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Effect of Conventional Weapons on Civilian Injuries

Analysis of data from Red Cross hospitals

by Robin M. Coupland and Hans O. Samnegaard

Introduction

The use of weapons against people or targets containing people inevitably has a direct impact on the health of those people. This impact is related to factors dependent on the design of weapons and on their use. The nature of injury is closely related to the design of the weapon; wounds from bullets, fragments, and buried antipersonnel mines are distinguishable. Factors dependent on the user, such as discipline and desire to avoid or injure civilians, determine the number and kind of people injured and may, in the case of bullets, determine which part of the body is injured. This century has seen an increased proportion of civilians injured during war. This is usually ascribed to military weapons passing into the hands of those with no respect for the civilian population or the Fourth Geneva Convention, which protects civilians. In parallel, there has been an extraordinary development of the military efficiency of weapons. This generates a provocative question: to what extent is the weapon development this century linked to the increased proportion of civilians injured? This poses a further question: does increased ease with which a weapon can be used to achieve military objectives (military efficiency) increase the potential for civilian casualties?

The hallmarks of countries where most modern wars are fought are poverty, destroyed social and economic infrastructure, and availability of a variety of weapons. Disciplined armies train their soldiers in the laws of war, which include respect for the civilian population; by contrast, modern wars tend to be fought by forces that are poorly trained and may even target civilians. Another feature of these modern wars is that competent medical facilities are few or non-existent. Care of those wounded during these conflicts has fallen to international aid agencies. One of the few sources of data about casualties in these wars is the hospitals run by the International Committee of the Red Cross. We examined all the data held by the Red Cross on wound injuries treated in its hospitals from January 1991 to July 1998 to explore these two questions. We also examined data from the Kabul hospital during a period when the city of Kabul was under siege.

Patients and Methods

Database

The wound database of the International Committee of the Red Cross was installed in January 1991 and originates from a system of data collection originally designed to give the organization an indication of activities of its independent hospitals. All patients wounded in war who have been admitted to the Red Cross hospitals of Quetta (Afghan border of Pakistan), Kabul and Khandahar (Afghanistan), Khao I Dang (Cambodian border of Thailand), Butare (Rwanda), Novi Atagi (Chechenia) and Lokichokio (Sudanese border of Kenya) have routinely had a data form filled out on their death or discharge from surgical wards. Age and sex, the cause of injury and the time lapsed between injury and admission are recorded for each patient. Patients are not asked whether they are combatants.

Kabul

The Red Cross hospital in Kabul, functioned independently until the fall of the communist government in mid-1992. It was the first of its kind to be in a city under siege rather than removed from the conflict over a border. Where the hospital was working was thus the same place as where patients were wounded. Patients were wounded in the city itself and at the front lines surrounding the city. Those wounded among the rebel forces besieging the city had access to the first-aid posts run by the Red Cross outside the city and then were transported to the hospital by the organization's ambulances; few reached the hospital within six hours. By contrast, those wounded in the city reached a hospital usually within an hour and certainly within six hours. Patients in the city were representative of victims of urbanized, modern conflict, many were clearly civilians.

Analysis

The patients' data were analyzed by age and sex and the cause of injury. As in previous studies, women and girls, boys (under 16 years of age), and men of 50 or more were considered to be civilians. In this study, bullet indicates any gunshot wound, fragment

indicates injury from shell, bomb, or mortar, and mine indicates injury from an anti-tank or anti-personnel mine. Differences in the proportion of people injured by bullets in comparison with mortars or mines were evaluated using the χ^2 test.

(see table at right)

Results

A total of 27,825 patients were registered between January 1991 and July 1998. Of these, 18,877 were injured by bullets, bombs, shells, mortars, or mines; the rest were admitted because of burns or blunt trauma or for reconstructive surgery. Of the 18,877 who were injured by weapons, 2,012 were admitted to the Kabul hospital in less than six hours after injury.

Discussions

Limitations

These data are probably the best available means of examining the direct human impact of the use of weapons in modern conflicts. Their validity and reliability have not been ascertained by formal independent means because of the constraints imposed on collecting them under field conditions and there is obvious scope for misclassification. Some patients lie about how they were injured to gain admission to hospital or they may not know exactly what injured them, and our means of classifying patients as combatants or civilians is a potential source of error. Nevertheless, any misclassification in this setting is likely to have underestimated the numbers of civilians. The number of men aged 16–49 who were civilians was probably greater than the combined number of women, boys and men over 49 who were combatants. Thus the proportion of civilians is almost certainly higher than the proportions given here.

Weapon type and civilian injuries

To our knowledge, the implications for civilian injuries brought by different weapons have not been fully examined before. These data show that factors relating to both the design of weapons and the discipline or intent of the user have implications for civilian injuries. The higher proportion of civilians injured by fragments rather than bullets is significant and may be exaggerated in a different context such as a city under siege, where at least 61 percent of those injured by fragments were civilians. Likewise, the proportion of injured by mines is significantly higher than that injured by bullets. There must therefore be a link between the technology of weapons and who is wounded. Two points are important when consid-

ering the nature of this link. Firstly, weapons that fragment can easily injure more than one person and mines remain after the conflict, both increasing the likelihood of civilian injuries. Secondly, compared with using a rifle, there is distance and no visual contact between the user and the victim in space (shells, bombs, and mortars) or time (mines). The user thus feels less responsible for his or her actions, the psychology of the user perhaps changing with the weapon used. At the time these data were collected those besieging the city of Kabul reported that they kissed the rockets, shells, and mortars before they were loaded so that God would decide whether they hit the enemy.

Both increased destructive force and increased distance between user and victim are features of military efficiency of a weapon system. This study supports the proposal of a fundamental principle: with greater military efficiency of weapons comes an inherent and increased potential for injuring civilians. The data from Kabul are pertinent to the global trend of urbanization of societies and show how the potential of any weapon to injure civilians is exaggerated in urban settings.

Weapons, law and medicine

The process of making or promoting policy and law entails analyzing data that clarify the nature of the problem that the policy or law is trying to avoid. International humanitarian law is no exception. These data show that the number of civilian injuries is related not only to whether weapons are in the hands of untrained and undisciplined users but also to the type of weapon in those hands. This argues for a greater need to control the transfer of weapons of increasing military efficiency and warrants urgent and serious examination of States' obligations under international humanitarian law in relation to arms transfer. Such an examination should naturally follow the precedent set by the drawing up of a treaty banning the production, stockpiling, transfer and use of anti-personnel mines. The medical profession has a responsibility to examine the global weapon problem as a health issue; this is a form of preventive medicine. ■

Table 1 Numbers of patients admitted to all Red Cross hospitals by cause of injury

Cause of injury	No of patients	No (%) of civilians*
Bullet	8432	1578 (18.7)
Fragment†	5759	1962 (34.1)
Mine‡	4686	1445 (30.8)
Total	18877	4985 (26.4)

*Women and girls, boys (under 16), men aged ≥ 50 .
†Includes shells, bombs, and mortars. ‡Antitank and antipersonnel.

Table 2 Numbers of patients admitted to Red Cross hospital in Kabul within six hours of injury by cause of injury

Cause of injury	No of patients	No (%) of civilians*
Bullet	699	273 (39.1)
Fragment†	837	507 (60.6)
Mine‡	476	262 (55.0)
Total	2012	1042 (51.8)

*Women and girls, boys (under 16), men aged ≥ 50 .
†Includes shells, bombs, and mortars. ‡Antitank and antipersonnel.

- ◆ During war, mines and fragmenting munitions (mortars, bombs, and shells) are more likely than bullets to injure civilians
- ◆ Civilians in a city under siege are particularly at risk of being injured by weapons whose users are not able to see the victim
- ◆ The inherent nature of weapons may be a factor in determining whether civilians are killed or injured
- ◆ There is a need for greater respect for the Fourth Geneva Convention and for greater controls on weapons being transferred to untrained and undisciplined forces.