Internship Training
at

NHSRC, Haridwar, Uttarakhand,
(01 Feb - 30 April 2019)

Assessing Extent, Utilization and Experience of 108 Ambulance Services in Haridwar District, Uttarakhand

By
Dr Sharpi Sharma
PG/17/056

Under the guidance of
Dr BS Singh

Post-Graduate Diploma in Health &Hospital Management
Batch 2017-19

International Institute of Health Management Research,
New Delhi
2019

Assessing Extent, Utilization and Experience of 108 Ambulance Services in Haridwar District, Uttarakhand

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Internship and Dissertation Report Submitted in Partial Fulfillment of the Requirements for the Award of

Post-Graduate Diploma in Health and Hospital Management

Batch 2017-19

By

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Under the guidance of

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2019

Abstract

Assessing Extent, Utilization and Experience of 108 Ambulance Services in Haridwar District, Uttarakhand

Aim of the study was to assess extent, utilization and experience of 108 ambulance services in Haridwar District, Uttarakhand.

Objectives of this study was to analyze the aspects from the perspective of an health administrator and assess extent, utilization and experience of 108 Ambulance Services by pregnant women who have experienced medical emergency between March 2015 to March 2018 in Haridwar District, and to assess the factors determining and affecting utilization of 108 Ambulance Services.

In **methodology,** the study was carried-out in the District Female Hospital, Haridwar, Uttarakhand from 01 Feb to 30 Apr 2019. It is a cross sectional descriptive study. A sample size of 93 Respondents (pregnant women/attendant/family member) were studied out of which 60 people responded. 15 (05 each) respondents comprising ambulance drivers, EMT and call centre operators were studied. Non probability purposive sampling technique was used. For study tool semi structured questionnaire, telephonic and face to face interview was carried out. For analysis, all the data was checked and entered in SPSS (Statistical Package for the Social Sciences) version 22.After entering data descriptive statistic (frequency) tool was applied to find out the frequency of responses.

Major **findings/results** from the study suggests that the patient/attendant/family member experience was mostly fair and poor due to incomplete advice given by ambulance call centre about what to do till ambulance arrives, Ambulance takes more than an hour to reach the site which is quite late in case of emergency situation. There is lack of adequate ambulances in Haridwar district. It has only 9 GVK EMRI service ambulance which is less for 18 lakh population of Haridwar. Drivers and EMTs are not performing their job completely like carrying patients to ambulance, providing medical aid and stabilizing condition of patient etc. Ambulance was fairly clean in most cases and it needs to be cleaned after every shift by drivers. There are many factors which affects ambulance service, few of them are EMT and driver's performance, trips and distance travelled by ambulance, shortage of ambulance. In every ambulance there is checklist for inspecting the medical equipment, this checklist needs to be checked and completed before daily shift of EMT but in Haridwar EMTs check this checklist sometimes and not before daily shift. Due to shortage of ambulance, there is burden on the ambulance driver as they have to take more than 4 trips per day and travel more than 120 km per day, thus giving rise to the need for more ambulances to serve the patients.

To **conclude** main issue of 108 ambulance service is shortage of ambulance due to which many times patients do not receive the care that they expect during emergency, which leads to lot of suffering, particularly to pregnant mothers and may lead to post natal complications. Strength of ambulance service is that cleanliness is well maintained and call centre in Haridwar District are performing their duties well. Major shortcomings are lack of adequate ambulance and lack of monitoring of service periodically in Haridwar District of Uttarakhand.

Key Words: Extent, Utilization, Experience, 108 ambulance service, pregnant women, EMRI service, quality of service.

(Completion of Dissertation from Respective Organization)

The certificate is awarded to

Dr Sharpi Sharma

In recognition of having successfully completed her

Internship in the department of

NHSRC, Haridwar, Uttarakhand

And has successfully completed her Project on

Assessing Extent, Utilization and Experience of 108 Ambulance Services in Haridwar District, Uttarakhand

From 01 Feb – 30 Apr 2019

NHSRC, Haridwar District, Uttarakhand

She comes across as a committed, sincere & diligent person who has a strong drive and zeal for learning

We wish her all the best for future endeavours

Dr Himanshu Bhushan
Advisor, PHA
NHSRC, Haridwar
Uttarakhand

TO WHOMSOEVER IT MAY CONCERN

This is to certify that Dr Sharpi Sharma, student of Post Graduate Diploma in Hospital and Health Management (PGDHM) from International Institute of Health Management Research, New Delhi has undergone internship training at NHSRC, Haridwar, Uttarakhand from 01 Feb to 30 Apr 2019.

The student has successfully carried out the study **"Assessing Extent, Utilization and Experience of 108 Ambulance Services in Haridwar District, Uttarakhand"** which was assigned to her during her internship training and her approach to the study has been sincere, scientific and analytical.

The internship is in fulfillment of the course requirements.

We wish her all success and very best in all her future endeavours.

PK Panda

Dr Pradeep Panda
Dean(Student Affairs and Academics)
IIHMR, Delhi

BS Singh

Dr BS Singh
Dean (Research),
IIHMR, Delhi

CERTIFICATE OF APPROVAL

The following dissertation titled **"Assessing Extent, Utilization and Experience of 108 Ambulance Services in Haridwar District, Uttarakhand"** is hereby approved as a certified study in management carried out and presented in a manner satisfactory to warrant its acceptance as a prerequisite for the award of **Post Graduate Diploma in Heath and Hospital Management** for which it has been submitted. It is understood that by this approval the undersigned do not necessarily endorse or approve and statement made, opinion expressed or conclusion drawn there in but approve the dissertation only for the purpose it is submitted.

Dissertation Examination Committee for Evaluation of the Dissertation.

Name Dr Madhulekha Bhattacharya Signature 13/9/19.

Name Dr. Nitish Dogra Signature

Name Dr. Pankaj Talreja Signature

CERTIFICATE FROM DISSERTATION ADVISORY COMMITTEE

This is to certify that **Dr Sharpi Sharma**, a graduate student of the **Post Graduate Diploma in Health and Hospital Management** has worked under our guidance and supervision.

She is submitting this dissertation titled **"Assessing Extent, Utilization and Experience of 108 Ambulance Services in Haridwar District, Uttarakhand"** in partial fulfillment of the requirements for the award of the Post Graduate Diploma in Health and Hospital Management.

This dissertation has the requisite standard and to the best of our knowledge no part of it has been produced from any other dissertation, monograph, report or book.

Dr BS Singh
Internal Mentor
Dean (Research)
IIHMR
Delhi

Dr Himanshu Bhushan
External Mentor
Advisor, PHA
NHSRC
Haridwar

TO WHOMSOEVER IT MAY CONCERN

This is to certify that **Dr Sharpi Sharma**, student of Post Graduate Diploma in Health and Hospital Management (PGDHM) from International Institute of Health Management Research, New Delhi has successfully completed training at NHSRC, Haridwar, Uttarakhand from 01 Feb to 30 Apr 2019.

During her tenure with the organization she has successfully completed her project on the topic **"Assessing Extent, Utilization and Experience of 108 Ambulance Services in Haridwar District, Uttarakhand".**

During the tenure of her association with the organization, I found her sincere, hardworking and focused in the tasks and assignments allotted to her. Throughout the training she was found to be a keen learner and her performance was found to be excellent.

I wish her all success and the very best in all her future endeavours,

Dr Himanshu Bhushan
Advisor, PHA
NHSRC
Haridwar
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CERTIFICATE BY SCHOLAR

This is to certify that the dissertation titled "**Assessing Extent, Utilization and Experience of 108 Ambulance Services in Haridwar District, Uttarakhand**" and submitted by Dr Sharpi Sharma, Enrollment No. **PG/17/056** under the supervision of **Dr BS Singh**, Dean (Research), Internal Mentor, IIHMR, Delhi for the award of Postgraduate Diploma in Hospital and Health Management of the Institute carried out during the period from **01 February to 30 April 2019** embodies my original work and has not formed the basis for the award of any degree, diploma associate ship, fellowship, titles in this or any other Institute or other similar institution of higher learning.

(Dr Sharpi Sharma)
PG/17/056

FEEDBACK FORM

Name of the Student : Dr Sharpi Sharma

Dissertation Organization : NHSRC, Haridwar, Uttarakhand

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Suggestions for Improvement : Health Informatics and Digital Technology

Suggestions for Institute : Nil

(Signature)

Dr Himanshu Bhushan
Advisor, PHA
NHSRC
Haridwar
Uttrakhand

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ACRONYMS / ABBREVIATIONS

1. **NHSRC** - National Health System Resource Centre
2. **NRHM** - National Rural Health Mission
3. **MoHFW** - Ministry of Health & Family Welfare
4. **EMS** - Emergency Medical Services
5. **NHM** - National Health Mission
6. **IFT** – Inter facility Transfer
7. **GIS** - Geographic Information System
8. **EMT** - Emergency Medical Technician
9. **SPSS** - Statistical Package for the Social Sciences
10. **SRT** - Site Response Time
11. **GVK EMRI** - Emergency Management & Research Institute
12. **NAS** - National Ambulance Services

SECTION 1: OVERVIEW

INTERNSHIP REPORT

SECTION 1: OVERVIEW

INTERNSHIP REPORT

(01 Feb - 30 Apr 2019)

Organization Profile

1. National Health Systems Resource Centre (NHSRC) has been set up under the National Rural Health Mission (NRHM) of Government of India to serve as an apex body for technical assistance.

2. Established in 2006, the National Health Systems Resource Centre's mandate is to assist in policy and strategy development in the provision and mobilization of technical assistance to the states and in capacity building for the Ministry of Health and Family Welfare (MoHFW) at the Centre and in the states. The goal of this institution is to improve health outcomes by facilitating governance reform, health systems innovations and improved information sharing among all stake holders at the national, state, district and sub-district levels through specific capacity development and convergence models.

3. It has a 23 member Governing Board, chaired by the Secretary, MoHFW, Government of India with the Mission Director, NRHM as the Vice Chairperson of the board and the Chairperson of its Executive Committee. Of the 23 members, 14 are ex-officio senior health administrators, four from the states. Nine are public health experts, from academics and Management Experts. The Executive Director, NHSRC is the Member Secretary of both the board and the Executive Committee. NHSRC's annual governing board meet sanctions its work agenda and its budget.

4. The NHSRC currently consists of seven divisions – Community Processes, Public Health Planning, Human Resources for Health, Quality Improvement in Healthcare, Healthcare Financing, Healthcare Technology and Public Health Administration.

5. The NHSRC has a regional office in the north-east region of India. The North East Regional Resource Centre (NE RRC) has functional autonomy and implements a similar range of activities.

Vision

6. They are committed to facilitate the attainment of universal access to equitable, affordable and quality healthcare, which is accountable and responsive to the needs of the people of India.

Mission

7. To provide Technical support and capacity building for strengthening public health systems in India.

Policy Statement

8. NHSRC is committed to lead as professionally managed technical support organization to strengthen public health system and facilitate creative and innovative solutions to address the challenges that this task faces.

9. In the above process, they intend to build extensive partnerships and network with all those organizations and individuals who share the common values of health equity, decentralization and quality of care to achieve its goals.

10. NHSRC is set to provide the knowledge-centre technical support by continually improving its processes, people and management practices.

Governing Board

11. Chairperson- Ms Preeti Sudan, Secretary, Department of Health & Family Welfare.

12. Vice Chairperson - Shri Manoj Jhalani, Additional Secretary & Mission Director (NHM), D/H & FW, Ministry of Health & Family Welfare.

13. **Members**

(a) Dr. S Venkatesh, DGHS, Ministry of Health and Family Welfare.
(b) Dr. R K Vats, Additional Secretary & Financial Advisor, D/H&FW.
(c) Prof. Balram Bhargava, Secretary, Department of Health Research.
(d) Dr. Manohar Agnani,Joint Secretary (Policy),Ministry of Health & Family Welfare.
(e) Ms. Preeti Pant,Joint Secretary, Urban Health, MoH & FW.
(f) Ms. Vandana Gurnani**,** Joint Secretary (RCH), D/H & FW.
(g) Prof. J.K. Das, Designation: Director, NIHFW.

(h) Mrs .Gauri Singh, Principal Secretary (Health), Gov.of Madhya Pradesh.

(i) Shri Samir Kumar Sinha, Principal Secretary (Health),Govt. of Assam.

(j) Shri Prabodh Saxena**,** Principal Secretary (Health),Govt. of Himachal Pradesh.

(k) Smt. Poonam Malakondaiah**,** Principal Secretary (H& FW),Govt. of Andhra Pradesh.

(l) Dr. Devadasan N, Director, Institute of Public health Bangalore.

(m)T. Sundararajan, Dean, School of Health Systems Studies.

(n) Professor Gautam Sen, Chairman and Founder Health spring, Mumbai.

(o) Indrani Gupta**,** Professor, Institute of Economic Growth, University Enclave, University of Delhi(North Campus).

(p) Prof.Sunil Maheshwari**,** Chairperson (AHRD), IIM Ahmedabad

(q) Dr.Sundar Ravindran**,** Professor, Achutha Menon Center for Health Science Studies,

(r) Sree Chitra Tirunal Institute for Medical Sciences and Technology, Trivandrum.

(s) Prof.Lipika Nanda ,Director, Indian Institute of Public Health Bhubaneswar.

(t) Dr.Anand Krishnan, Professor, Centre For Community Medicine AIIMS.

(u) Ms. Sujatha Rao,Former Secretary, Department of Health & FW,GOI.

14. Member Secretary- Dr Rajani R. Ved,Executive Director, National Health Systems Resource Centre.

15. **Divisions**

(a) Community Processes.

(b) Public Health Planning.

(c) Human Resources for Health.

(d) Quality Improvement in Healthcare.

(e) Healthcare Financing.

(f) Healthcare Technology.

(g) Health Informatics.

(h) Public Health Administration.

Public Health Administration

16. The implementation framework and plan of action of NRHM emphasize making the public health delivery system fully functional and accountable so that health indicators improve. The state capacity to plan, and implement the plan is limited, especially in the high focus states of Bihar and UP that are expected to benefit the most from NRHM. PHA division supports the high focus states, especially Bihar in planning and implementing the state plans.

17. The Division responds to requests from the state or center. This division also helps with development of guidelines, pursuant administrative orders to support implementation and is responsive to requests for assistance from the division of MoHFW, Government of India.

18. During the Internship period I was attached with the NHSRC, Haridwar, Uttarakhand. I undertook a study on extent, utilization and experience of 108 ambulance services in Haridwar, Uttarakhand between 01 Feb to 30 Apr 2019. Respondents in terms of pregnant women/attendants/family members, ambulance drivers, call centre operators and EMT were interviewed to arrive at the analysis of ibid study.

Recommendations

19. The recommendations based on the general analysis of data and observations during my internship during aforesaid duration will go a long way in improving the 108 ambulance services in Haridwar, Uttarakhand. Few recommendations are as under:-

(a) Hire more ambulance to match the standard of 01 ambulance per 01 Lakh population.

(b) Proper schedule making of shifts of ambulance to reduce burden on ambulance and drivers.

(c) Checklists of ambulance to be maintained by both driver and EMTs and it should be monitored by nodal person.

(d) May hire different company than GVK EMRI 108 for pregnant women.

(e) At ambulance call centre there should be an advisor, who can guide and advice callers about what to do till ambulance arrives to stabilize patients.

(f) Feedback form to be filled by patients or attendant or family member who have used the ambulance service.

SECTION 2: DISSERTATION

ASSESSING EXTENT, UTILIZATION AND EXPERIENCE OF 108 AMBULANCE SERVICES IN HARIDWAR DISTRICT, UTTARAKHAND

CHAPTER 1: INTRODUCTION

Background

20. Estimates show that 21.7 million deaths in the year 2010 in developing countries were due to emergency medical conditions related to communicable diseases, maternal conditions, non-communicable diseases and injuries.[i] Emergency medical condition as defined by Jagim, is a medical condition manifesting itself by acute symptoms of sufficient severity such that the absence of immediate medical attention could reasonably be expected to result in increased morbidity or mortality.[ii] Provision of immediate care to a person in emergency medical condition may prevent death or disability. Pre-hospital emergency medical services include rapid assessment, timely provision of appropriate care, and timely transportation to the nearest health facility with the required services to enhance survival, control morbidity, and prevent disability.[iii] According to WHO report on trauma care, many of the world's population do not have access to pre-hospital emergency care.[iv] This is a common problem in developing countries like India, Pakistan, Thailand, China and other African countries as the emergency medical services are not well defined.[v] Emergency services in India are often provided by various organizations which include private agencies, government hospitals and non-government organizations. There is a rural-urban dichotomy in the provision of emergency care.[vi] It is well established that patients receiving basic care from trained professionals and promptly transported to the nearest healthcare facility within 15-20 minutes has the greatest chance of survival.[vii] Studies have established that disability or loss of life among the victims of trauma conditions and maternal conditions are due to lack of transport facility in emergency. These adverse health outcomes can be prevented with the presence of an efficient emergency medical service system.[viii]

Emergency Medical Service System in India

21. Emergency medical service (EMS) system is an integral part of the health care system. It is **'The golden hour'** and the **'Platinum Ten Minutes'** that typify the importance of **Emergency Medical Services (EMS)** all over the world. It makes a positive contribution to

the health system by providing emergency care to the people in need. EMS system comprises of interdependent elements; pre hospital care including transportation and hospital care. These elements must work in coordination to make a lasting impact on health of the people.[ix] Effective pre-hospital care is very essential for improving the survival among the people in emergency conditions. It is a well- accepted fact that patients who receives basic care from trained professionals and are transported to the nearest healthcare facility within 15-20 minutes of emergency has the greatest chance of survival .Over the years many advancements have been made and research is underway to create services that provide medical assistance to patients at the earliest.

22. This is possible only through the availability of a well equipped ambulance with trained EMTs. A regulated emergency medical service system emerged in the developed world in last three decades. Literature available on emergency services in developed countries reveal the presence of a well established EMS system with a centralized phone number and emergency service providers. For example, 911 in USA (United States of America) and Canada, 999 in UK (United Kingdom), 000 in Australia and 112 in Germany. They provide high quality clinical care and emergency transport services through different types of ambulances and trained paramedics and emergency technicians.

23. The state of EMS varies drastically from developed to developing countries like India. Studies have shown that emergency medical services in India are not well defined. The quality of medical services provided in emergency is poor. It is well known fact that in India there were many gaps in the emergency medical care services at the district level and the existing ambulance services were not functioning well. There is no single system which plays a major role in managing emergency medical service in India. There is neither a countrywide uniform phone number nor a single system which can play a major role in providing emergency care services. There is a fragmented system to attend the emergency in the country. Emergency transport service which is a very essential element of emergency medical services varies across the countries. Ambulances are mostly used for inter-hospital transports rather than for primary emergency response. Transportation of patient to hospital is often either by attendants/ relatives.

24. 102 is the emergency number for ambulance in many parts of India. There are many different emergency telephone numbers in India's 29 states and 7 Union Territories. Efforts have been made by few state governments to provide emergency medical services in India. For

example, Centralised Accident and Trauma Services (CATS), New Delhi accessible at toll free numbers 102 and 1099, Ambulance Access for All (AAA)-Mumbai (1298) and Ambulance Motorbike and Rescue Service (AMARS)-CMC, Ludhiana (104). However, these efforts were confined to a state or parts of a state. Similar effort was also made in the state of Andhra Pradesh in India in the year 2005. Hospitals in the country also provide different telephone numbers for ambulance services. The existing fragmented system falls short of meeting the demand.[x]

25. At the time of launch of NRHM in 2005, such ambulance networks were not present. Public health and hospitals being a state subject, the primary responsibility of providing health care including general as well as critical care ambulance service lies with the respective state government. Under the NHM, technical and financial support is provided to States/UTs to strengthen their healthcare systems including support for ambulance services including dial - 108, dial -102.[xi] The present EMS system in place across the length and breadth of the country lacks standardization in terms of equipments, services, HR deployment etc. This leads to variation in services offered impacting effective care to the person being transported /cared for. Consequently, the EMS services in the country vary from state to state and more often than not, fall short of meeting the demand. With support under the National Health Mission – the flagship programme of Government of India, a considerable improvement has been made in emergency services in our Country. Hence the present operational guidelines are an effort towards developing a comprehensive EMS – with standardized parameters, to be implemented across the Country.

26. With the launch of National (Rural) Health Mission (NHM) technical and financial assistance was provided to State/UT Governments to strengthen their healthcare systems, including EMS. The model for implementation of Emergency Systems is selected by respective State/UT Government depending upon their requirement and suitability. NHM provides States/UTs support towards capital cost for Ambulance Services along with their operational cost based on the services offered. Under NHM while one ALS ambulance is supported for an average population of five lakh, one BLS Ambulance is supported for over one lakh population. Presently administratively and functionally there are three main models of EMS and patient transport systems (PTS) that have emerged over the past ten years. Under NHM, it is envisaged that for efficient utilisation of available resources, all ambulances in a State/UT are networked

and inter-connected through a Centralized Call Centre or the Public Safety Answering Point (PSAP). This PSAP should include an Integrated Ambulance Command Centre (IACC). All ambulance requests should land and be serviced by this IACC. To achieve this, support is provided to all States/UTs under NHM for GPS tagging of ambulances so that their location, contact details etc. are available at the IACC.

27. Under JSSK, pregnant women are entitled for free transport from home to health facility, inter-facility transportation during complication and drop-back after delivery. Similar entitlement has been extended to all infants for getting treatment during complications. The country-wide experience under JSSK indicates that the family does not want to send pregnant women either for delivery or for managing complications in ambulance due certain beliefs and social stigma. This is the reason that states, under NHM, were given flexibility for adding a transport vehicle for beneficiaries of JSSK, which many States have implemented with a different branding like – 'Kushiyon Ki Sawari'**,** etc. So, the present operational guidelines issued by NHM will address the requirements of ALS and BLS.

28. **Emergency Management and Research Institute (EMRI)** launched ambulance services both in rural and urban areas of Andhra Pradesh as a public private partnership (PPP) with Government of Andhra Pradesh. This emergency transport service can be accessed at the **toll free number 108** either through land line phones or mobile phones. This model has now been adopted in **few other states** which include Gujarat, Rajasthan, Assam, **Uttarakhand,** Goa, Karnataka, Madhya Pradesh, Tamil Nadu and Meghalaya.[xii] Studies reveal a relatively low utilization of ambulance services at the time of emergency in India. According to the studies, there is a **gap in the provision and utilization of emergency transport services**.[xiii] Presence of emergency transport services does make any change on the health conditions of people unless they are utilized. It is important to understand the extent and utilization of emergency services and the factors determining the utilization of **108 ambulance services**. This helps in identifying the reasons for under utilization of services in the community. This knowledge helps in better provision of ambulance services and experience which will lead to better health outcomes.

Rationale for the Study

29. There are a few studies in India showing poor utilization of ambulance services for which reasons were not known. There were recent hospital-based studies in Assam and Goa focusing on epidemiology of emergencies and mode of transport used but not on the determinants of extent, utilization and experience of 108 ambulance service. Some others have studied trauma related emergencies and their outcomes with little focus on importance of emergency transportation. There is no study which included all the aspects of pre-hospital emergency care with focus on emergency transportation. Thus, there is a need to understand the extent and determinants of utilization and experience of 108 ambulance services particularly by pregnant women in the community and the benefits of utilizing ambulance service in emergency. There are 09 ambulances run by GVK EMRI under Emergency Health Transport Scheme (108) in Haridwar District, Uttarakhand. Analysis of maternal cases handled by 108 ambulance services revealed Haridwar to be one of the districts having low utilization due to low availability and associated problems. The daily average trips per ambulance per day for transportation of pregnant women in Haridwar District works out to 5.5 to 6 on an average per day which is less as compared with other districts. Being an Intern at NHSRC at Haridwar, this district is selected to study the factors determining the extent, utilization and experience of 108 ambulance services in Haridwar District, Uttarakhand.

Details Of Ambulances All India Vs Uttarakhand (2015-2018)

Ser.	State /UTs	Dial 108	Dial 102/104	Other Patients Transport Vehicle	Total Ambulance Under NHM
(a)	Uttarakhand	139	109	0	248
(b)	All India	7361	8147	6244	21752

A.1 Ambulance Operational under NHM (as on March 2015)

Ser.	State /UTs	Dial 108	Dial 102/104	Other Patients Transport Vehicle	Total Ambulance Under NHM
(a)	Uttarakhand	139	109	0	248
(b)	All India	7661	8304	6199	22164

A.2 Ambulance Operational under NHM (as on March 2016)

Ser.	State /UTs	Dial 108	Dial 102/104	Other Patients Transport Vehicle	Total Ambulance Under NHM
(a)	Uttarakhand	139	109	0	248
(b)	All India	8061	8872	6674	23607

A.3 Ambulance Operational under NHM (as on March 2017)

Ser.	State /UTs	Dial 108	Dial 102/104	Other Patients Transport Vehicle	Total Ambulance Under NHM
(a)	Uttarakhand	139	109	0	248
(a)	All India	8755	9385	5849	23989

A.4 Ambulance Operational under NHM (as on March 2018)

CHAPTER 2 : REVIEW OF LITERATURE

Utilization Of Emergency Transport Services

30. Utilization is the use of an existing health service by people. Utilization of ambulance services among patients attending emergency departments in developed countries according to a couple of studies varied from 15 to 53 percent.[xiv] Utilization of ambulance for children in developing countries varied with type of emergency (6 to 31 %) as per the study conducted by Hyder.[xv]According to a study among patients having acute myocardial infarction in china only 37.3 percent used ambulance to reach health facility.[xvi] In India, utilization of ambulance services is low. There are a couple of studies showing utilization of ambulance to be around 5 to 12 percent in India.[xvii] This evidence suggests a need to understand the determinants of utilization of ambulance services.

Reasons For Utilizing Emergency Transport Services

31. Most frequent specific reasons reported by patients in US for visiting emergency department are abdominal pain, chest pain and fever. Accidents, respiratory, cardiac and obstetric related incidents were the types of incidents mostly addressed by London ambulance service (999).[xviii] Studies have shown that India is facing emergencies related to both communicable diseases and non communicable diseases including trauma.[xix] A recent study on emergency medical epidemiology in Assam revealed that the emergency cases attended by the hospitals include pregnancy related (22.7%), accidents (12.2%), assaults (15.4%) and fever related (8.7%).[xx] Diseases of the circulatory system, ischemic heart disease and stroke were the leading causes of mortality followed by injury and external causes in rural Andhra Pradesh. Trauma and vascular diseases were found to be the major contributors of morbidity and mortality among the patients attending emergency departments in Chennai. A recent study on maternal cases handled by EMRI revealed that 10 percent of pregnant women had antenatal or intra-natal or postpartum haemorrhage and 9 percent had medical emergency medical conditions that complicate pregnancy. Road traffic accidents and the falls from height were the two main causes of head injuries and traumatic brain injuries according to a study in Kashmir. Falls and road traffic injuries were the common causes of emergency among children.[xxi] According to a sample survey in Delhi, the morbidity pattern of injuries showed maximum cases of falls (38%) followed by traffic related injuries, mechanical injuries, burns, and animal-bites. The nature of emergencies for which ambulance services are utilized shows the demand for rapid response emergency services. Availability of emergency transports services can minimise the mortality and morbidity due to emergencies.

Factors Affecting Utilization Of Emergency Transport Services

32. For the success of the services, awareness and utilization of the service among people is very important. It has been revealed that, poor opinion about the functioning of ambulance service in government system was reason for not utilizing the ambulance service in emergency. Studies have shown demographic and socio-economic factors to be the major influencing factors of utilization. Other factors influencing utilization of emergency transport services are severity of illness, knowledge of emergency symptoms, possession of vehicle, cost of transport services and availability and accessibility to transport and communication facilities.[xxii]

Problems Due to Absence of Emergency Transportation

33. Absence of emergency transportation is a barrier for accessing health care. Obstetric related emergencies often take place at home. Emergency transport to reach a nearby health facility is very important. Absence or lack of availability of transportation to reach an appropriate health care facility is one of the major contributors to maternal mortality.[xxiii] This might be due to reasons like absence or inadequacy of roads and inability to pay.

Pre Hospital Care In Emergency

34. Care given in the community and care during transportation before a patient arrives at a formal health care facility is known as pre-hospital care. Key strategies of pre-hospital care include access to rapid transport facility with emergency care equipment and the deployment of personnel trained in basic life saving skills. Prior stabilization and adequate care by skilled personnel during transport reduces morbidity and mortality. Study conducted by Morris et al revealed that, pre-hospital delay for those arriving by ambulance was shorter compared to those who arrived by other means.[xxiv]

Average Ambulance Response Time

35. Studies have shown that ambulance response time in developed countries ranged from 7 to 20 minutes.[xxv] Studies have shown a significant association of ambulance response time with survival. There are very few studies on ambulance response times conducted by EMRI in India. Average response time for 108 ambulance is said to be 15 to 20 minutes in urban areas and 35 to 40 minutes in rural areas.

Relationship Between Use of Ambulance and The Health Outcome

36. It is well established that patient who receives basic care from trained professionals and transported to the nearest healthcare facility within 15-20 minutes of an emergency has the greatest chance of survival. Healthcare outcomes depend on the availability of transport in time, en route care and immediate care on arriving at the hospital. There are studies showing marked variations in health outcome of patients transported by ambulance compared to other means of transport. Receipt of emergency care in emergency departments was faster for those who arrived by an ambulance compared to those who arrived by self transport. In India, there are studies showing association of early arrival at hospital with survival. However, no studies have been done on relationship between use of ambulance in emergency and the survival.

Benefits of Availability of Emergency Transport Services

37. Utilization of health services improve with availability of emergency transport services and transport facilities in general. Use of walkie talkie, transport and quality health services through trained personnel under RESCUER project in Uganda helped reduce maternal mortality rates by 40 percent.[xxvi] . Provision of transport for women to reach health facilities under phase 2 of RCH programme improved the utilization of services, particularly institutional deliveries in Madhya Pradesh, Orissa, Andhra Pradesh and West Bengal.[xxvii]

Emergency Health Transport Scheme, Uttarakhand

38. EMRI under the aegis of NHM recognized the need for a well established ERS because of the continuous rise for the need for quality emergency services. GVK EMRI is providing emergency ambulance services across Uttarakhand state in a unique PPP mode with the Government of Uttarakhand under the aegis of NHM. As on March 2018, GVK EMRI has a fleet of 248 ambulances operating in the districts in the state of Uttarakhand. The 108 ambulance services are operationalised through electronically controlled call-centres run by GVK EMRI on a 24-hour schedule. Emergency ambulance services are provided through a toll free number 108. It is accessible through landline phones as well as mobile phones. The Emergency Health Transport Service (108) was launched with a view to enable people to have easy access to the health care services free of cost in times of emergency, particularly in respect of maternal and neonatal and infant emergencies. As per the data available, around one-fifth (21%) of the emergencies transported are delivery (maternal) related complications and around 65% of the emergency cases are being transported to government hospitals.

39. The transport of pregnant women to an appropriate health facility plays a pivotal role in preventing maternal deaths. In India, state-run call-centre based ambulance systems ('108' and '102'), along with district-level Janani Express and local community-based innovations, provide transport services for pregnant women.[xxviii] The numbers of pregnant women referred and requiring transport for IFT are likely to be large while '108' transports only about 35 000 pregnant women for IFT. A small proportion of pregnant women and obstetric emergencies made use of '108' services.[xxix] There were no large differences in adverse pregnancy outcomes among those transported using '108' ambulance than those not transported.[xxx] The first issue is that of sub-optimal response time and calls not being attended. The standard norm for reaching every urban call is within 20 minutes, every rural call within 40 minutes, and to shift the patient to the nearest hospital within 20 minutes after reaching him/her.[xxxi] However, non-adherence to stipulated response time in delivery of the 108 service has been observed across several states.
Denial of benefits and pay as mentioned in the contract have led to conflicts between the employees and the contracting company across various states. Conditions like maintenance of equipment and vehicles, geographic information system (GIS) tracking, skill up gradation, networking with government hospitals, and generating awareness among the public about 108 services were not fulfilled.

Present Support for Density of Ambulances under NHM

40. Presently, the States are provided support for ambulance services so as to have one ambulance per 01 lakh population and response time of less than 30 minutes. The States which achieve one ambulance per lakh population criteria can be supported to increase ambulance density if number of trips per ambulance/day is greater than 4 or distance travelled per ambulance per day is more than 150 Km.

Density of Ambulances

41. Ideally, all types of ambulances available through the State/NHM/MPLADS/Donated/ NHAI/ MoRTH/ any other source etc. should be pooled together for a comprehensive Emergency Response Ambulance Services. Further, ideally, all these ambulances in the State/UT should be managed through a single Emergency Number based IACC. The IACC should deploy an appropriate emergency response vehicle after proper triaging - i.e. after ascertaining the requirement regarding type of ambulance required – Type A

or B or C or D. Based on the requirements/calls received and the nature of emergency, the utilization of various ambulances may vary. Hence, different States/UTs would require different implementation strategies, based on the current status of ambulance services utilization and vehicle mix.

Time-To-Care Approach

42. Time-to-care approach essentially entails providing access to a functional health facility where patient in emergent circumstances can be provided definitive care - within 1 hour. It is a critical determining factor for deployment of an ambulance – in response to a call, based on the location of various appropriate ambulances / health facilities. Location or point of deployment of ambulance should be determined both by the density of population as well as time-to-care approach, as the case may be. For this purpose, GIS based mapping of various health facilities as well as real time GPS tracking of ambulances is required to be undertaken by the State/UT - both for plain and hilly areas. Further, it is also advisable to have good motor able road connectivity for various habitations for effective emergency response services. The IACC needs to maintain list of such functional facilities which are operational and capable of catering to the needs of essential and emergency care as per operational guidelines.

Response Time

43. In developed countries like the USA, and various European countries etc., the Site Response Time (SRT) for Ambulances is recommended to be less than or equal to 8 minutes. However, keeping in view the Indian scenario with regard to the infrastructure, traffic etc., the SRT for an appropriate ambulance to reach the patient/beneficiary should ideally not be more than 20 minutes. Further, based on the assessment of terrain/population density/road infrastructure etc. the States/UTs may ensure SRT of not more than 30 minutes in rural and sparsely populated areas, while maintaining SRT of not more than 20 minutes in urban areas. The EMT deployed in the ambulance dispatched should have real-time information on operational facilities where s/he should be able to take the patient/beneficiary directly - for the type of medical services required after triaging.

Performance Indicators

44. To ensure an efficient ambulance service network, it is essential to monitor performance and utilization of each ambulance as well as of the IACC. For this, certain performance parameters that may need to be captured and analysed as **per operational guidelines** are as under [xxxii]:-

(a) **General Indicators:** Total no. of ambulances deployed in the State/UT, average population-ambulance ratio, percentage of EMTs trained and deployed.

(b) **Parameters For IACC:** For measuring the performance of an IACC, indicative parameters include number of calls received, no. of calls dropped, average response time per call with minimum and maximum duration of attendance, percentage and no. of dropped calls responded, percentage of EMTs trained and deployed etc.

(c) **Parameters For Ambulance :** No. of trips and total km travelled per day for each ambulance, emergency by type : % of obstetric emergencies, % of new-born emergencies, % of emergencies arising out of road accidents, % of emergencies arising out of other – i.e. non-road accidents etc.

CHAPTER 3: AIM AND OBJECTIVES

Aim

45. To assess Extent, Utilization and Experience of 108 Ambulance Services in Haridwar District, Uttarakhand.

Objectives of Study

46. The objectives of this study are to analyze the following from the perspective of a health administrator:

(a) To assess extent of utilization of 108 Ambulance Services by the pregnant women who have experienced medical emergency between December 2018 to March 2019 in Haridwar District.

(b) To assess the experience of pregnant women or their attendant or family member while utilizing the services of 108 Ambulance Services.

(c) To assess the factors determining and affecting utilization of 108 Ambulance Services.

Expected Outcomes of The Study

47. The results of this study can provide an insight on the utilization and experience of Emergency Health Services (EMS) in the district of Haridwar, Uttarakhand with particular reference to pregnant women in the district and the health outcomes as a result of the emergency care provided at health facilities to the service provider (EMRI), Government of Uttarakhand, health professionals, policy makers and the community at large. Information on factors determining the extent and utilization of emergency transport services including the experience of the patients would help in improving the quality and quantity of 108 ambulance services in Uttarakhand. The findings of the study would lead to overall improvement of health system. The findings may help improve the utilization of 108 ambulance services in all the states which have implemented 108 or other emergency transport services either in PPP mode or otherwise as the general emergency transport services setting throughout India is more or less the same.

CHAPTER 4: METHODOLOGY

48. **Methodology of Data Collection.**

(a) **Study Area**. The study was carried-out in District Female Hospital, Haridwar District, Uttarakhand.

(b) **Study Design**. Cross sectional Descriptive study design to assess patient experience and factors affecting service provision of 108 ambulance. Data collection was done during a period of three months.

(c) **Study Period**. 01 Feb to 30 Apr 2019 in three phases. In first phase framework was understood and study approval was taken. In second phase tools were decided. In third phase data analysis was done. Data collection was done simultaneously during a period of three months. Reference period of respondents is from December 2018 to March 2019.

(d) **Study Population**. The study was conducted amongst pregnant women, their attendant/ Family members who visited public health facilities (District Female Hospital) Haridwar by ambulance, ambulance drivers, EMT and ambulance call centre operator.

(e) **Sample Size**.

Ser.	Objectives	Sample Size
a.	• To assess extent of utilization of 108 Ambulance Services by the pregnant women who have experienced medical emergency between December 2018 to March 2019 in Haridwar District.	Sample size - 93 Respondents - 60
b.	• To assess the experience of pregnant women or their attendant or family member while utilizing the services of 108 Ambulance Services.	Sample size - 93 Respondents - 60
c.	• To assess the factors determining and affecting utilization of 108 Ambulance Services.	Sample size - 15 Respondents - 15

A.5 Sample Size

(f) **Study Tool**.

Ser.	Objectives	Study Population	Tools and Techniques
a.	• To assess extent of utilization of 108 Ambulance Services by the pregnant women who have experienced medical emergency between December 2018 to March 2019 in Haridwar District.	• Pregnant women or their attendant/Family member who visited District Female Hospital Haridwar by 108 Ambulance	• Ambulance service questionnaire • Telephonic Interview
b.	• To assess the experience of pregnant women or their attendant or family member while utilizing the services of 108 Ambulance Services.	• Pregnant women or their attendant/Family member who visited District Female Hospital Haridwar by 108 Ambulance	• Ambulance service questionnaire • Telephonic Interview
c.	• To assess the factors determining and affecting utilization of 108 Ambulance Services.	• Driver of Ambulance, EMT, 108 Ambulance call centre operator.	• Ambulance service questionnaire • Face to Face Interview

A.6 Study Tool

(g) **Sampling Technique**. Non-Probability Purposive Sampling Technique was used.

49. **Procedure**. To have an initial understanding about the 108 ambulance services operating in Haridwar District, a checklist was prepared after going through the Operational Guidelines for Road Ambulances under the National Ambulance Services for reference purpose. Details of respondents was collected from District Female Hospital, Haridwar for the aforesaid period reference of Dec 2018 to Mar 2019. Semi structured Questionnaire was prepared and thereafter respondents were contacted to elicit their responses.

50. **Ethical Considerations:** Ethical clearance was obtained from the Institutional Ethics Committee of IIHMR, Delhi. Written and Verbal informed consent was taken from all the participants as applicable before conducting the interview. Confidentiality of the information was assured and anonymity was maintained by delinking the information that identifies the personnel. Official written permission was taken from the Advisor, PHA, NHSRC, Haridwar, Government of Uttarakhand and MS, District Female Hospital, Haridwar to carry out the ibid study.

CHAPTER 5: OBSERVATIONS AND ANALYSIS

Analysis

51. All the data were checked and entered in SPSS (Statistical Package for the Social Sciences) version 22. After entering data Descriptive statistic (Frequency) tool was applied to find out the frequency of responses.

Findings

52. **Out of 93 attendants, patients, family members who used ambulance service (Respondents were 60). Telephonic interview was carried out after verbal consent from them and following parameters have been chosen to assess extent utilization and experience of pregnant women or their attendant or family member in use of 108 ambulance service.**

Awareness, Knowledge And Perception About 108 Ambulance Services

53. Most of the respondents (50) said that 108 ambulance comes to their mind at the time of emergency. (58) respondents heard about the ambulance service but unfortunately only (46) of them were aware of the number to be dialled in emergency. It is well known among the respondents that the 108 ambulance services are provided by the state government at free of charge and the source of information about the service was mostly the neighbours /friends and relatives.

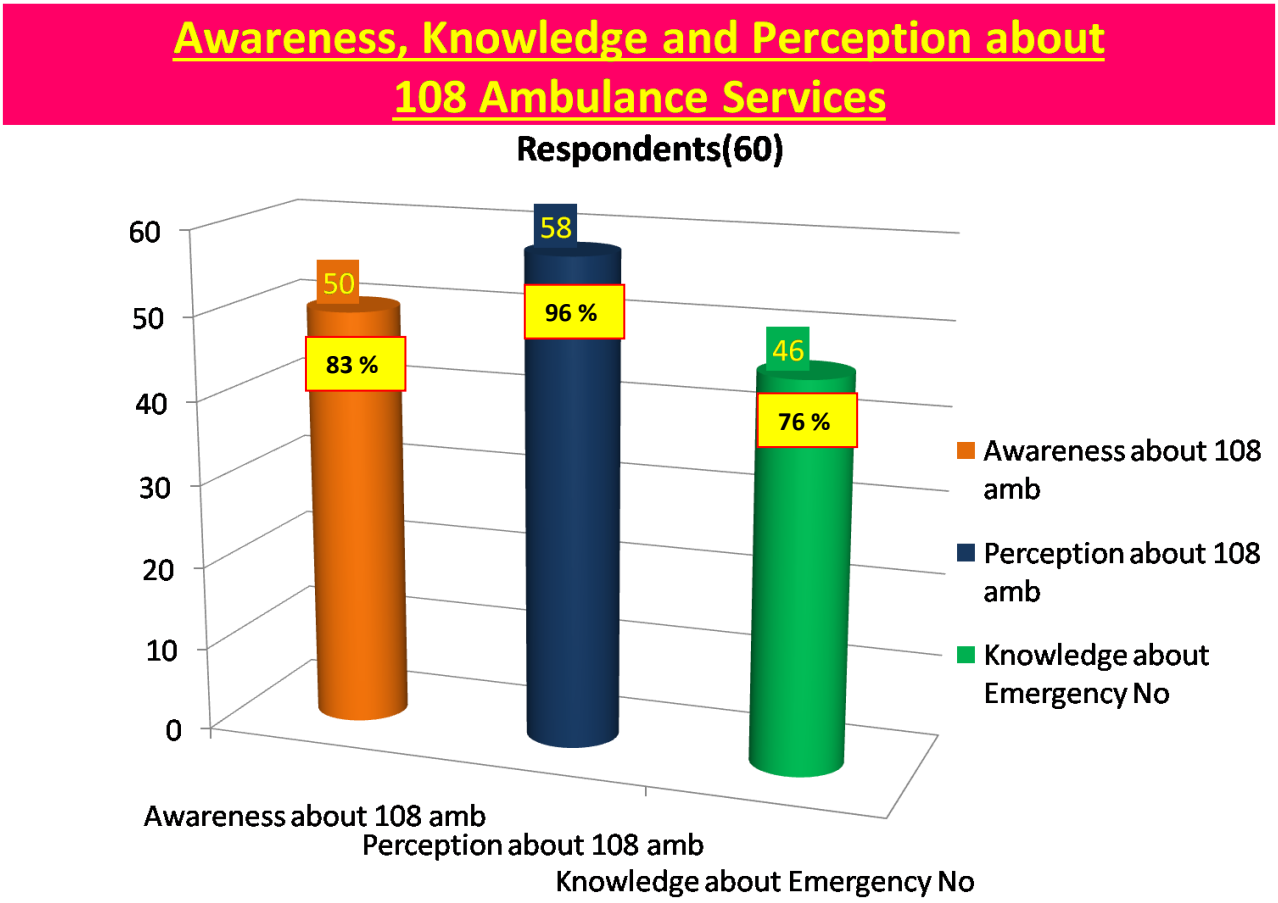


Fig 1.1 : Awareness, Knowledge & Perception about 108 Ambulance Services

54. **Contacting other Organisations or Service for Help before the Ambulance Service was called by the Respondents**

(a) Out of 60 Respondents:-

(i) 10 said yes, they contacted other organizations / services.
(ii) 50 said No they only contacted 108 ambulance service.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	10	12	17	17
	No	50	59	83	100
	Total	60	71	100	
Missing System		25	29		
Total		85	100		

A.7 Contacting other Organisations or Service for Help before the Ambulance Service was called by the Respondents

55. **Location of Patient/ Attendant/Family Member when the Ambulance Service was Called**

(a) Out of 60 Respondents:-

(i) 15 said Home.
(ii) 35 said Patients Home.
(iii) 05 In a Public place.
(iv) 05 Can't remember.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Home	15	18	25	25
	Patients Home	35	41	59	84
	Public Place	05	6	8	92
	Can't Remember	05	6	8	100
	Total	60	71	100	
Missing System		25	29		
Total		85	100		

A.8 Location of Patient/Attendant/Family Member when Ambulance was called

56. **Attitude of the Ambulance Control Room Operator in terms of Reassurance to the Respondents**

(a) Out of 60 Respondents:-

(i) 40 said yes, the operator at ambulance control room was reassuring.
(ii) 15 said No the operator at ambulance control room was not reassuring.
(iii) 05 said can't remember.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	40	47	67	67
	No	15	18	25	92
	Can't remember	05	6	8	100
	Total	60	71	100	
Missing System		25	29		
Total		85	100		

A.9 Attitude of Ambulance Control Room Operator

57. **Aspect of the Ambulance Control Room Operator Passing the Respondents Call on to a Telephone Advisor to Assess their Situation or Give them Advice over the Phone**

(a) Out of 60 Respondents:-

(i) 40 said Yes.
(ii) 12 said No.
(iii) 08 Can't remember.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	40	47	67	67
	No	12	15	20	87
	Can't Remember	08	9	13	100
	Total	60	71	100	
Missing System		25	29		
Total		85	100		

A.10 Ambulance control room operator passing respondents call on to a telephone advisor

58. **Aspect of Assistance Provided by the Ambulance Service Staff to Help the Respondent (Pregnant Women/ Attendant/ Family Member)**

(a) Out of 60 Respondents:-

(i) 38 said Yes.
(ii) 10 said No.
(iii) 12 Can't remember

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	38	45	63	63
	No	10	12	17	80
	Can't Remember	12	14	20	100
	Total	60		100	
Missing System		25	29		
Total		85	100		

A.11 Assistance provided by ambulance service staff to help respondents

59. **Information on Duration of Waiting Period before the Ambulance Service Arrives**

(a) Out of 60 Respondents:-

(i) 32 said Yes, but the wait was short.
(ii) 08 said Yes, and they had to wait about as long as they were told
(iii) 08 said Yes, but the wait was longer
(v) 07 said No, they were not told
(vi) 05 said Can't Remember

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes but wait was short	32	39	54	54
	Yes waited as long as they were told	08	9	13	67
	Yes but the wait was longer	08	9	13	80
	No they were not told	07	8	12	92
	Can't Remember	05	6	8	100
	Total	60	71	100	
Missing System		25	29		
Total		85	100		

A.12 Information on duration of waiting period before ambulance arrives

60. **Advice on Telephone to the Respondents (Pregnant Women/ Attendant/ Family Member)**

(a) Out of 60 Respondents

(h) 4 said yes, they get enough advice

(ii) 56 said no they did not get enough advice about what to do

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	4	5	7	7
	No	56	66	93	100
	Total	60	71	100	
Missing System		25	29		
Total		85	100		

A.13 Advice on telephone to the respondents

61. **Time Taken by Ambulance to Reach the Respondents**

(a) Out of 60 respondents

(i) 28 response were that ambulance took more than 4 0mins to reach.

(ii) 12 response were that ambulance took 40 mins to reach.

(iii) 10 response were that ambulance took 30 mins to reach.

(iv) 10 response were that ambulance took 20 mins to reach.

		Frequency	Percent	Valid Percent	Cumulative percent
Valid	20 mins	10	12	17	17
	30 mins	10	12	17	34
	40 mins	12	14	20	54
	More than 40 mins	28	33	46	100
	Total	60	71	100	
Missing System		25	29		
Total		85	100		

A.14 Time taken by the ambulance to reach the respondents

59. **Measures taken by Ambulance Staff to help Control Patient Pain**

(a) Out of 60 respondents

(i) 22 responses were Yes, staff did everything to help control patient pain

(ii) 38 responses were No

		Frequency	Percent	Valid Percent	Cumulative percent
Valid	Yes	22	26	37	37
	No	38	44	63	100
	Total	60	71	100	
Missing System		25	29		
Total		85	100		

A.15 Measures taken by ambulance staff to help control patient pain

60. **Cleanliness of Ambulance**

(a) Out of 60 Respondents

(i) 40 responses were fairly clean

(ii) 10 responses was not very clean

(iii) 0 3 responses were not at all clean

(iv) Only 07 responses were very clean

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Clean	7	8	12	12
	Fairly Clean	40	47	66	78
	Not very clean	10	12	17	95
	Not at all clean	3	4	5.0	100
	Total	60	71	100	
Missing System		25	29		
Total		85	100		

A.16 Cleanliness of ambulance

61. **Overall Care Received**

(a) Out of 60
  (i) 01 response was care was very good
  (ii) 14 response was care was good
  (iii) 25 said it was fair
  (iv) 19 said it was poor
  (v) 01 said it was very poor

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very good	1	1	2	2
	Good	14	16	23	25
	Fair	25	31	41	66
	Poor	19	22	32	98
	Very poor	1	1	2	100.0
	Total	60	71	100	
Missing System		25	29		
Total		85	100.0		

A.17 Overall Care received

62. **Interviews were taken of 15 Respondents to include(05 Ambulance driver, 05 EMT and 05 Call centre operators) in Haridwar with tool (Questionnaire) and following parameters were chosen to assess factor affecting the ambulance services.**

To document factors affecting the Ambulance Services (Responses by Call Centre Operator)

63. **Time Taken to Answer a Call**

(a) Out of 05 Call Centre Operators

(i) 01 response was 20 sec

(ii) 02 response was 28 sec

(iii) 02 response was 36 sec

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Upto 20 Sec	1	15	20	20
	Upto 28 sec	2	28	40	60
	Upto 36 sec	2	28	40	100
	More than 36 sec	0	0	0	100
	Total	5	71	100	
Missing System		2	29		
Total		7	100		

A.18 Time taken to answer a call

64. **Mode of Despatch of Ambulance**

(a) Out of 05 Call Centre Operators

(i) 03 response was as per case

(ii) 02 response was randomly

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Despatch as per case	3	43	60	60
	Despatch randomly	2	28	40	100
	Total	5	71	100	
Missing System		2	29		
Total		7	100		

A.19 Mode of despatch of ambulance

65. **Availability of Telephone Advisors**

(a) Out of 05 Call Centre Operators

(i) 04 response was as yes
(ii) 01 response was No

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	4	56	80	80
	No	1	15	20	100
	Total	5	71	100	
Missing System		2	29		
Total		7	100		

A.20 Availability of telephone advisors

66. **Type of Information provided till the ambulance arrives**

(a) Out of 05 Call Centre Operators

(i) 02 response was as per how to take care of patient
(ii) 02 response was as per how much time the ambulance will take
(iii) 01 response was both
(iv) 0 response as none

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	As per how to take care of the patient	2	28	40	40
	As per how much time ambulance will take	2	28	40	80
	Both	1	15	20	100
	None	0	0	0	
	Total	5	71	100	100
Missing System		2	29		
Total		7	100		

A.21 Type of information provided till ambulance arrives

67. **Use of Real Time GPS Tracking**

(a) Out of 05 Call Centre Operators
  (i) 03 response was Yes
  (ii) 02 response was No

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	3	43	60	60
	No	2	28	40	100
	Total	5	71	100	
Missing System		2	29		
Total		7	100		

A.22 Use of real time GPS

68. **Keeping Records of Patients**

(a) Out of 05 Call Centre Operators
  (i) 04 response was Yes
  (ii) 01 response was No

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	4	57	80	80
	No	1	14	20	100
	Total	5	71	100	
Missing System		2	29		
Total		7	100		

A.23 Keeping records of patients

69. **Keeping Records of Driver and EMT**

(a) Out of 05 Call Centre Operators

(i) 05 response was Yes

(ii) 0 response was No

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	5	100	100	100
	No	0	0	0	0
	Total	5	0	100	
Missing System		0	0		
Total		5	100		

A.24 Keeping records of drivers and EMT

70. **Shortage of Ambulance**

(a) Out of 05 Call Centre Operators

(i) 05 response was Yes there is a shortage of ambulance

(ii) 0 response was No

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Yes	5	100.0	100.0	100.0

A.25 Shortage of ambulance

To document factors affecting the ambulance services (Responses by EMT)

71. **Trained Or Qualified To Handle Conditions Like Pregnancy Or Post Natal Care**

(a) Out of 05 Call Centre Operators

(i) 04 response was Yes

(ii) 0 1 response was No

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	4	57	80	80
	No	1	14	20	100
	Total	5	71	100	
Missing System		2	29		
Total		7	100		

A.26 Trained Or Qualified To Handle Conditions Like Pregnancy Or Post Natal Care

72. **Procedure Of Getting An Ambulance**

(a) Out of 05 Call Centre Operators

(i) 04 response was As per training
(ii) 0 1 response was randomly

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	As per Training	4	57	80	80
	Randomly	1	14	20	100
	Total	5	71	100	
Missing System		2	29		
Total		7	100		

A.27.Procedure of calling an ambulance

73. **Knowledge of Actions Required to be Taken in Case of Accidental Exposure With Infected Patients**

(a) Out of 05 Call Centre Operators

(i) 03 response was yes they are aware of the procedures

(ii) 02 response was they are not aware

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Aware of procedures	3	43	60	60
	Not Aware	2	28	40	100
	Total	5	71	100	
Missing System		2	29		
Total		7	100		

A.28 Knowledge of actions required

74. **Action of Checking the Checklist for Inspecting Medical Equipment Before or After Their Daily Shift**

(a) Out of 05 Call Centre Operators

(i) 0 response was yes

(ii) 0 response was No

(iii) 05 response was sometimes

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Sometimes	5	100.0	100.0	100.0

A.29. Action of checking the checklist for inspecting med equipment after daily shift

75. **Action of Checking for Cleaning of Equipment Care Area of The Ambulance**

(a) Out of 05 Call Centre Operators

(i) 04 response was yes

(ii) 0 response was No

(iii) 0 response was sometimes

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	4	57	80	80
	No	1	14	20	100
	Sometimes	0	0	0	100
Missing System		2	29		
Total		7	100		

A.30 Action of checking for cleaning of equipment care area of ambulance

79. **Action of Maintaining Record of Patient**

(a) Out of 05 Call Centre Operators

(i) 04 response was yes
(ii) 01 response was No
(iii) 0 response was sometimes

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	4	57	80	80
	No	1	14	20	100
	Sometimes	0	0	0	100
	Total	5	71	100	
Missing System		2	29		
Total		7	100		

A.31 Action of maintaining record of patient

To Document Factors Affecting the Ambulance Services (Response By Driver)

80. **Training or Certification by the Drivers**

(a) Out of 05 Call Centre Operators

(i) 01 response was CPR
(ii) 01 response was First Aid
(iii) 03 response was Both
(iv) 00 response was none

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	CPR	1	14	20	20
	First Aid	1	14	20	40
	Both	3	43	60	100
	Total	5	71	100	
Missing System		2	29		
Total		7	100		

A.32 Training or certification by the drivers

90**. Availability of GPS Tracker in The Ambulance**

(a) Out of 05 Call Centre Operators

(i) 04 response was Yes

(ii) 01 response was No

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	4	57	80	80
	No	1	14	20	100
	Total	5	71	100	
Missing System		2	29		
Total		7	100		

A.33 availability of GPS tracker in the ambulance

91. **Action of Checking Ambulance for Air, Fuel & Oil**

(a) Out of 05 Call Centre Operators

(i) 04 Yes regularly

(ii) 01 response was Yes sometimes

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	4	57	80	80
	Sometimes	1	14	20	100
	No	0	0	0	100
	Total	5	71	100	
Missing System		2	29		
Total		7	100		

A.34 Action of checking ambulance for air, fuel & oil

92. **Action of Checking Ambulance for Cleanliness**

(a) Out of 05 Call Centre Operators

(i) 04 Yes after every use

(ii) 01 response was Yes sometimes

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	4	57	80	80
	Sometimes	1	14	20	100
	No	0	0	0	100
	Total	5	71	100	
Missing System		2	29		
Total		7	100		

A.35 Action of checking ambulance for cleanliness

93**. Time it Takes to Reach / Response Time**

(a) Out of 05 Call Centre Operators

(i) 01 response was 20 mins

(ii) 01 response was 30 mins

(iii) 03 response was 40 mins

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Response time 20 mins	1	14	20	20
	Response time 30 mins	1	14	20	40
	Response time 40 mins	3	43	60	100
	Response time more than 40 mins	0	0	0	100
	Total	5	71	100	
Missing System		2	29		
Total		7	100		

A.36 Time it takes to reach/ response time

94. **No of Trips Per Ambulance Per Day**

(a) Out of 05 Call Centre Operators

(i) 0 response was less than 03 trips per day

(ii) 0 response was between 3 to 4 trips per day

(iii) 05 response was more than 04 trips per day

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less than 03 trips per day	0	0	0	0
	3-4 Trips per day	0	0	0	0
	More than 04 Trips per day	5	100	100	100
	Total	5	100	100	
Missing System		0	0		
Total		5	100		

A.37. No of trips per ambulance per day

95. **Distance Travelled Per Ambulance Per Day**

(a) Out of 05 Call Centre Operators

(i) 0 response was less than 80 km per day

(ii) 0 response was between 80 – 120 km per day

(iii) 05 response was more than 120 km per day

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less than 80 km per day	0	0	0	0
	Between 80 – 120 km per day	0	0	0	0
	More than 120 km per day	5	100	5	100
Missing System		0	0		
Total		5	100		

A.38 Distance travelled per ambulance per day

96. **Maintenance of Checklist of The Ambulance**

(a) Out of 05 Call Centre Operators

(i) 04 response was Yes

(ii) 0 response was No

(iii) 01 response was sometimes

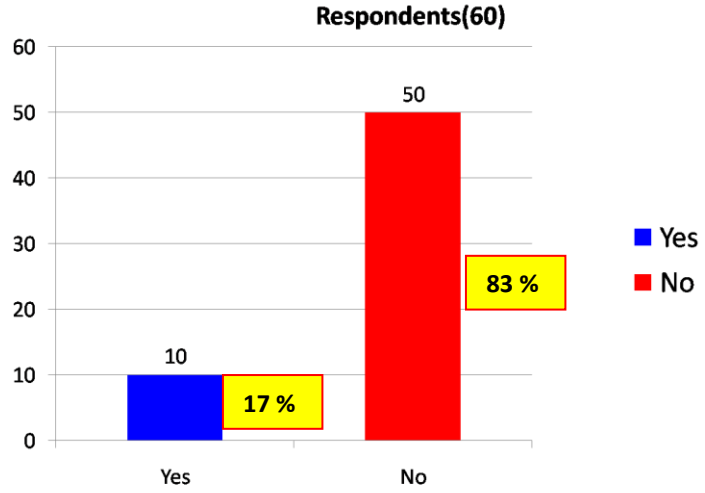
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	4	57	80	80
	Sometimes	1	14	20	100
	No	0	0	0	100
	Total	5	71	100	
Missing System		2	29		
Total		7	100		

A.39 Maintenance of checklist of the ambulance

Analysis and Interpretation

97. **60 Respondents : Attendants, Patients, Family Members Who Used Ambulance Service**

Contacting other Organisations or Service for Help before the Ambulance Service was called by The Respondents

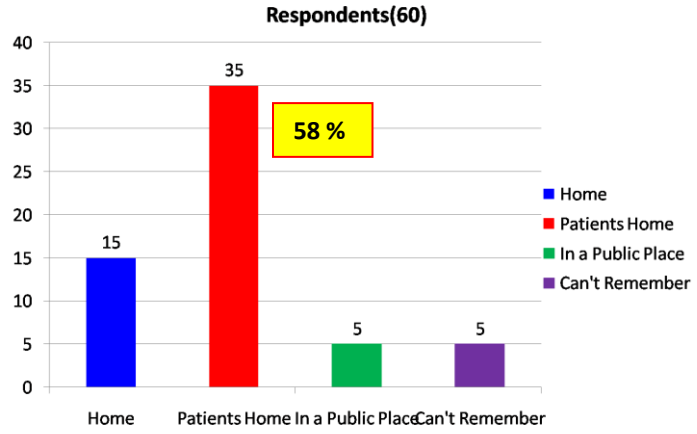


-Max respondents directly contacted the 108 ambulance service (83%)

-This reflects on the awareness and knowledge about the services in Haridwar District

Fig 1.2 Contacting other organizations before ambulance service was called by the respondents

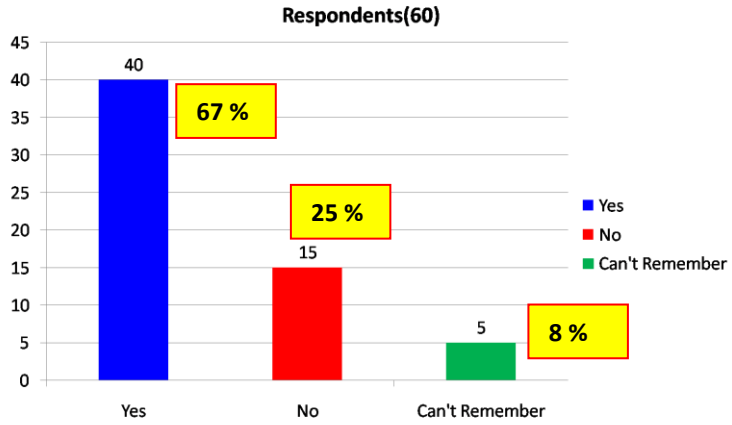
Location Of Patient/ Attendant/Family Member When the Ambulance Service was Called



-58 % respondents location was the patients home when ambulance service was called
-Few were in public place and few can't remember

Fig 1.3 Location of patient/attendant/family member when the ambulance service was called

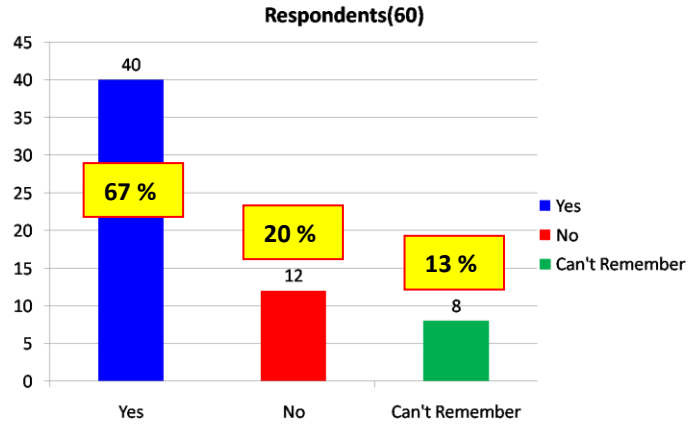
Attitude of The Ambulance Control Room Operator in Terms of Reassurance to the Respondents



-67% respondents said yes that ambulance control room operator was reassuring to the respondents
- Indicates that call operators are courteous and well trained in their duties

Fig 1.4 Attitude of ambulance control room operator

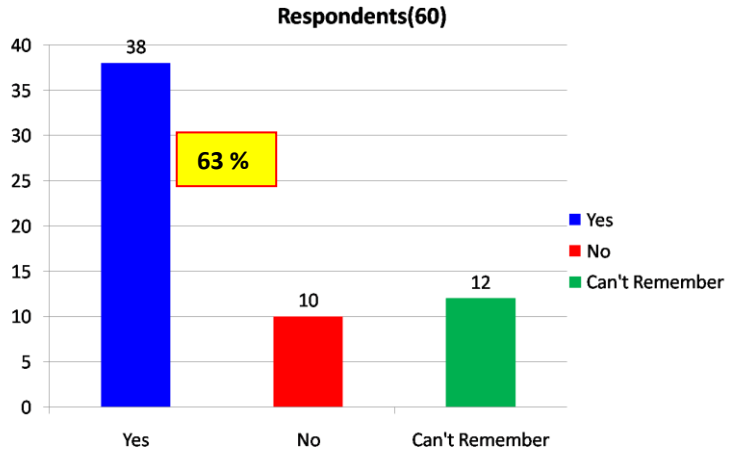
Aspect of the Ambulance Control Room Operator Passing the Respondents Call on to a Telephone Advisor to Assess their Situation or Give them Advice over the Phone



-67% respondents said yes their call was passed on to a telephone advisor to assess their situation and give advice
- Indicates that coordination exists between the control room operators and telephone advisors

Fig 1.5 Ambulance control room operator passing to telephone advisor for advice

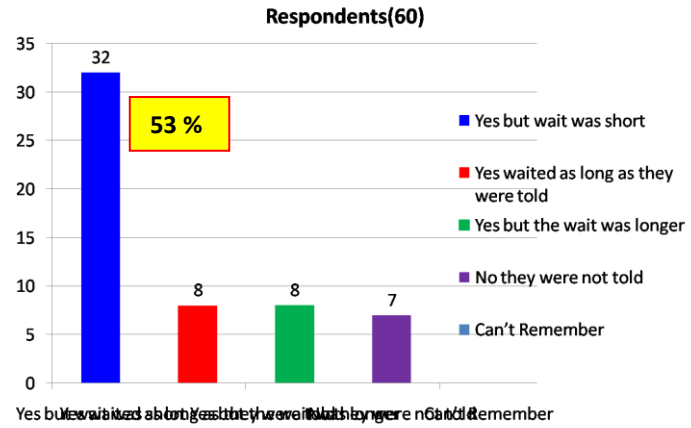
Aspect of Assistance Provided by the Ambulance Service Staff to Help the Respondent (Pregnant Women/ Attendant/ Family Member)



-63% respondents were happy regarding the assistance provided by the ambulance service staff
- Remaining others need to be further trained and goaded to change their attitude

Fig 1.6 Assistance provided by ambulance staff to help respondents

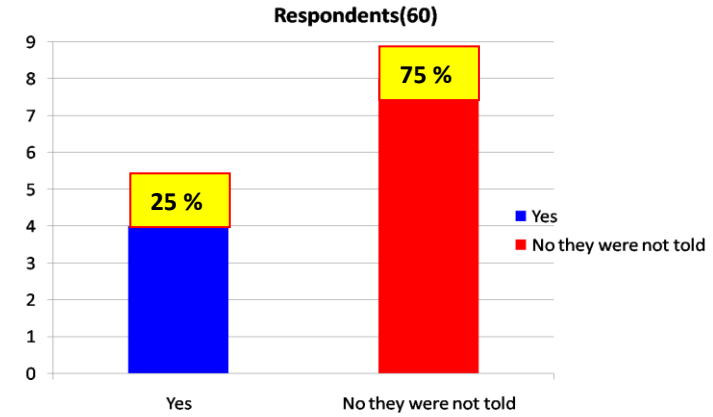
Information to the Respondent on Duration of Waiting Period before the Ambulance Service Arrives



-53% respondents said yes but the wait was short
- This aspect needs to be further refined to cut down the waiting duration period further

Fig 1.7 Information to respondents on duration of waiting period before ambulance service arrives

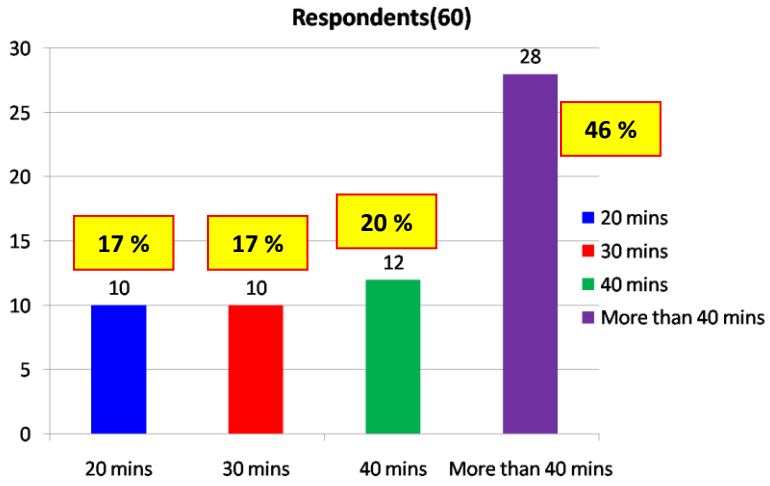
Advice on Telephone to the Respondents (Pregnant Women/ Attendant/ Family Member)



-75% respondents said No they were not given any advice on telephone
- This aspect merits immediate attention of the authorities concerned to obviate any lapses

Fig 1.8 Advice on telephone to the respondents

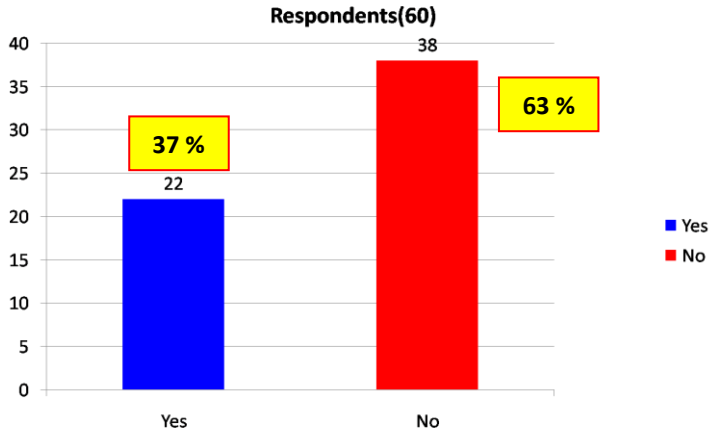
Time Taken by Ambulance to Reach the Respondents



-46 % (almost half) occasions of more than 40 mins was taken by ambulance to reach respondents
- The site response time (SRT) for ambulance to reach patient/beneficiary should ideally not be more than 20 mins.

Fig 1.9 Time taken by ambulance to reach respondents

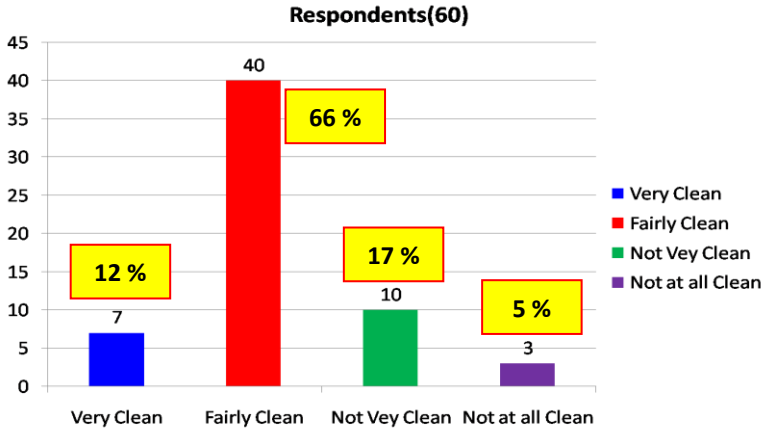
Measures taken by Ambulance Staff to help Control Patient Pain



- 63% respondents said No
-The actual work of an ambulance driver is much more, like for eg to assist in medical procedures and carrying victim to ambulance etc
- EMT duty is to provide medical aid, to stabilize patients condition, shift patient to ambulance with the help of driver

Fig 1.10 Measures by ambulance staff to help control patient pain

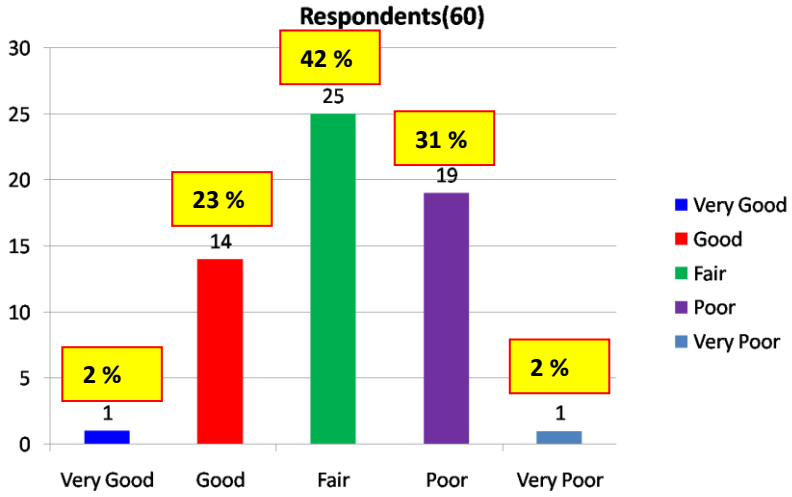
Cleanliness of Ambulance



- 66% respondents said ambulances were fairly clean
- It is the duty of ambulance driver to keep ambulance clean from both inside and outside

Fig 1.11 Cleanliness of the ambulance

Overall Care Received

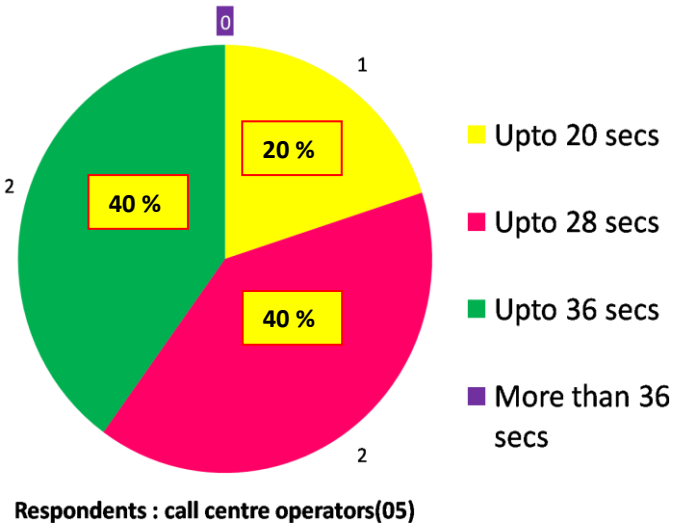


- Max respondents response was fair (42%) & poor (31%)
- Only 23% was good
- All the above mentioned factors are responsible to ensure that overall care received by the respondents improve
- Efforts should be made by all concerned to ensure the % of good category increases

Fig 1.12 Overall care received

98. **Factors Affecting The Ambulance Services (Responses By Call Centre Operator)**

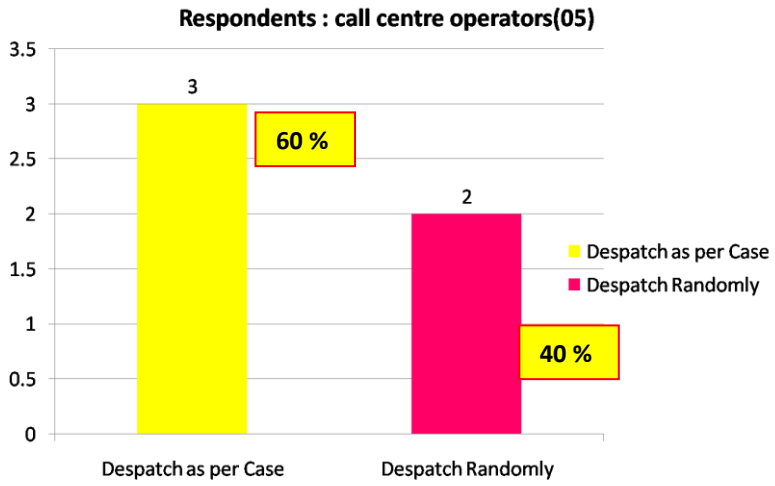
Time Taken to Answer a Call



- 40% call operators took upto 36 secs to answer the call
- Only 20 % took upto 20 secs
- This aspect can be improved further by proper training in handling calls and increase promptness

Fig 1.13 Factors affecting ambulance services (response by call operators)

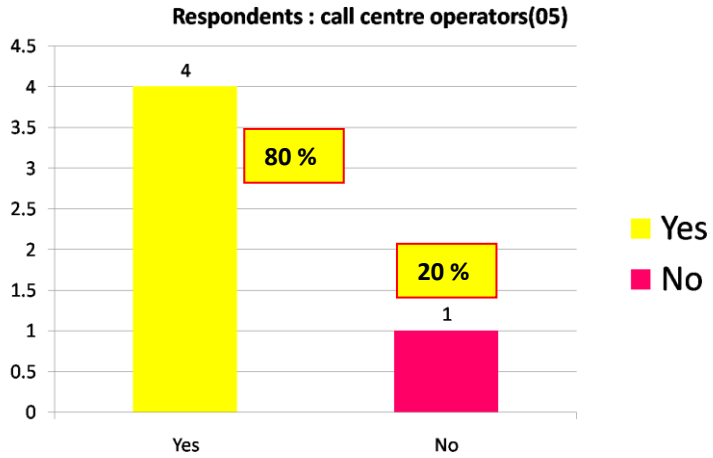
Mode of Despatch of Ambulance



-60% call operators despatched the ambulance as per case
- With increased awareness this can further improve

Fig 1.14 Mode of despatch of ambulance

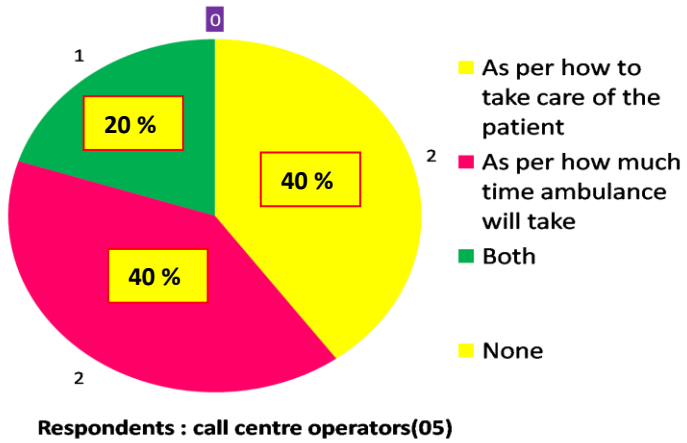
Availability of Telephone Advisors



-80% availability of telephone advisors was observed
- A healthy % figure keeping in mind leave/ sickness/absenteeism of the telephone advisors

Fig 1.15 Availability of telephone advisors

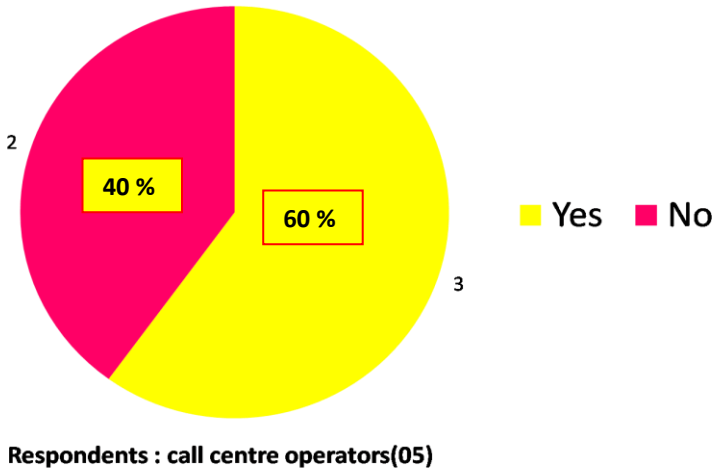
Type of Information Provided till The Ambulance Arrives



- 20 % provided both type of information to include how to take care of the patient as also how much time ambulance will take
- This aspect merits attention and further improvement

Fig 1.16 Type of information provided till ambulance arrives

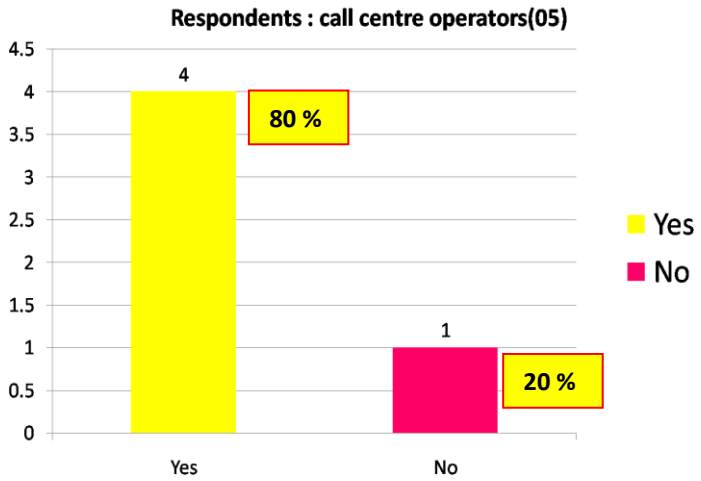
Use of Real Time GPS Tracking



-60% said that use of real time GPS tracking was available
- Serviceability state of GPS is important and needs regular maintenance

Fig 1.17 Use of real time GPS tracking

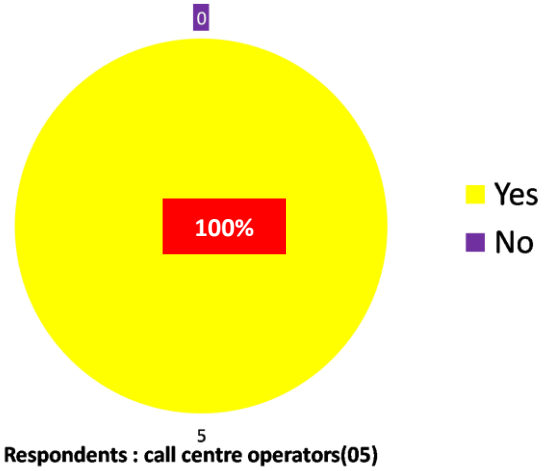
Keeping Records of Patients



-80% call centre operators were keeping records of patients
- Fairly encouraging figures

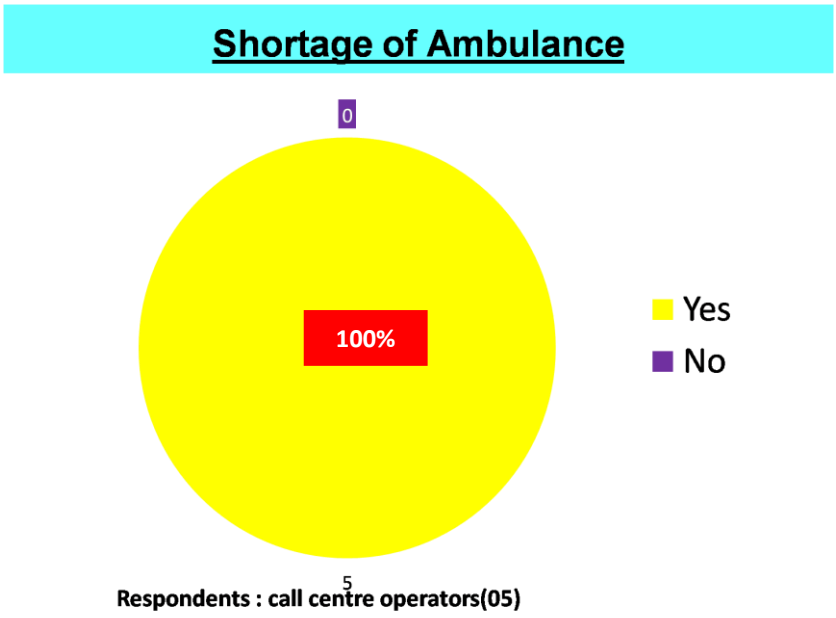
Fig 1.18 Keeping records of patients

Keeping Records of Driver and EMT



-100 % call centre operators were keeping records of driver and EMT
- A very important aspect since they deal with the respondents directly and hence their record keeping is utmost important

Fig 1.19 Keeping records of drivers and EMT



-100% respondents said there is shortage of ambulances
- As per guideline there should be 01 Ambulance per 01 lakh population
- But Haridwar District has only 09 ambulance for 18 lakh population due to which call centre operator sometimes refuses for providing ambulance to caller because of shortage of ambulance

Fig 1.20 Shortage of ambulance

GVK EMRI 108 Emergency Services in Haridwar District

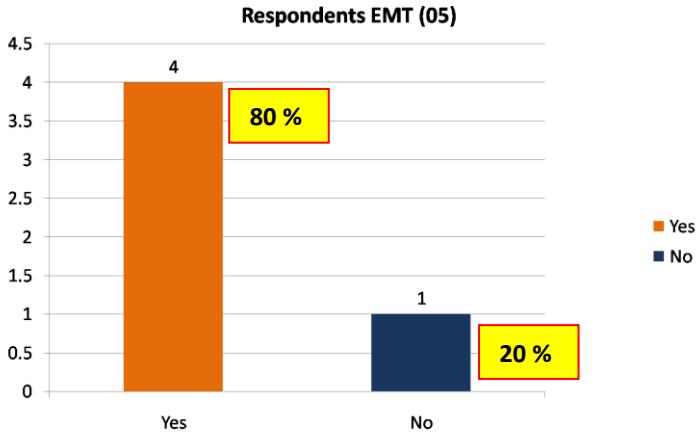
(Haridwar District Summary)

Number of Ambulances	
UK07GA2329.	ROORKEE
UK07GA2313.	HARIDWAR CCR
UK07GA2338.	LAKSAR
UK07GA2369.	JWALAPUR
UK07GA2304.	MANGLORE
UK07GA0538.	PATANJALI
UK07GA0602.	SIDKUL
UK07GA0063.	KHANPUR
UK07GA0164.	BHAGWANPUR

A.40 GVK EMRI 108 Emergency Services in Haridwar District

99. **To Document Factors Affecting The Ambulance Services (Responses By EMT)**

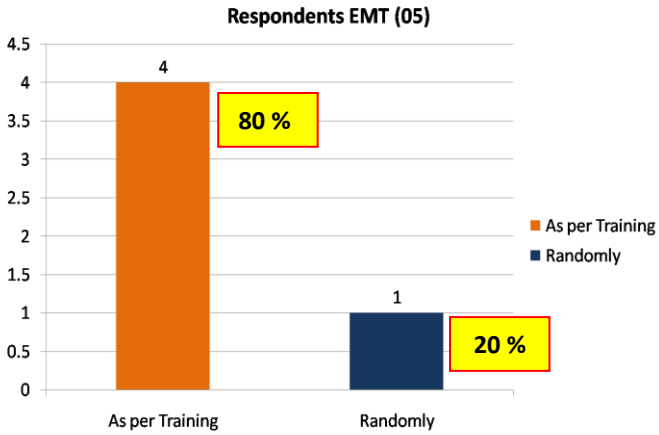
Trained Or Qualified To Handle Conditions Like Pregnancy or Post Natal Care



-80% respondents said that EMT were trained to handle conditions like pregnancy or post natal care
- Vey important aspect to ensure the satisfaction of respondents and their condition during transport

Fig 1.21 Trained or qualified to handle pregnancy conditions

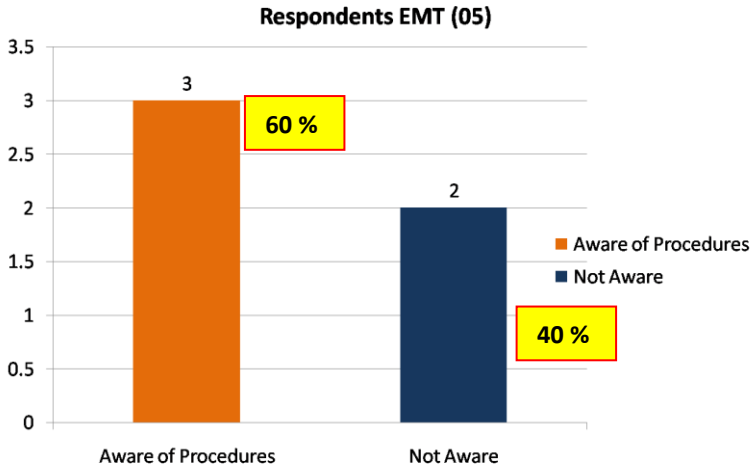
Procedure of Getting an Ambulance



-80% respondents said that EMTs were trained in procedures of getting an ambulance

Fig 1.22 Procedure of getting an ambulance

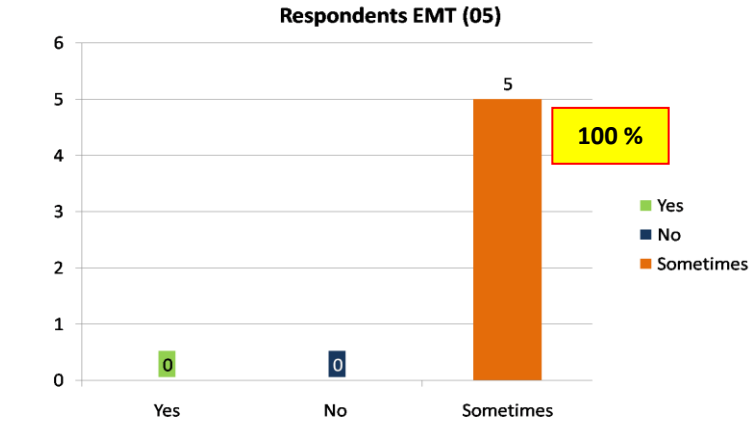
Knowledge of Actions Required to be Taken In Case of Accidental Exposure with Infected Patients



-60% respondents said that EMTs were well aware of the procedures
- There can be no compromise to respondents life due to consequent accidental exposure with infected patients

Fig 1.23 Knowledge of actions required to be taken

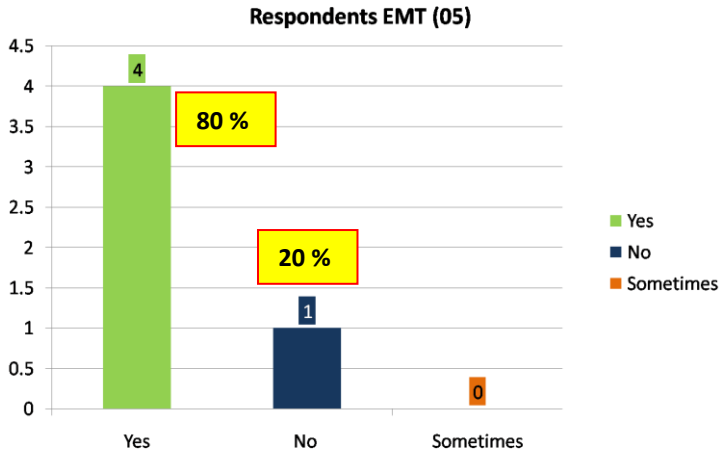
Action of Checking the Checklist for Inspecting Medical Equipment Before or After Their Daily Shift



-All (100%) the respondents mentioned that they check only sometimes
-Checklist is there for inspecting the medical equipment
- On duty ambulance EMT have to check the functioning of the equipment before his /her daily shift.

Fig 1.24 Action of checking the checklist for inspecting med equipment before/after shifts

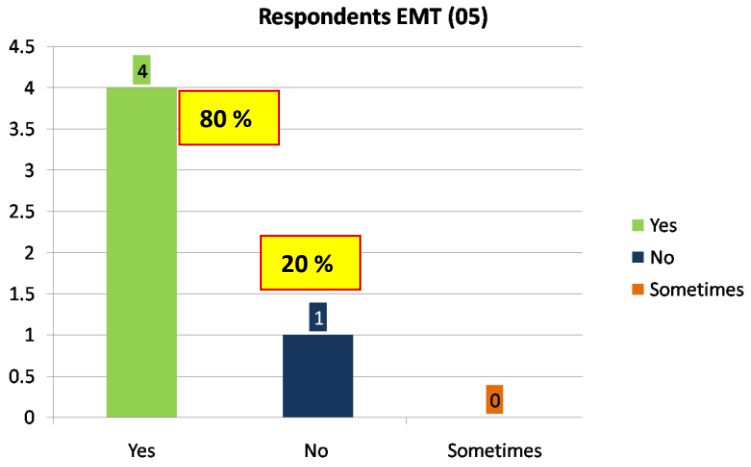
Action of Checking for Cleaning of Equipment Care Area of the Ambulance



-80% EMT took action for cleaning of equipment care area of the ambulance
-Fairly good score

Fig 1.25 Action of checking cleaning of equipment area of ambulance

Action of Maintaining Record of Patient

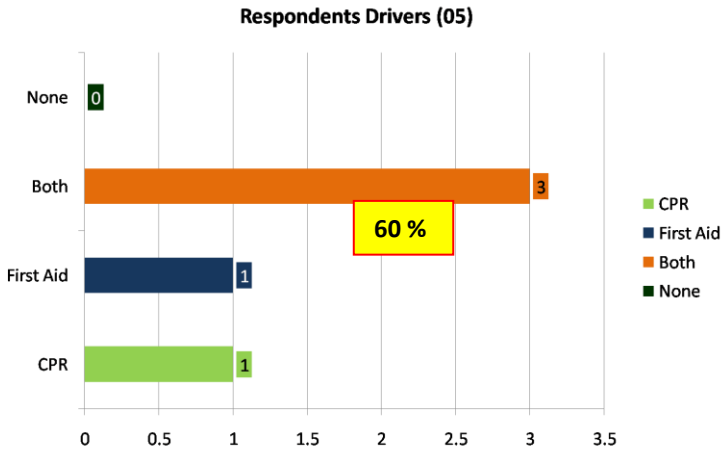


- 80% EMT took action for maintaining record of patients
- A very important aspect of subsequent follow through procedure
- Fairly good score

Fig 1.26 Action of maintaining record of patient

100. **To Document Factors Affecting The Ambulance Services (Responses By Drivers)**

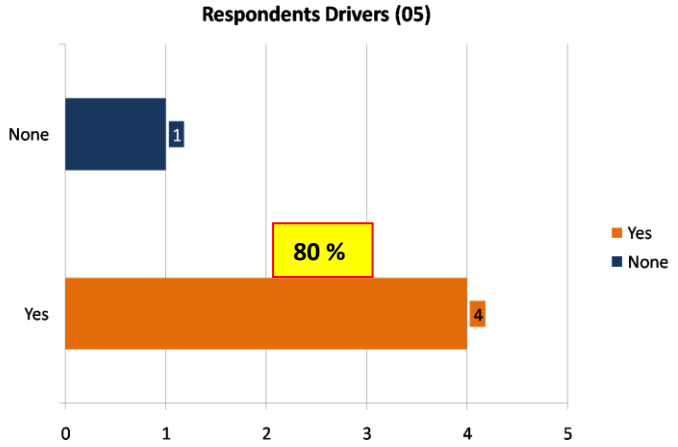
Training or Certification by the Drivers



-60% respondents were trained or certified in first aid and CPR
- Being Emergency Services this is very important to assist during critical situations

Fig 1.27 Training or certification by the drivers

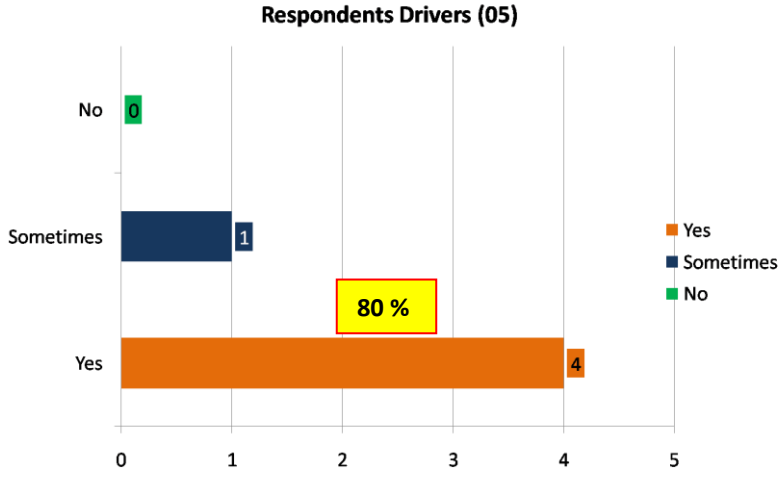
Availability of GPS Tracker in the ambulance



-80% respondents said Yes GPS tracker was available in the ambulance
- Required for real time tracking and provision of assistance in emergency situations

Fig 1.28 Availability of GPS tracker in ambulance

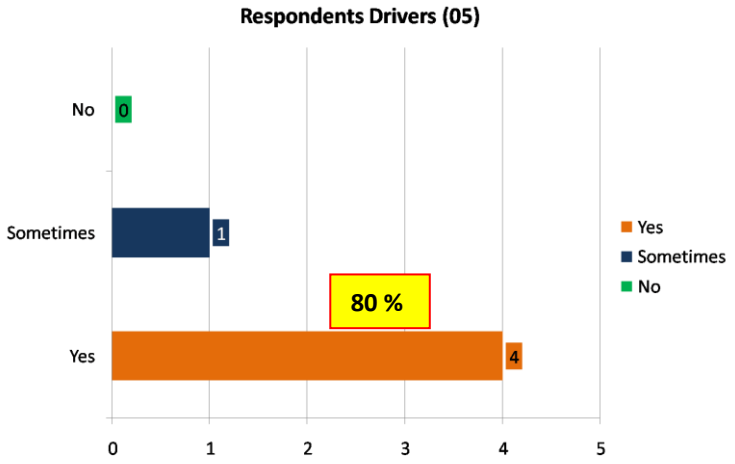
Checking Ambulance for air, fuel & oil



-80% drivers checked ambulance for air, fuel and oil
- To keep the serviceability of the ambulance and state of high readiness at all times

Fig 1.29 Checking ambulance for air, fuel & oil

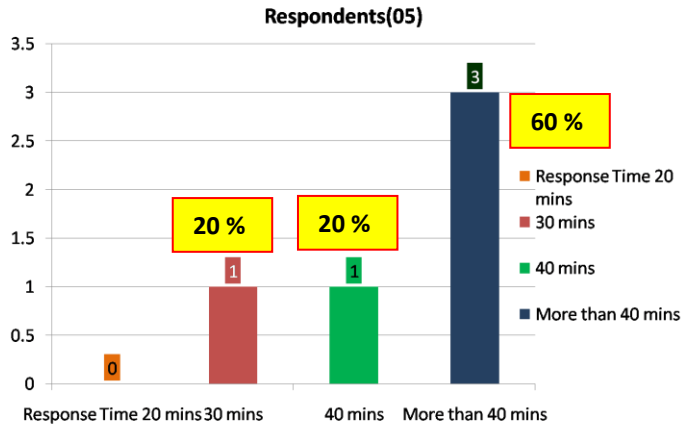
Action of Checking ambulance for Cleanliness



-80% drivers checked ambulance for cleanliness
- A must for hygienic conditions and prevention of infections to the patients being transported

Fig 1.30 Action of checking ambulance for cleanliness

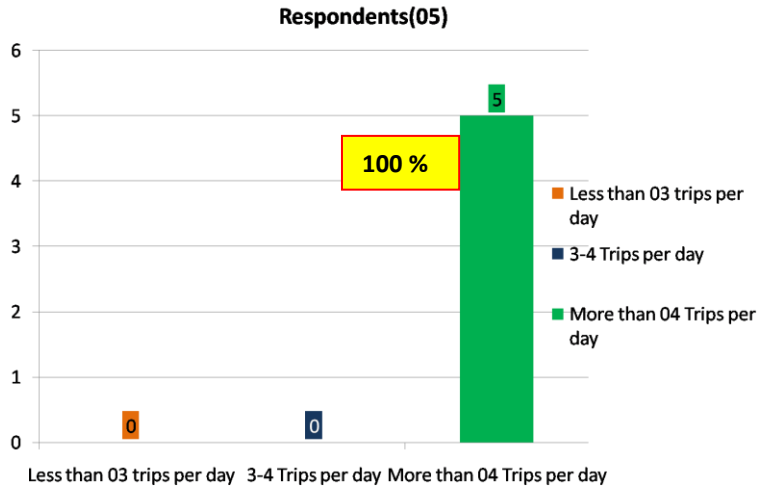
Time it Takes to Reach (Response Time)



-60% drivers took more than 40 mins to reach the respondents(response time)
- This aspect needs attention
- Measures to be taken to reduce it to upto 30 mins response time

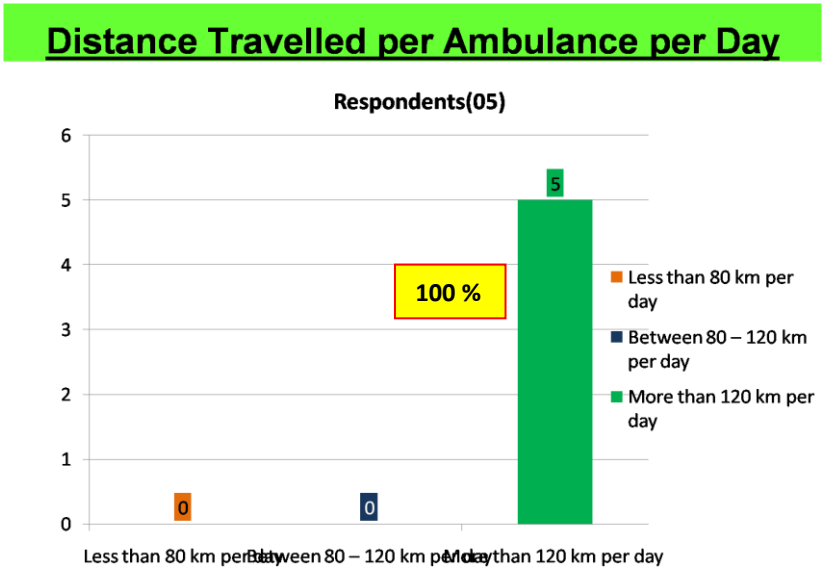
Fig 1.31 Time taken to reach (response time)

No of trips per Ambulance per day



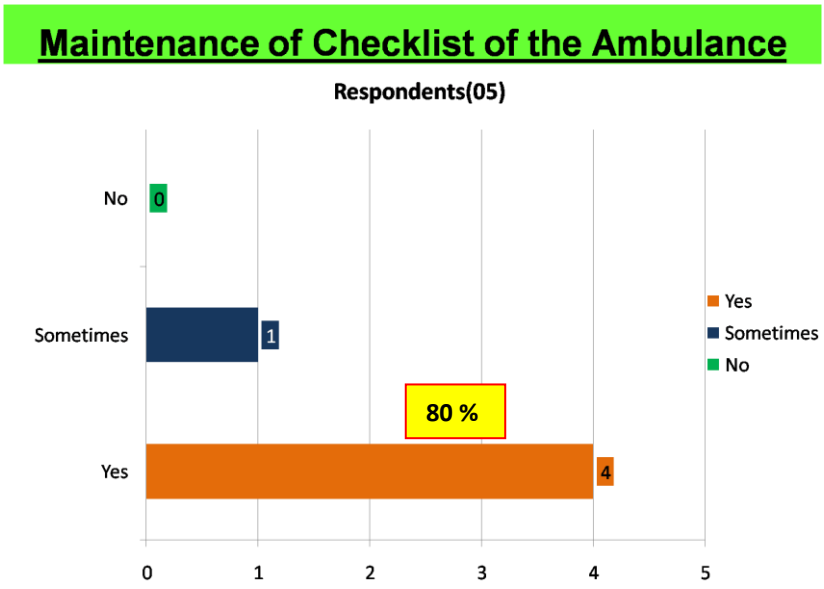
-No of trips per ambulance per day is more than 04 and distance travelled per ambulance per day & is more than 120 km
-If No of trips per ambulance/day is greater than 04 and/or distance travelled per ambulance per day is more than 120 km / day, an additional ambulance in that area is required.
-In Haridwar ambulance travel is more than 120 km per ambulance per day and take trips more than 04 per ambulance per day
- Therefore, need of additional ambulances is there

Fig 1.32 No of trips per ambulance per day



-100 % drivers travelled more than 120 km per day
- In Haridwar ambulance travel is more than 120 km per ambulance per day and take trips more than 04 per ambulance per day
- Therefore, need of additional ambulances is there

Fig 1.33 Distance travelled per ambulance per day



-80% drivers checked ambulance for maintenance of checklist of the ambulance
- Required to keep the serviceability of the ambulance and state of high readiness at all times

Fig 1.34 Maintenance of checklist of the ambulance

CHAPTER 6: DISCUSSION AND RECOMMENDATIONS

101. **Discussion.** The evidence from the study and major findings suggests the following :-

(a) That the patient/attendant/family member experience was mostly fair and poor due to incomplete advice given by ambulance call centre about what to do till ambulance arrives.

(b) Ambulance takes more than 40 mins to reach the site which is quite late in case of emergency situation .

(c) There is lack of adequate number of ambulances. Haridwar district has only 9 GVK EMRI service which is less for 18 lakh population of Haridwar. Drivers and EMTs are not performing their duties completely like carrying patient to ambulance, providing medical aid and stabilising condition of patient.

(d) Ambulances were fairly clean in most cases. However it needs to be cleaned after every shift by the drivers.

(e) There are many factors which affect ambulance service. Few of them are EMT and driver's performance, number of trips and distance travelled by ambulance per day, shortage of ambulance etc.

(f) In every ambulance there is checklist for inspecting the medical equipment, this checklist need to be checked and completed before daily shift of EMTs.

(g) However in Haridwar, EMTs check this checklist sometimes and not before daily shift.

(h) Due to shortage of ambulance, there is burden on the ambulance driver as they have to take more than 4 trips per day and travel more than 120 km per day, which gives rise to need for more ambulances to serve the patients.

102. **Recommendations:**

At NHM/Government Level

(a) This study suggests more efforts towards improving the awareness on benefits of using emergency transport service in the respondents to increase the utilization of ambulance services in Haridwar District.

(b) Strategies should be developed to build trust among respondents which would in turn encourage utilization of ambulance services.

(c) Availability of ambulance service needs to be improved as 12% of those who had called for it could not access the service.

(d) A list of criteria should be given to the respondents in order to minimize utilization of ambulance in non-emergency cases so that others in real need of ambulance could gain access to it.

(e) Separate set of ambulances for inter-hospital transports could be maintained at the first referral unit. This benefits the patients as well as the EMRI in better management of ambulance services by minimizing the load on ambulances that serve in Haridwar District.

(f) Hire more ambulance to match the standard of 01 Ambulance per 01Lakh population.

At The Services Provider Level (GVK EMRI)

(g) May hire different company than GVK EMRI 108 for pregnant women.

(h) Improve the ambulance response time for all kinds of medical emergencies as there is a delay in response for some emergency cases. This could be done by identifying the specific reasons for the delay for those particular emergency cases.

(i) Proper schedule making of shifts of ambulance to reduce burden on ambulance and drivers.

(j) Checklists of ambulance to be maintained by both driver and EMTs and it should be monitored by nodal person.

(k) At ambulance call centre there should an advisor, who can guide and advice caller about what to do till ambulance arrives to stabilize patient.

(l) Feedback form to be filled by patients or attendant or family member who used the ambulance.

CHAPTER 7: CONCLUSION

103. 108 ambulance service is responsible only to transport the patient to nearest government or private health facility. This nullifies all the efforts made to transport the patients in emergency if that health facility does not have capacity to handle certain emergency conditions. Main issue of 108 ambulance services is shortage of ambulance due to which many times patients do not receive the care that they expect during emergency, which leads to lot of suffering, particularly to pregnant mothers. If timely response is not taken it may lead to post natal complications. Strength of ambulance service is that cleanliness is well maintained and call centre in the District is performing quite well. Major shortcoming is lack of adequate number of ambulance and lack of monitoring of service periodically in Haridwar District of Uttarakhand.

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