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An epidemiological study of viral hepatitis in Sri Lanka

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Viral Hepatitis is one of the main water born diseases and it has been endemic in Sri Lanka for many years. Thus it is essential to recognize possible causal factors for the disease. The objective of this study is to identify the prognostic factors that affect survival of hepatitis patients, identify associations between each covariate related to hepatitis, the factors affecting incidence of disease and classify the patients according to two forms of the disease. The main study focused on analyzing information about hepatitis cases reported from all island hospitals during the period 2005-2008. The data was obtained from the Epidemiological Unit, Colombo 8.

Preliminary analysis reveals the pattern and nature of the disease. In order to identify the factors that affect incidence of hepatitis, Generalized Linear Models were fitted using Generalized Estimating Equations methodology, with a Negative binomial distribution for the responses. The response variable was the number of hepatitis cases recorded from a certain district, in a particular month of the year 2007. The model reveals that the incidence of hepatitis is influenced by water quality parameters such as conductivity and the amount of fecal coli form in water and the month of the year. According to past literature Viral Hepatitis is not affected by weather parameters such as rainfall, humidity and wind and hence was not studied.

A Cox model was fitted to survival data and finally it was pointed out that risk of death for individuals who used both boiled and un-boiled water is greater than for individuals who used boiled water only. Evidence indicating genetical, geographical and cultural factors have not been found in the literature. Log linear model emphasized that all prognostic factors of hepatitis are associated with each other and produced informative conclusions. Feed forward procedure of Artificial Neural Networks can be used to classify any patient according to the form of hepatitis that they carry. About 78% accuracy was achieved based on their symptoms.

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