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# Performance Evaluation of

# Pre-hospital Emergency Management in Gaza Governorates:

# Health Providers' Perspectives

Raed Yousef Sabbah

M.P.H. Thesis

Jerusalem – Palestine

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# Performance Evaluation of Pre-hospital Emergency Management in the Gaza Governorates: Health Providers' Perspectives

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# Dedication

This thesis is dedicated to my wonderful parents:

To my father; who has been of a great support to me through my life journey. To him, I owe the wisdom, the knowledge, and confidence which would have been never the same without his inspiration and advice.

To my mother; who has been always a great caring person that inspired me with love and care.

This is a sincere thanks and dedication for their unconditional love, guidance, and support that they have always given to me.

Raed Yousef Sabbah

## Declaration

**I certify that this thesis submitted for the degree of Master is the result of my own research, except where otherwise acknowledged, and that this thesis (or any part of the same) has not been submitted for a higher degree to any other university or institution.**

**Signed ……..**

**Raed Yousef Sabbah**

**Date:**

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## Abstract

This thesis is looking at the current situation of the pre-hospital emergency medical services in the Gaza governorates. The research has been conducted over the second half of the year 2008 targeting pre-hospital emergency services in the Gaza governorates.

The research has examined the performance of the Pre-hospital Emergency Management from the health providers perspectives aiming at assessing the current performance of pre-hospital services to identify its effectiveness as well as its areas of strengths and weaknesses, in the process of assessing the accessibility of the preparedness of the pre-hospital emergency health services as well as the coordination aspects among the different providers of the pre-hospital emergency medical services.

The major rationale of this research is to bring out recommendations that contribute to advance the care of patients in the out-of-hospital locale. As Gaza Governorates are significantly subject to intentional and non-intentional injuries as a leading cause of death among persons at different ages due to falling down from higher points to the ground, ongoing military activities, potential natural disasters and the traffic accidents. The need to evaluate the performance management is to carry out best practices of Pre-hospital emergency medical services is a major concern of this research that would provide vital knowledge to the decision makers of where the pre-hospital emergency medical services are standing for the time being.

The research has followed a cross-sectional hybrid with follow-up analysis of descriptive data based on triangulation of research tools as integrating both qualitative and quantitative approaches. The process included interviewing several key people working in the Emergency Health Sector, observations against available data collected from relevant literature of journal articles, news reports, and materials from senior health and research organizations. In addition, the researcher tackled a questionnaire for pre-hospital emergency medical services staff as well as conducted focus groups that gather senior and junior pre-hospital emergency personnel.

The main result that the research brought up is that the current pre-hospital Emergency Medical services are fragmented among six providers. In the time it has been formally

mandated to the Palestinian Red Crescent Society according to presidential decree, other providers continue in providing pre-hospital emergency medical services.

Then, the researcher found out that there are no effective regulations, standards, or legalizations that govern the work of the ambulance services, recruitment and qualifications of staff.

Additionally, the researcher found out that the absence of one Command Room hinders best practices of pre-hospital Emergency Medical services which might lead to delay in response time or allocations of patients to hospitals.

On the technical level, the researcher found out a relevant commitment of the daily-check of ambulances in terms of technical inspection or checking the availability of medical equipment and consumables.

The researcher concluded that the existing management performance of the Pre-hospital EMS is relatively adequate with a strong infrastructure. Yet, the disintegration of the pre-hospital EMS providers, deficiency of standards and legislations, insufficient capabilities of workforce are undermining the overall management performance. Thus, the researcher strongly concludes with the recommendation that rapid steps should be undertaken to meet the challenges of the of Pre-hospital Emergency Medical services management. Recommendations have included, but not limited to, an establishment of a leading agency, one command room, a training institutes and a standards for ambulances, pre-hospital equipments, and qualifications of staff.

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**ملخص**

**تقييم أداء إدارة الخدمات الصحية الطارئة لمرحلة ما قبل الوصول للمستشفى**

**من وجهة نظر مقدمي الخدمات**

يتناول هذا البحث الوضع الحالي للخدمات الصحية الطارئة لمرحلة ما قبل الوصول للمستشفى في محافظات قطاع غزة من وجهة نظر مقدمي تلك الخدمات. ولقد تم إجراء هذا البحث في النصف الثاني من العام 2008.

يهدف البحث لإجراء تقييم لأداء إدارة الخدمات الصحية الطارئة لمرحلة ما قبل الوصول للمستشفى بهدف تحديد فعالية النظام ومواضع قوته وضعفه. وتقييم جاهزية الخدمات الصحية الطارئة لمرحلة ما قبل الوصول للمستشفى وجوانب التنسيق بين ذوي العلاقة لهذه الخدمات.

الدافع الرئيسي لهذه الدراسة هو الخروج بتوصيات تساهم في تطوير الخدمات الصحية للمرضى خارج إطار المستشفى حيث أن محافظات قطاع غزة تتعرض بشكل مستمر لحوادث طارئة تشكل في معظمها سبباً رئيسياً للوفاة بين الأشخاص من مختلف الأعمار. تتمحور تلك الحوادث في السقوط من نقاط عالية على الأرض، الإجتياحات العسكرية من قبل قوات الاحتلال الإسرائيلي، الحوادث الطبيعية المحتملة وحوادث الطرق وحوادث أخرى.

وفي سبيل الوصول إلى أفضل النتائج فإن الباحث قد استخدم مزيجاً من الأدوات الوصفية التحليلية والتي تعتمد على كلا المنهجين النوعي والكمي. وقد شملت الأدوات إجراء استبيان يستهدف العاملين في الخدمات الصحية الطارئة لمرحلة ما قبل الوصول للمستشفى إضافة إلى إجراء مقابلات ومجموعات بؤرية مع عدد من صانعي القرار والذين يعملون أو عملوا في مجال الخدمات الصحية الطارئة. إضافة إلى ذلك فإن الباحث استند على المعلومات المنشورة في الأبحاث الأكاديمية، التقارير المنشورة في المجلات العلمية والكتب ذات العلاقة.

الخلاصة الرئيسية لهذا البحث هي أن الخدمات الصحية الطارئة لمرحلة ما قبل الوصول للمستشفى يقوم بها ستة من مزودي الخدمات الصحية الطارئة. في الوقت الذي تم تكليف الهلال الأحمر الفلسطيني بمهام مرحلة ما قبل الوصول للمستشفى وفقاً لقرار رئاسي. ولكن هذا لم يمنع الاخرين في الاستمرار في تقديم الخدمات الصحية الطارئة لمرحلة ما قبل المستشفى.

لقد خلص الباحث إلى أنه لا يوجد أي من التشريعات أو المعايير أو الإجراءات المنظمة التي تنظم عمل الإسعافات، آليات التوظيف، ومعايير التدريب المهنية. إضافة إلى ذلك فقد أشار الباحث إلى عدم وجود وحدة عمليات مشتركة الأمر الذي يعيق الوصول إلى أفضل الممارسات للخدمات الصحية الطارئة لمرحلة ما قبل الوصول للمستشفى مما يؤدي إلى تأخر الاستجابة أو توزيع المرضي على المستشفيات.

فيما يتعلق بالجانب الفني فإن الباحث خلص إلى أن هناك إلتزام محدود في فحص تجهيزات الإسعافات من الأجهزة والإسعافات إضافة إلى فحصها التقني.

وبالرغم من أداء الخدمة نسبياً مقبول عن أداء الإدارة الحالية للخدمات الصحية الطارئة لمرحلة ما قبل الوصول للمستشفى، إلا أن إستمرار الوضع الحالي من غياب التشريعات، وعدم كفاية مؤهلات الطاقم الفنية يساهم بشكل كبير في إضعاف الأداء الإداري العام. وبناءاً على ذلك يختتم الباحث بعدد من التوصيات والتي من شانها تطوير الوضع القائم، ومن أهمها القيام بخطوات عاجلة لمواجهة التحديات لإدارة الخدمات الصحية الطارئة لمرحلة ما قبل الوصول للمستشفى.

لقد شملت التوصيات على تأسيس جهة مركزية واحدة لقيادة الخدمات الصحية الطارئة لمرحلة ما قبل الوصول للمستشفى، وحدة عمليات مشتركة، معهد تدريبي، معايير لتجهيزات الإسعافات، الأجهزة الطبية ومؤهلات الطاقم.

## Table of Contents

## List of Abbreviations

| | |
|---|---|
| **AAS** | Anglo-American System |
| **AAA** | American Ambulances Association |
| **CPR** | Cardio Pulmonary Resuscitation |
| **EMS** | Emergency Medical Services |
| **EM** | Emergency Management |
| **EMTs** | Emergency Medical Technician |
| **FGS** | Franco-German System |
| **MoH** | Ministry of Health |
| **NGOs** | Non Governmental Organizations |
| **NHTSA** | National Highway Traffic Safety Administration |
| **PT** | Palestinian Territories |
| **PCBS** | Palestinian Central Bureau of Statistics |
| **PRCS** | Palestinian Red Crescent Society |
| **PNA** | Palestinian National Authority |
| **PCBS** | Palestinian Central Bureau of Statistics |
| **PHIC** | Palestinian Health Information Centre |
| **PHEMS** | Pre-hospital Emergency Medical Service |
| **SPSS** | Statistical Package of Social Sciences |
| **UNRWA** | United Nations Relief and Works Agency |
| **WHO** | World Health Organization |
| **VHF** | Very High Frequency |

## List of Tables Page

## List of Figures Page

## List of Appendices:

# Chapter One

# Introduction

# Chapter 1 INTRODUCTION

## 1.1 Introduction:

Over the last 60 years, the Palestinian Territories have been going through several dramatic political events causing disorder and unrest in key sectors that maintain appropriate, healthy and good standards of life for the Palestinians. The health sector has gone through many ups and downs over the past years because of the several authorities which ruled the Palestinian Territories. It was ruled by the Jordanian and Egyptian Administration (1948-1967), the Occupational Israeli Administration (1967-1994) and, finally, the autonomous Palestinian Authority, that was formed pursuant to the Oslo Accord in 1993, which instituted for the emergence of the Palestinian Authority's health system. These events had a profound influence on the characteristics of the health system emerging today.

Through the different eras of the Palestinian history, the heath sector has not been strong enough to meet the diverse crises such as the 1967 war, first and second Intifada (Uprisings) of 1987 and 2000, and the Palestinian internal conflict in 2007. It is also noteworthy that the "crisis of the Israeli re-invasion of Palestinian-controlled towns and villages since April 2000 and the attendant collapse of state structures and services have raised the problems to critical levels" (Giacaman, 2006).

Several research have been done to look into different perspectives of the health sector either on the medical levels or the management ones. However, what is still lacking and mostly needed is a revision of the emergency health services. Therefore, this research focuses on assessing the current pre-hospital services of health providers in the Gaza Strip exclusively. The research will be an assessment that will only focus on the pre-hospital services because "the pre-hospital emergency care services are the first point of contact for patient suffering from emergency conditions" (Bamidis, 2005) and hence it's "role in the health care outcomes for a number of emergency conditions is indisputable" (Bamidis, 2005). In other words, this research concentrates on "the process of emergency management at the pre-hospital level" rather than looking into Hospital emergency management.

Venugopal says: "Currently, the emergency health care system in the OPT is ill-equipped to meet the emergent medical needs of the Palestinian population, so there remains a great need for regional and international collaboration to continue to improve the provision of emergency health services" (Venugopal, 2007).

**1.2 Problem Statement:**

The Gaza Strip is one of the highest potential areas in Palestinian territories with non-intentional injuries as a leading cause of death among persons at different ages due to the ongoing military activities. Emergency Medical Services play an effective role in the decreasing and increasing the rate of deaths. EMS can be more effective in terms of response time and clinical capacity if a good management system is in place. At the Palestinian level, there is no available data that could assess the current position of the Emergency Medical Services" preparedness. This lack of data hinders policy makers to develop the system to achieve its maximum benefits, saving people's lives. Based on this argument, this research has been established to examine the system design. It has been particularly designed to produce an evaluation for the current system.

Yet, "Emergency medical services (EMS) systems, and pre-hospital care are difficult to evaluate", therefore, "the true efficacy and value of such systems are difficult to determine", MacFarlane and Benn argued. The utilized tools, especially the methodology that is based on EMS provider's perspective, were very helpful to give a rational and systematic analysis of the current EMS in the Gaza Strip.

**1.3 Justification:**

The foremost key rationale to carry out pre-hospital research is to advance the care of patients in the out-of-hospital locale from management strategies perspective rather clinical one.

The management strategies of pre-hospital EMS under focus of this thesis are particularly in need of evaluations that identify effectiveness. The importance of this evaluation comes as "evidence shows that early care [at the pre-Hospital stage] reduces mortality and morbidity and offers the patient the best chance of survival and improved quality of life" (Barnett, 2006) .

Moreover, based on a health sector needs assessment conducted in 2005 in the West Bank and Gaza Strip, the World Health Organization (WHO) has listed the "Heath Sector priorities and requirements for the year 2006". Among these priorities was the massive need to "strengthen local capacity in emergency preparedness and response by developing an integrated emergency health plan covering risk assessment, health intelligence, capacity building, community awareness and emergency response capability". Based on this need that has reiterated the key planned project that aims to improve "health sector preparedness and capacity to respond to emergencies" (WHO, 2006). In addition to the WHO recommendations, Abu Hamad B. mentioned during a Development Needs Assessment conference for Gaza Strip "Developing a national emergency plan that effectively increases emergency preparedness at the health facility and community levels to reposed to the contextual and uncertainty and deterioration of political situation (Abu Hamad, 2008).

A recent study on the child injury deaths in the Palestinian Territory has aimed to identify the types of injury that lead to death among Palestinian children aged 0–19 years revealed that the leading cause of injury mortality in Palestinian children was accidents caused by firearms missiles (9.6). In comparison, transport accidents were the leading cause of death in children in both Israel (5.0) and England and Wales (3.5) (Shaheen, Edwards, 2008).

This argument consolidates a solid requirement for developing the current emergency system is to assess the strengths and areas of weaknesses of the current pre-hospital emergency health services and it's the accessibility of the preparedness during crises.

**1.4 Objectives:**

- To evaluate the status of the current pre-hospital emergency health services in the Gaza Strip.
- To identify areas of strengths and areas of weaknesses in emergency heath services.
- To assess the coordination aspects in the pre-hospital emergency health services.
- To assess the accessibility of the preparedness of the pre-hospital emergency health services.

**1.5 Background:**

Based on the above introduction, this thesis will focus on the emergency management at the pre-hospital stage. Thus, there are two components that need to be defined: first, what is an emergency and why it needs to be approached? Second, what is emergency management? The following section will focus on why the pre-hospital stage is being discussed only.

In this thesis, the emergency has been defined as *"a sudden incident that necessitates urgent and appropriate management to treat its results and avoid its sequel. It becomes a health emergency if it results in an unexpected risk to the health of people or the physical environment in which they live*" (WHO Report, 1981). If this has been applied to the Palestinian situation, one might note that several "regular" cases rather than "sudden" but yet can be identified as under the term "Health Emergency". First there are the regular military invasions, which inflict mass Casualties. Second, we have health epidemics which could be "sudden" but also expected in view of the increasing level of pollution in the sea and air, deterioration of health services, and the cross-borders epidemics such Avian Flue. Moreover, there are the expected natural disasters such as earthquakes which have been predicted by geologist to take place in the Middle East in the near future, "A major quake of magnitude seven on the Richter scale in the politically-fragile region of the Middle East could have dire consequences for precious holy sites and even world peace, said Tel Aviv University geologist Dr. Shmulik Marco (Science Daily News, 2007). Whenever such situations happen, they require a special type of intervention, the emergency process in general. This particularly needs a management framework to achieve its maximum advantages. A management as a framework differs from one system to another, but all goes in the same context "input, process and output". In the case of emergency management, the system goes typically into these three stages that can be applied in the two stages, the Pre-Hospital Stage and In-Hospital Stage.

As W. Segree says, "Pre-hospital Emergency Medical Services (PHEMS) refers to a service that responds to specific health needs of persons outside of a hospital setting. These needs include, but are not confined to, attention to acute life-threatening events, transportation of ill or injured persons to special facilities for investigation and treatment, inter-facility movement of the ill and injured, and standby assignments at events that pose

health risks to participants or spectators" (Segree,1994). This stage *which is the core of this thesis* includes: "inputs" where there are well-equipped ambulances, qualified staff, and then a "process" where there are communication, coordination among related actors, time management and health care approach and ultimately the patient delivery that comes as the last step in the Pre-Hospital Stage.

Barnett and others defined Pre-hospital Emergency Medical Service as "a vital component of a country's health service because it provides early medical care to critically ill and injured persons in the field" (Barnett, Segree and Matthews, 2006).

**1.6 The Health System in the Gaza Strip:**

In 2008, the Palestinian Health Sector has been considered as a massive institution, one that has been developed over the time and experienced different administrations. In other words, the Palestinian Health Sector's "structure, function and capacity has been shaped largely by the complex political history" (Giacaman, 2003). The Palestinian Health Sector as mentioned above has gone under the role of the Jordanian and Egyptian Administration (1948-1967), the Israeli occupational Administration (1967-1994) and currently the Palestinian National Authority since 1993 to date.

On the ground, the health facilities are classified under three levels of services; primary, secondary and the tertiary care. These services, in different capacities, are provided by four main actors: the Palestinian Ministry of Health (MOH), the United Nations Relief and Works Agency (UNRWA), Non-governmental organizations (NGOs) and the private clinics and medical centers. On the level of health and emergency services providers, there are 266 ambulances (Table 1.1) working in the Gaza Strip and operated by a total number of 320 staff members.

As this research focuses on the Gaza Strip, one needs to refer to the Gaza Strip characteristics in brief. The Gaza Strip is one the world's most densely populated areas, with 3000 inhabitants per km (PCBS 2008), of whom 70% are refugees. The Gaza Strip is a coastal strip of land along the Mediterranean Sea, bordering Egypt on the south-west and occupied Palestinian territories on the north and east. It is about 41 kilometers (25 mi) long, and between 6 and 12 kilometers (4–7.5 mi) wide, with a total area of 360 square

kilometers (139 sq mi).

### 1.7 Overview of Emergency Medical Services

The Pre-hospital emergency services have emerged as early as mid 1960s. At that period, the pre-hospital services were underdeveloped. This was mainly due to the poor infrastructure of the Palestinian community particularly under the Israeli occupation.

The poor infrastructure can be looked at within the context of Pre-hospital EMS in two perspectives: pre-hospital EMS preparedness and telecommunication systems.

With regard to the pre-hospital EMS preparedness, there was no actual, independent pre-hospital EMS department. There were only ambulance services operating under the umbrella of hospitals. Nevertheless, the hospital number was limited and they were located at the center of the main cities in the Gaza Strip, namely, al-Shifa Hospital in the Gaza city, Nasir Hospital in Khanyounis, el-Naser Pediatrics Hospital and el-Naser Ophthalmology Hospital. Emergency departments were limited to al-Shifa Hospital in Gaza city and Nasir Hospital in Khan Younis.

The Pre-Hospital services were restricted by the Israeli occupation authorities. "There were only 5 ambulances operating along the Gaza Strip poorly equipped and their role [was] limited to transportation only" (Mohammed Salama, October 2008, Personal Interview).

On the other hand, the telecommunication systems were extremely immature. The process of contacting an ambulance was so difficult. To receive an ambulance services, people were first contacting a Central Switchboard that put them on to a hospital's switchboard operator who makes a note to an ambulance driver. "[These] services were so slow, and response time was so poor" (Mohammed Salama, October 2008, Personal Interview).

On mid 1970s, there were efforts by Palestinian key figures to establish an independent body of Pre-Hospital EMS. "Mayor Rashad Shawa and others established "Al-Hayya Al-Khayria – the Charity Commission", in which the first five ambulances put in services and the EMS call 101 has been established" (Bashar Murad and Mohammed Salama, October 2008, Personal Interview).

Since then, Al-Haya Al-Khayria has been offering the pre-hospital services through 101 dialing coder. The main role was connecting the public with hospitals at that time. There was no significant progress in its performance though. However, the number of ambulances increased to reach 10 ambulances. This was due to the natural increase of the population. Besides, "two ambulance stations have been opened; one in North and the other in South of Gaza Strip" (Mohammed Sabbah, September 2008, Personal Interview). This independent body continued to operate until the establishment of the Palestinian Authority in 1993.

"With the emergence of the Palestinian Authority on 1993, the Ministry of Health has taken the role of the Pre-Hospital EMS [in] early 1994 where all the ambulances transferred under the authority of Emergency and Ambulance Authority. In addition, the Pre-Hospital staff has been employed officially in the Palestinian Authority as Ministry of Health employees" (Mohammed Salama, October 2008, Personal Interview).

In late 1994, a Presidential decree has been issued on the mandate of the pre-hospital EMS. The decree mandated the Pre-hospital EMS to the Palestine Red Crescent Society (PRCS) that was headed by Dr. Fathi Arafat. Consequently, the ambulances and staff moved to work under the umbrella of The Palestine Red Crescent Society. Yet the Pre-Hospital staff was still on the Ministry of Health payroll.

The Palestine Red Crescent Society has established five pre-hospital emergency station located in Jabalia in the North of Gaza Strip, Gaza as headquarter, Deir el-Ballah in the Middle of Gaza Strip and Khan Younis and Rafah in the South of the Gaza Strip. "The PRCS operates 30 ambulances divided on the five command rooms. These ambulances are renewed whenever fund available" (Bashar Murad, October 2008, Personal Interview).

The PRCS Pre-Hospital command rooms play the major reference for any pre-hospital emergency situation, are utilizing the 101 dialing code with an advanced technology. This 101 services is allocated to all Gaza Strip inhabitants, however; if dialed from any geographical area, it reaches only the command room located in that area (Public Relations Officer of the Telecommunication Company, October 2008, Personal Interview).

Currently there are 6 relevant providers of EMS as mentioned in (Table 1.1), yet the Palestinian Red Cross Society are considered the major provider of the pre-hospital, followed by the Ministry of Health yet the latter is "providing inter facility transport" at first stage (Hani Alja'afarawi, October 2008, Personal Interview) then followed by a pre-hospital EMS. The following sections will be highlighting the roles of these two major providers.

Nevertheless, it's important to mention that the other four providers that own ambulances are providing pre-Hospital EMS only in the time of disasters and hospital based transport.

As this research examines the frequent pre-hospital EMS rather than hospital based transport, the focus will be on the PRCS and the MoH performance as frequent pre-hospital EMS providers. Indicators of the current situation of the pre-hospital EMS offered by both providers are assumed to reflect the level of preparedness to meet both normal or under crises situations.

**Table 1.1:** The total number of ambulance in Gaza governorates (PHIC Gaza 2008)

| | ***Health and emergency services providers*** | ***Number of ambulance*** |
|---|---|---|
| 1. | Ministry of Health | **57** |
| 2. | Palestinian Red Cross Society | **33** |
| 3. | Medical Military services | **37** |
| 4. | Civil defense | **27** |
| 5. | Non Governmental Organizations + Private sectors | **55** |
| 6. | United Nation Relief and Works Agency | **5** |
| ***Total*** | | **266** |

**1.8 Main Pre-hospital Providers:**

As mentioned above, in term of public accessibility, the pre-hospital EMS in the Gaza Strip is mainly provided by two main providers. Those are the PRCS and The MoH. The following section will outline a briefing about each of those providers.

### 1.8.1 Palestinian Red Crescent Society (PRCS):

The PRCS has been founded on 26 December 1968 as an extension of the Red Crescent charity societies having sprouted in a number of Palestinian cities, such as Jaffa and Jerusalem, in the first quarter of the 20th century. It has started to provide its medical services in a small clinic in one of the Palestinian refugee camps in Jordan.

In 1969, the Palestinian National Council issued a resolution that declared that PRCS in an association with an independent national entity.

In 1995, the PRCS started to provide its services in the Gaza Strip. It has joined the international movement of the Red Cross / Red Crescent as a full member in the 29th international conference that took place on 22$^{nd}$, June 2006. Dr Fathi Arafat has founded the PRCS after the Palestinian defeat in 1967 war. Dr. Arafat established the Medical Services of Fateh Faction later, after which the idea of establishing of the PRCS was formalized.

The PRCS provides a wide range of health, social and other humanitarian services to the Palestinian people throughout the Middle East. In 1996, the PRCS was mandated by the late president, Yasser Arafat to provide emergency medical services in Palestine. The PRCS has been instrumented in the establishment of the national emergency number 101, by carrying out a nationwide campaign so that EMS services could be more efficient.

There are six stations working around the clock in Gaza. The stations operate 33 ambulances, staffed by 110 EMTs.

The stations and sub-stations are as follows: Gaza station (located at PRCS Gaza), Khan Younis station (located at PRCS Khan Younis), Jabalia station (located at PRCS Jabalia), Deir El – Balah Station (located at PRCS Deir El–Balah), Rafah station (located at PRCS Rafah), The airport station (located in Al–Shukaa municipalities). It is worth to mention that there is a sub station located in El–Mawasi (currently not functional).

The qualified EMTs are providing 20 hours of first aid training for the community upon the request of various NGOs and institutions. The PRCS also has an Emergency Medical

Institute located in Khan Younis. It provides training for its staff members, as well as for level I and II EMT in the field of pre-hospital emergency medical care in accordance with international standards.

### 1.8.2 Second: the Ministry of Health:

The Ministry of Health has been formally established with the arrival with the foundation of the Palestinian National Authority on 1993.

The Emergency Medical services have been developed as a part from the comprehensive medical services offered for the Palestinian public. Currently, the Directorate of Emergency and Ambulance Services is among key departments.

There are 128 staff members working in six different duty stations all over Gaza Strip namely: North, Gaza City, Middle Gaza Strip, Khanyounis, Rafah, the Gaza International Airport who providing Emergency medical services.

The MoH Emergency medical services are provided through telephone No. 2826101. Despite that the MoH team play significant role in the invasion time, they are more working with inter-facility transport, ICU services, and abroad medical services.

## 1.9 Definitions:

**Austere Medical Care** is the level of medical care, modified from the expected standard of care that is provided when hospital resources, medical supplies and medical personnel are limited or unavailable for an extended response period.

**Coordination of Pre-Hospital Emergency Services** is a policy that advised by which "all pre-hospital emergency services plans shall: Utilize Standardized Emergency Management System structure, works within the plan in a manner consistent with other provider agencies within the operation area that provide the same type or level of service, EMS system participants shall collaborate to assure maximal response".

**Lead Agency**: A lead agency is the entity responsible for coordinating and administrating all aspects of the installation's EMS activities. The lead agency should be responsible for ensuring compliance with all applicable state and local requirements and should facilitate cooperation and mutual support between all of the pre-hospital EMS providers.

**Pre-hospital Emergency:** Pre-hospital Emergency Medical Services refers to a service that responds to specific health needs of persons outside of a hospital setting. These needs include, but are not confined to, attention to acute life-threatening events, transportation of ill or injured persons to special facilities for investigation and treatment, inter-facility movement of the ill and injured, and standby assignments at events that pose health risks to participants or spectators (Segree, 1994).

**Preparedness Activities**, tasks, programs, and systems developed and implemented prior to an emergency that are used to support the prevention of, mitigation of, response to, and recovery from emergencies.

**Normal Operations** means the day-to-day Pre-Hospital EMS system functions of dispatch, response, field and hospital care.

**Multi-Casualty or Disaster Operations** refers to the EMS system functions that provide care to an increasing number of patients, requiring increasing numbers and types of resources more than those normally available for deployment.

# Chapter Two

# LITERATURE

# REVIEW

# Chapter 2 LITERATURE REVIEW

## 2.1 Theoretical Diagram of Conceptual Framework

As the researcher has reviewed the literature which covered the research experiences in different countries; the researcher noted that these studies were comprehensive covering different aspects of the pre-hospital EMS and others focus on specific aspects of the pre-hospital EMS. Nevertheless, the entire research conducted was reviewing common factors. The researcher has developed his conceptual framework based on all those common factors related to Performance of the pre-hospital EMS Management. These factors are Socio-demographic, Human Resources, Communication and Coordination and finally Technical Recourses.

As the researcher covered these factors within the pre-hospital EMS as best as possible, but yet acknowledges that due to the absence of prior research on the pre-hospital EMS in the Gaza governorates, the research has been broad rather than focused on every factor.

### 2.1.1 Socio-demographic

This is an important factor within any study. However context of the Socio-demographic situation varies from country to another depending on the land size, geographical density, the culture and the level of development in the framework of this research. Thus the research has developed his analysis based on the current situation of the Gaza governorates.

### 2.1.2 Human Resources

Several studies have explored the human resources in the context of the pre-hospital EMS. Most of these studies were related to capacity building, training, improving staff skills, recruitments standards and education. The researcher might argue that these were general topics as need for any staff in any field, but the researcher see that in relation with the pre-hospital EMS the capacity building should be in more continuous bases.

The studies have emphasized the important of reviewing personnel skills frequently so the ambulance service providers should be give the opportunity to continue at a higher level of

qualifications. Further studies affirmed the role of the government to reinforce the EMS personnel through requiring nationalized certification of paramedic education programs (Keith, 2007).

### 2.1.3 Communication

Development of strong communication system depends on the resources and technological infrastructure. Communication as explored by different research affirmed the vital importance between the pre-hospital EMS stakeholders and among stations, ambulances drivers and hospitals.

Technology can be used for effective and rapid responses; this will be helpful in reducing response times to emergencies" (Carney, 1999).

Harmonizing the work between the pre-hospital EMS providers will affect their activities and incorporate communications to ensure as best as possible emergency services for the patient (Institute of Medicine of the National Academies, 2006).

### 2.1.4 Coordination

Coordination among different pre-hospital EMS providers has seen to be vital in small as well as big mass casualties' events. ". Several studies have seen that consolidated functions related to emergency care to be through a single agency rather than scattered among multiple agencies (Institute of Medicine of the National Academies, 2006). The tasks and responsibilities of the different providers involved in pre-hospital emergency response across the country would work better if well coordinated. Some assessment also focused on the centralized that is only managed by one body regardless other efforts in the community like regional, local, and volunteer agencies (Schaenman, 2007). Studies revealed that once government, EMS providers, and community members work together, a high quality EMS at the lowest possible cost will be in place (Peralta, 2005).

### 2.1.5 Technical Recourses

The technical resources that include ambulances, equipment, tools are essential infrastructure of the whole pre-hospital EMS system. Research within this context focused

on availability of ambulances, equipment and tools in a good manner when needed. In fact standards of pre-hospital EMS and the difference between transportation, ICU and pre-hospital merely purposes have been elaborated. Another important factor was related to checking the technical aspect of the ambulances (Pratt, Pepe, Katz and Persse, 2007).

### 2.1.6 Management

This is an essential part of the system evaluation. Studies within this regard aimed to contribute in developing the management of emergency stages. Some activities have been reviewed by the Foundation for Research and Technology-Hellas and the National Center for Emergency Care to assess the impact on performance for effective and efficient provision of emergency care practices. The research shed the light on the importance of the effectual management of emergency incidents. Protocol triage, management of resources and continuous education of staff, will be contributing factors to the enhancement of public services to support patients in life intimidating emergency circumstances (Bamidis, 2005).

**Theoretical Diagram of Conceptual Framework**

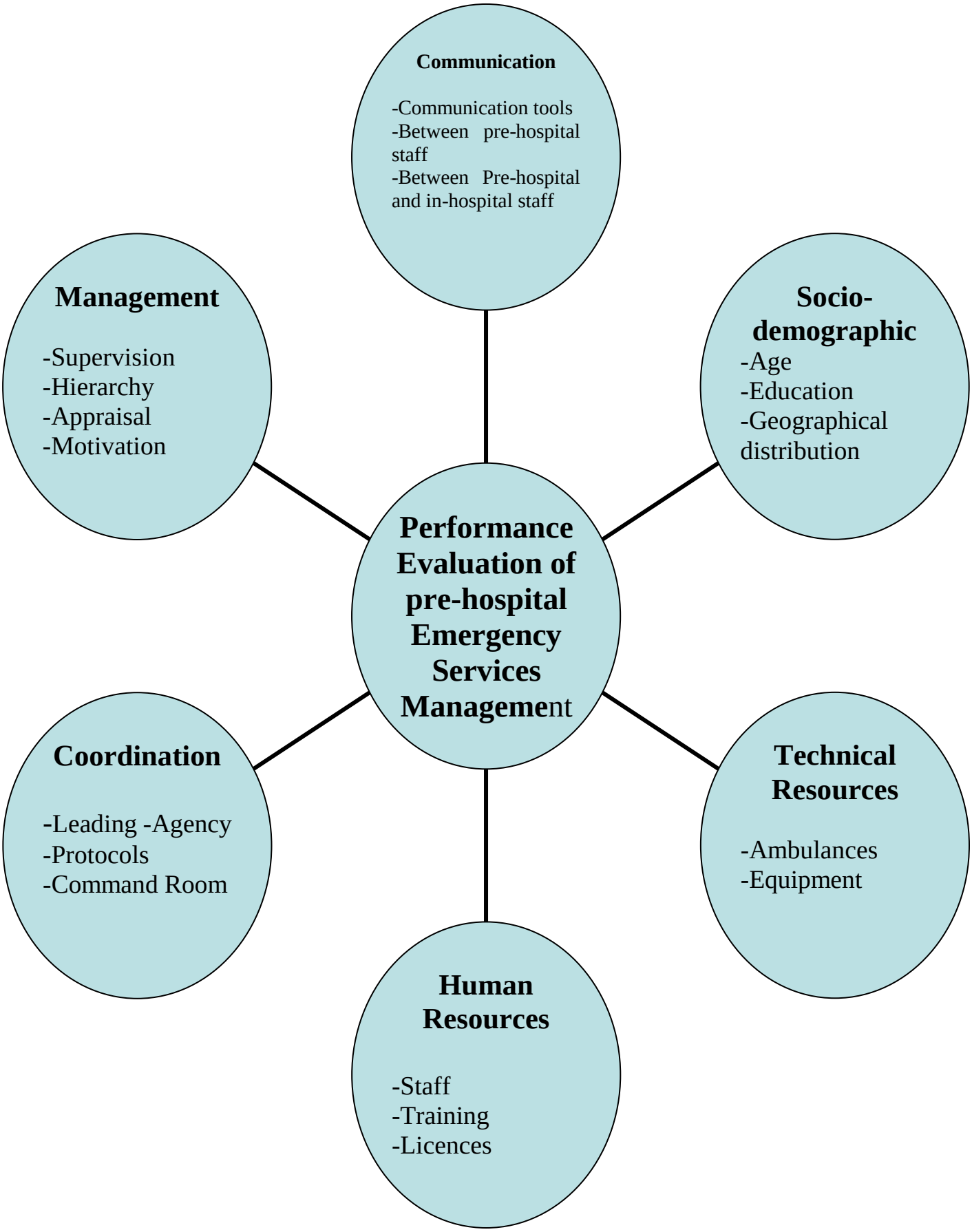



Fig 2.1. Schematic Representation of the Theoretical Framework of the Study

## 2.2 Previous Research

An in-depth review has been done to several preceding research papers published in medical journals, workshops recommendations, national projects, consultant reports, lessons learned and scientific studies that have been conducted to assess, develop and analyze the different aspects of the emergency care services and particularly the components of the pre-Hospital stage. The following review will survey selected experiences that examined pre-Hospital stage emergency services.

One the most important systems discussed within the framework of the pre-hospital EMS is the Anglo-American vs. Franco-German. Both systems have been designed to perform emergency services better; however, a special report developed by Wolfgang F. Dick found that both systems are different in strategies though similar on the overall goal which is saving lives. Dick concluded his research by 10 points summarizing the differences between both systems. Moreover, he stated some recommendations for the EMS in general. It is so important to refer to these points as a vital study done within the context of this research.

First, Dick mentioned that "the Franco-German system, the doctor is brought to the patient; in the Anglo-American system, the patient is brought to the doctor" Second, "In the FGS, emergency physicians and paramedics provide pre-hospital intensive care to emergency patients. This guarantees high quality performance of emergency measures". Third, "In the FGS, if they are first at the scene and specially trained, paramedics are allowed to apply BLS including defibrillation, end tracheal intubation, administration of life-saving drugs, etc., under physician directives". Fourth "In the FGS, specially qualified anesthesiologists, internists, surgeons, pediatricians, etc. operate as emergency physicians". Fifth, "Emergency medicine is recognized as a supra-specialty to anesthesiology, internal medicine, surgery, and pediatrics". Sixth, "Special training programs exist for emergency physicians, medical EMS directors, chief emergency physicians, and paramedics". Seventh, "Emergency medicine encompasses CPR and the treatment of shock, acute myocardial infarction, stroke, polytrauma, status asthmaticus, etc". Eighth, "Morbidity and mortality rates for the above mentioned “golden-hour diseases”, have been decreased considerably by the FGS, and now, are similar to U.S. figures". Ninth "Supervision and

Q/A are integral parts of emergency medicine management". Finally, "Expenses per capita or per EMS operation of the FGS either are similar to or lower than those in the Anglo-American system with a similar or better quality of care" (Dick, 2003). These points have been mentioned here briefly. Nevertheless, within the context of this research, both models will be highlighted while assessing the Palestinian Pre-Hospital EMS in the Gaza Strip context.

On the countries level the researcher is going to explore the experience of a few countries which tackles similar performance assessment of pre-hospital EMS.

First, the Greek experience; a provision of emergency care services took place in the Crete region has lead to pioneering activities that contributed to developing the management of emergency stages. These activities have been reviewed by the Foundation for Research and Technology-Hellas and the National Center for Emergency Care to assess their impact on performance for effective and efficient provision of emergency care practices in the Crete region. The research concluded that "Information technologies and educational practices are essential for the timely and effective management of emergency episodes. Protocol triage, management of resources and continuous education of staff are contributing factors to the improvement of public services to assist patients in life threatening emergency situations" (Bamidis, 2005).

Second, the Mexican comprehensive review was carried out by Luis Peralta in University of Maryland Baltimore County on 2005 to verify whether the pre-hospital emergency medial system in Mexico City meets the criteria standards instituted by the American Ambulance Association Guide for Contracting Emergency Medical Services (AAA Guide) for highly efficient emergency medial systems. Peralta concluded that "Emergency medical services in Mexico City did not meet the AAA requirements for high-quality, pre-hospital, emergency care. Coordination among EMS providers is difficult to achieve, due, in part, to the lack of: (1) an authoritative structure; (2) sound system design; and (3) appropriate legislation. The government, EMS providers, and community members should work together to build a high quality EMS system at the lowest possible cost" (Peralta, 2005).

Another research was conducted in Iraq on the "Role of Pre-hospital Care in Reducing the Mortality Rate Amongst Victims of Gunshot Injuries" to consider what difference pre-

hospital care might have made on One hundred and six (106) cadavers who were victims of different event types of gunshot injuries (criminal, accidental and suicidal) seen at autopsy in the Sulaimani Forensic Department. The research concluded that "if pre-hospital measures for bleeding control were applied … Life absolutely could be preserved in 10.37% (11/106). Researcher, Dr Tahir Abdullah Hawramy, recommended an "Establishment of emergency centers in every health center, supplied by 24hrs ambulance and medical staff, in which all centers have a special telephone connection with the main trauma center" (Hawramy, 2007).

In 2006, the State of New Jersey in the United States has conducted assessment for its Emergency Medical Services system to determine immediate and future needs and evaluating the strengths and weaknesses of the state EMS system. It has been argued that "analyzing what EMS does is a key to determining an appropriate system design and provides a true picture of what happens".

A four-phase analysis that has incorporated interviews of key staff members, 13 focus groups of organizational and provider constituents, interviews with officials to get their feedback as well as using the triangulation of data". A comparison approach has been followed. The New Jersey EMS has been compared with other five States in the US similar in terms of population and density.

According to the assessment, "New Jersey EMS systems consists of more than 25,000 volunteers and career providers, including first responders, emergency medical technicians (EMTs), paramedics, nurses, and physicians". The assessment concluded that "New Jersey's State oversight is highly centralized and with little coordination between state, regional, local, and volunteer agencies". Based on this it has been recommended that "New Jersey restructured their EMS system by creating a regional approach that will decentralize daily management of EMS by creating three geographical regions". In other words, "in order for the state oversight organization to make adaptive instead of technical decisions, a regional approach should be adopted". Besides, it has been recommended that "as part of the change needed there is a critical need to overhaul the state EMS information system … a requirement that should be put in place for the submission and analysis of EMS data" (Schaenman, 2007).

Following Bali bombs that took place in Indonesia on 2002, a heated debate has risen on the pre-Hospital EMS due to the high number of Casualties of non-Indonesians to asses the shortcomings of the existing system. Among the several papers that have been developed within this framework, a study analyzed the situation very well. It was carried out by E Pitt from Accident and Emergency Department in Medical School, Dundee, UK and, A Pusponegoro from Department of Surgery, Cipto Mangunkusomo General Hospital University of Indonesia. In this paper, E Pitt and A Pusponegoro described "the evolution and current system of pre-hospital emergency care in Indonesia" (Pitt and Pusponegoro, 2005) to assess the challenges faced and how did they overcome.

Researchers described Indonesian pre-Hospital as facing many difficulties due to "an unstable political situation and unsteady economy" which hinders any changes that Indonesian may tackle. "Accepting accidents as fate" (Pitt and Pusponegoro, 2005) by Indonesian public say researchers is minimizing opportunities to improve the state of pre-hospital emergency care. However, "Indonesia is keen to bring internationally agreed standards and training into its system of pre-hospital care" (Pitt and Pusponegoro, 2005). Researchers refereed to a bombing event that took place in 2002 in the centre of Jakarta, where a diplomat was among the injured. As this diplomat was received a 30-minute late services, the government formed a committee to investigate the process of the EMS. This committee, which was formed with 118 and municipal office staff, has estimated that about 100 ambulances (along with the paramedics to staff them) are needed for Jakarta to reduce the response times. The aim is to deploy the ambulances at 20 points instead of the current 10 points around Jakarta.

This enthusiasm to develop the system strongly motivates Indonesia in spite of the challenges represented by the unstable political situation, geographical, social, and unsteady financial and economics situations. According to their analysis of the EMS situation, the researchers concluded that "pre-hospital care and an integrated emergency medical service may become a reality for Indonesians not just in the major centers but in the more rural areas of this vast and diverse country" (Pitt and Pusponegoro, 2005).

Another significant research on Pre-hospital has been developed on 2003 by P O'Meara, professor at Monash University School of Rural Health in Australia. In this research, O'Meara has reviewed and looked into rural pre-hospital models in Australia.

In his research, O'meara has examined the Existing rural pre-hospital models in Australia and the role of the pre-hospital practitioner as being criticized for being isolated from the healthcare system. O'meara research was based on systems methodology that used to develop and critically appraise the pre-hospital practitioner model as an alternative to existing models.

O'meara mentioned that "analysis showed that the most powerful reason for advocating the pre-hospital practitioner model is that it places pre-hospital systems within a symbiotic relationship with the healthcare system. Unlike the existing emergency service models or the "chain of survival" model, it is an integrated system that provides a range of services at multiple points during the patient care cycle.

While this research is highlighting a new methodological approach of looking at Pre-Hospital services O'meara conclusion was based on the argument that the pre-hospital practitioner would have responsibility in the prevention of injury and illness, responding to emergencies and facilitating recovery.

O'meara concluded that "Implementing this new model would see the pre-hospital system using its available capacity more effectively to fulfill broader public health and primary care outreach roles than is currently the case. Patients would be referred or transported to the most appropriate and cost effective facility as part of a seamless system that provides patients with well organized and high quality care" (O'meara, 2003).

A different review on pre-hospital has been done by C J Carney. The researcher is looking at another research developed in the United Kingdom on Pre-hospital Emergency Medical services. In this comprehensive research, C J Carney is assessing the performance of Emergency ambulance dispatch, Ambulance response times and call prioritization, Ambulance paramedic clinical training and education, Emergency ambulance vehicles and equipment, Medical pre-hospital support in the UK to discuss the efforts made to respond the increases in levels of emergency calls over the last five years which aimed to a 40% increase nationally in the Pre-hospital Emergency services.

As every part has been discussed in length, the C J Carney concluded that "Pre-hospital care is largely provided in the UK by National Health Services Ambulance Trusts, supported by a variety of medical support mechanisms when medical and paramedical care is needed at the scene of the incident… Technology can be used to activate effective emergency paramedic response to emergency calls more rapidly, assisted by re-engineering of paramedic shift rotas and ambulance deployment to response posts nearer areas of high call density to reduce response times to emergencies" (Carney, 1999).

As the researcher has been developing the research in view of four exact indicators namely, personnel, coordination and communication, Technical resources, and the management performance; the researcher finds it is worth to illuminate research that has been conducted in these areas.

In reference with personnel, one important Policy Resource and Education Paper conducted by the American College of Emergency Physicians has emphasis that sufficient recruitment must be provided to meet "anticipated demand on national and community standards for system performance". The paper states that the staff assigned to pre-hospital EMS duty "should have EMS as a primary duty". The paper recommends that staff working in the pre-hospital "must, at minimum, meet this level of training…community standards, however, may dictate a higher level of training". EMS personnel must be certified by the appropriate organization, and maintain certification through approved continuing education and other requirements (American College of Emergency Physicians, 1997).

Another study highlighted the New Zealand Pre-hospital Emergency Medical Services has underscored the important of reviewing personnel skills frequently pointing out that "at all levels, there should be a regular revalidations and audits of skills. The ambulance service provides a progressive and planned career path also with the opportunity to remain at a level of qualification that is comfortable to individuals" (Keith, 2007).

In a study on the Canadian pre-hospital system, Symons and Shuster illustrate the position of provincial pre-hospital emergency medical services (EMS) systems, and the tasks and responsibilities of the different providers involved in pre-hospital emergency response across the country. This description exposes that there is "tremendous interprovincial

variability in the laws and regulations governing pre-hospital emergency care…..There is also intraprovincial variability in the types of human and material resources allocated to EMS delivery, in the types of EMS providers and in the training they offer". Pursuant to Shuster and Symons, despite of the having a certification body, "staff employed prior to its introduction do not fit neatly into these profiles, as their skills overlap the categories".

In the context of training, the researchers affirm the important of the accreditation and certification in which should go through a certified agency. Therefore, they point out that new practitioner trained according to the certification body model "may not be allowed to practice to the full extent of their training, depending on provincial or local regulations". The levels of capability in the certification body are minimum requirements, and regional medical authorities can expand practitioners' scopes of practice by offering made-to-measure complementary training courses (Symons and Shuster, 2004).

Further, the personnel training has been clearly stated in the recommendation of comprehensive study on the Pre-hospital on Pre-hospital EMS in Québec, Canada, Where the authors pointed out that "some provincial regulations governing pre-hospital practice dictate that quality-assurance mechanisms to be set up…These mechanisms may include mandatory continuing education, mandatory recertification, audits of emergency calls received and a complaint-investigation system (Banken, Côté, Champlain and Lavoie, 2005).

In a research on Emergency Health and Risk Management in Sub-Saharan Africa that conducted to assess lessons learned from the Embassy Bombings in Tanzania and Kenya taken place on 1998, one of the important recommendations listed is that Promoting the Education and Training of Emergency Responders. The researchers pointed out that "in order to respond effectively to the challenges that face the community, the emergency and disaster response workforce requires additional training and education" such training needs to include the most likely first responders to everyday emergency responders as well as police men, firemen, ambulance drivers, nurses, and doctors (Clack, Keim, Macintyre and Yeskey, 2002).

In reference with coordination and communication relevant to the pre-hospital EMS; a significant study titled "The Future of Emergency Care: Key Findings and

Recommendations" tackled by Institute of Medicine of the National Academies in the United States has recommended that the emergency care system should be one in which all providers "fully coordinate their activities and integrate communications to ensure seamless emergency and trauma services for the patient". Further, the study recommended that "government should consolidate functions related to emergency care that are currently scattered among multiple agencies into a single agency" (Institute of Medicine of the National Academies, 2006).

In the above study it has been also noted that the government ought to reinforce the EMS personnel through requiring nationalized certification of paramedic education programs, accepting national accreditation for formal licensure, and adopting common EMS certification levels (Institute of Medicine of the National Academies, 2006).

In terms of transportation services and the role of other stakeholders of pre-hospital EMS, an important study on the Pre-hospital Emergency Medical Response focusing into The role of the United States Fire Services in Delivery and Coordination published by the National Paramedic Institute, it has been argued that a speedy, competent and efficient deliverance of Pre-hospital EMS response is "dependent on immediately sending nearby trained personnel to the scene of an emergency regardless of the vehicle or mode of transportation". The researchers argued that it is very popular in the most communities in the United States that fire trucks are the earliest emergency care provider who is responsible for competent care may arrive on a fire truck separate from an ambulance. Despite that "ambulances are necessary to transport patients to a hospital where more definitive care may be needed. However, because ambulances are often busy evacuating, transporting and turning over patients at the hospital, the most reliable vehicle to ensure a rapid response generally is the neighborhood fire truck" (Pratt, Pepe, Katz and Persse, 2007).

According to the study conducted on the pre-hospital care in Hong Kong, the authors combined all the indicators together to be achieving for having a successful pre-hospital EMS. It has been argued that "a quick and efficient pre-hospital emergency response depends on immediate ambulance dispatch, patient assessment, triage, and transport to hospital". The study affirms the importance of the coordination and cooperation between stakeholders, as it states that "cooperation between the Fire Services Department and the

Hospital Authority exists at the levels of professional training of emergency medical personnel, quality assurance, and a coordinated disaster response" (CB L, KK L and KP M, 2000).

# Chapter Three

# METHODOLOGY

# Chapter 3: METHODOLOGY

## 3.1 Study Design

This study is a cross-sectional hybrid with follow-up analysis of descriptive data based on triangulation of research tools as both qualitative and quantitative approaches are being integrating. Qualitative investigations aim to ensure that observations are accurately recorded and interpreted. An example would include collecting data for some indicators by means of observation, from interviewing several key people working in the Emergency Health Sector, and by checking observations against available data collected from relevant literature of journal articles, news reports, and materials from senior health and research organizations. Quantitative investigations aim to analyze information of surveys conducted in the context of this research. Based on this, the researcher has developed a questionnaire

## 3.2 Period of the Study:

The study was scheduled to start on May 2008 till September 2008. The researcher has started by seeking ethical approval and setting up the administrative procedures. Then Data collection was scheduled on late May 2008 in the same time the ethical approval was acquired. Data collection has included the questionnaire, an interview and the focus group.

## 3.3 Place of Study

The study has taken place in all ambulance stations and command rooms of Palestinian Red Crescent Society and the Ministry of Health of pre-Hospital emergency health services.

## 3.4 Target Population:

238 staff members represented the MoH and PRCS Health providers of pre-hospital EMS system who work in the Gaza Strip during the period of May 2008 to October 2008.

### 3.5 Ethical Consideration:

To implement this study, the researcher prepared a proposal and questionnaire that sent to the committee of Helsinki to get the ethical allowance of the study (Annex no 1). An official letter included the aim of this research to the center of emergency and ambulance in the Gaza Strip to gain approval to conduct this study at its institutions. A consent form that includes the nature of study, objectives, research institutions, participant rights to refuse or withdraw and the guarantee of confidentiality must cover the questionnaire for better reading. If there is agreement, participants must sign a consent form before the data collection occurs. Finally, my full address and phone number were written in the consent form for any clarification requests about the research and its results.

The researcher gets two types of approval for data collection from (PRCS and MOH) (Annexes 2 and 3)

### 3.6 Eligibility criteria:

#### 3.6.1 Inclusion Criteria:

Any Pre-hospital emergency services staff member working in the Ministry of Health and the Palestinian Reed Crescent Society, as a Dispatcher, Ambulance officer or Ambulance driver and Administrator with a minimum proven experience of four years in the field of emergency ambulance.

#### 3.6.2 Exclusion Criteria:

Any Pre-hospital emergency services staff member working in the Ministry of Health and the Palestinian Reed Crescent Society of the Gaza governorates who is not licensed or with a proven years of experience.

### 3.7 Study Population and Sampling:

The target population of the present work was Pre-hospital EMS Providers who are working at the MoH and PRCS centers in the different governorates of the Gaza Strip.

Total number of Pre-hospital EMS providers in Gaza Strip distributed on

1. The Ministry of Health (MOH) 110 staff members
2. The Palestinian Red Crescent Society (PRCS) 128 staff members

**3.8 Sample size:**

There have been no cluster samples for the purpose of this research as the researcher aimed to meet the entire two hundred thirty eight staff members working in the emergency services.

**3.9 Response Rate:**

Despite that two hundred thirty eight staff members aimed, but the response rate was 137 staff member from both MoH and PRCS.

**3.10 Data Collection and Research tools:**

In-depth interview with key administrators as well as a focus group technique has been held with senior people to explore concepts and variables to be included in the questionnaire.

Meeting interviews was implemented through Personal Interview with individuals as well as focus groups, and experts and interested people that could be discussed a prepared issues.(Annex no 4)

The main instrument of this approach has been the questionnaire which is designed based on experts" input and on previous similar studies with few modifications.

The questionnaire included questions related to the followings: staff job specifications, coordination between the staff themselves, coordination with other emergency health provider bodies, ambulances numbers (MoH, PRCS), ambulances driver's qualifications, and the ambulances response time.

### 3.10.1 Focus group:

According to the triangulation of analytical tools approach, the researcher has prepared for a focus group that could aimed for 10 key figures that have in-depth experiences in the pre-hospital EMS services. The preparation has been done in accordance with best standards of conducting focus group. The researcher have specified time, date and place. Then, the researcher developed a proper invitation and agenda with the questions that were based on the research performance indicators. (Annex 4)

### 3.10.2 Questionnaire:

An important part of data was collected by using mixed close-ended and open questionnaires which were constructed and conducted in Arabic. Details about the components of the questionnaire were included in the annex no.5. The questionnaire was designed to include five major components:

1. Socio-demographic and general characteristics of the subjects,
2. Human resources and capacity of the subjects.
3. Equipment and resources.
4. Communication and coordination.
5. Supervision and Administration.

The items and components of the questionnaire were arbitrated and validated at two levels. The first was criterion related validity that depended on the construction of questionnaire items after reviewing the related literature. The Second was content validity; the questionnaire was checked by university scientists and experts (Annex no 6)

The questionnaire was distributed to the staff at the out-of-the hospital MoH staff and PRCS centers where they are working. The researcher explained the purpose and objectives of the study and he declared and committed to the participant with regard to the confidentiality of the study. After their consent, the subjects were asked to fill the proper questionnaire. The average time for filling the questionnaire was about 10-15 minutes.

### 3.10.2.1 Validity and reliability:

For the purpose of ensuring validity and reliability of instruments, the researcher distributed the questionnaire to experts in emergency field and research methodology science for their comments (validity of expertise).

To check reliability of the questionnaire, the researcher made a pilot study on a sample of 20 staff members, chosen randomly.

### 3.10.2.2 Data analysis:

Descriptive statistics (means for continuous data and counts for categorical data of EMS) used to examine the characteristics of medical providers EMS determined by the questionnaires survey. To compare continuous data, the researchers used the chi-square for categorical data.

Descriptive statistics (arithmetic and geometric means, geometric standard deviations, minima, and maxima) used to characterize the levels of frequencies, central tendency and dispersion measurements, cross tabulation and advanced statistical testing like t-test, was used to further clarify the relationship between the research variables. All of these statistics facilitated by Statistical Package for the Social Sciences (SPSS) version 13.

With regard to the focus group, the researcher has been the played the role of mediator for the group of senior and junior pre-hospital EMS specialists. The researcher has prepared several questions to the attendants. While attendants have been giving their comments; the researcher has been taking notes. As the focus group has been completed, the researcher have revised the comments and developed an analysis in relations to the research indicators.

### 3.10.2.3 Pilot Study:

Twenty Health Providers (Ambulance Officers and Drivers) were assigned for the piloting stage of the present work. The 10 volunteers Health Providers are not eligible for the present study due to the experience condition. They were asked to freely answer the

questionnaire. The questionnaire content was modified for best results and accuracy purposes.

**3.10.2.4 Type of sampling:**

The researcher distributed the questionnaire to the Health Providers thorough meeting interview, and then asked the Health Providers to fill and answer the items of the questionnaire and signed the consent form at the end of the questionnaire. The researcher explained the purpose and objectives and methodology of the study and inserted his name and occupation to all subjects included in the present study. He also declared and committed to the participant about the confidentiality of the study. The participation in the study was optional and confidential. Neither names nor personal data were published. All ethical considerations were maintained, including respect of people, truth and confidentiality.

**3.10.2.5 Data treatment and Statistical analysis:**

The data from the questionnaire were tabulated, encoded and statistically analyzed using the Statistical Package for the Social Sciences (SPSS) version 13. The following measurements and tests were performed with the aim to describe and identify significant relationship, correlations and differences between the MOH and PRCS of the present study items that include variables and parameters.

**3.10.2.5.1 Frequency tables:**

The crosstabs procedure was followed to present the frequencies of the different items of the questionnaire. Moreover all p-values were mentioned on each table where appropriate.

**3.10.2.5.2 Chi square test:**

The chi square test was used to determine whether the difference in frequency (percentage) among the same groups is significant or not, which means significance between row percentages in a single column of a table.

### 3.11 Study Limitations:

It was the lack of information, especially with regard to the number of workers in the area and emergency ambulance. On the other hand, the absence of a standard protocol or system in Palestine impedes research work. In addition, it is difficult to compare the approach in Palestine with the rest of the regulations, for several reasons; Palestine is still an occupied country, which led to a lack of communication possibilities. Every state has standards and systems that rely on the nature of disasters expected in that given state.

In addition, multiple sources of information and the absence of a central responsible for the control and emergency ambulance responsibilities is another limitation. Finally, it should be mentioned that this subject was not examined before in Palestine, which has increased the scarcity and lack of information and published papers.

**Methodology**

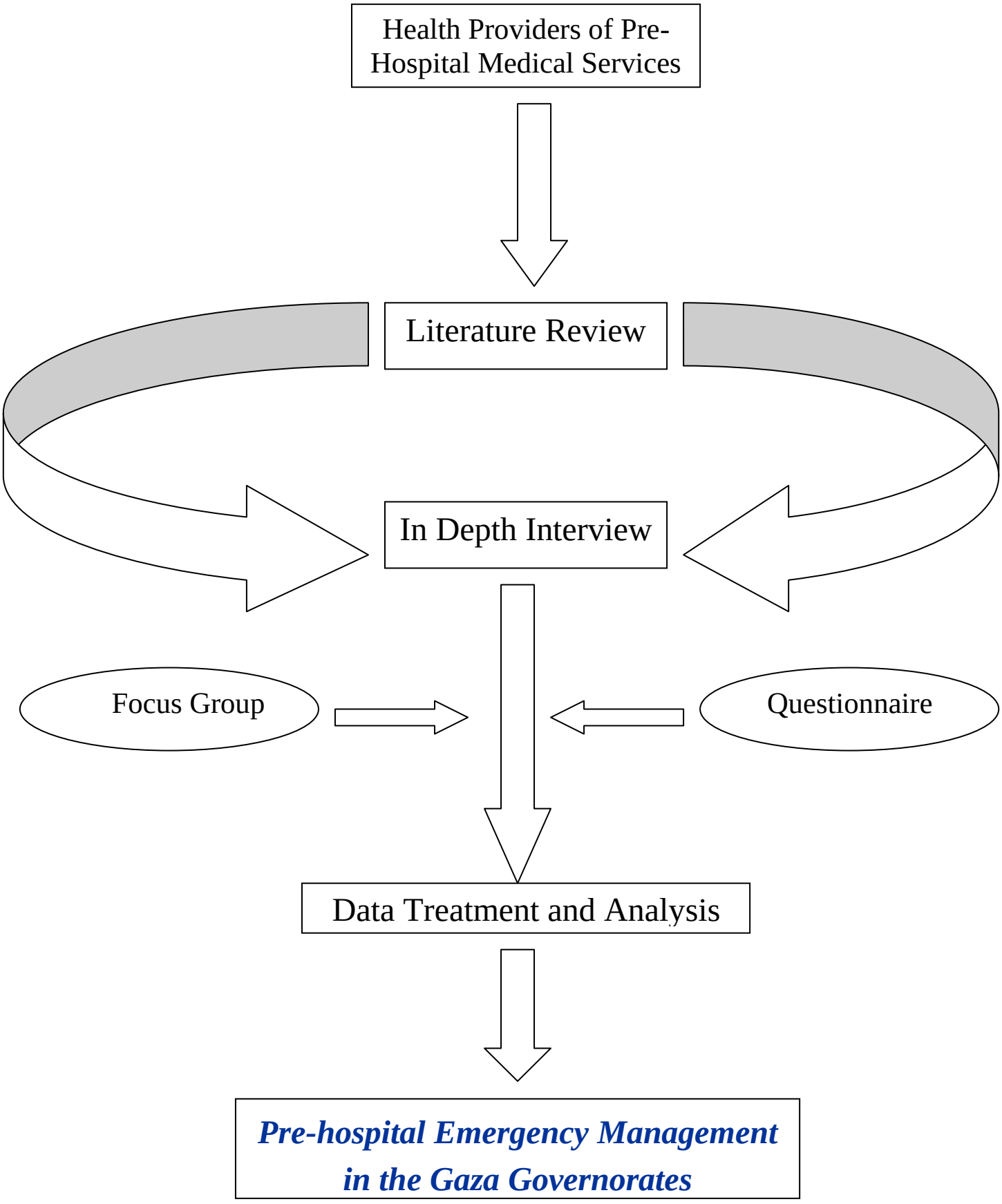



Fig 3.1. Schematic Representation of the Methodology.

# Chapter Four

# Results

# Chapter 4: Results

## 4.1 Overview:

This chapter explores the results and findings of a questionnaire that was developed as part of the methodological approach followed to assess the existing framework of pre-hospital EMS in the Gaza Strip. In the process of the questionnaire development, several interviews have been conducted with key EMS providers and health specialists to review the general layout, the chronological development of the data to be collected, and some specific questions.

As a genuine research tackled in the area of EMS's pre-hospitals services, there was a need to conduct the questionnaire at its early stage of development to the consultations to the different providers. The results of the consultations were significant contribution to the questionnaire in its final version as showed in (Annex No 1).

The final questionnaire's results demonstrate descriptive statistics of the sample population including personal data, demographical characteristics, available resources (human and equipment), communication and coordination mechanisms, final management style and supervision of pre- hospital.

In the process of conducting the research, an initial data have been collected by the researcher on the numbers of EMS providers in all over Gaza Strip governorates. The researcher found out that the major EMS providers, who play significant roles at the pre-hospital level, are distributed as follows in (Table 4.1).

It is noteworthy that other Health providers like UNRWA and the nongovernmental sector have a very minor role and mostly not involved in the pre-hospital services. However, they participate in the time of exceptional situations like the military invasions which are the most common cause of mass casualties in the Gaza Strip.

**Table (4.1) shows the distribution of pre-hospital EMS providers over number of staff and geographical locations**

| Name of pre-hospital provider | North | Gaza | Middle | Khanyounis | Rafah | Airport | Total Number of Staff |
|---|---|---|---|---|---|---|---|
| The Palestinian Red Crescent Society | **20** | **19** | **21** | **20** | **22** | **0** | **110** |
| The Ministry of Health | **15** | **41** | **18** | **21** | **18** | **15** | **128** |

As the above data were collected, the researcher started to fill in the questionnaires. Out of the overall 238 staff members, 137 were available. This number was acceptable to the researcher as representatives of the overall bulk of pre-hospital EMS providers in Gaza governorates.

The following sections will initially demonstrate characteristics of the pre-hospital EMS staff that completed the questionnaires then a detailed analysis of the data collected compared with the standards of pre-hospital.

In the following chapter there will contain a further discussion of this analysis in comparison with other different Pre-hospital EMS systems in the world.

This chapter will be divided into two main sections namely the statistical analysis of the questionnaire then followed by a general discussion of this analysis in comparison with different other Pre-hospital EMS systems in the world.

### 4.2 Statistical Analysis:

#### 4.2.1 Personal and demographic characteristics:

As mentioned, a total of 137 health professionals were available. Thus, all of them filled the questionnaire. Those professionals have met the selection process criteria mentioned

earlier. The sample was all Gaza Strip governorates. As the questionnaire conducted in terms of face to face interviews, the process started with an orientation to the target group about the aim of the research that is to assess the performance of pre- hospital in Gaza strip. The group which was selected included 116 males and 21 females.

According to the results, the study subjects show many variations in socio demographic characteristics as shown below:

**Table (4.2a) Distribution of the study population by sociodemographic characteristics**

| Characteristics | | Frequency | Percentage |
|---|---|---|---|
| **Sex** | **Male** | 116 | 84.7% |
| | **Female** | 21 | 15.3% |
| | | | |
| **Age Groups** | **Under 30** | 32 | 23.4% |
| | **30 – 40** | 62 | 45.3% |
| | **More than 40 to 50** | 39 | 28.5% |
| | **Over 50** | 4 | 2.9% |
| | | | |
| **Governorate** | **North** | 21 | 15.3% |
| | **Gaza** | 36 | 26.3% |
| | **Middle** | 31 | 22.6% |
| | **Khanyounis** | 30 | 21.9% |
| | **Rafah** | 19 | 13.9% |
| | | | |
| **Health Providers** | **MOH** | 56 | 40.9% |
| | **PRCS** | 80 | 58.4% |
| | | | |
| **Educational Level** | **University** | 16 | 10.9% |
| | **Diploma** | 84 | 57.7% |
| | **Unknown** | 42 | 31% |

**Table (4.2b): Distribution of the study population by Scio demographic characteristics**

| Characteristics | | Frequency | Percentage |
|---|---|---|---|
| **Work Type** | **Driver** | 50 | 36.5% |
| | **Ambulance Officer** | 81 | 59.1% |
| | **Administrator** | 6 | 4.4% |
| | | | |
| **Working experience** | **From 4 to 5 years** | 26 | 19% |
| | **Over 5 years to 10** | 81 | 59% |
| | **More than 10 years** | 30 | 21% |

**4.2.1.1 Male/Female distribution:**

**Table (4.3): Distribution of the male/female staff members**

| Sex | Frequency | Percent |
|---|---|---|
| **Male** | 116 | 84.7 % |
| **Female** | 21 | 15.3 % |
| **Total** | 137 | 100 % |

This male/female distribution shows significant difference of numbers in favor of males as showed in the above table. This shows a trend in employing males more than females. However, its important to mention that the results of the questionnaire reveals that all the 21 female staff members are PRCS employees with no female employees working for the MoH pre-hospital EMS. Head of the EMS department in the MoH has confirmed this figures in a personal interview held with him. (Head of the EMS department, October 2008, Personal Interview)

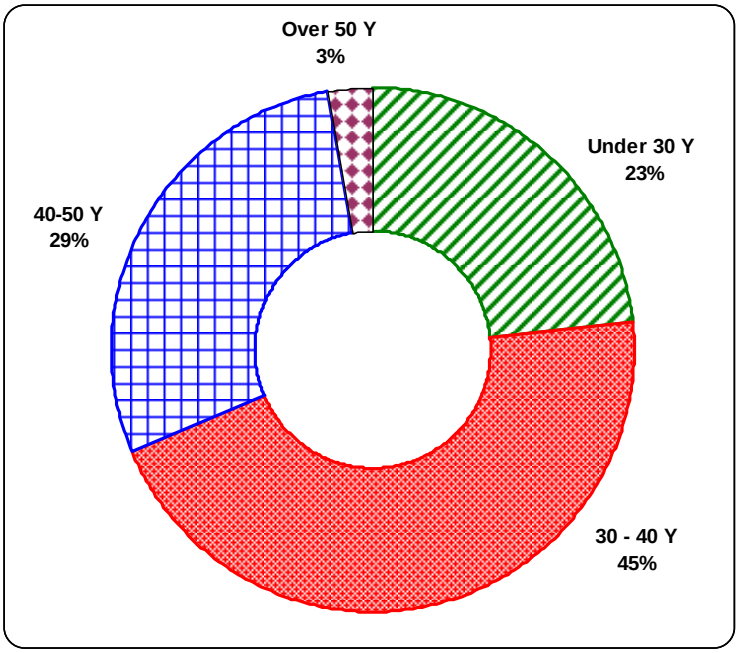
The researcher argues within this context that the PRCS recruitment policy is considerable to the gender issue on the contrary that the MoH is not considering such issues yet according to the figures

#### 4.2.1.2 Age distribution:

The study reveals that the minimum age of health professionals participated in the study was 37.3 years old with standard deviation (SD) 7.4, median 37 and ranges from 25 to 60 years old. Most of participants are 30 to 40 years age.

According to the results (Table1 and Figure1), 23.4% of study participants are under 30 years old, 45.3% within 30 to 40 age group and 28.5% aged 40 to 50 years. Most of the participants are in the middle age.

This above data reads that the distribution of age is a positive indicator. A good performance system relies on different ages to strengthen the capacity performance and the exchange of experience among the different ages. Besides, the age of the staff reveals that the pre-hospital EMS is managed by young staff in average.

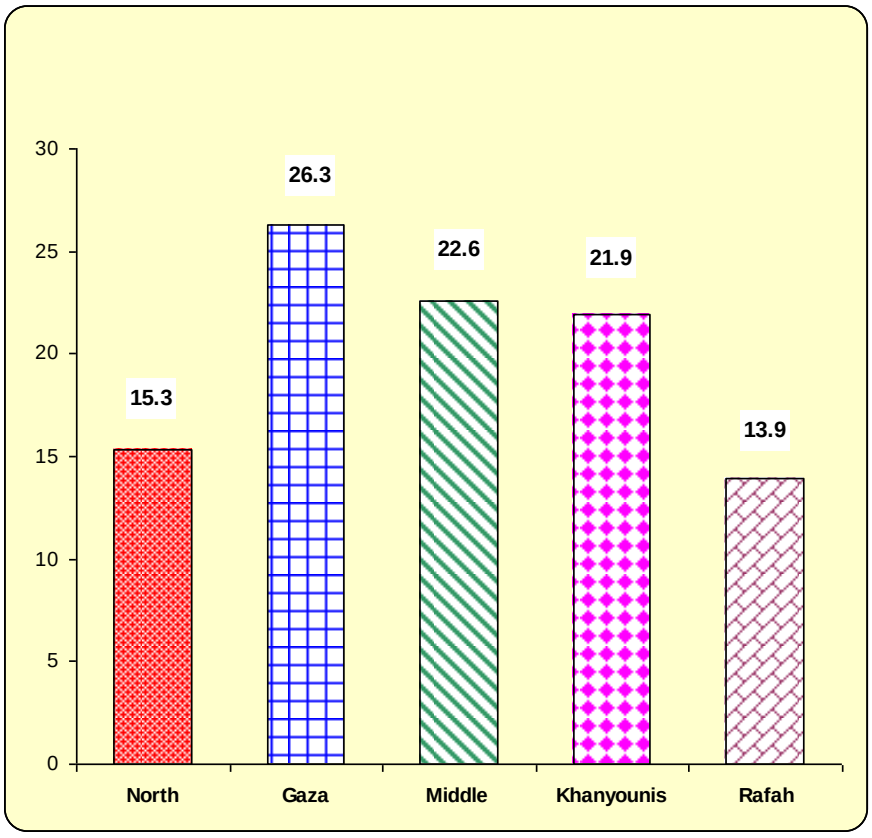



**Graph 4.1: Distribution of the sample by age**

### 4.2.1.3 Geographical distribution:

With regard to the geographical distribution, data shows that distribution of respondent's place of residence by governorate. 26.3% of the sample was selected from Gaza governorate, followed by Middle area 22.6%, Khanyounis 21.9%, North 15.3 % and Rafah 13.9 %.

These data shows that the pre-hospital personnel are well-distributed and all Gaza governorates are covered based on the density of population relatively.




**Graph 4.2: distribution of respondents by governorate.**

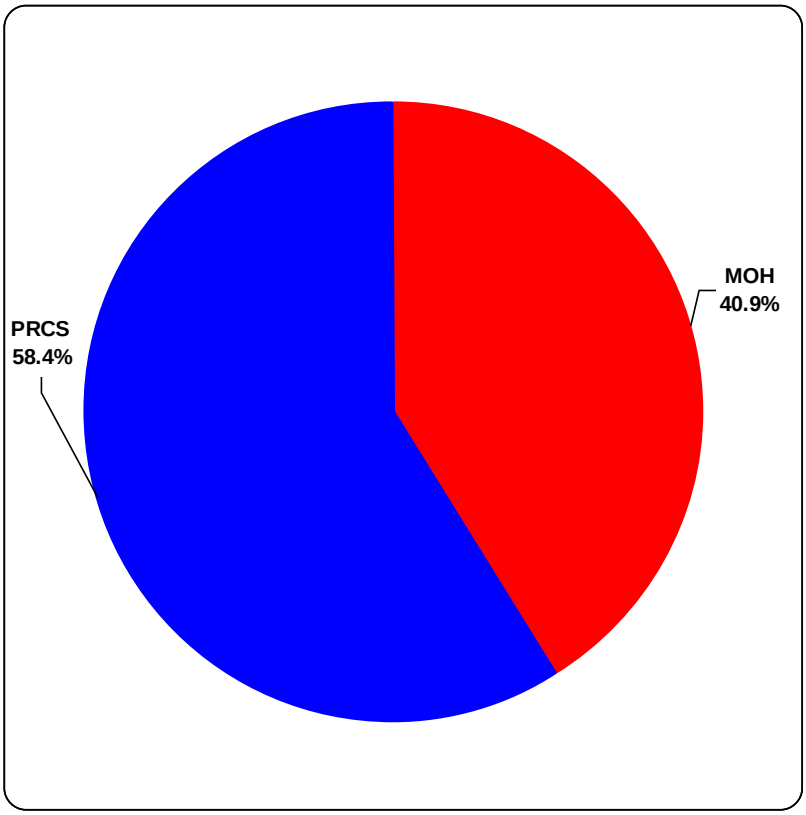
### 4.2.1.4 Health providers:

As the researcher reviewed the personnel capacity of the major health providers who filled in the questionnaire, the figures indicated that more than half of the study participants were

from the Palestinian Red Crescent Society (PRCS) 58% and the Ministry of Health (MoH) working staff represents (41%) of study participants as shown in table 3.

**Table 4.4: Distribution of staff by Pre-Hospital EMS Provider**

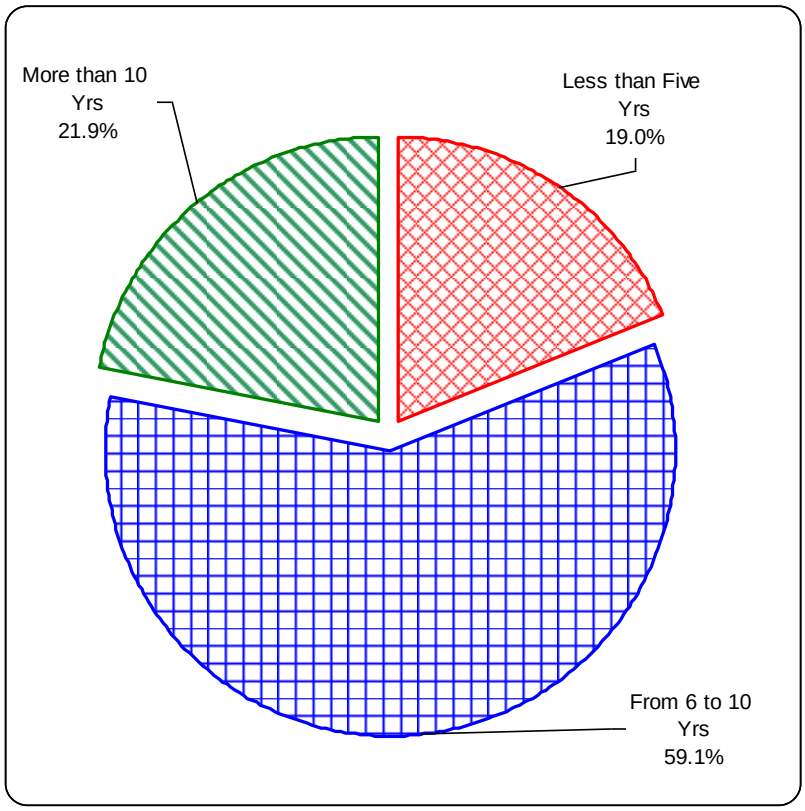
| Health provider | Frequency | Percent |
|---|---|---|
| **MOH** | 56 | 40.9 |
| **PRCS** | 80 | 58.4 |
| **Total** | 136 | 100 |




**Graph 4.3: Distribution of staff by Pre-Hospital EMS Provider**

#### 4.2.1.5 Working years of experience:

According to results, 59% of the participants has six to ten years of experience, 19% has less than five years working experience and 22% of the participants has more than ten years of experience (table & figure).




**Graph 4.4: Distribution of respondents by years of experience.**

### 4.2.2 Human Resources

#### 4.2.2.1 Working staff:

The following data takes an in-depth look at the personnel characteristics, years of experiences, working hours, positions within the organizational structure and other human resources related to the core work of the pre-hospital EMS. The data that analyzed the capacity of the pre-hospital EMS staff shows that over half of the staff are having years of experiences that exceeds 6 years. Notably the figures show, 60% of the staff are

Ambulance officers, which is a good indicator to the high performance. As the number of the Ambulance officers exceeds those Drivers, this means that there are more Ambulance officers than drivers. In fact this is important in the organizational structure that empowers the performance of the pre-hospital EMS in general. However, the researcher argues that the number of drivers is big compared with the ambulance officers. This is weakening the overall performance of the Pre-hospital EMS in general.

The professional educational attainment for the majority of the providers is Diploma, which is considered to be low compared with providers with university degrees. Although the working experiences for those providers are relatively high; up to ten years, the quality of this experience is low. This is especially true since there is no organized training and no specialists practicing EM. In addition, 93% of participants declared that "they are in need for other important training courses" like refreshing, upgrading and advanced courses. This is greatly affecting the quality of the service provided as well as a weakness in the Pre-hospital EMS.

This level of education shows an unsatisfactory level despite that the recruitment process indicates strict procedures. This will keep the level of performance relatively low with less specialized staff members.

Work schedules in time of invasions do not exist. Data shows that invasions are dealt with as exceptional events where pre-Hospital staff should work voluntarily, which is not the case in Gaza governorates that are exposed to the Israeli attacks from time to time.

From existing staff perspectives, the current working staff is insufficient. Pre-hospital staff seems overloaded of missions which decline the performance. This means that performance level gets worse in time of invasion.

- The average years of experience for pre-hospital EMS staff was 9.34 years (DS 4.78), median 8 and range from 1 to 22 years. Most of the respondents have 6 to 10 years of experience (59%).

- 40% of the pre-hospital EMS team who participated in the study work as Ambulance Drivers and 60% work as Ambulance officers, out of the 60 %, there are 5 % who works as Dispatchers, yet employed as Ambulance officers.

- In reference to the pre-hospital ambulatory missions, data shows that each mission's team includes a Driver and an Ambulance Officer and sometimes, a nurse or a general practitioner may join the team.

- In reference to participants' educational level, more than half of participants have diploma certificates after secondary school (57%) and only 10% have a university degree. The rest, 33 % has only secondary schools certificates.

- Pre-Hospital EMS staff works 42 hours a week in normal situations, but during invasions and Israeli attacks they tackle an endless voluntarily missions with self motivation in service of victims of invasions.

- The recruitment process for new personnel includes sitting for an exam, appropriate qualifications, training courses as well as working experience in emergency and an ambulatory services.

- In terms of staff availability, 64% of the respondents stated that "the number of working staff is insufficient".

#### 4.2.2.2 Training and Capacity building:

In the capacity and training context, figures show that there are weak and low levels of interest from employers" level in training and capacity building in Pre-hospital emergency services to improve staff qualifications and skills which affect the quality of service provided.

The following indicators reflect the situation of training among pre-hospital providers to assess the level of updating knowledge that continually received.

Data indicates that during staff lifespan 57.7% of the respondents stated that they attended training courses related to their work in emergency services such as general and advanced first aid courses, driving ambulance, communication skills, disaster management, utilizing D.C shock and ECG devices. These courses were mainly in-house training, and an average of 18% of the training courses were external or attended on individual bases.

In terms of training continuity, there are significant variables during the last five years. During period of Intifada (2000 - 2005), the total number and percentage of participants working in emergency service who attended training courses were (42, 30.6%).

The average of training courses has been lowered between 2006 and 2008. The total number and percentage of participants working in emergency service who attended training courses were 11.8 %. Since early 2008, there were only 2 respondents who participated in training courses with a percentage of 1.5%.

The majority of the participants (86%) stated that "there is a lack of support and limited resources as a result for not attending/getting training courses in emergency and ambulatory field.

In addition 93% of participants declared that "they are in need of other important training courses like refreshing, upgrading and advanced courses".

**4.2.2.3 Obstacles and limitations facing ambulance teams:**

(Table 4.5) shows the main obstacles and problems facing Pre-Hospital emergency and ambulance teams .The study reveals that 39% of the responses acknowledged that the most frequent difficulty and obstruction facing them were the "limited resources" followed by the "inappropriate place" with a percentage of 28.6%. A percentage of 19.5% attributed difficulties to the "limited working staff".

This data read that, "lack of resources" is the major reason for low performance as unavailability of resources would influence quality performance. This is related to most Pre-hospital EMS components such response times, Preparedness of ambulances, communication system, etc.

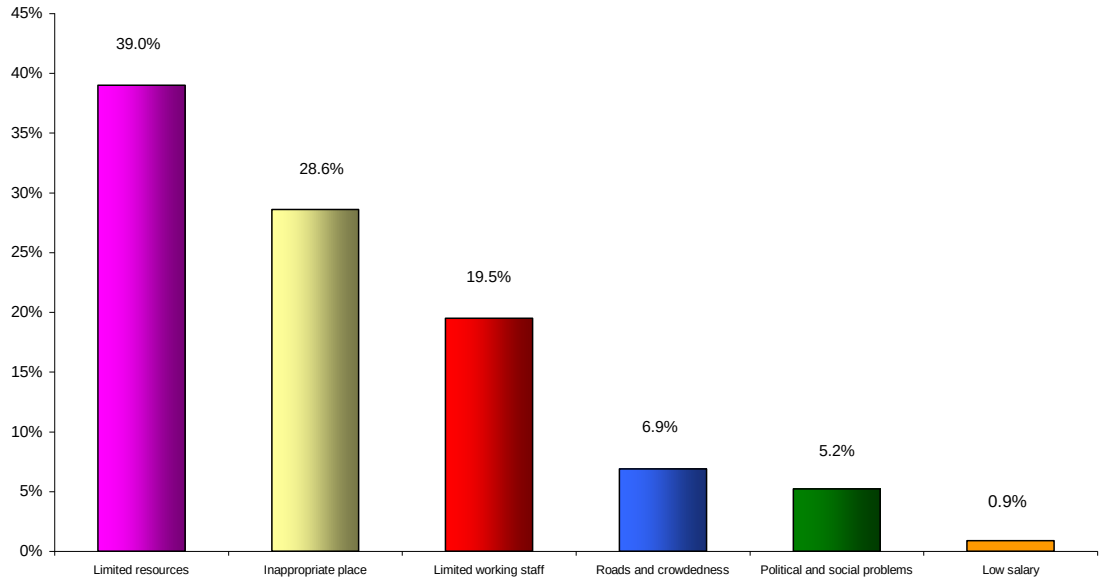
Where "inappropriate place" listed as a second difficulty, this refers to inadequate housing, working conditions, and parking place and the poor design of the ambulance station. This is defiantly, among the key factor of high performance which will ease the whole pre-hospital services.

Records related to "Limited working staff" as 19.5 % affirm the previous point where 64% of the respondents stated that "the number of working staff is insufficient". Such situation is significantly influence as sought to be high standard performance. And if this was the case in normal situation, the current pre-hospital system will not be able to react to complicated disasters.

Data analysis shows that respondents have more than one answer. Therefore, the number of Responses do not indicate the number of people who filled the questionnaire rather those who actually listed the problem as they encountered them.

**Table 4.5: Main obstacles and problems facing emergency and ambulance team**

| **Problems & Obstacles** | **Number of Responses** | **Percent** |
|---|---|---|
| Limited resources | 90 | 39.0% |
| Inappropriate place | 66 | 28.6% |
| Limited working staff | 45 | 19.5% |
| Roads and crowdedness | 16 | 6.9% |
| Political and social problems | 12 | 5.2% |
| Low salary | 2 | .9% |
| Total | 231 | 100.0% |




**Graph 4.5: Main obstacles and problems facing emergency and ambulance team**

### 4.2.3 Coordination and communication

This section explores where the coordination and communication, among ambulance officers, drivers, other pre-hospital providers, and hospitals, stands.

The data exposes a good communication system between the public and the pre-hospital EMS where this enhances response time. Most of ambulance staff has mobile phones and VHF Radio devices which facilitate communication among each other for the services of the public. It has been noted also that the communication system with other providers is good as confirmed by 76% of the working staff. However, data shows that there is no united command room that coordinates that work. Work is done among providers on

voluntarily bases but not based on a protocol and mechanism among the different providers. Besides, there is no relationship with the police or civil defense. However, the police facilitate ambulance movement in the street but only as part of the traffic jam, not a preparatory process.

A significant defect in the communication system lies with the missing channels among pre-hospital EMS and the Emergency Hospital Departments. Communication with the hospital as process of notification of the coming case is a part of the Pre-hospital process. This defect in the relationship in both civil defense and police, who are supposed to make the mission easier and the response time higher, ending up with the hospital that should be ready and well notified about the case level of urgency, is supposed to be under review.

76 % confirmed that "everyone can reach ambulance and emergency services easily" and 75% of ambulance and emergency departments own special free telephone number accessible for all people.

63% stated that "calling system works and utilized efficiently" and 73% of ambulance team got sufficient information about patients and wounded people before reaching the place of injury.

67% stated that "ambulance teams have special telecommunication tools to communicate with each other and other ambulances", most of ambulance teams have mobile phones and VHF Radio devices.

The estimated time needed for ambulance departure was 3.4 minutes and ranges from 2 to 5 minutes.

The average time to reach patients from ambulance station to a patient's place was 7 minutes and ranges from 4 to 15 minutes depending on the distance between the station and the target.

Ambulance teams revealed that to minimize response/reaching time, it is suggested to improve roads and facilitate traffic.

52% of ambulance teams declared that "there are other ambulance and emergency providers in the same area" and 57% stated that "there is a central operation room" to guide and coordinate ambulance teams. In addition to 76% of the working staff confirmed that "there are good coordination and cooperation with different ambulance service providers", such as the MoH, PRCS and UNRWA. This is due to the urgency of work and long experience in the field, widespread support and helping culture between ambulance working team.

Most of the times, coordination process is done centrally and it has effective mechanisms.

37% of the respondent stated that "there are a limited coordination with police and supporting departments such as civil defense", but usually policemen facilitate ambulance missions during their way to the hospital.

According to ambulance working staff point of view, 92% stated that "It's very important to coordinate with the nearest hospital" and 32% contact hospital directly.

33% of ambulance team stated that "No coordination with the hospital" because of lack of communication and coordination techniques (devices and procedures). In addition, 50% stated that "There are no clear system and protocols for coordination".

### 4.2.4 Management style and Supervision:

This section examines the hierarchal relationship of the Pre-hospital EMS team. It explores the interests of the high level management in developing as well as maintaining the level of performance of their subordinates. This included the capacity building activities, supervision techniques, and the acknowledgement approach of efforts. The data below will also provide a comparison between the MoH and PRCS approaches. The importance of this analysis lies in its indication of the continuous process of enhancing the performance.

Within this context, the data below indicated that the High Level Management interest of staff professional development ranges between Moderate or absent based on the consensus of 55.% which is more than half of working staff as shown in (Table 4.6).

**Table 4.6: High Level Management interest and support in professional development.**

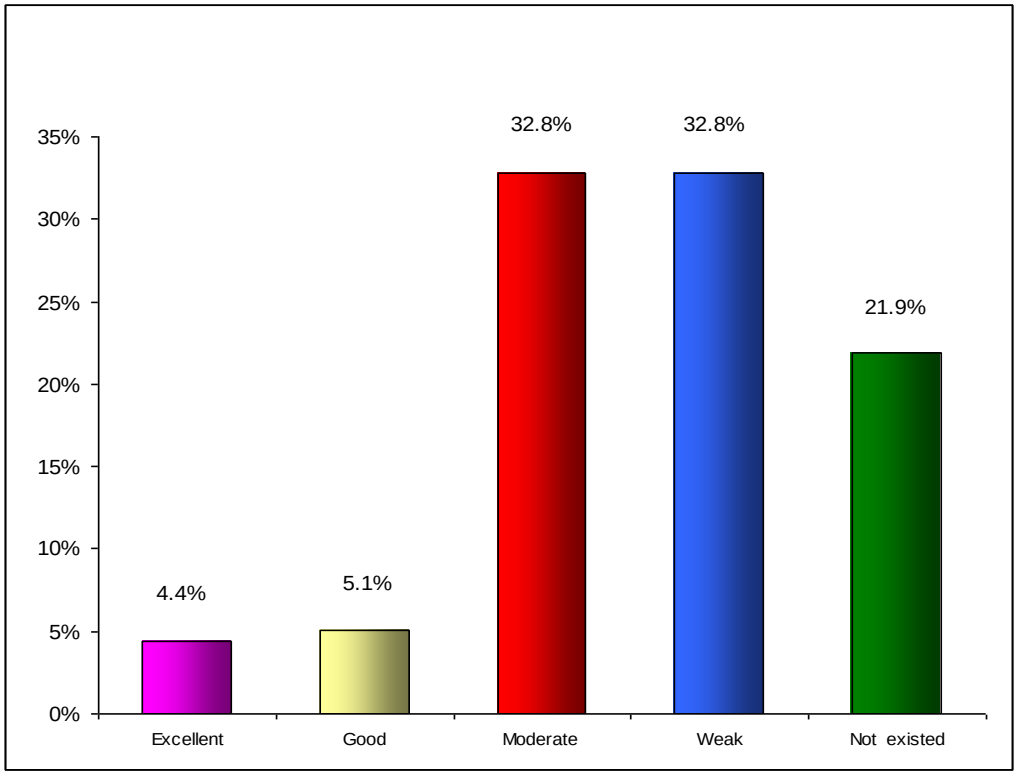
| Level of Interest | Frequency | Percent |
|---|---|---|
| **Excellent** | 6 | 4.4 |
| **Good** | 7 | 5.1 |
| **Moderate** | 45 | 32.8 |
| **Weak** | 45 | 32.8 |
| **Not existed** | 30 | 21.9 |
| **Total** | 133 | 100 |

As such figures of capacity building concerns were compared among the major pre-hospital EMS providers namely the MoH and PRCS. Data showed that the MoH staff declared a higher percentage in low level of interest for high level management. (75%) stated that there is a lack of interest in professional development for emergency and ambulance services compared with 43% from PRCS staff. (Table 4.7)

**Table 4.7: MoH and PRCS interest in Capacity Building**

| Level of interest | Work place | | Total |
|---|---|---|---|
| | MOH | PRCS | |
| Low | 42 | 33 | 75 |
| | 75% | 42.9% | 56.4% |
| High | 14 | 44 | 58 |
| | 25% | 57.1% | 43.6% |
| Total | 56 | 77 | 133 |
| | 100% | 100% | 100% |

Chi-Square 14.6 P- value < 0.001 (statistically significant)




**Graph 4.6: High Level Management interest and support in professional development**

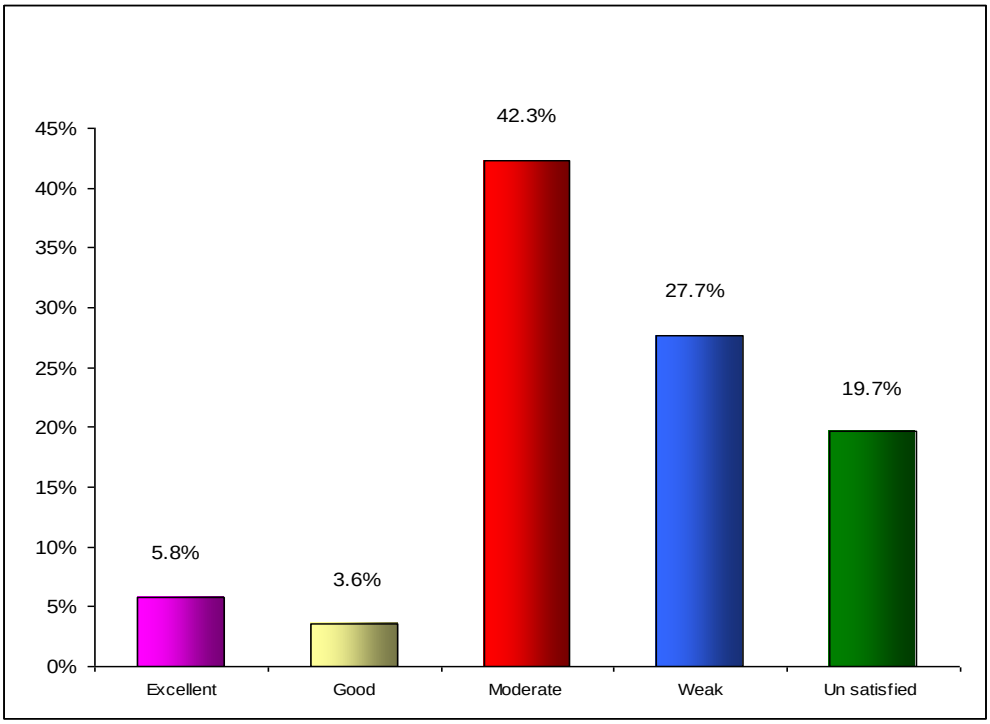
- The findings revealed that only 38% of participants agreed on that "There is a periodical performance appraisal in their organization"

- Overall, 77% of the participants confirmed that "they provide a written progress and activity reports about their achievement and problems", however, half of them stated that the "head of department didn't take into account our reports".

As shown in (Table 4.7), there was a low level of satisfaction about supervision techniques, with 47% of the participants stated that they were weakly or completely unsatisfied.

**Table 4.8: Level of Satisfaction about Supervision Techniques**

| Level of satisfaction | Frequency | Percent |
|---|---|---|
| **Excellent** | 8 | 5.8 |
| **Good** | 5 | 3.6 |
| **Moderate** | 58 | 42.3 |
| **Weak** | 38 | 27.7 |
| **Un satisfied** | 27 | 19.7 |
| **Total** | 136 | 100 |




**Graph 4.7: Level of Satisfaction about Supervision Techniques**

Moreover, the MoH working staff declared they are highly unsatisfied about the supervision techniques and process compared with PRCS staff (71.4%, 31.2%) (see table )

**Table 4.9: MoH and PRCS satisfaction level on supervision techniques**

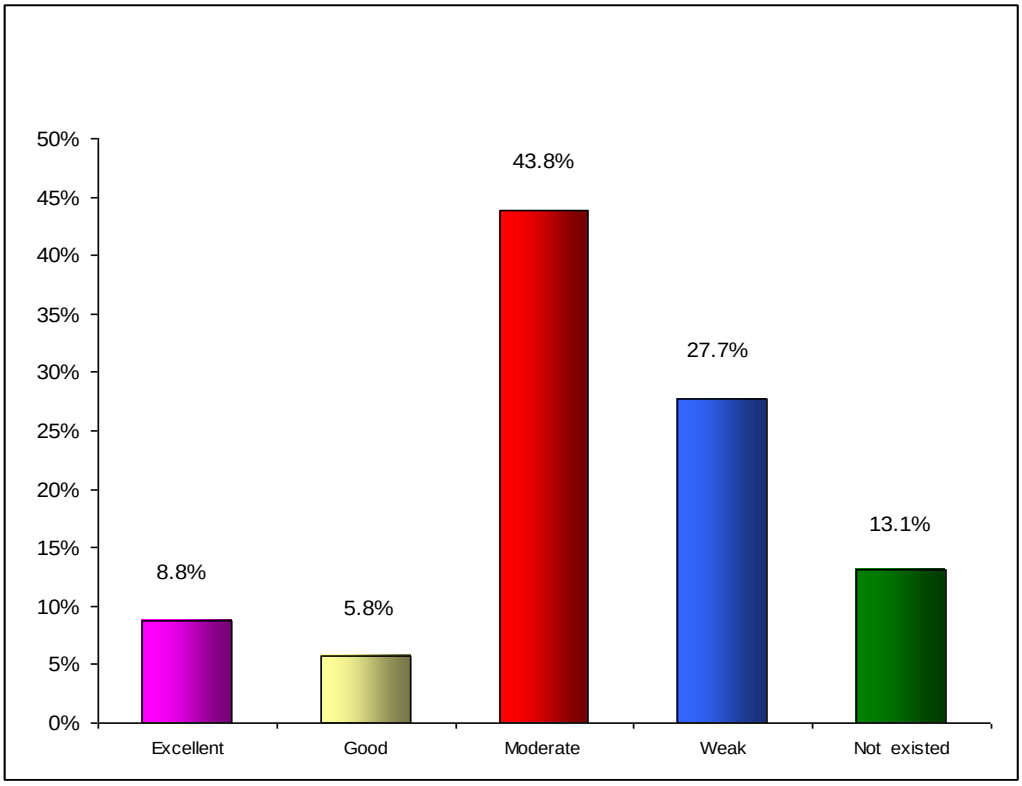
| Satisfaction Level | Work place | | Total |
|---|---|---|---|
| | MOH | PRCS | |
| Low | 40 | 25 | 65 |
| | 71.4% | 31.2% | 47.8% |
| High | 16 | 55 | 71 |
| | 28.6% | 68.8% | 52.2% |
| Total | 56 | 80 | 136 |
| | 100% | 100% | 100% |

Chi-Square 22.4 P- value < 0.001 (statistically significant)

(Table 4.9) shows ambulance team estimation about Managers appreciation and recognition of their work and efforts, 30% of the working staff stated the Manager's recognition was weak or absent. On the other hand, 44% of the participants stand in the middle, very good rating, and a few of them stated that there is a high level of recognition. This confirms the lack of interest and support from high level management which is a significant indicator of performance.

**Table 4.10: High Management and Recognition of Work and Efforts**

| Level of recognition | Frequency | Percent |
|---|---|---|
| **Excellent** | 12 | 8.82 |
| **Good** | 8 | 5.88 |
| **Moderate** | 60 | 44.12 |
| **Weak** | 38 | 27.94 |
| **Not existed** | 18 | 13.24 |
| **Total** | 136 | 100 |




**Graph 4.8: High Management and Recognition of Work and Efforts**

In comparing figures of both MoH and PRCS, Table 4.10 shows that the MoH staff suffers from lower level of appreciation and recognition for their work and efforts 50.9% while these figures cover even lower for the PRCS staff as level of appreciation and recognition rated only 34.6.

**Table 4.11: MoH and PRCS appreciation and recognition of staff work and efforts**

| Level of recognition | Work place | | Total |
|---|---|---|---|
| | MOH | PRCS | |
| Low | 28 | 28 | 56 |
| | 50.9% | 34.6% | 41.2% |
| High | 27 | 53 | 80 |
| | 49.1% | 65.4% | 58.8% |
| Total | 55 | 81 | 136 |
| | 100% | 100% | 100% |

Chi-Square 3.9 P- value < 0.001 (statistically significant)

In light of the above data, combining the three questions regarding management style and supervision to produce a general impression or scale to describe these issues, the study found out that there was a lower level of administrative support and recognition in the MoH per- hospital services compared with that of the PRCS.

**Table 4.12: MoH and PRCS Over all assessment for management Style**

| Over all assessment for management style | Work place | | Total |
|---|---|---|---|
| | MOH | PRCS | |
| Low | 41 | 33 | 74 |
| | 74.5% | 42.9% | 56.1% |
| High | 14 | 44 | 58 |
| | 25.5% | 57.1% | 43.9% |
| Total | 55 | 77 | 132 |
| | 100% | 100% | 100% |

### 4.2.5 Technical Resources:

The following section examines the ambulances readiness from pre-Hospital EMS team perspective. In principle, a team's job is to conduct a daily check for the ambulance vehicle structure as well as the equipment inside it. As part of the researcher investigation to assess the pre-hospital management performance, the data below reflects the current pre-hospital staff practices in both the MoH and PRCS. In addition to the technical check-up of the ambulance vehicles, the data reflects the pre-Hospital EMS teams' knowledge of the availability of the equipment.

This check list that the researcher built his argument on is developed by the PRCS as a tool for their teams to be utilized on daily basis.

This is in addition to the data reflection on the MoH and PRCS which has been developed into two major areas: first the structure and technical aspects of the ambulances and second the equipments inside the ambulances. The researcher developed a comparative analysis for both pre-hospital EMS providers performance.

#### 4.2.5.1 First: Ambulances' structure and technical aspects:

Figures show 87.6 % of the MoH and PRCS pre-hospital staff respondents acknowledge the availability for body, paint, mirrors, tires, windows and cleaning for the ambulance shape and condition which is tackled through daily check for the ambulances readiness. In this context, the PRCS team has a better knowledge with 89.3 % than the MoH team with 84.5% of such daily practices due to the more organized recording process for the daily check.

In addition, figures related to the daily check of the lights, wiper system, emergency light, Horn, Radio, Siren as a part of the ambulance electricity function test refers that 87.72 % of both the MoH and PRCS pre-hospital staff respondents acknowledges the availability of such practices where as, the figures show a better knowledge for that working in the PRCS with 89.3 % rather than MoH staff with 84.8 %.

Furthermore, figures related to the daily check of the radiator, battery and break fluid as a part of the Ambulance engine which is tackled through daily check for the ambulances readiness show that 87.6 % of both MoH and PRCS pre-hospital staff respondents acknowledge the availability of such practices where as, the figures show a better knowledge for that working in the PRCS with 88.9 % rather than MoH staff with 85.2 %.

Moreover, figures related to the daily check of the E R triangular, fire extinguisher, Jack, Spot light, License paper and case forms as a part of the Ambulance Technical Machinery which is tackled through daily check for the ambulances readiness refers that 84.4 % of both MoH and PRCS pre-hospital staff respondents acknowledge the availability of such practices where as, the figures show a better knowledge for that working in the PRCS with 87.8 % rather than the MoH staff with 79.6 %.

**Table 4.13a: Ambulances' structure and technical aspects**

| **The ambulance Shape and Condition** | **MOH** | | **PRCS** | |
|---|---|---|---|---|
| Body | **45** | 83.3% | **72** | 88.9% |
| Paint | 45 | 83.3% | 72 | 88.9% |
| Mirrors | 46 | 85.2% | 72 | 88.9% |
| Tires | 46 | 85.2% | 72 | 88.9% |
| Windows | 46 | 85.2% | 73 | 90.1% |
| Clean in, out | 46 | 85.2% | 73 | 90.1% |
| **Ambulance Electricity (Function Test)** | **MOH** | | **PRCS** | |
| Lights on off | 46 | 85.2% | 73 | 90.1% |
| Wiper system | 46 | 85.2% | 71 | 87.7% |
| Emergency light | 45 | 83.3% | 72 | 88.9% |
| Horn | 46 | 85.2% | 73 | 90.1% |
| Radio | 46 | 85.2% | 72 | 88.9% |
| Siren | 46 | 85.2% | 73 | 90.1% |
| **Ambulance engine** | **MOH** | | **PRCS** | |
| Radiator | 46 | 85.2% | 72 | 88.9% |
| Battery | 46 | 85.2% | 72 | 88.9% |
| Break fluid | 46 | 85.2% | 72 | 88.9% |
| Oil level | 46 | 85.2% | 72 | 88.9% |

**Table 4.13b: Ambulances' structure and technical aspects**

| Ambulance Technical Machinery | MOH | | PRCS | |
|---|---|---|---|---|
| E R triangular | 45 | 83.3% | 71 | 87.7% |
| fire extinguisher | 45 | 83.3% | 72 | 88.9% |
| Jack | 46 | 85.2% | 71 | 87.7% |
| Spot light | 45 | 83.3% | 71 | 87.7% |
| License paper | 45 | 83.3% | 70 | 86.4% |
| Case forms | 32 | 59.3% | 72 | 88.9% |

**4.2.5.2 Second: Medical equipment and supplies availability:**

With regard to the Medical Equipment availability, figures show that 79.7 % of the MoH and PRCS pre-hospital staff respondents acknowledge the availability for below listed medical equipment as referred in table 4.14 (Annex no 7) that is tackled through daily check for the ambulances readiness.

In this context, the PRCS team has a better knowledge with 93.3 % than the MoH team with 59.3% of such daily practices. These figures related to this particular component indicate that the PRCS team has a better and more organized recording process for the daily check and the PRCS ambulance are better equipped.

As a perspective of the pre-hospital EMS on the limited resources such as medical equipments in ambulances, 33.5% the participants justified this as "unavailable in Gaza market" due to Israeli measures and closure. In addition to 28.2% of clarified the cause was "Limited Resources" of the MoH or the PRCS. An average of 27.1% of the participants revealed the cause was "carelessness and lack of interest from high level management".

It is noteworthy that 91% of ambulance and emergency team have been ordered these unavailable equipments and supplies from high level management. This indicates the lack of interest and weak supervision techniques.

**Table 4.14: Common reasons for lack of medical equipments and supplies in ambulances**

| Reasons | Number of Responses | Percent |
|---|---|---|
| Unavailable in Gaza | 57 | 33.5% |
| Limited resources | 48 | 28.2% |
| Careless from top management | 46 | 27.1% |
| Skills and experience | 19 | 11.2% |
| Total | 170 | 100.0% |

### 4.3 Focus Group Analysis:

As an important of part of the research, the researcher has invited a group of key figures who are experienced on pre-hospital EMS management. the researcher did interact with the group with in prior defined questions based on the four performance indictors of the researcher (Annex 4).

As the debate has taken place, the researcher played the role of the mediator. The results were analyzed in the following section.

The attendants acknowledged that the number of ambulances is adequate with good geographical distribution over Gaza governorates. The researcher recognizes that there is at least one pre-hospital station in five different areas over Gaza governorates governing, northern, southern, middle areas, and Gaza city.

There are no clear protocols and standards of ambulances equipment, vehicle and structures. The research argues that most of these ambulances are donated through different donors and prepared outside Gaza governorates. Despite that the PRCS has been acknowledged of having unified checklist for ambulances but this checklist is not the same as the one used by the MoH.

With regard to the license of ambulance officer, there is no formal accreditation body that could be authorized of issuing such license.

In terms of communication, the attendants agreed that there is lack of communication between pre-hospital staff and in-hospital Emergency and Accidents staff.

There are fragmented providers of the pre-hospital EMS providers as the PRCS is not working in coordination with the MoH. Despite, there were some initiatives in this regard as PRCS has developed communication system but it is still not working for lack of follow up. Some comments have been arisen on the coordination with other pre-hospital EMS stakeholders like police, civil defense and traffic agencies.

There is no standardized teaching curriculum; However the PRCS has a curriculum for ambulance officers which could be used as a base of a national level. They agreed on the importance on developing it with more input.

**4.4 Discussion**

In this section the researcher is looking elaborately at the results of the questionnaire's analysis placed in the first section. In addition, the researcher is discussing the interviews and the focus groups that have been tackled in the course of this research.

Within the context of the questionnaire conducted, the data provided by the 137 Pre-hospital staff members in both PRCS and the MOH, has given important indicators about the current situation of the Pre-hospital EMS in the Gaza Strip. In addition to the questionnaire, the researcher has conducted several interviews with senior EMS staff who are involved in the development of the pre-hospital EMS in particular. Besides the researcher has conducted a focus group that gathered Senior EMS staff with junior ones.

As the output of the questionnaire has been statistically analyzed in the previous section; the researcher at this section will follow the same structure of the four components discussed in the first section namely: Personal and demographic characteristics, Human Resources, Coordination and communication and Management style and supervision.

Due to the absence of agreed upon international standards of the pre-hospital, the researcher will discuss the pre-hospital EMS in comparison with other pre-hospital systems in other countries and the basic principles of the pre-hospital EMS management.

The researcher argument of the pre-hospital performance will be elaborated by each other following sections. Nevertheless, the researcher argues, based on the statistical analysis, and data collection, interviews that the pre-hospital EMS system in the Gaza Strip are fragmented due to the absence of one collaborative strategy of common work. The six providers work individually. Despite that PRCS has been mandated solely to provide pre-hospital EMS in Palestine, other agencies specially the Ministry of Health developed a pre-hospital system has been duplicated the work with the PRCS. The six pre-hospital EMS providers have no leading EMS department. The researcher argues that this situation is weakening the performance of the overall pre-hospital system. For this purpose, the researcher will highlight some management performance indictors of the pre-hospital EMS that has been utilized to measure the current pre-hospital situation in Gaza governorates.

The following are some Performance Indicators that has been adopted within this analysis: (Delagi and Robert, 2007).

### 4.4.1 Resource Management Performance Indicators

Program management at local, regional and state level, Technical assistance, Unit coordination, Supplies, Equipping and staffing of ambulance vehicles considering the international and national standards.

### 4.4.2 Personnel Performance Indicators

Personnel/recruitment and retention, Authority/responsibility, Availability of provider educational opportunities, Job satisfaction, Training programs, Workforce relationships, number and quality of staff, improved dispatch capabilities, Institutional support, Systematic, scientific based and institutionalized staff recruitments, The staff knowledge, skills in dealing with equipments and different cases.

### 4.4.3 Communications Performance Indicators

System access, Equipment, Coordination/responsibilities, Dispatch standards, Time to answer call, Time to gather call data, Did the call/taker dispatcher ask the right questions, Time to select & send correct response, Accuracy of call assessment, Accuracy in managing incidents, Monitoring error levels, Information passed to hospitals, Information gathered, Time and efforts saving approaches and techniques.

### 4.4.4 Transportation Performance Indicators

Ground coverage, Licensure and inspection, Inter-facility coordination, Evaluation procedures, Response and transport times (distance, terrain, climate)

### 4.4.5 Technical Performance Indicators

Number of ambulances, Computer aided dispatch, Legislation, Vehicle performance / reliability)

The researcher has utilized some of these indicators for the purposes of this research as this a comprehensive study. The research argues that a more detailed research should be accomplished to cover every area separately.

### 4.4.6 Overview of EMS system Components

This overview underlines the contemporary status of the EMS covering the diverse aspects of the system in a broad approach. Yet, this is only perspectives of health providers rather than the patients or recipients of the services. The focus on the providers is based on their rich experience of the EMS day to day activities.

According to the Brennan, John, Krohmer, Jon, Medical Services Act of the USA has outlined 15 components of EMS system namely: manpower, training communications, transportation, emergency facilities, critical care units, public safety agencies, consumer participation, access to care, patient transfer, standardized record – keeping , public information and education, system review and evaluation, disaster planning, and mutual

aid" Yet for Brennan, John, Krohmer, Jon Components of the modern EMS system include physician medical oversight, communications, dispatch, out–of-hospital transport agencies, inter facility transport agencies, protocols (triage, treatment, transport, and transfer), receiving facilities, specialty care unites, training, audit and quality assurance, financing, public information and education, mutual aid, and disaster management. (Brennan, John, Krohmer, Jon 2006). While the United Stated, National Highway Traffic Safety Administration has listed the components of assessment as regulation and policy, resource management, human resources and training, transportation, facilities, communication, public information and education, medical direction, trauma systems, and evaluation.

Within the context of this discussion, communications, dispatch, out–of-hospital transport agencies, inter facility transport agencies, resource management, human resources and training and disaster management will be further discussed.

### 4.4.7 Pre-hospital EMS Personal

As the ambulance staff are key players in saving the life of people during emergency as they establish the first contact with them, high level of attention must be considered in recruiting and selection process with developing criteria of election without any passing for the minimum requirements in order to select the most skillful, well-trained and experienced people, the minimum criteria of selection and knowledge, skills, physical fitness should be approved at national level and to be applicable with all different provides.

The pre-hospital EMS personnel are key to the overall process of pre-hospital services. In fact, the research argument focuses in-depth on a well-trained staff, well staffed agencies, a strong workforce relationships. In reassessment standards developed by Alaska Emergency Medical Services Program it has been mentioned that "EMS personnel can perform their mission only if adequately trained and available in sufficient numbers throughout the State"

PRCS Senior Ambulance Officer stated "PRCS has sufficient teams compared with the level of work tackled by the existing staff" (PRCS Senior Ambulance Officer, September 2008, Personal Interview)

Well-staffed workplace is an important factor for any pre-hospital EMS system. This understanding has been also adopted by the RUPRI Center for Rural Health Policy Analysis in Nebraska Medical Center (Idaho, 1999).

According to the researcher analysis The Pre-hospital situation in Gaza governorates in terms of staffing quantity is satisfactory. Nevertheless, the researcher argues according to analysis; the staff quality there is unsatisfactory results.

According to Head of Department in EMS of MoH "The recruitments process of the MoH pre-hospital EMS staff is not professional as the conditions of recruitment rely on continuous informal training from accredited health organization in the field of EMS regardless the formal education namely secondary school or university. On the other hand, the interviewee refers that ambulance drivers are being licensed from the Ministry of Transportation with no coordination with Ministry of Health, the matter that influence proficiency of the process" (Head of Department in EMS of MoH, October 2008, Personal Interview)

With reference to Head of Department in EMS of MoH statement; the researcher argues that the scientific based and institutionalized staff recruitments within the MOH are missing. Thus current existing staff are not meeting standards of recruitments.

It has been noted that pre-hospital EMS has not received a well-established training to properly perform the specialized and important duty of pre-hospital EMS and particularly, the EMS dispatching. The researcher noted that the assignments of dispatchers are given to the aged personnel with no solid training.

All staff should receive induction training and relevant training in the first aid and life resuscitation topics, orientation on the equipment and tools and best practices of using it. Ongoing training and education is more variable and should be based on the actual needs of development and learnt lesson from the field, although it is excellent to see that staff are being given training with using international standards and national protocols. This has been very well received and the intention is for all clinical team leaders to undergo this training. This will provide a very substantial resource PHE expertise for use at field level. It would be. Also a competent and confidant staff is very essential component for

conducting work with high level of quality. Also we have to keep in our mind successful staff must be able to adapt quickly to new ways of working

According to Alaska reassessment standards "The State EMS lead agency has [should have] a mechanism to assess current manpower needs and establish a comprehensive plan for stable and consistent EMS training programs with effective local and regional support" (Bailey and *et al,* 1999).

The researcher argues that training for the pre-hospital staff should utilize a standardized curriculum for each level of pre-hospital EMT personnel, including EMS dispatchers. EMS training programs must be are routinely monitored, instructors meet certain requirements.

Senior Staff Nurse in EMS of MoH stated that "there is no identified program for Training targeting the MoH EMS staff" (Senior Staff Nurse in EMS of MoH, October 2008, Personal Interview).

On the other Hand, PRCS Senior Ambulance Officer stated that "few of the PRCS team has the paramedic certification" (PRCS Senior Ambulance Officer, September 2008, Personal Interview)

"Training within the system of both new and existing personnel is a primary concern" (Brennan, John, Krohmer and Jon, 2006). Within this regard, the researcher would argue that the current Primary training programs that meet or exceed the national standard curricula should be established within the system on continuous and scheduled bases. If this is not possible, it can become expensive to send providers outside of the system for their education.

An alternative is to hire only certified providers who have completed training. However, this alternative has a drawback because the system has less control over the education content.

In terms of staff incentive and motivations, there is strong significant relationship between quality of provided services and continuous support of the higher management team, the managers and team leaders are the major elements for successful team, in developing learning efforts. Creating motivated and satisfied surrounded environment, they should consider that the human resources are their assets so they have to push them to be

comfortable and to stressed sufficiently the reinforcing effect of simultaneously pursuing quality and efficiency

### 4.4.8 Transportation:

Even as communities make progress in identifying those who require transportation assistance during emergencies, that vital process still remains one of the most vexing challenges in planning for emergencies.

According to Alaska reassessment standards "Safe, reliable ambulance transportation is a critical component of an effective EMS system. The transportation component of the local EMS plan includes provisions for uniform coverage, including a protocol for air medical dispatch, rendezvous and a mutual aid plan" (Bailey and *et al*, 1999) in addition, the researcher believe that All pre-hospital EMS transport services are subject to routine, standardized inspections, as well as spot checks to maintain a constant state of readiness. The researcher argues that according to the feedback given from the EMS personnel who are working at different stations in the Gaza governorates that was not the case.

At the very basic level, Abdul Rahman, Alias, Zlatanova, Sisi defined three basic tasks of the ambulances are: 1) to get at the site of accident in the fastest manner and 2) to provide the best treatment and 3) transport the patient to a hospital (Abdul Rahman, Alias, Zlatanova and Sisi, 2006).

However, Dr. Mohammed Salama, Former Director General of MoH EMS stated that "the current status of ambulances in the Gaza governorates is in a mess due to the lack of ambulance specification and equipment standards" This is, Dr. Salama explains "due to obstacles done by the Israeli occupation authorities and no national standards, so different donors donate different ambulance specification" (Mohammed Salama, October 2008, Personal Interview).

The transportation issues, the researcher argues, falls between the cracks of the lack of coordination among the different pre-hospital EMS providers in the Gaza Strip. The

researcher believes that an ambulance specification and equipment standards policy to ensure a more reliable ambulance service.

MoH Senior EMS specialist stated that "there is not a unified uniform either among MoH staff" (MoH Senior EMS specialist, October 2008, Personal Interview).

The researcher acknowledge having a uniform for every providers individually but yet no unified uniform for all those personnel working in the MoH which is weak performance that might lead to the proficiency to the second major pre-hospital EMS providers.

On the other hand, emergency vehicle operator competency seemed in a better situation, both PRCS and MoH personnel keep a good maintenance exercise for their ambulance vehicle. Yet the PRCS showed a higher competency within this regard.

In terms of utilization, the researcher noted that MoH using the ambulances as Inter facility transport. According to the data provided, the MoH has 45 ambulance vehicles work to transfer cases among hospitals and 12 ambulance vehicles works as ICU unites. According to the Brennan, John, Krohmer, Jon in their book Principles of the EMS "inter facility transfer, in its strictest sense, is not the responsibility of the EMS system, although transfer can be an integral part of a comprehensive system that uses categorized facilities" (Brennan, John, Krohmer and Jon 2006). Bases on this, the researcher argues that MoH pre-hospital services are not working according to the standards and this is critically affecting the whole pre-hospital EMS performance capability and efficiency. The researcher argues that the ambulance vehicles will be depreciated and consumed in areas that are not related to the actual pre-hospital EMS operations.

The researcher argues that the problem with the transportation issue is related to duplication in mandate between the MoH and the PRCS, in addition that other pre-hospital providers who working without organized or unified mechanism. According to National Highway Traffic Safety Administration Technical Assistance Program" The lead agency [should] has a mechanism for routine evaluation of transport services and the need for modifications, upgrades or improvements based on changes in the environment i.e., population density" (NHTSA, 2007). What is significant in the NHTSA statement is that the pre-hospital EMS should have a lead agency which should be responsible for

coordinating the transport issues. The researcher has further discussed the coordination issue in this section is an important component for a good performance of the pre-hospital EMS.

### 4.4.9 Coordination and Communication:

A significant part of this research has been dedicated to the resources management performance as there current among all interviewed key EMS specialists that pre-hospital EMS are scattered and lack of coordination and good communication.

Just as no two emergencies are the same, neither are the responses. The real challenge is to develop the relationships among key providers and the best practices that allow for the most effective response. Although no single solution or best practice might alleviate all concerns, discussion among leaders at all levels of government, and non government providers, will produce innovations and procedures to better address the coordination and sharing information issues.

A lack of coordination among pre-hospital EMS providers themselves can present barriers to more effective services. The questions of who is located go before an emergency, where they need to go, and where they ultimately went are ones that are not only difficult to answer, but are in perpetual flux. Improvements in this area can best be accomplished by developing and sharing effective methods of collecting data; establishing common and responsive criteria for determining and locating these providers; and building information-sharing capabilities among agencies at the local level.

Also because communications is a vital aspect of any emergency response effort, sharing information during emergencies requires dual approaches. First are the relationships among providers, agencies, organizations and individuals that need to share information on emergency plans before and communicate directives and procedures during an actual emergency. Second are the various technologies required to help distribute that information. An important factor in the communications process is appropriate public education using a variety of formats including, audio, symbols/pictures, and media episodes.

According to Alaska reassessment standards "central coordination and current knowledge of system resources is essential to maintain a coordinated response and appropriate resource utilization within an effective EMS system" (Bailey and *et al*, 1999).

Dr. Bashar Murad, Director General of the PRCS Ambulance and Emergency Administration in Gaza stated "there is no coordination with other pre-hospital EMS. The coordination only takes place during crises with prior plans" (Bashar Murad, October 2008, Personal Interview)

The researcher argues that the coordination is essential to maintain a harmonized response and suitable resource exploitation within an efficient EMS system.

In reference to the current situation in the Gaza governorates, the communication and coordination is not meeting the minimum standards of the efficient EMS system. The current case of fragmentation among the different providers is badly affecting a harmonized response.

This is due, in the researcher view, to the lack of one command room that is supposed to be adequately staffed to carry out coordination of responses and activities. The existence of a unified agency management requests technical assistance both proactively and as needed.

On the other hand, According to Alaska reassessment standards "A reliable communication system is an essential component of an EMS system. The agency is responsible for utilizing a communication system that is compatible with their local dispatch agency and area hospitals" (Bailey and *et al,* 1999).

The communication main utility is the radio that is used between the different providers. In the cases of Gaza governorates, there is no common radio system that allows for direct communication between all providers and facilities.

However, minimum standards for dispatch centers for every stakeholder are established, yet these no coordination among those centers.

Montoya argues that "With the rapid development of mobile communications and wireless technologies, more and more geo-information applications have emerged from the field of mobile services (Montoya, 2003).

According to Brennan, John, Krohmer, Jon "The EMS agency must establish a comprehensive communications plan or accept a preexisting regional plan to make optimal use of available communication resources" (Brennan, John, Krohmer and Jon, 2006).

The aforementioned arguments, affirms that A trustworthy communications system is an essential component of an overall EMS system.

Yet, this should be done through as lead agency that should be responsible for central coordination of EMS communications based in it a common radio system that allows direct communication between all providers; dispatch to ambulance communication, ambulance to ambulance, ambulance to hospital, and hospital to hospital communications, to ensure that receiving facilities are ready and able to accept patients.

All ambulances should be outfitted with VHF radio systems for quick contact and communications. Mobile data terminals, pagers and portable radios are used by many services to expedite activation, and provide flexible communications between the Dispatch Centre, ambulance vehicles and receiving hospitals.

Dr. Murad stated that "there is no communication between ambulance officers and the Hospitals despite the efforts made by the PRCS in giving the hospitals VHF equipments" (Murad Bashar, October 2008, Personal Interview).

Within this lead agency, a plan should specify how system access by the community will occur and where calls for assistance will be routed. Such system in compared with the existing performance of the pre-hospital EMS providers in the Gaza governorates does not exist.

Ideally, Brennan, John, Krohmer, Jon argue "Emergency medical response should be dispatched through a communications center that coordinates the response of all public

service provides, including fire and police personnel, to better use and coordinate all available resources" (Brennan, John, Krohmer and Jon, 2006).

The EMS system communications center occasionally is located in an agency or political authority that is not under direct operational control of the EMS system" (Brennan, John, Krohmer and Jon 2006).

Brennan, John, Krohmer, Jon argue that "a plan that ensures that communications are fully coordinated and integrated with other public safety providers….. must designate frequency use for dispatch, disaster, online activities, inter vehicle communications, and interagency communications. To ensure that all providers, whether ground vehicles have appropriate communications ability, the system must define what minimal radio Equipment is and develop protocols that designate appropriate frequency use" (Brennan, John, Krohmer and Jon, 2006)

**4.4.10 Technical Resources:**

The technical capacity of the pre-hospital EMS services is, inevitably, a vital component to a high performance. The responsibility of the technical capacity management is massive within the system performance.

It makes sense to be sure that all the needed equipment and disposable are available in adequate quantities. Availability of them is very essential and critical for saving the life of others. In general, emergency medical and resuscitation equipment should be easily to used as needed. To be practical all the ambulance staff should have check-list sheet in order to verify the presence and missed items.

It has been noted from the documents being used as check-list sheets in both PRCS and MoH (Annex no 8,9) that both providers check for the vehicle as a transport machine while the PRCS has an additional component that check for medical equipment and supplies which is in our view significant for the operation of the ambulance as a pre-hospital EMS vehicle. The researcher argues that importance of the check-list lies in its being a tool for performance development. The check of well status of the ambulance as well as the availability of all needed equipment will definitely as a preemptive necessary measures to avoid performance failure.

Several research have focused on the technical capacity of the pre-hospital EMS. Particular standards have been also developed on ambulances performance. In their research on Ambulance Service Performance, Elliott, Ross; Barnes Robert developed standards for personnel, Facilities, Vehicles, Dispatch-Communications, Ambulance Resources. Elliott, Ross; Barnes Robert stated that "All in-service ambulances shall be equipped with the safety and emergency equipment required for ambulances [by the pre-hospital EMS department] The Department may conduct unannounced ambulance inspections at any time. The Department may remove an ambulance from service for noncompliance to Department requirements" (Elliott and Barnes, 2007). In addition, Elliott and Barnes mentioned that "Ambulance providers shall have a preventive mechanical maintenance program for ambulances, so as to ensure compliance with Transportation minimum standards…. The ambulance provider shall ensure that all ambulances subject to call or service are mechanically sound and safe to operate at all times" (Elliott, Barnes, 2007).

As mentioned these technical measures are key for a sound and safe to operate ambulances at all times. The performance of the PRCS within this context has been notably more advanced than MoH. This can be noted in (Annex No. 2).

The researcher argues that the PRCS sheet is very satisfactory and this experience should be transferred to other pre-hospital EMS providers.

**4.4.11 Disaster Planning:**

As this research has aimed to assess the pre-hospital performance management to examine its capability of response to the mass casualty events such as natural disasters or military invasions, the researcher has developed the argument below based on the data provided by the Pre-hospital EMS staff, the focus group and the interviews.

Disaster Planning involves preparing for circumstances which may be: foreseen and unforeseen; man-made or natural, or at an individual or mass casualty level. To be effective at national and regional levels there must be coordination between the EMS services (both public and private), government agencies (police, military, fire, and airport), Ministry of Health, Disaster Management Agencies, and non-governmental organizations (Salvation

Army, Red Cross, etc). The PHEMS physician should be part of the strategic planning team, and be thoroughly familiar with the entire plan (Barnett, Segree and Matthews, 2006). Disaster management issues have been expanded to include the activities of domestic preparedness response activities

In terms of standards, Brennan, John, Krohmer and Jon argue that "disaster planning is primarily the responsibility of the emergency management program. Although it is not the primary responsibility of the local EMS provider, the EMS system does provide the majority of initial medical response and transport units at any mass-casualty incident and must be an active participant with the rest of the emergency management community in the planning process" (Brennan, John, Krohmer and Jon 2006). Despite the consequences of who carries out the planning function, the EMS agency, unified agency, should ensure that a wide-ranging plan exists for its service district. The researcher argues that The disaster preparedness arrangement must deal with corresponding central management, integration of all EMS system components, and communications during disasters. As a plan is established, the EMS system must undertake in disaster preparedness drills to assess performance and correct deficiencies. The drill process also educates the providers so that, when under the stress of a disaster response, they will act automatically and appropriately. The EMS system must also be a critical player in domestic preparedness planning activities education, drills, and response,

# Chapter Five

# Conclusion and

# Recommendations

# Chapter 5: Conclusion and Recommendations

## 5.1 Conclusion

In conclusion, the researcher believes that this research is a step forward in developing the Pre-hospital EMS in the Gaza governorates. The overall output of this research indicates that the current management performance of the Pre-hospital EMS is relatively acceptable with a strong infrastructure. Yet, the fragmentation of the Health providers, lack of standards and legislations, inadequate capabilities of staff are weakening the overall management performance. Thus, the researcher strongly concludes with the recommendation that a rapid steps should be undertaken to meet the challenges of the of Pre-hospital Emergency Medical services management.

In-depth analysis for the four indicators of this research explicitly; personnel, communication and coordination, technical resources and the management concluded the following:

First: in terms of personnel, research showed that the pre-hospital EMS is understaffed with a limited number of people working. The need for more people to work becomes more essential in the time of massive flux of casualties. Data showed that most of the current staff is relatively in the middle age with an integration of young, middle age and people advanced in years. This ageing integration proved to be helpful in terms of exchanging and transferring experiences.

Another important conclusion was related to the geographical distribution of the staff over the governorates of the Gaza Strip. Relatively speaking, this was a fair distribution in relation to the density of the population and the availability of staff in every governorate.

The personnel factor in the pre-hospital EMS is vital. According to the staff, there is a massive need for training, but the overall conclusion for the researcher is the focus not only on training on one time bases but with regular courses on continuous bases.

Second: the coordination and communication component. The researcher concluded that the fragmentation and lack of coordination between the pre-hospital EMS providers are a major weakness in overall pre-hospital EMS system. It does weaken the overall management process for the mass casualties' events. Despite that the communication system between the pre-hospital staff and the public, it is weak between the pre-hospital staff and the in-hospital staff and in the time of mass casualties' events, the problem gets clearer with the lack of coordination in transferring injured cases which, based on the researcher perceptions from the pre-hospital EMS provides, complicates the work on the ground.

A vital conclusion in relation with coordination is related to non-medical pre-hospital services providers namely police and civil defense. The researcher concluded that this absence of coordination hinders the integration of one pre-hospital EMS system.

Third, the management style and the supervision within the context of the pre-hospital EMS staffing is relatively not as good as it should be. According to most of the pre-hospital staff surveyed, there is a limited recognition of the staff accomplishment from the high management. This matter with other factors such as level of satisfaction and supervision, lack of interest of professional development and capacity building from the management are declining the performance of the staff.

Finally, the technical resources including the ambulance structure and technical aspects that is being a basic part of the pre-hospital EMS infrastructure. The researcher concluded that with having adequate number of ambulances, a basic communication system, and well distribution of pre-hospital EMS stations; the technical resources are relatively strong. Besides the researcher concluded that the pre-hospital EMS staff acknowledge the availability of technical check for the ambulance vehicles which is an important experiences needs to be conducted on a daily basis.

The availability of technical check and the number of ambulances ensure good facility of work. But yet, the regularity and continuity of this check up from the staff is very vital for the pre-hospital EMS system to be more efficient.

## 5.2 Recommendations

To this end; the research concludes with a number of recommendations that the researcher finds its necessary to tackle in order to improve and enhance the current performance of the pre-hospital Emergency Medical services in the Gaza governorates. In the light of the results of the performance evaluation of the pre-hospital Emergency Medical services that carried out, the researcher has developed the recommendations corresponding to the areas evaluated namely personnel, technical resources, communication and coordination. These recommendations yet are open for further discussion and development. The researcher believes that the most significant contribution for this research is that it has paved the way for further focused research as the researcher is highly recommending that every area that discussed in the context of this research needs to be examined exhaustively.

The following are the key recommendations of the researcher.

### 5.2.1 Pre-Hospital EMS Structure:

- At the overall organizational structural level, a vital necessity to a one leading agency of the pre-hospital EMS is demanding. Thus, the researcher recommends at the first place to establish a leading agency with an exclusive mandate of the pre-hospital EMS. This agency should tackle the pre-hospital EMS mission with a unified Calling System and one Command Room. The important of this agency is that, it will eliminate the current duplication of the different agencies.

- The research recommends that this agency may take the form of a High Commission that includes all providers. This High Commission should be established with a duly delegated representation from EMS service providers: Ministry of Health, Palestinian Red Crescent Society, Civil Defense, NGOs, Military Medical Service and UNRWA. Further, due to the well-build infrastructure, training and expertise of the PRCS, the researcher recommends that the EMS community should recognize the PRCS to mainly mandated as the lead agency for the planning, development, and implementation in consultation with other providers in the High Commission. Among the High Commission takes, the researcher recommends, developing protocols for the relationship among Pre-

hospital Health providers to be as minimal performance standards and conducting drills – simulating disasters - at regular bases to assess performance and correct deficiencies in coordination with Police and Civil Defense.

- In the time of crises, disaster or evacuation situations; the researcher is highly recommending that all ambulance services should work under the command of the PRCS that the only source of information and the only body directing the ambulance.

- Prior to any changes being made to the EMS system, it is necessary to conduct a national assessment of all the EMS providers and resources currently operating in the Gaza governorates.

- With regard to the legislations; the Ministry of Health should preserve, the key task for ensuring the improvement of legislation to found, govern and control an effective EMS system to meet the requirements of the Palestinian public.

- With regard to NGO, UNRWA, Civil Defense and Military Medical Service potential roles; it is recommended to recognize that they may have different primary roles than the provision of EMS services to the public, but should be adequately incorporated into the planning that they could provide support to civilian services in time of disaster or mass casualty events.

### 5.2.2 Human Resources:

- In terms of Human resources, the researcher recommends setting up standardized recruitment process for ambulances officers, drivers, and dispatchers.

- As the PRCS has an already established EMS education program, this should be the foundation of EMS training. A standardized Educational curriculum should be in place within this training facility. In addition, a system of continuous education should be developed. Within this regard to the existing pre-hospital staff, updating courses should be held on regular bases.

### 5.2.3 Technical Resources:

- In terms of Technical Resources, Ambulances vehicles should be equipped by standardized equipments and specifications that meet international standards. Ambulances vehicles are divided among two major types: advanced life support ambulances, staffed by paramedics, and MICUs staffed by paramedics and physicians respond only to the most medically serious cases.
- In addition to its leading role of formulating legislations, the role of the Ministry of Health is recommended to take place mainly in the field of inter-facility among hospitals, transfer of patients.

- Role of Private ambulance services should be non-emergency transport only.

### 5.2.4 Communication and Coordination:

- The researcher recommends that an effective, interagency, communications system is essential to avoid unnecessary responses by multiple agencies.

- A review of essential operational, telecommunications, and technical resources necessary to facilitate the existence of sound basic system that can support the delivery of high performance EMS

- A unified calling system shared with Police and Civil Defense should be in place.

- In terms of dispatch, the researcher recommends the development of a central dispatch that controls and harmonizes the responses of all EMS providers, the matter which is essential for day-to-day and emergency situations. This central dispatch could be part of the overall strategy for the establishment of an Operations or a Command Room that would be activated with representatives of each EMS organization present, during time of disaster or major emergency. To achieve this control and harmonization, the central dispatch must develop and use standardized forms to collect information on dispatches and responses, field assessment and

treatment, and hospital outcome. Computer technology can be used to analyze the vast amounts of information that accumulate in this process.

- Within this context, the researcher further recommends, the establishment of multi-disciplinary communications plan which includes EMS, police, fire, emergency management, transportation, public works, utilities and others.

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Bashar Murad, (October 2008) Director General of the PRCS Ambulance and Emergency Administration, Personal Interview

Hani AlJa'afarawi, (October 2008) on the Establishment of EMS in Gaza Strip Personal Interview

Head of Department in EMS of MoH, (October 2008) On the MoH Pre-hospital EMS Personal Interview

PRCS Senior Ambulance Officer, (September 2008) On the PRCS Pre-hospital EMS, Personal Interview

MoH Senior EMS specialist, (October 2008) On the MoH Pre-hospital EMS Personal Interview)

Mohammed Salama, Former Director General of Ministry of Health, Emergency Medical Services (September 2008) on the Establishment of EMS in Gaza Strip, Personal Interview

Mohammed Sabbah, (September 2008) on the Establishment of EMS in Gaza Strip Personal Interview

Public Relations Officer of the Telecommunication Company (October 2008) the Emergency Telephone Services, Personal Interview)

PRCS Senior Ambulance Officer (September 2008) On the PRCS Pre-hospital EMS, Personal Interview)

Senior Staff Nurse in EMS of MoH, (October 2008) On the MoH Pre-hospital EMS Personal Interview

# Appendices

## Annex 1

Palestinian National Authority
Ministry of Health
Helsinki Committee

السلطة الوطنية الفلسطينية
وزارة الصحة
لجنة هلسنكي

Date: 15/8/2008

Name: Raed Sabbah

I would like to inform you that the committee has discussed your application about:

**Performance evaluation of pre-hospital emergency management in the Gaza Strip health providers perspective.**

In its meeting on August 2008

and decided the Following:-

To approve the above mention research study.

التاريخ: ١٥/٨/٢٠٠٨

الاسم: رائد صباح

نفيدكم علماً بأن اللجنة قد ناقشت مقترح دراستكم حول:-

و ذلك في جلستها المنعقدة لشهر أغسطس ٢٠٠٨

و قد قررت ما يلي:-

الموافقة على البحث المذكور عاليه.

Signature
توقيع

Member
عضو

Member
عضو

Ministry of Health
Helsinki Committee
Chairperson

Conditions:-

- Valid for 2 years from the date of approval to start.
- It is necessary to notify the committee in any change in the admitted study protocol.
- The committee appreciate receiving one copy of your final research when it is completed.

Gaza Etwam – Telefax 972-7-2878166

## Annex 2


Al-Quds University
Jerusalem
School of Public Health

جامعة القدس
القدس
كلية الصحة العامة


2008/7/16

الأخ الدكتور / محمد البردويل المحترم
مدير عام الإسعاف والطوارئ – جمعية الهلال الأحمر الفلسطيني بغزة
تحية طيبة وبعد،،،

الموضوع: مساعدة الطالب رائد صباح

يقوم الطالب المذكور أعلاه بإجراء بحث بعنوان:

**"Performance Evaluation of pre-hospital Emergency Management in the Gaza Governorates"**

كمتطلب للحصول على درجة الماجستير في الصحة العامة-مسار إدارة صحية و عليه نرجو التكرم للإيعاز لمن ترونه مناسب لتسهيل مهمة الطالب في جمع البيانات اللازمة حيث أن العينة تشمل :

1.( ضباط الإسعاف ، سائقين الإسعاف ، ودسباتشر ) 2. التأكد من مدى جاهزية سيارات الإسعاف للعمل .

علماً بأن المعلومات ستكون متوفرة لدى الباحثة و الجامعة فقط.

و اقبلوا فائق التحية و الاحترام،،،

د. بسام أبو حمد
منسق عام برامج الصحة العامة


Jerusalem Branch/Telefax 02-24799234
Gaza Branch/telefax 08-2884422-2884411
Sphealth@admin.alquds.edu
فرع القدس/تلفاكس 02-2799234
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ص.ب/51000-القدس

## Annex 3


Al-Quds University
Jerusalem
School of Public Health

جامعة القدس
القدس
كلية الصحة العامة


2008/7/16

الأخ الدكتور / معاوية حسنين المحترم
مدير عام الإسعاف والطوارئ –وزارة الصحة
تحية طيبة وبعد،،،

الموضوع: مساعدة الطالب راند صباح

يقوم الطالب المذكور أعلاه بإجراء بحث بعنوان:

**"Performance Evaluation of pre-hospital Emergency Management in the Gaza Governorates**

كمتطلب للحصول على درجة الماجستير في الصحة العامة-مسار إدارة صحية و عليه نرجو التكرم بالإيعاز لمن تروه مناسب لتسهيل مهمة الطالب في جمع البيانات اللازمة حيث أن العينة تشمل :

1. ضباط الإسعاف ، سائقين الإسعاف ، ودسباتشر ) 2. التأكد من مدى جاهزية سيارات الإسعاف للعمل .

علماً بأن المعلومات ستكون متوفرة لدى الباحثة و الجامعة فقط.

و اقبلوا فائق التحية و الاحترام،،،

د. بسام أبو حمد
منسق عام برامج الصحة العامة

نسخة
- الملف


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## Annex 4 Focus Group

## Objectives:

- Evaluation on the current statues of pre-hospital EMS management
- Identify weakness and strength points of the pre-hospital EMS.

## Questions:

- What do you think about the current Pre-Hospital Emergency Services in Gaza?
- In your best knowledge as Senior EMS specialist; doest the current pre-hospital Emergency Services meeting a proper standards?
- Do you think that the current staffing of pre-Hospital Emergency Services is adequate?
- Do you think that the current staffing of the pre-hospital Emergency is qualified?
- What do you think about the pre-hospital EMS communication protocols among stakeholders?
- What do you think of the current coordination statues among pre-hospital EMS providers?
- Do you think there are enough ambulances serving in the pre-hospital level?

## Major points of Discussion:

- Pre-hospital EMS management
- Pre-hospital EMS Coordination among EMS providers
- Pre-hospital EMS Communication among EMS providers and with in-hospital staff
- Pre-hospital EMS Human and technical resources

## Time, Date and Place:

- 25th of October, 2008
- From 10:00 am to 2:00 pm
- Union of Health Care Committees premises in Gaza city

## Recording:

- Written notes will be taken

## Facilitator:

The focus group will be mediated by the researcher

## People Invited

- Dr. Mohammed Salama,
- Mr. Rami Ali
- Mr. Hani AlJa'afarawi
- Mr. Raafat Jaaror
- Mohammed Abdalzaaz Sabbah
- General Director of Civil Defense

## Invitation

Within the context of writing my academic thesis research titled "Performance Evaluation of Pre-hospital Emergency Management in the Gaza Governorates, Health Provider's Perspective"; I am glad to invite you for a focus group to discuss the current situation of Pre-hospital Emergency Medical services in the Gaza governorates based on your experience within this field.

Its worth to mention that this thesis research is being developed in partial fulfillment of the requirements for the Degree of Master of Public Health at AL- Quds University.

Your attendance is highly appreciated.

Raed Sabbah

**Annex 5**

**كلية الصحة العامة**

**School of Public Health**

**جامعة القدس**

**يقوم الباحث بإجراء بحث حول تقييم أداء عمل طواقم الإسعاف والطوارئ في محافظات غزة ، ويهدف هذا الاستبيان إلى معرفة أعمق وأوسع لعمل طواقم الإسعاف والطوارئ وذلك من خلال المقابلة المباشرة مع عدد من ضباط الإسعاف والعاملين في مراكز ومحطات الإسعاف والطوارئ، وعليه نرجو المساعدة في تعبئة هذا الاستبيان بدقة وموضوعية علماً بأن المعلومات التي سيتم الحصول عليها سوف يتم التعامل معها بسرية تامة ولن تستخدم إلا لأغراض البحث العلمي فقط.**

**أنا الموقع أدناه أوافق على تعبئة الاستبيان**

☐ **تعبئة الاستبانة**

**التوقيع /**

**اسم الباحث**

**رائد يوسف صباح**

**جوال رقم 0599400529**

## بيانات شخصية و ديموغرافية

- **الجنس:** ☐ ذكر ☐ أنثى
- **العمر:** ـ سنة
- **المحافظة:** ☐ الشمال ☐ غزة ☐ الوسطى ☐ خان يونس ☐ رفح
- **مكان العمل:** ☐ وزارة الصحة ☐ وكالة الغوث ☐ الهلال الأحمر الفلسطيني ☐ مؤسسة أهلية
- **سنوات الخبرة في مجال الإسعاف والطوارئ:** _____
- **نوع العمل:** _____
- **المؤهل العلمي:** _____
- **ساعات العمل الأسبوعية الأساسية:** _____
- **ما هو الحد الأقصى للساعات الإضافية:** _____

## 1. القدرات البشرية:

- **هل اجتزت امتحاناً قبل التعيين؟**

**☐ نعم ☐ لا**

- **ماهي الشروط المطلوبة التي بناءاً عليها يتم التوظيف ؟**

☐ الشهادات العلمية.

☐ الدورات التدريبية في مجال الإسعاف والطوارئ.

☐ الخبرة العملية في مجال الإسعاف والطوارئ.

غير ذلك _____

- **هل أنت حاصل على شهادة تتعلق بعمل الإسعاف والطوارئ؟**

**☐ نعم ☐ لا**

- **إذا كان نعم فهل هي:**

**☐ دورة ☐ دبلوم ☐ أخرى**

- **هل شاركت في دورات تدريبية ذات صلة مباشرة في عملك ضمن فريق الاسعاف؟**

☐ نعم ☐ لا

- **إذا كان نعم الرجاء تعبئة الجدول التالي:**

| الرقم | اسم الدورة | عدد الساعات | السنة | من خلال عملك | | الجهة المنظمة للدورة |
|---|---|---|---|---|---|---|
| | | | | نعم | لا | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

- **إذا كان لا ، ماهي الأسباب لعدم الحصول على دورات تدريبية في مجال الإسعاف والطوارئ؟**

☐ عدم اهتمام

☐ غياب الدعم وقلة إمكانيات

☐ غير ذلك ـــ

- **هل تحتاج إلى دورات أخرى تعتقد أنها مهمة لعملك؟**

☐ نعم ☐ لا

- **إذا كان نعم الرجاء ذكرها:**

1- ـــ

2- ـــ

3- ـــ

- **من فضلك اذكر الأشخاص الذين يتواجدون معك في سيارة الإسعاف حين تأدية المهمة الإسعافية؟**

☐ طبيب ☐ ضابط إسعاف ☐ ممرض ☐ مسعف متطوع

- **في اعتقادك من خلال الممارسة اليومية هل كل شخص في فريق الاسعاف يعرف مهامه بشكل واضح ؟**

☐ نعم ☐ لا

- **حسب رأيك هل عدد الافراد العاملين في دائرة الاسعاف والطوارئ مناسب وكافٍ؟**

☐ نعم ☐ لا

- **من خلال ممارستك العملية هل أنت راضٍ عن قدرات فريق الإسعاف؟**

☐ نعم ☐ لا

- **من فضلك اذكر المعيقات التي تواجه عمل فريق الإسعاف:**

☐ المكان غير مناسب. ☐ قلة إمكانيات. ☐ قلة عاملين ☐ أخرى ـــ

## 2. <u>الموارد والمعدات:</u>

- **ماهي الأدوات والأجهزة المتوافرة باستمرار في سيارة إسعافكم؟**

| Ambulance Shape | | Electicity (Function Test) | | Engine | | Car Equipment | |
|---|---|---|---|---|---|---|---|
| Body | ☐ | Lights (out, in) | ☐ | Radiator | ☐ | ER Triangular | ☐ |
| Paint | ☐ | Wiper System | ☐ | Battery | ☐ | Fire Extinguisher | ☐ |
| Mirrors | ☐ | Emergency Lights | ☐ | Break Fluid | ☐ | Jack | ☐ |
| Tires | ☐ | Horn | ☐ | Oil Leve; | ☐ | Spot Light | ☐ |
| Windows | ☐ | Radio | ☐ | | | License Papers | ☐ |
| Clean (in,out) | ☐ | Siren | ☐ | | | Case Forms | ☐ |

Medical Equipment

| | Item | No. | | | Item | No. |
|---|---|---|---|---|---|---|
| | 02 Cylinder (M Size) | 1 | | | Clothes Scissors | 2 |
| | 02 Cylinder (S Size) | 1 | | | Kidney Receiver | 1 |
| | 02 Face Mask (A, C) | 1 each | | | Urinal Bottle | 1 |
| | 02 Nasal Canola | 4 | | | Plasters Roll | 3 |
| | Oral Airway(أحمر، برتقالي، أخضر) | 3 each | | | IV. Canola: (G14, 16, 18,20,22) | 5 each |
| | Electric Suction | 1 | | | Triangular Bandage | 10 each |
| | Manual Suction | 1 | | | Normal Saline 0.9% | 5 |
| | Ambo Bag (Adult, Child) | 1 each | | | Dextrose 5% in water | 5 |
| | Jump Kitشنطة اسعاف مجهزة | 1 | | | Ringer Lactate | 5 |
| | Pocket Mask | 12 | | | شراشف | 2 |
| | Neck Collars (s, M, L) | 1 each | | | بطانيات | 2 |
| | Resuscitation Kit | 1 | | | مخدات | 2 |
| | Long Spinal Board | 1 | | | Sharp Container | 1 |
| | Short Spinal Board | 1 | | | Non Sterile Gloves | 1 box |
| | Sphygmomanometer | 1 | | | Crep Bandage | 10 |
| | Metal Splints | 4 sizes | | | Arterial Tourniquet | 1 |
| | Air Splints (Am, Leg) | 1 each | | | Field Bandage | 5 |
| | Ferno Bed Stretcher | 1 | | | E.T. Tube 2 each Size | |
| | Foldable Stretcher | 1 | | | Delivery Kit | 1 |
| | Wheel Chair | 1 | | | Quick Cold | 3 |
| | Scoop Stretcher | 1 | | | Pulse Oximeter | 1 |
| | Laryngoscope With Blades | 1 | | | Ventilator | 1 |
| | Micro dropper | 1 | | | Defibrillator | 1 |

Pullet Proof Protection Sets

| | | | | | | |
|---|---|---|---|---|---|---|
| | Ceramic Plates | 2 | | | Kevlar Sheets | 2 |

Miscellaneous Remarks

**في حال عدم توفرها:**

- **ماذا تعتقد أسباب عدم توفرها؟**

☐ قلة دراية وخبرة بأهميتها ☐ عدم توفرها محلياً.
☐ قلة إمكانيات ☐ عدم القدرة على التعامل معها إن وجدت
☐ إهمال الجهات المختصة
☐ أخرى ــــــــ.

- **هل لديك معرفة بآلية طلب الحصول على مثل هذه المعدات؟**
  **☐ نعم ☐ لا**

- **هل سبق ان طالبتم المعنيين بتوفيرها؟**
  **☐ نعم ☐لا**

## 3. <u>الاتصال والتنسيق:</u>

- **هل آلية الاتصال بكم متوفرة ومتاحة لجميع المواطنين دون معيقات؟**
  ☐ نعم ☐ لا

- **هل لديكم أرقام خاصة تتيح لعامة الناس الاتصال معكم مباشرة بدون معيقات؟**
  ☐ نعم ☐ لا

- **اذا كان نعم هل نظام استخدامها وتشغيلها كفء؟**
  ☐ نعم ☐ لا

- **إذا كان لا لماذا؟**
  ــــ

- **هل تتلقوا معلومات كافية عن الحالة وطبيعة الإصابة قبل الوصول؟**
  ☐ نعم ☐ لا

- **هل لديكم أجهزة اتصال خاصة تتيح التواصل مع المسعفين الآخرين بدون عوائق؟**
  ☐ نعم ☐ لا

- **إذا كان نعم ما هي أجهزة الاتصال الموجودة لديكم؟**
  **☐ GP – 360**
  **☐ Radio Wave**
  **☐ Mobile**
  **☐ VHF Radio ☐ أخرى حدد ……**

- **ما هي المدة الزمنية المستغرقة للإستجابة للبلاغ وإنطلاق سيارة الإسعاف ؟**

_____

- **في أغلب الأحيان ما هي المدة الزمنية لوصول سيارة الإسعاف منذ إنطلاقها حتى الوصول للحالة المصابة؟**

_____

- **ماذا تقترح لتحسين سرعة الوصول للهدف؟**

_____

- **هل يوجد مقدمي خدمات إسعافية أخرى في نفس المنطقة تابعة لمؤسستكم؟**

☐ نعم ☐ لا

- **هل هناك غرفة عمليات مركزية توجه جميع السيارات وتتابع معها؟**

☐ نعم ☐ لا

- **هل هناك تنسيق مع مزودي خدمات اسعافية أخرى؟**

☐ نعم ☐لا

- **إذا كان نعم، فمع من يتم التنسيق:**

☐ وكالة الغوث ☐ الهلال الأحمر الفلسطيني ☐ وزارة الصحة ☐خدمات طبية ☐ أخرى

حدد _____

- **كيف تتم عملية التنسيق؟**

☐ ميدانياً ☐ مركزياً ☐ فرعياً

- **هل آلية التنسيق فعالة وعملية من وجهة نظرك؟**

☐ نعم ☐لا

- **عند إبلاغكم عن إصابات أو حادث يتطلب وجودكم وخدماتكم هل يتم التنسيق مع:**

☐ الشرطة ☐ شرطة المرور ☐ الدفاع المدني ☐ لايوجد تنسيق

- **هل تقوم شرطة المرور بتسهيل مهماتكم؟**

☐ نعم ☐ لا

- **حسب رأيك هل هناك اهمية للتنسيق مع اقرب مستشفى لمكان الحدث؟**

☐ نعم ☐ لا

- **هل تقومون بعملية التنسيق مع المستشفى المرسل إليها الحالة؟**

☐ نعم ☐ لا

- **اذا كانت الاجابة لا فهل الاسباب هي:**

☐ نقص معرفي بأهمية التنسيق. ☐ عدم وجود آليات تنسيق فعالة. ☐إهمال.
☐ أخرى.....

- **اذا كانت الاجابة نعم هل التنسيق يتم :**

☐ بشكل مركزي ☐ مباشرة ☐ أخرى حدد: ـــــ

- **هل هناك بروتوكول ونظام واضح لجميع آليات التنسيق التي ذكرت سابقاً؟**

☐ نعم ☐ لا

**اذا كان نعم الرجاء تحدد الجهة:**.....

## 4. <u>الاشراف والادارة:</u>

- **مارأيك باهتمام الإدارة بالارتقاء المعرفي والمهاراتي لطاقم الإسعاف؟**

☐ ممتاز جداً ☐ ممتاز ☐ جيد جداً ☐ ضعيف ☐ معدوم

- **هل يتم تقييم أداء العاملين من فترة لأخرى في مؤسستكم؟**

☐ نعم ☐ لا

- **أذكر آخر مرة تم فيها تقييم لأداء الأفراد؟**

_____

- **هل تزودون الإدارة بتقارير دورية مكتوبة عن أعمالكم ومشاكلكم ؟**

☐ نعم ☐ لا

- **هل يتم دراسة تقاريركم بشكل جدي من قبل الإدارة؟**

☐ نعم ☐ لا

- **مدى راضاك عن عملية الإشراف الإداري؟**

☐ ممتاز جداً ☐ ممتاز ☐ جيد جداً ☐ ضعيف ☐ معدوم

- **ما هي مقترحاتك لتحسين عملية الإشراف الإداري؟**

_____

- **مدى اهتمام وتقدير المسئولين بعملكم؟**

☐ ممتاز جداً ☐ ممتاز ☐ جيد جداً ☐ ضعيف ☐ معدوم

- **هل يتم تقييم مستمر للاستفادة من أي أخطاء؟**

☐ نعم ☐ لا

- **هل خدماتكم مجانية؟**

. ☐ نعم ☐ لا **إذا كان لا كم تبلغ تكلفة الخدمة؟ ــ**

## Annex 6

**Panel of Expert**

The questionnaire was examined by group of experts, some items were added, modified or excluded as a results of their comments.

1. Dr. Mofeed AlMokhalalati
2. Dr. Bassam Abu Hamad
3. Dr. Ezdeen AbuelAeesh
4. Dr. Mahmoud Sirdah
5. Dr. Yehia Abed
6. Mr. Omer AlMajdalawi
7. Mr. Rami Ali
8. Mr. Rafat Jaeror
9. Mr. Ashraf Heliwa

# Annex 7

**Table 4-14a: Ambulance medical equipments:**

| Medical equipment | MOH | | PRCS | |
|---|---|---|---|---|
| 02cylinder m size | 32 | 59.3% | 79 | 97.5% |
| 02 Sylender s size | 33 | 61.1% | 79 | 97.5% |
| 02 face mask a, c | 40 | 74.1% | 79 | 97.5% |
| 02 nasal canola | 40 | 74.1% | 79 | 97.5% |
| Oral airway | 39 | 72.2% | 79 | 97.5% |
| Electric suction | 39 | 72.2% | 80 | 98.8% |
| Manual suction | 31 | 57.4% | 79 | 97.5% |
| Ambo bag adult child | 39 | 72.2% | 79 | 97.5% |
| Jump kit | 30 | 55.6% | 79 | 97.5% |
| Pocket mask | 32 | 59.3% | 80 | 98.8% |
| Neck collars s.m.l | 38 | 70.4% | 79 | 97.5% |
| Resuscitation kit | 37 | 68.5% | 80 | 98.8% |
| Long spinal Board | 38 | 70.4% | 80 | 98.8% |
| Short spinal board | 33 | 61.1% | 79 | 97.5% |
| Sphygmomanometer | 39 | 72.2% | 78 | 96.3% |
| Metal splints | 34 | 63.0% | 80 | 98.8% |
| Air splint | 24 | 44.4% | 80 | 98.8% |
| Frno bed stretcher | 38 | 70.4% | 80 | 98.8% |
| Foldable stretcher | 33 | 61.1% | 80 | 98.8% |
| Wheel chair | 22 | 40.7% | 80 | 98.8% |
| Scoop stretcher | 29 | 53.7% | 78 | 96.3% |
| Laryngoscope with blade | 24 | 44.4% | 78 | 96.3% |
| Micro dropper | 22 | 40.7% | 50 | 61.7% |
| Clothes scissors | 31 | 57.4% | 79 | 97.5% |
| Kidney receiver | 23 | 42.6% | 80 | 98.8% |
| Urinal bottle | 23 | 42.6% | 80 | 98.8% |
| Plasters roll | 37 | 68.5% | 80 | 98.8% |
| I.V canola | 38 | 70.4% | 79 | 97.5% |
| Triangular bandage | 38 | 70.4% | 79 | 97.5% |
| Normal saline 0.9% | 39 | 72.2% | 79 | 97.5% |

**Table 4-14b: Ambulance medical equipment:**

| Medical equipment | MOH | | PRCS | |
|---|---|---|---|---|
| Dextros 5%in water | 39 | 72.2% | 80 | 98.8% |
| Ringer lactate | 39 | 72.2% | 80 | 98.8% |
| Bedspread | 38 | 70.4% | 80 | 98.8% |
| Blancket | 27 | 50.0% | 77 | 95.1% |
| Pillows | 26 | 48.1% | 62 | 76.5% |
| Sharp container | 38 | 70.4% | 79 | 97.5% |
| Non sterile gloves | 39 | 72.2% | 79 | 97.5% |
| Crep bandage | 39 | 72.2% | 79 | 97.5% |
| Arterial tourniquet | 39 | 72.2% | 80 | 98.8% |
| Field bandage | 33 | 61.1% | 80 | 98.8% |
| E.t.tube 2each size | 29 | 53.7% | 77 | 95.1% |
| Delivery kit | 21 | 38.9% | 80 | 98.8% |
| Quick cold | 28 | 51.9% | 80 | 98.8% |
| Pulse oximeter | 27 | 50.0% | 70 | 86.4% |
| Ventilator | 27 | 50.0% | 52 | 64.2% |
| Defibrillator | 35 | 64.8% | 46 | 56.8% |
| ceramic plates | 9 | 16.7% | 49 | 60.5% |
| Kelver sheets | 10 | 18.5% | 48 | 59.3% |

# Annex 8

# PRCS Ambulance Check-list

جمعية الهلال الأحمر الفلسطيني
دائرة الإسعاف والطوارىء

## Chick List

المركز: _____ رقم السيارة: _____ النوع: _____

التاريخ: / / 200 الشفت: A B C

| Ambulance Shape | | Electricity ( Function Test) | | Engine | | Car Equipment | |
|---|---|---|---|---|---|---|---|
| Body | | Lights (out, in) | | Radiator | | ER Triangular | |
| Paint | | Wiper System | | Battery | | Fire Extinguisher | |
| Mirrors | | Emergency Lights | | Break Fluid | | Jack | |
| Tires | | Horn | | Oil Level | | Spot Light | |
| Windows | | Radio | | | | License Papers | |
| Clean (In, out) | | Siren | | | | Case Forms | |

Medical Equipment

| | Item | No. | | | Item | No. |
|---|---|---|---|---|---|---|
| | O2 Cylinder (M Size) | 1 | | | Clothes Scissors | 2 |
| | O2 Cylinder (S Size) | 1 | | | Kidney Receiver | 1 |
| | O2 Face Mask (A, C) | 1 each | | | Urinal Bottle | 1 |
| | O2 Nasal Canola | 4 | | | Plasters Roll | 3 |
| | Oral Airway (أحمر ، برتقالي ، أخضر) | 3 each | | | IV. Canola: (G14, 16.18,20,22) | 5 each |
| | Electric Suction | 1 | | | Triangular Bandage | 10 each |
| | Manual Suction | 1 | | | Normal Saline 0,9 % | 5 |
| | Ambo Bag (Adult, child) | 1 each | | | Dextrose 5% in Water | 5 |
| | Jump Kit شنطة إسعاف مجهزة | 1 | | | Ringer Lactate | 5 |
| | Pocket Mask | 12 | | | شراشف | 2 |
| | Neck Collars (S,M,L) | 1 each | | | بطانيات | 2 |
| | Resuscitation Kit | 1 | | | مخدات | 2 |
| | Long Spinal Board | 1 | | | Sharp Container | 1 |
| | Short Spinal Board | 1 | | | Non Sterile Gloves | 1 box |
| | Sphygmomanometer | 1 | | | Crep Bandage | 10 |
| | Metal Splints | 4 sizes | | | Arterial Tourniquet | 1 |
| | Air Splints (Am, Leg) | 1 each | | | Field Bandage | 5 |
| | Ferno Bed Stretcher | 1 | | | E.T. Tube 2 each size | |
| | Foldable Stretcher | 1 | | | Delivery Kit | 1 |
| | Wheel Chair | 1 | | | Quick Cold | 3 |
| | Scoop Stretcher | 1 | | | Pulse Oximeter | 1 |
| | Laryngoscope With Blades | 1 | | | Ventilator | 1 |
| | Micro dropper | 1 | | | Defibrillator | 1 |

Pullet Proof Protection Sets

| | | | | | | |
|---|---|---|---|---|---|---|
| | Ceramic Plates | 2 | | | Kevlar Sheets | 2 |

Miscellaneous Remarks

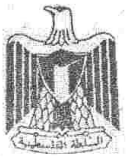
Team _____

Supervisor _____

## Annex 9

## MOH Ambulance Check-list

Palestinian National Authority
Ministry of Health
General Administration of
Emergency Health Services EMS



السلطة الوطنية الفلسطينية
وزارة الصحة
الإدارة العامة للإسعاف والطوارئ
دائرة الإسعاف

إقرار تسليم و استلام السيارة و التي تحمل رقم _____

اسم السائق _____/اليوم _____ / التاريخ _____.

| م/ | الأشياء التي يتم تفقدها | صباحاً | مساءً | ملاحظات |
|---|---|---|---|---|
| ١ | زيت ماتور | | | |
| ٢ | ماء رديتر | | | |
| ٣ | زيت جير | | | |
| ٤ | الوقود | | | |
| ٥ | الإشارات ضوئية (الغمازات) | | | |
| ٦ | وجود الملحقات (جلد-مثلث-مفتاح) | | | |
| ٧ | فحص و تفقد البودي | | | |
| ٨ | فحص الإطارات | | | |
| ٩ | فحص أوراق السيارة | | | |
| ١٠ | تنظيف السيارة من الداخل و الخارج | | | |
| ١١ | تفقد اسطوانة الأكسجين و المنظم | | | |
| ١٢ | الشيالة نوعين | | | |
| ١٣ | جهاز بلص اجزوميتر | | | |
| ١٤ | جهاز شفط | | | |
| ١٥ | جهاز امبو | | | |
| ١٦ | تفقيد اللواح | | | |
| ١٧ | تفقيد السرينة | | | |

**ملاحظة :-**

في حالة وجود أي مشكلة في بند من تلك البنود يبلغ :-

١- مديرعام الاسعاف و الطوارىء ٢- مدير دائرة الاسعاف و الطوارئ ٣- المسئول الاداري للفترة و في حال عدم الابلاغ في حينه يتحمل السائق عن ذلك كامل المسئولية .

توقيع السائق _____ توقيع المسئول _____

يعتمد
مدير عام الإسعاف والطوارئ
د./ معاوية حسنين