

**The Islamic University in Gaza**  
**Deanship of Research and Postgraduate**  
**Faculty of Commerce**  
**Master of Business Administration**



الجامعة الإسلامية بغزة  
عمادة البحث العلمي والدراسات العليا  
كلية التجارة  
ماجستير إدارة الأعمال

# **The Reality of Overcrowding in Emergency Departments in the Ministry of Health In Gaza Strip: from Viewpoint of Healthcare Providers.**

واقع الازدحام في أقسام الطوارئ في مستشفيات  
وزارة الصحة في قطاع غزة من وجهة نظر مقدمي الخدمة

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**A thesis submitted in partial fulfillment  
of the requirements for the degree of MBA**

**September/ 2017**

إقرار

أنا الموقع أدناه مقدم الرسالة التي تحمل العنوان:

**The Reality of Overcrowding in Emergency  
Departments in the Ministry of Health In Gaza Strip:  
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وزارة الصحة في قطاع غزة من وجهة نظر مقدمي الخدمة

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واقع الازدحام في أقسام الطوارئ في مستشفيات وزارة الصحة في قطاع غزة من وجهة نظر مقدمي الخدمة

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﴿ وَاتَّقُوا اللَّهَ وَيُعَلِّمُكُمُ اللَّهُ وَاللَّهُ بِكُلِّ شَيْءٍ عَلِيمٌ ﴾

[البقرة: 282]

## الملخص

تهدف هذه الدراسة إلى تحديد واكتشاف أسباب الاكتظاظ في أقسام الطوارئ في مستشفيات قطاع غزة كما تهدف إلى تقديم الإطار النظري للمشكلة، وإيجاد الحلول المناسبة للتعامل مع هذا الوضع. تكون مجتمع الدراسة من جميع العاملين في أقسام الطوارئ في مستشفيات قطاع غزة، لجمع البيانات الخاصة بالمجموعات البؤرية حيث تم اختيار عينة طبقية مقصودة من ثلاثة مستشفيات رئيسية موزعة جغرافياً ، وتم جمع بيانات المقابلة الشخصية من خلال خمسة خبراء في مجال الطوارئ من المجتمع المحلي، تبنت هذه الدراسة المنهج النوعي، كما تم تحليل بيانات الدراسة باستخدام المنهج المقارن المستمر على أساس نظرية البناء .

توصلت الدراسة إلى أن سوء فهم المراجعين للدور الحساس لأقسام الطوارئ هو السبب الرئيسي للاكتظاظ، كما أن تفضيلات الناس وفقدانهم الثقة في طبيب العيادة الأولية تزيد من دخول الحالات غير الطارئة عبر بوابة قسم الطوارئ، زيادة عدد المرافقين يزيد من التداخلات ويعيق تدفق المرضى ويزيد الاكتظاظ، وجود فجوة كبيرة بين مقدمي الرعاية الصحية في المرافق الصحية الحكومية والمرضى، عدم توفر التصميم المناسب لقسم الطوارئ، عدم تقديم التدريب المناسب للعاملين في الطوارئ، فشل نظام الفرز الطبي، كما وجدت الدراسة أنه ليس هناك نظام متكامل لتنظيم العمل، وتبين أن هناك نقص في موظفي قسم الطوارئ من جميع التخصصات من الأطباء وتمريض والإداريين ومراسلين وخدمات المرضى، واتضح أن أقسام الطوارئ في قطاع غزة تعوض ذلك النقص من خلال الاعتماد الكبير على المتطوعين والأطباء المتدربين، كما يرتبط الاكتظاظ في أقسام الطوارئ بنقص أسرة المبيت في المستشفى.

وتوصي الدراسة بضرورة إنشاء نظام متكامل فعال ينسق وينظم العمل بين مراكز الرعاية الصحية الأولية والمستشفيات والمجتمع المحلي وضرورة العمل على زيادة وعي المواطنين بحساسية قسم الطوارئ، وضرورة تفعيل دور مراكز الرعاية الصحية الأولية وزيادة التوظيف وتوفير التدريب الكامل للأطباء على بروتوكولات الطوارئ الخاصة قبل النزول لقسم الطوارئ، وزيادة عدد أسرة الطوارئ وكذلك زيادة عدد أسرة المبيت للمرضى المنومين.

## **Abstract**

This study aims to explore the causes of overcrowding in Emergency departments (EDs) within ED itself. It also aims to develop theory about crowdedness in EDs and to find out suitable solution to handle such situations.

The research population is all employees in the ED in Ministry Of Health, The focus group data was collected from ED staff from three major hospitals using purposive stratified sample , the interview data was collected from five emergency experts from the local community, the qualitative approach was adopted, the Constant Comparative Method based on Grounded theory was used to analyze the data.

The study found that misunderstanding the critical role of emergency department is the main cause of the overcrowding, people preferences and losing confidence in primary healthcare physician also contribute in the increasing of non urgent cases to ED, In addition high attendance of patient family member increase interventions that delays the patient flow and increases overcrowding, the study also found that there is a large gap between governmental healthcare providers and patients; the poor design of emergency department affects badly in the patient flow, the lack of staff training in emergency protocol increase the bad consequences of overcrowding; the failure in triage system, the lack integrated system to organize the work among various healthcare providers, the shortage in ED staff from all aspects doctors, nurses, administrators, messengers and patients services, the high dependence on voluntaries and trainee doctors, the unavailability of inpatient bed all of these causes interaction and leads to increasing overcrowding and its harmful consequences.

The study recommended to establish an effective integrated system between primary health care centers, hospitals and the local community, increase citizens' awareness of the sensitivity of the ED, activating the primary health care center role; provide full training for doctors on special emergency protocols before going to the emergency field, increasing the number of ED beds, increasing the number of inpatient beds.

## **Dedication**

*This thesis is dedicated to:*

*My Mom pure soul and to my father, who never stop sacrifices;*

*My dearest husband and my mother in law who leads me through the  
darkness with sparkled light of hope and support;*

*My dear brothers and sisters;*

*My dear kids: Mohammad, Sarah, Khaled;*

*To all my family, the symbol of love and generosity,*

*My friends who encourage and support me;*

*To all the people who supported me throughout my  
entire study and helped me a lot in finalizing this thesis.*

*I dedicate this research.*

## *Acknowledgement*

*First and foremost, I must acknowledge my limitless thanks to Allah, the Ever-Magnificent; the Ever-Thankful, for His help and bless. I am totally sure that this work would have never become truth, without His guidance.*

*Second, I owe a deep debt of gratitude to my university for giving me an opportunity to complete this work.*

*Third , I would like to express my special thanks of gratitude to my Supervisor Professor Yousif Ashor who gave me the golden opportunity to accomplish this thesis, who also helped me in doing a lot of research which enlarge my knowledge about so many new things I am really thankful to him.*

*Fourth, a great thanks to my best appreciated doctors: professor Mohammad Miqdad and Professor Bassam Abu Hamad who accepted to examined me in the thesis defense.*

*Last but not least, deepest thanks to all people who took part in making this thesis real.*



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## **List of Abbreviations**

<b>ACEP</b>	American College Of Emergency Physicians
<b>AED</b>	Accident & Emergency Department
<b>AMI</b>	Acute Myocardial Infarction
<b>CCM</b>	Constant Comparison Method.
<b>CDC</b>	Centers For Disease Control And Prevention
<b>DES</b>	Discrete Event Simulation
<b>DRS</b>	Developmental Research Sequence
<b>ED</b>	Emergency Departments.
<b>GAO</b>	The U.S. <i>Government Accountability Office</i>
<b>GT</b>	Grounded Theory.
<b>HES</b>	Health And Social Care Information Centre
<b>HIS</b>	Health Information Center
<b>INGO</b>	International None Governmental Organizations
<b>IOM</b>	The Institute of Medicine
<b>LOS</b>	Length of Stay
<b>MOH</b>	Ministry of Health
<b>NEDIS</b>	National Emergency Department Information System
<b>NGO</b>	None Governmental Organizations
<b>PCBS</b>	Palestinian Central Bureau Of Statistics
<b>PHC</b>	Primary Healthcare Centers
<b>PHIC</b>	Palestinian Health Information Center
<b>PNGO</b>	Palestinian None Governmental Organizations Network
<b>SPSS</b>	Statistical Package For Social Sciences
<b>UNRWA</b>	United Nations Relief And Works Agency for Palestinians refugees in the near east
<b>WHO</b>	World Health Organization

# **Chapter 1**

## **Introduction**

# Chapter 1: Introduction

## 1.1 Introduction

As health sector is one of the most important components in any community, the Ministry Of Health MOH in Gaza Strip takes on its responsibility to promote the health status of the Palestinian community, particularly vulnerable groups; insuring to provide an appropriate, equitable, comprehensive, accessible, safe, cost effective, evidence-based and client-centered healthcare (MOH, 2013). MOH provides its service through 56 Primary Healthcare Centers and 13 Secondary healthcare centers i.e. Hospitals distributed along Gaza Strip(MOH, 2014). This study is going to investigate the case of Emergency Departments (EDs) in three major hospitals in Gaza Strip those are Al-Shifaa Medical Complex, Nasser Medical Complex, the Indonesian hospital.

Gaza Strip which is narrow longitudinal area with an area of 365 square kilometers that suffered from a lot of repetitive wars and attacks and faced a historical turning point occurred in June 2007 and still affecting the whole life of Gazans, as political and security situation was deteriorating and going to unknown dangerous state, and besides a tight siege was imposed by the Israeli entity. Later in 2007 Israel declared that Gaza Strip as hostile Entity. As a result the Israeli Government reduced supply of fuel and electricity which affects basic services include health.

As EDs are also an important component of any health care system, treating people who have a serious illness or injury that requires urgent attention, 24 hours a day and 7 days a week. For all of that ED overcrowding situation is considered as a serious health problem both in Gaza Strip and around the World(Pines et al., 2011).

ED overcrowding defined as "an extreme volume of patients in ED treatment areas, forcing the ED to operate beyond its capacity (Brassard, 2013).

A systematic review was done by Hoot and Aronsky (2008) find that there are four general themes existed among the effects of ED crowding, the first general effect: unfavorable outcomes which determined by patient mortality as a common adverse outcome of crowding, the Second: lower quality determined by delays in



transporting and delays in treatment, the third: lack of accessibility determined by ambulance diversion, the fourth: institution losses determined by financial effect. In addition to care delay, unnecessary procedures, extended pain, and death.

The current Study aims to perform an exploratory analysis about the causes of overcrowding in EDs in MOH that help to find the solution for this problem, most of previous studies tried to find consensus definitions and causes through reviewing literature relevant to this subject (Bradley, 2005; Hwang & Concato, 2004; Schull, Slaughter, & Redelmeier, 2002; Trzeciak & Rivers, 2003). In addition Schull et al. (2002) conducted their Study based on standard qualitative research techniques using an expert panel consist of participant with different backgrounds and experiences who were willing to express their experiences.

The Study will be accomplish through using qualitative case study methodology as it is appropriate and valuable approach for health science research to develop theory, evaluate programs, and develop interventions as it is flexible and rigorous (Baxter & Jack, 2008).

## **1.2 Research Problem and justification**

For more focus on our problem, EDs in MOH hospitals suffer from an increased visit comparing with other EDs around the world where the EDs visit ratio in Gaza is 77.1% (HIC, 2014) as illustrated in table (1.1) below. Where it is in the USA 44.5%(CDC, 2015), and in The United Kingdom is 25.9 % (HES, 2014) comparing ratios reveals the large scale of pressure in ED utilities, that affect patient safety and public health that results in delayed sensitive diagnostic and treatment decisions, long waiting time, patients leaving without being seen, ambulance diverting, dissatisfaction for both patient and provider, as well as medical errors and financial losses, etc. It has also a numerous negative consequences including potential increasing in mortality and morbidity (Brassard, 2013).

**Table (1.1): ED Visit.**

<b>MOH Emergency departments</b>	<b>Annual visits</b>	<b>Daily visits</b>
General ED	745,669	2,043
Pediatric ED	385,371	1,056
Obstetrics and Gynecology ED	39,964	109
Non MOH EDs	116,716	-
Total	1,287,720	3,528
population	1,670000	N/A
Visit ratio	77.1 %	N/A
Al Shifaa ED visitors	182,500	500
ED visitors per hour		21
# ED Physician working on in any hour	N/A	4
ED patients per physician per hour	N/A	5.25

Source: (PCBS, 2014); (HIC, 2014)

In the Emergency Medicine most emergency physicians should not see more than 2.6 to 3.1 patients per hour (ACEP, 2009).

Comparing that with the mentioned above ratio for Gaza Strip, revealed how large is the problem we are stuck in and suffering from.

Despite its harmful impacts, and the availability of rich international literature base and recommendation about the importance of conducting a detailed analysis for the increased demand and use of EDs (Durand et al., 2012), ED overcrowding remains poorly understood by government and hospital administrations in Gaza Strip and poorly investigated, as there was no study focused on this problem or tried to find the solutions, and this is adequate justification to use the qualitative approach to achieve the study objective which will be mentioned later, thus the research problem can be summarized in the following questions:

**Research Questions:**

**Question 1: What are the causes of overcrowding in EDs within ED itself in the MOH Hospitals In Gaza Strip?.**

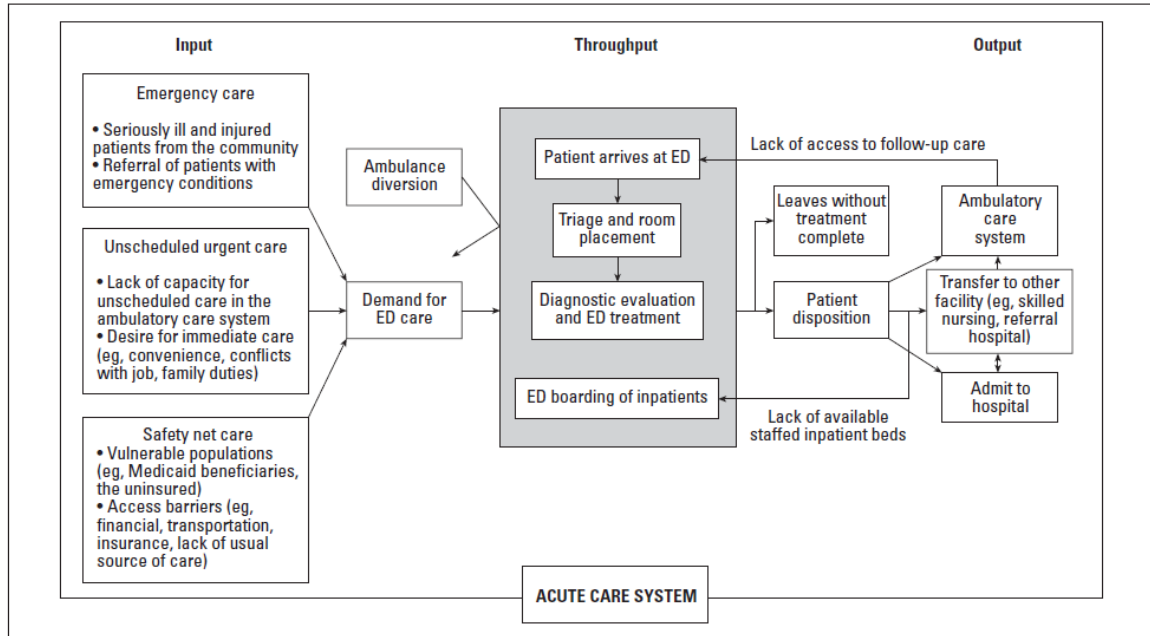
**Question 2: Do people prefer hospital EDs on Primary Healthcare Centers In Gaza Strip? Why?**

**1.3 Research Concepts:**

Based on literature review, the model developed by (Asplin et al., 2003) was adopted in this study, this model provide a conceptual framework on which researchers can study and investigate the causes of ED overcrowding and set up potential solutions. The conceptual model divided the ED crowding factors into three factors and components dependent on each other: input factors, throughput factors, and output factors. As follows:

- a. **The input factor of ED crowding in the conceptual model** which may be any condition, event, or system characteristic that leads to the increased demand for ED services
- b. **The throughput factor of the model** is determined by patient length of stay in the ED as a possible contributory factor to ED crowding. This division of the model identify the need to investigate the ED care processes from inside. in the model , there are two key throughput phases. The first is represented in triage, room placement, and the initial provider evaluation. The second represented by diagnosis and treatment.

- c. **The output factors** refers to the Inefficient disposition of ED patients which lead to crowding for discharged and admitted patients.



**Figure (1.1): The input-throughput-output conceptual model of ED crowding.**

Source: (Asplin et al., 2003)

#### 1.4 Research Importance:

The importance of this research is that it is handling a serious problem both in Gaza Strip and around the world, that affect patient safety and public health, It has also a numerous negative consequences including potential increasing in mortality and morbidity.

It is worthy to mention that the percent of Emergency patients to population in 2014 reported to for hospitals MOH equals 1,171,004 (HIC, 2014) to 1,670,000 (PCBS, 2014) a percentage of 70.12%, the percent of Emergency patients to population reported to all hospitals in Gaza strip include (MOH hospitals, Ministry Of Interior Hospitals, Non-Governmental Hospitals) in 2014 equals 1,287,720 (HIC, 2014) to 1,670,000 (PCBS, 2014) a percentage of 77.2% .

## **1.5 Research Objectives:**

The research aims to achieve the following objectives:

- a.** To explore the causes of overcrowding in EDs within ED itself in Gaza Strip.
- b.** To investigate if people prefer hospital EDs on Primary Healthcare Centers in Gaza Strip and why.
- c.** To identify and rank the most important factors, and interventions lead to overcrowding in EDs in Gaza Strip.
- d.** To find out suitable solution to handle such situations in Gaza Strip

## **Summary:**

The current chapter served as introductory chapter. It gives a brief background about the health situation in Gaza Strip, and considering the emergency department as an important component of any health care system, it gives a definition of the ED overcrowding, it also provides an introduction about the current study in general, it includes the Research Problem and justification, it provides some necessary statistics about the emergency visits in Gaza strip. the research questions, and the research concepts are provided in details. Hence the importance of the study is discussed. Finally, the research objectives are illustrated in details.

# **Chapter 2**

## **Theoretical Framework**

## **Chapter 2: Theoretical framework**

### **Introduction**

Historically, the Gaza Strip has been exposed to different kinds of casualties particularly those of political origin. Since the beginning of the second intifada in September 2000, till the end of 2011, MOH reports indicate that 7227 persons killed and 60043 injured in the WB and Gaza (MOH, 2013). Among martyrs, around 73% were from Gaza (5112) and the rest were from WB. Among the injured, 41.1% (24660) were from Gaza with the highest proportion also from the north and Gaza governorates.

Israel's three-week military aggression in 2008/2009 left behind it account of 1,455 killed people, (38%) of them, were children and women; and 5,380 of them are injuries, (49.6%) of them are children and women, and massive destruction to thousands of houses, businesses, and infrastructure. Around 16 healthcare providers were killed and 38 were injured in the Israeli aggression in 2008/2009 (PNGO, 2009). Many cases were reported of injured people who bled to death and the Israeli forces prevented any kind of assistance being provided to them neither by medical staff nor by people available close by (PNGO, 2009). The mass casualties with multiple injuries, the lack of hospital capacity to absorb such high numbers of injured led to loss of life of some of those injured without providing them with the needed care (PNGO, 2009). Also, the huge number of the injured people and lack of resources led to complications result from the wrong transfer of cases and the early discharge of injured before they reach the stage of full recovery (PNGO, 2009).

During the Israeli aggression in 2008/2009, 56 health facilities were targeted and either totally or partially demolished. This includes MOH hospitals, NGO hospitals, MOH-Primary HealthCare centers-PHC and health centers belonging to other providers. During the Israeli aggression , 21 out of the 56 MOH PHC centers, and 3 of the 20 United Nation Relief and Works Agency (UNRWA) PHC centers, were closed(MOH, 2009). In addition, of the 24 PHC centers designated as potential emergency response centers, only 10 were partially operational and of those centers none had adequate obstetrics or neonatal services.

During the period between November 14<sup>th</sup> to November 21<sup>st</sup>, Israel launched a second military aggression within less than 4 years from the aggression in 2008/2009(MOH, 2013). In the military aggression of 2012, Israel shelled more than 1,500 sites in Gaza Strip, between government buildings, homes and apartment blocks and business institutions. A total of 189 peoples were killed in the operation, of them 47 children and 13 women (MOH, 2013). Besides 1,526 Palestinians were injured. Israeli shelling by air, by land, and by sea left behind it civilian casualties, include children in schools and civilian residences. In addition to 4 killed after the agreed truce and 48 injured (MOH, 2013).

Also, trauma, accidents and injuries constitute one of the leading causes of death. In 2008, it constituted 20% of the total deaths in Gaza Strip (MOH, 2013). However, the leading causes of death in 2009 did not change significantly. However, the contribution of trauma to the total deaths increased from 20% in 2008 to 23% in 2009 as a result of the Israeli aggression. In 2010, accidents constituted the fourth leading cause of death among the entire population (9%) (MOH, 2013).

Mortality rates resulted from accidents per 100,000 population in the Gaza Strip in 2000 was 15; then, it became 14.5 in 2005 and jumped to 93.1 (because of the Israeli aggression in 2008/2009) and the reported mortality was 29.1 in 2010 (MOH, 2013). The most frequently reported deaths by accidents type cross the period between 2000 through 2010 were Israeli assaults, road traffic accidents and falling down.

Before the aggression on Gaza in December 2008, most of the healthcare and medical equipment was in a miserable case due to severe lack of spare parts and replacements, maintenance and as effects of frequent power cuts (WHO, 2009). There were worthy amounts of equipment and spare parts needed to be delivered from the West Bank and Israel, which was faced by Israeli constraint. Approximately 30% of necessary medical equipment including operating rooms equipment were in defect (PNGO, 2009). Recently, Israel allowed essential humanitarian supplies to enter Gaza strip. Resulted in, the overall medical equipment state improved in spite of some needs gaps still taking a place. Although the situation had significantly improved with the generous donations, still there is shortage of spare parts for equipment and disposable items.



## **2.1 Al-Shifaa Medical Complex and its Emergency department:**

Al-Shifa Medical Complex is the largest medical complex and central hospital in Gaza Strip, It was established in 1946 and was built on an area of 42 thousand square meters. Located in the western side Gaza City, started with small kiosks, then these kiosks are developed over years till now, many buildings were Constructed like radiotherapy department, burn department, special surgery department, second floor in internal medicine department.

Al-Shifa Medical Complex a referral hospital for a number of hospitals in the Gaza Strip. The hospital offers secondary, tertiary and specialized services and it provides emergency services to the majority of injured people. the hospital is also the main teaching hospital for health trainees. The catchment area surrounding the hospital is large; more than half million population. Most of the casualties of the Israeli aggression December 2008 were treated at Al-Shifa Medical Complex.

It is subdivided into three hospitals: surgery hospital, obstetrics and gynecology hospital, internal medicine hospital beside paramedical services such as physiotherapy, radiotherapy, laboratory, and pharmacy, which includes different patients referred From reception and EDs or by the primary healthcare centers. where it is transferred to the internal departments, or outpatient department in the complex(MOH, 2016).

This medical complex contains 704 hospitalization beds, distributed in obstetrics and gynecology and neonatal , general and specific surgeries, internal medicine, burns, and intensive care unit. There were in this medical complex 248 daily care beds, that is distributed on dialysis, oncology, ED and other specialized clinics, percentage of EDs beds from the daily care beds  $51/248 = \% 20.5$  , also a total number of employees are 1750 (PHIC, 2014).

Al-Shifa medical complex has three separate EDs – internal medicine, surgical and obstetrics and gynecological. Patients may brought by ambulance, or may be walking patients register. There's security guards are allocated around ED in

case of problem or miscommunication, patients are triaged to obs/gynae surgical, medical, or outpatients.

Each medical and surgical ED have 4 doctors with various specialties and 5 Nurses working three shifts system– and each one have in total 22 ED beds distributed as follow: triage room which contain 4 beds there is a main hall with 12 beds, a suturing room with 2 beds, a plaster room with 2 beds and an ED intensive care room (Resuscitation) with 3 beds .

The purpose of triage room is classifying cases as priorities where the nurse sort and direct patient either the outpatient department to book an appointment, or to go to PHC, or to enter the ED to been see by the doctor .

Al Shifa Medical Complex EDs deals with around 500 patients per day and free care is provided, the kinds of patients that visit ED are patients with common complaints like cardiac problems abdo pain, and breathing problems, the EDs receive many trauma patients.

Despite the lack of space and the large number of patients and the lack of medical staff and administrative the medical staff is sparing no efforts to work on the patient's comfort and provide a better health service(Sahabani. A., personal communication, May 22, 2016)

## **2.2 The Indonesian Hospital and its Emergency Department:**

The Indonesian Hospital was established by a generous donation from the Indonesian people . The Indonesian Hospital was established on 27/12/2015 . The Indonesian Hospital is located in the North Governorate opposite the Sheikh Zayed Towers west of the entrance of Tel Za'tar with a total area of 16 dunums and the actual area of the building is about 4 dunums.

The hospital provides the residents of the North Governorate with an estimated population of 300,000 people. The health services of internal medicine, Cardiology, General Surgery, Orthopedics and Vascular Surgery have a total capacity of 110 bed beds distributed among the internal medicine, General Surgery and Orthopedic Departments and 10 beds dedicated to intensive care.

The building consists of 3 floors. The ground floor includes the administration, in addition to the outpatient clinics. 5 outpatient clinics and the reception and ED which has account of 8 beds, 3 of them are intensive care for emergencies, in addition to a triage room contain account of 3 beds. The radiology department includes a Fluoroscopy machine, CT machine, 2 Ultrasound machines), internal pharmacy, intensive care unit and operations consists of 4 fully equipped operating rooms and a physiotherapy hall and the first floor receives the inpatient cases in the internal medicine departments, surgery departments , as well as doctors' offices. The bedroom underground consist of the central laboratory and the central pharmacy of the hospital's central sterilization department and medical equipment maintenance room and administrative offices. The ED daily cases is approximately from 350 to 400 case (Abu Zaher. E., personal communication, December 22, 2016).

### **2.3 Naser Medical Complex and its Emergency Department**

The foundation stone of the hospital was laid in 1958, when it was officially opened in 1960 and under the Egyptian administration for the Gaza Strip. Since then, developments in the hospital have taken place in its administrative and medical buildings and technical staff with extensive experience. In addition, the hospital administration has established a number of medical centers, outpatient clinics and new buildings that have been assigned to provide quality medical services to the residents of the southern region and other areas of the Gaza Strip.

And about the ED in Naser Medical Complex, Dr. Mohammad Zaqqout the General Director of the complex said that ED is renewed with additional improvement such as applying medical triage, one-way patient flow, computerized filing, advanced medical assessment and termination of medical service in the same place without the need for the patient to travel to any other place.

He continued that "The new system has been in place since last August, 2016, and this system can evaluate and distribute cases by qualified nursing staff who have received courses carried out by the Red Cross in cooperation with the General Directorate of Hospitals, in accordance with international regulations and standards."

And mention that the number of emergency beds in the Nasser complex was 30 beds divided into 16 beds in the internal medicine ED and Surgery ED , and 4 beds in the Injury Hall. The intensive care unit includes 4 beds equipped with all modern equipments of respiration, electric shock, ultra sound machine, and four beds in the triage hall , one bed for wounds and one for Splint fractures. (Zaqqout, personal communication, 01/09/2016.)

## **2.4 Definition of Emergency Medicine**

“Emergency Medicine is the medical specialty with the principal mission of evaluating, managing, treating and preventing unexpected illness and injury(Schneider, Hamilton, Moyer, & Stapczynski, 1998).

Emergency physicians provide fast assessment and treatment for patients need urgent care and attention who visit ED with no prior appointment; either by an ambulance or by his own means.

Unexpectedly, at any time anyone may need medical care. Therefore , emergency medical care is supposed to be available 24 hours a day as a core element of healthcare delivery system.

## 2.5 Crowdedness in EDs around the world

**It's an international Serious problem.** As mentioned before, The overcrowding issue in EDs become a significant problem not only nationally, but also internationally. Comparison Across 15 Countries about ED Crowding, is illustrated in table (2.1).

Due to the Importance of reducing the overcrowding of EDs , setting up ideal model for work flow in ED attracts many researchers to ensure best practices, and to avoid any problem may occur as a result of overcrowding.

Table (2.1): Comparison Across 15 Countries about ED Crowding

Country	Systems Evidence/Reports of ED Crowding
Australia	ED visits and crowding are Increased: annual increase around 3.5%; the main cause of crowding is boarding.
Canada	ED visits per year around 12 million; but increased recently by 6%.
Denmark	Till now ED crowding is not seen a key problem
Finland	ED visits are stable but there is lower in primary care EDs, slightly increased at specialist EDs; ED crowding take place as a result of boarding.
France	ED crowding is increased, around 64% increase in ED visits from 1995 to 2005.
Germany	Increased in ED visits by 4% in 2006 and 8% in 2007 as survey findings.
Hong Kong	in Hong Kong from 17 ED there is a little crowding in 16; and high levels of ED crowding in one ED.

**Source: (Pines et al., 2011):**

Country	Systems Evidence/Reports of ED Crowding
India	Big problems with ED crowding;
Iran	no statistics, crowding in ED is a main problem;
Italy	ED crowding a main problem; for the past 5 years the increases in ED visits around 5% to 6% per year.
Netherlands	growing rate of ED visits from 2% to 4% per year.
Saudi Arabia	ED crowding is reported. as a major problem
Spain	boarding resulted in ED crowding.
Sweden	ED crowding is not reported as a problem.
United Kingdom	ED visits in 1998–9 are around 14.2 million; in 2008 – 2009 around 16.5 million ED visits are increasing

**Source: (Pines et al., 2011):**

## **2.6 Moral Implications of ED Crowding**

In spite of little agreement on identified and specified definition of ED crowding, significant consensus is found regarding the moral implication resulted in this phenomenon.

Crowding in EDs lead to serious problems regarding the moral principles most medical practitioners apply throughout patient treatment, to respond to ED patients in a timely and safe manner, and giving them the be treated with respect, having the right of information and choice, privacy. This chapter will explore the Unethical aspects both ED patients, practitioners hospital and community suffer form.

### **a. Increased Wait Times**

Waiting for service is typically a negative consumer experience and causes unhappiness, frustration, and anxiety, consumers retrospectively overestimate the duration of waiting time , resulting in a reduction in service evaluation (Zhou & Soman, 2003).

Crowding in ED leads patients to wait for longer times to get physician treatment; when patients attending to the ED demanding treatment exceeds the physical resources or staffing capacity this state creates a bottleneck to patient access to care, and they are forced to wait for long times for the care, in addition to those who are admitted, they also wait for an inpatient bed (Asplin et al., 2003).

Patients who attending to ED and wait for a long times might be at a high risk of mortality and may be admitted in the next seven days. As length of stay increases, the risk of later adverse events may take place specially for patients with high acuity illness (Guttmann, Schull, Vermeulen, & Stukel, 2011).

Patients always ranked waiting for long times as a main reason for leaving without treatment, and around 60% of them search for other medical care within a week. Patients who left the ED without completing treatment were twice to face worsened health problems (Hoot & Aronsky, 2008).

Timely care was defined by The Institute of Medicine IOM as “reducing waits and sometimes harmful delays for both those who receive and those who give

care.” A growing evidence an relation was associate ED crowding to delays in patient timely care, which is considered as a bad indicator and leads to reduction in patient satisfaction, care delay for time-sensitive cases such as severe trauma, acute myocardial infarction (AMI), sepsis, pneumonia, stroke, those requiring emergent surgery (e.g., appendicitis, bowel obstruction), and ambulance delays may leads to adverse outcomes (Bernstein et al., 2009).

Most of EDs that are interested in increasing the patient satisfaction score, always achieve that by reducing entering-to-exist times (Handel, French, Nichol, Momberger, & Fu, 2014).

To reduce waiting times, EDs can extend its resources past its ideal capacity by putting transfer stretchers in the corridors, providing fast track services, and even trying to restructure and redesign triage protocols to deal with more patients with more efficient and timely care (Brassard, 2013).

It is important to point out that waiting for ED services is not a novel concept, but in sometimes it is unethical.

#### **b. Boarding**

Overcrowding also resulted in boarding, when hospitalization beds are fully occupied, patients can't be moved from the ED to inpatient units. This condition lead to boarding patients practice, patient either stay in the ED, or may use beds in corridors , waiting for vacant inpatient bed (IOM, 2006) .

The boarding practice indicates moral hazards, boarded patients suffer form lack of the privacy, don't receive timely care services, and do not have the benefit of specialized expertise and equipment according to their situation that they will have in the inpatient department.

(Walsh, Cortez, & Bhakta, 2008) surveyed patients without a disposition, visitors, and boarded patients at a county hospital ED. Boarded patients agreed that they prefer corridors on an inpatient ward to ED boarding. They refer that preference to more privacy issues, less noise level and those patients find it easy to access doctors in the inpatient wards.



The problem of boarding patients in ED, not only prevent patient from receiving the suitable care but also consume ED resources and filled a bed that is needed for other ED patients. when the admission delays reduced, the hospital's net revenue from ED operations improve significantly, as the delay in the admission limited the utilization from ED treatment beds for other patient (Falvo et al., 2007) .

Even if the initial decisions and diagnosis and requiring the inpatient care is made, the patient still in the ED, and still need monitoring and treatment as required. this situation exhausted the ED staff, create stressful and tension environment which delay treatment, increase errors, and badly affect the care quality.

It is not the matter if hospitals operate close to capacity or not , rather than inadequate bed, inefficiency may be the cause of boarding. Some hospitals have reduced or put an end to boarding by working on efficiency.

(Rabin et al., 2012) demonstrate evidence based strategies for managers to improve efficiency. For example:

1. Boarded patients who are in EDs and whose health condition is stabled must transfer to inpatient hallways , As patients prefer less noisy and not crowded inpatient wards to ED wards,
2. Managing the active bed to closely trace bed usage and forecast bottlenecks in bed flow in and bed flow out using computerized systems.
3. Establish simple admission procedures protocol that ED and inpatient staff must follow when moving patients to the floor;
4. Reverse triage .

### **c. Ambulance Diversion**

The large volume of patients attending to the ED beside resulting in longer wait times, in also leads to execute ambulance diversion. In a way to alleviate the overcrowding in EDs, many hospitals adopted the ambulance diversion, where ambulances are moved to another ED during peak periods of crowding (Cooney et al., 2011).

While this practice done trying to give the suitable emergency care during peak periods of crowding, diverting often break basic moral standards. By

increasing the time to gain treatment, the requirement of patient safety may be compromised and the patient may be at a higher risk.

For cases with time sensitivity conditions, ambulance diversion is linked with increasing the mortality rate. (Shen & Hsia, 2011) found that patient exposed to be diverted are facing a higher mortality rate by about 3 percentage points than if he/she not diverted.

When an ambulance is diverted from its original destination, the second hospital may not be the hospital where the patient would have chosen to receive treatment. The patient may have preferred being treated at a hospital where his doctors have privileges and his medical records would be readily available (Brassard, 2013) .

#### **d. Medical Errors**

Besides compromise patient safety, medical errors also negatively affect the reliability and quality of care the community can expect from the ED. ED medical errors may resulted from of the fast-paced, crowded, and acute nature of care (Pham et al., 2011)

In their studies, Epstein, Huckins et al. (2012) found that there is non -linear association appeared with most preventable medical errors occurring at the most reported crowding level. And they found a direct relation between the risk of preventable medical errors and ED crowding high levels (Epstein et al., 2012).

Overloaded work was found as a contributory factor to medical errors (Källberg et al., 2015), as wrong decision may resulted from miscommunication during the overcrowding peak periods.

The high tension environment created by ED crowding increases medical errors. Such medical errors have been identified by the Institutes of Medicine as serious threats to public health.

#### **e. Decreased Confidentiality And Privacy**

ED crowding often results in patients being examined and treated in any space including hallways. Patients in crowded EDs are very close together, and the ability to offer a sense of privacy is nearly nonexistent. (IOM, 2006).

The issue of privacy does not only concern the privacy of information, but also physical privacy. Examinations are often done in close proximity to other patients, sometimes with only a curtain separating patients which arouse feelings of violation, acute embarrassment, shame, or resentment thus compromising patient security and safety in the ED (Brassard, 2013).

#### **f. Inequitable Care**

The main reason seeking care in the ED is that all patients are guaranteed access to medical evaluation and emergency care regardless of ability to pay or other considerations that may lead to health disparities in other medical settings

EDs crowding let vulnerable people to be disadvantaged from the healthcare services. The left-without-being-seen rate is increasing in poorer EDs.

The stress and pressure the staff may lead to a more hurried pace which could potentially compromise the quality of care received. In order to prevent this perception of inequity, EDs ought to have protocols in place to ensure that patients who are seen during peak crowding conditions receive the same level of care as patients who do not present at times of high crowding (Brassard, 2013) .

#### **G. Educational Challenges**

Crowding may harm the education of medical students and residents in academic EDs. When patient volume and demands exceed ED resources, attending physicians are drawn away from traditional teaching opportunities because of pressing clinical issues, bottlenecks in patient flow, and other administrative problems (Lin, Taira, Promes, & Regan, 2011).

#### **h. Violence.**

With patient waits for a long times, patients or their family member tend to be more violent. fist fights and other cases of violence have taken place in the ED waiting halls, for who to be treated first. Body harm and threats may directed to both emergency physicians and nursing staff.

**Summary:**

This chapter, firstly provides an introduction about context of Gaza strip, and how the political situation has influenced badly the healthcare services, then it presents the situation of three major hospital targeted in this study and their emergency departments these are Al-Shifaa Medical Complex, The Indonesian Hospital, Naser Medical Complex. A definition of Emergency Medicine was provided. Then the phenomena of overcrowding in EDs around the world is illustrated. Finally the moral implications of ED crowding is listed and these are: increased wait times, boarding, ambulance diversion , medical errors , decreased confidentiality and privacy, inequitable care, educational challenges, violence.

# **Chapter 3**

## **The Previous Studies**

## Chapter 3: The Previous Studies

### Introduction:

This chapter perform an overview of the current literature review related to the phenomena of overcrowding in EDs. **Two literature reviews were performed. The first** was a preliminary review undertaken in the initial stages of the research as the importance of making explorations of the literature, in order to identify knowledge gaps or aspects of the overcrowding in EDs, **and the second** a more comprehensive and deep review conducted at the end of the research as it is advised in qualitative research and particularly in Grounded theory which described as a “general inductive method possessed by no discipline or theoretical perspective or data type” (Glaser, 2005, p. 141).

### 3.1 Initial Studies Review

Due to the Importance of reducing the overcrowding of EDs , setting up ideal model for work flow in ED attracts many researchers to ensure best practices and to avoid any problem may occur as a result of overcrowding.

The lack of consensus definitions for ED ED overcrowding lead many researchers to conceptualized the problem. Schull et al. (2002) tried to emerge a standardized definition for overcrowding and developed a specific list of important elements, by using expert panel and asking to provide an operational definition of ED overcrowding. The panel performed a conceptual model of ED overcrowding that partition the causes into 4 determinants: community, patient, ED and hospital factors). They found that ambulance diversion was the suitable operational definition of ED overcrowding phenomena as it reflects the ability of an ED to meet its main responsibilities. While Asplin et al. (2003) set up a conceptual model to help researchers, administrators, and policymakers to get close to its causes and perform potential solutions for ED crowding. the conceptual model divided the ED crowding into 3 interdependent factors: input factors, throughput factors, and output factors, they adopted the definition of Crowding Resources Task Force which was associated by American College of Emergency Physicians as: " A condition where the identified demand for emergency services exceeds available resources in the ED; Agreed with him Trzeciak and Rivers (2003) by referring to it as an extreme excess of patients in the treatment areas, exceeds ED capabilities.

Later on Hwang and Concato (2004) conducted a review Study aims to find out how this issue was defined in the medical literature, the review agree with Schull et al. (2002) that the definition of overcrowding should use operational definitions – but disagree in limiting it in identifying standardized criteria based on events that take place inside the ED. Such as: patient-to-bed ratios, waiting times and treatment times.

To summarize, most of the literature adopt the operational definition, as every country, every community and every hospital has its own and special circumstances, In the current study it is preferred to define the problem operationally by identifying its causes, intervention factors and impacts using specific indicators.

As most of the literature adopt the operational definition, so some indicators must be developed to measure this phenomenon. By reviewing literature; Bradley (2005) listed Causes and indicators of ED crowding as mentioned in literature; the causes were as follow: Lack of inpatient beds was determined as the major cause of ED crowding, and other causes such as nursing and staff shortages, increasing in ED patient census, unavailability of specialty consultation, high patient acuity and others. The list of indicators were: number hours boarding admitted patients, ambulance diversions, wait times to meet ED physician, ED volume, ED length of stay (LOS), staffed inpatient bed capacity/hospital occupancy, daily admission rate and others.

Ospina et al. (2007) Agreed with Bradley (2005) and suggested that focusing on indicators of the events taking place in the ED would that will make it easy to distinguish between the characteristics, causes, and outcomes of overcrowding, in their Study they aimed to identify the level of consensus between ED experts in Canada on the importance of a set of potential indicators of ED overcrowding and describe the relative importance of these indicators, participants were asked to rank 36 indicators and measures of ED overcrowding, they found that the most important indicators was: Total ED visitors, percentage of inpatients beds occupied by ED patients, total percentage of time ED at or above stated capacity, time in the ED, time from bed request to bed assignment, number of occupied acute care beds, overall bed occupancy, time from triage to emergency Physician, satisfaction of emergency Physician.

In the other hand a study made by GAO (2009) disagree with the above finding specially using ambulance diversion, waiting times and patient boarding as indicators for this problem because they have some limitations. The study adds these refutations: ambulance diversion indicate how often EDs believe that they cannot safely deal with additional patients, waiting times, prolonged wait time is the major reason for patients to leave the ED before being seen. Boarding is an indicator that an ED cannot treat additional patients. Despite of limitations mentioned by GAO (2009) they still considered and valid to use.

Otherwise a systematic Review done by Rowe et al. (2011) tried to find out the role of the effectiveness of the Triage Liaison Physicians intervention in



preventing or reducing the negative effects of ED overcrowding. Besides, it demonstrate how this intervention affect some metrics of the ED overcrowding such as reducing patient's length of stay, which in turn may help to strengthen the health care system.

Later on Durand et al. (2012) consider that non urgent patients are one of the causes of ED crowding, so they tried to analyze the decision making process of requesting ED healthcare in the for a non urgent cases by evaluating and assessing the perceptions and experience of both ED health professionals and patients The study also aimed to explore how ED health professionals see the phenomenon of non urgent ED patients, and to examine the solutions suggested by these professionals. The study illustrated contradictions between ED health professionals and ED patients perception of the phenomena, particularly concerning patient's behavior, the study focused on the importance of performing a detailed analysis of the demand for healthcare by unscheduled visitors, including patients with minor trauma to improve dealing with them and provide good management for these situations.

As length of stay is a sub-indicator of crowding; Karaca, Wong, and Mutter (2012) tried to explore the length of stay in EDs by patient volume, patient characteristics, admission hour, day of the week, area characteristics and hospital characteristics, and, they found that the duration of treated and released ED visits varied significantly by the previous variables.

### **Review of Modeling Approaches for ED Patient Flow and Crowding**

There are several modeling approaches used in the literature that tried to analyze and predict ED patient census and crowding, those are: formula based equations, time-series analysis, regression modeling, and more recently, queuing theory-based models and discrete event simulation (DES) models. Wiler, Griffey, and Olsen (2011) developed a comparative summary of every model inputs, outputs, and methodologies in(table 3.1)

Wiler et al. (2011) had also reviewed the quantitative method, ability to define and forecasting crowding, ability to predict process improvement effect on ED operations, ease of model development, and model complexity of development is presented in (Table 3.2), based on the their own assessment.

**Table (3.1): Comparison of Conceptual Models Used to Describe and Forecast ED Patient Load and Crowding.**

<b>Model</b>	<b>Inputs</b>	<b>Outputs</b>	<b>Methodology</b>
Formula-based	Important factors selected based on experience (e.g., number of staff and beds)	Measures of crowding	Past experience of ED flow performance is used to posit appropriate formulas
Regression-based	Uses multiple independent input variables (e.g., patient arrivals per hour)	Dependent variables (e.g., ED crowding)	Statistically predicts dependent variables based on independent variables
Time-series analysis	Recently observed ED flow performance (e.g., ED bed occupancy levels)	Current ED flow performance (e.g., ED census)	Statistically uses recent past performance to predict current and immediate future Performance
Queuing Theory	Patient arrival behavior, number of servers (e.g., staff), and service priorities (e.g., first come first serve)	ED flow (e.g., mean wait times)	Mathematical formulas are derived from general system principles and used to convert inputs to outputs
DES	Patient arrival behavior, number of servers (e.g., staff), and service priorities (e.g., FCFS) and routing	ED flow (e.g., mean wait times)	A computer generated model (typically with graphical interface) is used to sample inputs and generate outputs
DES = discrete-event (or process) simulation; FCFS = first-come-first-serve.			

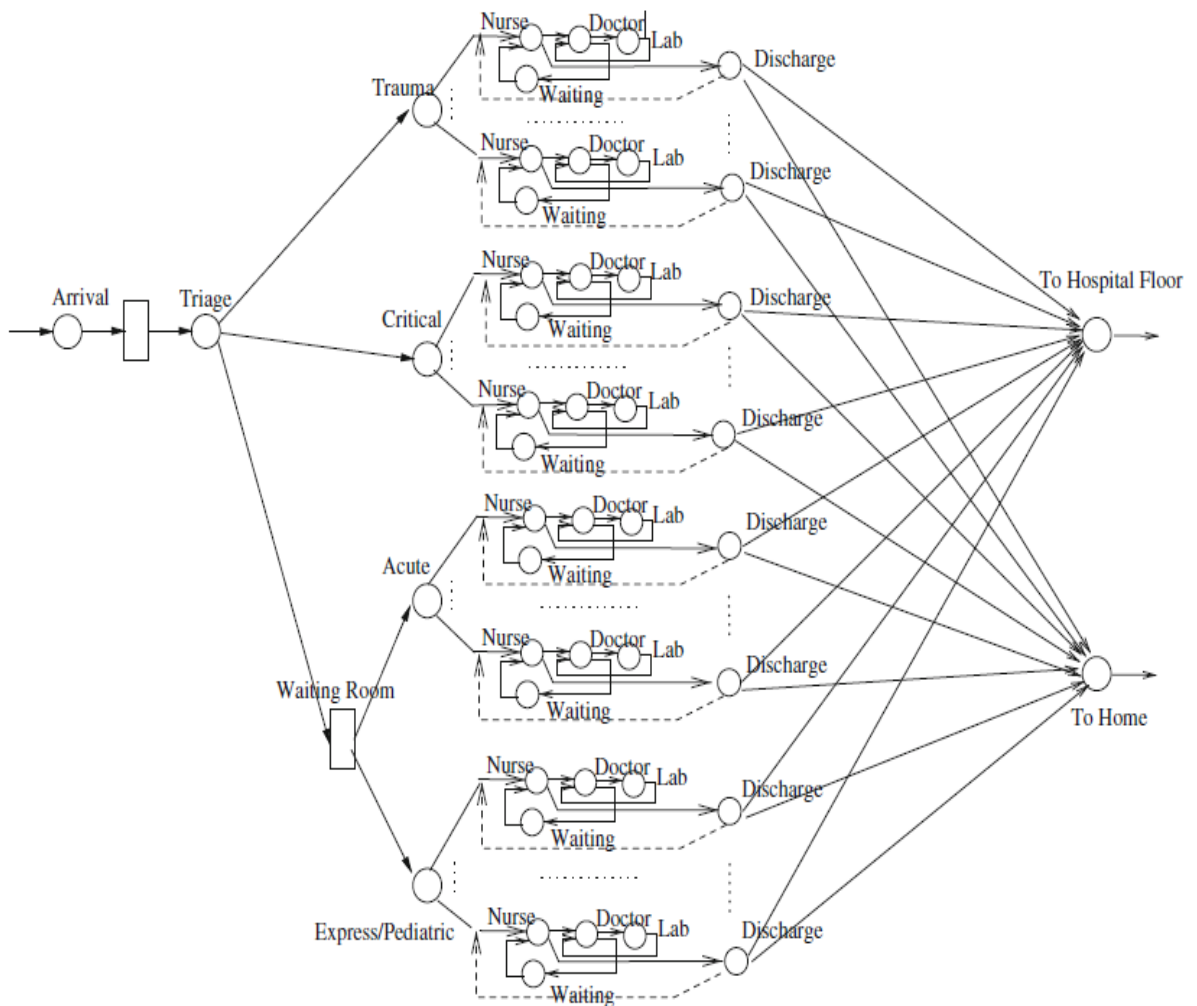
Source: (Wiler et al., 2011)

**Table (3.2): Summary of Mathematical Models Used to Describe ED Operations**

<b>Approach</b>	<b>Quantitative Method</b>	<b>Used to Define Crowding</b>	<b>Ability to Forecast ED Crowding (Short-term)</b>	<b>Ability to Predict Process Improvement Impact</b>	<b>Ease of Model Development</b>	<b>Ease of Use</b>	<b>Comments</b>
Formula-based	Mathematical formulas	Good	Poor	N/A	Good	Good	Readily available inputs
Regression-based	Statistical analysis	Fair	Fair	Poor	Fair	Fair	Widely understood
Time-series analysis	Statistical analysis	N/A	Fair	Poor	Poor	Fair	Computational resources
Queuing theory	Mathematical formulas	N/A	Poor	Good	Poor	Fair	Significant number of underlying assumptions
DES Computer	Programming code	N/A	Fair	Good	Poor	Poor	Costly to implement and maintain
DES = discrete-event (or process) simulation; N/A = does not allow, is not applicable.							

Source: (Wiler et al., 2011)'s assessment

Another attempts to find solution done by Wang, Li, and Howard (2013) whom presented a structure show the patient flow with a complex network, split, parallel, closed and re-entrant processes (fig.3.1). Then they focused on studying this issue using analytical models. they develop approximation method to analyze the scenario with many services within the patient room



**Figure (3.1) Structure of Patient Flow in Emergency Room .Source: (Wang et al., 2013).**

### **3.2 Final Studies Review:**

#### **(Abu-akar, 2017): Evaluating The Quality Of Health Services In Emergency Departments In Private Hospitals From Viewpoints Of Beneficiaries And Service Providers In Bethlehem.**

The aim of the study was to evaluate the quality of health services in emergency departments in private hospitals in Bethlehem governorate from the point of view of service providers and beneficiaries through the impact of the five factors on the quality of health services, the impact of demographic factors affecting the quality of health services, and to identify obstacles that reduce the quality of health services in emergency departments in private hospitals from viewpoints of beneficiaries and service providers in Bethlehem Governorate. A questionnaire was designed and distributed to the beneficiaries and to the service providers on a random sample of the three largest private hospitals in Bethlehem Governorate. The main findings of the study were that the quality of health services in emergency departments in private hospitals in Bethlehem governorate was high from the point of view of service providers and beneficiaries according to quality factors.

The study also found that the main obstacles that reduce the quality of health services from the point of view of the service providers was shortage of health staff and equipment's. From the point of the view of the beneficiaries, it is about the delay in providing health services. While some of the recommendations referred to the emergency departments in the private hospitals in Bethlehem Governorate should be provided with the necessary medical equipment, maintenance and support for the equipment periodically. In addition, focus on the dimension of tangibility and reliability from the viewpoints of beneficiaries and service providers by focusing on providing clean, air-conditioned waiting rooms, and that the corridors in the emergency departments are wide and comfortable to ensure mobility without difficulty. The study recommended the concerned authorities: The Ministry of Health in general and the management of private hospitals in particular the need to pay attention to improve the quality of health services in emergency departments in private hospitals in Bethlehem.

**(Nahhas, Awaldi, & Reggelin, 2017): Simulation and the ED Overcrowding Problem**

The objective of the simulation study is to identify the required capacity of different healthcare givers as well as to measure the required number of procedure and examination rooms to achieve over 90 % service level with the reasonable costs.

A simulation study was conducted to evaluate and assess the configuration of a planned Urgent Care Center. Statistical data were supported to perform simulation, several discrete-event simulation models was established to investigate the behavior of a planned system and specified the needed resources such as number of assistants and nurses, number of doctors, number of procedure and examination rooms. every model have its own simulation scenario. A solution scenario was developed by combining major components of the different scenarios. Scenarios components were observed through a verification process and with a heuristic optimization approach to determine their effect on the system performance . Various patient arrival themes with specific critical level was investigated. besides two major responses was observed those are, the leaving without being treated percentage and staffing and operational costs. The observation of this system illustrate some obstacles in dealing with such Urgent Care Center, break hours created huge gabs in the system during some working hours. The findings stress on modifying treatment processes, through permitting more flexibility in choosing between procedure and examination rooms as well as on enabling more flexible staff hierarchy.

**(Yang, Lam, Low, & Ong, 2016): Managing ED crowding through improved triaging and resource allocation.**

The objective in this paper is to test the efficacy of three alternative triage processes to route patients who may or may not require laboratory services, and to identify situations, if any, where the benefits of these triage processes are amplified or muted. This study examines the effect of three alternative triage processes, shared versus dedicated laboratories, and different utilization of physicians, triage nurses and laboratories on the performance of EDs using a generic simulation model of EDs. The simulation model is built upon a set of conservative assumptions such that

implementations of the findings in actual EDs are expected to witness improvements that exceed those reported in the results. The findings provide useful and general insights that can be implemented across different EDs to substantially improve their performance. Useful insights are noted for managing the factors affecting the in ED length of stays, the variability of patients' length of stays and time to first consultation and TFC of different patient groups. At low physician utilization, the benefit of advanced triage processes and extra triage capacity is relatively muted. However, at high physician utilization, choosing the right triage process and extra triage capacity can significantly improve the ED performance. At high physician utilization, extra triage capacity offers the largest improvements in ED length of stays, the variability of patients' length of stays and time to first consultation for patients who do not require laboratory services. For patients who require services from shared laboratories, an advanced triage process such as T2 and T3 and extra triage capacity offer the largest improvement in ED length of stays, the variability of patients' length of stays. When both are implemented together, the shared laboratory is, interestingly, able to handle the ED requests promptly without extra laboratory capacity. In contrast, the dedicated laboratory is much less able to handle surges in ED requests even with extra laboratory capacity. To improve ED length of stays, the variability length of stays of patients who require services from dedicated laboratories, extra laboratory capacity in the dedicated laboratory offers the largest improvements.

### **(Cha, Ahn, Shin, Park, & Cho, 2016): ED Crowding Disparity: A Nationwide Cross-Sectional Study**

The aim of this study is to determine the factors that are significantly linked to crowding in EDs across Korea. A cross-sectional study used data supported by the National Emergency Department Information System (NEDIS) the study computed the occupancy rates to evaluate the crowding situation of the EDs in Korea. Login data were traced to compute patient volume. The log data including timing from entrance to exit from emergency department. ED occupancy rates were used to determine crowded categories ; from input factors which was examined, ED

crowding was linked to the number of visits and the acuity and severity level, the number of patients diverted by ambulances was not linked to crowding. From the throughput factors, the number of healthcare staff were strongly linked to crowding level. From the output factors, the study found a positive correlation between ED crowding state and hospital bed occupancy rates. Ratio of emergency identified that hospitals with crowded ED, admitted more patients from EDs. The study also found various outcome concerning crowding status that raise diversion of patients, and increased mortality rate in overcrowded EDs .

**(Mirhaghi, Heydari, Ebrahimi, & Bahmani, 2016): Non-emergent Patients in the Emergency Department: An Ethnographic Study**

This study aims of was to increase understanding of ED nurses' practice when applying triage for non urgent patients. Based on Spradley's developmental research sequence (DRS), focused micro-ethnography was used. This study was conducted in an emergency department, Data was collected through complete participant observations and through interviews, DRS was used for analyzing the data. The nurses' beliefs on non-emergent patients. And the shared knowledge of nurses revealed that non-emergent patients did not belong to the ED. Nurses identify non-emergent patients using key criteria, including non-life-threatening medical condition, low risk history, and time to arrival or treatment. In addition, triage nurses categorize patients as non-emergent when there is both actual and implied pressure from their colleagues to prevent these patients from reaching the ED. Four main categories were identified: non-emergent patient as an uninvited guest, non-emergent patient as an elephant in a dark room, non-emergent patient as an aggressive client, and being nonemergency unless being toward death.

The findings give a deep insight into the ED nurses culture of practice regarding the triage of non-emergent patients. Nurses believe that non-emergent patients were recognized largely unreliable and irreproducible, Providing care in the ED is significantly affected by non-emergent patients, so the mission of the ED as a place for serving critically ill patients was challenged. An unconstructive approach to



patient management could endanger safety and morale, resulting in poor outcomes. The study recommended to apply a cultural awareness training program.

**(Makama, Iribhogbe, & Ameh, 2015): Overcrowding of accident & emergency units: is it a growing concern in Nigeria?**

This study aimed to identify the causes and effects of overcrowding accident & emergency department AEDs in Nigeria . A cross sectional, descriptive study was performed in three AED of 3 referral teaching hospitals in Nigeria, a pre-tested and questionnaire was used and distributed among AED staff. Data was Processed and simply analyzed using SPSS . The major causes of AED visits was: Delays in transferring patients to wards, road traffic accident, Delay in the operations theater , radiological investigations delay, hematological Investigations delay, Absent community health care, Long waiting times, Poverty. The Common causes of prolonged waiting time in AEDs was bed capacity Shortage, Consultation rooms Shortage, delayed in specialty pre-review. The main cause of AED overcrowding is a inadequate inpatient beds for an AED patients and the increasing acuity and complexity of illness. The study illustrated that reducing the overcrowding requires a multidisciplinary system-wide approach and recommended to plan for delivery of care to patients who must be placed in temporary bed locations, coordinate with health facilities and home health agencies to facilitate hospital discharging, and to adopt initiatives that help hospital to expect and prepare for AED overcrowding, rather than react to it when occurred.

**(Hamrock, Paige, Parks, Scheulen, & Levin, 2014): Relieving ED crowding: Simulating the effects of improving patient flow over time**

This study aimed to identify the impacts of reducing ED dwell time on the patterns of patient flow and patient demand on ED services. This study develop Separate discrete event simulation models for the EDs of a 1,000-bed urban medical center and a 560-bed community medical center using patient flow data. These models identify the impacts of reducing waiting time, total length of stay, dwell time on ED care area census, and waiting room census. When using DES, to model such

complex place, This study assumed that patient volumes would remain in line with the base case (i.e., fixed) regardless of changes in dwell time. DES trials showed how reducing dwell time in 5% increments leads to reduce crowding. This study proofed that reducing the length of stay resulted in a great impacts on ED patient volume during non peak hours. This impact may allow to reduce the overnight staffing levels thus optimizing scarce ED resources. Improving throughput will resulted in decreasing crowding in the waiting room in the evening shift .

**(Erenler et al., 2014): "Reasons for Overcrowding in the Emergency Department: Experiences and Suggestions of an Education and Research Hospital".**

This study aimed to identify the causes of ED overcrowding and provide some recommendations that make it easy to reduce patients length of stay in the ED. data was collected from patients admitted to ED . electronic medical records from the ED over a 12-month period was analyzed. Demographic characteristics, revisit frequency, LOS, and patients consultation state were identified. The study found that inadequate inpatient beds, increased length of stay in the ED, consultants delay, laboratory and imaging tests delay are the main causes of overcrowding in the ED. The study recommended to taken some strategies to increase satisfaction ratio and to minimize errors .

**(O'Connor, Gatien, Weir, & Calder, 2014): Evaluating the effect of ED crowding on triage destination**

The study aimed to identify if patient triage destination and intensity of investigation was influenced by ED crowding. It concentrate on patients coming with shortness of breath or chest pain , evaluated as high acuity case. Triage and the directing the patient to an area in the ED is very important part in the patient flow in the ED. Triage destination affect the whole course of the patient's flow, such effects on length of stay in the ED, extent of workup and time to assessment, conducted a health records review of patients presenting to two ED was conducted in campuses of a large urban tertiary care Canadian academic teaching hospital.

The sample was selected through an Internet based random number generator <http://www.randomizer.org>, data were abstracted from the electronic health record, such data was scanned hand-written nursing triage notes and physician notes in addition to computerized laboratory and imaging results. ED occupancy bed rate was the measure of Ed crowding, which was defined as the ratio of total number of ED patients to the number of ED beds. Reporting patient and system characteristics was performed using descriptive statistics. the study found when the ED are crowded, high acuity patients attending with shortness of breath or chest pain had a higher rate of triage to the non-monitored area within the ED, wait longer times to get the physician initial assessment, and had lower rate of investigations. . In the contract in the crowded ED it is not appeared to lead to ED re-admission between discharged patients.

**(Hurwitz et al., 2014): A flexible simulation platform to quantify and manage ED crowding.**

This study aimed to establish a discrete-event simulation framework to quantify long-term patient flow outcomes. And to validate the model ability to simulate two distinct ED environments accurately and to simulate and analyze implementing various care pathways, adding staff and beds, and reducing the boarding times in these environments. An ED patient flow model was established to identify the complexities of ED process of care. The model provide flexible numerous input parameters, which make simulating various environments be done accurately. The study examined two qualitatively distinct ED environments and found that when apply a similar changes to process of providing care, such as perform a systematic reduction in boarding times, implementing fast track mechanisms, or adding resources – made differences on patient flow. Forecasting the impacts of these changes accurately is often difficult, which show the importance of using simulations to understanding the dynamics of ED. In addition, the model can quantify these dynamics accurately and provides a tool to specify bottlenecks and examine the impacts of suggested operational changes, which helped hospital managers to perform cost effective, hospital specific solutions to crowding in ED.

To illustrate this condition, two qualitatively distinct ED environments were established and then explored and studied: one developed from statistics averaged over all U.S. EDs, and another from statistics averaged over a cohort of U.S. academic EDs and found that healthcare staff shortage was linked to crowding in the nationally average environment, but the beds shortage was the main cause of delays in the averaged academic setting.

**(Pascasio & Mtshali, 2014): A descriptive analysis of ED overcrowding in a selected hospital in Kigali, Rwanda**

This study adopted the quantitative descriptive design, Self-administered questionnaires were used and distributed to ED nurses. The study found that ED overcrowding in Rwanda is determined by reasonable waiting time to be treated by a physician, full occupancy of beds in the ED, waiting time in the hallways. Causes of overcrowding were divided into three areas: factors linked to community level; factors within emergency department; factors linked to inpatient and emergency centre support services. The emergency centre overcrowding is caused by these triggers: High volume of non-emergency cases, High patient volume faced with inadequate inpatient beds, Increasing the complexity and acuity of diseases, Staff shortage, lack of on-call emergency physicians to deal with complex cases that required specialized healthcare, inefficient diagnostic and ancillary services, insufficient community resources to deal effectively with discharged patients, shortages of health and human resources, Lack of alternative emergency healthcare providers, Delayed laboratory tests, Lack of public education and awareness about ED usage. Finally the study recommended Rwanda's Ministry of Health to adopt a collaborative approach in to determine ED overcrowding with trained emergency nurses and doctors who are key role players to develop resolutions to this problem.

**(Linden et al., 2013): ED crowding in The Netherlands: managers' experiences**

This study was aimed to describe the current status of EDs in The Netherlands concerning the patients' length of stay and nurse managers' experiences of crowding ED. A survey was distributed to all ED nurse managers in The Netherlands with questions illustrated the annual ED census, the type of facility, and length of stay. In addition to questions addresses whether crowding is considered as a major problem in the ED, how often it take place, which time periods are the most stressful and peak crowded and what action the ED had undertaken to enhance the patient flow. Length of stay in The Netherlands EDs is short comparing with published Length of stay in other countries. In spite of a short length of stay, recurring crowding considers to be a nationwide problem as addressed by the Dutch nurse managers of ED, around 68% of them reported that crowding take place many times a week or even daily. Almost 50 %of the crowded EDs overcrowding twice a week or more. Consultations delay and laboratory and radiology services delay are contributory factors to this problem. Admitted patients addressed longer length of stay as a result of shortage inpatient beds.

### **3.3 Research Gap:**

This study tried to fill a missing element in the existing literature justified in these points:

- a) To the knowledge of the researcher; There is no such study done before trying to develop theory, evaluate situation, and develop interventions about this subject in Gaza Strip.
- b) The exceptional situation of Gaza strip in the health, economic, social, political conditions which is described as crisis situations.
- c) This topic is considered as one of scientific research priorities for the year 2015 based in recommendation of Planning and Polices Unit in MOH In Gaza Strip.

**Summary:**

This chapter consist of two literature reviews. The first was a preliminary review undertaken in the initial stages of the research , and the second a more comprehensive and deep review conducted at the end of the research, several studies about the overcrowding in emergency departments are reviewed, and deduct that most of the literature adopt the operational definition, as every country, every community and every hospital has its own and special circumstances, It highlighted different models and method for studying the ED overcrowding , In addition this chapter provided a clear image about the causes and consequences of overcrowding in EDs. Finally this chapter was ended by illustrating the study contribution.

# **Chapter 4**

## **Methodology**

## **Chapter 4: Methodology**

### **Introduction**

Conceptual thinking and theory building is interrelated with the qualitative research method approach – grounded theory (Glaser & Strauss, 1967). Qualitative research is used to explore the potential antecedents and factors about which little has been known and explored (Corbin & Strauss, 1990). This type of study is based on ‘grounded theory approach’ as it is conceptual thinking and theory building rather than theory or hypothesis testing (Glaser & Strauss, 1967).

In grounded theory, multiple stages of collecting, refining, and categorizing the data is used. The strategies of the making constant comparisons is used and theoretical sampling is applied to obtain a theory grounded in the data.

The purpose of this qualitative, grounded theory study is to explore the causes of overcrowding in EDs within ED itself, to investigate why people prefer hospital EDs on Primary Healthcare Centers, to identify and rank the most important factors, and interventions lead to overcrowding, to develop theory about crowdedness in EDs .

Because of the exploratory nature of this study, an inductive approach was used for data collection and analysis (Creswell, 2009). Creswell recommended that raw data be organized and thoroughly reviewed, grouped into themes or patterns, and then interrelated and interpreted. In this study, data were gathered through focus group conducted in three large and representative hospitals, an five interviews with experts from the local community, data are analyzed by using the Constant Comparative Method (CCM) as a requirement of GT approach.



## **4.1. Section 1: The Qualitative Research**

### **4.1.1. Conceptualization of Qualitative Research**

Qualitative research, is broadly defined in the literature, It means "any kind of research that produces findings not arrived at by means of statistical procedures or other means of quantification"(Corbin & Strauss, 1990).

Qualitative research is based upon the observations and interpretations of people's perception of different events and it takes the snapshot of the people's perception in a natural setting(Khan, 2014).

Creswell (1998) gave his definition of qualitative research focusing on the methodological nature, the complexity of the end product and its nature of the naturalistic inquiry: Qualitative research is an inquiry process of understanding based on distinct methodological traditions on inquiry that explore a social or human problem. The researcher builds a complex, holistic picture, analyses words, reports details of informants, and conducts the study in a natural setting (Creswell, 1998).

Qualitative research uses a naturalistic approach that seeks to understand phenomena in context-specific settings, such as real world setting [where] the researcher does not attempt to manipulate the phenomenon of interest (Patton, 2002).

Qualitative data gathered through face-to-face, focus group, telephonic etc. interviews and observations, this means such methods are dominant in the naturalist (interpretive) paradigm and supplementary in the positive paradigm, where the use of survey serves in opposite order(Golafshani, 2003). In one hand quantitative researchers attempt to disassociate themselves as much as possible from the research process, In the other hand qualitative researchers have come to embrace their involvement and role within the research (Winter, 2000).

Patton (2002) supports the idea of researcher's involvement and immersion into the research by discussing that the real world are subject to change and therefore, a qualitative researcher should be present during the changes to record an event after and before the change occurs. However, both qualitative and quantitative researchers need to test and demonstrate that their studies are credible.

Advocates of qualitative data claim that these data were their media and therefore were still the best and richest for theorizing about social structures and social systems. Also, qualitative method still was the only way to obtain data on many areas of social life not amenable to the techniques for collecting quantitative data (Glaser & Strauss, 1967).

It's important to say that there is no fundamental clash between the purposes and capacities of qualitative and quantitative methods or data. What clash there is concerns the primacy of emphasis on verification or generation of theory to which heated discussions on qualitative versus quantitative data have been linked historically (Glaser & Strauss, 1967) .

Generally speaking, qualitative research is oriented toward understanding of a natural world, and is highly interpretive in nature. The purpose of a qualitative research is not to verify a causal relationship by falsifying a no-relationship hypothesis. Instead, it recognizes the multifaceted interpretations of human experience, and the iterative relation within social and cultural systems. The focus of a qualitative research is on understanding how people make sense of their world with exploitation of different aspects and different expressions. It provides both the researchers and the participants with a discovering experience.

Further, to refine the construct and to answer the research questions, the researchers have to get data and analyze it and then again and again repeat this process until and unless new data stop emerging or the data saturation occurred(Glaser & Strauss, 1967) and the grounded theory approach is an appropriate way to study human behavior on a sensitive topic even in a different cultural context .

#### **4.1.2. Grounded Theory**

Grounded theory is one of four qualitative designs frequently used in the human and social sciences; the other designs are ethnographies, case studies, and phenomenological studies. The main difference between grounded theory and the others is the emphasis on theory development

The qualitative research approach 'grounded theory' was originally developed by two sociologists, Barney Glaser & Anselm Strauss . They defined

‘grounded theory’ in these words as ‘The theory that was derived from data, Generating a theory from data means that most hypotheses and concepts not only come from the data, but are systematically worked out in relation to the data during the course of the research. Generating a theory involves a process of research(Corbin & Strauss, 1990).

In grounded theory, the theoretical concepts and framework are grounded in and emerge from the data and analysis that follow, instead of prior theory that guided data collection and analysis(Glaser & Strauss, 1967) .

According to Glaser (1992) grounded theory deals with only inductive approach rather than deductive approach of inquiry. Grounded theory methods consist of systematic, yet flexible guidelines for collecting and analyzing qualitative data to construct theories 'grounded' in the data themselves. The guidelines offer a set of general principles and heuristic devices rather than formulaic rules (Charmaz, 2014)

The journey of theory development in grounded theory approach starts and ends with the data. This journey is best explained by theCorbin and Strauss (1990) as... ‘Data collection, analysis, and eventual theory stand in close relationship to one another... beginning with an area of study and allow the theory to emerge from the data...grounded theories, because they are drawn from data, are likely to offer insight, enhance understanding, and provide a meaningful guide to action’.

In my opinion, grounded theory is best defined as a research strategy whose purpose is to generate theory from data.

#### **4.1.3. Focus Groups: Rationale and uses:**

Focus groups are used for generating information on collective views, and the meanings that lie behind those views. They are also useful in generating a rich understanding of participants’ experiences and beliefs (Gill, Stewart, Treasure, & Chadwick, 2008)

Focus groups are a form of group interview that capitalizes on communication between research participants in order to generate data in ways that would be less easily accessible in a one to one interview.

Focus groups were originally used within communication studies to explore assessing health education messages and examining public understandings of illness and of health behaviors, They are widely used to examine people's experiences of disease and health services, and are an effective technique for exploring the attitudes and needs of staff.

The optimum size for a focus group is six to eight participants (excluding researchers), but focus groups can work successfully with as few as three and as many as 14 participants (Gill et al., 2008).

Krueger Richard and Anne (1994) had endorsed the use of very small focus groups, what he terms “mini-focus groups” , which include 3 (Morgan, 1997), or 4 (Krueger, 1994) participants, when participants have specialized knowledge and/or experiences to discuss in the group. Because participants might not be available on the day of the focus group(Onwuegbuzie, Dickinson, Leech, & Zoran, 2009).

## **4.2. Section 2: The Research Methodology**

### **4.2.1. Research Design**

This research adopt the qualitative approach that would reveal more in-depth and rich information than quantitative description using different techniques such as focus group, personal interviews, observations. As mentioned previously by reviewing literature most of researchers used qualitative tools to find out the causes of this complex problem and to review and analyze what was mentioned in the literature through expert panels (Bradley, 2005; Hwang & Concato, 2004; Schull et al., 2002; Trzeciak & Rivers, 2003).

This research intends to use several qualitative techniques, e.g., personal interviews, focusing groups. For interviews and focus groups, a more time is spent in designing a semi structured, open ended question to get as much data as possible for later analysis and to generate participant perspectives about ideas, opinions, and experiences.

### **4.2.2. Data Collection:**

Study data was collected in the period between 01/06/2016 to 31/01/2017 through observation, taking general notes, In-depth interviews was conducted with participants who meet the previous mentioned criteria and agree to participate. Each interview will last between 30 to 60 minutes, privacy was protected, focus groups lasted around 2 hours. Both interviews an focus groups was recorded using a digital audio system.

In focus group methodology, the unit of analysis is taken to be the group (Morgan 1988, Kreuger 1998), and groups are typically homogenous,

In this study three focus groups were formed with a total of 24 ED staff from three hospitals. The focus group consist of physicians, nurses, and administrators and supported servers who are willing to share knowledge and experience, and have been working there at least for six months before data collection date, all the participants are very comfortable with each other as Homogeneity is key to maximizing

disclosure among focus group participants, Organize the times, locations and people involved for all the groups you have scheduled.

first of all participants were introduced to and make them comfortable with the topic of discussion, then started with the Exploration questions: get to achieve the goal of the discussion, finally checked to see if anything was missed in the Discussion

The time and the place for the interview was carefully arranged. As dealing with sensitive place and sensitive positions. The group interviews targeted managers and supervisors in the ED in Gaza Strip hospitals, This is illustrated as follows:

**Table (4.1) Focus group schedule**

Focus Group	Date	Time	Region
The Indonesian Hospital	06/01/2017	08:30 a.m	North Gaza
Al-Shifa Medical Complex	07/08/2016	08:10 a.m	Gaza and middle Gaza
Nasser Medical Complex	16/01/2017	10:00 a.m	South Gaza

The individual interviews targeted expert in Emergency Medicine from the local community, details of interview arrangement illustrated as follows:

**Table (4.2) Interview schedule**

Interviewee's Titles	Date	Time
Previous supervisor in European Hospital	22/12/2016	11:00 a.m
National Emergency committee member	27/11/2016	10:00 a.m
National Emergency committee member	20/11/2016	10:00 a.m
Previous Deputy of Al-Shifa Medical Complex	02/01/2017	10:00 a.m
Retired Head nurse of Gyne Hospital	17/11/2016	08:00 a.m

#### **4.2.3. The population and Sample:**

The research population is all employees in the ED in Ministry Of Health. As focus group will be used as a main tool in this study, the target sample will be a focus group consist of three physicians, three nurses, and two administrators who are willing to share knowledge and experience, and have been working there at least for six months before data collection date. And the other sample participants will execute through short interviews with five expert from outside the EDs i.e from the local community who are expertise in emergency medicine.

#### **4.2.4. Data Analysis Plan**

All observations was documented and all interviews was recorded and transcribed verbatim. Constant Comparative Method based on Grounded theory was used to analyze the data. With a help of Professional Doctor with background of qualitative research, transcripts was read and reread independently to ensure credibility of the data interpretations, notes was taken of each term, meetings was conducted to reach consensus about the findings. Whenever different interpretations occur, transcripts was re-reviewed and discussed until consensus is achieved.

#### **4.2.5. The Qualitative Analysis: the Constant Comparative Method.**

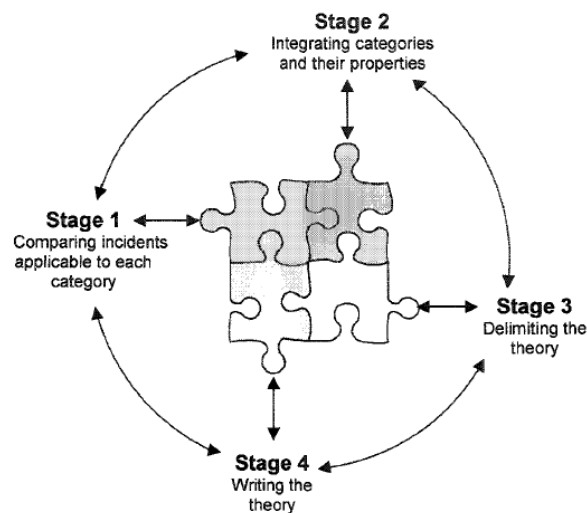
Constant comparison analysis Developed by Glaser and Strauss (Glaser, 1978, 1992; Glaser & Strauss, 1967, Strauss, 1987), constant comparison analysis, also known as the method of constant comparison, was first used in grounded theory research. Constant comparison analysis can also be used to analyze many types of data, including focus group data

The constant comparative method was defined as a process of “combines systematic data collection, coding, and analysis with theoretical sampling in order to generate theory that is integrated, close to the data, and expressed in a form clear enough for further testing”(Kolb, 2012)

The constant comparative method can be described in four stages: First, comparing incidents applicable to each category, Second, integrating categories and

their properties, third, delimiting the theory, and fourth and finally writing the theory(Glaser & Strauss, 1967).

The constant comparative method is a method for analyzing data in order to develop a grounded theory. During the four stages of the constant comparative method, the researcher continually sorts through the data collection, analyzes and codes the information, and reinforces theory generation through the process of theoretical sampling.



**Figure (4.1): The four stages of CCM the constant comparative method of analysis. Source: (Kelly, 2008).**

Focus group data can be analyzed via constant comparison analysis, especially when there are multiple focus groups within the same study, which, as noted previously, allows the focus group researcher to assess saturation in general and across-group saturation in particular. Because focus group data are analyzed one focus group at a time, analysis of multiple focus groups effectively serves as a proxy for theoretical sampling, which is when additional sampling occurs to assess the meaningfulness of the themes and to refine themes(Charmaz, 2006). Thus, researchers could use the multiple groups to assess if the themes that emerged from



one group also emerged from other groups. Doing so would assist the researcher in reaching data saturation and/or theoretical saturation.

### **Coding procedures in Grounded Theory Approaches**

Coding aims to classify all of the data so that it can be compared systematically with other parts of the data set. the researcher carefully reads the transcript line by line, applying label (a 'code') that describes what they have interpreted in the passage as important . Corbin and Strauss (1990) describe some flexible guidelines for coding data when engaging in a Grounded Theory analysis:

#### **Open Coding**

The process of breaking down, examining, comparing, conceptualizing, and categorizing data". the data are chunked into small units. The researcher attaches a descriptor, or code, to each of the units. Open coding takes place when coding anything that might be relevant as many different perspectives as possible(Gale, Heath, Cameron, Rashid, & Redwood, 2013). Corbin and Strauss summarize open coding as follows:

**Concepts are the basic building blocks of theory. Open coding in grounded theory method is the analytic process by which concepts are identified and developed in terms of their properties and dimensions. The basic analytic procedures by which this is accomplished are: the asking of questions about the data; and the making of comparisons for similarities and differences between each incident, event and other instances of phenomena. Similar events and incidents are labeled and grouped to form categories(Corbin & Strauss, 1990, p. 74)**

The result of open coding should be a list of the codes and categories attached to the text. This should be complemented by the code notes that explain content of codes and categories these notes called memos, For both open coding and the other coding strategies it is suggested that the researchers regularly asks these basic questions(Flick, 2009):

- a. What? What is the issue here? Which phenomenon is mentioned?

- b. Who? Which persons, actors are involved? Which roles do they play? How do they interact?
- c. How? Which aspects of the phenomenon are mentioned (or not mentioned)?
- d. When? How long? Where? Time, course, and location.
- e. How much? How strong? Aspects of intensity.
- f. Why? Which reasons are given or can be reconstructed?
- g. What for? With what intention, to which purpose?
- h. By which? Means, tactics, and strategies for reaching the goal.

By asking these questions, the text will be opened up.

### **Selective Coding:**

The third step, selective coding, continues the axial coding at a higher level of abstraction. The process of selecting the core category, systematically relating it to other categories, validating those relationships, and filling in categories that need further refinement and development" one or more themes that express the content of each of the groups is developed (Strauss & Corbin, 1998).

In this step the story of the case is formulated. At this point, Strauss and Corbin conceive the issue or the central phenomenon of the study as a case and not a person or a single interview. The aim of this formulation is to give a short descriptive overview of the story and the case and should therefore comprise only a few sentences (Flick, 2009).

The analysis goes beyond this descriptive level. The core category again is developed in its features and dimensions and linked to (all, if possible) other categories by using the parts and relations of the coding paradigm. Grouping the data according to the coding paradigm allocates specificity to the theory and enables the researcher to say, "Under these conditions (listing them) this happens; whereas under these conditions, this is what occurs"(Corbin & Strauss, 1990).

Finally, the theory is formulated in greater detail and again checked against the data. The procedure of interpreting data, like the integration of additional

material, ends at the point where theoretical saturation is reached (i.e., further coding, enrichment of categories, and so on no longer provide or promise new knowledge).

### **Theoretical Coding**

Theoretical coding is a sophisticated level of coding that follows the selective coding. Glaser (1978) defined theoretical codes as conceptualizing 'how the substantive codes may relate to each other as hypotheses to be integrated into a theory.' These codes may help you tell an analytic story that has coherence. Hence, these codes not only conceptualize how your substantive codes are related, but also move your analytic story in a theoretical direction(Charmaz, 2014).

In this phase the properties, connections or links between the categories and the core category emerge from the data(Glaser & Strauss, 1967), and the descriptive links between the categories are become more theoretical links(Glaser, 1978).

### **The core category**

The search for a core category begins from the outset of data analysis, the core category explains the main concern or problem for the participants(Kelly, 2008) Glaser (1978, pp. 95-96) identifies the main criteria for the core category selection:

- a. The core category should be central to as many other categories as possible.
- b. The core category is frequently seen in the data. It is a recurring theme.
- c. The core category takes more time to saturate or expand than the other categories. Saturation occurs when the data yields no new information for a category.
- d. The core category has meaningful links to the other categories and these links can be quickly and easily identifies.
- e. The core category must have the ability to explain participant behavior for the duration of the research analysis.
- f. The core category must easily account for variations that occur as the relationships between the core category and other categories develop and expand.
- g. The core category should also be a part of the problem itself,

- h. On occasions a core category may also be classified as a basic social process (BSP). Basic social processes are a type of core variables, and are fundamental behavioral patterns that research participants exhibit over time (Glaser, 1978).

The six Cs coding family is used to identify the theoretical connectors or links between the categories and the core category, through asking questions given by Glaser and Strauss (1967) during the data analysis

Glaser (1978) presents a series of 18 theoretical coding families that include analytic categories such as his Six Cs: Causes, Contexts, Contingencies, Consequences, Co-variances, and Conditions,

The theoretical coding family of The Six Cs was used in this study. Glaser (1978) states that the most studies fit into either a causal model, a consequence model or a condition model, the six Cs coding family is the one that recommended for the beginning researchers. Kelle (2007) also stated that Glaser's first coding family (the six C's), is obviously considers as the most important family code referring to causal relations

Theoretical coding was used to find relations between categories. To do this, a series of questions are asked when analyzing the data which are stated by Glaser and Strauss as follow:

- a. Is this category a condition of some other categories?
- b. Is it a cause, context of another category?
- c. Does this category co-vary with other categories?
- d. Is this category a strategy?

### **Theoretical Memos**

Memo writing is essential to Grounded Theory methodological practices and principles" (Lempert, 2007). as Lempert holds: "Memos are not intended to describe the social worlds of the researchers data, instead they conceptualize the data in narrative form". Memo-writing used for articulating conjectures about the

comparisons that made between data and data, data and codes, codes of data and other codes, codes and category, and category and concept.

Memos are helped to think about the data and to discover the ideas about them. Glaser (1978) offered guidelines for preparing effective memos to generate substantive theory including the following :

- a. Keep memos separate from data
- b. Stop coding when an idea for memo occurs, so as not to lose the thoughts
- c. A memo can be brought to you by literally forcing it, by beginning to write about the code
- d. When a lot of memos on different code appear similar, compare the codes for any differences that may have been missed. If the codes still seem the same, collapse to codes into one code.
- e. When you have two ideas, add two separate memos to avoid confusion.

Memo writing helps to make the analysis more explicit and transparent for the researcher

#### **Data Reduction (Data condensation):**

According to that nature of qualitative inquiry research, vast amounts of data can be collected through the process of interviewing. Researchers should continue data collection until the point of data saturation is reached (Glaser & Strauss, 1967). Data saturation is reached when there is enough information to replicate the study, when the ability to obtain additional new information has been attained, and when further coding is no longer feasible (Fusch & Ness, 2015).

According to (Miles, Huberman, & Saldana, 2013) "Data reduction refers to the process of selecting, focusing, simplifying, abstracting, and transforming the data that appear in written up field notes or transcriptions." As (Miles et al., 2013) explain, Data reduction is not something separate from analysis. It is part of analysis. The researcher's decisions—which data chunks to code and which to pull out, which evolving story to tell—are all analytic choices. Data reduction is a form of analysis

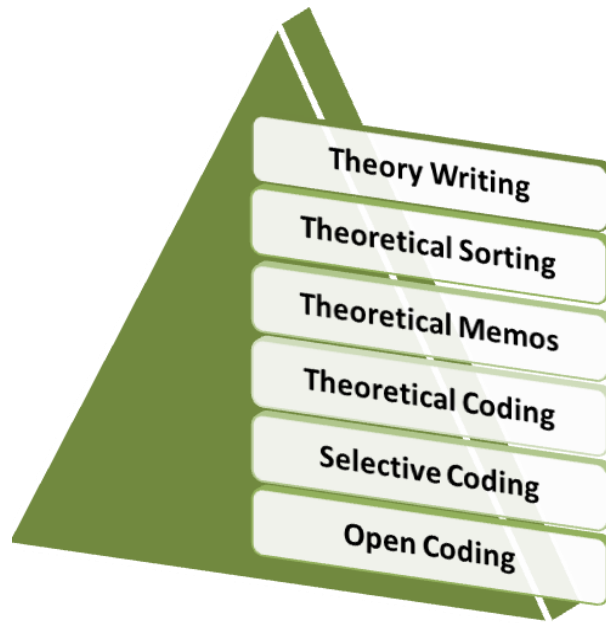
that sharpens, sorts, focuses, discards, and organizes data in such a way that “final” conclusions can be drawn and verified.

### **Theoretical Sorting**

As mentioned above, researcher must develop categories in written memos and titled them in specific, and analytic terms as possible in order to sort them. The purpose of theoretical sorting is to sort the memos that the researcher has written during the research in order to identify the emerging theory(Al-Herbawi & Al-Daya, 2015).

Grounded theory sorting gives the researcher a logic for organizing your analysis and a way of creating and refining theoretical links that prompts you to make comparisons between categories (Charmaz, 2006). (Charmaz, 2006) set a practical guide to help researchers in sorting, comparing, and integrating memos?

- a. Sort memos by the title of each category
- b. Compare categories
- c. Use your categories-carefully
- d. Consider how their order reflects the studied experience
- e. Now think how their order fits the logic of the categories
- f. Create the best possible balance between the studied experience, your categories, and your theoretical statements about them.



**Figure (4.2):Data analysis process of GT . Source: Developed by the researcher (2017).**

#### **4.2.6. Ethics in Qualitative Research**

Ethical considerations is a very importing issue when selecting and involving participants, researchers must ensure that full information about the purpose and uses of participants' contributions, ) make it clear to them that participating in the study is voluntary, and they have the right to withdraw at any time, and not pressurizing participants to speak during the interview is good practice.

A particular ethical issue to consider in the case of focus groups as it is shared in a group setting, so that all participants were reminded that information discussed in the group was kept confidential. Researcher can also caution participants to not disclose particularly private information if they are concerned about confidentiality (Ranney et al., 2015), and researchers have the responsibility to anonymise data from the group.

#### **4.2.7. Determining Rigor in Qualitative Research:**

Just as with quantitative research, the basic strategy to ensure rigor in qualitative research is systematic and self conscious research design, data collection, interpretation, and communication. According to that there are two goals that

qualitative researchers should seek to achieve: to create an account of method and data which can stand independently so that another trained researcher could analyze the same data in the same way and come to essentially the same conclusions; and to produce a plausible and coherent explanation of the phenomenon (Mays & Pope, 2000)

Tests and measures used to establish the validity and reliability of quantitative research cannot be applied to qualitative research, In the broadest context these terms are applicable, with validity referring to the integrity and application of the methods undertaken and the precision in which the findings accurately reflect the data, while reliability describes consistency within the employed analytical procedures(Golafshani, 2003) .

As this is a grounded theory research, and the purpose of it is not to validate findings but to develop theory which identifies the major concerns of the participants in the research(Al-Herbawi & Al-Daya, 2015), Guba and Lincoln's (1989) alternative criteria was used namely, Credibility, transferability, dependability and confirmability which was established for assuring rigor within qualitative research, discussed and applied in this study as follows:

**Credibility:**

(Guba & Lincoln, 1994) describe credibility as being parallel to internal validity in quantitative research. The credibility means that when the participants read the research, they recognize it as their own experience (Kelly, 2008). Other mechanism used in the study to ensure accuracy is the audio tapings of the interviews, which were then transcribed. Finally, memos which document the researcher's thoughts, ideas and actual concerns to ensure the accuracy and increase credibility of the data collected in this study.

(Silverman, 2013) also recommends five approaches to improve the validity of qualitative work: application of the 'refutability principle', use of the constant comparative method, comprehensive data treatment, deviant-case analysis, and use of tabulations. The constant comparative method and comprehensive data treatment is used in this study.



**Transferability:**

(Guba & Lincoln, 1994) also describe Transferability as being parallel to external validity. Lincoln and Guba (1985) noted that transferability is more the responsibility of the person wanting to transfer the findings to another situation or population than that of the researcher of the original study. They argued that as long as the original researcher presents sufficient descriptive data to allow comparison, he or she has addressed the problem of applicability and transferability.

Another way to meet the criterion of transferability is to consider the data rather than the subjects (Krefting, 1991). Specifically, the researcher must determine if the content of the interviews, the behaviors, and observed events are typical or atypical of the lives of the informants.

**Dependability:**

(Guba & Lincoln, 1994) describe dependability as being parallel to reliability. Dependability can also be enhanced through triangulation. **Triangulation** of multiple methods, data sources, and theoretical perspectives tests the strength of the researcher's ideas to ensure that the weaknesses of one method of data collection are compensated by the use of alternative data-gathering methods (Krefting, 1991).

Another means that could be used to increase the dependability of the study is to conduct a code-recode procedure on his or her data during the analysis phase of the study. After coding a segment of data, the researcher should wait at least 2 weeks and then return and recode the same data and compare the results (Krefting, 1991).

**Confirmability:**

(Guba & Lincoln, 1994) describe confirmability as being parallel to objectivity. the researcher should also aim at fairness, completeness, balance and freedom from bias (Kelly, 2008). Confirmability achieved when truth value, consistency and applicability have been addressed. prolonged engagement with participants and that the methods undertaken and findings are intrinsically linked to the researchers' philosophical position, experiences and perspectives should be accounted for and differentiated from participants' accounts(Golafshani, 2003).

Guba (1981) described the audit strategy as the major technique for establishing confirmability. Auditability (Audit trail) suggests that another researcher could arrive at comparable conclusions given the same data and research context (Lincoln & Guba, 1985). Audit trail includes the process of accessing the participants, describing the setting and equipment, an explanation of one's experiences and decision making process (Kelly, 2008). The audit trail is applied in this study in the memos, examples, diagrams and supporting documents where appropriate.

### **Summary:**

This chapter consist of two Section the first section start with Conceptualization of Qualitative Research which is based upon the observations and interpretations of people's perception of different events and it takes the snapshot of the people's perception in a natural setting, then it highlighted the grounded theory as one of four qualitative designs frequently used in the human and social sciences, further more it present the main tool of this research which is the focus groups that are used for generating information on collective views, and the meanings that lie behind those views, in addition to illustrating the rationale and uses of focus groups.

The second section present the research methodology, its design, data collection, focus group schedule, interview schedule, the population and sample, data analysis plan, the constant comparative method which was used to analyze the research data, the four stages of the constant comparative method was described , the coding procedures in grounded theory approaches was illustrated, in addition to applying Ethics, and rigor determinants that applied in qualitative research

# **Chapter 5**

## **Data Analysis and Findings**

## **Chapter 5: Data Analysis and Findings**

### **Introduction:**

This chapter applies the Constant Comparative Method (CCM) as a method of data analysis. This method has a series of steps that vary from one researcher to another, but it centers on the same process and results. By applying the (CCM), the movement through the four stages of (CCM) is not linear, and it is required to move back and forth from one stage to another as she constantly compares the data during each phase of the process(Kelly, 2008).

This chapter addresses how this method was used in analyzing the data, the emerging themes, integrating categories, theoretical coding, theoretical sorting and developing the emergent theory. After the process was conducted, the research proposed the emerged theory of this study.

## **5.1 Section 1: The Data Analysis**

### **5.1.1 The Analysis of the Input factors Group**

#### **The Responses**

Misunderstanding of the nature and function of ED, increasing population, complexity of disease, people preferences, increasing in patient family visitors, social cohesion, low trust in PHC, demanding specialized services, high accessibility to EDs, internal immigration, preferring ED to PHC, low awareness of patient's rights and liabilities, culture of social cohesion, rush and high-tension people, culture of not waiting, complexity of disease, all hospital transfer to Shifa Medical Complex ED, ineffective referral system, outpatient problem (closure, long waiting list, specifying number of cases to deal with), escaping from waiting queue in other clinics, large catchment area, PHC closure in evening, 60%- 70% non urgent cases, absence of leadership and management team, absence of integrated system between hospitals, PHC and UNRWA clinics, exploiting ED resources from doctors and patients, faster and broader services, difficult economic situation, having health insurance.

#### **Open Coding:**

In this phase the data is coded in as many ways as possible (Glaser, 1978), the data is examined word by word, line-by-line and even section-by-section.

The focus groups were named –coded- as A, B, C, the interview coded as D, E, F, G, H the raw data was reviewed many times, each segment of data was coded and investigated closely and compared. The general codes revealed are:

- a. Socio-cultural Characteristics.
- b. General Health system Characteristics.
- c. Economical affairs.
- d. Geographical Affairs.
- e. Political affairs.

### **Developing the categories (Themes) and its sub- categories:**

During the open coding, many codes emerged then these codes grouped together to built categories and sub-categories as follows:

#### **a. Socio-cultural Characteristics.**

- i. Misunderstanding the roles .
- ii. Increase of non urgent cases .
- iii. Emotional, rush people .
- iv. People preference.
- v. Loss confidence in PHC .
- vi. Internal immigration .
- vii.** Increasing population .
- viii. Demanding specialized services.
- ix. Bad communication skills.
- x. Not appreciating medical staff efforts.
- xi. Culture of social cohesion.

#### **b. General Health system Characteristics:**

- i. PHC work only morning shifts .
- ii. Outpatient clinics failure.
- iii. Referral system failure.
- iv. No integrated system between hospital and PHC and UNRWA clinics.
- v. High accessibility with large catchment area.
- vi. Long waiting list in other clinics.
- vii. No fairness in services distribution is not fair.

#### **c. Economical affairs:**

- i. Low income .

### **Selective Coding:**

In this stage the focus is on a limited number of categories that represented the major factors that the participant focus on, From the focus group data and the individual interview data

- a. Misunderstanding the roles .**
- b. People preference .**
- c. No integrated system between ED, PHC, UNRWA.**
- d. Economic situation .**

### **5.1.2 The Analysis of Throughput factors Group**

#### **The responses:**

Lack of comprehensive control system, triage system failure, lack of awareness of triage system, absence of job description, lack of applying policies and procedure and protocols of emergency, lack of laboratory and radiology services, narrow space, small area not sufficient to apply triage, not enough beds, the dependence on the new graduated and junior doctors, lack of experience, no commitment to work place, shortage in administrators and patient services staff, problem in the on-call specialty consultants, security shortage, low morale, lack of messenger , patients family members enter the ED and overlap with staff, shortage in some medical supplies, patient refuse the triage decision, instruments and logistics are available but face repetitious damage, lack of leadership and management person for ED, some personal agenda, incompetent medical staff particularly in night shifts.

#### **Open Coding:**

The main initial codes revealed are as follows:

- a. Work Environment
- b. Triage
- c. Human resource
- d. Instruments and logistics

## **Building the categories (Themes) and its sub- categories**

### **a. Work Environment**

- i.Guiding tools
- ii.One-way flow
- iii.Physical layout

### **b. Triage**

- i.Responsibility allocation.
- ii.People awareness

### **c. Human resource**

- i.Junior doctor
- ii.Voluntary staff dependency
- iii.Skill of decision making
- iv.Training program
- v.Low morale

### **d. Instruments and logistics**

- i.Equipments
- ii.Diagnosis tools
- iii.Beds
- iv.Medicine

## **Selective Coding**

- a. Work Environment
- b. Triage System
- c. Working Human resource
- d. instruments, logistics, medicine and others supplies



### **5.1.3 The Analysis of Output factors Group:**

#### **Responses:**

Absence of follow-up, full bed occupancy in Ed specially in the peak time, fully occupied inpatient beds, no home care or community care, readmission cases due to low confidence in doctor decision, lack awareness, diversion of cases to other hospital, ED bed is taken with the case to the inpatient departments, low bed number compared with the large volume of cases, lack of coordination between Ed and inpatient departments, no vacant bed in the evening and night shift, some cases waiting until inpatients discharged, boarding patient at the peak time.

#### **Open Coding**

- a. Patient Admission
- b. Patient Discharge

#### **Building the categories (Themes) and its sub- categories:**

- a. **Patient Admission**
  - i. Inpatient bed occupancy
  - ii. Inpatient service
- b. **Patient Discharge**
  - i. Community care.
  - ii. Readmission.

#### **Selective Coding:**

- a. Inpatient bed occupancy
- b. Community care.

## **5.2 Section 2: Findings and Recommendations**

### **5.2.1 The Findings:**

The participant responses to each concept was compared to find out the causes of overcrowding, the causes of crowdedness may be input, throughput or output factors. findings and propositions of this grounded theory study are illustrated as follow:

**Firstly, regarding the causes of overcrowding due to input factors, the causes are as follow:**

#### **Misunderstanding the critical role of ED:**

Misunderstanding the critical role of ED is the first and the most significant factors that leads to overcrowding in the ED, 60 %- 70 % of the cases that visit ED are non urgent cases, there was a consensus by all participants that the demand on ED is abnormal, most of Gazans misunderstand that ED is a sensitive place that must be fully prepared for emergency cases only. There is lack of awareness about the nature and the function of ED, people neither know when to take their case to PHC nor when to take it to ED nor even to the pharmacy. (Pascasie & Mtshali, 2014) finding agreed with the current study finding by considering lack of public education and awareness about ED usage caused overcrowding. (Mirhaghi et al., 2016) and (Pascasie & Mtshali, 2014) and (Durand et al., 2012) agreed with the current study by consider that non urgent patients are one of the causes of ED crowding, so the mission of the ED as a place for serving critically ill patients was challenged and recommended to apply a cultural awareness training program.

#### **The People Preferences**

Some participant said that people prefer to go to ED not to the PHC referring psychological cause as most patient said: “when we visit the hospital we get well and heal” even before seeing the doctor or take the cure. Participant also refer that people lose confidence in the PHC physician as they don’t touch any positive results from the PHC service. As revealed from the data people prefer going to EDs as they provided specialized services and more diagnostic tools such as advanced laboratory

and radiology services are available in hospital and not available in PHC. The people also get their services faster as observed, they go to ED escaping from the waiting queue in other clinics, when going to the outpatient clinics patient may required to wait for weeks or even months to reach his turn in the list, so the patient just go through the Emergency gate to get the services.

This enormous increase in the non urgent case leads to many problem and complication in the ED, for example not for exclusive: emergency patient will Deprived from expected high quality service, and will not find a well prepared, sterile bed and high alert medical team. People have to raise their awareness about the concept that the EDs is Only for emergencies.

Results of (Harris et al., 2015) study indicated a preference for treatment by an emergency physician in hospital for possible concussion and treatment by a doctor in ambulatory settings for. Its results suggested a clear preference for lower costs, shorter wait times and strong emphasis on quality care.

### **Bad Communication**

The participant refer to the large gap between the medical staff and the patient and his family. The patient come to the ED in a rush and high tension condition or even claim the disease and enlarge it to get fast service, he wants to get his service as soon as possible regardless his evaluation is urgent or not urgent, they refuse waiting and start to controversy with the medical staff . Here, appear another problem faces the ED staff which is, people don't respect or appreciate the medical staff efforts in the governmental hospital, while in contrast they wait for long time maybe for hours in the private clinics without complaining.

Another problem lead to miscommunication the patient family, you find the patient and around him form 3-6 family member, this increases intervention which prevent the medical staff from performing their job ideally. and wasting of time as the medical staff may forced to answer all their questions about their patient condition.

### **Lack integrated system**

Lack integrated system to regulate the work between PHC, outpatient clinics, UNRWA center. The medical referral system is not activated, referral are given to the patient as requested from the PHC doctor or UNRWA doctor and ask to write “urgent referral” that leads to the access of non urgent cases to the ED and causes crowdedness and overload on the medical staff.

Some participants disagree with other participants and said that the problem is not in the referral system but it is the responsibility of the physician who refer and direct the cases towards ED not to outpatient clinics. Otherwise all PHC and outpatient clinics work only morning shifts till 14:00 o’clock which shifts all cases either they are urgent or non urgent to ED, as the most of Gazan suffer from hard economic situation and cannot go to private clinics.

A participant said “to solve the problem of crowdedness the ministry must provide alternatives”. Another Participant said that: " 40 % of the ED visits in Gaza Strip are going through Al-shifa Medical Complex ED and the remain percent distributed to the other hospital in Gaza Strip" . This ratio indicate another problem which is: there is no fairness in the geographical distribution of health services, as all hospitals transfer cases to Al-Shifa Medical Complex because it is the only and lonely hospital that provide some sensitive services such as brain and neurosurgery .

### **Secondly, regarding the causes of overcrowding due to throughput factors, the causes are as follow**

#### **Inappropriate ED Design:**

Participants declare that the design of ED is inappropriate and hinder the work flow as the design doesn’t support the one-way flow, the area is very small the design is old, there is no space to apply triage, the waiting halls are not fit to the numbers of patients and their family, no chairs in the waiting hall, which differ in other hospital such as Naser Medical complex where the ED is recently reconstructed, the B participant said that the ED space and area is appropriate supporting the one-way flow, and it is well-designed and well prepared supporting with guiding tool, LCDs, waiting area with chairs. The inappropriate ED Design was

consider one of the important factors of ED crowding study of (Exadaktylos, Evangelopoulos, Wullschleger, Bürki, & Zimmermann, 2008) used data from emergency department to map the system based on patient pathways from admission to discharge. Patterns of activity, demand, and system bottlenecks were simulated with this map to solve strategic design challenges in emergency department capacity planning, and demonstrate that patient pathways in the emergency department is an important factor of overcrowding.

### **Triage Failure:**

Data revealed that Triage system in applied efficiently in Nasser Medical complex as there is clear protocol an policies and procedures manuals distributed to all staff members, and the responsibility for implementing it is allocated to persons. While in contrast the data show a consensus that most hospital suffer from triage Failure, Medical Triage system is not work efficiently, due to many causes such as: the staff did not receive adequate training to apply it, the absence of job description, role ambiguity, there is a conflict in the responsibility of triage between doctors and nursing.

There is a high depending in junior and new graduated , volunteer trainee doctor who lacks experiences and are not able to take a decision in risk cases, other causes of triage failure is the shortage of medical staff in all aspects (doctors, nurses, administrators, messengers, cleaners, and other supportive services, this shortage increasing in the evening and night shifts, another causes are the narrow space of ED, and also people refuse to accept the decision of triage team as they claim they reach first so they must treated first. the Interviewee H said that : “ The problems we face is that people misunderstand of medical Triage, we find that the patient in America can wait in the emergency four hours in Gaza patient is not able to wait expected, "I cut the ticket before," I am waiting here for one hour.”

These challenging when applying triage lead to deal with both urgent and non urgent cases which drain the medical staff capacity and the result is low quality emergency service.

## **Shortage of Human Resources**

Concerning human resources, data from focus group conducted in Al-shifa medical complex refer that ED is suffering from a large number of Junior, untrained, voluntary, not decision maker doctors, that lead to low commitment to work and delayed services which participate in increasing the waiting queues in the EDs. The lack of system to follow-up and control all these types of staff increase the problem also. Beside these challenges there is no training on emergency protocols for new and current doctors.

"...more than 60% of the crew of the EDs between volunteers and others who spends the period of mandatory training as a supplement to get a bachelor's degree or the excellent doctor training, and are faced with the problem of the responsibilities and accountability....."

There is a shortage in the on-call specialty consultants who are beside their on- call duty in the Emergency department, are also in supervisory positions in their departments, and they have large work load, that may in sometime delayed the emergency services. A Participant said that: "... ED suffering from an acute shortage of medical specialists, demand for joining the specialty of Emergency Medicine is very weak and there is only four specialists in emergency medicine in Gaza strip...", Another participant said that: "...There is a great shortage of on-call specialty consultants, a large pressure on them, the ED staff are burnt out..." There is also shortage in other position such as: nursing, administrators, cleaners, messengers, patient services staff. In the other hand Naser Medical Complex participants said that the shortage is only in messengers and security. "...We excuse family members because of the lack of messengers and patient services staff, we always hear "my father is waiting for more than two hours and did not find anyone to transfer him to the Department of radiography...". (Hurwitz et al., 2014) found that healthcare staff shortage was linked to crowding in the nationally average environment, and that the same of what was found by (Abu-akar, 2017).

### **Shortage of ED instruments and logistics:**

Instruments, logistics, Equipments, Diagnosis tools and others supplies required in the emergency department, face repetitious breaking down because of high usage rate. "...There is a shortage in resources for emergencies at a time there was not available tongue depressor and was instead uses a sterile syringe, which is equivalent to one-eighth of which the price of one dozen full of tongue depressors...."

"...Increase beds turnover causes pressure on the resources , equipment and trays and tools..."

**Thirdly, regarding the causes of overcrowding due to output factors, these are as follow**

### **Inpatient bed shortage:**

Regarding the inpatient bed occupancy, there was a consensus by all participant: A, B, C, D, E, F, G, H that the bed occupancy rate is very high and could reach to 100 % at peak time and at the evening and night shifts, ED staff some time there is a decision for cases to be admitted to the inpatient departments, and as there is a fully occupied inpatient bed so ED forced to deal with these case inside the ED where there is already a shortage of bed, other cases take the ED bed to the inpatient department, other cases may be boarded in the ground in the ED ward waiting for a vacant bed, other cases may be diverted to other hospital. Most of the literature agreed with the current study such as: (Cha et al., 2016) which found a positive correlation between ED crowding state and hospital bed occupancy rates the same what (Makama et al., 2015) , (Erenler et al., 2014) , (Hurwitz et al., 2014), (Pascasie & Mtshali, 2014) found that the main cause of AED overcrowding is a inadequate inpatient beds for ED patients

### **Lack of Community care**

Regarding Community care, as there is PHC clinic and NGO clinics but the problem is with the patient culture as he prefer taking his service through the gate of ED as we discussed previously, and resulted in increasing the re-admitted cases, the

participant agreed that there is a number of cases who may re visit the ED within 24 hours and within 48 hours these cases may be a chronic diseases, or misunderstand the recipe , or don't take adequate time or service, or because of a low confidence in the doctor decision



### **5.2.2. The Recommendations:**

The following recommendations are offered to alleviate the effects of overcrowding in emergency departments as:

#### **First, Recommendations regarding the overall health system:**

- a. Establish an effective integrated system between primary health care centers, hospitals and the local community
- b. Activating the primary health care center role, providing of primary care services 24 hours and distributed it fairly in all geographical area
- c. Perform a system act as a law to restricting non urgent visitors, demonstrate the patient right and the patient liabilities and commitment inside ED.
- d. Coordination between the ED and other de partments in the hospital,
- e. Development of the medical triage system
- f. The development of home services through the work of mobile health units

#### **Second, Recommendations regarding emergency staff:**

- a. Developing a policy and procedures guideline to deal with emergency patients, and providing full training for staff on special emergency protocols before going to the emergency field
- b. Activating the benefit of physicians holding degrees specializing in emergency.
- c. Increase ED staff specially administrative and recruit more emergency medicine specialist doctors, adding more security on the ED gate.
- d. Rotation program sponsored by the Ministry of Health by rotating of the new emergency doctor on all disciplines neurosurgery, orthopedic intensive care work for at least two years.
- e. Provide emergency medicine specialist Diploma grants .
- f. Activation of incentives and punishment system.
- g. Self-esteem by emergency personnel that the employee feels that he is with a great value and importance.

**Third, Recommendations regarding the emergency visitors:**

- a. Spreading culture of "Emergency is only for emergencies". And impose tariffs on ED services for non-urgent services to reduce the number of visitors.
- b. Increase citizens' awareness of the sensitivity of the ED through announcement in radio, television, social networks, Educational courses in schools and mosques, stickers in road and these must be continuous at least six months.
- c. Activating the rule of one family member with the patient, and improve public relations with all stakeholders.

**Finally, Recommendations regarding Physical resources:**

- a. Make expansion in the ED area and improve the ED design, particularly improve the entrances and exits of ED.
- b. Increasing the number of ED beds and the inpatient beds.

**5.2.3 The Future Research:**

Future research on EDs may proceed in different directions. One obvious direction for such researches is to test some of the current study's propositions. Another possibility is an investigation of excessive waiting times on patients who leave the ED without being seen.

As grounded theory research methodology, the researcher hopes that this study provides some directions to healthcare and business researchers to use grounded theory. As Barney Glaser, the originator of the classical grounded theory methodology encourage researchers to “just get on and do it.”

#### **5.2.4 Conclusion:**

This chapter discussed how this study used the CCM as an analysis process and the propositions of the categories with a link to the Six CS methods which are used in the theoretical coding of this study.

The main findings of this research are provided in addition to the contribution of this study which mainly focuses on exploring the main causes and intervention that lead to overcrowding in EDs in Gaza strip by adopting Asplin's Conceptual framework .

Using the grounded theory approach, the study achieved its proposed objective and study found that misunderstanding the critical role of emergency department is the main cause of the overcrowding, people preferences and losing confidence in primary healthcare physician also contribute in the increasing of non urgent cases to ED, In addition high attendance of patient family member increase interventions that delays the patient flow and increases overcrowding, the study also found that there is a large gap between governmental healthcare providers and patients; the poor design of emergency department affects badly in the patient flow, the lack of staff training in emergency protocol increase the bad consequences of overcrowding; the failure in triage system, the lack integrated system to organize the work among various healthcare providers, the shortage in ED staff from all aspects doctors, nurses, administrators, messengers and patients services, the high dependence on voluntaries and trainee doctors, the unavailability of inpatient bed all of these causes interaction and leads to increasing overcrowding and its harmful consequences.

The study recommended to establish an effective integrated system between primary health care centers, hospitals and the local community, increase citizens' awareness of the sensitivity of the ED, activating the primary health care center role; provide full training for doctors on special emergency protocols before going to the emergency field, increasing the number of ED beds, increasing the number of inpatient beds.

Finally , this study hopes that the future researches testing quantitatively the research hypotheses. This study contributes to the literature in multiple ways, besides the previous mentioned findings and recommendation, this study derives some propositions to guide the future researches, and open new ways for more researches.

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# Appendixes

**Introduction:**

The focus group and the interview aim to collect data as a tool of research to complete the master degree in business administration. To collect data dealing with the topic of the research which is " Investigation on Causes of Overcrowding in EDs in the MOH Hospitals In Gaza Strip Gaza Strip". The study adopted Asplin's conceptual framework on which researchers can study and investigate ED causes and develop potential solutions. The conceptual model partitions ED crowding into 3 interdependent components: input, throughput, and output, As followed later. The focus group and the interview is just for the purposes of the research remembering you that the focus group and the interview will be audio recorded. You are free to choose the place of the interview, to answer the questions that you want answer it.

**With all respect,**

**The researcher**

**Raja'a m. Nasrallah**

**Input factors (the conditions, events, or system characteristics that contributes to the demand for ED services)?**

1. What do you think our EDs are look like?
2. What are the main problems in the emergency department?
3. What are the main factors that lead to overcrowding in EDs ?
4. What are the conditions, events, or system characteristics that contributes to the demand for ED services (input factors)?
5. Describe the nature of cases daily received?
6. Describe the people Culture and their understanding of ED Function?
7. Do you think people prefer hospital EDs to PHC? why?
8. How does the close distance to Hospital participate ED workflow?
9. Describe the status of medical referral system and its role on Emergency Department?
10. What are the peak days, What are the pressure hours?



**Throughput factors are the factors that affect patient length of stay in the ED as a potential contributing factor to ED crowding**

1. *What are the factors that affect patient length of stay in the ED as a potential contributing factor to ED crowding . ?*
2. Describe the ED space, physical layout, workflow in ED ?
3. Is there suitable waiting place for patient family members?
4. Describe the procedures of Triage system in Emergency Department?
5. Tell me about the adequacy of ED personnel physicians, nurses, administrative/clerical support staff,
6. What are the problems faced by the on-call specialty consultants in Emergency Department?
7. How would you describe of instruments, logistics, medicine and others supplies required in the emergency department?
8. How would you describe morale staff in the emergency department?

**Output factors are the factors that lead to inefficient disposition of ED patients and contributes to crowding for admitted and discharged patients**

1. What are factors that lead to inefficient disposition of ED patients and contributes to crowding for admitted and discharged patients (output factors)?
2. After the completion of the diagnosis and treatment Does the admitted patient find a vacant bed in the ED until the transferring decision is taken?
3. What are the problems facing emergency patients after deciding transferring to internal departments in the hospital?
4. could you Tell me about the community of community care (home care, sub-acute, long-term care) after discharging from the emergency department?
5. What is the re-admission rate for the same patient within 24 hours? 48 hours?
6. Could you tell me about the level of patient satisfaction after receiving emergency service?