Use of hospital statistics to plan preventive strategies for burns in a developing country

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This study is based on hospital statistics using 1985 burn patients admitted to Maputo Central Hospital, Maputo, Mozambique, for a period of 42 months (1988–91). On the basis of the results obtained, some suggestions are made for the design of the targets and methods for a preventive strategy for burn injuries in Maputo. Strengthening of preventive measures should occur during the cold season of the year and particularly in the preceding months (March to May). Children under 5 years old would be the main target, particularly the age group 2–3 years. Mothers' and older siblings' education would be the vector and they would be approached through continuing health education activities, regularly carried out at present, and educational programmes in schools. We also propose the use of a simple safety device aimed at preventing burns responsible for the highest lethality. Proposed interventions rely on extensive knowledge of the epidemiological parameters influencing the occurrence of burns severe enough to warrant admission to hospital. The beneficial impact of these interventions on hospital workload and economy would probably overcome costs for its implementation.

Introduction

Effective primary prevention of injuries depends on a sound knowledge of the most important risk factors, especially of those that are open to manipulation by means of health education1. Planning an effective health education intervention, however, requires more than only insight into these risk factors per se2. Knowledge of the behavioural determinants of these risk factors is also essential. Then it is possible to decide whether they can be changed by means of health education or by facilitation. Determinants of behaviour related to the prevention of injuries are difficult to study because there is a multitude of circumstances and factors leading to injuries3. Lack of knowledge about or inability to perform the desired safe behaviour are the main causes for not behaving in a safe way. Financial constraints can also be responsible for this. Some authors highlight the need for information on severity of the burn, derived from all levels of medical care, or collected in the community, to design preventive strategies4,5. This is because we need to define precisely the targets and methods of these strategies, on the basis of a sound knowledge of the epidemiological parameters that govern the occurrence of burns.

Community-based surveys on burns are scarce in developing countries as opposed to similar surveys on infectious diseases. Skills and resources concentrate on these diseases and a lack of awareness of the magnitude of burns in developing countries is still remarkable.

The above considerations represent a real deterrent for those who plan to prevent burns when resources and skills are scarce, such as in Mozambique. Nevertheless, previous experiences tried world-wide have shown some preventive strategies to be successful in reducing the number of deaths and hospital admissions for burns. Knowledge of the frequency of certain circumstances leading to injuries was the sole basis for the design of their targets and methods6–10.

The lack of community-based surveys for the design of preventive strategies has led us to try to develop a strategy based solely on existing hospital-based statistics. In our aim to support the idea that hospital-based data alone can provide useful information. This can be enough for successful establishment of targets and methods of burns prevention strategies in a developing country.

Materials and methods

A retrospective analysis of the files of all 1985 burn patients admitted to the Maputo Central Hospital, Maputo, Mozambique was made for the 42-month period from January 1988 to June 1991. The parameters analysed concerned data of admission, age, type of accident and number of deaths.

Data concerning age and number of deaths for the year 1988 and the first semester of 1990 were excluded, because reliable information was not available. The same exclusion was made for the second semester of 1990 and the year 1991, concerning date of admission and type of accident.

Maputo Central Hospital admits all the burn patients for the Maputo city area, a catchment area of around 1.5 million population, and a few patients from the south of the country. No other hospital in this area admits burn patients except a few minor injuries in small numbers.

Results

The monthly average of patient admissions was 43.3. The
Figure 1. Distribution of burn cases by month of admission (second semester 1990 excluded) (n = 1301; month of admission unknown in 20 cases).

Children under 10 years old are the most affected. They represent 63.9 per cent (798/1249) of all burns (Figure 2). Detailing this age group (Figure 3), children under 5 account for 79 per cent (824/1042) of all children. Among these, the second and third years provide more than half the patients (50.6 per cent) (417/824). Of the 131 patients who died, 54 (41.2 per cent) were children under 10 years of age (Figure 4), and they have the lowest case fatality rate (CFR, 6.8 per cent).

Burns by flames contributed to most deaths (77.6 per cent) (Figure 5). Among these, the most common (57.6 per cent) involved the use of a home made lighting device ('xiphefo').

Discussion

There is a slight increase in the number of burn patients during the colder months of the year (June to August). This is when people use fire more often, for warming, cooking and lighting; it is also when people stay indoors for longer. We may infer with some certainty that preventive activities should concentrate on this time of the year and particularly on the preceding months (March to May).

It is not surprising that children represent an overwhelming majority since they are also more represented in the general population. The fact that they have the lowest CFR is because they usually receive the smaller burns. Among the age group under 10, the 2–3 years old are the most affected, and this group is probably the main target for prevention.

Exposing the mothers of these children to education on burns prevention would probably help to reduce these accidents. This is feasible through the Mother and Child Care sessions, that are routinely held in most health centres. At present these aim at exposing mothers to health education on immunization and nutrition, but they could also include information on burns prevention. Door-to-door campaigns on health education, regularly implemented by community health workers nowadays, could include specific information on burns. Mothers need to be made aware of the possibility that their children can get burned.

In our environment, a high percentage of small children is looked after by their older sisters and brothers during much of the day. This also happens in most developing countries while many parents are away at work. Usually, these care-takers attend school, and it seems sensible to set up specific educational programmes to inform them of safer behaviour. There is already good evidence of the efficacy of this method in a developing country.

Burns resulting from accidents involving the use of the 'xiphefo' were responsible for most deaths. This is a very popular device in suburban areas, where there is no electric power and where most of the population lives. This home made bottle-lamp with a wick fuelled by kerosene, petrol
or even jet fuel, is usually very unsafe. This is because it is normally very unstable and easily tipped over and highly flammable. The wide availability in suburban areas of a structure aimed at enlarging the base of this bottle-lamp (Figure 6) can be of benefit. This device ensures that the ‘xiphefo’ is more stable. It is made with local resources, such as a small piece of wood with the remnant of a used can, attached by a few nails, and it is inexpensive and easy to build.

It appears appropriate to assume that these proposed basic preventive measures are realistic and adequate. They seem well targeted, although based on conclusions drawn exclusively from hospital statistics.

Jha5 considers hospital studies to reveal little of the true incidence of burns in the community. In fact, only severe injuries warrant admission to hospital, while mild and moderate injuries are often treated as outpatients or left to their natural course. To obtain an accurate picture, collection of information from within the community is considered to be essential. This author5 considers hospital-based statistics do not reflect exactly the situation in the community and are difficult to interpret.

Generalizing the argument that community-based epidemiological information is essential to plan preventive interventions can be erroneous. Our proposed interventions do not intend to prevent all burns but only those that are severe enough to warrant admission to hospital. These are the ones that cause deaths and the highest suffering. They are also the burns with a high financial cost that overstrain the health budgets of developing countries.

Education is a slow process. However it is a sure path and the most effective way of changing personal factors, particularly when involving a wide range and variety of causes as in burn injuries. However, some years will elapse before we can detect the results of these interventions, but this will probably happen before an improvement in socioeconomic conditions, the guaranteed palliative for this problem.

Even considering the difficulties inherent in behaviour change, these measures will probably contribute to a reduction in the frequency of burn patients admitted to this Hospital and the mortality from burns in Maputo.

It seems reasonable to suggest that the beneficial impact of these interventions on the hospital workload and economy will probably overcome the costs and resources required for its implementation.

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