

Epidemiological Analysis of Deaths Associated with Dengue Haemorrhagic Fever in Southern Viet Nam in 1999- 2000

by

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Abstract

A retrospective epidemiological study of deaths due to dengue haemorrhagic fever (DHF) in 19 provinces of southern Viet Nam in 1999 and 2000 was undertaken. Most deaths occurred among those less than 15 years old (92.7%), especially those aged 5-9 years; 81.6% of them were in the south-west provinces (Mekong delta region). Almost all the cases were hospitalized too late (3-4 days after the onset of the disease). One-half of the deaths occurred during the first 24 hours and one-third of the remaining deaths between the third and the sixth day of hospitalization. Most of the deaths occurred in provincial hospitals rather than in district hospitals.

Keywords: Dengue deaths, retrospective study, Viet Nam.

Introduction

Dengue haemorrhagic fever (DHF) is still the leading cause of mortality among the reported infectious diseases in southern Viet Nam⁽¹⁾, although morbidity decreased in 2000 (69.9/105) as compared to the average during the previous 5 years (1994-1998) (250.7/105). Mortality and the case-fatality rate followed the same pattern: 2000: 0.18/105 and 0.26%; 1994-1998: 0.71/105 and 0.29%, respectively^(2,3). The dengue shock syndrome (DSS) (grade III, IV)

occurrence rate was: 2000: 1.5%; 1999: 2.1%. Southern Viet Nam still accounted for 90% of total deaths due to DHF in the country^(2,4).

It was considered necessary to explain the epidemiological characteristics of all DHF deaths in 19 provinces of southern Viet Nam in order to gather information for improving the control strategy and management to reduce the case-fatality rates in Viet Nam as per the objectives of the DHF control programme.

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Study method

The retrospective study was based on the data entered into the DHF death surveillance proforma of the National Target DHF Control Programme in southern Viet Nam for 1999 and 2000^(5,6).

Sample size: It included 53 deaths out of 65 in 1999 and 43 deaths out of 49 in 2000 with full information on the DHF death form in 19 provinces of southern Viet Nam (the rest was not included because of incomplete information).

Results and discussions

(1) Distribution of deaths by age

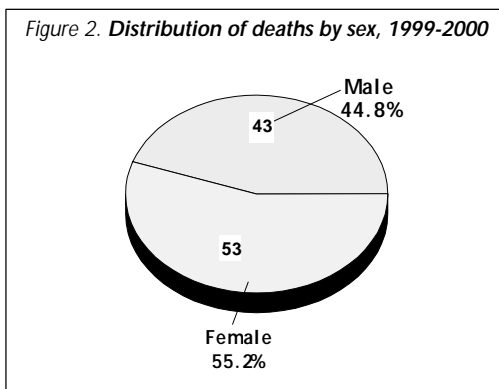
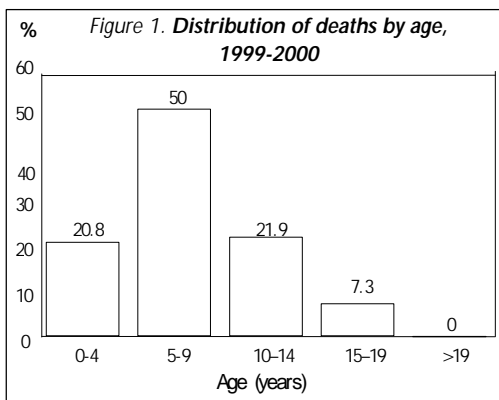
In both years (1999-2000), those mainly affected were below 15 years of age (92.7%) (89/96 deaths); only 7.3% of them were aged above 15 years. Most deaths occurred among 5-9-year-olds (50%) (Figure 1), who also had the highest DHF morbidity^(3,4). It could have been that southern Viet Nam was an epidemic region and, thus, almost all DHF patients were infected at a younger age.

(2) Distribution of deaths by sex

In 1999-2000, the proportion of deaths among males and females was not equal (Figure 2): deaths among males were 44.8%, while among females these were 55.2%.

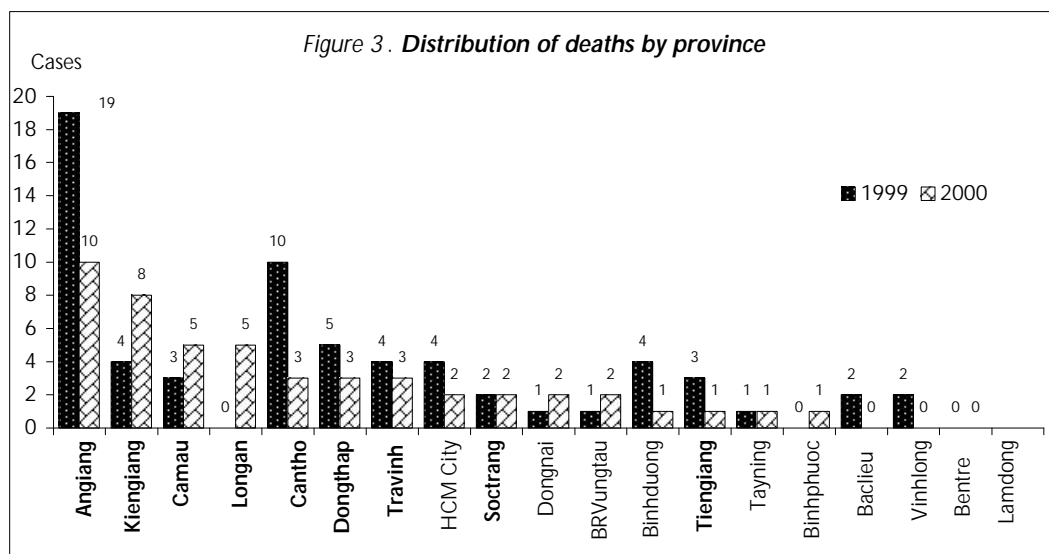
(3) Distribution of deaths by province

In 2000, 81.6% (40/49) of the deaths were reported from 9/12 provinces in the south-west region (Mekong delta region). These included: Angiang, Cantho, Dongthap,



Kiengiang, Travinh, Camau, Tiengiang, Soctrang and Longan. The rest (18.4%) were in 6/7 provinces of the south-east region, i.e. Ho Chi Minh City, Binhduong, Dongnai, Bariavungtau, Tayninh and Binhphuoc. Bentre, Baclieu, Lamdong and Vinhlong provinces did not record any deaths. A similar status was observed in 1999 (Figure 3).

The south-west region is a DHF endemic region and recorded high morbidity and mortality in southern Viet Nam^(3,4). In 2000, the DHF case-fatality rate in this region was 0.3% while this rate was 0.2% in the south-east. The south-west region is affected by many climatic and geographical factors such as a wet climate,



(South-west provinces: bold)

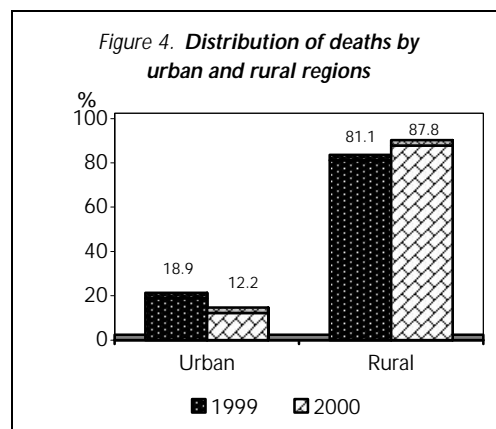
long stretch of rainy season, and having many rivers and canals. The main water source is surface water, so, the inhabitants are used to storing water in many types of containers which are suitable for larval development of *Aedes* mosquito. In addition, poor road infrastructure results in late hospital admissions. On the contrary, in the south-east region, the inhabitants get water from wells. The larval density there is lower because of low number of water containers. Road transport is more comfortable. Thus, the morbidity, mortality and case-fatality rates of DHF are lower there than in the south-west region

(4) Distribution of deaths by urban and rural regions

During 1999-2000, most of the DHF deaths occurred in the rural region (Figure 4).

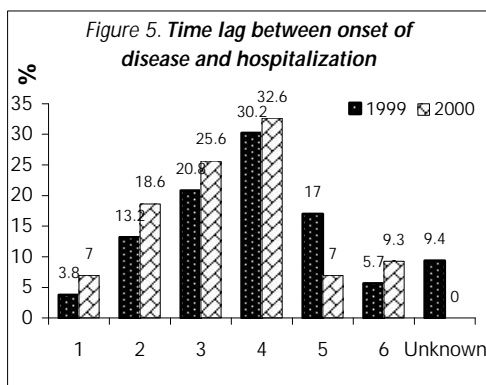
Rural inhabitants are economically poor. They spend almost all their time

working to earn their living and therefore have little time for health care⁽⁷⁾. The difficulty in transport and lack of health communication make the patients stay for long at home before being transferred to a hospital. Patients so hospitalized are usually in a serious condition and easily go into shock with a higher risk of death.



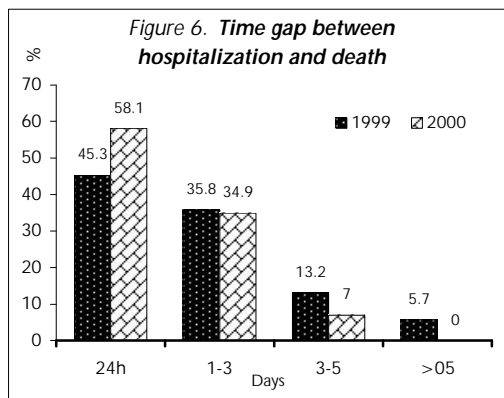
(5) Time from onset of disease to hospitalization

Almost all the deaths were due to late hospitalization on the third or fourth day of the disease and even on the fifth or sixth day. As a result, late hospitalization is one of the important causes of increased death risk⁽⁸⁾ (Figure 5).



(6) Time gap between hospitalization and death

In 2000, half of the deaths occurred during the first 24 hours of hospitalization and one-third of the remaining deaths occurred on the second or third day. The proportion of deaths after the fifth day of admission was very low (Figure 6).

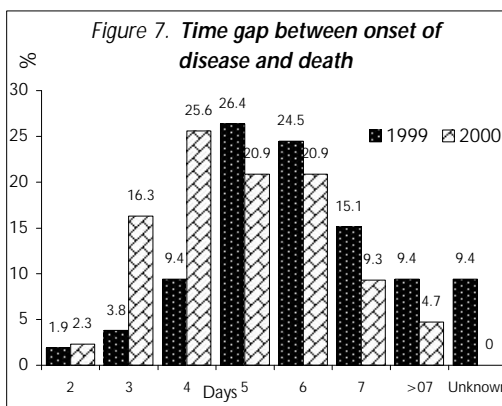


All these patients were admitted with severe status. This means that health communication in the past was not effective. It is necessary to improve the health communication system in order to help the population discover early signs and symptoms of DHF and transfer the patients to health facilities as soon as possible. In addition, training in DHF case management for all health staff is very important.

(7) Time gap between onset of disease and death

Almost 83.7% of the deaths occurred between the third and the sixth day of the onset of the disease in the year 2000, 15% on the seventh day and only 2.3% on the second day. The same trend was observed in 1999.

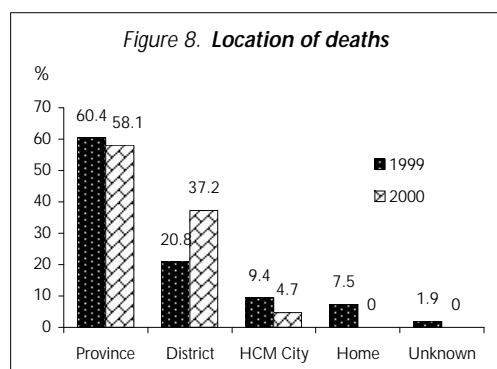
If the patients were diagnosed early and treated effectively on the first day of the onset of the disease, the mortality would have been lower (Figure 7).



(8) Death locations

Over half of the deaths were reported from provincial hospitals, followed by district hospitals. In 2000, deaths at the central paediatric hospitals (Paediatric Hospital No.1

and Paediatric Hospital No.2 in Ho Chi Minh City) and at home had decreased (Figure 8).



Conclusion

The main age group where most DHF deaths occurred was those under 15 years of age, especially children aged 5-9 years. The proportion was the same for males and females. Almost all deaths were in the south-west (Mekong delta) region (81.6%). The case-fatality rate was 0.3%, higher than in the south-east. Most of the deaths occurred in rural areas. Most deaths were among those patients who were hospitalized on the third or fourth day of the onset of the disease. Half of the deaths occurred during the first 24 hours of hospitalization, perhaps due to late hospital admission with severe status. Deaths between the third and the sixth day of the disease amounted to 83.7%. There were more deaths in provincial hospitals than in district hospitals.

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