
Protective effect of swimming in a tsunami disaster and its protection of caretakers and children

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Introduction

On the morning of December 26th, 2004, an undersea earthquake occurred 30 km off the western coast of northern Sumatra, Indonesia which triggered tsunami waves up to 30 meters high that inundated coastlines of countries bordering the Indian Ocean. In Indonesia, the closest country to the fault line, the tsunami caused an estimated 140,000 deaths in the northern areas of Sumatra, Indonesia. The majority of these deaths were in women and children. The event provided an opportunity to understand the impact on a particularly vulnerable population, women and the children they cared for.

Methods

A retrospective cohort study was conducted 13 months after the tsunami. The cohort was composed of survivors living in temporary housing near where their pre-tsunami household had been. The survivors provided information on their households at the time of the tsunami. The primary caretaker for each child under 10 years of age was identified. The swimming ability, outcome and behavior of the caretaker were correlated with the individual child being cared for. A crude analysis was done looking at mortality and the odds ratio for death for children and caretakers. Statistically significant factors were included in a logistic regression model to control for confounding. A multivariate logistic regression analysis was done for age, sex, swimming ability, distance from the coast, location at time of tsunami, survival behavior used, and whether the child's caretaker was present and if that caretaker was able to swim.

Results

For infants and children with caretakers (those under 10 years) there was a very strong association between their survival and the survival of the caretaker. For the youngest children (infants and those 1–4), odds of survival were about twenty times those whose caretakers did not survive, and for the less dependent children (aged 5–9 years) their odds of survival were about 15 times higher if their caretaker survived. The main factor associated with caretaker survival was swimming ability, which increased the odds of survival between 2.3 and 3.7 times depending on age of child cared for.

Conclusions

There are simple skills that can be taught to all adults to enhance their survival in a catastrophic aquatic disaster such as a tsunami. The skill of survival swimming confers a major protective effect on the caretaker, which results in greatly enhanced survival of the infant and child in their care. This provides a very powerful tool for pre-disaster preparation for protecting women and the children they care for in disaster situations related to water.

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