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A Study to assess the knowledge and perception of ambulance service among people living in Poonamalle

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Abstract
Emergency Medical Services (EMS), generally known as ambulance services, provides medical transport and/or out-of-hospital medical care to patients at scenes of incidents or to people who are in need. Countries differ in their approaches to designing and operating EMS. In general, an EMS system receives requests for ambulances via a central emergency telephone number. The demand is examined to identify the severity and urgency (or priority) before one or more suitable vehicles are dispatched to the scene. The goal of EMS is to increase the chance of survival for patients. To this end, time plays an important role, especially in cardiac arrest cases. The last proxy is also called coverage rate and is a widely-used measure of EMS performance. Many EMS systems are found to base their performance standards on coverage. Such a coverage standard can require at least 80% of emergency calls have response times under 10 minutes. The present study aims to assess the knowledge and perception of ambulance service among people living in Poonamalle. A descriptive cross sectional research design was conducted among 60 elderly population in Poonamalle. A simple random sampling technique was used to select samples. Self-structured questionnaires were used to collect demographic data, knowledge and perception regarding ambulance service was assessed. The present study also shows that demographic variables of age 18–25 were 35%; 25–40 were 21%; 40 – 60 were 35 %; above 60 % were 8 %. Gender of male were 55 %; female were 45 %. Educated were 63 %; uneducated 36 %; Marital status Married were 58 %; unmarried were 42 %. Occupation, self-employed 23 %; Industrial worker 21 %; Student 25 %, house wife \ retired 20 %. Religion Christian 23 %, Muslim 26 %, Hindu 33 %. The studies thus indicates that out of 60 samples, 25 (41.7%) had inadequate knowledge, 25 (41.7%) had moderate knowledge and 10 (16.7%) had adequate knowledge.

Keywords: ambulance service, Poonamalle, Emergency Medical Services (EMS).

Introduction

Emergency Medical Services (EMS), generally known as ambulance services, provides medical transport and/or out-of-hospital medical care to patients at scenes of incidents or to people who are in need. Countries differ in their approaches to designing and operating EMS. In general, an EMS system receives requests for ambulances via a central emergency telephone number. The demand is examined to identify the severity and urgency (or priority) before one or more suitable vehicles are dispatched to the scene. In the case that all vehicles are busy, the call is delayed. At the scene, medical treatment is provided and the vehicle will transport the patient to a hospital if necessary. When an ambulance is not busy with assignments, it is supposed to go to a waiting base that is the home station or a different location in an attempt to better match the anticipated demand (i.e. dynamic ambulance redeployment).

The goal of EMS is to increase the chance of survival for patients. To this end, time plays an important role, especially in cardiac arrest cases. Analysis for out-of hospital cardiac arrest patients in the literature has revealed the relation between survival rate and impact factors including the response time (i.e. the interval between the arrival of an emergency call and the time when the assigned ambulance reaches the patient), the emergency service model, and the intervention time of cardiopulmonary resuscitation (CPR) as well as the defibrillation process.

Some regression models for patient survivability in cardiac arrest, which were developed from empirical data, can be found in Mc Lay (2010). Because of the importance of response time, ambulances are supposed to be located such that potential emergency cases can be reached in a time-efficient manner. Although patient survival is the ultimate goal, it is hardly measured and not typically set as a performance measure of EMS by practitioners or researchers. Proxies for patient survival are used instead.

The preparedness value for a demand zone takes into account the estimated call volume in

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the zone, the number of nearby ambulances and their travel times to the zone. Management of an EMS system, like other systems in general, consists of three levels strategic, tactical and operational management. Strategic EMS planning solves problems related to system design. However, a plan of ambulance deployment determines the EMS performance and therefore indicates where stations would be located. A large number of models have been developed to simultaneously optimize station location and ambulance allocation. The integration of these issues constitutes the problem of ambulance location which is further described later in this section and in the next chapter. In order to address emergency calls of various types, an EMS provider has to coordinate the actions of many ambulances and the staff who have distinct levels of training. However, a plan of ambulance deployment determines the EMS performance and therefore indicates where stations would be located. A large number of models have been developed to simultaneously optimize station location and ambulance allocation. The integration of these issues constitutes the problem of ambulance location which is further described later in this section and in the next chapter. In order to address emergency calls of various types, an EMS provider has to coordinate the actions of many ambulances and the staff who have distinct levels of training.

According to Andersson (2005), develops another measure called preparedness in order to value the EMS capability of responding to pending calls in every demand zone. The preparedness value for a demand zone takes into account the estimated call volume in the zone, the number of nearby ambulances and their travel times to the zone. Management of an EMS system, like other systems in general, consists of three levels strategic, tactical and operational management. Strategic EMS planning solves problems related to system design (i.e. deciding the organization of advanced life support services with or without basic life support services, regarding cost effectiveness analysis and limited funding), configuring the number of stations and their locations (i.e. station planning), configuring the number of ambulances, and allocating a fleet of ambulances to given stations (i.e. ambulance allocation).

According to Ingolfsson (2013) that ambulance deployment should vary with time to match daily and weekly demand patterns. However, a plan of ambulance deployment determines the EMS performance and therefore indicates where stations would be located. A large number of models have been developed to simultaneously optimize station location and ambulance allocation. The integration of these issues constitutes the problem of ambulance location which is further described later in this section and in the next chapter. In order to address emergency calls of various types, an EMS provider has to coordinate the actions of many ambulances and the staff who have distinct levels of training. Staff scheduling is a typical problem in tactical planning of EMS. Trip routing for patient transport orders is another problem as many transport orders are known in

advance. At the operational level, EMS providers make real-time decisions on dispatching and relocating ambulances. Dispatch and relocation planning takes into account the system state at the moment of decision, analyzes the effect of possible decisions on the system and aims at maximizing the coverage, preparedness or minimizing the response time. According to Schmid, 2012, and they are shown to be better than the closest-vehicle rule in decreasing the average response time. The change in ambulance availability, travel time or anticipated demand can influence coverage. To prevent coverage degeneration, ambulance redeployment or relocation is considered for idle vehicles.

The purpose of the study

1. To assess the level of knowledge regarding ambulance service among people living in Poonamalle.
2. To find out the association between the level of knowledge and perception on ambulance service among people living in poonamalle and their demographic variables.

Methods and Materials

The descriptive cross sectional study was used to condect the study in poonamallee. A simple random sampling technique was used to select samples. Self structured questionnaires were used to collect demographic data, knowledge and perception regarding ambulance service was assessed. The study samples were selected based on the following inclusive and exclusion criteria. The criteria for sample selection those who are willing to participate in the study and those who are available at the time of data collection and those who can read and / or write tamil or English and the exclusion criteria are who are not co operative and those who are not available during the study and those who can't read and write. Before commencing the data collection, authorized setting permission was obtained from the authorities of the selected area. The data was collected for one week in the month of March 2020 from the general population residing in poonamallee. The investigator introduced and explained the purpose of the study to the sample and obtained the written informed consent. The demographic data was collected using self structured questionnaire used to assess the knowledge and perception regarding ambulance service. The data were analyzed using descriptive and inferential statistics. The sample characteristics were described using frequency and percentage. Pearson's co-relation coefficient was used to assess the knowledge and perception of ambulance service.

Result and Discussion

Among 60 samples people living in Poonamalle of age 18 – 25 were 35%; 25 – 40 were 21%; 40 – 60 were 35 %; above 60 % were 8 %. Gender of male were 55 %; female were 45 %. Educated were 63 %; uneducated 36 %; Marital status Married were 58 %; unmarried were 42 %. Occupation, self employed 23 %; Industrial worker 21 %; Student 25 %, house wife\retired 20 %. Religion CHRISTIAN 23 %, Muslim 26 %, Hindu 33 %.
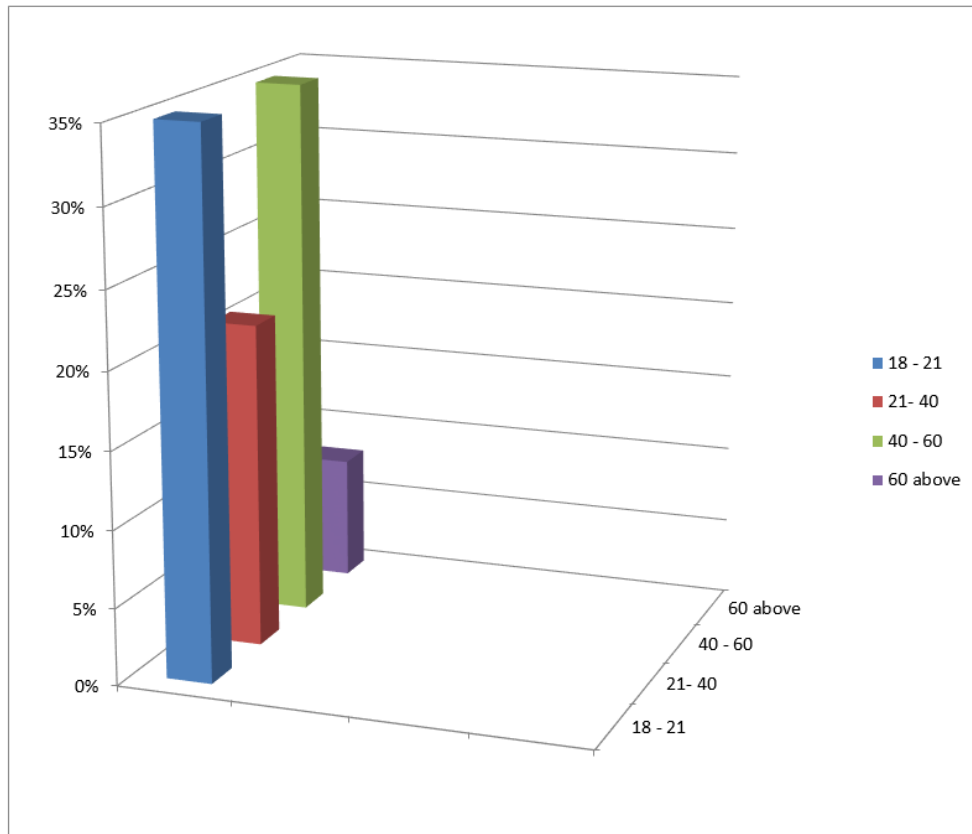
Fig 1: Frequency and Percentage distribution of age among people living in poonamalle.
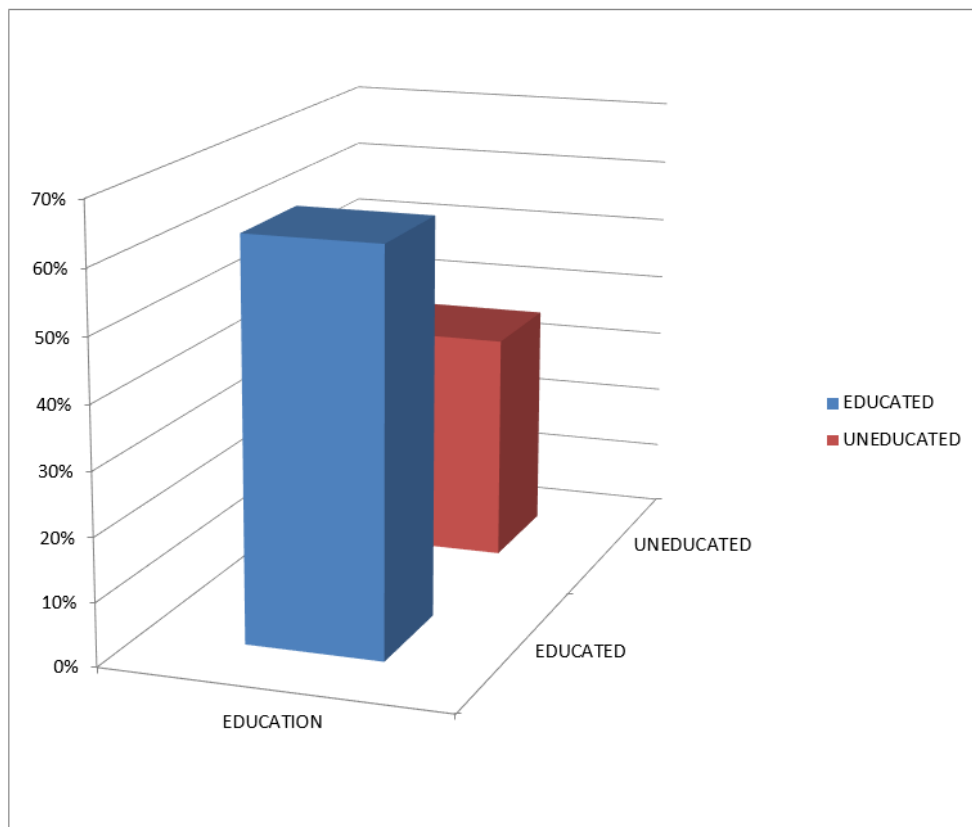
Fig 2: Frequency and Percentage distribution of Marital Status among people living in Poonamalle.

The present study shows that Mehrdad sharifil *et al.* (2012) conducted the study to assess the quality of pre hospital emergency care and ambulance services among patients. The services provided to the patients of pre-hospital emergency center and their satisfactions indicate the quality of pre-hospital emergency services. The goal of this study is to investigate the satisfaction of patients with Ambulance Service services in Shahrekord in the first half of 2012. In this descriptive and analytic study, 450 patients transferred to the hospital by pre-hospital emergency center were

chosen using simple random sampling method and data was collected by using satisfaction evaluation questionnaire. The information obtained under SPSS software version 16 was analyzed by statistical descriptive test, independent t test, variance analysis test and Pierson Correlation test. The findings showed that satisfaction level with pre-hospital emergency services in men, low educated people, married people, those with the record of using emergency services and those with emergency problems was significantly higher than others. Satisfaction level in all fields was above 50% and was totally 71.12. The highest level of satisfaction was for the efficiency of emergency center (58, 78) and the lowest level of satisfaction in the questions was for the performance of technicians (58, 73). Patients' satisfaction with emergency services and their quality is considered as one of the main concepts in pre-hospital emergency procedures, in the manner that the results of this study showed that patients' satisfaction in different fields were high and satisfactory and the technicians should allocate much more time for interaction with patients in order to improve their satisfaction.

Another study that supports Denesa Playzord et al.; While there are numerous studies investigating use and outcomes of the ambulance service, there are none looking at population attitudes and knowledge about the ambulance service. The aim of this study was to see if education is required for a sample population representative of rural Australia in regards to cost and coverage. Methods This study used a knowledge, attitude and practice survey voluntarily self-completed by a sample population recruited opportunistically from a number of health and public areas in the city of Geraldton, including the Emergency Department, a General Practise Clinic, a Physiotherapy Clinic and a Shopping Centre. Results 229 surveys were completed and showed that 30.1% of the sample population had no coverage in that they were not a pensioner, had no private health insurance and did not posses St John country cover. Aboriginal people were more likely than non-Aboriginal people to be without cover. Although 96% of people believed that everyone should be covered, 56% of participants did not know who administers rural ambulance coverage and 59% did not know the average call out fee for a life threatening call. The majority did not consider costs when using an ambulance. Conclusion The results demonstrated considerable lack of knowledge about ambulance cover and suggested that public education about ambulance services would be beneficial.

Frequency and percentage distribution of knowledge on Ambulance Service among people living in Poonamalle. Out of 60 samples, 25(41.7 %) had inadequate knowledge, 25(41.7 %) had moderate knowledge and 10(16.7 %) had adequate knowledge.

Out of 60 samples, Age group of 18–25 7(11%) had inadequate knowledge, 10(16.7%) had moderate knowledge, 4(6.7%) had adequate knowledge. Age group of 25-40 6(10%) had inadequate knowledge, 3(5 %) had moderate knowledge, 4(6.7%) had adequate knowledge. Age group of 40 – 60 7 (11%) had inadequate knowledge, 12(20%) had moderate knowledge, 2(3.3%) had adequate knowledge. Age group of 60 above 5 9 8%) had inadequate knowledge. Gender Male 14(23.3%) had inadequate knowledge, 13(21.7%) had moderate knowledge, 6(10%) had adequate knowledge. Female 11(18.3%) had inadequate knowledge, 12(20%) had moderate knowledge, 4(6.7%) had adequate

knowledge. Educational Qualification of people, Educated 11(18.3%) had inadequate knowledge, 19(31.7%) had moderate knowledge, 8(13.3%) had adequate knowledge. Marital Status, Married 19(31.7%) had inadequate knowledge, 9(15%) had moderate knowledge, 7(11.7%) had adequate knowledge. Unmarried 14 (23.3%) had inadequate knowledge, 8(13.3%) had moderate knowledge, 3(5%) had adequate knowledge. People with Occupation, Self employed 5(8.3%) had inadequate knowledge, 6(10%) had moderate knowledge, 3(5%) had adequate knowledge. Industrial workers 5(8.3%) had inadequate knowledge, 5(8.3%) had moderate knowledge, 3(5%) had adequate knowledge. Student 5(8.3%) had inadequate knowledge, 12(20%) had moderate knowledge, 4(6.7%) had adequate knowledge. Housewife/Retired 10 (16.7%) had inadequate knowledge, 2(3.3%) had moderate knowledge. People of Religion, Chirstian 5(8.3%) had inadequate knowledge, 7(11.7%) had moderate knowledge, 2(3.3%) had adequate knowledge. Muslim 8 (13.3%) had inadequate knowledge, 7(11.7%) had moderate knowledge, 1(1.7%) had adequate knowledge, Hindu 12(20%) had inadequate knowledge, 11(18.3%) had moderate knowledge, 7(11.7%) had adequate knowledge.

Level of Knowledge	Scores	Frequency N = 60	Percentage (%)
Inadequate Knowledge	Less Than 50	25	41.7%
Moderate Knowledge	Score 51 - 75	25	41.7%
Adequate Knowledge	More Than 75	10	16.7%

S.No	Variables	Mean	Standard Deviation
1.	Knowledge about Ambulance Service among people living in Poonamalle.	48.8	18.7

The present study was supported by Stewart, Scott Ian (2001) conducted a study to assess the Customer Satisfaction in the Metropolitan Ambulance Service. Abstract the field of customer satisfaction is complex and lacks clarity. Any technique that can bring order and predicability to the field is keenly sought. The partial least square methodology (PLSM) is a new means of modelling and predicting future outcomes. This research uses the partial least square modelling methodology to investigate and model the satisfaction of users of the Metropolitan Ambulance Service, Melbourne (MAS). The theories of Customer Satisfaction were reviewed then a definition of the concept established. The current state of the MAS was briefly discussed and the PLSM methodology was defined. Data collected from the MAS customer population was analysed by the PLSM method and by traditional statistical methods for comparative purposes. The results of the research demonstrated that the PLS methodology can be successfully applied to the field of satisfaction measurement of the ambulance service customer. Whilst uniquely modelling the determinants of customer satisfaction, it agreed with work by earlier researchers that particular aspects of staff behaviour were very important for high levels of customer satisfaction in the service industries. The model predicted that changes in the satisfaction rating of the staff variable would have a significant effect on overall

satisfaction and critical consequential outcomes such as reuse and re-subscription. It also predicted that the overall model of customer satisfaction of MAS users was insensitive to changes with image, cost or equipment. An unexpected finding was that perceived medical ability was strongly linked to the paramedic's professional appearance. Implications of the finding are that MAS should pay close attention in the design and maintenance of the paramedic uniform. The relationship between a paramedic's professional appearance and their medical ability as perceived by a patient should be emphasised during training and professional development days. The very high importance of staff issues such as competence, friendliness, calmness and trustworthiness in regard to customer satisfaction reaffirms MAS attention and awareness of the matter. The research needs to been repeated within MAS to give a trend over time and a measure of the effectiveness of changes. To show that the methodology is widely applicable the research should be repeated using another ambulance service.

Matthew J Booker, *et al*.; (2017) conducted a study Seeking ambulance treatment for 'primary care' problems: a qualitative systematic review of patient, carer and professional perspectives Objectives To understand the reasons behind, and experience of, seeking and receiving emergency ambulance treatment for a 'primary care sensitive' condition. Design A comprehensive, qualitative systematic review. Medline, Embase, PsychInfo, Cumulative Index of Nursing and Allied Health, Health Management Information Systems, Healthcare Management Information Consortium, Open Sigle, EThOS and Digital Archive of Research Theses databases were systematically searched for studies exploring patient, care or healthcare professional interactions with ambulance services for 'primary care sensitive' problems. Studies using wholly qualitative approaches or mixed-methods studies with substantial use of qualitative techniques in both the methods and analysis sections were included. An analytical thematic synthesis was undertaken, using a line-by-line qualitative coding method and a hierarchical inductive approach. Results of 1458 initial results, 33 studies met the first level (relevance) inclusion criteria, and six studies met the second level (methodology and quality) criteria. The analysis suggests that patients define situations worthy of 'emergency' ambulance use according to complex socioemotional factors, as well as experienced physical symptoms. There can be a mismatch between how patients and professionals define 'emergency' situations. Deciding to call an ambulance is a process shaped by practical considerations and a strong emotional component, which can be influenced by the views of caregivers. Sometimes the value of a contact with the ambulance service is principally in managing this emotional component. Patients often wish to hand over responsibility for decisions when experiencing a perceived emergency. Feeling empowered to take control of a situation is a highly valued aspect of ambulance care. Conclusions when responding to a request for 'emergency' help for a low-acuity condition, urgent-care services need to be sensitive to how the patients emotional and practical perception of the situation may have shaped their decision-making and the influence that carers may have had on the process. There may be novel ways to deliver some of the valued aspects of urgent care, more geared to the resource-limited environment.

Conclusion
This indicates that knowledge and perception of ambulance service among people living in poonamalle is inadequate

Authors Contribution
All the authors actively participated in the work of the study. All authors read and approved the final manuscript.

Conflicts of Interest:
The authors declare no conflicts of interest.

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