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Economic consequences of injury and resulting family coping strategies in Ghana

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Abstract

The toll of human suffering from illness and injury is usually measured by mortality and disability rates. Economic consequences, such as treatment costs and lost productivity, are often considered as well. Lately, increasing attention has been paid to the economic effects of illness on a household level. In this study, we sought to assess the economic consequences of injuries in Ghana by looking at the effects on households and the coping mechanisms these households employed. Using cluster sampling and household interviews, we surveyed 21,105 persons living in 431 urban and rural sites. We sought information on any injury that occurred to a household member during the prior year and that resulted in one or more days of disability time.

A total of 1609 injuries were reported for the prior year. Treatment costs and disability days were higher in the urban area than in the rural. Coping strategies were different between the two areas. Rural households were more likely to utilize intra-family labor reallocation (90%) than were urban households (75%). Rural households were also more likely to borrow money (24%) than were urban (19%). Households in both areas were equally likely to sell belongings, although the nature of the belongings sold were different. Although injuries in the urban area had more severe primary effects (treatment cost and disability time), the ultimate effect on rural households appeared more severe. A greater percentage of rural households (28%) reported a decline in food consumption than did urban households (19%). These findings result in several policy implications, including measures that could be used to assist family coping strategies and measures directed toward injuries themselves.

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1. Introduction

The burden of illness is usually assessed by mortality and disability rates (The World Bank, 1993; Murray and Lopez, 1996). Increased attention is now being focused on economic costs of illness. These include costs of treatment and costs of lost productive time on the part of the ill persons and those who care for them. Such costs are usually considered at a macro-economic level (Lee and Mills, 1985). However, several authors have pointed out the importance of looking at the household, in terms of the effect of the cost of illness and in terms of household coping strategies to deal with both time and financial costs (Jayawardene, 1993; Mills, 1994; Sauerborn et al., 1996a,b).

Such factors have been looked at both for medical problems in general and especially for the cost of illness due to malaria (Jayawardene, 1993; Mills, 1994; Asenso-Okyere

and Dzator, 1997; Attanayake et al., 2000). Scarce attention has been paid to the cost of injury. However, injury is a significant health problem in most less developed countries. Moreover, rates are anticipated to rise, primarily due to increased use of motorized transport (Smith and Barss, 1991; Zwi, 1993; Murray and Lopez, 1996).

A few studies have looked at the economic effects of injury. In large part such studies have looked at health service utilization as a proxy for associated costs (Mock et al., 1995; Zwi, 1993). Several studies have looked at actual costs of hospitalization for injuries (Zwi, 1993). A Malaysian study estimated costs of injuries nationwide based on per capita GDP and loss of life expectancy for fatalities (Arokiasamy and Krishnan, 1994).

One population based study stands out in its thoroughness. The costs of all illness in rural Brazil was looked at by deCodes et al. (1988). Direct costs of medical treatment were calculated from both health service sources and out of pocket payments by patients and their families. Indirect morbidity costs were calculated using days lost from work

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multiplied by usual wages. They found that a large component of the cost of illness was due to indirect costs. In the United States, the ratio of indirect costs to the direct costs of medical treatment is estimated at 2.5–1 (Rice et al., 1989), but deCodes et al. found a ratio of 7–1 in their study. Injuries accounted for 25% of all costs, primarily because of its high cost of indirect morbidity (deCodes et al., 1988).

There have been almost no studies to assess the effects of injury on the household level, nor to address household coping strategies for dealing with these economic costs. The purpose of this current study was to perform such an assessment in Ghana. We sought to look at the monetary costs of treatment and of lost wages. We also sought to investigate the broader effects on the involved families and the coping strategies they employed. By so doing, we hoped to provide information that would help with development of policies to assist existing household coping strategies and ameliorate the economic impact of injury or illness on the involved families.

2. Methods

The urban area studied was the Kumasi Metropolitan Area in the Ashanti Region. This city, with a population of 650,000, is the second largest city in Ghana and the economic center of the northern two-thirds of the country. The rural area studied included all or portions of four contiguous districts of the Brong-Ahafo Region: Berekum, Jaman, Wenchi, and Dormaa. The rural study area comprised 7500 km² with a population of 425,000.

In Kumasi, the primary economic activities involve commerce, small scale trading, and a variety of small industries. In rural Brong-Ahafo, the majority of the population are employed in non-mechanized farming.

Data on injuries occurring in the study areas were obtained by an epidemiologic survey using household visits and interviews. The study methods have been presented in detail in prior publications (Mock et al., 1997, 1999a,b,c,d) and are briefly reviewed herein. Those selected to be interviewed were chosen using a two stage cluster sampling scheme (Lemeshow and Robinson, 1985; Bennett et al., 1991).

In the first stage of the sampling process in Kumasi, the individual enumeration areas (EAs), employed by the Ghana Statistical Service for the 1984 census, were listed by their populations. Individual EAs varied in population from 500 to 5000. Similarly, in the rural areas, the individual villages and towns were listed by their population. Populations varied from single individuals in isolated homesteads to towns with 20,000 persons. A subset of the EAs in the city and the villages/towns in the rural area were randomly selected for sampling with probability proportional to their population size (Lemeshow and Robinson, 1985; Bennett et al., 1991).

In the second stage of the sampling process, each selected EA and village/town was visited. A random location within each site was chosen and the nearest household to this

location was then selected. Household members were interviewed regarding any injuries that occurred to themselves or other household members during the preceding year. Information was obtained on any injury during the preceding year which resulted in one or more days of lost activity, including fatalities, occurring to persons who had been living in that household during the prior year. The study definition of injury included blunt injury, penetrating injury, and burns. It did not include poisoning or asphyxiation.

For those for whom there were no such injuries, demographic denominator information on the household was obtained. For those to whom an injury had occurred, a six-page questionnaire was verbally administered in the vernacular language (Ashanti Twi). This questionnaire concerned the injury sustained, the mechanism of injury, treatment obtained, cost of treatment, economic consequences of the injury to the individual and his/her family, and length of disability. Information was obtained from either the injured persons themselves or from their relatives if the injured person were absent or under age 18 year.

Field workers surveyed a minimum of 30 persons for the denominator at each site. In more sparsely populated areas, adjacent homesteads and hamlets were visited in addition to the selected site, as necessary to accrue a sufficient number of persons for that site. A total of 10% of sites were randomly chosen and revisited by the principal investigator (CNM) to confirm the findings of the field workers.

The *primary economic effects* of the injury included treatment costs for the injured persons. This consisted of out of pocket payments for all forms of treatment, including traditional practitioners, outpatient clinics, and inpatient and outpatient services at hospitals. It also included payments for supplies and medications, whether prescribed by a medical practitioner or purchased for self medication. Primary economic effects also included the time that the injured person lost from his/her usual activity (disability time). When this activity was wage labor, the percentage of persons who lost wage income was also estimated.

Coping strategies that were specifically asked about included intra-family labor reallocation, borrowing money, and pawning or selling belongings.

Secondary economic effects evaluated included decline in family income, decline in food production (rural only), and decline in family food consumption.

In addition to the above specific questions, injured persons and their families were also given the opportunity to discuss, in their own words, how the injury had affected their family and how they had dealt with the financial stress. The interviewers recorded verbatim or paraphrased and summarized these comments. Responses varied from one sentence to several paragraphs.

The socio-economic level of the urban respondents was categorized into high, medium, or low, based on housing type (Boapeah and Tipple, 1983). In rural areas, villages were ranked by degree of remoteness based on the transportation access of the village: 1 (most access): paved road; 2: major

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