College of Graduate Studies and Scientific Research

Hebron University

Quality Improvement Through Capacity Management In Hospitals

The Case of the Governmental Hospital in Hebron "Alia Hospital", Palestine.

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"Submitted in partial fulfillment of the requirements for the degree of Master of Business Administration (MBA Degree) College of Graduate Studies and Scientific Research, Hebron University"

Hebron - 2011

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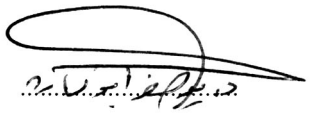
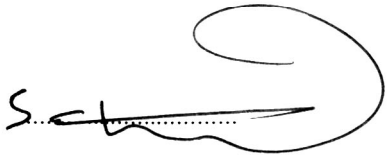
Dr. Yousef Abu Farah Associate Professer	**External Examiner**	
Dr. Sameer Abu Znaid Associate Professer	**Internal Examiner**	

Dedication

To

Lina

my parents

my wife and my sons

Yara

and all my good friends who helped or supported

me even without knowing that.

Acknowledgements

I would like to thank many people for their helpfulness and support. Thanks to all my teachers in the MBA courses, and all the team members of Graduate College in Hebron University.

Special thanks to my supervisors Dr. Suhail Sami Sultan and Dr. Motasem Abdullah Hamdan for their guidance, vision and valuable comments. Without them I couldn't complete this research. I appreciate and thank Mr. Khaldoun Sughayer and Mr. Monjed Sammoh for their help.

I would like to thank the management team and all employees of the Governmental Hospital of Hebron "Alia Hospital" for their co-operation and transparency.

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QUALITY IMPROVEMENT THROUGH CAPACITY MANAGEMENT IN HOSPITALS

The Case of the Governmental Hospital in Hebron "Alia Hospital", Palestine.

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Abstract

Governmental Hospitals in Palestine operate at the limits of their design capacity. On average, the Governmental Hospital in Hebron “Alia Hospital” is over occupied. This state of work to cope with high demand leaves behind adaptive responses and practices that negatively affect the quality of care.

This study scores the operational quality of care services delivered in Alia Hospital as being the deviation of patients’ perceptions from their expectations. Adapted SERVQUAL questionnaire tool is used to measure the relative gaps in five dimensions of quality, tangibility, reliability, responsiveness, assurance, and empathy.

The researcher had conducted a pilot study to improve and test the questionnaire first, then cross-sectional data of 118 respondents sample revealed gaps in all the dimensions of quality in Alia Hospital; maximum relative gap of 0.982 was measured for the responsiveness dimension. The Pediatrics Department scored the maximum average gap (0.93) between all the inpatient departments of Alia Hospital.

Actual activities, processes and procedures to deliver care services were analyzed, observations and interviews were conducted in the Emergency and Pediatrics Departments. Nurses were a sample of human resources in the hospital. Results show weaknesses in communication, documentation process, resource allocation, and layout.

Process analysis in the Emergency Department shows the needs for process restructure to eliminate non-value added activities, and to increase the medical team. The department also needs a daycare unit to balance load with inpatient departments, and to objectively manage the triage unit.

Process analysis in the Pediatrics Department shows the need for; more nurses, nursing staff reallocation, and additional primary equipments. The admission room in the department will operate efficiently.

To effectively manage the interdependency relations between departments, a whole communication process improvement is recommended. The researcher strongly recommends the implementation of Medical Record and Information Systems. These two systems are effective quality improvement tool and decision making tool.

Operational Definitions:

The **hospital** is Alia Hospital with 216 beds and 496 employees. It is a governmental and educational hospital and run by the Palestinian Ministry of Health (MoH). It is in the city of Hebron, Palestine. It is the case study of this research.

The **Palestinian Ministry of Health (MoH)** is the main health care provider in Palestine. It is a governmental organization that owns and runs 25 hospitals of total capacity of 2917 beds. 1324 of these beds (45.4%) are in the West Bank and 1593 (54.6%) of them are in Gaza. **[29]**

The **hospital operational outcome** is characterized mainly in the level of customer satisfaction defined as the average difference between the patient expectation and perception, which represents a judgment on the quality of services. Healthcare technical quality outcomes and social function outcomes are out of the scope of this research**.[22]**

Expectation is an attitude towards prioritization and importance level of some needs in behavior, response, or action in healthcare services in the patient's mind.**[1]**

Perception is the image made and stored in the patient's mind about healthcare service when he experiences this service.**[1]**

Value Added Activity to the Patient: It is an additional activity that partially satisfies the patient to fulfill his needs.

Gaps in quality are the deviations of the average expectations as a function of patients' needs, word of mouth and past experience in certain quality dimension from their average perception as a function of their experience.

The **respondent** to the questionnaire is the patient who received healthcare services in the hospital for one time or more, and stayed at least for one day and still in the hospital, or a relative to that patient when he is in the Pediatrics Department or the patient who is unable to complete the questionnaire.

Hospital management includes all the employees who spend part or all of their time in managerial activities and directing other employees in the hospital on either daily or regular basis.

Practices include all actions, activities, and procedures conducted in the hospital to deliver healthcare services.

The **whole system** of the hospital is the big picture view of the hospital as a community organization receives inputs, makes processes, and delivers outputs. Inputs and outputs are status of individuals. Processes make the change in the physical or mental status of the individuals.

The **admission room** (AR) is a single room in the pediatrics department, uses two beds and treats patients at the moment of arrival. Activities in the AR include medical procedures and paper works. It is the only equipped room in the department. The **ward** is the area of the inpatient department.

The **triage nurse** is a trained and registered nurse in the emergency department. His responsibility is to test vital signs for the coming patient and determines a medical level to the treated case.

The **cold and urgent cases** are the patients whose need to medical services could be delayed or should be at the moment respectively.

The **day-care unit** in the emergency department is a unit where patients receive some treatment and tests for a period of time after initial

diagnosis to make more accurate decision for admission or not. This unit is a buffer stage to partially absorb the excess load of the inpatient department.

Evaluation is the process of three corners: identify the processes that need improvements, find gaps in performing these processes according to a set of measures, and do towards closing the gaps**.[1]**

Policies are general statements of the top level management; these are broad guide lines to the middle and lower managers of the hospital to make decisions for the day-to-day issues.

Procedures are step by step approach of doing something in the organization. Procedures answer the question (What is the next step?) as saying the standard procedure for patient discharge process. Rules tell the action of either do or don't do under the situation.

Discharge is the concept used to describe the process of leaving the hospital. On the other hand, admission is the concept used to describe the process of getting in the inpatient departments of the hospital.

Department: Each sub-unit of the hospital that works as part of the hospital system, and has specific defined function. Normally, a department highly affects and is affected by other departments. Some of them interact with the patients and others do not.

The Inpatient Department: The functional unit of the hospital, it provides specialized health care according to medical definition, directed by a specialist physician.

Quality in Hospitals: The healthcare services are right the first time, every time, and delivered on time, it is the patient's delight, and his

different stated and implied needs (medical, physical, emotional, and communication needs) are satisfied**.[2]**

Patient Satisfaction: The state of perception in the patient's mind that equals or exceeds his prior expectations towards hospital services to serve his needs.

Perception: To a treated patient it is his main first word in mind to express about the services he received in the hospital. It is the key reason that makes him talks kindly and advice others to go to this hospital. *The process by which individuals organize and interpret their sensory impressions in order to give meaning to their environment***.[1]**

Capacity of the Hospital: The number of patients a hospital can serve in a certain period of time, it is measured by the number of beds in the hospitals, these beds are supplied with sufficient resources.

Occupancy Rate in the Hospital: The ratio of the total occupied days of all the hospital's beds to the total available days in one year (365 days)

Process in the Hospital: What is done to, for what patient, with or by defined individuals or groups? When the patient is participant in the process then each activity in the process is designed to add value to the patient.

SERVQUAL: A service quality questionnaire that measures the gap between customer expectations and perceptions of performance after a service encounter. It is the most commonly used tool to prioritize factors in delivering quality services.

Perfect Hospital: A hospital performance that measures zero gap between patients' expectations and perceptions. Perceptions' scores are equal to expectations' scores or exceed them.**[3]**

List of Abbreviations:

MoH: The Palestinian Ministry of Health.

WHO: The World Health Organization.

NGO: The Non Governmental Organization.

ED: The Emergency Department of Alia Hospital.

AR: The Admission Room in the Pediatrics Department.

E.N.T: Ear, Nose, and Throat Department.

GDP: The Gross Domestic Product.

ANOVA: Analysis of Variances.

MIS: Management Information System.

MRS: Medical Record System.

RN: Registered Nurse.

TOC: Theory of Constraints.

WSCT: Whole System Commissioning Template.

JCAHO: The Joint Commission on Accreditation of Healthcare Organizations.

PCBS: Palestinian Central Bureau of Statistics.

Tan: Tangible variable.

Rel: Reliability variable.

Res: Responsiveness variable.

Ass: Assurance variable.

Emp: Empathy variable

Chapter (1)

Introduction

1-1 Introduction and Background:

The rise of knowledge - based economy and the fast growing service sector made up the necessity for quality in the health care industry as a part of the service sector and professional category of services in one hand, and the nature of this industry on the other hand.

Hospitals are the main providers for healthcare services and play the main role in delivering high quality health services. The scope of health care service quality goes beyond the quality of care provided to the patient; it includes the impact on the family, relatives and the community.

The capacity of health provider or health program is the ability to provide specific services, such as clinical screening and disease surveillance. Effective capacity is mainly achieved by the maintenance of the basic infrastructure of the public health system, as well as by specific program resources.

Hebron is the largest city Palestine. It is about 35 Km to the South of Jerusalem. Its population is estimated by 250000 in 2007 according to the Palestinian Central Bureau of Statistics (PCBS), while the population of Hebron governorate is 551130. These people are the target center of the service offered by the hospitals operating in Hebron.

Since 1948, Hebron as well as all other cities in Palestine had experienced unstable political state, which negatively affected the health status and health industry in Palestine for decades. The absence of planning in the last decades, and the unstable political / economic environment left

behind a high load on Palestinians to govern, manage, or develop the whole sectors of their community, including the health care sector.

The total population of West Bank and Gaza strip (3,761,646), 3.3% is the natural increase rate of the population, 103% is the male / female ratio, and the median age is 17 years. The Palestinian Ministry of Health (MoH) owns 55% of the total hospital beds**.[28]**

Five hospitals in Hebron provide healthcare services with a total capacity of 412 beds in 2010. They are shown in table 1-1 below:

Table1-1: Hospital Beds By Ownership in Hebron Governorate according to the Palestinian Ministry of Health [28]

#	Hospital	Ownership	No. of Beds	Percentage of total beds
1.	Hebron Governmental Hospital "Alia"	MoH	216	52.4 %
2.	Abu Al Hassan Governmental Hospital	MoH	21	5.1 %
3.	Al Ahli Hospital	NGO	145	35.2 %
4.	Red Crescent Hospital	NGO	30	7.28 %
5.	Al Mezan Private Hospital	Private	25	6.06 %
		Total	412	100 %

In 2010, the number of beds in Al Ahli Hospital is 145, while the case study of this research is the Governmental Educational Hospital of Hebron "Alia Hospital" has 216 beds with 436 employees is the largest to serve a population of 551000. There are 436 employees in Alia Hospital, 40 of them are specialist doctors, 51 are resident doctors, 54 are paramedical specialists, 196 are nurses, and other 95 administrative and supportive employees.

Alia hospital is organized in a functional form of structure as shown in figure (1-1) below. This organizational structure is common in all the governmental hospitals in Palestine. It is organized in four main functional areas, medical, paramedical, nursing and administrative affairs. If activity categorization is applied medical departments are the primary or core departments and all other departments will be the supportive departments.

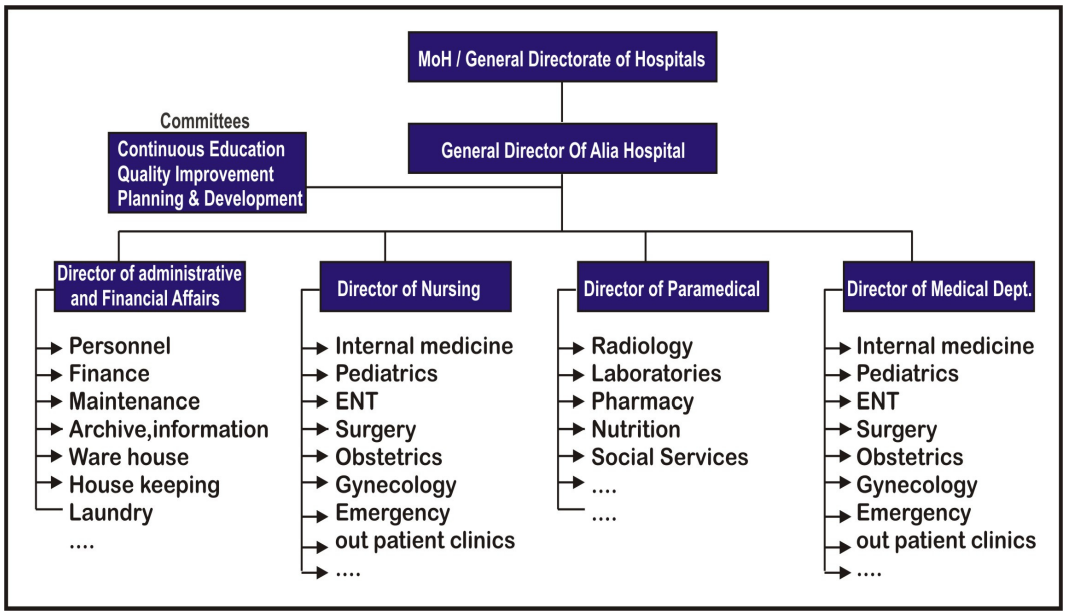

Figure 1-1: The Organizational Structure of Alia Hospital

Source: The Human Resource Department of Alia Hospital.

The Palestinian Ministry of Health (MoH) annual report 2007 annex (66, 69) **[4]** shows the structure of Palestinian population and the distribution of the hospital beds in the following table 1-2.

Table1-2: Statistical data.

The Population Characteristics, and Healthcare Providers' Capacity in Palestine

Source: The Palestinian Ministry of Health.

#	Title of the indicator	Value
1	Population of Palestine	3761646
2	Total Hospitals	78
3	Total beds in hospitals	4942
4	Governmental hospitals	28
5	Beds in Governmental Hospitals	2863

6	Median age	17 years
7	Age Distribution, Less than 15 years	46.0%
8	Age Distribution, Over 60 years	4.4%
9	Male female ratio	103%
10	Proportion of population <5years	17.3%
11	Proportion of population >65years	3.1%
12	Population natural annual increase rate	3.3%
13	Population - Governmental bed ratio	1344
14	Population - Governmental bed ratio (**Hebron**)	2715
15	Governmental Bed per 10,000 (**Hebron**)	**3.683 beds**
16	Average Bed Occupancy rate (**Palestine**)	**71.2%**
17	Bed Occupancy rate (**Hebron 2007**)	**89.1%**
18	Hebron population	551130
19	Number of beds in Governmental Hospital of Hebron 2007	203

The Palestinian Ministry of Health (MoH) annual report 2007, annex (66, 69) **[4]** and the Annual Report 2009 of Alia Hospital **[5]** show a low level of healthcare supply indicators, as revealed in the following table 1-3.

Table 1- 3: Comparable indicators of Alia Hospital and West Bank
Source: The Palestinian Ministry of Health, Annual Report of Alia Hospital 2009

	Indicator	**Alia Hospital**	**MoH Hospitals in West Bank**
1	Beds 2007	203	1336
2	Beds 2009	216	1324
3	Population	551,130	2,345,107
4	Governmental Beds / 10000	**3.683**	5.697
5	Beds of all hospitals (Governmental and all others)	412	2939
6	Beds of all hospitals /10000	**7.4**	12.5
7	Bed occupancy rate in **2007**	89.1 %	67.5 %
8	Bed occupancy rate in **2009**	102.88 %	74.6%

Table 1-3 above shows that Alia Hospital worked at 102.88 % average occupancy rate in 2009. The pediatrics department worked at 124.5% occupancy rate (85% is recommended by the WHO "World Health Organization" **[6]**) Occupancy rate of beds in Alia Hospital is the highest in the Palestinian Governmental Hospitals.

The annual report of Alia Hospital **2009** also shows that **31,280** patients had got medical admission. These patients were served in the inpatient departments and utilized **81,114** days of medical care. Other **65,669** outpatients in the outpatient clinics and **88,239** emergency patients were served without admission.

The inpatient departments represent the scope of this research. According to the same data source, in average, these departments operate in an over capacity state which was 102.8 % in 2009. This is the average occupancy rate of Alia Hospital, **and defined as**; the ratio of the total occupied days of all the hospital's beds to the total available days in one year (365 days) while, assuming the availability of the needed resources for each bed. That is, the ratio of the operating capacity to design capacity. By definition the average occupancy rate of Alia Hospital in 2009 will be as calculated below:

Number of beds = 216
Design capacity = 216 x 365 = 78840 days of care in a year.
Care delivered in Alia Hospital = 81114 days of care in 2009

Then:

The average occupancy rate in 2009 = 81114 / 78840 = 102.8%

If the average occupancy rate is measured related to the effective capacity it will be 17.6 % higher than the calculated one above.

Under these operating conditions managers of Alia Hospital find their facility almost always full, the departments are always full, and they have very few alternatives to solve the daily managerial issues they face.

It is logical to say that alternatives are born from excesses, and decisions are born from constraints. The management team of Alia Hospital find themselves under pressure of high continuous demand. Negative impacts on the quality of the day–to–day services are delivered because pressure propagates to the whole facility. Short term decisions will then tradeoff coping with demand or caring the quality of service.

The internal and external business environment of Alia Hospital deal with demand as a highly prioritized objective, which, again pushes the operating state closer to the unaccepted line of performance defined as being less than the safety requirements.

The research is a connection of all the variables mentioned above in a systematic way. A conceptual model is made as seen by the researcher to represent the road map of this research to achieve its objectives is shown in figure 3-1, and will be discussed in detail in the methodology chapter (Chapter 3).

1-2 Main Research Question:

The research is based on a broad question, it is about the normal operation mode of an over occupied hospital. **How does the state of operating over design capacity to cope with high demand affect the quality of the delivered healthcare services in the governmental hospitals and lead to serious unintended consequences?**

1-3 Statement of the Problem:

Governmental Hospitals in Palestine operate at the limits of their effective capacity or even they operate over capacity in some of the hospital departments. Alia Hospital is the most crowded one in Palestine, operating at 102% average occupancy rate in 2009.

The negative impact on the quality of the services delivered, and the outcomes of the hospital, due to the overload work pressure, is supposed to push the operating state of service to unacceptable performance. Patients will not have the sufficient time to be treated, and a very high working efficiency is needed to achieve the minimum health care requirements. Literature shows many actions done to respond with the high demand state. These short term actions used to cope with high demand lead to serious unintended consequences and problems of quality.

Such a strong persistent demand of hospital care services in Hebron needs higher investment in hospitals (capital and skilled staff) in the long run. **But in the short run it is a management challenge to respond to high patient demand pressure, while keeping on good quality of the services delivered. This should push managers to more emphasis on continuous process improvements, evaluation and follow up, activation of effective communication, and efficient utilization of resources.**

1-4 Research Importance and Contribution:

Hospitals are the main providers of healthcare services and their operational quality is of great scientific, economic, and social importance. Managing the operational capacity of Alia Hospital to improve the operational quality is important and of major contribution to the quality of health services to the people of Hebron. Operational or functional quality involves the process of how the patient receives a service, as the quality of nurse/patient interaction and the condition of the environment. Patients can better understand functional aspects than technical aspects.

In addition to the special importance of quality in the healthcare sector, this research contributes to quality measurement literature in using the SERVQUAL tool developed by Parasuraman to find out the gaps in the operational service quality. This tool is used to answer "what are the weaknesses? How much does the hospital deviate from a perfect one? Who? and Where do gaps concentrate? ".

The research can contribute to social welfare and cost saving by:

- Deriving its importance from the increasing awareness of the need of high quality health care services in Palestine.
- The nature of healthcare services (life or death) where the highest degree of customers' contact makes it necessary to find out the best practices to improve the quality of service delivered.
- The research has an economic value while trying to find out the most efficient way to operate the hospital. Health care industry is one of the most expensive industries and developed countries expend a good percent of their Gross Domestic Product (GDP) to this industry (more than 7% - 15% of their GDP). **[7]**

The research introduces the quality of health care services as viewed by the patient. This will encourage both supplier and consumer to define and work forward to achieve patients' satisfaction.

1-5 Research Objectives:

The research aims at:

1- Assessing the operational quality of the hospital care services delivered in Alia Hospital as perceived by the patients. Measuring the gaps of quality as being the average difference between patients' expectations and perceptions towards different quality dimensions.

2- Exploring the informal practices and the weaknesses of the normal operating process / structure of the over occupied departments in Alia Hospital, and locating the resource bottlenecks and non-value added activities.

3- Developing a proposed bundle of alternative practices and procedures that improve resource utilization in terms of effectiveness and efficiency, practices in the right way towards the objectives and uses minimum resources. These practices are supposed to improve the system's outcomes.

The research is supposed to answer the following questions:

1- How do patients evaluate the quality healthcare in Alia Hospital?

2- What are the practices and activities that negatively affect quality while trying to cope with demand?

3- What are the practices and activities that if done would improve the score of quality? What resources are needed to implement these practices?

1-6 Research Boundaries:

The overload state of work and the topic of this research as tradeoffs between quality and coping with high demand are the reasons behind choosing Alia Hospital as the case study.

This case had formed some of the boundaries of the research. As **a** governmental hospital, the research has faced some problems due to the existing organizational boundaries. Geographical boundaries of the research are defined as the populated areas of Hebron city and a round, which represent the direct population of the hospital.

Time boundaries are related to the time primary and secondary data were gathered.

1- The Governmental Hospital of Hebron (Alia) is owned and run by the MoH. Thus, the research results are mainly applicable only to other governmental ones operating. Other non-governmental hospitals have their own managerial procedures and other methods of payment.

2- The geographic and cultural characteristics of Alia's Hospital population make the results of this research as being not valid in other Palestinian Governorates, because attitudes **toward** quality may vary geographically, people have different priorities in different areas. Results are not even valid for private or NGO hospitals in the city of Hebron because they are run by different managerial system.

3- Since quality improvement will be conducted for the operations, demand, processes, activities, and procedures of Alia Hospital, then results will be biased more to represent the cultural and demographic characteristics of Hebron district. The customer's perceptions and expectations of quality may be affected by these characteristics.

1-7 Research Limitations:

The scope of the research does not include the outpatient services of the hospital, but contributes only to inpatient departments. Cross sectional data were gathered within a small period which reflects business environment at that time, although longitudinal data may be more accurate for long run analysis**.** But such long term data analysis are the concern of specialized centers in health care or the health authorities more than being as applicable to this research.

1- Cross sectional data may explain or reflect the management response to some factors that affected the period of collecting data, that is, the operation mode of the hospital during that period.

2- It was difficult to gather data from female patients or their relatives in the Obstetrics department due to cultural limitations and the nature of treatment (almost always emergency more than recovery).

3- The weights of quality dimensions, from the patient's perspective were not applied in the questionnaire, due to knowledge limitations of the respondents in the pilot study to understand the concept and put weights.

Chapter (2)

Literature Review

In this chapter the theory of management and the related literature contribute to build the basic knowledge to continue this research. The three triad keywords of this research (Quality, Capacity, and Hospitals) will be viewed in both literature and the theory of management. A systematic integration management approach will be followed to discuss the customer oriented view of service management.

2-1 Literature Review:

This section deals with literature in the fields of capacity and quality and comments, literature focuses on the operational approach to manage organizations efficiently and effectively. The capacity related literature is viewed first, and then the quality related ones are reviewed.

Cook and J Rasmussen 2005 "Rather than being a static property of hospitals and other healthcare facilities, safety is dynamic and often on short time scales. In the past most healthcare delivery systems were loosely coupled – that is, activities and conditions in one part of the system had only limited effect on that elsewhere. Modern management techniques and information systems had allowed facilities to reduce inefficiencies in operation" **[8]**

Cook and J Rasmussen made the dynamic safety model to describe the feasible operating space for a socio-technical system within three boundaries that form an envelope. They are the economic failure boundary, the workload failure boundary, and the unacceptable performance (accident) boundary. Because the environment is dynamic, the operating point (state of operation within these boundaries) of a facility moves

continuously within the envelope unless it is pushed away out of the accident boundary due to the pressure of the other two boundaries.

Anne Miller 2007 used Cook model to achieve resilience for an organization operating at capacity "During bed gridlock patient waiting times increase the risk of complications and patient's length of hospital stay which further contributes to gridlock". He defined resilience as "a work system's ability to buffer, adapt to, absorb, and prevent adverse patient outcomes in face of disruption". **[9]**

In (2006) Cook and Nemeth illustrate how humans adaptively modify their behavior when under pressure. In their examples staff members rearranged operating room, schedules, and staff rosters to compensate for the effects of intensive care unit bed gridlock. Compensation is understood to involve the adaptive use of back-up or opportunistic process to manage situations, but tends to mask the overall state of a stressed system. **[9]**

Eric (2005) defined a process / policy structure as part of his template "Whole System Commissioning Template WSCT" for the application of system dynamics learning and "what if" analysis of patient pathways. "Having mapped and shaped the process/policy structure for the organization and agreed data with the management teams from each agency (department). Models are run under capacity constraints to identify the location and extent of bottlenecks occurring along the patient pathways".

"It is generally well accepted in all situations along the patient pathway that only very limited waiting is acceptable, in terms of emergency services very little waiting at all is permitted". **[10].** The importance of managing excess capacity as the start point of patient flow control process as seen by Eric, and the higher efficiency through accurate

utilization of operation management skills to improve the patient outcomes were of great value to guide the researcher.

Bryan Dodson described quality as a must in the healthcare services industry by nature. “One important sector of service economy where quality is especially important is the healthcare industry. There is disappointment when a ($100) dinner does not meet expectations, but the consequences are much greater when a routine appendectomy does not meet expectations” **[11]**

Berry et al. (1985) defines quality in terms of customer expectations. Service perceived by the customer to be better than expected is considered to be of high quality to that customer. **[12]**

Parasuraman et al. (1985) identified the most important aspects of service quality by conducting interviews with executives and by conducting focus groups with users of retail banking, the most important components of service quality were; access, communication, competence, courtesy, credibility, reliability, responsiveness, security, tangibles, and understanding. **[13]**

In 1988, Parasuraman used the ten components of service quality from (1985) research. He described the potential and development of applications of multiple-item instrument called SERVQUAL for measuring customer perceptions of service quality. **[13]**

In 1991 refinement and reassessment of SERVQUAL scales was studied by Parasuraman to offer directions for future SERVQUAL research and application to comparative study of researches employed the instrument, the findings were the five dimensions of service quality, they are: tangibility, reliability, assurance, responsiveness, and empathy).

D. Selcen (2007) studied the effects of services quality on customer satisfaction and customer loyalty in Marmara University Hospital. Selcen used the gap model and SERVQUAL questionnaire to measure quality. His findings were the deviations of each quality dimension from a perfect hospital. He found that the highest deviation was 1.144 in tangibility dimension, while other quality dimensions scored less than 0.7 average deviations from perfect hospital. The deviation range is between zero and four. **[3]**

Many studies used the SERVQUAL scale to measure quality in different fields of services. In 2000 Kathryn Frazer Winsted found nine dimensions of service quality all are cross related with Parasuraman findings**.** In 2000 a validation study of SERVQUAL scale was in Queensland and applied to four small retail businesses by (Fogarty and Forlin). In 2003 Hong Zhon in his research "Quality Dimensions of Hospital Care" found that besides the technical performance, patients are also concerned with how they will be served in a hospital care system**.** In 2005 Mik Wisniewski used SERVQUAL to measure service quality in hospital Colpo-scopy clinic in United Kingdom to find the gaps in the nursing staff performance to improve quality. **.[12]**

Arash Shahin (2005) used SERVQUAL and gap model as a framework for determining and prioritizing critical factors in delivering quality services. *SERVQUAL as the most often used approach for measuring service quality has been to compare customers' expectations before a service encounter and their perceptions of the actual service delivered. It has five generic dimensions or factors.* **[14]**

In 2007 the SERVQUAL instrument was used to measure customer perception of quality of services of large hospital in "New Delhi" by the institute of management and technology by Dr. Mohit N.Saxena**.[12]**

In 2009 the instrument was used to measure the quality of service in LASIK Service centre by Yu Hung and Deng-Juin Lin in Taiwan**..[15]**

R Cook 2003 descriptive model of the operating envelope which was limited in scope to healthcare in the literature created the start point of this research. The model is shown in figure (2-1) below. Alia Hospital is operating under both pressures of workload and economy; the researcher assumed that the business context of the hospital had taken the operating point outside the accepted marginal zone or even passed the accepted line of acceptance.

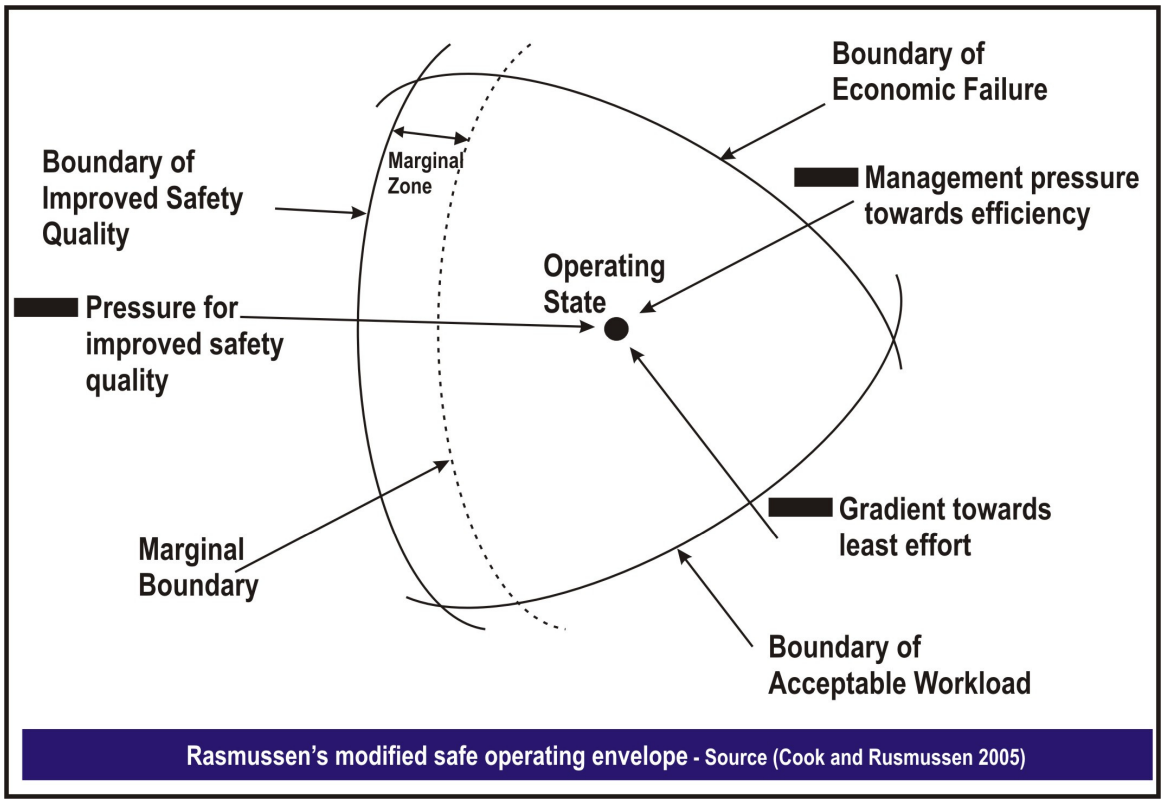

Figure (2-1): Dynamic Safety Model.

(**Source**: "Going Solid": a model of system dynamics and consequences for patient safety. www.qshc.com)

Anne Miller 2007 described the system resilience by compensation – decomposition process (the way how does the system respond?) to face demand changes, his results are compatible to the theoretical operating conditions of managing a private hospital more than being suitable to a governmentally run and managed hospital.

Anne's view 2007, the critique view of Eric (2005) and the four-level healthcare system conceptual model (Ferlie and Shortell 2001) shown in figure (2-2) below were the clues to build the big picture of the conceptual model of this research. **[16]**

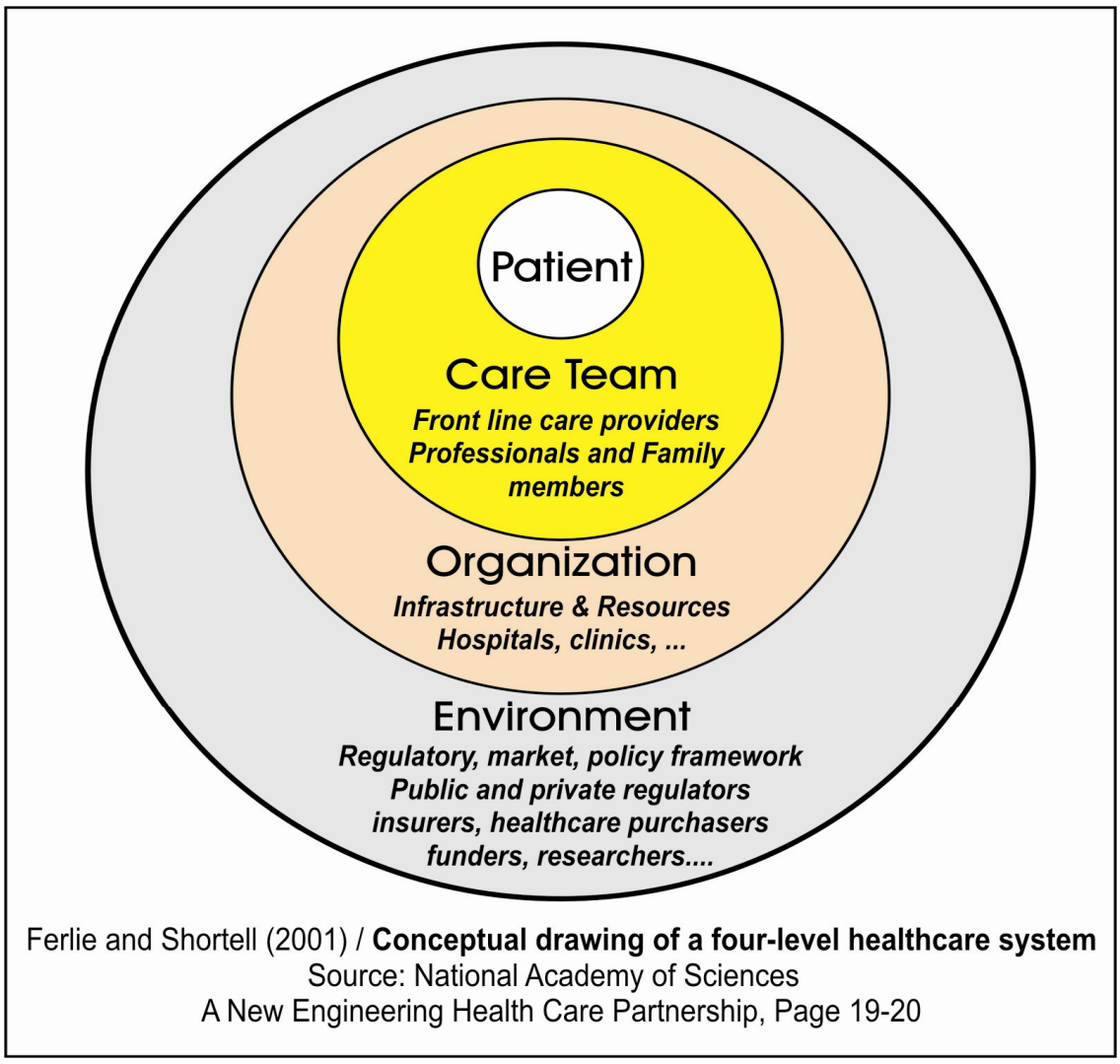

Figure (2-2): Conceptual drawing of Four-level Healthcare System

Source: Ferlie and Shortell 2001.Building a Better Delivery System: **[22].**

www.nap.edu/catalog/11378.html

This research contributes to the literature capacity management in a systematic approach to hospital management. A hospital could achieve higher levels of operating efficiency by smoothing patient admissions and discharges, through the right process/resource structure, mainly, while serving a high demand that equals or even higher than the design capacity of the facility through whole system way of thinking.

This research contributes to quality measurement literature in using the SERVQUAL tool developed by Parasuraman to find out the gaps in the operational service quality. It is noticed that most of the literature above used this tool to measure the healthcare service quality. This tool is used to answer "what are the weaknesses? How much does the hospital deviate from a perfect one? Who? and Where do gaps concentrate? ". The tool was tested for acceptable reliability and validation after adaptation of the variables to suite the operating environment of Alia Hospital.

The calculated deviations of the five different dimensions of quality were between 0.456 and 0.982. These values show a degree of good and better or a degree of bad and worse. Dr Seleen 2007 showed an average deviation value of 0.7 for Marmara Hospital. This strengthens the validity of the results of this research.

2-2 Nature of services:

A service is an activity or benefit that one party can offer to another that is intangible and does not result in the transfer of ownership of any physical object**. [17]**

A service is an activity or series of activities of more or less intangible nature that normally, but not necessarily, take place in interactions between customer and service employees and/or physical resources or goods and/or systems of the service provider, which are provided as solutions to customer problems**.[18]**

Services differ from goods as being usually intangibles, produced and consumed simultaneously, unique due to high customer interaction, and inconsistent product definition. Services now constitute the largest economic sector. Most services contain a good, when the tangible product is not included in the service we call it pure service. Revenue is generated primarily from the intangible services because services are often knowledge based like educational and medical services, and therefore hard to automate. **[17]**

Health is the state of "complete physical, mental, and social well-being and merely the absence of disease" – WHO definition –. The purpose of health service is to apply appropriate technologies and provide for the delivery of care services to meet the health needs of the population served. **[19]**

To demonstrate the problems of service industries, in 1986 Roger Schmenner proposed the service process matrix shown below in Fig. (2-3)

Degree of interaction & customization

Degree of labor intensity	Low	High
Low	**Service factory** *Airlines *Trucking *Hotels	**Service Shop** ****Hospitals** *Auto-repair
High	**Mass service** *Retailing *Wholesaling *Schools	**Professional** *service *Physician *Lawyers *Accountants *architects

Figure (2-3) Service Process Matrix
Source: James A. Fitzsimmons, 2006, 5th edition. (Service Management).

In this matrix services, services are classified across two dimensions that significantly affect the character of the service delivery process.
The vertical dimension measures the degree of labor intensity, which is defined as the ratio of labor cost to capital cost.

The horizontal dimension measures the degree of customer interaction and customization which is a marketing variable that describes the ability of the customer to affect personally the nature of service delivered.

We notice that hospitals are classified in service-shops having the following characteristics:

1. Capital Intensive investment i.e considerable investment in plant and equipment relative to labor costs which makes capital decision and demand management challenges to managers.

2. Hospitals permit high degree of service customization and interaction which makes quality enhancement from the customer perspective.
3. The presence of the customer (patient) on site makes him input to the service system. Thus to function the performance of the service system interaction of the customer is of a considerable importance.

2-3 Service Package:

The service package is defined as a bundle of facilities, goods and services that is provided in some environment. This bundle can be tangible as the decor and fitting of a hotel, or intangible as the feeling of confidence imparted by an efficient hospital**. [17]**

Generally the service package consists of the following five features:

1. Supporting facility: Hospital building
2. Facilitating goods: Medical supplies.
3. Information: Operations data or information provided by the customer to enable efficient and customized service. (Patient Medical Records).
4. Explicit services: the observable benefits (absence of pain).
5. Implicit services: Psychological benefits the privacy of the patient.

This bundle forms the basis of the patient's perception of service.

2-4 Open-System View of Services:

Service organizations are sufficiently unique in their character to require special management approaches that go beyond the simple adaptation of the management techniques found in manufacturing. The distinctive characteristics suggest enlarging the system view to include the customer as a participant in the service process.

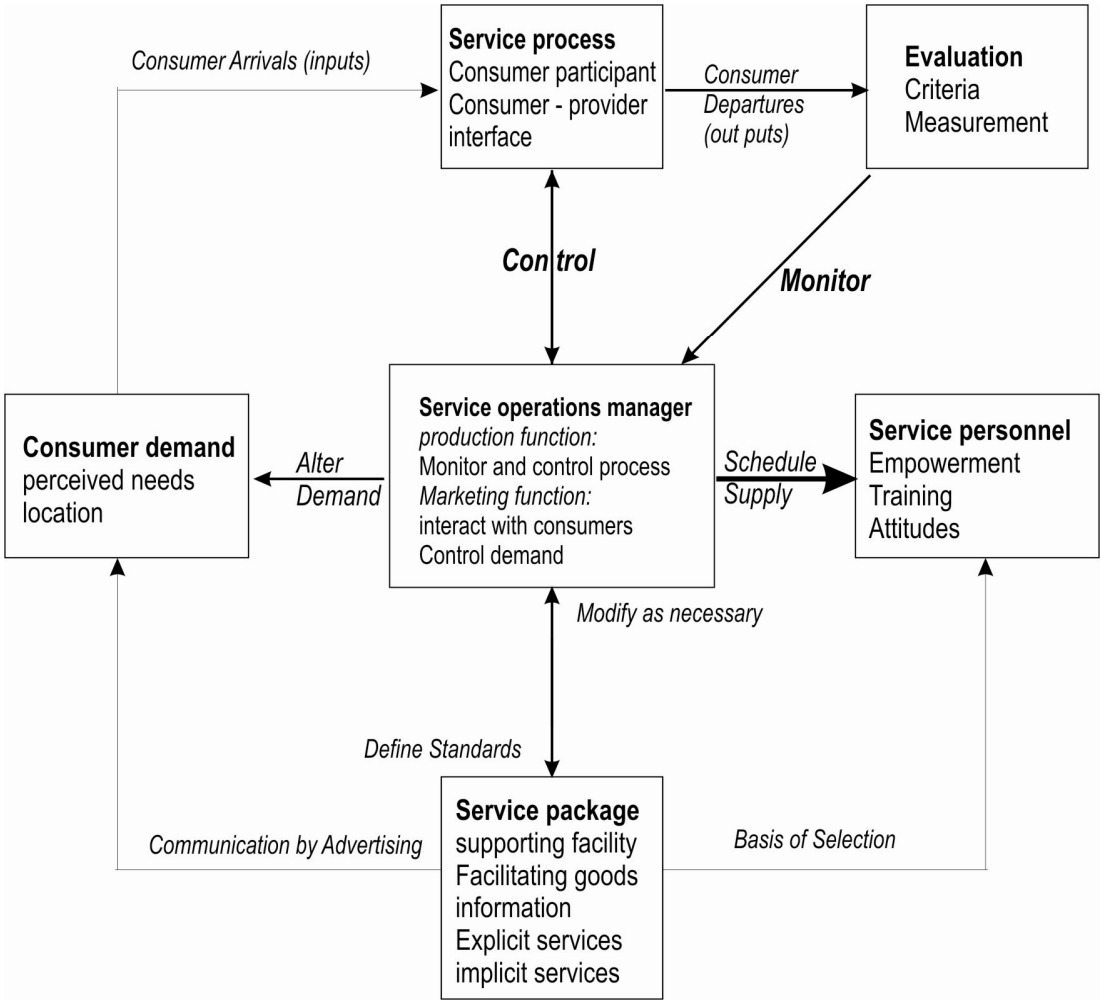

Figure (2-4): Open System View of Services
Source: James A. Fitzsimmons, 2006, 5th edition. (Service Management).

Figure (2-4) above shows the customer viewed as an input that is transformed by the service process into an output with some degree of satisfaction. For services, the process is the product, thus, the traditional manufacturing separation of the production and marketing functions are no more exist. **[18]**

In services, it is the human element that is central to effective operations, the unavoidable interaction between service provider and consumer is a source of risk to control the process of delivery. Therefore the attitude of personnel and appearance of personnel, facilities, equipment and tangible supports are of considerable importance.

The fast growth of service industry, the complex environment of healthcare services, large number of stakeholders, the high scores of performance base-lines since safety and well-being are of considerable importance, and the high level of interaction between the provider and the patients. All these are strong factors to create a challenge for hospital managers to achieve the success criteria of acceptable performance and satisfied patients.

2-5 Service Quality:

Service quality is a function of the relationship between a customer's prior expectations of the service and his or her perception of the service experience both during and after the fact. Unlike product quality, service quality is judged by both the process of service delivery and the outcome of the service **[18]**. This introduces the quality in services as value added activities, and the process of service delivery as root causes of delivering high or poor quality.

In general quality is the ability of a product or service to meet the customer needs. Ducker defines service quality as (what the customer gets out and is willing to pay for) rather than (what the supplier of the service puts in).

Hence, service quality is often conceptualized as the comparison of service expectations with actual performance perceptions **[18]**.

Since service quality is generally intangible, only three definitions of Garvin (1984) apply to service quality; an acceptable product at a reasonable price, innate excellence or providing what customer wants. **[17]**

The definition of the American Society for Quality is “The totality of features and characteristics of a product or service that bears on its ability to satisfy stated or implied needs”. **[17]**

The health care industry deals with human lives, so the quality of service provided is of paramount importance. A comprehensive view of the service system for health care entails that the scope of service quality extends beyond the quality of care that is provided by the patient, it also includes the impact on the family and community.

It is not applicable any more to say "People have been made to fit services rather than services being made to fit the people". There are two distinct constituents of service quality, the technical and the functional. Technical quality focuses on the technical accuracy of medical diagnosis and procedures (quality of curing), while functional quality is the manner in which or process by which the health care is delivered (quality of caring). **[17]**

In health care context it is difficult for the patient to evaluate the technical side of quality, because of no technical expertise to do that. While functional quality of how to deliver the service can be evaluated by the customer.

2-6 Service Quality Measurement:

Measuring service quality is a challenge because customer satisfaction is determined by intangible factors. Service quality contains many psychological features e.g. the ambiance of the facility. In addition, service quality often extends beyond the immediate encounter because, as in the case of health care it has an impact on the persons feature quality of life.

The five dimensions of service quality as shown in figure (2-5) where identified in five principal dimensions that patients used to judge service quality – **reliability, responsiveness, assurance, empathy, and tangibles,** which are listed in order of declining relative importance.

Reliability: The ability to perform the promised service both dependably and accurately. Reliable service performance is a customer expectation and means that the service is accomplished in time, in the same manner, and without errors every time. Reliability also extends into the back office where accuracy in billing and record keeping is expected.

Responsiveness: The willingness to help patient and to provide prompt service. If a service failure occurs, the ability to recover quickly and with professionalism can create very positive perceptions of quality.

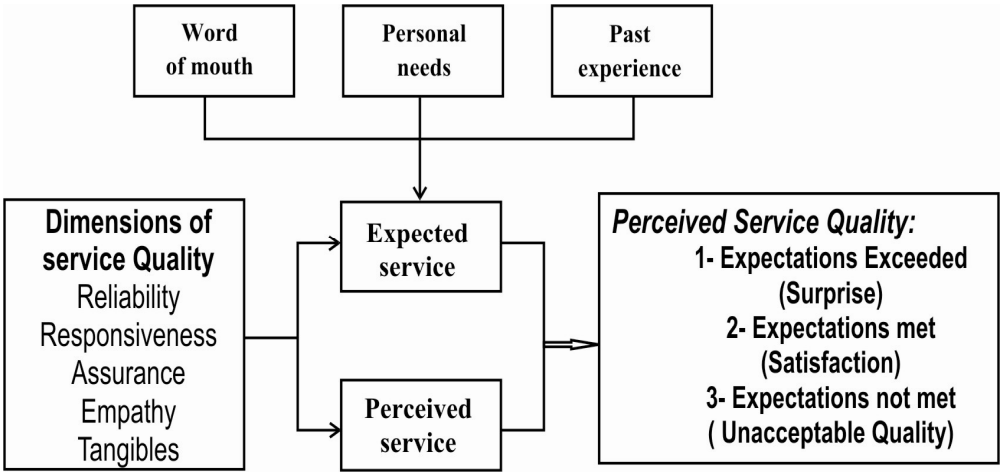

Figure (2-5) Perceived Service Quality
Source: Richard Chase and F. Robert Jacobs, 2007. 11th edition
(Operation Management for Competitive Advantage).

Assurance: The knowledge and courtesy of employees as well as their ability to convey trust and confidence. It includes the following features: competence to perform the service, politeness and respect for the patient, effective communications, and general attitude that the server has the patient's best interests at heart.

Empathy: The provision of caring, individualized attention to patients, it includes the following features: approachability, sensitivity, and effort to understand the patient's needs.

Tangibility: The appearance of physical facilities, equipment, personnel, and communication materials. The condition of physical environment is tangible evidence of care and attention.

Patients use these five dimensions to form there judgments of service quality, which are based on a comparison between expected and perceived services. The gab between expected and perceived service is a measure of the level of service quality.

Gaps in Service Quality

Measuring the gab between expected service and perceived service is a routine customer feed back process. Figure (2-6) shows the service quality gap model, where gap (5) defines the gab between customer expectations and perceptions. The numbering of gaps from 1 to 5 represents the sequence of steps that should be followed in new service design.

Gap (1): is the difference between consumer expectation and management perceptions of consumer expectation.

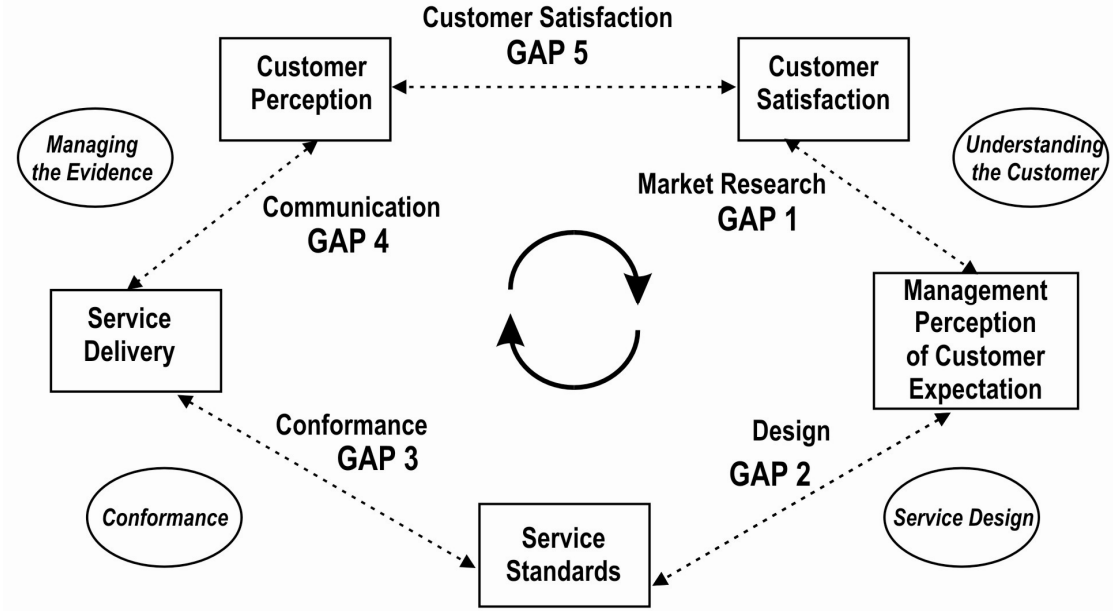

Figure (2-6) Service Quality Gap Model

Source: Richard Chase and F. Robert Jacobs, 2007. 11th edition (Operation Management for Competitive Advantage).

Gap (2): is the difference between management perceptions of consumer expectation, and service quality specifications.

Gap (3): is the difference between service quality specifications, and, service actually delivered.

Gap (4): is the difference between services actually delivered, and what is communicated about the service to the consumer.

Gap (5): is the difference between consumer expectations and perceptions.

SERVQUAL Instrument:

SERVQUAL instrument is an effective tool for serving customer satisfaction that is based on the service quality gab model shown in figure 2-4. It is used for measuring the five dimensions of service quality (i.e. reliability, responsiveness, assurance, empathy, and tangibles). This two-part instrument was developed in twenty two statements survey by the authors of the service quality gab model (This instrument has been validated for use in a variety of service encounters)**. [18]**

This instrument was widely used by researchers to measure the gap of the functional quality in health care organizations including hospitals and clinics. The value of the performance gap measured is assumed to be the value of deviation from a perfect hospital. Details of calculating the gaps are in chapter (4).

This tool (SERVQUAL) is used in this research to measure the gap of quality in Hebron Governmental Hospital (Alia Hospital). The instrument was adapted to match the business environment context of Alia Hospital; all the details are explained in chapter (3) of the study.

2-7 Classification of Service Failures:

Chase and Stewart summarized service errors can originate from both the server and the customer **[18]** as follows:

I. Server errors

Tasks

- Doing work incorrectly.
- Doing work not required.
- Doing work in the wrong order.
- Doing work too slowly.

Treatment

- Failure to acknowledge the customer.
- Failure to listen to the customer.
- Failure to react appropriately.

Tangible

- Failure to clean facilities.
- Failure to provide clean uniforms.
- Failure to control environmental factors.
- Failure to proofread documents.

II. Customer errors

Preparation

- Failure to bring necessary materials.
- Failure to understand role in transaction.
- Failure to engage the correct service.

Encounter

- Failure to remember steps in process.
- Failure to follow system flow.
- Failure to specify desires sufficiently.
- Failure to follow instructions.

Resolution

- Failure to signal service failure.
- Failure to learn from experience.
- Failure to adjust expectations.
- Failure to execute post- encounter action.

2-8 Capacity of Service Facilities:

Capacity is the throughput or number of units a facility can hold, receive, store, or produce in a period of time **[17]**

Capacity in service is the ability to deliver service over a particular time period. Capacity is determined by the resources available to the organization in the form of facilities, equipment, and labor.

Capacity planning is the process of determining the types and amounts of resources that are required to implement an organization's strategic business plan.

While **capacity management** deals with the challenge that is faced by managers of matching service capacity with customer demand on a daily basis in a dynamic environment, this entails two complementary strategic approaches of managing supply and managing demand to achieve effective capacity management.

Capacity building is planned development of (or increase in) knowledge, output rate, management, skills, and other capabilities of an organization through acquisition, incentives, technology, and training.

Design capacity is the theoretical maximum output of a system in a given period under ideal conditions. Capacity can be measured in terms of beds and total work time available as a measure of overall capacity of hospital. Most organizations operate their facilities at a rate less than the

design capacity. They do so because they have found that they can operate more efficiently when their resources are not stretched to the limit.

Effective capacity is the capacity a firm can expect to achieve, given the current operating constrains. Effective capacity is often lower than the design capacity to meet the needs of maintenance and standards of quality. The Word Health Organization (WHO) recommends occupancy rate of 85% as effective capacity to design capacity ratio. **[20]**

2-9 Hospitals – Role and Importance:

A hospital is an integral part of a social and medical organization, the function of which is to provide complete health care for the population, both curative and preventive, and whose outpatient services reach out to the family and its home environment, the hospital is also a center for training of health workers and biosocial research. **[21]**

The basic responsibility of the hospital is to provide immediate care to the sick and injured individuals. While a hospital, as a social and medical organization has to provide primary care to the community. Management is the process of designing and maintaining an environment in which individuals working together in groups, efficiently and effectively accomplish selected goals. Hospitals are unique type of organizations, they are very complex organizations, the beneficiaries are the patients and providers are still more complex, ranging from highly skilled doctors to illiterate or just literate people.

Hospitals are the primary providers of health services to apply appropriate technologies and provide for the delivery of care services to meet the health needs of the population served. **[21]**

Hospitals in general can be divided into two categories depending on the source of financing the hospital. They are: government or public hospitals, those are managed by the government services, and financed from the over all budget of the public services. The second category is non-governmental hospitals which can be a private, or managed by public charitable or cooperative society.

Organizing hospitals is the process of grouping the necessary responsibilities and activities into workable units determining the lines of authority and communication, and developing patterns of coordination to achieve the organization's goals. The formal design of an organization is laid out in "an organizational chart".

Beside the normal service organization characteristics of authority, responsibility, and communication, hospitals have the following additional organizational realities:

1- There are number of important professional people who consider themselves as heads. This means, not only one head, or one line of authority. Thus leads to managerial conflict.
2- High level of interdependences: because of the extensive division of labor, and accompanying specialization of work, particularly every person working in the hospital depending upon some other person or persons for the achievement of his own organizational goal.
3- Hospital organization is both "authoritative and permissive", and highly formalized because of the very crisis nature of work. Hospitals are extreme cases of an organization highly dependent on the effectiveness of people and collaborative performance. **[6]**

4- The control of the hospital subsystems is basically dependent upon the coordinating efforts of the managers, as the activities of the hospital are highly interlocking and interdependent.

2-10 "Hospital - Capacity – Quality" Integration Management:

In the operations management context, capacity may be defined as (The highest sustainable output from an operating system per given time, a system's overall capacity is determined by the capacity of its narrowest part "bottle neck") **[17].**

While identifying capacity in terms of services can be particularly difficult, since it fails to take into account the quality or effectiveness of the delivered services. By definition, in services we cannot measure the output simply as the number of customers served per given time (Capacity measure), unless we measure the quality. In a health care facility we can measure the number of patients a physician treats in a day, but this is by no means equivalent to measuring the amount or quality of services the physician has provided, at most what is measured is the physician's efficiency in treating patients which is some use of identifying slackers and hard workers **[17].**

This leads to quality-capacity measurement approach in services rather than capacity measurement, quality measurement approach. Since we can control what we can measure, capacity management leads to quality enhancement and leads to a moment of truth to the customers.

In healthcare, where service capacity is time and location dependent, demand is volatile, when operations are carried out in the limits of effective capacity, and capacity utilization becomes service quality control tool to keep the business within the safe envelope.

"Utilization Review" is a method for evaluating the appropriateness of patient use of hospital services. The JCAHO (The Joint Commission on Accreditation of Healthcare Organizations) - voluntary organization controlled by providers, not payers or patients – defines utilization review in the context of appropriate allocation of hospital resources to provide high quality and efficient patient care. **[22]**

A hospital is an example facility of services, which, needs a complex system of scheduling to achieve the best case of capacity management for daily job sequencing and resource assignment. Because of no priority system, such as First Come First Served (FCFS), for treating emergency patients can be used. While emergency departments schedule employees 24 hours, seven days a week, however hospitals do schedule products such as surgeries.

A system is defined as a collection of parts that interact with each other to function as a whole. Hospital is a complex system organized to provide health care services, the system is composed of primary departments, the emergency, the out patient clinics and the inpatient departments (internal medicine, surgery, pediatrics …….) and supportive departments as named paramedical departments (laboratories, blood bank, radiology, nutrition, physiotherapy …), in addition to managerial and functional departments (the Human Resources Management department HRM, the registration and archive departments, maintenance department, laundry, environment ….).

Every participating unit in the system should recognize its dependencies and influence on every other unit, this prioritizes the processes and procedures to be service quality producer. Quality management views all work in the form of processes and systems. Systems

are arrangements of organizations, people, materials and procedures that together are associated with a particular function or outcome.

A system consists of inputs, processes, and outputs. A process is defined as a sequence of steps through which inputs from suppliers are converted into outputs for customers "all processes are directed at achieving one goal". Figure (2-7) shows a general simplified systematic view of Alia Hospital, rows show the patient move through the hospital.

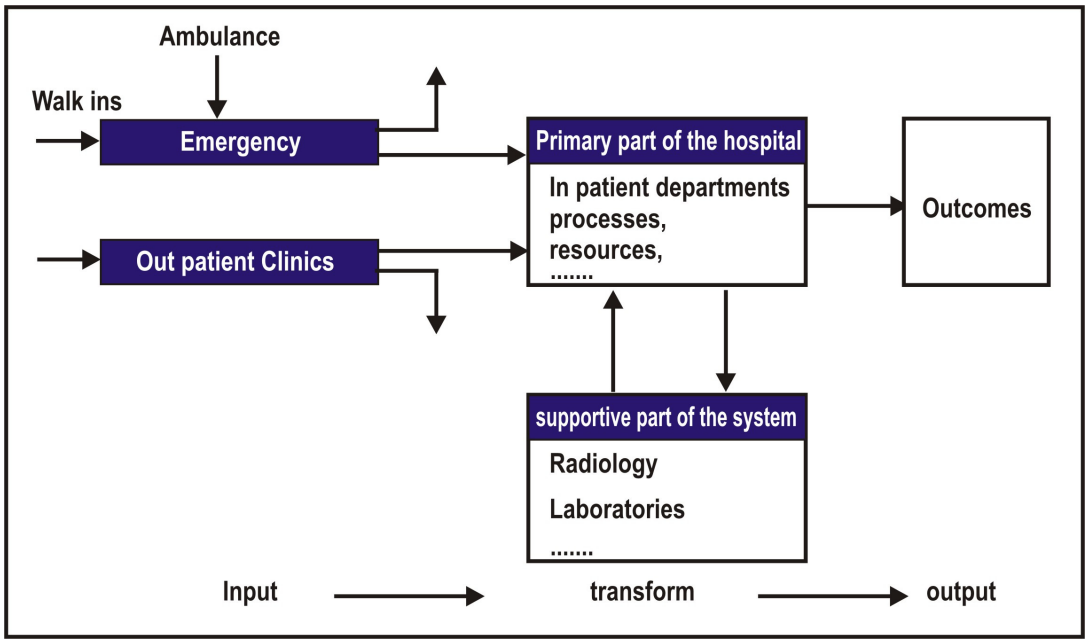

Figure (2-7): General Simplified Systematic view of Alia Hospital.
Source: Prepared by the researcher.

The movement of patients through the medical facility as they seek and receive healthcare is called the patient flow process. It is the most significant management issue in capacity management.

Deming insisted management aspect responsibility for building good systems. The employees cannot produce products that on average exceed the quality of what the process is capable of producing. **[23]**

Thus the systematic thinking, cause and effect relations, between all parts of this complex system of the hospital should be understood and highly considered, to improve the quality of services delivered.

The process/policy structure of an organization is a map of patient's pathway and polices that make them work. In hospitals models are run under capacity constraints to identify the location and extent of bottlenecks occurring along the patient's pathways**.[24]**

An objective of the theory of constraints TOC is to maximize utilization of the bottlenecks. *Bottleneck is a resource whose capacity is less than or equal to the demand placed on it, that is, it limits the plant's output*. The first principle of TOC is to balance flow, not capacity. This is achieved through three sequential steps, to identify bottlenecks, to schedule the critical resources to get maximum utilization, and to schedule non-critical resources for balancing the flow**.[24]**

Chapter (3)
Methodology and Research Design

Hypothesis testing research deals with generals and regulars, in case studies the research is directed at understanding the uniqueness of a particular case in all its complexity. Usually its objective is to investigate the dynamics of some single bounded system. Action research is conducted with a view to finding a solution for a particular practical problem situation [25].

It is worth mentioning that a descriptive expletory approach had been followed to analyze data rather than hypothesis approach.

*"Both expletory research approach and hypothesis testing approach are productive in their place and these approaches are not incompatible with one another. If our models are not sufficiently formulated to frame hypotheses, then it is not often useful to force hypotheses to be articulated. In stead it is appropriate to formulate more general research question and engage in the exploratory research necessary to answer that question. This more exploratory work will eventually lead to fuller understanding of the subject matter, which will, in turn, allow us to construct a more complete model that we may be able to then test in more formal way.***[26]**

3-1 Research Design:

The research design is best described in the conceptual model shown in figure 3-1. Because of being a case study research, this model was formed in steps while deep understanding of Alia Hospital operations was in progress. This model represents the road map of the research. It forms the basis on which the research is conducted.

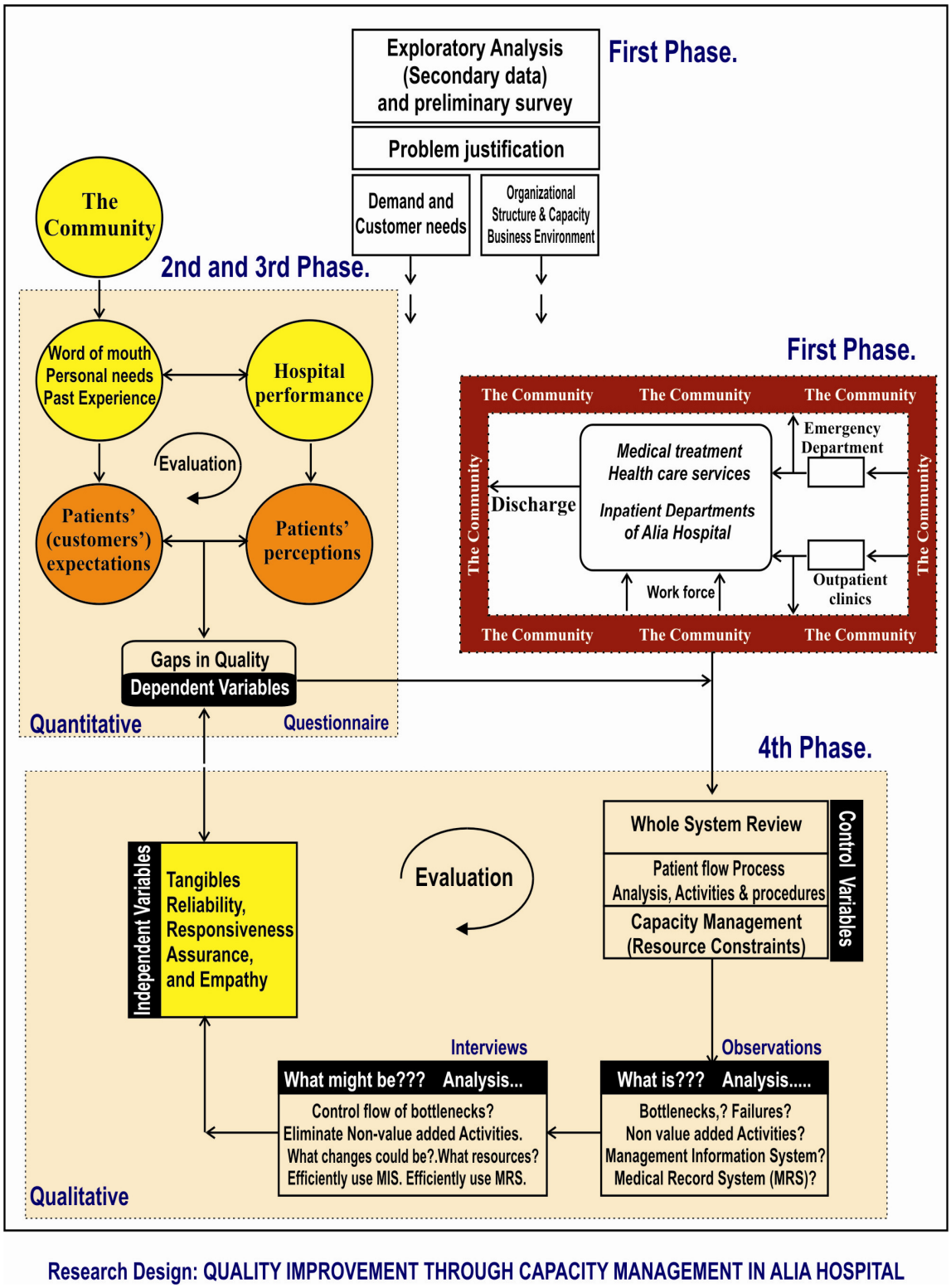

Figure 3-1: The Conceptual Model of the Research Design.

Source: Prepared by the researcher.

This chapter provides the preparations and all the operational steps and measures used in this research in detail. The quantitative part of the research to score the operational quality of the services used the adapted

form of the SERVQUAL questionnaire instrument as a valid and reliable quantitative tool.

The qualitative part of the research explores practices under normal operating conditions to fully understand the operational system in Alia Hospital (What is analysis?) by observation. Then interviews were conducted to demonstrate the difference between what is done? And what could be done? This phase guided the researcher to establish a standardized bundle of better or best practices.

The patients of Alia Hospital are the population of the study; accordingly the following procedures to complete the research were determined. Cross sectional data were collected from a random sample of 118 patients (N=118). Other two samples were taken for the qualitative part of the research. The Emergency and Pediatrics departments were samples of working areas to represent a full process review from arrival to discharge. The nursing staff had been used as a human resource sample. To conduct activity based analysis for both samples; observation and interviews instruments were used. Reasons behind that are discussed later.

Four phases of work were conducted as viewed in blocks and shall be discussed in time sequence in the pages to come of this chapter. The outcomes of each phase were the guide to choose the next phase, to determine the input variables for this phase, and keeping in mind the causal loop diagramming. This is the part of the research that demonstrates the systematic thinking approach to solve the research problem.

The hospital is presented as a part of the community in bidirectional relation as services provider (supplier) and benefits from the resources of the community, on the other side the community benefits from the hospital services – mainly patient care.

Evaluation, as shown, is the continuous control process needed to achieve continuous improvements as a way to provide quality health care through better management of resources.

Two evaluation loops are demonstrated in the model. The upper loop represents using the quantitative instruments (questionnaire), if a patient expresses his perception and satisfaction towards services in the hospital, an effective feedback will be created and will help leading the whole system towards patient satisfaction. The second evaluation loop is an activity control method to detect practices and measure deviations from standards, then to conduct corrective actions. This is a continuous process and executed on each patient case basis.

The lower loop represents the qualitative instruments (observation and interviews) which formed the data collection tool to activity based analysis. Results were used to measure time, material, and manpower utilization.

The phase of conducting the pilot study is not shown within the model; it was conducted as a pre-test to the quantitative instrument to develop relevant lines of the questions, and helped in developing the conceptual model as being one additional step to understand the operations in the hospital.

3-2 Research Methodology:

The initial steps in this research were conducted in December 2009, preparing for the requirements, selection of the problem, review of literature, developing the research question, defining the tools and techniques, and the availability and quality of data.

Conducting the research included primary data collection in which the adapted form of SERVQUAL questionnaire instrument was used. Then results of the analysis of the primary data and the data collected through controlled observations method and interviews were all used to analyze the recent operational processes of Alia Hospital as inputs to the study of the working practices (process, activities, and procedures). The secondary data are the annual report 2009 of the hospital and the annual reports 2007-2010 of the MoH.

This broad description of the research methodology is discussed in detail as being the four main phases or stations of the research. **They are:**

3-2-1 First Phase: Literature Review:

The problem had been defined; the related literature in the field of the research was reviewed to decide the best road-map to follow. The outcomes of this phase are, the instrument used to measure the operational quality of the service delivered in the hospital, the sample and data type.

Different studies described the overcrowding phenomenon in hospitals, their managerial solutions and models built a knowledgeable background to study and understand the normal operating state of Alia Hospital, and look forward to form the model of “Best Practices”. For this purpose controlled observation technique and interviews were conducted to study activities and resource utilization.

Most of the literature used the queue analysis approach to solve the crowding and random demand problems of hospitals. Others used the process analysis approach to solve operational problems within the hospital system, and the models of these researchers in the literature were adapted by the researcher. Three models in the literature had made the basis of the qualitative research:

1- Parasuraman SERVQUAL model in 1988 [3].

2- Cook model of Safety envelope 2005 [15].

3- Ferlie and Shortell conceptual model 2001 (Four-level Healthcare System) **[27]**.

3-2-2 Second Phase: Pilot Study:

A pilot study was conducted to 10 patients to test the reliability of the instrument. Validation testing of the instrument was through six experts' opinion: three management consultants, one physician, one paramedical, and one statistical consultant [appendix 1]. They were kindly asked to evaluate the 34 item questionnaire. Their notes were discussed and adapted.

The Cronbach alpha values for reliability for each of the five quality dimensions in the SERVQUAL questionnaire exceeded the threshold of acceptance **0.7** as recommended by Nunally 1978. **[11].**

The pilot study also led to a number of detailed changes in some questions as that of the monetary income of the patient. Modifications were made and misleading words were changed, for example the statement does not specify whether the employee is a nurse or a doctor. The method followed to complete the questionnaire was changed; the researcher manually filled all the questionnaires according to the verbal answers of the respondents. The respondent was asked first about his expectations for the

variables, and then he was asked about his perceptions about the variables of quality. Using this way the researcher got absolute values rather than relative values of both expectations and perceptions. This is closer to the way these terms are defined and gives more accurate results.

Then the complete edited questionnaire is given in the [appendix 1]. The sample characteristics are shown in chapter four.

3-2-3 Third Phase: Data collection and analysis:

1- A quantitative approach to assess and measure the gaps of the operational quality in Alia Hospital. The size of the gap indicates where improvements should take place to bridge the gaps. The SERVQUAL gap analysis model which defines five dimensions of service quality to measure, and their SERVQUAL questionnaire is used as measurement instrument. The necessary adaptation of the instrument was done to suite the characteristics of the case study.

2- Each statement is two parts, and represents one variable to ask the patient about his expectation and perception concerning that item of service. The patients were asked to express his expectation in a five point Likert scale. The level of his desire as (5) to "strongly want", and (1) to "strongly do not want". Also, the other section of the same question asked the patient to express his experience in the hospital about that service issue in a five point Likert scale ranging from (5) to represent "strongly agree" to (1) to represent "strongly disagree".

3- The questionnaire was headed by an introduction to kindly ask the patients to complete it, and to define himself in (10) demographic and situational questions. The questionnaire was tailed by other six questions to express some operational weaknesses (poor quality) she or he had experienced while receiving the medical treatment.

4- The thirty four items questionnaire was distributed to 118 patients at the end of August 2010 within two days. The questionnaire was filled by the researcher according to the patients' verbal answers, thus the 118 filled ones were all valid for the statistical analysis. They represented the research sample. The sample was chosen randomly in all the departments except the Pediatrics Department where all the patients were asked and responded to complete the questionnaire through the two random visits of the researcher to the department.

The respondents were asked to define themselves by answering the following eleven demographic and status questions shown in table 3-1 below:

Table (3-1): The Demographic and Status Variables of the Respondents.

Construct Variable	Attribute	Level
Gender	**Male**	Nominal
	Female	
Age	**( ) years**	Scale
Marital status	**Married** **Single** **Others**	Nominal
Case	**Patient**	Nominal
	Patient's relative	
Education	**University educated**	Ordinal
	School educated	
	Uneducated	
Length of stay	**1-2 days**	Ordinal
	3 days	
	More than 3 days	
Department of Admission	**Pediatrics**	Nominal
	Surgery	
	Internal Medicine	
	Obstetrics and Gynecology	
	Others	
Admission started in Root of Admission	**Emergency Department**	Nominal
	Out patient Clinics	
	1st time	Ordinal

Number of admissions	**2nd time**	
	3rd time or more	
Method of Payment	**Insurance**	Nominal
	Others	
Residency	**Hebron City**	Nominal
	Hebron District	
	Others	

5- Data Analysis:

The collected cross sectional data were analyzed by a statistical software package; results are used in chapter four and five for interpretation and discussion. Descriptive statistics were used to measure deviations in quality dimensions, average of means was measured related to departments to find out which inpatient department scored on average the largest gap.

while inferential statistics were used to test relations between variables;

Chi-Square Test: to find out the dependency of the gap size on the education level of the respondent.

Regression Analysis: to test if a relation between gap size and respondent's age exists or not.

To test the internal consistency or reliability of a set of two or more scale indicators, Cronbach's Alpha is used. And values are shown in table (3-2) below:

Table (3-2): Cronbach's Alpha Values

Quality dimension	Cronbach's Alpha
Tangibility Variables	0.812
Reliability Variables	0.791
Responsiveness Variables	0.889
Assurance Variables	0.794
Empathy Variables	0.746
Total	**0.953**

Generally, all Cronbach's Alpha values exceed the threshold value of acceptance as recommended (0.7). Then results were interpreted and used to plan for the next fourth phase of the research.

3-2-4 Fourth Phase: Process Analysis:

Activity based Analysis of the operating state of Alia Hospital:

Every hospital should have a system which can provide management with information necessary to plan and control efficient patient care and efficiently manage the hospital. Many factors affecting utilization help in identifying aspects of complex departmental relationships that are sensitive to changes, by relating their linkages to utilization. Different indices are used in the assessment of hospital utilization, but taken singly; none of them can give a proper picture of the utilization pattern.**[15]**

An operational approach is adapted, and qualitative tools are used to find out the normal operating state. To understand the system in the hospital four patients were tracked by the researcher through all the different stages of the whole service process since his arrival to his discharge. Observation tool was applied to deeply understand the practices and the whole delivery process of care service in the hospital.

Four different patients were tracked, time of each activity was measured, and the sequence of activities was recorded. Then the actual process chart was made. Bottleneck resources were found in different areas of work.

Three interviews were conducted, one with the nursing director of the hospital as being one of the top management level, he participates in establishing the resource structure in the hospital. Another two interviews

were conducted with the nursing director of the pediatrics department. The third interview was conducted with the emergency department director.

The first interview aimed at knowing:

- The hospital policies to assign resource.
- The criteria of structuring resources.
- The follow up process used to track procedures.

The other two interviews in the pediatrics and emergency departments aimed at understanding:

- The detailed activities in the department.
- The daily routine activities and the nursing staff response actions due to work overload..
- On the other hand they were asked about the best practices they would apply in case of having sufficient time and resources.

The nursing resources were chosen as a human resource sample for the interviews and job analysis because they are the key managers of daily operations, and have the highest interaction with the patients in the whole delivery process of care services.

The Pediatrics Department and the Emergency department were the sample of working areas in the hospital. The Pediatrics Department was chosen for analysis for the following reasons:

- On average, Pediatrics Department is working over occupancy rate. Thus it is more representative to the research problem.
- Gaps in quality in this department scored high deviation from patients' expectations as a result of the previous stage in (quality measurement stage).

To understand the big picture of the whole process to deliver care services in Alia Hospital, analysis were conducted to the emergency department where inpatients must pass through first.

Activity based time and resource analysis were conducted to evaluate the current whole process in the hospital to answer the questions (What is?) and (What could be?), and in between the weaknesses will be diagnosed and the proposed actions are suggested.

Chapter (4)

Results and Analyses

4-1 Results and Analyses of Measuring Quality

4-1-1 Introduction and objectives:

In this chapter the collected primary data of (118) patients are sorted, analyzed, and presented to:

1- Find out The gaps in each variable of quality.

2- Catch the largest gap in the five dimensions of quality.

3- Determine which is the most inpatient department that suffers the largest gaps in behind patient's expectation.

4- Determine the cause and the functional area of delay.

5- Locate the cause and type of errors, the patient experienced through treatment.

4-1-2 Sample Characteristics:

This study aimed at finding the negative impact of over demand operational state on quality. Governmental hospitals were the chosen organizations to achieve this goal, and specifically the 216 beds of Alia Hospital was a case study for this research. Cross-sectional data was collected in two day from118 respondents. The introductory (10) questions were used to investigate the individual differences between respondents. They are labeled (P1 through P10), where (P) stands for personal attribute. The sample characteristics are shown in table 4-1 below:

Table (4-1): The Sample Characteristics.

Construct Variable	Attribute	Frequency	Percent %
Gender	**Male**	36	30.5
	Female	82	69.5
Case	**Patient**	46	39.0
	Patient's relative	72	61.0
	Married	101	85.6

Social Status	**Single**	11	9.3
	Others	6	5.1
Education	**University educated**	23	19.5
	School educated	79	62.7
	Uneducated	20	16.9
Days of stay	**1-2 days**	77	63.3
	3 days	12	10.2
	More than 3 days	29	24.6
Department of Admission	**Pediatrics**	60	50.8
	Surgery	24	20.3
	Internal Medicine	11	9.30
	Obstetrics and Gynecology	14	11.9
	Others	9	7.60
Admission started in (patient pathway)	**Emergency Department**	98	83.1
	Out patient Clinics	20	16.9
Number of admissions	**1st time**	50	42.4
	2nd time	22	18.6
	3rd time or more	46	39.0
Method of Payment	**Insurance**	110	93.2
	Others	7.0	5.90
Residency	**Hebron City**	45	38.1
	Hebron District	72	61.0
	Others	1.0	0.80

4-1-3 Calculation of Gaps in Operational Quality:

Five point type Likert - Scale was used to score both expectations and perceptions in an ascending pattern, ranging from (1) to represent strongly disagree, and (5) to represent strongly agree.

For each statement of the questionnaire:
"Tan" stands for tangible variable. "Rel" stands for reliability variable. "Res" stands for responsiveness variable. "Ass" stands for assurance variables. And "Emp" stands for empathy variables. All variables are defined later in appendix (2)

Gap score = Perception – expectation

G = P-E

(Very Good quality) **4 > G >- 4** (Very Poor quality)

Where: ***G = 0*** *when performance meets expectation. (Satisfied)*

G = - 4 *when performance highly lags behind expectation. (Unsatisfied)*

G = 4 *when performance highly leads expectation. (Surprised)*

By summing the gap scores of all the statement of the questionnaire service quality is measured:

$$\textbf{Average Gap Score} = \{ \sum_{x=1}^{n} (P_x - E_x) \} / n$$

Where: P_x *is the rating of performance corresponding x statement in the questionnaire. And* E_x *is the rating of expectation corresponding x statement in the questionnaire.*

Table (4-2): Average Tangibles SERVQUAL Score

Results of Tangibles' Deviation						*Deviation Gap*
Expectation			*Perception*			
Variable	*Std. Deviation*	*Mean (Me) Expectation*	*Variable*	*Std. Deviation*	*Mean (Me) Perception*	
Tan.1a	.760	4.50	Tan.1b	.772	4.21	- 0.29
Tan.2a	.618	4.70	Tan.2b	1.186	3.76	- 0.94
Tan.3a	.788	4.42	Tan.3b	.983	3.44	- 0.98
Tan.4a	.882	4.64	Tan.4b	1.504	3.08	- 1.56
Tan.5a	.725	4.53	Tan.5b	1.002	3.93	- 0.6
Tan.6a	.563	4.64	Tan.6b	.899	4.17	- 0.47
Tan.7a	.700	4.64	Tan.7b	1.129	3.84	- 0.8
Tan.8a	.758	4.15	Tan.8b	.832	3.44	- 0.71
Tan.9a	.628	4.67	Tan.9b	1.106	3.64	- 1.03
Tan.10a	.673	4.36	Tan.10b	.772	4.05	- 0.31
					Sum	- 7.69
					Average Gap **P-E**	**- 0.769**

It is "**The cleanness of Toilets**" statement that scored 1.56 gap, it is the maximum deviation between all tangibility variables, where managers of Alia Hospital should prioritize their attention.

The statement "**availability of drugs**" had scored (1.09) gap, it is the maximum gap between all reliability factors (please see table 4-3 below). Interviews conducted also shows sometimes the pediatrics department suffers from the lack of drugs.

Table (4-3): Average Reliability SERVQUAL Score

Results of Reliability Deviation						Deviation
Expectation			Perception			
Variable	Std. Deviation	Mean (Me) Expectation	Variable	Std. Deviation	Mean (Me) Perception	
Rel.1a	.629	4.78	Rel.1b	1.124	4.03	- 0.75
Rel.2a	.661	4.64	Rel.2b	1.116	3.95	- 0.69
Rel.3a	.546	4.77	Rel.3b	1.139	3.68	- 1.09
Rel.4a	.584	4.62	Rel.4b	1.112	3.86	- 0.76
Rel.5a	.528	4.70	Rel.5b	.880	4.17	- 0.53
Rel.6a	.878	4.29	Rel.6b	.943	3.67	- 0.62
					Sum	- 4.44
					Average Gap **P-E**	**- 0.74**

Table (4-4): Average Responsiveness SERVQUAL Score

Results of Responsiveness Deviation						Deviation
Expectation			Perception			
Variable	Std. Deviation	Mean (Me) Expectation	Variable	Std. Deviation	Mean (Me) Perception	
Res.1a	.485	4.76	Res.1b	1.102	3.98	- 0.78
Res.2a	.721	4.66	Res.2b	1.091	3.99	- 0.67
Res.3a	.647	4.69	Res.3b	1.070	3.98	- 0.71
Res.4a	.667	4.61	Res.4b	1.052	3.50	- 1.11
Res.5a	.699	4.57	Res.5b	1.088	3.76	- 0.81
Res.6a	.571	4.71	Res.6b	1.152	3.97	- 0.74
Res.7a	.714	4.63	Res.7b	1.292	3.47	- 1.16
Res.8a	.677	4.63	Res.8b	1.230	3.57	- 1.06
Res.9a	.748	4.51	Res.9b	1.057	3.70	- 0.81
					Sum	- 7.85
					Average Gap **P-E**	**- 0.982**

The statement "**ability and easiness to communicate with nurses**" had scored 1.16 gap, it is the maximum gap between all responsiveness factors (please see table 4-4 above). Interviews conducted also shows no communication tool between patient's bed and nurses in the pediatrics department.

Table (4-5): Average Assurance SERVQUAL Score

Results of Assurance Deviation						Deviation
Expectation			Perception			
Variable	Std. Deviation	Mean (Me) Expectation	Variable	Std. Deviation	Mean (Me) Perception	
Ass.1a	.505	4.75	Ass.1b	1.002	4.11	- 0.64
Ass.2a	.520	4.63	Ass.2b	.885	4.05	- 0.58
Ass.3a	.590	4.65	Ass.3b	1.010	4.07	- 0.58
Ass.4a	.579	4.64	Ass.4b	.853	4.20	- 0.44
Ass.5a	.566	4.49	Ass.5b	.827	4.00	- 0.49
					Sum	- 2.73
					Average Gap **P-E**	**- 0.546**

The statement "**availability of trusted and knowledgeable doctors**" had scored 0.64 gap, it is the maximum gap between all assurance factors (please see table 4-5 above).

Table (4-6): Average Empathy SERVQUAL Score

Results of Empathy Deviation						Deviation
Expectation			Perception			
Variable	Std. Deviation	Mean (Me) Expectation	Variable	Std. Deviation	Mean (Me) Perception	
Emp.1a	.725	4.53	Emp.1b	1.160	3.69	- 0.84
Emp.2a	.494	4.74	Emp.2b	1.019	4.15	- 0.59
Emp.3a	.636	4.64	Emp.3b	.995	4.03	- 0.61
Emp.4a	.534	4.69	Emp.4b	.941	4.05	- 0.64
					Sum	- 3.17
					Average Gap **P-E**	**- 0.793**

The statement "**nurses explain and advice the patient kindly**" had scored 0.84 gap, it is the maximum gap between all empathy factors (please see table 4-6 above). Interviews conducted also show that working stress in

the pediatrics department pushes the nursing staff towards automated humans doing their jobs.

The whole average gap scores measured

for all the 34 variables of quality is:

{- (7.69 + 4.44 + 7.85 + 2.73 + 3.17)}/34 = - 25.88/34 = - 0.77

Interpretation: Generally, results show considerable deviations of the service delivered in all the dimensions of quality. It is worth to note the following:

1- *The largest average gap score is measured in the responsiveness variables, (0.982). More specifically, the two variables Res7 and Res8 scored more than (1.0) which deal with quick response of nurses and the availability of easy method to communicate nurses have the highest gap scores in between all variables. This is an issue related to the nurse care services and should be surfaced.*

2- *The smallest average gap score is measured in the assurance variables, (0.546). More specifically, this will encourage the management of the hospital to prioritize their attention towards other quality factors.*

All these points share a common cause of high work pressure, and high service demand which already exceeds the design and effective capacity of Alia Hospital and creates a state of continuous challenge for continuous improvements.

4-1-4 The largest SERVQUAL Gap between the departments:

Average means of quality gaps were measured to find out the average gap score of each inpatient department. Results are shown in table (4-7). Results are drawn in figure (4-1) below where best results of quality are in the internal medicine department and “others” as E.N.T department.

Table (4-7): SERVQUAL Score related to department

Inpatient Department	N	Gap = P-E
Pediatrics	60	**-.9300**
Surgery	24	-.7679
Obstetric and Gynecology	14	-.7500
Medicine	11	-.3273
Others	9	-.2889
Total	118	-.7706

Interpretation: Again, R Cook and J Rasmussen study "The dynamic safety model to describe the feasible operating space for a socio-technical system within three boundaries that form an envelope". Confirms with the results that economic pressure "lack of equipment in the pediatrics department" and the workload pressure "the pediatrics department is almost always over occupied" pushes the operating state towards unacceptable performance.

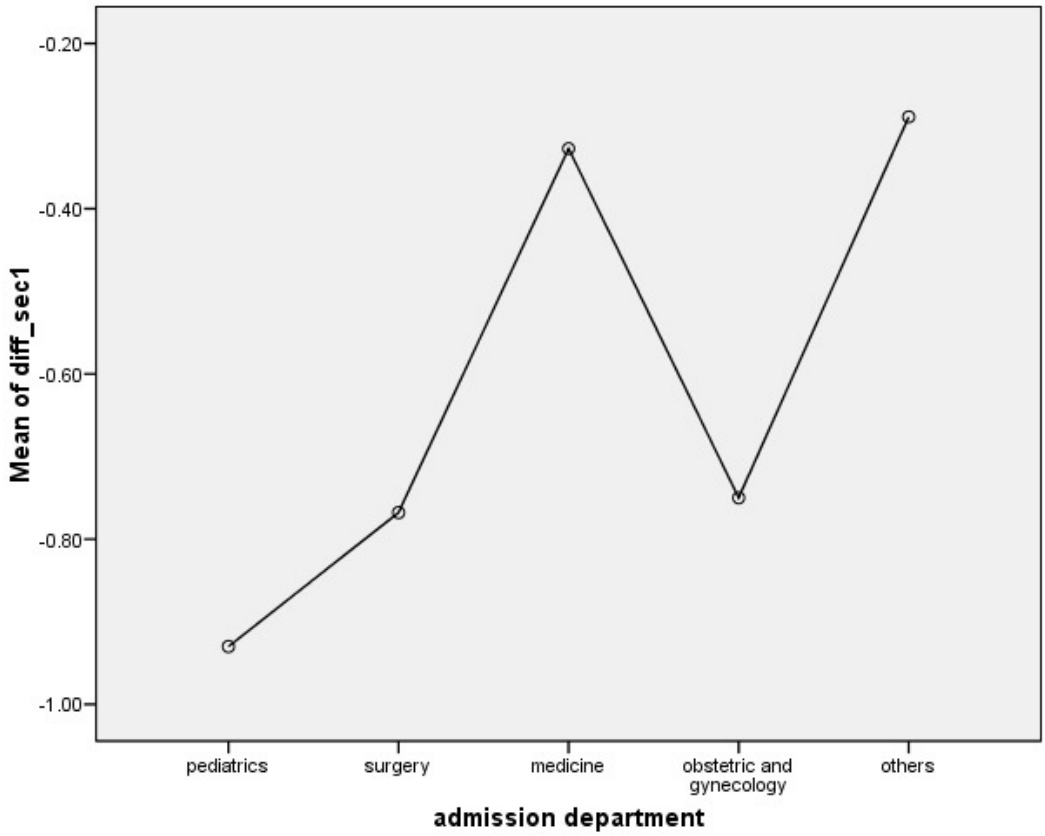

Figure (4-1): Deviations in quality measured in the departments.

Pediatrics department suffers the largest gap score, then, surgery and obstetrics departments come second, and this is a compatible result to the general question of the research. The pediatrics department is working over the design capacity.

4-1-5 Gaps in quality are not independent of the education level of the patients:

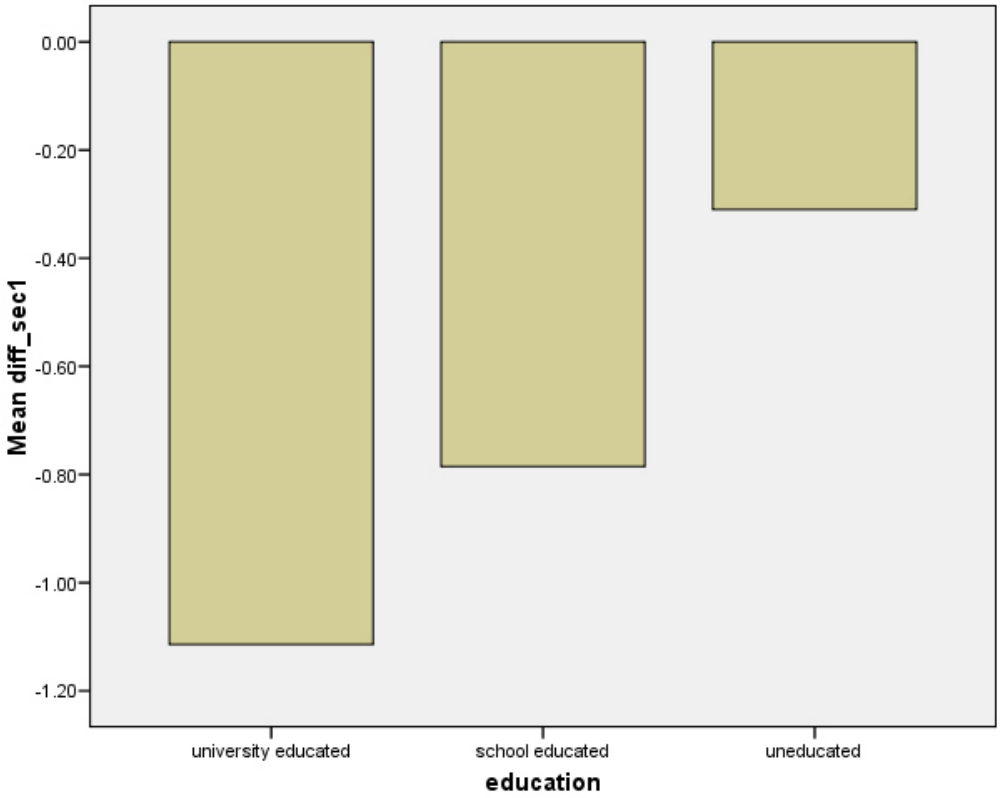

Figure (4-2): SERVQUAL Score related to educational level
X-axis: education level
Y- axis: gap scores

Interpretation: Chi-square test of the three groups of the respondents according to their level of education shows that quality gap scores are not independent of the respondents' educational level. The higher the respondent is educated the higher the gap score is. This is true and confirms

a hypothesis that well educated people score higher level of expectations of the service delivered. This result is graphically shown in figure (4-2) above.

4-1-6 Gaps in Quality are not correlated to the respondents' age:

Interpretation: Regression analysis of the age intervals showed no relation between age and gap scores of quality. The age data were left untreated since it is of no meaning to make age intervals to find out the relation between age intervals and gap scores of quality. Results of the regression analysis are drawn in Figure (4-3) below:

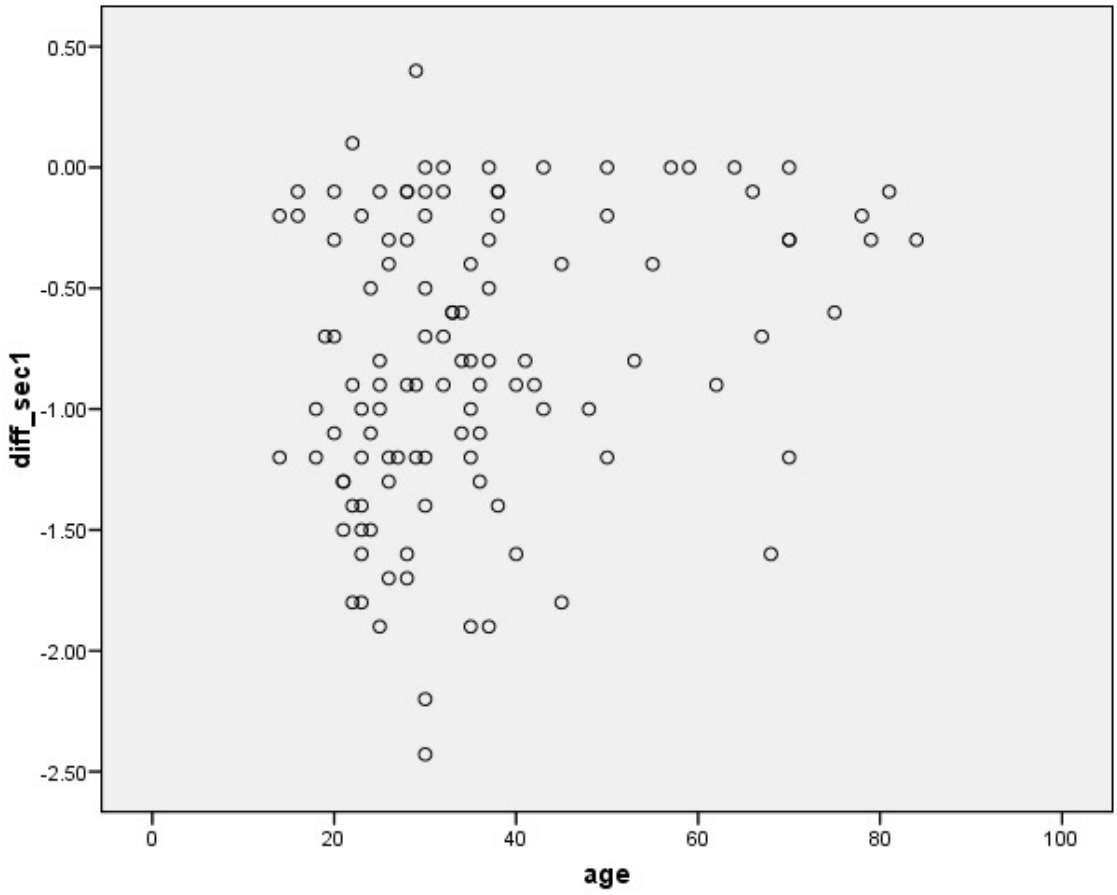

Figure (4-3): SERVQUAL Score related to the age
X-axis: age
Y- axis: gap scores

4-1-7 Causes of poor quality features and the related working areas as seen by the patients:

The last part of the questionnaire was implemented to investigate causes of poor quality in the hospital while asking about weaknesses the patient had subjected through the service delivery processes. They are labeled as (Q1 through Q6) in the questionnaire form.

The most frequent delays in the working areas.

Table (4-8): Frequencies of delays in the different working areas?

Where was a delay in the process?	Frequency	Percent	Valid Percent
Outpatient clinics	34	26.3	26.3
Emergency	16	13.6	13.6
Registration	24	20.3	20.3
Surgery	6	5.1	5.1
Award (Department)	25	21.2	21.2
Radiology	4	3.4	3.4
Laboratory results	8	6.8	6.8
No delay	4	3.4	3.4
Total	118	100.0	100.0

Interpretation: Results show three different working areas that suffer delay in the service delivery process. Two of them (in the outpatient clinics, and the inpatient Department) patients experience delays in getting served. While, the third shows a procedural delay in the registration process. Bottlenecks in the process of patient flow in the hospital are located in two different areas, the award and the registration department. The third "the outpatient clinics" is not within the scope of this research.

Delay Causes:

Table (4-9): Frequencies of causes of the delay?

Cause of delay	Frequency	Percent	Valid Percent
No doctor	20	16.9	16.9
Procedures (Internal Controlled Factor)	27	22.9	22.9
No nurse	4	3.4	3.4
No drugs	1	.8	.8
No bed	6	5.1	5.1
High demand (Externally Controlled factor)	57	48.3	48.3
no cause	3	2.5	2.5
Total	118	100.0	100.0

Interpretation: The above table of frequencies shows that the most frequent causes of delay are "high demand, procedures, and absence of a doctor." All these are operating capacity issues. High demand is out of hospital control, but the other two causes if managed effectively will decrease delay times and improve patient satisfaction.

Results of the last two questions (Tables 4-8 and 4-9) show the importance of managing both departments and procedures, this leads towards process / structure analysis for finding methods of improvement.

Medical Service Errors, what is the root cause of the error?

Interpretation: Figure (4-4) shows that (10) patient out of (118) respondents had experienced a medical service error, (8.4%), most of the error – six out of ten- are caused by the doctor -.

In Pediatrics Department- **Doctors** are the main cause of medical error.

In Obstetrics Department- **Nurses** are the main cause of medical error.

In Surgery Department- **Laboratory** is the main cause of medical error.

It is very high percentage in this industry when the target percentage is zero and only zero.

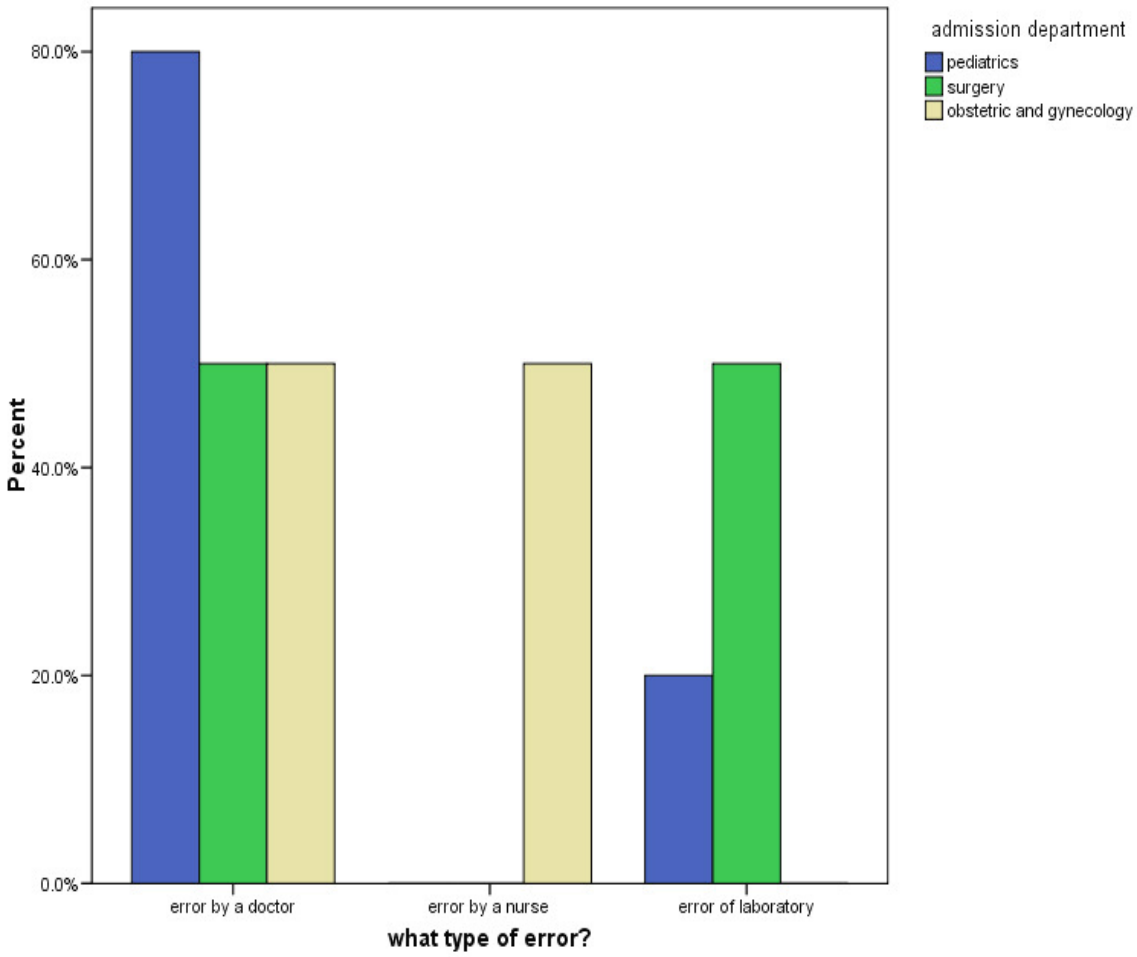

Figure (4-4): Cause of error and percentage of total errors, distributed according to department. X-axis: error made by – resource/department
Y- axis: percentage

Satisfaction, loyalty and reliability of the insurance system:

Respondents were asked to express their general opinions about the degree of loyalty, satisfaction and the reliability of the applied insurance system respectively, of Alia Hospital services by either "yes" or "no". These questions expressed the patient's response for his future healthcare needs if Alia Hospital will be his first choice (loyalty), and if he is going to advice others to get treated in this hospital (satisfaction), or if his health insurance document had covered his minimum healthcare requirements.

The results are as shown in table (4-10):

Table (4-10): The patients' response to general questions about their loyalty, Satisfaction and the applied Insurance System

Question	Variable	Description	**yes**	**no**
Q4	Loyalty	Alia Hospital is your first choice	71.2%	28.0%
Q5	Satisfaction	You will advice Alia Hospital to others	81.4%	17.8%
Q6	Insurance system	Do you think that the used insurance system offers the needed level of health care?	73.7%	22.9%

Interpretation: 81.4% of the respondents are satisfied. 71.2 % of them are loyal to Alia Hospital, while 73.7% of them think that the used system of medical insurance is effective. This percent of unsatisfied patients is compatible to the results of gap scores in the following sections 4-1-5. Assuming 31200 patients are treated in 2009, then, about 6000 of them are unsatisfied, which is assumed to be a high absolute number and a high percentage.

4-2 Capacity Management Analysis:
Activities – Time Analysis - Procedures and Resources

4-2-1: Introduction and Objectives:

The Rusmussen's safe operating envelope shown in figure (1-9) represents the start point of this phase. The phase of measuring quality had proved that gaps exist in the operational part of the service delivery process, and even some patients experienced medical errors. In this phase the researcher looked for causes of gaps through the actual process/structure analysis of the hospital. Analyses later show the resource bottlenecks and non-value added activities, and suggest the possible scenarios to manage them. The researcher followed time study approach to analyze activities, to decide the effects of overload pressure on employees and their behavior.

Time is a common variable that affects both quality and capacity management, it is the source of value for the patients "customers" and time of skilled employees is the main resource of the health service provider. An hour lost in the bottleneck resource is an hour lost for the whole operating system. This answers the question of Why time analysis? It is the control variable that if efficiently managed will achieve the research objective.

The objectives of this section of the research are to answer the following questions:

1- How can the normal operating state of Alia Hospital be described, in terms of practices in the whole service delivery process?
2- What are the alternative practices "best practices" that if applied would improve quality?
3- How could changes be made towards best practices within the same resources?

4- What are the minimum additional resources needed to meet patients' requirements and minimum organizational requirements to achieve better out comes?.

To answer these questions, the data used in this section are from four major sources:

1- The secondary data of Alia Hospital, mainly, the annual report 2009, the organizational structure of Alia Hospital will be used.
2- The results of Quality Gap Analyses found in section 4-1 of this chapter.
3- The observation notes through the researcher's multi visits to the hospital?
4- The interviews conducted with the emergency department director, the pediatrics nursing director, the registration director and the nursing director of the whole hospital. These employees have the most counter intuitive actions in the complexity of high demand and shortages of resources.

4-2-2: Emergency Department (ED) Process Analysis:

The ED works to provide emergency medical services either in the department itself or as an input stage to the inpatient departments when the initial diagnosis of the patient shows the need for admission.

The ED works 24 hours a day, 7 days a week, in three daily shifts normally named A,B, and C shifts. The ED of Alia Hospital has an annual load to serve more than 115000 patients, according to hospital statistical report 2009. Out of them 88000 patients didn't need admission. Which means that on average the ED serves 300 patients per day.

Two interviews were conducted with the director of the emergency department; he is a resident physician in pediatrics and managerially acts as

the line manager of the ED. He is in contact with both higher managers and the patients, he prepares the schedule of shits A,B, and C. The researcher also observed the operations and followed patients' pathways in the emergency department for four different times, each in different operating shifts. The results of this stage were used to fully understand the actual process flow. Activities were timely analyzed to find out the operating capacity, and capacity constraints.

The ED has the following main operating characteristics described in tables (4-11) and table (4-12):

Table (4-11): Resources in the emergency department.

Numbers are the outcomes of the interview.

Resource	Total for the 24 hours	Shift A	Shift B	Shift C
Doctors	7	2-3	2	2
Nurses	16	4	3	2
Beds	10	10	10	10
Triage Nurse	Part of the 16 nurses	1	1	1
ED Worker	3	1	1	1

There are thirteen activities the patient must pass through to start admission in the inpatient department; it takes him on average 50 minutes to pass assuming no queues. Nine activities out of the 13 are non-value added activities and consume 29 minutes of the total 50 minutes.

Table (4-12) below lists the activities each inpatient should pass through in the emergency department in sequence. The table also shows who does the activity? How many employees are available? And average time for each activity:

Table (4-12): Sequence of Activities Conducted in the Emergency Department.

Numbers are the outcomes of the interview.

#	Activity	Who does the activity?	Resources	Av. time (min)
1	Triage paper work	Triage nurse	1	1
2	Triage verbal history – cause*	Triage nurse	1	2*
3	Vital signs measure*	Triage nurse	1	4*
4	Registration for ED services	Registration employee	1	5
5	MD test (bed) and medical samples, support *	MD & RN	2	12*
6	Paper works (no admission)	MD	2	3
7	Call for specialist	Emergency Doctor	2	1
8	Shake hands (specialist & MD)	MD	1	2
9	Shake hands (specialist & MD)	specialist	1	2
10	Specialist test and pre-diagnosis*	specialist	1	3*
11	Paper works "Prepare PT's file and history"	specialist	1	10
12	Register for admission	Registration employee	3	5
13	Go to inpatient department	Worker or the patient	1	Variable
	Total time			**50 min**

MD: Physician, RN: registered nurse, ED: emergency department. PT: patient. * Value added activity.

The present process flow of the ED is shown in figure (4-5) below. It seems to be smooth and easy followed by the staff and the patients. But actually that is not the situation. Actual behaviors are discussed below.

While visiting the ED the researcher observed the following behaviors and their negative consequences:

1- Patient almost always start going to the nurse station, in stead of triage station. This makes him wait for the nurse to guide him to the triage. This phenomenon is a layout weakness. The following negative consequences appear:

a- The patient spends more time.

b- More nurse time is lost.

c- Continuous crowding in front of the nurse station.

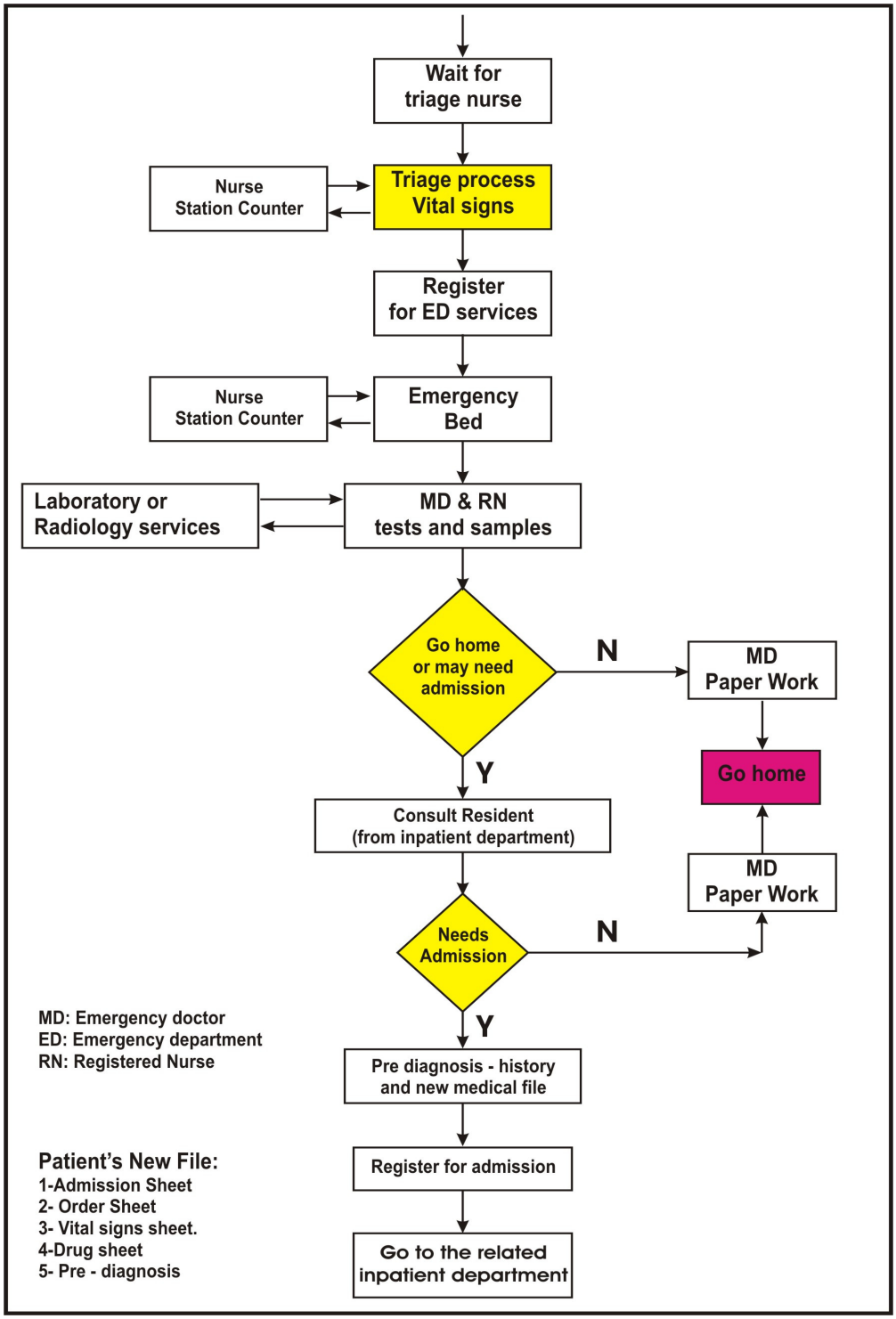

Figure (4-5): The Present Process Flowchart in the emergency department of Alia Hospital

This chart is prepared by the researcher , patient flow was followed .

2- Patient finishes the triage stage and mostly, without knowing the next step, he goes to the nurse station again, in stead of being registered and assigned for defined emergency bed.

3- When a patient is registered she or he tries to find an empty bed and waits or asks for service.

4- Calling for a specialist for some cases takes a minute. But mostly there is a delay when he comes. This equally delays the usage of an emergency bed.

5- The emergency worker is responsible for taking the patient to the inpatient department. He serves all the patients and always comes late and delays the take off process of the patient from the ED. It is easily observed that his process is a bottleneck in the patient's pathway, which limits the operating capacity and delays patient flow.

6- The lack of "Daycare Unit" in which patients stay for hours for more tests and observation, after that the decision is finally taken either he goes home or needs admission. This unit has two major advantages related to workload:

a- It is a buffer stage that helps making load balance.

b- Decreases the number of inpatients, because initially all patients in this unit were inpatient, but now part of them may go home while others get admission according to the results of the additional tests.

7- Crowding in front of the stations in the ED causes the elimination of some steps in procedures, and damages patient individualization process.

Observations also depicted the need of layout redesign of the emergency department to smooth the patient and process flow; the weaknesses in the layout of the Emergency Department add more non-value added walks in the patient's pathway. The misalignment between the sequence of procedures and the position of the service stations doubles the distance of walk to arrive an emergency bed. This is cleared in figure 4-6:

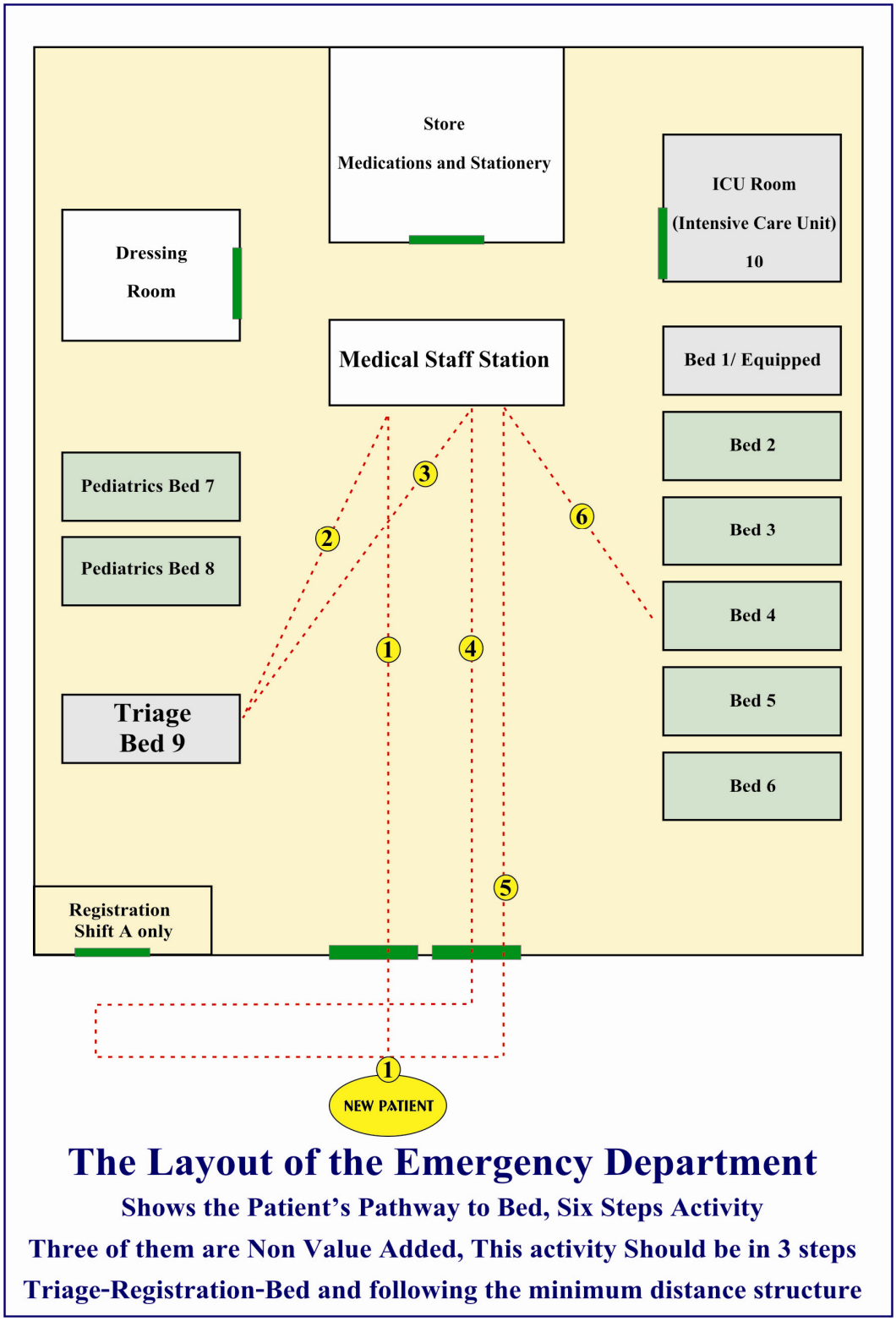

Figure (4-6) The layout of the Emergency Department-Prepared by the researcher

To avoid these negative consequences a proposed process flow to the emergency department is shown in figure (4-7) below. The management of non-value added activities which consumes 60% of the time is one of the

outcomes of using the Management Information System (MIS) which simply means the use of computer to communicate and show instant operational data and consequently make situational-based decisions. Communication channel between triage and nurse station will help facilitate patient flow. Effective use of the triage stage will help decision making and smoothing patient flow.

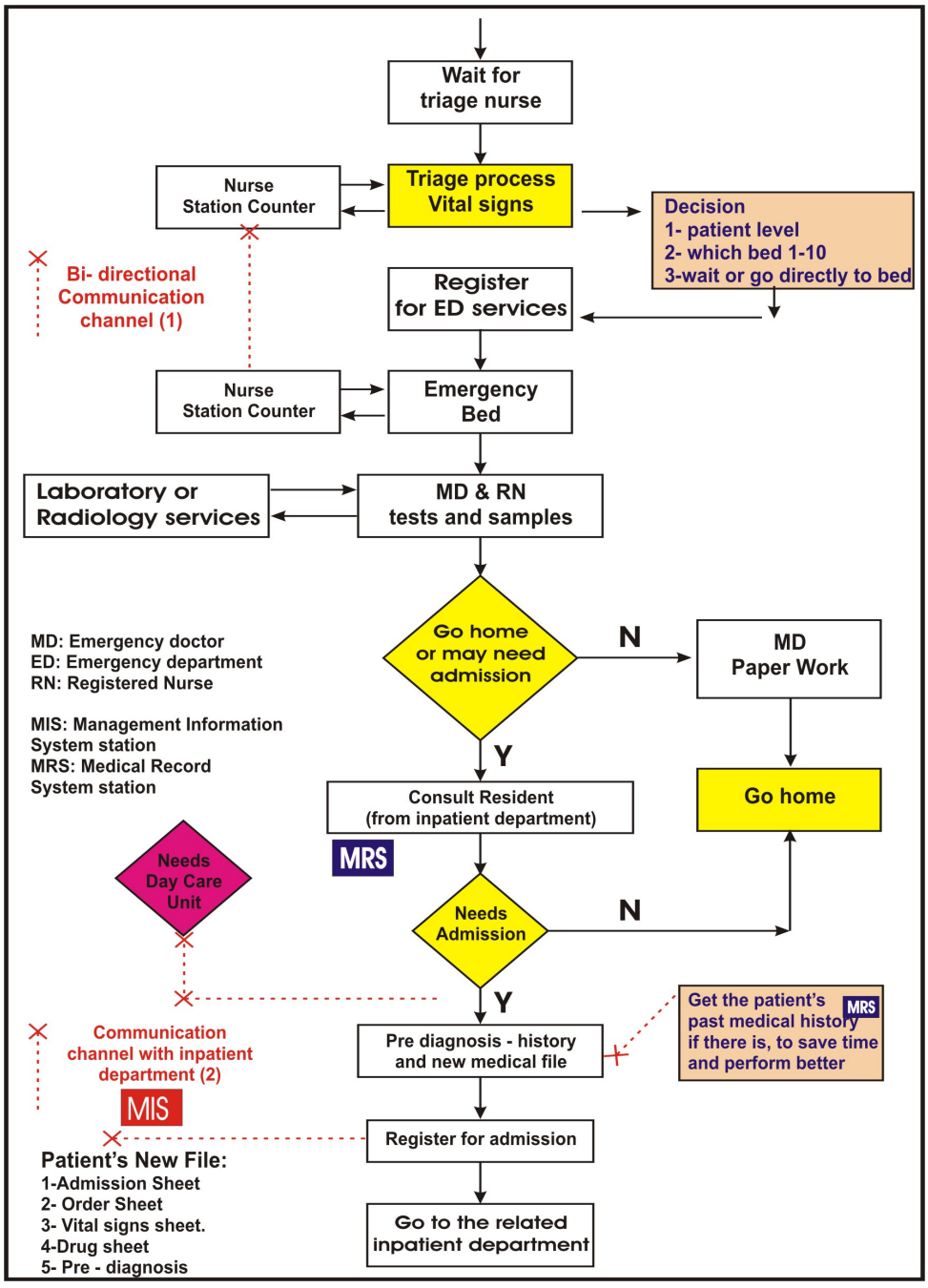

Figure (4-7): The proposed process flowchart in the emergency department of Alia Hospital

Prepared by the researcher.

Additional time-capacity analyses are carried out to find out the resource bottleneck to manage the patient flow process in the ED. The detailed activities of the ED shown in table (4-12) above had been timely analyzed to find out which station is the bottleneck of the whole process. Knowing the average daily demand and the load work needed, the bottleneck will be assigned. The detailed calculations are shown in figure (4-8):

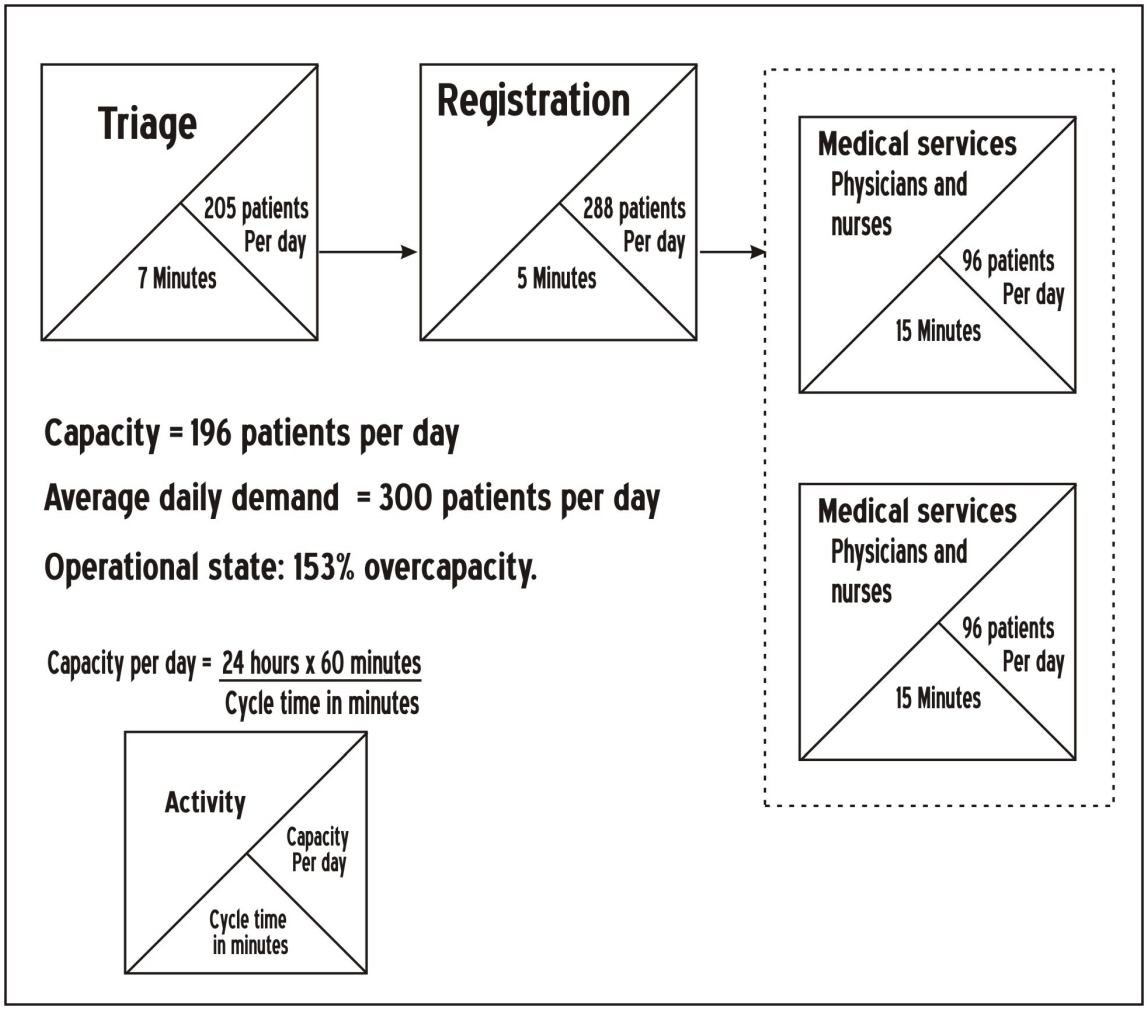

Figure (4-8): The activity time analysis of the emergency department of Alia Hospital

Prepared by the researcher.

From figure (4-8) it is clear that the **medical team** of "one physician and one nurse" who work together and share some activities to serve the patient represents the bottleneck resource. The ED needs at least one additional team of a physician and one nurse to have a capacity of serving

288 per day in stead of 192. But two additional teams will leave capacity caution and flexibility to manage break time, leaves, and vacations of the employees in one side and face surge in demand on the other side, and improve quality.

4-2- 3: The Pediatrics Department Process Analysis

The pediatrics department had offered 27,266 days of healthcare in 2009. It has 60 beds, and one equipped admission room of two beds. The department serves patients aged from one day up to 14 years old. On average the occupancy rate was 124.5%. Seasonality of the department is in winter mainly the months of December and January the peak demand is in these months, some days more than 100 patients are treated in 60 beds.

The researcher interviewed once one resident doctor and twice the staff nurse of the pediatrics department in the beginning ten days of January 2011. This department suffers the economic pressure mainly represented in the lack of medical equipment, sometimes lack of drugs, and the work overload pressure mainly on nurse staff. They perform a lot of activities, they are in continuous contact with patients, perform the doctors' orders, apply regular follow up and medications, make beds, and do paper works. Thus *Nurses are the key line managers during daily operation.* Lack of equipment in the department (insufficient number of Pulse Oxi Meters, thermometers, and medical monitors, they are available only in the AR, suction equipment, and sometimes drugs) represent the economic pressure that pushes the operating state of towards unacceptable performance.

The actual process flow chart of the pediatrics department is shown in figure (4-9). Resources mainly nurses are fully utilized and even almost

always over loaded in Shift A of work. All patients share one admission room services at the beginning, and then each patient is assigned to inpatient bed. There is no certain rule to assign a bed to a patient; it is only a nurse intuitional decision.

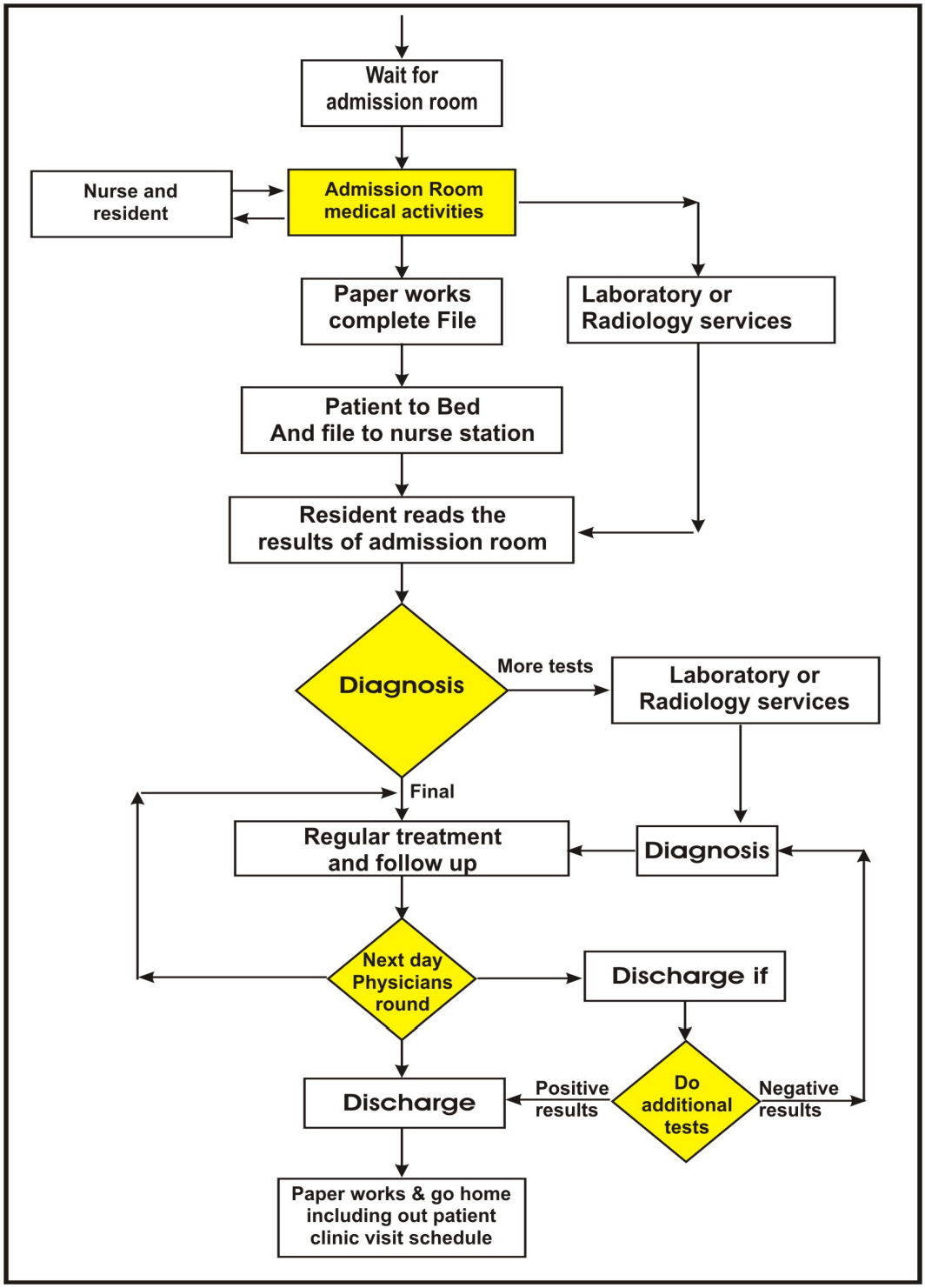

Figure (4-9): The actual process flowchart in pediatrics department of Alia Hospital

Prepared by the researcher.

The over load work pressure on nursing staff leads sometimes to cut the service scope. Activities are done some times in parallel in stead of sequentially to save time and procedures are broken other times, the lack of quality audit is of great importance, because of work overload pressure.

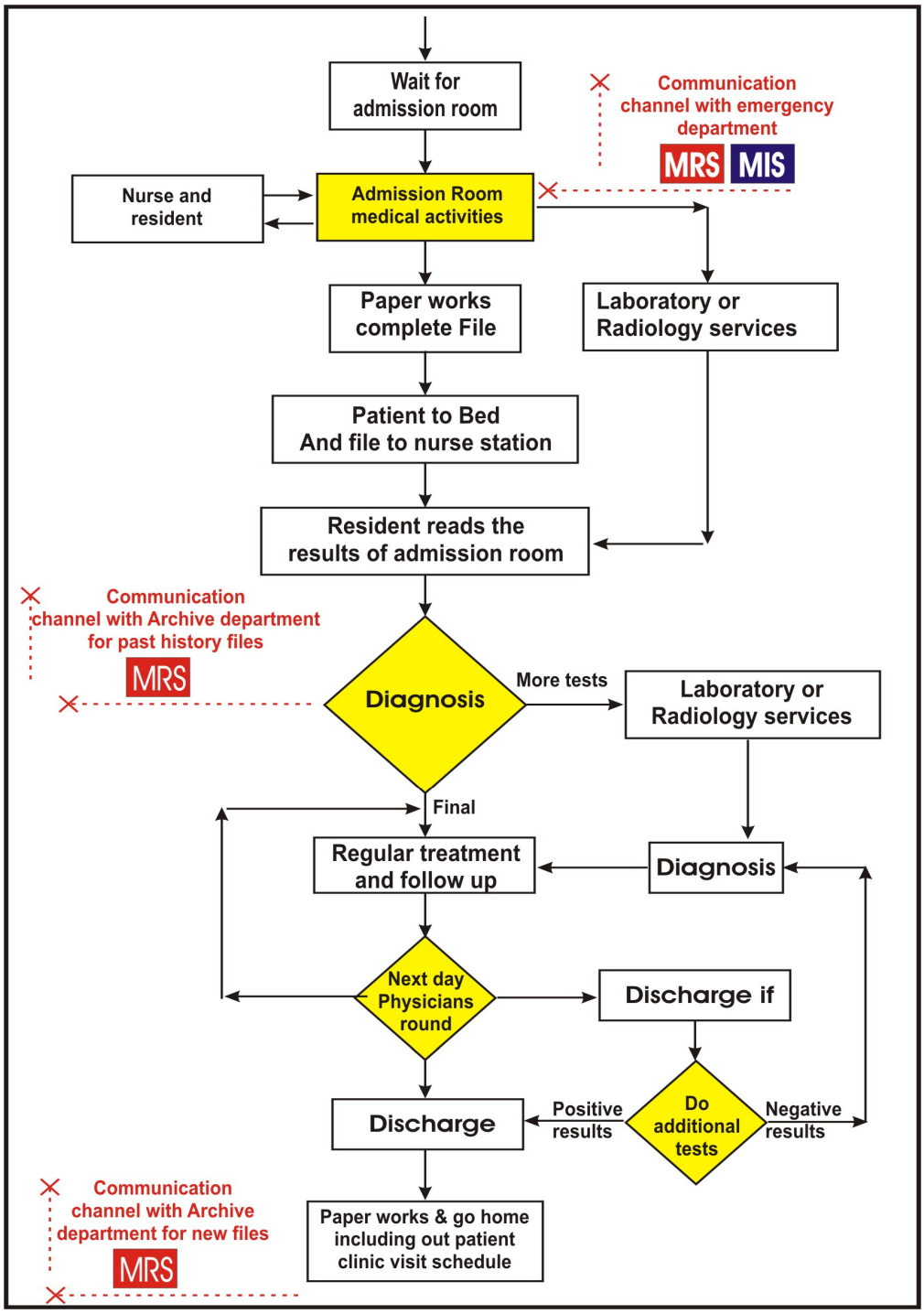

Figure (4-10): The proposed process flowchart in pediatrics department of Alia Hospital

Prepared by the researcher.

In addition to the need of resources determined later in this section, and the necessity of quality audit in the department to check the application of the procedures of each process. Figure (4-10) above shows a proposed process flow chart that interacts effectively with both Management Information System MIS and Medical Record System MRS, to balance the load and smooth patient flow.

The pediatrics department has the following main operating characteristics shown in table (4-13) below:

Table (4-13): Resources in the Pediatrics Department.

Numbers are the outcomes of the interview.

Resource	Total resource for the 24 hours	Shift A	Shift B	Shift C
Specialist	4	4	One On call	One On call
Residents	8	3	3	3
Nurses	19	Two in ward Two in AR + Staff nurse	Two in ward Two in AR	Two in ward Two in AR
Beds	60	60	60	60
Rooms	13	13	13	13
Worker	6	2	2	2

These resources are responsible of the activities shown in the process flow above. Time analysis will be conducted to the activities performed in the admission room. And the must be done daily activities that serves patients in beds in shift A to calculate the minimum required staff of nurses and to compare it with actual one.

Through interviews and observation, a queue of patients was in front of the AR, and in front of the nurse station. During the four visits

conducted by the researcher to the AR, nurses were available however, physicians were not observed.

For this reason the researcher followed the activities carried out by nurses, time analyses were conducted to determine the exact needs of nurses. It is worth mentioning that unbalanced distribution of total 196 nurses in the hospital is applied in the departments.

Table (4-14) below lists the activities each inpatient should pass through in the pediatrics department in sequence. Table also shows who does the activity? How many employees are available? And average time for each activity:

Table (4-14): Activities Conducted in the Admission Room.
Numbers are the outcomes of the interview.

	Activity	Who does the activity?	Staff to do this activity…	Average time (min)
1	Admission room (cannula)	RN	2	3
2	Admission room (vital signs measurement)	RN	2	3
3	Admission room (sample for Lab.)	RN	2	0.5
4	Admission room (weight & dimensions))	RN	2	0.5
5	Admission room (drugs)	RN	2	1
6	Admission room (test & diagnosis).	Resident physician	1	6
7	Admission room (paper works)	Resident physician	1	5
8	Arrange for a bed	RN	1	2
9	Take patient to bed	RN	1	3

RN: registered nurse./ Average time is estimated from the employees working in the admission room and the staff nurse of the ward.

Figure (4-11) below shows the time needed to operate the admission room, assuming no other constraints the operating load is 91% of the design capacity. But actual operating state showed patient queue in the admission room that is mainly because of:

1- The resident doctor assigned to be in the admission room was absent in four different visits, he is available only on papers, that

puts the nurse in a position to do his job which overloads the nurse more and affects negatively the outcomes.

2- Due to lack of nurses in the ward, nurses in the admission room share duties and responsibilities with them. That reduces the nurse resource capacity and creates a bottleneck.

3- The lack of monitor equipment in the rooms adds load to the admission room, and it is a waste of time to arrange for the patient to be monitored in the admission room and go back to bed.

4- The absence of the assigned physician in the admission room leads to routine activities to be carried out and determined by the registered nurse capability, this limits the outcomes and delays diagnosis and impacts quality.

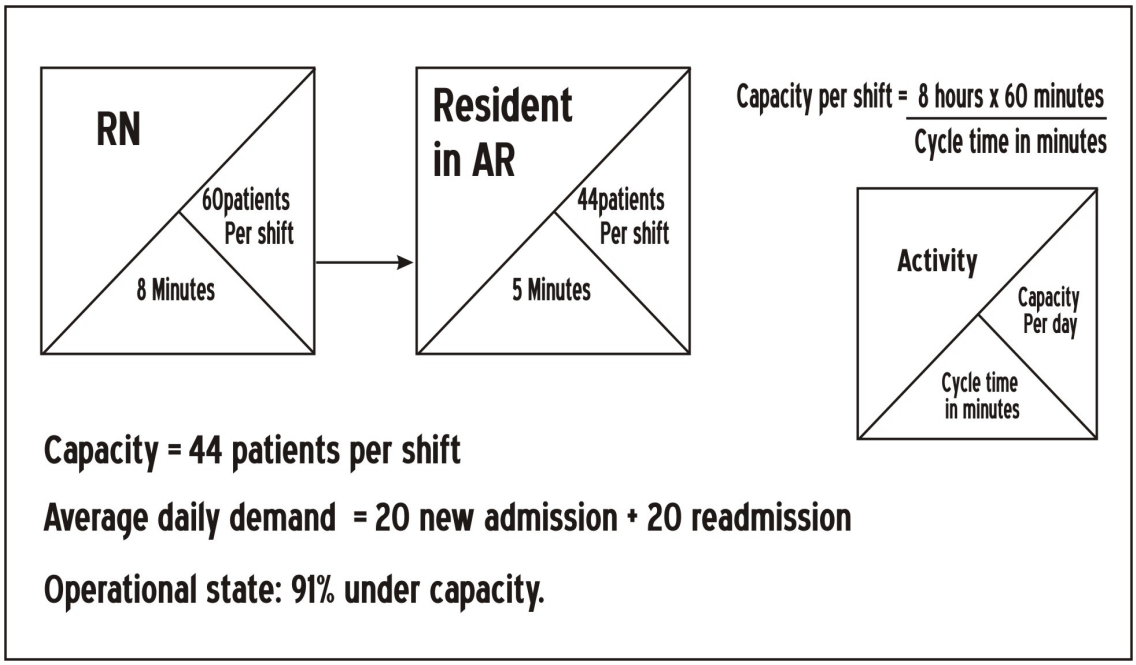

Figure (4-11): The Activity Time Analysis of the Admission Room in Pediatrics Department

Justification of the lack of nursing staff in the pediatrics department was conducted by the researcher in three different ways:

First: The number of human resources in this department is within the requirement of MoH for licensing **except for** the nursing staff. The

minimum requirement of MoH is three nurses per five beds per 24 hours, which is the sum of one registered and two trained nurses.

This condition puts the pediatrics department of Alia Hospital in need of (60/5) x 3=36 nurses, to get licensed and operate normally in full load. But since Alia Hospital is an MoH hospital, this licensing criteria is ignored.

Second: Time analysis of the activities done by the nursing staff showed the need for additional staff. In shift A the total nurse hours needed to serve 60 patients were (2160 minutes / 60) = 36 hours, the number of nurses in shift A should be **5** instead of **2** nurses, as shown in table (4-15) below:

Table (4-15): The time consumed to do the daily activities of nursing staff in the Pediatrics Department.

Activity in shift A	**Nurses' time needed to serve 60 patients (min) As it must be.**
Shake hands with shift C 7:30 AM	60x2=120
Bed making and dusting	60x3=180
Injection 9:00 AM	60x3=180
Medication and temperature measurement + signature	60x5=300
Patients' files distribution for the morning round	15
The round outcomes duty / tests	60 x 8=480
Discharge cases follow up	25x5=125
Results of laboratory to resident doctors	40
Injection 1:00 PM	60x3=180
Medication and temperature measurement + signature	60x5=300
Paper works	60x2=120
Shake hands with shift B 2:00 PM	60x2=120
Total	**2160 minutes**

Source of data: an interview with the nursing staff manager in the pediatrics department.

It is clear that this department is 40% nurse staffed, that leads to dangerous consequences due to all the compensation intuitional policies followed to cope with continuous high demand.

Third: The internal medicine department for example has 26 beds and served 7163 days of care in 2009. But 17 nurses are assigned to this department. It is a problem of resource structure in Alia hospital. The ratio of number of nurses related to beds is twice between the two departments, and the work load is one fourth of that in the pediatric department. The problem of lack of nurses accumulates and makes the unintended consequences of care, by either eliminating some activities or follow the minimum legal requirement they are responsible for.

Chapter (5)

Conclusions and Recommendations

In this chapter results of the study are discussed followed by the key conclusions and recommendations. The researcher proposes some further research that may provide additional insight into the quality of services in the governmental hospitals in Palestine.

5–1 Conclusions:

The workload in Alia Hospital was broadly hypothesized to be a cause of quality failures in the day–to–day operations. Different departments of Alia Hospital face the high degree of service demand even more than the designed capacity of the hospital. Results show that there is no sufficient evidence to reject this broad hypothesis. Results also show a considerable degree of gaps in all quality dimensions and deviation form perfect hospital behind patients' expectations, and the more crowded the department, the more the deviation from perfect performance – please see table 4-7. Coping with demand as the dominant daily objective made Alia Hospital seem to be more or less in equilibrium with supply matching demand hiding behind realities of weaknesses in delivering care services as shown in figure (4-4).

This research contributes to literature by viewing the interplay between resource utilization and quality. The side of quality is analyzed in a quantitative approach study to continuously evaluate quality and make the corresponding corrections. The side of resource management is analyzed in a qualitative approach to continuously evaluate loads and make the necessary time based load-resource balance. A little overload creates motivation, but continuous overload results in common attitudes toward

least effort and solid state of operation (no flexibility) in addition to the shifting in acceptance criteria level away from standards. This is a management challenge to balance trade-offs of utilizing human resources and the associated negatives of work pressure.

The literature in the field supports these results. R Cook, G Rasumussen (2005) suggested a managerial zone acts as safety region for patients' safety in the conditions of economic and workload pressures. For example, Turkey expends $ 647 per capita per year in 2007 (Selcen 2007) while Palestine expends $ 85 per capita in 2009 (Annual Report of MoH 2009 - Appendix 6) **[28]**, this explains the existence of economic pressure on the Governmental Hospitals in Palestine.

Patients in Alia Hospital had an attitude to receive health care services as commonly delivered. Value of the service is measured in their minds as being recovery to what they had already paid in advance for the Governmental Insurance System in the form of Salary Cut. From the researcher's perspective, this attitude towards governmental health services represents the main cause to lower their level of expectations. In spite of the presence of this phenomenon, still there is a considerable degree of gaps in quality, which biased the results towards bridging the gaps.

There is a lack of competent or sufficient resources in some areas (triage unit & admission room). This, by default, leads to routine processes which unfortunately is the dominant action in our case. The individualization of the patient and creativity of the service represent the health industry specific requirement. The lack of primary equipment like the thermometers in the pediatrics department impedes the medication routine process, and raises the implications of the existing nursing shortage.

"Quality healthcare is a goal all hospitals profess. But words should be translated into a chain of actions; actually these actions are of comprehensive and scientific means". Quality is not a magic output of declaration (Alia Hospital has a triage unit but management of this unit is not observed). It is a continuous improvement process starts at the grassroots and contributes to all management processes (planning, organizing, leading and directing, and controlling).

Quality needs the commitment of all working parties. Management should plan for high quality service, and should organize the process of achieving quality. Commitment of high level management is a must to direct and motivate quality, measures should be done and monitored carefully, and correction action must be made. All of that should be in a continues time frame (Regular meetings for line managers and top level management, and for managerial and professional employees are of great importance and not activated in Alia Hospital).

The management of Alia Hospital needs to follow the activities of each process in the different departments to eliminate the non-value added activities that will increase the resource utilization percentage. For example, a patient waits for the emergency worker to be transferred to inpatient department. This activity normally delays the patient in the emergency department because only one worker is available. Another activity for example, the patient looks for an available bed in the emergency department while the medical staff looks for a new patient between the unassigned beds; it is a waste of time for both the supplier of the service and the customer.

Organizations that quickly spot problems and correct them use less of their capacity, making things wrong and reworking them so they can

provide more dependable services and goods **[18]**. Through observations and interviews, a gap was found between what is written in a higher management level and how procedures and policies are actually processed. The absence of applying operational auditing system in Alia Hospital created uncompleted states of work and some skipped activities in a process assumed as being finished. Mangers are strongly advised to design and activate the auditing system to ensure that activities are done, procedures are followed, and outcomes are evaluated. This is one of the outcomes of effective communications between different levels of management. Effective communication between higher level management and line managers will be of great results in the "who will do what?" practice.

The use of advanced communication and information technologies in modern hospitalization is as important as the use of advanced technology in the medical equipment. The lack of Medical Record system in Alia Hospital is the cause behind the wasted time of professionals and handling non-value added activities. The lack of Information System in Alia Hospital makes it difficult to follow a scientific approach in decision making. These are tools of quality improvement for effective (right way of use) and efficient (best Utilization) management of resources. The lack of information system in Alia hospital delays statistics and run charts of effective use and generation of hospital statistics on daily and periodically basis instead of using statistics for legal and organizational coverage.

Results of improved responsiveness and productivity will be easily detected, less re-admission and increased utilization of resources. In addition to the nature of hospital's work to serve people's life, health care quality is a must and is of great value.

5-2 Recommendations:

Based on the results and conclusions, the following recommendations could be implemented to enhance the quality of healthcare in Ali Hospital. **The following recommendations are supposed to enhance operations in the Emergency Department:**

1. "Triage Nursing Process": Despite the fact that this process is applied in the emergency department, It should be managed in a way to achieve the following operational objectives:

   a. Triage nursing is a buffer stage where some cold (not urgent) cases may be delayed according to the level of severity to provide better capability of the emergency department to prioritize urgent cases mainly in times of excess demand.

   b. Emergency beds should be numbered from (1) to (10) and assigned in the triage stage to the patient to smooth the patient path way and eliminate misleading walks. A suitable layout should be planned and implemented.

   c. Trained triage nurse is needed in the triage unit.

   d. Effective communication between the triage nurse and the medical team of the Emergency department will be of great value.

2. There is a need to increase the number of emergency department medical staff, according to the study results**,** by one or two physicians and one or two nurses.

3. The day-care unit must be activated. This unit will be a buffer stage to partially absorb the excess load of the inpatient department and helps avoiding the push policy to the next stage when excess demand appears

in the previous stage. Figure (5-1) below shows the suggested structure for the patient flow in the emergency department.

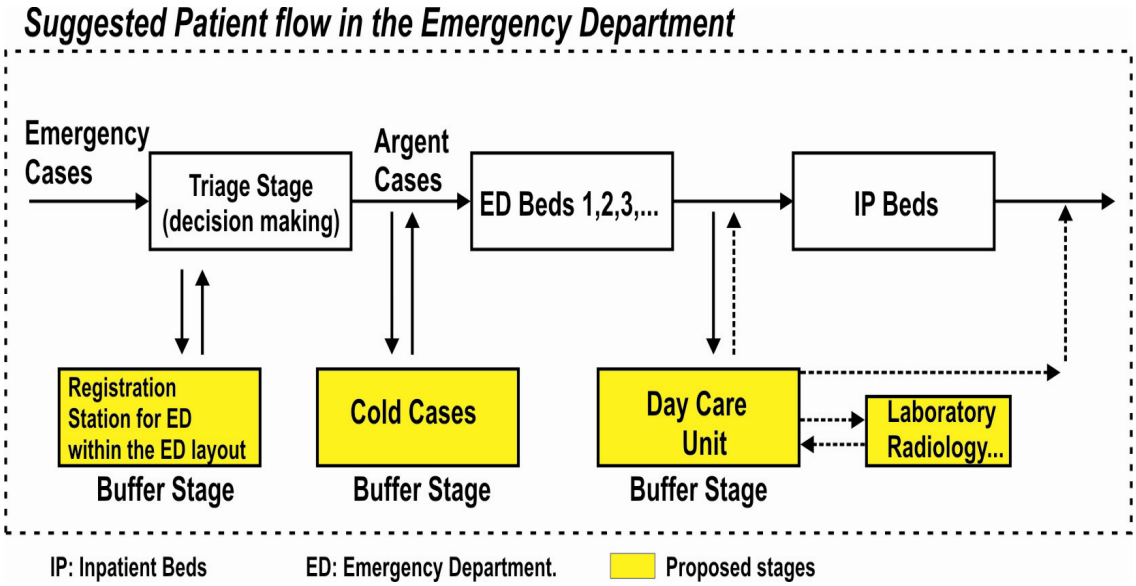

Figure 5-1: Proposed Process / Structure diagram in the Emergency Department

4. Beds numbering and patient assignment to a certain bed is a piece of requirement in the emergency department but of significant process smoothing results.

5. There is a need for a computerized data system in the emergency department which may save the registration time (bottleneck resource) and eliminate a lot of paper works.

6. Redesign of the Emergency Department layout to avoid all misleading paths will eliminate a lot of non-value added walks of the patients and the employees.

The following recommendations are proposed to enhance operations in the Pediatrics Department:

1. Alia Hospital needs to develop an effective and accurate approach to restructure the distribution of nursing staff in all of the working areas of the hospital. Nurses are the key employees of daily operations in a hospital. This will compensate for the lack of nurses in the pediatrics department.

The following factors represent the recommended approach for nursing staff deployment:

A. Severity of cases in the different departments.

B. Reconsidering allocation of nursing staff based on the number of beds per department and the average workload.

D. Provide cross training to support nursing capabilities and improve work flexibility.

2. There is a need for equipment in the Pediatrics Department, monitors and adequate number of thermo-meters should be available to save non-value added time of nurses.

3. The Pediatrics Department some-times suffer from lack of medications. Medications are the main physical resource for the hospital operations. Therefore the department needs medications-consumption plan, and management response plan.

4. A social employee in the Pediatrics Department will help and motivate mothers to share loads of serving their children. Mothers and nurses in the Pediatrics Department can achieve chain management in the healthcare process, both curative and preventive care.

5. Communication system between patients and nurses must be activated to increase responsiveness.

6. The hospital managers are advised to carry out quality audit steps. The Pediatrics Department needs at least regular management walk around to avoid procedure cuts or ineffective use of the Admission room.

The following recommendations are proposed to enhance operations in the whole Hospital:

1. Alia Hospital needs to increase the number of staff in general. The Pediatrics Department needs at least 36 nurse-staff instead of 19 nurses to cover the legal requirements.

2. The managers of Alia Hospital are advised to plan for effective communication in the whole hospital. Two-way communication plan will serve the optimum utilization of interdependencies between departments, and serve as quality auditing tool.

3. Alia Hospital needs an effective use and generation of hospital statistics on daily and periodically basis instead of using statistics. Management Information System will serve this goal.

4. Medical Record System is an urgent need to the hospital to enhance the quality of healthcare. It will help in patient follow up process, eliminate non-value added activities, help in patient's file recovery process in case of readmission, and will enhance reliability of care.

5-3 Proposed Further Research:

Many questions had been raised while working in this research, and can be answered by further research. Some of these questions are of human resource management aspect, operational aspect, economic aspect, information technology aspect, and cultural aspect. The word hospital in the following suggested research titles stands for any governmental organization that delivers hospitalization services in Palestine to the population of patients.

1- The role of effective management of outpatient clinics to enhance quality of services in inpatient departments in hospitals.

2- The practical implications of implementing an electronic medical information system in the hospitals.

3- Is hospital archive management an effective technical quality tool in hospital management?

4- The economic status to apply make-or-buy strategy in the related hospitals and the quality implications of the strategy.

5- To what extent does the cultural behaviors of patients impedes delivering a high quality services in hospitals?

6- The effects of shared quality values between management and skilled professional employees on hospital performance.

7- To what extent does the governmental health insurance system serve providing a high quality healthcare system in hospitals?

8- Applying a matrix organization structure rather than functional in a modern hospitalization system.

9- How does networking the core medical departments of a hospital with the supportive paramedical departments solve resource bottlenecks?

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ملحق (1)

Appendix (1)

الاستبيان المستخدم لقياس

الفجوات الموجودة بين مستوى الخدمة المتوقعة والخدمة المقدمة

في مستشفى عالية

يتقدم الباحث بالشكر من السادة الأساتذة الأفاضل

لتحكيم الاستبيان وإبداء الملاحظات القيّمه.

	الاسم	العمل	العنوان
1-	الدكتور سمير أبو زنيد	أستاذ مشارك / إدارة أعمال	جامعة الخليل
2-	الدكتور شريف أبو كرش	عميد كلية التمويل والإدارة	جامعة الخليل
3-	الدكتور مروان جلعود	كلية العلوم الإدارية ونظم المعلومات / إدارة أعمال	جامعة بوليتكنك فلسطين
4-	الدكتور عبد الحكيم عيده	كلية العلوم / إحصاء	جامعة القدس / أبو ديس
5-	الدكتور إبراهيم الهور	المجلس الطبي الفلسطيني	طبيب باطني في مستشفى الخليل الحكومي (عالية)
6-	أ. رفعت طهبوب	مدير الطب المساند	مستشفى الخليل الحكومي (عالية)

بسم الله الرحمن الرحيم

جامعة الخليـــل
كليـــــة الدراسات العليا
برنامج ماجستير إدارة الأعمال

استبيان رسالة ماجستير بعنوان:

تطوير جودة الخدمات المقدمة من خلال إدارة الطاقة الإنتاجية في المستشفيات
دراسة حالة: مستشفى الخليل الحكومي – عالية

Quality Improvement through Capacity Management
In Hospitals
The case study of Hebron Governmental Hospital (Alia)

تحية طيبة:

يتشرف الباحث أن يضع بين أيديكم إستبانة لقياس جودة الخدمات المقدمة في مستشفى الخليل الحكومي لاستكمال متطلبات الحصول على درجة الماجستير في إدارة الأعمال بجامعة الخليل بإشراف الدكتور سهيل سلطان والدكتور معتصم حمدان.

ولتحقق هذه الاستمارة أحد أهم أهداف الدراسة المتعلقة بقياس الفجوات الموجودة بين مستوى الخدمة المتوقعة والخدمة المقدمة في مستشفى الخليل الحكومي (عالية)، فهي تتكون من ثلاث مراحل تعنى بخمسة عناصر جودة الخدمات وهي:

1. **المظاهر المادية** (Tangibles) في المستشفى من حيث البناء، والأقسام، المعدات، والأشخاص، وأدوات الاتصال.
2. **المعولية (الاعتمادية)** ..(Reliability) مدى الاعتماد على دقة وجودة الخدمات المقدمة وسلامة المريض.
3. **الاستجابة** ..(Responsiveness) رغبة الموظفين في المستشفى لتقديم أفضل خدمة.
4. **التعهد والأمان**..(Assurance) التزام الفريق العامل في المستشفى بالعمل في إطار المعرفة والاحترام لإعطاء الثقة للمريض.
5. **التعاطف ومشاركة المشاعر** (Empathy).. **الاهتمام بالمريض، وخصوصيته.**

أرجو قراءة كل عنصر وعباراته، والإجابة عليه بكل موضوعية من أجل الحصول على نتائج دقيقة وصحيحة، علما بأن البيانات التي ستدلون بها ستعامل بسرية تامة ولأغراض البحث العلمي فقط وستعالج ضمن رزم إحصائية..

الباحث: وسيم إدريس سلطان

القسم الأول:

الخصائص الديمغرافية (معلومات عامة)

أرجو وضع علامة (✓) في المربع المناسب لاختيارك.

1- الجنس ☐ ذكر ☐ أنثى

2- الحالة الاجتماعية متزوج ☐ أعزب ☐ أرمل أو مطلق ☐

3- العمر ☐ سنة

4- مريض ☐ مرافق مريض [خاص بقسم الأطفال] ☐

5- مستوى التعليم / جامعي ☐ مدرسة ☐ غير متعلم ☐

6- عدد أيام الإقامة في المستشفى حتى الآن:

☐ 2-1 أيام ☐ 3 أيام ☐ أكثر من ثلاثة أيام

7- قسم العلاج ☐ أطفال ☐ جراحة ☐ باطني

☐ نسائية غير ذلك: .....

8- طريقة دخول المستشفى ☐ من خلال الطوارئ

☐ العيادات الخارجية في نفس المستشفى.

9- عدد مرات دخولك المستشفى ☐ الأولى ☐ الثانية ☐ الثالثة أو أكثر

10- العلاج على حساب ☐ التأمين الصحي الحكومي ☐ غير ذلك أذكر .....

11- مكان الاقامة مدينة الخليل محافظة الخليل غير ذلك أذكر .....

القسم الثاني: قياس مستوى الخدمة المرغوب بها والخدمة المقدمة:

في كل بند من الاستمارة أرجو تحديد مستوى الخدمة المقدمة والخدمة المرغوبة، حسب ما ترغب به ويلبي احتياجاتك، وحسب ما وجدت من خدمة مقدمة في مستشفى الخليل الحكومي (عالية) من جهة أخرى.. أرجو وضع (X) للاختيار الأنسب:

أولا: المظاهر المادية في المستشفى: Tangibles

#	الخدمة	المستوى المرغوب للخدمة					مستوى الخدمة المقدمة في عاليا				
		أرغب بشدة	أرغب	محايد	لا أرغب	لا أرغب بشدة	راضي بشدة	راضي	محايد	راضي غير	غير راضي بشدة
1	المظهر العام للموظفين مرتب ونظيف										
2	نظافة الغرف والأسرّة والأثاث										
3	نظافة وترتيب الطعام وأدواته.										
4	نظافة الحمامات والمرافق الصحية.										
5	نظافة أماكن الانتظار للعيادات.										
6	نظافة الممرات والمصاعد والدرج.										
7	التهوية في الغرف جيدة وصحية.										
8	توجد ممرات وأدوات لذوي الاحتياجات الخاصة										
9	المعدات الطبية المستخدمة مناسبة ومتوفرة										
10	اليافطات الإرشادية واضحة وسهلة القراءة وتدل على المكان الصحيح.										

ثانيا: المعولية والاعتماد على المستشفى في العلاج: Reliability

#	الخدمة	المستوى المرغوب للخدمة					مستوى الخدمة المقدمة في عاليا				
		أرغب بشدة	أرغب	محايد	لا أرغب	لا أرغب بشدة	راضي بشدة	راضي	محايد	غير راضي	غير راضي بشدة
11	لم اكتسب عدوى أثناء وجودي في المستشفى										
12	قام الموظفون في المستشفى بتقديم الخدمة التي وعدوا بها.										
13	الأدوية التي احتاجها للعلاج متوفرة في المستشفى.										
14	لا يوجد تحيز ويتم تقديم الخدمة الطبية بالتساوي لجميع المرضى.										
15	قام الممرضون بمتابعة الإجراءات التي طلبها الطبيب بدقة.										
16	يتم تقديم وجبات الطعام في مواعيد منتظمة.										

ثالثا: الاستجابة: Responsiveness

#	الخدمة	المستوى المرغوب للخدمة					مستوى الخدمة المقدمة في عاليا				
		أرغب بشدة	أرغب	محايد	لا أرغب	لا أرغب بشدة	راضي بشدة	راضي	محايد	غير راضي	غير راضي بشدة
17	حصلت على خدمة طبية فور وصولك.										
18	حصلت على سرير مباشرة بعد وصولك للقسم وبدون تأخير										
19	حصلت على العناية الطبية مباشرة عند وصولك للقسم.										
20	تظهر نتائج المختبر بدون تأخير.										
21	يتم تصوير الأشعة داخل المستشفى بدون تأخير.										
22	تمت الإجابة على تساؤلاتك الطبية بشكل واضح ودقيق.										
23	من السهل الاتصال بالممرضين وطلب الخدمة من على السرير.										
24	كان الممرضون حريصين على الاستجابة بسرعة لاحتياجاتك عند طلبك ذلك.										
25	في حالة طارئة من تطور مرضك تمت الاستجابة فورا من قبل الموظفين.										

رابعا: التعهد والأمان/الثقة: Assurance

#	الخدمة	المستوى المرغوب للخدمة					مستوى الخدمة المقدمة في عاليا				
		أرغب بشدة	أرغب	محايد	لا أرغب	لا أرغب بشدة	راضي بشدة	راضي	محايد	غير راضي	غير راضي بشدة
26	يثق المريض بالطبيب في المستشفى وأنه عالجه بطريقة مناسبة وصحيحة.										
27	يثق المريض بأن حالته الصحية ستتحسن قبل خروجه من المستشفى.										
28	يثق المريض بالممرضين لتقديم كل الخدمة اللازمة للمريض داخل المستشفى.										
29	يتم كتابة وتوثيق كل خطوات العلاج بملف المريض										
30	يثق المريض بأن الإجراءات المتبعة بالمستشفى ضرورية لخدمة أفضل.										

خامسا- التعاطف مع المريض ومشاركته المشاعر: Empathy

#	الخدمة	المستوى المرغوب للخدمة					مستوى الخدمة المقدمة في عاليا				
		أرغب بشدة	أرغب	محايد	لا أرغب	لا أرغب بشدة	راضي بشدة	راضي	محايد	غير راضي	غير راضي بشدة
31	يقوم الممرضون بالحديث عن مرضي، وإعطائي النصيحة الطبية مما يمنحني شعور بالراحة.										
32	تعامل الموظفون معي بأدب واحترام.										
33	كان العاملون في المستشفى حريصين على خصوصية المريض.										
34	تمت معاملة الزائرين لي بأدب واحترام.										

القسم الثالث: أرجو التكرم بالإجابة على الأسئلة التالية:

1- أكثر مرحلة انتظار وتأخير في تقديم الخدمة لك كانت:

☐	**عيادات خارجية**	☐	**التسجيل**	☐	**داخل القسم**	☐	**تصوير الأشعة**
☐	**طوارئ**	☐	**العمليات**	☐	**تحليل مختبر**	☐	**لا يوجد**

2- أذكر سبب التأخير في المرحلة المذكورة في البند (**1**):

☐	**عدم توفر الطبيب**	☐	**عدم توفر التمريض**	☐	**عدم توفر سرير**	☐	**لا يوجد**
☐	**الإجراءات الإدارية**	☐	**عدم توفر الأدوية**	☐	**اكتظاظ على طلب الخدمة**		

3- هل تعرضت لخطأ خدمة طبية ؟ ( ) نعم ( ) لا

إذا كانت الإجابة نعم أرجو تحديد نوع الخطأ ؟

☐	**خطأ طبيب تشخيص أو علاج**	☐	**خطأ مختبر**
☐	**خطأ تمريض**	☐	**خطأ نقل معلومات مريض آخر**

4- في حال اضطررت للعلاج مستقبلا، هل ستكون مستشفى عالية خيارك الأول؟ ( ) نعم، ( ) لا

5- إذا طلب منك ترشيح مستشفى للعلاج من قبل قريب أو صديق هل ستقدم عاليا كخيار أول؟ ( ) نعم، ( ) لا

6- حسب اعتقادك، التأمين الصحي يوفر مستوى الخدمة الصحية المطلوبة؟ ( ) نعم، ( ) لا

لكم الشكر والتقدير لتعاونكم.....

الباحث: وسيم ادريس سلطان

Appendix (2)

Statements of the Adapted Form of SERVQUAL Questionnaire used in the Research to Measure the Gaps of Operational Quality Alia Hospital

Variable	Label	Level
	Demographic Characteristics of the Sample	
p1	Gender	Nominal
p2	Marital status	Nominal
p3	Age	Scale
p4	patient or patient fellow “relative”	Nominal
p5	Education level	Ordinal
p6	length of stay in Alia till now.	Ordinal
p7	Admission department	Nominal
p8	Root of admission.	Nominal
p9	No. of admissions in this hospital till now.	Ordinal
p10	Method of payment	Nominal
p11	Residency	Nominal
	Tangibility Variables	
Tan.1a	Expect employees to be neat appearing.	Ordinal
Tan.2a	Expect clean room and beds.	Ordinal
Tan.3a	Expect clean food.	Ordinal
Tan.4a	Expect clean toilets.	Ordinal
Tan.5a	Expect clean waiting place in outpatient clinics.	Ordinal
Tan.6a	Expect clean, safe pathways and elevators.	Ordinal
Tan.7a	Expect fresh air and ventilation in the room.	Ordinal
Tan.8a	Expect path ways and tools for handicapped people.	Ordinal
Tan.9a	Expect suitable and modern looking equipment.	Ordinal
Tan.10a	Expect signs to be readable and easily leading.	Ordinal
Tan.1b	In Alia, employees are neat appearing.	Ordinal
Tan.2b	In Alia, clean room and beds.	Ordinal
Tan.3b	In Alia, clean food.	Ordinal
Tan.4b	In Alia, clean toilets.	Ordinal
Tan.5b	In Alia, clean waiting place in outpatient clinics.	Ordinal
Tan.6b	In Alia, clean, safe pathways and elevators.	Ordinal
Tan.7b	In Alia, fresh air and ventilation in the room.	Ordinal
Tan.8b	In Alia, pathways and tools for handicapped people.	Ordinal
Tan.9b	In Alia, suitable and modern looking equipment.	Ordinal
Tan.10b	In Alia, signs to be readable and easily leading.	Ordinal
	Reliability Variables	
Rel.1a	Expect safe environment and no infection in the hospital.	Ordinal
Rel.2a	Expect employees always do what they promised to do.	Ordinal
Rel.3a	Expect that drugs are always available.	Ordinal
Rel.4a	Expect no bias and all patients are treated equally.	Ordinal
Rel.5a	Expect nurses to follow responsibly the doctor's orders.	Ordinal
Rel.6a	Expect meals to be regular and always on time.	Ordinal
Rel.1b	In Alia, safe environment and no infection in the hospital.	Ordinal
Rel.2b	In Alia, employees always do what they promised to do.	Ordinal
Rel.3b	In Alia, needed drugs are always available.	Ordinal
Rel.4b	In Alia, no bias and all patients are treated equally.	Ordinal
Rel.5b	In Alia, nurses are responsible and they follow doctor's orders.	Ordinal
Rel.6b	In Alia, meals are regular and always on time.	Ordinal

	Responsiveness Variables	
Res.1a	Expect immediate service when arrived.	Ordinal
Res.2a	Expect a ready bed in the department when I come to inpatient dept.	Ordinal
Res.3a	Expect immediate follow up in the department.	Ordinal
Res.4a	Expect laboratory results within a time as promised.	Ordinal
Res.5a	Expect immediate radiology access if needed.	Ordinal
Res.6a	Expect clear and knowledgeable answers about my state of disease.	Ordinal
Res.7a	Expect easy to communicate nurses for service	Ordinal
Res.8a	Expect quick nurses response to my needs.	Ordinal
Res.9a	Expect immediate response in emergency.	Ordinal
Res.1b	Expect immediate service when arrived.	Ordinal
Res.2b	In Alia, a ready bed in the department when I came to the inpatient dept.	Ordinal
Res.3b	Expect immediate follow up in the department.	Ordinal
Res.4b	Expect lab. results within a time as promised.	Ordinal
Res.5b	Expect immediate radiology access if needed.	Ordinal
Res.6b	Expect clear and knowledgable answers about my state of desease.	Ordinal
Res.7b	Expect easy to communicate nurses for service	Ordinal
Res.8b	Expect quick nurses response to my needs.	Ordinal
Res.9b	Expect immediate response in emergency.	Ordinal
	Assurance Variables	
Ass.1a	Expect trusted and knowledgeable doctors	Ordinal
Ass.2a	Expect getting better in hospital	Ordinal
Ass.3a	Expect trusted nurse staff	Ordinal
Ass.4a	Expect accurate documentation	Ordinal
Ass.5a	Expect employees to follow perfect procedures	Ordinal
Ass.1b	In Alia, doctors are trusted and knowledgeable.	Ordinal
Ass.2b	In Alia, I am getting better in hospital	Ordinal
Ass.3b	In Alia, nurses are trusted	Ordinal
Ass.4b	In Alia, there is accurate documentation	Ordinal
Ass.5b	In Alia, employees follow perfect procedures	Ordinal
	Empathy Variables	
Emp.1a	Expect nurses to explain and advice me kindly.	Ordinal
Emp.2a	Expect polite & respectful employees.	Ordinal
Emp.3a	Expect patient's privacy.	Ordinal
Emp.4a	Expect employees to respect my visitors.	Ordinal
Emp.1b	In Alia, Nurses explain and advice me kindly.	Ordinal
Emp.2b	In Alia, Employees are polite & respectful.	Ordinal
Emp.3b	In Alia, There is patient's privacy.	Ordinal
Emp.4b	In Alia, Employees respect my attendants.	Ordinal
	Operational Variables	
q1	Delay point	Nominal
q2	Cause of delay	Nominal
q3.1	Medical error	Nominal
q3.2	What type of error?	Nominal
q4	Loyalty (Alia is my first choice)	Nominal
q5	Satisfaction (I will advice others to be treated in Alia Hospital)	Nominal
q6	Insurance system	Nominal

Appendix (3)

Distribution of hospital beds in Palestine (Annual report 2007 MoH)

Annex (62) Distribution of hospitals by specialty, governorate, sector and total beds, Palestine 2007

Hospital Name/Speciality	Governorate	Sector	No. of Beds
A) GENERAL HOSPITALS :-			
Dr.Sulaiman Martyeer Hospital	Jenin	MOH	123
Dr.Thabit Thabit Martyeer Hospital	Tulkarm	MOH	105
UNRWA	Qalqiliah	UNRWA	63
Rafidiah	Nablus	MOH	163
Al - Watani	Nablus	MOH	101
Al - Itihad	Nablus	NGO	61
Ev. Mission (Al Injeli)	Nablus	NGO	48
Ramallah	Ramallah	MOH	155
Khaled Tarifi	Ramallah	Private	14
Beit Jala	Bethlehem	MOH	113
Jericho	Jericho	MOH	54
ALKhaleil	ALKhaleil	MOH	182
Al Ahli	ALKhaleil	NGO	120
Red Crescent (Al Mohtaseb)	ALKhaleil	NGO	30
Al-Go'aba (Geriatric)	Jerusalem	Private	20
Al Makassed	Jerusalem	NGO	210
Augusta Victoria	Jerusalem	NGO	138
St. Josephs	Jerusalem	NGO	73
Al-Yamamah	Bethlehem	Private	17
Arab Care Medical Services	Ramallah	Private	33
Al-Meizan	ALKhaleil	Private	25
Emergency Salfit	Salfit	MOH	29
Emergency Qalqiliah (Darweesh Nazal)	Qalqiliah	MOH	10
Abu Al Hassan Al Kassem(Yatta)	ALKhaleil	MOH	21
Al Zakah	Tulkarm	NGO	33
Al Razi	Jenin	Private	36

Hospital Name/Speciality	Governorate	Sector	No. of Beds
B) SPECIALIZED HOSPITALS :-			
Bethlehem (Psychiatric)	Bethlehem	MOH	280
Al Razi (Opthalmic)	Ramallah	Private	10
Caritas (Paediatric)	Bethlehem	NGO	83
St.John (Opthalmic)	Jerusalem	NGO	49
Nablus Surgery	Nablus	Private	70
Specialized Arab Hospital	Nablus	Private	32
Psychiatric Hospital	Gaza	MOH	39
Al Nasser Pediatric Hospital	Gaza	MOH	151
Al-Dorra Pediatric Hospital	Gaza	MOH	84
Othphalmology Hospital in Gaza	Gaza	MOH	40
TOTAL SPECIALIZED HOSPITALS BEDS :-			838
Hospital Name/Speciality	**Governorate**	**Sector**	**No. of Beds**
C) Rehabilitation hospitals (Centres):			
Abu Raya	Ramallah	NGO	27
Arab Society	Bethlehem	NGO	77
Basma	Jerusalem	NGO	15
Al-Wafa	Gaza	NGO	51
Total rehabilitation hospitals beds:-			170
D) Maternity hospitals :-			
Red Crescent	Tulkarm	NGO	14
Walid EL Nather	Ramallah	Private	10
Al - Aqsa	Qalqiliah	Private	15
Red Crescent	Ramallah	NGO	50
Shepherrds Field	Bethlehem	NGO	18
Al Dibs	Bethlehem	Private	20
Holy Family	Bethlehem	NGO	37

بسم الله الرحمن الرحيم

السلطة الوطنية الفلسطينية
وزارة الصحة / نابلس
دائرة المعلومات والاحصاء

Palestenian National Authoroty
Ministry of Health / Nablus
Statistical & Information Dep.

التقرير السنوي عن أقسام المستشفى

السنة :- 2009

المستشفى :- الخليـــل

القسم	عدد الاسرة في القسم	العدد الباقي من الشهر الماضي	عدد الادخالات خلال الشهر	عدد الادخالات خلال الشهر: شفاء	عدد الادخالات خلال الشهر: وفاة	عدد الادخالات خلال الشهر: المجموع	عدد أيام المرض خلال الشهر	المعدل المئوي لاشغال الاسرة "٪"	معدل مكوث المريض "يوم"	العدد الباقي آخر الشهر
الامراض الباطنية	26	12	3216	3104	101	3205	7163	75.48	2.23	23
الجراحة العامة	16	3	1998	1988	3	1991	5856	100.27	2.94	10
الاطفال	60	76	9054	9048	7	9055	27266	124.50	3.01	75
النساء	8	1	1552	1549	~	1549	2249	77.02	1.45	4
الولادة	20	22	8162	8169	~	8169	11601	158.92	1.42	15
العناية المكثفة C.C.U	8	2	972	919	50	969	2282	75.15	2.36	5
المسالك البولية	10	3	902	894	1	895	4244	116.27	4.74	10
الانف والاذن والحنجرة E.N.T	12	8	2029	2030	~	2030	5643	128.84	2.78	7
جراحة العظام	12	17	710	712	1	713	4251	97.05	5.96	14
جراحة الاطفال	6	2	425	427	~	427	1029	46.99	2.41	~
الحاضنات	24	17	839	685	151	836	6133	70.01	7.34	20
العناية المركزة I.C.U	5	3	555	433	122	555	1215	66.58	2.19	3
العناية المتوسطة I.M	9	5	881	871	15	886	2182	66.42	2.46	~
المجمـــوع	216	171	31295	30829	451	31280	81114	102.88	2.59	186
المعالجون بدون اقامة										
الكلية الصناعية	24	~	15080	15080	~	15080	15080	172.15	1.00	~
غسيل الكلي البيتي C.A.P.D	~	~	7	7	~	7	7	~	~	~
أمراض الدم	4	~	2065	2065	~	2065	2065	141.44	1.00	~
المجمـــوع	28	~	17152	17152	~	17152	17152	167.83	1.00	~

توقيع مدير المستشفى

توقيع المدير الاداري

توقيع مسؤول التسجيل

Appendix (5)

The Minimum Resource Requirements for Bed Licensing (MoH)

متطلبات هامة خاصة بترخيص المستشفى

القسطرة: لا يوجد نظام واضح ولكن المعمول به هو:

- رئيس قسم: يحمل مزاولة مهنة في مجال أمراض القلب.
- جميع أفراد الكادر يحملون مزاولات مهنة ومعرفة في مجال العمل في القسطرة.
- الكادر (طبيب مختص ــ طبيب مقيم ــ تمريض عدد 2 ــ فني أشعة ــ فني صيانة).

الأقسام الأخرى:

- أخصائي مسؤول.
- رئيس قسم ــ أخصائي مسؤول.
- الأخصائيين العاملين في القسم وحسب تخصصاتهم.
- طبيب مقيم متفرغ لكل عشرة أسرة (على أن لا يقل عدد الأطباء المقيمين خلال أي وردية عن 3 أطباء).
- رئيس أو رئيسة تمريض ــ ممرضة قانونية وخبرة لا تقل عن 5 سنوات.
- ممرضة قانونية لكل خمسة أسرة.
- ضعف النسبة ممرضات مؤهلات.
- قابلات.

- **كوادر طبية ثابتة:** (الصيدلية ــ للأشعة ــ للمختبر ... الخ).

قسم ICCU:

- رئيس القسم: أخصائي قلب.
- الطاقم: 3 ممرضين لكل سرير 9 ممرضين × 3 ورديات لكل سرير.

قسم ICU:

- رئيس القسم : أخصائي تخدير.
- الطواقم: (2–3) ممرض لكل سرير ومن (7–8) ممرض لثلاث ورديات.

Appendix (6)

The actual expenditure for (MoH), Palestine, Annual Report 2009

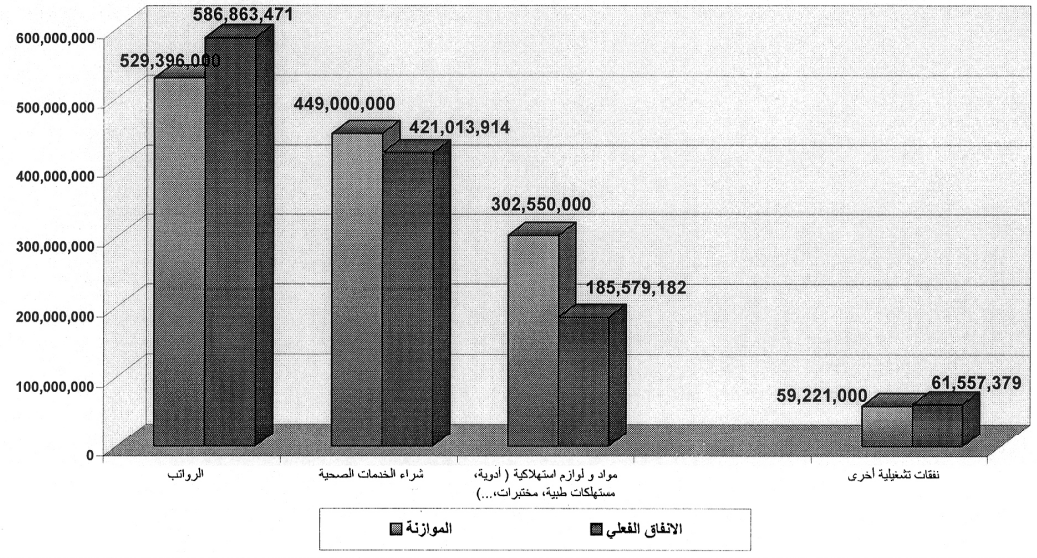
جدول (١٢٨) النفقات الفعلية لوزارة الصحة، فلسطين، ٢٠٠٩

Annex (128) Actual Expenditure for Ministry of Health, Palestine, 2009

Expenditure item	الانفاق الفعلي Actual expenditure	الموازنة Budget	بند المصروف
Salaries	586,863,471	529,396,000	الرواتب
Purchasing Health services	421,013,914	449,000,000	شراء الخدمات الصحية
Materials and supplies for the consumer (Drugs, medical consumables, laboratory,...)	185,579,182	302,550,000	مواد و لوازم استهلاكية (أدوية، مستهلكات طبية، مختبرات،...)
Other operating expenses	61,557,379	59,221,000	نفقات تشغيلية أخرى
Total	1,255,013,946	1,340,167,000	المجموع

الرسم البياني (٩) النفقات الفعلية لوزارة الصحة، فلسطين، ٢٠٠٩

Graph (9) Actual Expenditure for Ministry of Health, Palestine, 2009



numbers in New Israeli Shiekles.

MoH annual report. 2009.

www.moh.ps Feb. 25. 2011.

Appendix (7)
Distribution of Number of Referral Cases by Cost (MoH), Palestine, Annual Report 2009

جدول (١٢٢) توزيع حالات شراء الخدمة من خارج وزارة الصحة حسب المحافظة والتكلفة، فلسطين، ٢٠٠٩

Annex (122) Distribution of Number of Referral Cases by Cost & Governorates, Palestine, 2009

Governorate	No العدد	Cost التكلفة	المحافظة
	West Bank	الضفة الغربية	
Jerusalem	8,588	28,903,951	القدس
Ramallah & Al Bireh	5,147	29,252,455	رام الله والبيرة
Hebron	5,999	35,909,245	الخليل
Bethlehem	2,914	16,183,883	بيت لحم
Nablus	3,870	26,525,956	نابلس
Jenin	2,556	17,524,324	جنين
Jericho)	618	2,866,799	اريحا
Qalqiliya	831	5,703,743	قلقيلية
Salfit	745	4,436,118	سلفيت
Tubas	229	1,443,275	طوباس
Tulkarm	2,096	13,784,086	طولكرم
Others	6	64,500	غير ذلك
Unknown	47	252,432	غير معروف
Outside Palestine	2	19,950	خارج فلسطين
Total West Bank	33,648	182,870,717	مجموع الضفة الغربية
	Gaza Strip	قطاع غزة	
Gaza North	220	2,258,039	شمال غزة
Gaza City	11,434	95,803,574	مدينة غزة
Mid-Zone	107	955,737	المنطقة الوسطى
Khan Younis	191	1,928,950	خان يونس
Rafah	86	728,200	رفح
Others(West Bank District)	6	100,900	غير ذلك
Unknown	2	29,000	غير معروف
outside Palestine	3	29,500	خارج فلسطين
Total Gaza Strip	12,049	101,833,900	مجموع قطاع غزة
Total Palestine	45,697	284,704,617	فلسطين

284,704,617 ~~Reff~~ Referral

1255013946 total expenditure = 0.227

= 22.7 %

1255013946 exp / 3935249 population = 318.9 NIS / capita

= 85 US$ / capita

197

Appendix (8)

General Indicators of the Governmental Hospitals 2000-2009 (MoH), Palestine, Annual Report 2009

جدول (12) المؤشرات الخاصة بمستشفيات وزارة الصحة، فلسطين، للأعوام 2000- 2009

2009	2008	2007	2002	2000	المؤشر
2,917	2,857	2,863	2,613	2,303	عدد الأسرة
74.6	70.4	72.5	76.7	72	نسبة إشغال الأسرة %
2.5	2.5	2.6	2.8	2.8	معدل المكوث (يوم)
734,532	733,988	744,134	622,883	496,013	أيام التداوي
300,865	274,920	271,417	224,087	185,356	الإدخال Inpatient
2,396,879	1,869,085	1,855,558	2,035,857	1,297,223	المعالجون بدون إقامة
121,086	108,808	98,150	76,421	55,943	العمليات الجراحية
68,285	66,338	59,193	41,622	39,562	المواليد
4,290	3,828	3,613	3,312	2,886	الوفيات

"تطوير جودة الخدمات المقدمة في مستشفى الخليل الحكومي (عالية) من خلال إدارة السعة الإنتاجية"

إعـــــداد:

وسيم ادريس سلطان

ملخص

غالباً ما تعمل المستشفيات الحكومية في فلسطين بكامل طاقتها الإنتاجية والتي تقاس بعدد الأسرّة. ويعمل بالمعدل مستشفى الخليل الحكومي (عالية) بأعلى من طاقته الإنتاجية والبالغة 216 سرير، وبلغ معدل الإشغال 103% سنة 2009، ويؤدي ضغط العمل الناتج عن هذه الحالة إلى ممارسات عمل ونشاطات عفوية للتكيف مع الطلب العالي للخدمة. هذه النشاطات والممارسات تؤدي بدورها إلى نتائج تؤثر سلباً على جودة الخدمات المقدمة. هدفت هذه الدراسة في المرحلة الأولى إلى تقييم جودة الخدمات المقدمة في مستشفى الخليل الحكومي (عالية) من خلال قياس الفجوات الموجودة بين انطباع المريض عن مستوى الخدمة التي تلقاها في المستشفى وما يتوقعه من مستوى للخدمة. واستخدم الباحث لتحقيق هذا الهدف عينة عشوائية مكونة من 118 مريضاً أقاموا في المستشفى لمدة يوم على الأقل، وتمت تعبئة الاستمارات خلال يومين متتالين من شهر آب 2010.

أظهرت نتائج هذه المرحلة من الدراسة أعلى فجوة في الاستجابة كبعد من أبعاد الجودة الخمسة التي تم قياسها وهي المظاهر المادية، الاعتمادية، الاستجابة، الثقة، والتعاطف، بينما أظهرت النتائج أن أعلى معدل لفجوات الجودة كانت في قسم الأطفال.

وفي المرحلة الثانية من الدراسة تم تحليل العمليات والنشاطات القائمة في المستشفى وربطها بتوزيع الموارد البشرية والفيزيائية المتوفرة وذلك في أقسام الطوارئ والأطفال (معدل نسبة إشغال قسم الأطفال للعام 2009 كانت 128%). واعتبار طاقم التمريض فيها عينة موارد بشرية للدراسة وذلك من خلال التحليل الزمني لكافة هذه المتغيرات. واستخدمت الدراسة أدوات الملاحظة والمقابلة لتحقيق هدف هذه المرحلة.

أظهرت نتائج تحليل عمليات قسم الطوارئ الحاجة لإعادة هيكلة العمليات والحاجة إلى زيادة الطاقم الطبي وتفعيل وحدة الفحص الأولي والعناية اليومية وقدمت الدراسة مقترح هيكلي للعمليات في هذا القسم.

وأظهرت نتائج دراسة قسم الأطفال الحاجة إلى إعادة توزيع طاقم التمريض في المستشفى ليحصل قسم الأطفال على عدد إضافي وكافي من التمريض وتفعيل غرفة الإدخال العاملة في القسم وكذلك العمل على توفير الحد الأدنى من أدوات الفحص الأولي.

وأوصت الدراسة أيضاً بحاجة المستشفى الماسة إلى نظامي معلومات وتسجيل طبي لاستخدامهما كأدوات فعالة في صنع القرار وتطوير الجودة على التوالي. وإتباع نظام التدقيق والمتابعة في الالتزام بتنفيذ خطوات العمل الموضوعية لأداء المهام في تقديم الخدمات.