unknown primary	0.9	1.1	0.7	83 0.8
Prostate	0.5	0.8	0.4	58 0.6
Small intestine	0.3	0.5	0.2	33 0.3
Thyroid	0.5	0.3	0.2	32 0.3
Oesophagus	0.4	0.4	0.3	25 0.2
Pharynx	0.4	0.2	0.2	23 0.2
Skin	0.1	0.1	0.3	17 0.2
All other sites	1.5	1.8	2.2	211 2.1
Total	28.0	31.1	30.7	3026 30.2

Cancer specific mortality rate by time and governorate

Table 5 shows that cancer mortality rate has increased from 1985 to 2005 in the three governorates in Southern Iraq by about 9.6%. The degree of increase was variable however. It was lowest in Basrah (3.1%), highest in Missan (34.5%) and in between in Thi Qar (7.9%).

Cancer proportional mortality ratio

Cancer contributed to about 6.2% of total toll of deaths in Southern Iraq during the last 20 years. The proportional mortality ration increased from 4.1% in 1985 to 6.6% in 1995 and further to 7.7% in 2005. The details are shown in Table 6.

Table 5 Annual mortality rate from cancer of all sites per 100000 by years and governorate

Governorate	1985	1995	2005	Average per year	% change from 1985 to 2005
Basrah	29.2	33.3	30.1	30.9	+3.1
Missan	20.6	24.5	27.7	24.8	+34.5
Thi Qar	30.8	31.9	33.2	32.2	+7.8
Total	28.0	31.1	30.7	30.2	+9.6

Table 6: Cancer proportional mortality ratio by governorate and years

Governorates	Years			
	1985	1995	2005	Total
Basrah	3.1	6.4	6.5	5.2
Missan	6.3	8.3	11.3	8.8
Thi Qar	5.4	6.5	8.8	7.0
Total	4.1	6.6	7.7	6.2

4-Discussion

Cancer accounted for an average of 6.2% of all deaths which occurred in selected years during the last 20 years. The Proportional mortality ratio has increased from 4.1% in 1985 to 6.6% in 1995 and to 7.7% in 2005. The increasing trend could reflect increased cancer incidence, cancer case fatality or relative reduction in deaths due to causes other than cancer. Evidence from a number of studies

carried out in Southern Iraq (Yacoub *et al.*, 1999 ; Yacoub *et al.*, 1999 ; Habib *et al.*, 2006) suggests a rise in the risk of cancer during the last decade or so. Therefore, the relative rise in cancer proportional mortality ratio could reflect a real rise in the risk of death from cancer in Southern Iraq. The relative rise is consistent in the three governorates, highest in Basrah, intermediate in Missan, and lowest in Thi Qar. Comparing the cancer proportional mortality

was 3.3 % in Egypt, 8.8% in developing countries and 21.6% in developed countries (WHO, 1990-1998 ; WHO, 1995). It is lower than the 8.7% reported for Benghazi area in Libya (Singh and Al-Sudani, 2001). Although the cancer proportional mortality ratio in Southern Iraq was within the ranges in developing countries and much lower than the range in industrialized countries, the time trend is worrying. What justifies this worry is the fact that the cancer specific mortality rate has also shown rising trend with time. The rise was very marked in Missan governorate (34.5%) between 1985 and 2005. intermediate in Thi Qar (7.8%) and lowest in Basrah (3.1%) with an over all rise of 9.6%. The lowest scale of rise in Basrah did reflect the improvement in diagnosis and treatment facilities, which are much better than those in Missan or Thi Qar during the recent years. The average cancer specific mortality rate of 30.2 per 100 000 population seems low in comparison to other countries. Part of the explanation for such low rate is the fact that cancer risk and hence death increases substantially with age and the population of Iraq including Southern governorates is very young. Statistical estimates on population indicate that nearly 40% of the population is aged less than 15 years and people aged 65 years and above constitute less than 5% of the total population (Population Reference Bureau, 2006 ; UNPD, 2002). However, when the age standardized cancer mortality rate (ASCMR) is calculated using world population age structure given by Parkin (Parkin *et al.*, 2005), the ASCMR became 52.3 per 100 000 population.

This rate is still lower than rates reported for neighbouring countries (Ferlay *et al.*, 2000). Interpretation of the variation among different countries should consider variation in the true incidence and mortality, the extent of registration and ascertainment of cause of death and the demographic characteristics of different population particularly the age structure of populations (Hill, 1984). It is difficult at this stage to rule out or to estimate the extent of under registration of cancer as a cause of death in Southern Iraq. Further studies to cover more years are needed. Despite the limitations inherited in the data used in this paper, cancer seems an important cause of death in Southern Iraq, there was relative increase in its share to the overall mortality and is expected to become more significant health problem in the foreseeable future.

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وفيات السرطان في جنوب العراق

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الملخص

تعرض الورقة نتائج بحث اجري في ثلاث محافظات في جنوب العراق (البصرة، ميسان وذي قار) عام 2006 وتغطي عينة من ثلاثة عقود من الزمن. كان هدف البحث الأساس هو قياس العبء السرطاني كمسبب للوفاة في هذه المحافظات الثلاث. اعتمد الباحثون في الحصول على البيانات المطلوبة على مكاتب تسجيل الوفيات في كل المراكز الحضرية في المحافظات ودونست المعلومات المطلوبة عن كل حالة وفاة اعتبر السرطان فيها سببا للوفاة. أظهرت النتائج ان السرطان يمثل مشكلة مهمة كمسبب للوفاة في جنوب العراق إذ يساهم بما يقارب 6% من مجموع الوفيات السنوية. وكانت النسبة أعلى في الذكور (56,3%) مما هي في الإناث (43,7%) مع ميل إلى زيادة نسبية بين الإناث مع تقدم السنوات. وقد بينت الدراسة أيضا ان السرطانات العشرة الرئيسية للوفاة هي سرطان المثانة (16,4%)، سرطان الرئة (16,0%)، ابيضاض الدم (8,6%)، سرطان الثدي (7,6%)، سرطان الغدد اللمفاوية (5,3%)، سرطان الجهاز العصبي (5,1%)، سرطان المعدة (5,1%)، سرطان الحنجرة (4,5%)، سرطان الكبد (4,1%)، و سرطان البنكرياس (3,2%). احتلت هذه الأنواع العشرة 74,9% من مجموع وفيات السرطان. حصلت زيادة طفيفة في نسب وفيات السرطان في العشرين سنة الماضية والموضوع يحتاج إلى دراسة أكثر شمولاً من الدراسة الحالية. ونوصي بقوة بإنشاء تسجيل سرطاني سكاني فعال كما توصي بتشكيل فرق بحثية متعددة الاختصاصات والقطاعات للتعامل مع مشكلة السرطان المتزايدة في جنوب العراق.