Situational Analysis of E-Health Initiative using ICT in Emergency Care Services: The Case of Coimbatore in Tamilnadu State, India

P. Devika, PSG College of Arts and Science, India
N. Mathiyalagan, PSG College of Arts and Science, India

ABSTRACT

India, with its billion inhabitants, requires better emergency services to meet the growing demand for faster critical care facilitation. The scientific advances in the field of information and communication technology have contributed to the implementation of various e-health initiatives by various state governments within the country to improve the quality, access, and delivery of emergency care. “108 Emergency Response Service” is an e-health project established by the government of Tamilnadu state in India to render emergency services to the people. A qualitative study of the effectiveness of Information and Communication technologies in this Emergency Response Service (108 Emergency Service) in Coimbatore district of Tamilnadu state (http://www.coimbatore.tn.nic) was done and recommendations to increase the effectiveness were provided. The results reveal that the efficiency and effectiveness of 108 ERS could be greatly enhanced by providing better telecommunication facilities in rural areas and by deploying Global Positioning System (GPS) and Geographic Information System (GIS) and Automatic Vehicle Location (AVL) technologies to reduce the response time of the emergency vehicles.

Keywords: Automatic Vehicle Location (AVL), E-Health, Emergency Care Services, Geographic Information System (GIS), Global Position System (GPS), India, Information Communication Technology

1. INTRODUCTION

Emergency Response Service (ERS) System delivers emergency services like medical, police fire and rescue services to the people depending on the type of services required during the crisis. Emergency Medical Services (EMS) is dedicated to provide out-of-hospital emergency medical care and to transport patients to definitive care centers. The existing Emergency Medical Services in India is inadequate to serve the emergency needs of the country. People use non emergency vehicles like taxi, truck and private cars for emergency victim transportation (National Health Systems Resource...
Regardless of the apparent need for emergency care, EMS in India remains very poor (Das et al., 2008).

The EMS spectrum constitutes a communication system, emergency transportation and pre-hospital care. Communication system provides telephone access to the EMS and facilitates the reception of emergency calls, dispatch of required services, delivery of life saving information, and enables communication with emergency response personnel. The victim’s chances of survival are high when definitive care is given within the first hour of the emergency (The Trauma Center Association of America, http://www.traumafoundation.org).

Emergency transportation facilitates the quick transfer of the emergency victim from the scene of emergency to the nearest healthcare center. Pre-hospital care is essential for trauma type medical emergencies. In India, 80% of hospital fatalities occur in the first hour of admission (Jhampla, 2009). Such fatalities could be significantly reduced with reliable communication system, efficient emergency transportation and effective pre-hospital care.

1.1. Role of ICT in Emergency Response System

The role of Information and Communication Technologies (ICT) starts right from establishing the necessary telecommunication networks and providing a common emergency number for emergency services to the delivery of required emergency services using relevant communication technologies.

On dialing an emergency number, the call is connected to the dispatch center or communication center of the emergency service provider. The communication center is the center of emergency service and is the first link in emergency service (Maguire & Pruden, 2005). The center consists of dispatchers who are trained to receive and transmit reliable messages. They are also responsible to dispatch the appropriate emergency vehicle to the scene of emergency.

In countries like the United States of America and Europe, the process of reception of emergency calls and dispatch of the required services are automated and done with new technologies like Computer Assisted Dispatching (CAD), Global Positioning System (GPS), Geographic Information System (GIS) and Automatic vehicle location (AVL) technologies. GPS facility and GIS mapping assist in the identification of callers’ location and AVL technologies helps to track and dispatch the closest ambulance to the scene and to guide to the nearest health care center.

1.2. Background

India, the second most populous nation in the world consists of 29 states and 7 union territories governed by a federal system (Indian Government, 2010). Tamil Nadu is the eleventh largest state covering an area of 130,058 km² and is the seventh most populous state with a population of about 63 million as per Census of India 2001. Chennai (formerly known as Madras) is the state capital and is the fourth largest city in India. The official language is Tamil, usage of English is also common. Administratively, the state is divided into 32 districts (smaller administrative unit). Coimbatore is one of the districts with a population of about 3 million people according to 2001 Census of India (Tamil Nadu Government Portal, 2010).

1.2.1. Healthcare System in India

Health is the primary responsibility of each state government within India. Delivery of healthcare follows a three tier system. Under this system, the State Government provides health care at primary, secondary, and tertiary level.

At primary level, Primary Health Centers (PHCs) and sub-centers are established and maintained by the healthcare department. A medical officer, a women health assistant, a driver and a laboratory technician are placed in each of these PHCs to render medical care in every village. PHCs are also equipped with a jeep and necessary facilities to carry out small surgeries (Indian Government, 2010).

At secondary level, the district hospitals, small private hospitals and nursing homes and
Related Content

The Use of Static Telemedical Applications of Cytopathology for Proficiency Testing
www.igi-global.com/article/the-use-of-static-telemedical-applications-of-cytopathology-for-proficiency-testing/84036?camid=4v1a

An Agent-Oriented, Workflow-Based Mobile Framework for Implementing Interoperable Healthcare Information Systems
www.igi-global.com/chapter/an-agent-oriented-workflow-based-mobile-framework-for-implementing-interoperable-healthcare-information-systems/192678?camid=4v1a

Critical Systematic Review
www.igi-global.com/chapter/critical-systematic-review/35819?camid=4v1a
User Driven Psychiatry
Siju Oommen George and Samit Roy (2013). Clinical Solutions and Medical Progress through User-Driven Healthcare (pp. 15-23).
www.igi-global.com/chapter/user-driven-psychiatry/67732?camid=4v1a