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The Role of Small Arms during the 2003–2004 Conflict in Iraq

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Summary

Background

The Small Arms Survey is dedicated to documenting the effects of small arms on social well-being and public health throughout the globe. In March of 2003, military forces primarily from the United States and United Kingdom invaded Iraq and little population-based health data has been available since. This survey, funded in part by the Small Arms Survey, compares mortality during the period of 14.6 months before the invasion with the 17.8 months that followed and assesses the change in causes of death over that period.

Methods

A cross-sectional nationwide survey was conducted during September of 2004. Thirty-three clusters of 30 households each were interviewed about household composition, births, and deaths since January 2002. In households reporting deaths, the date, cause, and circumstances of violent deaths were recorded. Where known, the type of weapon used was recorded.

Findings

The risk of death after the invasion was estimated to be 2.5-fold higher (95% CI: 1.6–4.2) than before the invasion if the Falluja results are included, and 1.5-fold higher (95% CI: 1.1–2.3) without Falluja. The major causes of death reported by the families before the invasion were myocardial infarction, cerebrovascular accidents, and consequences of chronic conditions, while after the invasion violence was the primary cause of death and most of those deaths were attributed to coalition forces. Small arms were responsible for all (12 of 12) violent deaths not attributed to coalition forces but only 5% (3 of 61) of the deaths reportedly caused by the occupiers. The risk of death from violence after the invasion was 58-fold higher (95% CI: 8.1–419) than during the period before

the war. Data on gun ownership was not collected but unstructured interviews with Iraqi men indicated that gun ownership was dramatically higher post-invasion and that the price of small arms had gone down.

Interpretation

Small arms have played a key role in the increase in violent death rate in Iraq. While most coalition-attributed deaths were caused by air strikes, all other violent deaths involved pistols or long arms. Unstructured interviews with Iraqis indicate that weapons are far more prevalent on the household level and less expensive than they were before the war. Further research is needed to understand the roles of market dynamics and distributions by the old regime on the present levels of firearm violence. 

Introduction

Iraq underwent a particularly deadly war with neighbouring Iran during the 1980s with perhaps a million deaths occurring.² Following the Persian Gulf war of 1991, more than 60,000 Iraqis were believed to have been killed by the government in retaliation for perceived support of the US-led coalition during the conflict.³ The level of violence within Iraq has not been well recorded in recent years and, in fact, no survey or census-based estimate of crude mortality has been made in Iraq since 1997 and the last estimate of mortality in children under five years of age was a UNICEF-sponsored demographic survey of 1999.⁴

At present, Iraq is in a situation of extreme insecurity and government health surveillance data is incomplete. Limited morgue-based surveillance data indicates the post-invasion homicide rate is many times higher than the pre-invasion rate. In Baghdad, a city of 5 million people, there were reportedly 3,000 gunshot-related deaths in the first eight months of 2004.⁵ The Web site *Iraq Body Count* (www.iraqbodycount.org) has kept a running estimate of press accounts of the number of Iraqi citizens killed by coalition forces. At present the estimated range is 14,000 to 16,000.⁶ Aside from the likelihood that press accounts are incomplete, this source does not record deaths that are the indirect result of the armed conflict. Other sources place the death toll much higher.⁷

In the present setting of insecurity and limited availability of health information, we undertook a nationwide mortality survey to estimate mortality during the 14.6 months before the invasion (1 January 2002 to 18 March 2003) and to compare it with the period from 19 April 2003 to the days of the interviews, between 8 and 20 September 2004. This report attempts to summarize those findings with specific regard to violence. 

Methods

The cross-sectional survey was designed with the assumption that the crude mortality rate (CMR) was 10/1,000/year before the war, and that it would be analyzed as a cohort study, with each household and cluster essentially matched to itself before vs. after the invasion of March 2003. The sample size considerations, the sampling methodology, and the method of analysis are all reported elsewhere.⁸

Households were informed about the purpose of the survey; they were assured that their name would not be recorded and that there would be no benefits or penalties for agreeing or refusing to participate. Households were defined as a group of people living together and sleeping under the same roof(s). If multiple biological families were living in the same building, they were considered one household unless they had separate entrances onto the street. If the household agreed to be interviewed, the interviewees were asked for the age and sex of each current household member. Respondents were also asked to describe the composition of their household at present and on 1 January 2002; they were also asked about any births, deaths, or visitors who stayed in the household for more than two months. Time periods of visitation, and individual periods of residence since a birth or before a death, were recorded to the nearest month. Interviewers asked about any discrepancies between the 2002 and 2004 household compositions not explained by reported births and deaths. Where deaths occurred, the date, cause, and circumstances of violent deaths were recorded. When violent deaths were attributed to a faction in the conflict or to criminal forces, no further investigation into the death was made to respect the privacy of the family and for the safety of the interviewers. The deceased had to be living in the household at the time of the death and for more than two months prior to be considered a household death.

Within clusters, an attempt was made to confirm at least two reported non-infant deaths by asking to see the death certificate. Interviewers were initially reluctant to ask to see death certificates because this may have implied they

did not believe the respondents, perhaps triggering violence. Thus, a compromise was reached where interviewers would attempt to confirm at least two deaths per cluster. This was done to assure that a large fraction of the reported deaths were not fabrications. Death certificates usually did not exist for infant deaths and asking for such certificates would likely inflate the fraction of respondents who could not confirm reported deaths. Infant deaths were defined as deaths occurring in the first 365 days after birth. Violent deaths were defined as those induced by the intentional acts of others. The death certificates were requested at the end of the interview so that respondents did not know that confirmation would be sought as they reported deaths.

The death toll associated with the conflict was estimated by subtracting the pre-invasion mortality from the post-invasion mortality, and multiplying that rate by the estimated population of Iraq (assumed 24.4 million at the onset of the conflict) times 17.8 months, the period between the invasion and the survey.

This study was approved by the Johns Hopkins Bloomberg School of Public Health Committee on Human Research. 

Results

All 33 randomly selected locations were successfully visited and 988 households were interviewed between 8 and 20 September 2004. These households contained 7,868 living residents on the date of interview. Five households (0.5%) refused to be interviewed. In the 27 clusters with 808 households (81.8% of all visited) for which absentee households were properly recorded, 64 households (7.9%) were not at home at the time of our visit. In none of the clusters were households identified in which all of the household members were dead or had gone away except in Falluja, where there were 23. When asked, households reporting adult deaths produced the death certificate for 63 of 78 (81%) decedents where confirmation was attempted.

During the period from 1 January 2002 through 18 March 2003, the interviewed households experienced 275 births and 46 deaths. The CMR was 5/1,000/year (95% CI: 3.7–6.3, design effect of cluster survey=0.81). Of the deaths, 8 were infant deaths (29 deaths per 1,000 live births, 95% CI: 0–64).

From 19 March 2003 through mid-September 2004, in the interviewed households there were 366 births and 142 deaths, of which 21 were under one year of age. This indicates that the CMR during the period of war and occupation has been 12.3/1,000/year (95% CI: 1.4–23.2, Design effect = 29.3) and the estimated infant mortality was 57 deaths per 1,000 live births (95% CI: 30–85). More than one-third of reported post-attack deaths (53) and two-thirds of violent deaths (52) occurred in the Falluja cluster. Unfortunately, due to random sampling the Falluja cluster was the only one assigned to Anbar Governorate, believed to be the most violence-affected governorate. This extreme statistical outlier has created a very broad confidence estimate around the mortality measure and is cause for concern about the precision of the overall finding. If the Falluja cluster is excluded, the post-attack mortality is 7.9/1,000/yr. (95% CI: 5.6–10.2, design effect=2.0). This corresponds with 98,000 extra deaths (95% CI: 8,000–194,000) outside of Anbar Governorate.

Table 1
Summary of violent deaths from small arms

Person	Date	Circumstances of the death
M39	6/02	Two men shot at each other in street, victim was bystander.
M41	4/03	Shot by neighbour with a handgun over longstanding money-related feud.
M37	6/04	Bodyguard shot in attack on governing council member.
M30	7/03	Shot by neighbour with handgun in fight over money.
M30	7/03	Out in car, shot by accident during criminal clash, bystander.
M25	23/3/04	Shot on street, family called it criminal murder.
F22	6/03	Shot by family member.
M68	3/04	Shot in clash between US soldiers and combatants in Ramadi, was visiting relatives, went to grab child in street, attribution unknown.
M35	8/04	Shot by El Mahdee Army (anti-coalition).
M52	3/03	During invasion, shot by former government.
M27	5/04	Shot during a fight between others, was bystander.
M72	7/04	Shot by US soldiers at a check point by accident.
M28	12/03	Guard, shot by US soldiers by accident during a clash on street.
M45	4/04	Shot during a carjacking.
M37	4/04	Shot in neck, found dead on road, assailant unknown.
M56	8/04	Shot by US soldiers.

The main causes of death reported for the 14.6 months before the invasion and the time since the invasion are shown in Figures 1 and 2. Before the conflict, myocardial infarction, cerebrovascular accidents, and consequences of chronic conditions were the most common causes of death, accounting for 22 of 46 (48%) reported deaths. After the war began, violence was the most commonly reported cause of death, either including the Falluja cluster (73 of 142, 51%) or excluding the Falluja data (21 of 89, 24%). This was followed by myocardial infarction, cerebrovascular accidents (18), and accidents (13). There is an apparent increase over time of violent death during the period of occupation, and

the violence was geographically widespread, with violent deaths being reported in 15 of 33 clusters (45%). None of the 7 clusters in the Northern Governorates included reports of violent deaths. Table 1 describes the reported deaths that involved small arms. The 12 violent deaths not attributed to coalition forces all involved small arms; in contrast, only 3 of the 61 violent deaths attributed to coalition forces involved small arms. The other 58 coalition-attributed deaths were reportedly due to aerial weaponry or artillery. Of note is the fact that of 15 small arms-related deaths, none were children and only one was a woman. Among those 58 deaths attributed to coalition air strikes, 4 were women and 28 were children (the median age was 8 years, 10 were females, 16 were males, and two were infants and the gender was not recorded). Aside from a 14-year-old male, all of these child deaths were among children 12 or younger. ■

Discussion

The 58-fold increase in the rate of violent deaths after the March 2003 invasion is indicative of an extraordinary increase in violence. This rate, 6.3 violent deaths per 1,000 per year is 90 times the 2001 murder rate in the United States.⁹

Unstructured interviews with four trusted individuals described a similar increase in the availability of small arms within Iraq. Before the invasion, a Kalashnikov type weapon cost USD 200–USD 300 and a handgun cost approximately \$600 on the black market. During September 2004, the costs were approximately half the pre-invasion prices. Household ownership of small arms reportedly increased since the invasion. All interviewees reported that in the first weeks after the coalition invasion the cost of a Kalashnikov was very low, USD 10–USD 20, and then climbed steadily in the months that followed. It is unknown if the initial low price was an attempt by weapon holders to unload their assets, if this was the result of the looting of arsenals, or if this was an active programme to arm the population against the invaders. In contrast, coalition forces were perceived by some as encouraging small arms ownership as a way of enabling households to protect themselves in a time of chaos. One interviewee, who was fluent in English and has relatives in the United States, befriended a soldier who was among those searching his house, and the soldier offered the interviewee a Kalashnikov to help protect his house. The interviewee refused because he believed his neighbours would have killed him if he accepted a weapon from a US soldier. But, shortly thereafter, he did have his son purchase a weapon to protect the household. Further research is needed to describe the firearm market dynamics in Iraq and the public perception about the need for weapon ownership.

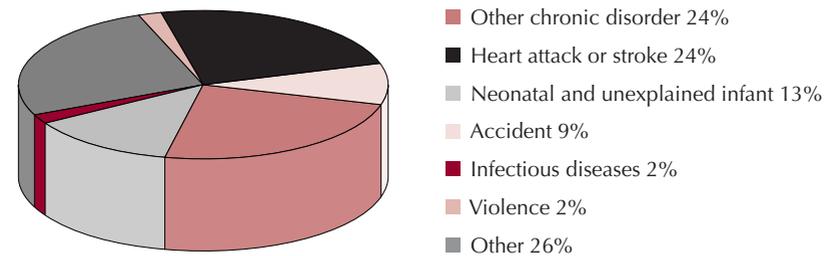
It is particularly striking that all but one of those killed by small arms were adult males. This contrasts with the deaths associated with air strikes, which killed more women and children than adult males. It is difficult to understand how much of this difference in targeting is related to intelligence about one's enemies, to the types of weapons used, or the disproportionate fraction of killings

with small arms that occurred outside the home as contrasted with air strikes, which primarily killed people in their homes. Only one woman was shot, killed by a relative inside her home.

In summary, most violent deaths in Iraq appear to be related to coalition air strikes. But, small arm violence is extraordinarily high and contributes to the use of air strikes by coalition forces. Further research is needed to better understand if the present proliferation of small arms in Iraq is the result of the present occupation and unrest or if weapons availability has been a strategic driving force of the instability. 📌

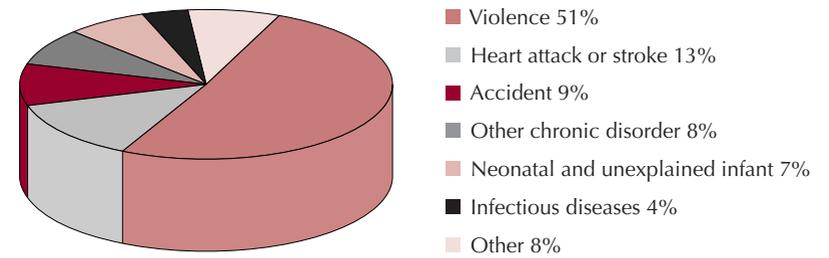
Figures

Figure 1
**Cause of death in 988 surveyed households, Iraq
 2 January–18 March 2003**



Source: Roberts et al. (2004).

Figure 2
**Cause of death in 988 surveyed households, Iraq
 19 March 2003–September 2004**



Source: Roberts et al. (2004).

Endnotes

- 1 CI = confidence interval.
- 2 See White (n.d.).
- 3 See Daponte (n.d.).
- 4 See Ali and Shah (2000); Ali, Blacker, and Jones (2003).
- 5 See Berenson (2004).
- 6 See <<http://www.iraqbodycount.org>>.
- 7 See Davis (n.d.).
- 8 See Roberts et al. (2004).
- 9 See CDC (2004).

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