Health-Related Outcomes of War in Nicaragua

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Abstract: Since 1983, war in Nicaragua has slowed improvements in health which had developed rapidly from 1979–82. The rate of war-related deaths among Nicaraguans now exceeds that of the United States citizens in either the Vietnam War or World War II. Forty-two of the 84 documented war-related casualties among Nicaraguan health workers have been deaths. This high case fatality rate reflects the targeting of health workers by contra troops. The number of staff and services of the public medical system decreased by approximately 10 per cent from 1983 to 1985. Population movements, the establishment of new settlements, and war-related destruction of the primary health infrastructure are associated with recent epidemics of malaria, dengue, measles, and leishmaniasis. The estimated rate of infant mortality in Nicaragua, which had declined from 120 per 1,000 in 1978 to 76/1,000 live births in 1983, has since shown no further decline. Internationally mandated protections enjoyed by civilians and health workers during times of war do not appear to operate in this so-called "low intensity" conflict. Further declines in infant mortality, prevention of epidemics, and improvement in other health indicators will likely await the cessation of military hostilities. (*Am J Public Health* 1987; 77:615–618.)

Introduction

While dramatic health improvements in Nicaragua[1,2] and other Central American countries[3–5] have been reported in recent years, warfare throughout the region has been detrimental to the population's well-being. Rising rates of malaria, measles, and polio have been reported, and warfare has become the most commonly reported cause of death in some Central American countries.[6] The present report quantifies the health effects of warfare during the last four years in one Central American country, Nicaragua.

Morbidity/Mortality Rates

By May 1, 1986, a total of 4,429 war-related deaths had been reported in Nicaragua (Figure 1).[7,8] Casualty figures from Nicaraguan sources have been interpreted variously.[9] The term "casualty" in the Nicaraguan context usually includes the total of dead, wounded, and kidnapped persons. Figures for the number of dead have sometimes included the estimated number of contra dead. Such data are of uncertain reliability and not all of the contra dead are Nicaraguan. The figures reported here include only those fatalities among civilian and military personnel on the Nicaraguan side of the conflict.

The dead include at least 210 persons under 12 years of age, 274 high school or college students, and 76 technicians or professionals.[10–12] Nearly a third of all deaths occurred among civilians.[13,14] This high civilian fatality rate is apparently a result of strategic considerations on the part of attacking "contra" troops. Targeting of civilians at farm cooperatives, on isolated roads, or in rural health centers appear designed to destabilize the Sandinista regime rather than to engage troops in battle.[15,16] Data on the number of fatalities are derived from body counts and therefore may be considered minimum estimates.

An estimated .04 per cent of the country's 3.3 million population has been killed in fighting since 1982.[7] From 20 per cent to 30 per cent of all accidental or violent deaths registered in Nicaragua since 1983 are related to the war (Ministry of Health, unpublished). In the regions suffering the greatest number of casualties, 7 per cent of all registered deaths were war-related in 1985, making this the third most common cause of death.

The war-related fatality rate among the general Nicaraguan population is more than 10 times greater than the aggregate rate of .003 per cent experienced by the United States population during the Vietnam War between 1965 and 1973.[17] It is also greater than the aggregate rate of .03 per cent experienced by the US population during World War II.[17] Still, the total number of fatalities among Nicaraguans amounts to only about 10 per cent of the number killed in that country's revolutionary war of 1978–79. It is estimated that 35,000–50,000 persons died in the Nicaraguan revolutionary war.

Some 4900 war-related injuries and 3800 kidnappings have been reported among Nicaraguan military and civilians from 1983 to 1985 (Figure 1).[7,8] In four major wars of the twentieth century, a minority of all casualties became fatalities.[17] In contrast, among Nicaraguan casualties since 1982, close to half were fatalities. This appears to result from the particular nature of the contra attacks: mining of rural roads, mortar attacks on isolated villages, and ambushing of vehi-

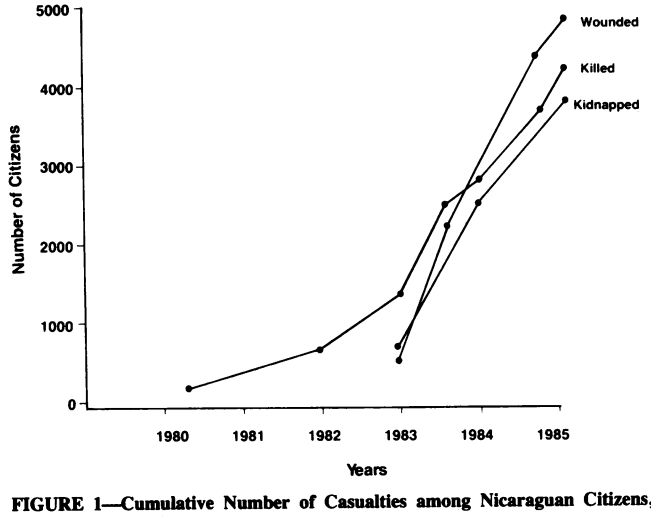

FIGURE 1—Cumulative Number of Casualties among Nicaraguan Citizens, 1980–85

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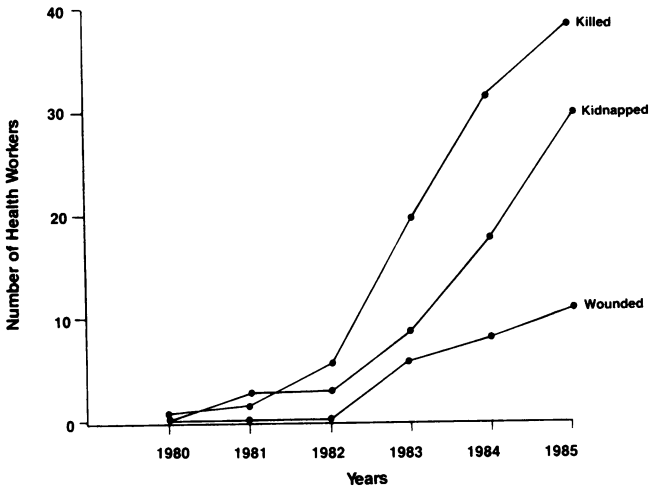

FIGURE 2—Cumulative Number of Casualties among Nicaraguan Health Workers, 1980–85

cles. By the end of 1985, over 100 rural communities had been attacked, 345 civilian vehicles had been ambushed, and 51 assassinations of local leaders had been reported.[10,18] Among survivors, the predominant wound site is the lower extremities as a result of fragmentation and explosion caused by mines or mortars. Contra officials appear to have made a strategic decision to expand such attacks with materials supplied through new US Congressional appropriations.[19,20]

Attacks on Health Workers

Contra military strategies have resulted in a higher number of casualties among health personnel. By December 1985, 42 salaried health workers were reported to have been killed by the contras; 31 others have been kidnapped, and 11 more were reported to have been wounded (Figure 2).[21] Some of the medical victims, such as Dr. Gustavo Sequiera, Vice Dean of the Managua Medical School, and Dr. Myrna Cunningham, Governor of Northern Zelaya province, are well known members of the Nicaraguan medical establishment. Most victims, however, are young health professionals who work in isolated rural communities. Some were killed when they happened to be in an area under attack; others were specifically identified as targets in order to disrupt health services. Such attacks are not limited to Nicaraguan nationals; in 1983, a French physician and a West German physician were killed in a mortar and rifle attack, respectively. During 1986, a Swiss technician and a Spanish nurse died in separate contra ambushes on jeeps. At least one US physician survived a contra rocket attack against the commercial ferry upon which she was traveling (A. Lifflander, personal communication); no British or North American health workers have yet been killed.

Effects on Social Services

Contra actions have led to the destruction of 300 work centers, destruction of 58 schools and the closing of 502 more, and the destruction of 2,100 homes and 11 social welfare centers as of early 1986.[8,11,21] This has reportedly affected 7 per cent of elementary students and 6 per cent of adult education students.[8] Sixty-five health facilities, including four large clinics and one hospital, are reported to have been completely or partially destroyed.[18] In addition, 37 health units located in war zones have been abandoned by the government. The loss in available facilities has coincided with an increased need for medical and social services. The war has created a large group of disabled young adults needing rehabilitative care and equipment. About 9,000 orphans have resulted from deaths to adults.

Some closed or damaged social service institutions have reopened when greater stability returned to the zones in question. Of the 226 schools which were closed in 1984 or 1985, 176 are reported to have reopened during 1986. Several medical clinics have been destroyed and rebuilt as many as three times in the past four years. The Nicaraguan government estimates that close to 10 per cent of the country's inhabitants have lost access to health services because of the war.[8,22]

The Nicaraguan Ministry of Health estimates that a total of $25 million in damage to the health system has been sustained.[12] About half of this damage has been to physical plants, while the rest involves destroyed or stolen equipment and supplies. The economic value of destruction to the health system is only a small part of the estimated $2 billion worth of losses sustained by the country as a result of the war.[18]

Contra attacks, lack of supplies, and war-related economic instability have forced about 250,000 Nicaraguans from their homes. About half of the displaced have resettled in some 80 new communities established by the government in areas near their original homes.[23] Most of the other displaced persons have fled to major cities. This migration is a severe strain on the social and health infrastructure of the country. A health clinic is usually established within several months of the identification of relocation settlements, but water, sanitation, and food production systems may take a year or more to establish. Setting up these emergency services is a severe drain on the country's economy, since defense and reconstruction consume most of the national budget.[24]

Infectious Diseases

National malaria control efforts are considered quite successful in the eight provinces of the country which suffer few direct attacks by the contras. In these areas, the number of malaria cases recorded from January 1983 to April 1985 was 62 per cent lower than the monthly average during the previous eight years. During this same period, the number of malaria cases detected in the war zones was 17 per cent greater than the monthly average during the previous eight years.* War-related population movements, the inability to carry out timely disease control activities, and shortages of health personnel in the war zones are likely responsible for the inability to reduce malaria transmission in these areas. Relatively greater underreporting of malaria cases in areas of conflict underestimates the differences in malaria incidence in the war and non-war zones. An investigation of positive cases in three of the eight non-war provinces during the first six months of 1984 showed that 78 per cent of all slide-verified cases were imported from the war zones.[25] The areas most disrupted by the war, Regions 2 and 6, had reported 35 per cent of all malaria cases in 1983. In the first 11 months of 1986, 76 per cent of all reported malaria cases came from these areas. The risk of contracting and reporting a case of malaria

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from these areas was 7.6 times greater than in the rest of the country. War-related population movements, crowding among the displaced, and lack of resources in the preventive health services are also associated with increases in dengue and leishmaniasis.

A measles epidemic in 1985–86 appears to be intimately related to the war. Coverage of children under five years of age with measles vaccine had risen above 50 per cent for the first time in Nicaragua in 1982. Successive community health campaigns and immunizations provided through the primary health system further raised coverage in ensuing years. This was associated with the reporting of 200 to 75 cases per year in a declining trend during 1981–84. With the growth of the war in 1983, coverage with measles vaccine declined in war zone Regions 1 and 6. More importantly, many isolated rural communities went wholly unvaccinated because of the dangers posed by the war for health volunteers and medical professionals. This lack of coverage continued through 1985, creating a large pool of susceptibles under five years of age. By July of 1985, an epidemic was noted in Region 6. Of the 953 measles cases reported in the entire country in 1985, 49 per cent came from Region 6 during the last six months of the year. By February 1986, the epidemic had spread to Region 1. During the first nine months of 1986, Regions 1 and 6 registered 51 per cent of the 2,021 measles cases reported in Nicaragua. Expanded immunization efforts in 1986 led to 60 per cent coverage of children under one year of age in these regions. This seems only to have attenuated the epidemic; the most vulnerable communities are still too dangerous for health workers to enter.

Other less contagious vaccine-preventable diseases which are targets of major control efforts have not rebounded. No cases of polio have been reported since 1981. Promotion of maternal immunization since 1983 has brought a gradual reduction in the number of reported cases of neonatal tetanus, from 132 in 1981 to 76 in 1985 (Ministry of Health, unpublished data). The decline in neonatal tetanus cases, however, would likely have been greater if the war had not disrupted efforts to train and supply rural midwives.

Health Infrastructure

Despite attacks on the health system and its personnel, a part of the country's health infrastructure has continued to grow in recent years. The number of doses of measles and polio vaccine administered increased slightly in 1985, reaching approximately 188,000 and 2,189,000 doses, respectively. This followed a more rapid rise in the number of doses administered during 1980–83.[1,2] The number of vaccine doses provided in preventive health campaigns, which grew rapidly during the early 1980s, has continued to rise rapidly during the past three years. In 1985, health campaigns provided 45 per cent and 75 per cent of all doses administered of measles and polio vaccines, respectively.

The number of children under five years of age seen in oral rehydration centers rose 17 per cent during 1983–85, to reach a total of 173,000 visits in 1985. During the same period, the number of prescriptions filled rose by 19 per cent, reaching a total of more than 15 million in 1985.

The capacity of the public curative medical system expanded rapidly during 1980–83. In 1983, over 6.3 million medical visits and 207,000 hospitalizations were reported. The number of medical visits recorded in the national health system fell 9 per cent and the number of hospitalizations fell 10 per cent from 1983–84. Estimated coverage in the program of supplemental feedings to malnourished children fell from 38 per cent in 1983 to 28 per cent in 1985. Coverage in the program for postpartum care for low weight births fell from 52 per cent to 33 per cent in 1985. These decreases appear to result primarily from the closing of health centers and the mobilization of civilian health workers to the armed forces. A total of 5,186 health workers have served for periods varying from 2 to 12 months in the militia.[21] The number of doctors and nurses employed by the public health system fell by 10 per cent and 8 per cent, respectively, during 1983–86. There were 1,959 physicians and 1,167 professional nurses employed by the national health system in June 1986. During this same period, the number of surgical interventions rose by 4 per cent to reach more than 56,000 in 1986, reflecting improved utilization of existing capacity.

From 1983 to 1985, the number of visits to a physician dropped from 2.0 to 1.7 per capita; this decline followed a rapid rise from 0.8 annual visits per capita prior to 1979. Between 1983 and 1985, the number of medical visits among children under one year old fell from 3.8 to 2.4, while among one to four year olds, it had dropped from 1.6 to 1.0 per capita. The site at which ambulatory care is provided is also changing. While outpatient visits to hospitals fell from 4.1 million in 1983 to 3.4 million in 1985, visits to hospital emergency rooms doubled, reaching 55,000 in 1985.

It was planned to extend coverage to an average of 2.0 visits to a doctor per capita in 1986 (Ministry of Health, unpublished). This rise was to be brought about through increased employment of physicians in decentralized ambulatory care settings. In this way, increased medical contact would reduce pressure on hospitals to provide episodic ambulatory care.

Estimated infant mortality levels have remained stable since 1983 at 76 per 1,000 live births (Latin American Demographic Center [CELADE], unpublished). This followed rapid improvements in Nicaragua's mortality profile from 1979–83.[1–4,6,26,27] A survey of 10,000 households using indirect demographic methods in 1986 found a more rapid decline in infant mortality in outlying regions than was expected. There is evidence, however, of a rise in infant mortality rates in the region which includes the capital city during the last two years. This rise may be the result of a rapid influx of persons displaced from the war zones. While war-related disruptions appear to have slowed or halted improvements in the country's health situation, deterioration in the population's overall health status has not been noted. The Ministry of Health's primary short-term goal is to maintain the improvements in the population's health status which occurred in the early 1980s (D.M. Tellez, Minister of Health, personal communication).

Human Rights during Armed Conflict

In military parlance, the war in Nicaragua is a "low intensity conflict."[27] While it may be low in intensity for the organizers and financial backers of the contra forces, it appears to be high in intensity for the target population.[9,29–31] The particular epidemiologic profile of Nicaragua has been affected by three war-related phenomena: a rising death rate due to military engagements; uncontrolled human migration in the war zones; and the establishment of new communities by those displaced by the war. Low intensity warfare often targets the civilian population for hostilities. Doctors, nurses, and patients are frequently victims. This violates customary and statutory international law regarding the neutrality of health workers in situations of war. Such warfare has inhibited both the general population's efforts in seeking

health services, as well as the ability of health workers and volunteers[32] to provide services to those in need.

Editor's Note: The data on which this report is based are certainly available to the US Departments of State and Defense. It follows that the decision to intensify the conflict by increasing support to the "Contras" reflects a parallel decision that the reported level of civilian mortality and morbidity is an acceptable price to pay. That the Nicaraguans are suffering to accomplish US strategic goals, seems to have been studiously ignored. Torture has been used by some governments to serve their strategic goal. Is the maltreatment of a population, here documented, any different? **A.Y.**

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American Academy of Nurse Practitioners National Survey

The American Academy of Nurse Practitioners (AANP) is continuing the national survey of nurse practitioners from their data base. The survey includes approximately 14,000 nurse practitioners across the United States. Half of the data base received the survey in November 1986 and the remainder of the data base received the survey in March 1987.

AANP encourages all nurse practitioners who receive the survey to take a moment to participate in this effort to document the data needed about nurse practitioners' practice and concerns for future legislative, marketing, and networking activities. The findings will be shared with colleagues, legislators, and others concerned with promoting the practice of nurse practitioners as recognized, popular primary health care providers. Strict confidentiality of participants identities will be maintained.

Any nurse practitioner who did not receive a survey may participate by mailing his/her name and address to the American Academy of Nurse Practitioners, 179 Princeton Boulevard, Lowell, MA 01851, or calling (617) 937-7343. Please state that you are contacting the Academy about participation in the survey.