A Time Series Model for Assessing the Trend and Forecasting the Road Traffic Accident Mortality

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Abstract

Background: Road traffic accident (RTA) is one of the main causes of trauma and known as a growing public health concern worldwide, especially in developing countries. Assessing the trend of fatalities in the past years and forecasting it enables us to make the appropriate planning for prevention and control.

Objectives: This study aimed to assess the trend of RTAs and forecast it in the next years by using time series modeling.

Materialsand Methods: In this historical analytical study, the RTA mortalities in Zanjan Province, Iran, were evaluated during 2007 - 2013. The time series analyses including Box-Jenkins models were used to assess the trend of accident fatalities in previous years and forecast it for the next 4 years.

Results: The mean age of the victims was 37.22 years (SD = 20.01). From a total of 2571 deaths, 77.5% (n = 1992) were males and 22.5% (n = 579) were females. The study models showed a descending trend of fatalities in the study years. The SARIMA (1, 1, 3) (0, 1, 0) 12 model was recognized as a best fit model in forecasting the trend of fatalities. Forecasting model also showed a descending trend of traffic accident mortalities in the next 4 years.

Conclusions: There was a decreasing trend in the study and the future years. It seems that implementation of some interventions in the recent decade has had a positive effect on the decline of RTA fatalities. Nevertheless, there is still a need to paymore attention in order to prevent the occurrence and the mortalities related to traffic accidents.

Keywords: Traffic Accidents, Mortality, Forecasting, Trends