

# **Iraq: Cancer during Conflict**

## **(2518 Words)**

This profile explores how recent conflicts (namely the Iran-Iraq War 1988-89, Gulf War 1990-91, and Invasion 2003-present) may have altered the current and future landscape of cancer in Iraq.

### **Conflict in Context**

Iraq is a country of conflicting fortunes. It enjoys enviable status as the world's second-largest oil producer and yet, owing to unrest and financial mismanagement, the World Food Program estimates that 18% of the population still live on less than US\$1 per capita per day<sup>1</sup>. Over-reliance on oil (production comprised 53.9% of GDP in 2007<sup>1</sup>) also means that while the government enjoys substantial revenue, this has been at the expense of adding value in other sectors and non-oil producing regions remain severely impoverished. For example, the now-barren province of Al-Qadissia has a population where 46.1% are in the lowest wealth quintile<sup>1</sup>. Income inequalities are favourable compared to elsewhere in the Middle East, but still show disparities - the poorest 10% earn just 5.8% of national income<sup>1</sup>. Despite being the inheritors of the Mesopotamians – a civilisation who shaped the entire Old World, Iraq is now ravaged in more ways than one. The country has seen a drop in primary school enrolment (from 91 to 85% since the most recent conflict<sup>2</sup>). The 2003 conflict itself is reported to have resulted in 655,000 excess deaths according to a landmark Lancet study<sup>3</sup>.

Remarkably however, decades of conflict have not stymied population growth – estimates suggesting the population size quadrupled since 1960 (from 7.38 to 32.03 million)<sup>4</sup>. Population concealment and under-reporting during Saddam’s regime might mean the true picture of growth is more conservative, but is unlikely to negate it entirely.

A changing landscape of health has accompanied these dynamic patterns during the decades of conflict. With reference to some core health indicators, Table 1 paints a mixed picture between the pre-1989 and post-2003 eras. The presence of multiple confounders (such as improved maternal healthcare, vaccine development, climate change and dietary patterns) mean a mono-causal relationship between conflict and these changes would be hard to prove. Improvements in data collection also mean that newer data is likely to be more robust and older data less reliable. They are thus presented for background and contextual purpose.

Indicator	In 1989 (pre-Gulf War)	In 2006 (post-2003 conflict)	Change
Adult Crude Mortality Rate	4 per 1000	436 per 1000	+ 432 per 1000
Infant Mortality Rate	52 per 1000	37 per 1000	-15 per 1000
Under 5 Mortality Rate	160 per 1000	47 per 1000	-113 per 1000
Life Expectancy at Birth	66 Years	56 Years	- 10 Years
% Population with sustainable access to safe water	93%	77%	-16%
% Pregnant Women with Trained Birth Attendants during Delivery	86	89	+3%

Table 1 – A comparison of WHO Statistics<sup>5</sup> of core health indicators

## **Conflicting reports of Cancer**

There is growing concern however that the conflicts have resulted in an increase in the incidence of several cancers, particularly in children<sup>6</sup> and women<sup>7</sup>. Media reports (inside and outside Iraq) are awash with descriptions on the use of uranium and radiation exposure during combat<sup>8</sup>, as well as pictures of children with birth defects, congenital abnormalities and leukaemia. Prominent scholars have attempted to elaborate this risk, including Dr. Abdul Haq Al-Ani whose book, 'Uranium in Iraq' gained nationwide coverage<sup>9</sup>.

Unfortunately, it would appear that this anecdotal evidence is yet to be corroborated by empirical research. WHO data from Iraq suggests Non-Communicable-Diseases (NCDs) accounted for 44% of all deaths in 2010 and only 7% due to cancer<sup>10</sup>. However, if this data is interpreted in the context of the NCD burden elsewhere in the region, a more insightful picture is possible. In fact, despite sharing similar dietary patterns and status as 'Lower Middle Income' countries, the NCD burden in all of Iraq's bordering countries is substantially higher – 72% in Iran, 71% in Saudi Arabia, 77% in Syria, 85% in Turkey and cancer mortality rates similarly so<sup>10</sup>. The reason for the disparity could be explained by the fact that in the same year, injury-related deaths in Iraq comprised 32% of all deaths, compared to 14% in Iran (the next highest)<sup>10</sup>. Although some of the data is age-adjusted, NCDs such as CVD and cancer tend to occur later in life and death ensues over a more lengthy time period. Suggesting that cancer is on the increase in Iraq is not necessarily incongruent with the seemingly low NCD burden – it may simply be that individuals with cancer are dying of injuries sooner than they would have died of cancer.

## Front line of fire

In the conflict with Kuwait, 944,000 rounds of depleted uranium were used according to declassified US documents and areas bordering Kuwait were additionally exposed to petroleum fires and Benzene, a known carcinogen<sup>11</sup>. Hagopian et al<sup>12</sup> found that in Basra (which borders Kuwait) this exposure may well have had a detrimental effect on the incidence of childhood leukaemia – which grew steadily over the 15-year period between 1993 and 2007 (Figure 1). Respite after the Gulf War may have allowed more people to report cancer and seek treatment than before, but incomplete access during war does not explain why the trend persisted even during the recent 2003 conflict. Further, the sustained, exponential increase in number of cases suggests whatever the exposure, it had the ability to pose a continued risk in new generations. Uranium and other conflict-related-carcinogens are known<sup>13</sup> to permeate and pose a sustained threat; even once the initial source is extinguished.

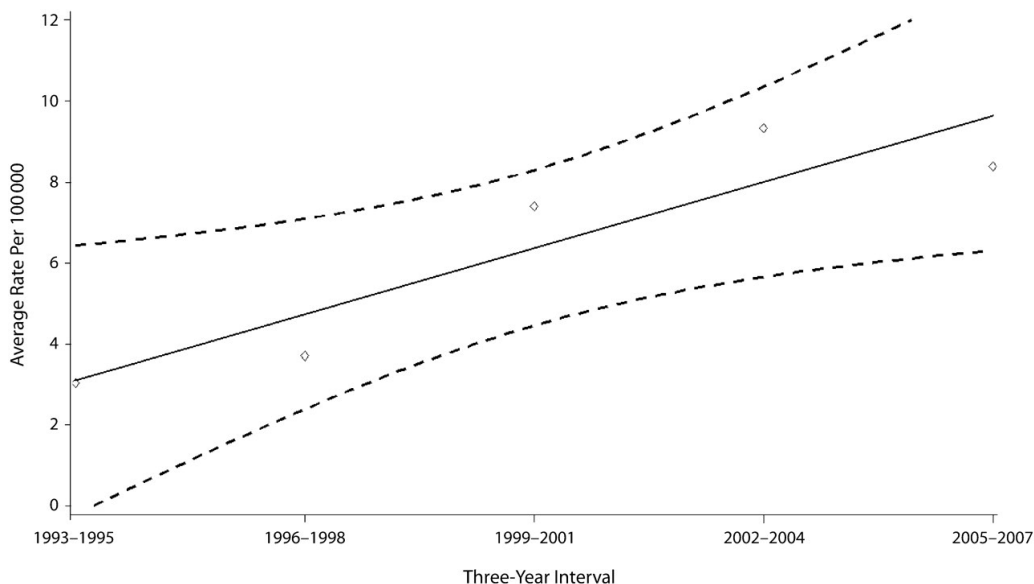


Figure 1 – Average leukaemia rates and 95% confidence intervals among children aged 0 to 14 in Basra, Iraq: 1993-2007. Data from Ibn Ghazwan MCH Cancer Registry<sup>12</sup>

In HIV-prone areas where data can be sparse, coffin sales are a useful surrogate for estimating mortality. By extension, the fact that Iraq's first cancer hospital for children opened in southern Iraq<sup>14</sup> (where fighting was fierce) is somewhat telling, albeit not definitive.

More directly, in Fallujah, (where fighting has been heavy since 2003), mean levels of uranium were found to be 0.16ppm versus 0.04ppm in an unexposed population, and uranium detected in hair at significant levels<sup>15</sup>. Another telling statistic is the birth sex-ratio, which normally is approximately 1.05 : 1 (M:F), but can be disturbed by genetic damage such as that encountered after uranium exposure. Busby et al<sup>16</sup> discovered the ratio of males per female in age cohorts 0–4, 5–9, 10–14 and 15–19 years to be 0.86, 1.182, 1.108 and 1.010 respectively - suggesting the 0-4 age cohort have been significantly affected ( $p < 0.01$ ) – coinciding with uranium exposure during the last 4 years of conflict.

However, a strongly patriarchal society sanctioning the publication of data that shows a dwindling male population is enlightening. Although the statistics are difficult to refute, one might reasonably question the motivation for publishing data that could serve as good propaganda and fuel anti-American sentiment. Exaggerating the effect of uranium through research is not inconceivable and a BMJ paper<sup>17</sup> that deceitfully portrayed epidermolysis bullosa as a *'boy with unknown skin disease thought to be linked with use of depleted uranium'* has since been discredited. There may be evidence of cancer incidence rising during conflict years, but a more robust answer is only possible if non-uranium perspectives are methodically explored.

## **Tobacco**

The association between cancer incidence and uranium exposure may be confounded by heavy tobacco consumption in conflict-prone areas such as Fallujah<sup>18</sup>. The unique circumstances in combat zones (stress, anger management, boredom) are known to promote tobacco usage, and consumption itself is widely accepted to pose an increased risk of developing several cancers. Norwegian studies<sup>19</sup> of conscripts have shown smoking behaviour to be most common in young servicemen and small, but convincing studies from Iraq<sup>20</sup> seem to corroborate this effect in the most recent conflicts. Since young men in the military tend to be from lower socioeconomic groups, one may reasonably attribute their smoking habits to background factors rather than the exposure to conflict and the stresses of war. Conversely these circumstances may serve to underscore just how serious the effects of war can be. Persistent smoking (with visible cardio-respiratory effects) in an occupation where fitness is essential, amongst people who can ill afford to be without a job emphasises this<sup>20</sup>.

If such stress puts serving personnel at an increased propensity to smoke, the same (or worse) may be true for the indigenous Iraqi population. The trauma of one's own country being ravaged by war, and the risk of death (not just job loss) in people without the perks of US-defence equipment is relevant. WHO data estimates<sup>10</sup> 25.3% of men in Iraq are daily tobacco smokers, as compared to a mere 8.5% in peaceful Saudi Arabia and 18.5% in the UK (where cigarettes are abundantly more affordable). The data from Iraq may also be a gross underestimate, not just because of rudimentary data but because the WHO definition is based on 'Over 15s who smoke tobacco daily'. In Iraq, tobacco consumption comes also in the form of Shisha smoking which often is not daily (and hence not captured in this data) but according to a WHO study<sup>21</sup> could be '100-200 times' worse than cigarettes.

Due to ill-affordability, cigarettes are also commonly sold as ‘singles’ on the blackmarket and such consumption is unlikely to feature in official statistics and accepted as ‘Unknown’ in WHO reports<sup>22</sup>.

Exacerbating the situation is the fact that decades of conflict occupied the efforts of governments, and other priorities (such as implementing public health policies and cessation campaigns) have suffered as a result. For example, despite cigarette advertisements being banned in most of the Western hemisphere due to irrefutable evidence of harm, large billboards (Figure 2) are still commonplace across Iraq. As a consequence of the Gulf War, economic sanctions prevented tobacco products arriving from overseas – forcing the insatiable demand of an addictive substance to be met by domestic production and not subject to international safety standards nor restrictions on carcinogenic content<sup>23</sup>. Even now that sanctions have eased, political disarray means cigarette imports aren’t subject to tight controls – imported packets contain warning notices in miniscule print, let alone the foreign language (Figure 3).



Figure 2 (left)– High visibility tobacco billboards in Kurdistan (24:3-6)  
Figure 3 (right)– Park Lane cigarettes have ‘Miniscule Print’ for health warnings and in Urdu, not Arabic (24:3-6)

Sustained conflict over decades could also have sustained consequences on long-term smoking habits. Recent studies<sup>25,26,27</sup> on adolescents in Baghdad and Kurdistan show as many as 25.1% are current smokers - perhaps driven by how conflict has blighted prospects for the future, increased boredom (destroyed schools and playgrounds) and contributed to poor health literacy.

### **Population studies**

Much like Hitler's pronatalist policy of awarding a 'Motherhood Cross' during World War II, Saddam rewarded mothers of 10 or more children during the Iran-Iraq war<sup>28</sup>. Replenishment of soldiers may have conferred a political advantage, but has since been regarded as potentially devastating for Iraq's multiparous women, due to multi-parity and early pregnancy being important risk factors for the development of breast cancer<sup>29</sup>. Not only have worldwide retrospective studies<sup>30</sup> demonstrated the risk of multi-parity, but also in Iraq, Majid et al<sup>31</sup> found incidence rates of breast cancer amongst Kurdish women (where many men died) to be abnormally high for the Middle East, as compared to Israeli Arabs and Jordanians.

However, disregarding genetic susceptibility and attributing the trend solely to conflict-related pregnancies may be premature, particularly since the same study found incidence in Kurds to peak at age 55, whilst in the USA 65% of diagnoses occur after the age of 55. A migration study in Sweden<sup>32</sup> appears to substantiate a genetic predisposition for cancer to occur earlier in Iraqis, finding mean age at diagnosis to be 4.0 years before the native population. However, mean age in other Middle-Eastern migrants was observed to be similar to Iraqis in this study and others<sup>33</sup>, and a positive family history is often not present<sup>31</sup> – suggesting other factors (such as multi-parity) could still be important. Although outside the scope of the present work, further migrant studies could offer vital clues on the relative importance of genetic and



lifestyle factors (such as multiparity), as well as how relevant early-life exposures (such as using outdated contraceptives during the sanction years) are in the development of cancer.

### **Policy impeding progress**

Irrespective of whether conflict has directly contributed to increased incidence, it has undoubtedly altered the way the burden of cancer can be managed. Much like Lebanon and Somalia, conflict led to mass-migration of doctors in three waves after Iraqi conflict<sup>34</sup>. Crucially to cancer treatment however, where effective treatment requires specific knowledge, specialists from teaching hospitals seem to have been part of the post-2003 exodus - 576 in 12 leading teaching hospitals alone and continued losses in Baghdadi hospitals annually<sup>35</sup>. A dearth of specialists in teaching hospitals could also have long-term consequences if the teaching of trainees suffers. It is little wonder therefore that cancer in Iraq is often diagnosed at clinically advanced stages<sup>36</sup>.

The symptom-iceberg could also be relevant in a population, already espousing strongly beliefs in traditional healing<sup>37</sup> and gender-selective services<sup>38</sup>, who may also be compelled to maintain the bravado act that often goes with war. This is made worse by the absence of any public health campaign<sup>39</sup> and general lack of cancer symptom awareness. The low incidence but high mortality of testicular cancer<sup>40</sup> (53% in Iraq versus 91% overseas), which can be avoided by health awareness and early recognition, is case in point. Even registration of cancer patients was not centralised to the Hewa Oncology Hospital until 2005, is woefully inadequate and, owing to sectarian differences, may be grossly misrepresentative.

Reticence about accessing cancer care may also impact Iraqis who later leave the country – with public health consequences that could span generations. A group in Harvard<sup>41</sup> cited ‘*consequences of war*’ as a key reason for the low-uptake of cancer services by Iraqi refugees in the USA. Even those who do avail themselves of care in Iraq are often, due to the consequences of conflict, unable to receive treatment. The renowned oncologist, Professor Sikora recently enumerated<sup>42</sup> the many challenges of upscaling cancer services in malnourished Iraq, crippled by food sanctions and embargoes even on generic drugs such as Cisplatin.

### **Legacy, Limitations and Conclusions**

Less than a month before US troops depart, there is much debate about the legacy of war in post-Saddam Iraq. As injury-related death tails off, aforementioned factors suggest that there is the distinct prospect of a rapidly growing NCD burden in Iraq. Legacy therefore could well be shaped by how the country continues to grapple with the looming threat of cancer and other diseases, especially since warfare agents used to-date could have severe implications in decades to come<sup>43</sup>.

The presumed increase in cancer burden is predicated on data, which although unequivocal, ought to be contextualised. Under-reporting of problems during Saddam’s dictatorship, gaps in data entry, as well as political incentive to overstate the harm of war weapons makes one accept the association with conflict with caution. Some cancers also have a lengthy latent period<sup>44</sup> and it could be decades before the effects of conflict in veterans and Iraqis can be fully appreciated. As with most things in life though, acknowledging the scale of the problem is the first step towards solving it.

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