Predictive Analysis of Pre-Hospital Care Ambulance Services in Western Province - Sri Lanka

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July 2019

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Dissertation submitted to the Faculty of Information Technology, University of Moratuwa, Sri Lanka for the partial fulfillment of the requirement of the Degree of Master of Science in Information Technology

July 2019

Declaration

I declare that this thesis is my own work and has not been submitted in any form for another degree or diploma at any university or other institution of tertiary education. Information derived from the published or unpublished work of others has been acknowledged in the text and a list of references is given

Name of Student	Signature of Student
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Name of Supervisor	Signature of Supervisor
S.C. Premarathne	----------
	Date:

Dedication

We are dedicating the results of our research and dissertation to decision-makers in the Ministry of Health, Nutrition and Indigenous Medicine who are trying to improve ambulance services for pre-hospital care in Sri Lanka. We also dedicate this system to all those who have generously dedicated their valuable time to advise and carry out this research, especially to my supervisor, Mr. S.C Premarathne. In Sri Lanka, pre-hospital care data analysis has not been carried out effectively with the appropriate techniques. It was with this thought in my mind that we did this research. I hope that the research and results described in this document will provide a useful overview by analyzing pre-hospital data to provide solutions related to pre-hospital issues.

Acknowledgement

It is a great honor for me to take this opportunity to express my gratitude to all those who have helped me throughout this project and guided me to the success of this project.

First of all, I would like to thank my project supervisor, Mr. S.C. Premarathne, who has spent his precious time leading this research to make it a success. Then Dr. M.F.M. Firdhouse, who taught research methodology and project management, was the foundation of this research. Then my next big thank goes to Dr. Rewanika Senawirathne (MO-Planning), a colleague from the headquarters of the Ministry of Health, who guided me in every movement of struggles in terms of health planning and management in this project .

In addition, my thanks go to all the lectures in MSc in Information Technology degree programme of Faculty of Information Technology, who have gone to the trouble of honing our knowledge and ideas throughout these two years, as they were the enlightenment that illuminated our path to success. Finally, I express my deepest gratitude to my wife and daughters who have helped me in all the way by encouraging me to carry out this project successfully.

Abstract

Pre-hospital care is emergency medical care provided to patients before their arrival at the hospital after activation of emergency medical services. This is a crucial element of all emergency care systems, but the needs of emergency patients must also begin early in the field. It traditionally included a range of care from spectator resuscitation to the treatment and transfer of legal emergency medical services. New concepts of care, including Emergency Medical Technicians (EMTs), emergency care practitioners, and physician-provided pre-hospital emergency medicine, are redefining the scope of pre-hospital care. The pre-hospital care data is large and exponentially growing daily in Sri Lanka. There are few researchers who have analyzed pre-hospital data such approaches are not capable of handling big data effectively and not efficient in predicting/describing the issues attached with the pre-hospital data.

Hence the research has been conducted to analyze pre-hospital data efficiently to explore different issues pertaining to the pre-hospital dataset. It is hypothesized that analyzing pre-hospital dataset can be done through data mining according to the output want to achieve through predictive or descriptive techniques. The solution takes the pre-hospital dataset as the input and predicts the factors attached to the particular pre-hospital issues with its associative causes. The overall design of the research consists of two research question, one question used predictive mining based solution and the other one is based on descriptive mining. Prediction in data mining was used to predict the Triage category based on the attribute, the classification and association were used in finding the factors and their relationship that related to the attributes. Finally, the data model analysis using data mining techniques are evaluated for their performance by using accuracy, error rate, and elbow methods, etc. I hope this research approach will be useful for decision-makers and policy-makers in the Ministry of Health, Nutrition & Indigenous Medicine.

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