Deanship of Graduate Studies

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Evaluation of Health Services Provided at the Governmental Burn Units-Gaza Governorates

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Evaluation of Health Services Provided

at the Governmental Burn Units-Gaza Governorates

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Dedication

To my parents, to my wife, to my faithful children flowers of my life to my relatives.

To every person who has helped me in completing this work.

To every Palestinian lover and defender of Palestine and the Al-Aqsa Mosque.

To the martyrs who sacrificed their lives for Palestine and Al-Aqsa.

Thank you and may Allah bless you

Alaa Jamel Abdel Rahaman

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Chapter Four: Results and discussion

Declaration

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

Signed:

Alaa Jamel Abdel Rahaman

Data:…./…../…….

Acknowledgement

First of all, praise is to Allah, the lord of the world, and peace and blessings of Allah be upon the noblest of all Prophets and messengers, our prophet Muhammad," Peace be upon him" all thanks to Allah who granted me the help and capability to complete this thesis.

I would like to express my deepest gratitude to my wife and children; without their support and encouragement I wouldn't have succeeded.

I would like to express my sincere thanks and gratitude to Dr. Mohammed Abudaya, my academic supervisor for his guidance, support and encouragement during the preparation of this thesis.

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Alaa Jamel Abdel Rahaman

Abstract

Burn injuries can be a potential cause of death, lifelong disfigurement and impairment. In the context of Palestine, with ongoing occupation and Israeli military incursions there is a greater risk of burn injuries. There is increased risk of domestic burn injuries due to limited fuel sources and electrical current, so appropriate burn management is essential to reduce the risk of fatality and lifelong impairment as well as improve the quality of life of those who have suffered a burn injury.

This study aimed to evaluate health services provided at governmental burn units in Gaza governorates. The design of the study is triangulated between quantitative and qualitative designs. Quantitative part is represented by descriptive, analytical the data registered in both two Shifa and Nasser hospitals for patients admitted to the burn units in 2014 and cross sectional for assessing facilities, services and multidisciplinary team in two burn units.

The sample of study consisted of all cases of burns admitted in two burn units during year 2014 were 458 burn patients and 52 health care providers who are working in both burn units. For data collection, a copy of the database was provided to the researcher about an admitted patients to burn units in 2014, the researcher used checklist for facilities and services, questionnaire for health care providers and focus group discussions with a health care provider.

A pilot study was conducted with 4 health care providers. Statistical test used for data analysis included frequency, percentage, mean and percentage mean. Also the qualitative data were categorized and interpreted to integrate the quantitative data.

The results showed that the incidence rate for admitted burn patients for year 2014 was 25.5 per 100,000 for hospitalized burn patients. The highest incidence rate for admitted burns patients observed in Khanyounis governorate was 50.8 per 100,000 in the year 2014 and the lowest rate in Middle zone of Gaza governorates. The mortality rate of burn patients in Gaza governorates was 0.89 per 100,000 for the year 2014.

Regarding gender of burn patients, male were 60.3% and female were 39.7%. The less five age group was the highest percentage was 41.9%, the second one age group from 21 to 30 years old was 16.4% and the more than 51 years was the lowest percentage was 4.6%. The most burn injuries occurred in Summer and the second one was Winter season. Regarding to health facilities and services were 57.1% were available in burn units of Shifa and 42.8% were in Nasser hospitals. For Multidisciplinary team, nearly two third of multidisciplinary team elements were unavailable in burn units of Shifa and Nasser hospital.

Recognizing burn services as a priority area that needs more support. Multidisciplinary team approach to burn care services are among areas need attention and need to employ adequate qualified physicians and nurses to offer quality care to burn patients.

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List of abbreviations

BBA: British Burn Association

EBA: European Burn Association

EMR: Eastern Mediterranean Region

GS: Gaza Strip

IMF: International Monetary Fund

MAP: Medical Aid for Palestine

MOH: Ministry Of Health

NGOs: Non-Governmental Organizations

OCHA: Office for the Coordination of Humanitarian Affairs

PASSIA: Palestinian Academic Society for the Study of International Affairs

PCBS: Palestinian Central Bureau of Statistics

PHC: Primary Health Care

PTSD: Post Traumatic Stress Disorder

SEA: South East Asia

SPSS: Statistical Package for Social Sciences

TBSA: Total Body Surface Area

UK: United Kingdom

UNRWA: United Nations Relief and Works Agency for Palestine Refugees in the Near East

USA: United States of America

WB: West Bank

WHO: World Health Organization

Chapter One

1. Introduction

1.1 Research Background

Burns have been described by the World Health Organization (WHO) as the ‘forgotten global public health crises'. Globally in 2004 the incidence of severe burns enough to seek medical attention was nearly 11 million people and ranked fourth in all injuries after motor vehicle accident, falls, and violence (Peck, 2011).

The WHO estimates that 310,000 people died in fires in 2004 across the world (WHO, 2004). The vast number over 95% of fire-related burns occurs in low- and middle-income countries. In 2008, over 410,000 burn injuries happened in the United States of America (USA), with approximately 40,000 need hospitalizations. In India more than one million people are moderately or severely burnt yearly. Nearly 173,000 Bangladeshi children are moderately or severely burnt yearly (WHO, 2014a).

Fire-related mortality rates are especially high in South-East Asia (SEA) 11.6 deaths per 100,000 population per year, the Eastern Mediterranean Region (EMR) 6.4 deaths per 100,000 population per year and Africa 6.1 deaths per 100,000 population per year. These compare with high income countries was rates 1.0 death per 100,000 populations per year. The incidence in the EMR was 187 per 100,000 per year compared to the lowest incidence in the Americas which was 19 and the highest incidence in SEA which was 243 per 100,000 per year (WHO, 2004).

In addition to those who die, more patients are remaining with lifelong disabilities and disfigurements, often with resulting stigma and rejection. The suffering caused by burns is even more tragic as burns are so absolutely preventable. High-income countries have made

important progress in lowering incidence of burn deaths, through combination of proven prevention strategies and through improvements in the care of burn victims. Most of these advances in prevention and care have been incompletely applied in low and middle-income countries. Increased efforts to do so would likely lead to significant reductions in rates of burn-related death and disability. Care are suboptimal, prolong morbidity or compromised function can result. The goals of therapy are to minimize pain and the risk of infection, achieve wound healing in a timely fashion, preserve physical function, minimize cosmetic deformity and affect physical and psychosocial, rehabilitation in the most efficient manner (Othman and Kendrick, 2010).

Because of the importance of these issues, it constitutes the focus of this study. The researcher conducted this study to evaluate governmental burn care services in Gaza governorates**.**

1.2 Research problem

Differing levels of burn injury and complexity require definite types of inpatient accommodation for the provision of optimal care. Uncomplicated injuries don't need separate burn wards with intensive staffing levels and high specification monitoring equipment to receive high quality care. However, the most complex injuries, which are small in number, will need specialist service. There is currently wide variation in the facilities and staffing available and many places are falling far short of the optimum levels.

It is envisaged that the development to burn care services will facilitate the care of patients in the most appropriate setting. Patients should be supported throughout their care pathway journey regardless of where they receive their care. Burn care services must ensure good and equitable access for patients for the duration of their injury and meet the health needs of the population. The provision of burns care services should also be informed by the

individual service's capacity to deal with and meet the requirements of a major incident. Remarkable differences in burn outcomes can be observed between high income and low and middle income countries. This probably related to providing adequate burn care services.

This research attempts to bridge information gaps related to the extent of governmental burn care services in Gaza governorates.

1.3 Justification of the study

The care requirements of a patient who has sustained a severe burn injury are considerable and complex. Severe burn injury need intensive care, specialized wound care and possibly skin grafting after which the patient recovers with scars that are more or less pronounced. It is far less known that the acute care phase is followed by a long and intensive rehabilitation process. Severe burn injury can be considered as a chronic condition, but with a different evolution over time acute onset followed by a usually long period of decreasing care needs wearing pressure garments, applying ointments several times a day reconstructive surgery, mobilizing and manipulating the burned limbs. The decreasing physical care needs often coincide with an increasing need for psychological support as time passes, it becomes clear to patients that the scars, discomfort, the functional limitations and financial consequences are often there for life. Moreover, that patients experience a difficult process of reintegration and often have to face societal prejudices and stigmatization, especially in case of visible scars. The complexity and rarity of burn injuries make delivering burn care a specialized service. Many of the improvements in burn care originated in specialized units dedicated to the care of burned patients. These units consist of experienced surgeons, physicians, nurses, therapists, dietitians, pharmacists, social workers and psychologists with the dedicated resources to get high

level of outcome to reduce suffering. According to El-Shabbah, (2004) in Gaza Strip (GS) the fire related burns and scaled injuries were 14.2% of unintentional injuries in children. In the context of Palestine, with ongoing occupation and Israeli military incursions there is a greater risk of burn injuries. There is increased risk of domestic burn injuries due to limited fuel sources and electrical current, so appropriate burn management is essential to reduce the risk of fatality and lifelong impairment as well as improve the quality of life of those who have suffered a burn injury. This research is considered as the first study in Gaza governorates that aimed to evaluate governmental burn services.

1.4 Purpose of study

To evaluate governmental burn services in Gaza governorates in order to increase the chance of providing effective and efficient burn services for burn patients in Gaza governorates.

1.5 Objectives

1. To determine epidemiology of burn injuries and characteristics of burn injuries in Gaza governorates.

2. To check facilities and services needed for the care of burn injuries in burn units of Shifa and Nasser hospitals.

3. To assess the availability of multidisciplinary team in burn units of Shifa and Nasser hospitals.

4. To assess health care providers' perspectives regarding to compliance with protocol, reporting of data related to burn patients and coordination with other services.

5. To develop recommendations for policy makers in Ministry of Health (MOH) to develop better burn care based on the results of the study.

1.6 Research questions

1. What are the incidence and mortality rates in Gaza governorates?

2. What is the characteristics of burn injuries in Gaza governorates?

3. Are there facilities and services needed for the care of burn injuries in burn units of Shifa and Nasser hospitals?

4. Is there the multidisciplinary team available in burn units in Shifa and Nasser hospitals?

5. What about compliance with protocol for management of burn injury in both burn units?

6. What about reporting data related to burn patients and coordination with other services?
7. What are suggestions to improve burn care quality in Gaza governorates?

1.7 Operational definitions

1.7.1 Burn injury: is an injury to the skin or other organic tissue primarily caused by heat or due to radiation, radioactivity, electricity, friction or contact with chemicals like white phosphorus and military weapons.

1.7.2 Health care provider

The health care provider (also called) professional is an individual who provides preventive, curative, promotional, or rehabilitative health care services to community (WHO, 2006).

1.7.3 Burn patient: a patient requiring treatment of burn related injuries that should be referred to burn center for assessment and care.

1.7.4 Burn services: the medical and surgical services that direct and coordinate the care of acute burn patients.

1.8 Context of the study

The researcher presented general information about geographical and demographical situation of Gaza governorates as follows.

1.8.1 Demographic context

Historical Palestine has an area of 27.000 sq. Km. Palestine is bordered by the Mediterranean Sea, the Gulf of Aqaba, the Dead Sea, the heights of Galilee, the Jordan River, and by four countries Jordan, Egypt, Lebanon and Syria. Gaza Strip (GS) is a narrow piece of land lying on the coast of the Mediterranean Sea. It is 45 Kilometers long and 6-12 Kilometers wide with an area of 365 sq. km (PASSIA, 2008).

The total population of the Palestinians in West Bank (WB) and GS is about 4.62 million, 2.83 million in the WB 61.2% and 1.79 million 38.8% in the GS. The population in Gaza governorate was 616,287 (13.4%), North Gaza governorate was 355,790 (7.7%), Khan Yunis governorate was 336,205 (7.4%), middle zone governorate was 260,080 (5.6%) and Rafah governorate was 221,648 (4.8%) of population. At the end of 2014, there were 2.35

million males in the State of Palestine compared to 2.27 females, a sex ratio of 103.3 per 100 females. Palestinian society is young with 39.6% of the population aged below 15 years at the end of 2014. The crude birth rate in the State of Palestine will decline from 32.3 births per thousand of the population in 2014 to 29.0 births in 2020. Crude death rates are expected to decline from 3.7 deaths per 1000 population in 2014 to 3.4 deaths per 1000 population by 2020. The population growth rate of population increase in the State of Palestine in 2014 was 2.90%. In the GS, the fertility rate was 4.5 during 2011 -2013 compared to 6.9 in 1997. As a result of the decrease in the mortality rate in the State of Palestine, the life expectancy for individuals has increased to 73.2 years in 2014 (PCBS, 2014). The under-five mortality rate 24 per 1,000 live births in Gaza Strip.

1.8.2 Socioeconomic and political context

The tunnel closure in 2013 led to fall in growth and a financial crisis of the Gaza government resulting in unsustainable unemployment levels and rising poverty. Moreover, tunnel trade was significant source of revenue for the Gaza government and Gaza municipalities. In addition, already in 2012 a total of 1.1 out of 1.7 million people living in Gaza received food assistance and more than 70 percent of Gaza's population relied on the services of a financially burdened United Nation For Relief and Works Agency (UNRWA) (World Food Program, 2013). This situation without doubt became bad with quickly growing unemployment rates jumped to 45 percent in the second quarter of 2014 driven by a large loss of jobs (IMF, 2014).

The current electricity deficit in Gaza began with an Israeli air strike on the Gaza power plant in June 2006 and continues to severely disrupt the delivery of basic services, undermining already vulnerable livelihoods and living conditions. Gaza has three sources

of electricity: the Gaza power plant, which has been operating at approximately half or less of its capacity (60 out of a potential 120 megawatts (MW); and electricity purchased from Israel (120 MW) and Egypt (28 MW), via 13 cross border feeder lines. The power supply has been significantly impaired over recent years by various factors, including the lack of funding for fuel for the Gaza power plant; the impact of unrepaired damage caused by Israeli attacks on the Gaza power plant and power networks; the lack of upgrade to the network; and the recurring malfunctioning or breakdown of the Israeli and Egyptian feeder lines. The energy crisis also posed increase dangers of occupational risks and home accidents due to poorly controlled use of generators, open fire and other sources of energy for heating, cooking and lighting.

During the last Israeli attacks on the GS infrastructure have left a large number of the Gazan people without food, water, shelters, electricity, and medical services. Nearly 490,000 people (over a quarter of the population) are seeking refuge in the UNRWA or governmental schools, public buildings and with host families and churches, and more than 70,000 people have lost their homes which are completely damaged in addition to numerous health centers, hospitals, mosques, electricity generating plant, water resources, sewage network, agricultural production lands and industrial production plants and facilities (OCHA, 2014). Greater poverty is apparent in Gaza households with children: 56.5 percent of poor households have children versus 43.5 percent in West Bank. Poverty rates reached up to 38.8% and 21.1% respectively in the year 2011and (PCBS, 2012). Suicidal attempts have increased recently in the Gaza Strip, especially during the past five years and resulted in a sharp deterioration in the economic and social conditions and the blockage of the horizon of the life sector of lead to high rates of killing oneself with petroleum substances. There is no data registered in health information unit about suicidal attempts because it considered sensitive for Palestinian people.

1.8.3 Palestinian health sector

The Palestinian Health sector consists of three major components, primary health care (PHC), secondary health care and tertiary health care. Four major service providers share responsibilities in health care service provision: governmental health sector (Ministry of Health), UNRWA, Non-Governmental Organizations (NGOs) and the private sector. Primary health care services are provided by various providers, including the MOH; NGOs; UNRWA and the Palestinian Red Crescent society. Primary health care centers throughout Palestinian governorates have expanded from 454 centers in 1994 to 750 centers in 2012, a 65.2% increase. The MOH is the main PHC operating 61.3% of the total PHC centers.

The MOH is also the main provider of secondary health care services. It owns and operates 2,979 hospital beds distributed over 25 hospitals throughout the various Palestinian governorates. The overall number of hospital beds in Palestine is 5,414 beds distributed over 79 hospitals; 49 are in the WB with 3,163 beds, making up 57.6% of total hospital beds, the remainder is in the GS.

In the provision of tertiary specialized health care services, the MOH also plays a major role through providing some limited services in its facilities, and through purchasing these services from other service providers inside (private sector and NGOs specifically East Jerusalem Hospitals) and outside Palestine (MOH, 2014a).

1.8.4 Health status in Gaza Strip

The impact of consequences of continuous siege on the health sector are lack of essential equipment, disposables and lab chemicals, lack of drugs MOH normally provides about 480 items of drugs, but now there is a significant lack with 225 pharmacological items

either unavailable or in critically low stocks and the physical working environment is poor that led to collapse of the health service delivery in Gaza (Gilbert, 2014).The health system had been impacted on severely in the two previous war in 2008 and 2012 are therefore not the only contributing factor to the deterioration and degradation of the social and economic conditions of the civilian population in Gaza and the health sector situation but the last war of (51 days). The Israeli Military on GS were destroyed or damaged either due to direct or indirect damage that during the 51 days of fighting 17 hospitals and 56 PHCs have been affected with damages ranging from totally destroyed to minor damage. One hospital and five PHCs have been completely destroyed with considerable consequences for the remaining health facilities in terms of patient load and health service accessibility for their catchments population. An ambulance station and a total of 45 ambulances either as consequence of direct attacks or as collateral damage. Not forgetting the huge number of disabled and psychological patients that now need treatment (Health Cluster, 2014).

The poor health service delivery that force a high number of patients to leave the GS for specialized treatment in the WB, Egypt, Israel and Jordan. The health system is also negatively affected by internal problems that are a result of the political-financial situation in the WB and GS, seen most urgently in the current health worker salary crisis. 50% of the Ministry health workforce in Gaza began a partial strike in late January to demand full payment of their salaries. Contracted hospital services for cleaning and food catering have also threatened imminent strike due to long-standing non payments. The crisis has already caused disruption in health services, curtailing elective surgeries, shortening work hours of clinics and leading to overcrowding of patients seeking care (Gilbert, 2014). According to El-Shabbah, (2004) in GS falls and traffic injuries reveals more frequent among boys the

other mechanism, burns, poisoning, and drowning are responsible for higher percentage among female.

1.8.5 Health services provided for burn patients in Palestine

In WB there is one burn unit in a Rafydia Hospital that covers whole WB for the moment. In GS there are two units in the governmental hospitals first unit in Shifa Hospital it was established in 1982 and was followed to the building of the surgery have been cases of burns and cosmetic cases dealt with within the general surgery without the presence of specialists in this field it was made up of 6 beds and one doctor and seven nurses. In 1992 transferred department of burns to the new section is a place for the complex internal pharmacy building was equipped at the expense of Mr. Hamid Yousef Bahloul consisting of 8 beds only in 1999 it was added an operating room and intensive care and did not take advantage of room and care operations except in case of emergency wars, due to the lack of doctors. In 2008, Adnan Al Almey was established scientific center for burns it includes 12 beds for patients, the intensive care unit with 3 beds and one operations room.The second unit in Nasser hospitals was supported by MAP in 2009 one room in women department (MOH, 2012).

Chapter Two

2. Conceptual framework &literature review

2.1 Conceptual framework

The following figure shows the conceptual model developed by the researcher to clarify the inquires.

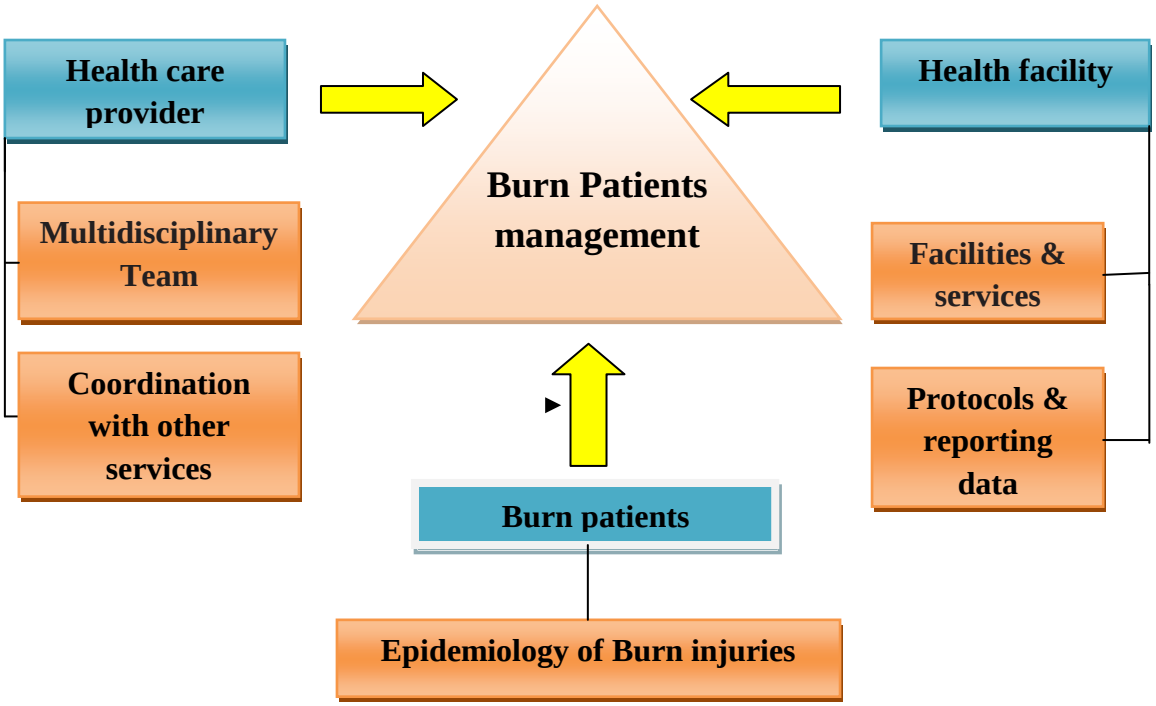


Figure (2.1): Diagram of conceptual framework

There are various factors related and affecting the burn care services. The framework consists of three categories:

Health facility: describes the facilities and services necessary to provide specialized burn care like availability of appropriately resourced burn bed, rehabilitation facilities and access to an appropriately designed and resourced operating theatre. Availability of protocols to ensure that everyone follow the same procedure in the management of the

burn patient. Availability of reporting data because data measure a wide range of health indicators for a community. Health data provide comparisons for clinical studies, can be used to assess costs of health care, can help identify needed and planning and evaluation by finding a baseline against which to measure in the evaluation phase.

Health care provider: cover the availability of multidisciplinary team and coordination with other services.

Burn patients: cover the epidemiology of burn injuries that include incidence rate, mortality rate, age, gender and seasonal variation of burn injuries.

2.2 Literature review

2.2.1 Background

Burns have always been considered as one of the most destructive injuries, causing not only mortalities, but also major economic and psychological impacts and long-term somatic sequels as well. In USA burn injuries result in approximately 1,000,000 emergency department visits, 50,000 hospital admissions, and a 5% mortality rate annually and burns are experienced by about 250,000 people in the United Kingdom (UK) each year (McKibben, et al., 2009). According to WHO, 238,000 individuals died of fire-related burns in 2000, and 95% of these deaths occurred in low and middle-income countries (WHO, 2002a). Also non-fatal burns contribute to a greater number of cases than fatal burns.

A burn injury occurs when some or all the different layer of cell in the skin are destroyed by a hot liquid (scalds), a hot solid (contact burns), or a flame (flame burn). Injuries of skin and other tissues due to ultraviolet, infrared radiation, radioactivity, electricity, or chemicals are also considered to be burned (WHO, 2010).

2.2.2 Functions of skin

Protection, sensation, heat regulation, control of evaporation, aesthetics and communication, storage and synthesis, excretion, absorption and water resistance (Proksch, et al. 2008; Madison, 2003).

2.2.3 Burn causes

Burns are caused by a variety of external sources classified as thermal (heat related), chemical, electrical, and radiation (Peck, 2011).

2.2.4 Signs and symptoms

The characteristics of a burn depend upon its depth. Superficial burns cause pain lasting two or three days, followed by peeling of the skin over the next few days. Individuals suffering from more severe burns may suffer discomfort or complain of feeling pressure rather than pain. Full-thickness burns may be entirely insensitive to light touch or puncture. While superficial burns are typically red in color, severe burns may be pink, white or black. Burns around the mouth or singed hair inside the nose may indicate that burns to the airways have occurred, but these findings are not definitive. More worrisome signs include: shortness of breath, hoarseness, and strider or wheezing. Itchiness is common during the healing process, occurring in up to 90% of adults and nearly all children. Numbness or tingling may persist for a prolonged period of time after an electrical injury. Burns may also produce emotional and psychological distress (Herndon, 2012).

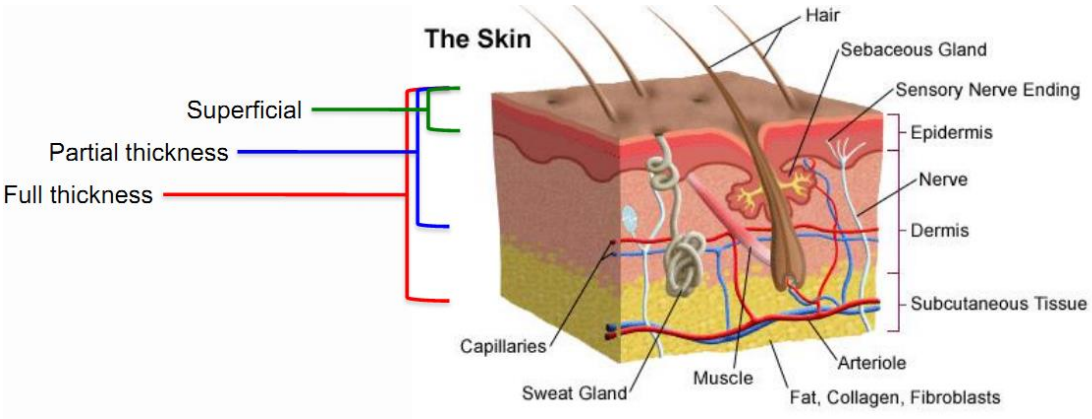
2.2.5 Diagnosis

There are a number of methods to determine Total Body Surface Area (TBSA), including the Wallace rule of nines, Lund and Browder chart, and estimations based on a person's

palm size. The rule of nines is easy to remember, but only accurate in people over 16 years of age. More accurate estimates can be made using Lund and Browder charts, which take into account the different proportions of body parts in adults and children (Granger, 2009).

2.2.6 Burn classification

The depth of a burn is very important as it determines how (surgically or not) the lesions should be treated. The depth classification is related to the anatomy of skin.



First degree: The typical first-degree burn is the sunburn. The skin is painful, but there is no breach of the epidermis. The skin looks red and dry and there are no blisters.

Superficial second degree: In this type of burn, the epidermis is destroyed, thus exposing the underlying more superficial parts of the dermis. Blisters may or may not occur. The skin (underneath the blisters) is moist, pink in color and hypersensitive to the touch. Blanching with pressure is positive, and capillary refill is virtually immediate.

Deep second degree: Here, the superficial parts of the dermis also have been destroyed, thus exposing the deep dermis. The exact depth of this type of burn may be very difficult to determine, as it may mimic a superficial one (with pain, pink surface, etc.), Capillary refill is slow or may not occur at all.

Third degree: In this type of burn, the entire epidermis and dermis are destroyed. Initially, these burns are not or hardly painful (the nerve endings, residing in the dermis, have been destroyed as well). The aspect depends on the mode of injury and may be anywhere from white (a deep scald) to dark gray or black (a flame burn), the wound surface is usually dry (Hermans, 2005).

2.2.7 Admission criteria for Burn unit

- Second and third degree more than 10% TBSA in children and elderly patients.
- Second and third degree burn more than 15% TBSA in adults .
- Burns that involve and threaten functional / cosmetic impairment of the face, hands, feet, genitalia, perineum and major joints.
- Full thickness burns.
- Electrical / chemical burns.
- Burns associated with inhalational injury.
- Circumferential burns of limbs / chest.
- Burn injury in patients with pre-existing medical disorders which could complicate management, prolong recovery, or affect mortality.

Any burned patient with concomitant trauma (admission of patient to the suitable department should be done according the priority and severity of injury).

2.2.8 Burn management

Resuscitation begins with the assessment and stabilization of the person's airway, breathing and circulation. If inhalation injury is suspected, early intubations may be required. This is followed by care of the burn wound itself. People with extensive burns may be wrapped in clean sheets until they arrive at a hospital. With major burns, early feeding is important. Hyperbaric oxygenation may be useful in addition to traditional treatments. Intravenous fluids in those with poor tissue perfusion, boluses of isotonic crystalloid solution should be

given.In children with more than 10-20% TBSA burns, and adults with more than 15% TBSA burns, formal fluid resuscitation and monitoring should follow. This should be begun pre-hospital, if possible in those with burns greater than 25% TBSA. The Parkland formula can help determine the volume of intravenous fluids required over the first 24 hours. The formula is based on the affected individual's TBSA and weight. Half of the fluid is administered over the first 8 hours, and the remainder over the following 16 hours. The time is calculated from when the burn occurred, and not from the time that fluid resuscitation began. Children require additional maintenance fluid that includes glucose (Hettiaratchy and Papini, 2004).

Additionally, those with inhalation injuries require more fluid. While inadequate fluid resuscitation may cause problems, over-resuscitation can also be detrimental. The formulas are only a guide, with infusions ideally tailored to a urinary output of >30 mL/h in adults or >1mL/kg in children and mean arterial pressure greater than 60 mm Hg (Hettiaratchy and Papini, 2004). Wounds requiring surgical closure with skin grafts or flaps (typically anything more than a small full thickness burn) should be dealt with as early as possible. Circumferential burns of the limbs or chest may need an urgent surgical release of the skin, known as an escharotomy. This is done to treat or prevent problems with distal circulation, or ventilation. It is uncertain if it is useful for neck or digit burns. Fasciotomies may be required for electrical burns (Orgill and Piccolo, 2009).

Burns can be very painful and a number of different options may be used for pain management. These include simple analgesics (such as ibuprofen and acetaminophen) and opioids such as morphine. Benzodiazepines may be used in addition to analgesics to help with anxiety. During the healing process, antihistamines, massage, or transcutaneous nerve stimulation may be used to aid with itching (Goutos, et al., 2009).

2.2.9 Skin bank and skin substitutes

The complete loss of cutaneous cover can occur as a result of different conditions including burns, trauma, infections, autoimmune diseases, and complex wounds. The loss of the cutaneous barrier increases the risk of infection, water loss, and hypothermia, which increases morbidity, the cost and length of hospitalization and in some cases, can result in death. Skin is the most ideal and natural dressing. It provides a waterproof covering and prevents: invasion of exogenous bacteria, loss of water by evaporation, protein loss by exudation, pain from exposed nerve endings, loss of heat, reducing metabolic requirements and immobility that would be produced by heavy protective dressing. Skin replacement is required in the major burn injuries.

A skin bank can provide stored skin for use in an emergency or for cold, planned surgical cases. There are many advantages: acts as the most effective dressing, acts as a barrier to infection, the rate of infection is reduced significantly, reduces the pain, lessen the hospital stay, increases the survival rate, cost of treatment goes down, it is an ideal and cost-effective dressing compared to highly expensive artificial skin substitute (Tanaka, et al., 2005).

The skin substitutes are initially classified according to whether they are to be used as a temporary wound covering to decrease pain and augment healing or a permanent skin substitute to add to or replace the remaining skin components (Mahdavi, et al., 2013).

2.2.10 In which settings do burns occur?

Burns occur mainly in the home and workplace. Adult men are usually in military war. Children and women are usually burned in domestic kitchens, from upset receptacles containing hot liquids or flames, or from cook stove explosions. Men are most likely to be burned in the workplace due to fire, scalds, chemical and electrical burns (WHO, 2014a).

2.2.11 Risk factors

Socioeconomic factors that increase the risk of burns include: low household income, crowded household living conditions, low maternal education and unemployment (Edelman, 2007).

2.2.12 Environmental and familial factors

Childhood burns are largely environmental and preventable. The risk factors include: lapse of supervision, walking barefoot, storage of flammable materials in the home, cooking utensils within reach, flammable clothing, lack of enclosure of open fires for cooking or heat, lack of water supply, large families, single parents, preexisting impairment of the child, sibling with a burn and illiterate mother or father (Forjuoh, 1996).

2.2.13 Prevention

Historically, about half of all burns were considered preventable. Burn prevention programs have significantly decreased rates of serious burns. Preventive measures include: limiting hot water temperatures, smoke alarms, sprinkler systems, proper construction of buildings and fire resistant clothing. Setting water heaters below 48.8 °C (119.8 °F). Other measures to prevent scalds include using a thermometer to measure bath water temperatures (Herndon, 2012).

Prevention strategies should address the hazards for specific burn injuries, education for vulnerable populations and training of communities in first aid. An effective burn prevention plan should be multi sectoral and include broad efforts to improve awareness, develop and enforce effective policy, describe burden and identify risk factors, set research priorities with the promotion of promising interventions, provide burn prevention programs and strengthen burn care (WHO, 2008a).

2.2.14 Consequences of non-fatal burn injuries

Burn injuries can result in significant long term consequences which in the absence of a comprehensive and coordinated rehabilitation program can leave children scarred, physically and psychologically, for the rest of their lives. Most rehabilitation programs seek to prevent long term problems such as scarring, contractors and other physical problems that limit functioning. However, attention should also be paid for managing pain as well as psychological issues such as anxiety, Post-Traumatic Stress Disorder (PTSD), phobias and isolation (Smith, et al., 2006). The most common physical long-term consequences following a burn include hypertrophic scarring, extensive contractures, the formation of keloids and the need to amputate an extremity. Hypertrophic scarring in particular has been found to be one of the most significant long term consequences of burn injuries, occurring in almost half of severe cases (Esselman, 2007). Burns to the face resulting in gross disfiguration can lead to poor self-esteem in children and adolescents (Mancuso, et al., 2003). In Gaza governorates there is one study about psychological impact of burn injury in children. Abu Mughasieeb (2015) showed clearly a marked load of psychological symptoms in children subjected to burn trauma (depression, anxiety and PTSD).

For adult burn patients who have suffered a major burn injury have to face psychological and social challenges that need to be understood by the surgeons who are treating their physical problems. By understanding the psychosocial impact of major burn injury, the surgeon will be better equipped to develop a healing relationship with the patients and their families, thus facilitating patient compliance with treatment, more effective decision-making about ongoing surgery and greater patient and surgeon satisfaction. The experience of a major burn injury is intrinsically traumatic because it is sudden, overwhelming, evokes feelings of intense helplessness, is potentially life-threatening, is a direct and catastrophic

assault on bodily integrity. In addition, it may be painful and the damage may be immediately apparent without the context of what can be done. It is no wonder that so many victims go on to develop PTSD. The incidence of PTSD following burns injury has been investigated, and a prevalence of full-blown PTSD with a range between 15% -45% at 12 months post-trauma has been found. This can become a long-term problem if not addressed (De Sousa et al., 2013).

Depression often develops in the aftermath of major burn injury and has a significant impact on the ability of the patient to comply with treatment and rehabilitate back into the community. Depression is characterized by cognitive and somatic symptoms such as low mood, feelings of sadness, diminished interest or pleasure, significant weight gain or loss, insomnia or hypersomnia, fatigue and loss of energy, feelings of worthlessness or excessive guilt, diminished ability to concentrate and recurrent thoughts of suicide. The physical consequences of the burn injury can mask any underlying depression, which can impede recovery (De Sousa et al., 2013).

2.2.15 Evaluation

Evaluations the systematic acquisition and assessment of information to provide useful feedback about some object (William, 2006). The value of evaluation is improving, developing, providing feedback and motivating. It helps in the decision making process. Aspinwall (1996) indicated that evaluation was an ongoing process that should ideally be initiated during the development and planning phase of a project. Donabedian (1996) stated that evaluation was the process of organizing, monitoring and controlling the gathering of patient satisfaction feedback, provides a constant stream of information on patients demand and expectation towards the organization's products.

The aims of the evaluation will decide how best to perform the evaluation. The evaluation will focus on assessing the extent to which the program objectives have been met, and may have one or more aims. Secondary aims may include determining if the enforcement has increased, and whether the program is acceptable to the stakeholders. The evaluation in this case needs to be multifaceted. The breadth of an evaluation will always be limited by the resources available, but note that a well-designed, simple evaluation can be as powerful as a more complex and costly one.

In 2002, Heinemann and Zeiss informed that there are many reasons to evaluate a program such as identifying strengths, weaknesses, opportunities and threats, sharing experiences, measuring progress, improving implementation, seeing what has been achieved so far, or making decisions about which programs or aspects of a program that should be continued or discontinued.

2.2.16 Types of evaluation

Formative evaluation: evaluation conducted to determine if services are being delivered in a manner that is consistent with the model of care adopted and with the policies of the program. Process evaluations can be used to improve how services are delivered. Summative evaluation: evaluation conducted to determine if a program is meeting its stated objectives and to determine if it is better than one or more other models of care (including the model which was in place before the new program). Outcome evaluation can be used to determine the relative "worth" of a program and can be used to make decisions about whether a program will be maintained, modified or ended (Marcus, et al., 2010).

2.2.17 Incidence rate

Globally, according to the WHO there were more than 7.1 million fire-related unintentional burns in 2004, equivalent to a global incidence risk of 110 per 100,000 per year. The incidence in the EMR was 187 per 100,000 per year and in SEA, which was 243 per 100,000 per year (WHO, 2004). At the Europe incidence rate for hospitalized patient was from 2 to 29 per 100,000 per year (Brusselaers, et al., 2010). In Spain, Catalonia Barret, et al. (1999) reported that acute burn admission rates include 6.6 per 100,000 per year. In the Americas for admission rate was 19 per 100,000 per year (WHO, 2004). In Netherlands Dokter, et al. (2014) reported admission rate was 4.66 per 100,000 per year. In the Sulaymaniyah province in Iraq, Othman (2010) reported that 40.4 per 100,000 per year for admission burn patients. In UK, Rajpura (2002) reported that acute burn admissions including smoke inhalation injuries was 29.0 per 100,000 per year. In Singapore Song and Chua (2005) reported that the incidence rate 7.0 per 100,000 per year for admitting patients. In Norway, Onarheim and Vindenes (2004) noted that incidence rate for hospitalized burn patients 13.5 per 100,000. It is likely that these variations in burn admission rates may be partly explained by variations in burn admission policies and variations in burn incidence and severity.

2.2.18 Mortality rate

Mortality due to burn injuries is higher in developing countries as compared to developed countries because of lack of awareness among people and lack of availability of health care services. The WHO estimates that 310,000 people died in fires in 2004. This amounts to a global mortality rate of 4.8 per 100,000 per year. The highest mortality is observed in the countries of SEA with 11.1 deaths per 100,000 per year, the EMR 6.4 deaths per 100,000 populations per year, in Africa 6.1 deaths per 100,000 populations per year and the lowest

in the Americas 0.9 deaths per 100,000 per year (WHO, 2004). In Iran mortality rates of burn injures 4.6 and 5.6 per 100,000 per year (Othman and Kendrick, 2010). In India, Batra (2003) reported the mortality rate 15.1 deaths per 100,000 per year. In the Sulaymaniyah city of Iraq the all age mortality rate from burn injuries was 8.0 per 100,000 per year (Othman, 2010).

2.2.19 Gender

The developing countries also differ from developed countries with respect to sex of people affected, place of injury, etc. Females are more affected in developing countries than developed countries (WHO, 2002b)**.** In Dammam, Saudi Arabia, Fadaak, et al. (1999) reported that 61.5% were male and 38.5% were female. In Israel, Haik, et al. (2007) reported that 68% were male and 32% were female. In Egypt, Hemeda, et al. (2003) reported that female 53.1% and male 46.8%. In Sulaymaniyah in Iraq Othman (2010) reported that58% female and male were 42%. In India Jagannath, et al. (2011) reported that 77.8% were female and 22.2% were male. In EMR Othman and Kendrick (2010) reported a higher proportion of males suffering burns compared to females. In European, Brusselaers, et al. (2010) reported that male predominance of 55% to 75%.

2.2. 20 Age

People of all ages are susceptible to burns, but living circumstances, work and physical conditions may increase or decrease this susceptibility. It is generally agreed that young children are at a higher risk of burn injuries, both in high-income and low-and middle-income countries (WHO and UNCEF 2008). In Israel, Haik, et al. (2007) reported that the largest age group was infants up to one year, 22.2%, from 2-4 years olds14.8%, 5-9 years olds 7.7%, 10-19 years olds 12.2%. In SEA the majority of the injury burden appears to be among younger children below the age of 5 years (Golshan, et al., 2013). In the EMR burn

injuries occur in childhood, mainly the 0-5 year age group was 78% (Othman and Kendrick 2010). In Sulaymaniyah in Iraq, Othman (2010) reported that children 0-5 years of age comprised 32%. In Saudi Arabia Fadaak, et al. (1999) reported that children under 5 years of age were 39% of the total burn patients. In European, Brusselaers, et al. (2010) reported that children younger than 5 years account for 50% to 80% of all childhood burns. In India, Jagannath, et al. (2011) noted majority of cases 55.78%were in the age group between 21 and 40 years.

2.2.21 Facility and services

Burn unit should be in major acute hospital, so to provide a comprehensive set of investigations and treatment facilities. This offers a system for the multi-specialty care of major of differing types and necessary rehabilitation facilities. This has led to the significant developments in our understanding and vast improvements in outcomes following major burn injuries. There are continual improvements in medical technologies, greater levels of knowledge and awareness amongst patient populations and increasing demand for the variety of sources of health care available within the health service. Any high care beds like burn unit should be in cubicles that have environmental control of both humidity and temperature. In addition, there must be a necessary equipment to address infection control issue is essential.

The operating theatre should be staffed by suitably experienced staff from the burn services itself, which offers a consistent service, along with suitably trained person available to assist the anesthetist (BBA, 2001).

According to the European standard of burn unit should have acute beds specially equipped and designed for the care of a major burned patient, i.e. high room temperature, climate control, total isolation facilities, adequate patient surveillance and intensive care

monitoring facilities. A burn unit should have access to an operating room, equipped with all needs for burn surgery and respiratory assistance service on a 24-hour basis. A burn unit should have an established current germ surveillance program. A burn center should have or at least have access to a skin bank. A burn unit should have access to anesthesiology, plastic surgery, orthopedic surgery, cardiology, cardiac thoracic surgery, gastroenterology, urology, hematology, neurology, obstetrics/gynecology, psychiatry, radiology, and laboratory services on a 24-hours daily basis (EBA, 2002). Availability of facilities and services in burn care has allowed greater resources and expertise to be devoted to treating and studying the psychological and social impact of burn injury. As mortality is reduced as a consequence of improved burn management, greater emphasis should continue to be devoted to improving the long term psychosocial health of patients. With appropriate support and interventions, severe burn patients are presently able to reintegrate into society and lead productive and fulfilling lives (Morris and Fadd, 1978).

2.2.22 Multidisciplinary team

Team practice has led professionals to see clients and their families as whole persons, not as parts of a whole (e. g. Mouths, brain, arms, legs). An appreciation of other disciplines allows professionals to accommodate larger functional goals and integrated interventions, instead of working on isolated tasks. Teamwork brings together diverse knowledge and skills and can result in quicker decision making. As a result of professional collaboration, redundancy or fragmentation of service can be reduced or eliminated, thereby increasing the cost efficiency of service. But there are drawbacks to timing as well. Certain economic and professional factors must be considered. A substantial amount of time can be spent by team members from various disciplines in communicating like the salary costs of a team conference or rounds. In addition, most professionals have a productivity standard that must be met. This can impose a limitation on the time such individuals have for

participating in these and other interdisciplinary activities. As a further complication, there are personnel shortages in many of the rehabilitation professions. Costs combined with staff shortages can certainly affect the ability to deliver services under a multidisciplinary team (Melvin, 1989).

Some team members and professional groups are threatened by the notion of giving up some of their autonomy to the group effort. There is a lack of confidence and trust in the opinions and decisions of individuals from other disciplines. In addition, team members' perceptions of their respective roles and contributions to the team may clash. This may lead to individuals feeling that others are usurping their domain. This issue of territorialism can destroy a functioning team (Rothberg, 1981).

The use of the multidisciplinary team appliance in facial burn offers several advantages for the outcome. It eliminates or reduces the extent of surgical reconstruction needed. The appliance aids in the restoration of function and aesthetics, promote tissue healing, reduce scarring, improves symmetry and maintains the size of the oral stoma (Yeroshalmi, et al., 2011). The management of burn injury may well represent the surgical specialty with the greatest integration of health professionals, seeing the most benefit from the influence of truly multidisciplinary care. This has occurred as a consequence of the complex nature of burn injury necessitating a diverse variety of skills for optimal modern care. A single specialist cannot be expected to possess the range of skills, knowledge and energy required for the comprehensive care of the patient. Reliance has been placed on a group of specialists to provide integrated care through innovative organization and that consist of burn lead, surgeons, nurses, anesthesiologist, occupational, physical, therapists, dietician, psychologist and social worker (Al Mousawi, et al., 2009).

Director of burn unit

The role of burn director as leader of the unit involves both deciding upon and directing the team towards achieving tasks, as well as facilitating positive interaction between members to enhance feelings of worth. It must be remembered that effective leadership is not domination. The director leading the team should be a skilled communicator, proficient in providing clear instructions, receiving information and facilitating discussion within the diverse group of specialists that comprise the team. With the increasing workload associated with centralized burn care, the senior surgeon must be prepared to delegate priority tasks to but the art of persuading people to work toward a common goal.

A functioning team is formed from individuals of a group once members are able to share common goals, and meet objectives that serve coinciding values (Herndon and Blakeney, 2007).

Burn surgeon

A burn surgeon is the key figure of the burn team. Either a general surgeon or a plastic surgeon or perhaps, both with expertise in providing emergency and critical care, as well as the techniques of skin grafting and amputations, provide leadership and guidance for the rest of the team which may include several surgeons (Shakespeare, 1994).

Nursing supervisor

The nursing supervisor role in the burn units to "operationalize" the Hospital's mission, the philosophy of the department of nursing and divisional objectives. To manage resources in a manner that results in the improvement of quality patient care. To ensure compliance with all internal and external professional and regulatory agency standards. Maintain that qualified and competent staff meets our patient care needs. The nursing supervisor will

also ensure that customer service expectations of patients, families and physicians are met or exceeded (Wake Health, 2015).

Nursing staff

Nursing staff form the largest section of the multidisciplinary burn team, responsible for implementing the daily continuous care of the burn patient. Severely burned patients can be very challenging to care for, requiring intensive support physically as well as emotionally. Burn nurses require a range of skills from management of acutely unwell critical-care patients on mechanical ventilation and renal support, sophisticated wound dressing techniques and to emotional support for patients and their families. Nurses on a burn unit will often be the first to spot and bring attention to any changes in the condition of a patient and institute remedial action. Due to the nature of the injury, burn patients often require a prolonged period of recovery both in the acute and rehabilitative phases. Continuity of nursing staff for patients allows trusting relationships and bonds to develop, improving satisfaction for both patients and staff. Experience and knowledge of burn injury can be applied in more varied roles including nurse-led clinics and patient case management, operating-room practitioners, performing research studies and developing wider teaching roles such as burn management courses for non-specialists. Greater autonomy for specialist nurses promotes retention of experienced and senior staff, and enhances the efficiency of the burn team overall (Al Mousawi, et al., 2009).

Pediatrician

Burn injury in children continues to be a major epidemiologic problem around the globe. Nearly a fourth of all burn injuries occur in children under the age of 16, of whom the majority are under the age of five. A minority of burn injuries is serious and meets criteria for transfer to a burn center; the care of these critically ill children requires a coordinated

effort and expertise in the management of the burned patient. So for this percentage of burn injuries in children pediatrician should be available in burn team (Krishnamoorthy, et al., 2012).

Anesthesiologist

Anesthesiologist with a specialist interest in burn care form an integral aspect of the burn team. The treatment of major burn patients presents challenges from a number of aspects where the skills and experience of anesthesiology in managing various aspects of care is invaluable. Burn patients may present a number of complex anesthetic issues, including airway management, ventilation, heat loss, fluid and electrolyte balance and circulatory instability. The anesthesiologist will have the knowledge and expertise to deal with the challenges presented by the path physiological changes related to burn injury. The release of inflammatory mediators and consequential systemic hemodynamic instability and metabolic effects of burn injury will reduce a patient's physiological reserve and ability to compensate for the stress of any surgery. Once resuscitated, patients may therefore be most fit for major surgery soon after injury. Early excision of the burn wound will aid to reduce inflammation and the risk of infection, but may also mean that the process of resuscitation is still proceeding whilst a patient undergoes surgery. Burn patients may require multiple operative procedures, dressing changes and wound assessment during their acute stay on the critical-care unit. Patients at risk of airway compromise due to inhalation injury will require early intubation and may benefit from the expertise in fiberoptic guided intubation as well as detailed assessment by subsequent bronchoscopy (Woodson, et al., 2005).

Occupational and physical therapists

Rehabilitation following severe burn injuries require an individualized multidisciplinary approach to achieve the optimum functional outcome possible for every patient. Planning

of a program begins on admission and is tailored to the individual needs of a patient through the various recovery stages. Burn patients require intensive dedicated input from rehabilitation therapy members of the team if burn sequel such as scarring, contractures and loss of function is to be minimized. Treatment modalities available include a variety of splints and pressure garments to minimize scaring, contractures, resistive exercise to maintain function and strength and of movement. Post burn resistance and aerobic exercise programs have been shown to improve muscle strength, power and lean body mass gain during the rehabilitation stages and reduce the number of surgical interventions required for scar contracture release (Celis, et al., 2003).

Clinical pharmacist

The clinical pharmacist for the burn unit is considered the medication expert on the team and plays an integral role within the multidisciplinary team to ensure that pharmaceutical care for each patient is optimized. Some areas of patient care that the pharmacist focuses on include: pain management, treatment and prevention of infections, ideal medication selection and use of a multitude of burn related needs, safe medication practices, staff and patient education and dispensing of medications. In addition, the clinical pharmacist assists with medication reconciliation both on admission and at discharge and is available for medication counseling or addressing any other medication concerns that the patient or family may have (Wake Health, 2015).

Dietician

Patients with major burns require intensive nutritional support to address massively elevated energy and protein demands. Hypermetabolism and muscle protein catabolism following major burns increases proteolysis by up to 50% and leads to debilitating losses in lean body mass. The dietician or nutritionist on the burn team monitors the dietary needs of

the patient and provides the nutritional recommendations and feeding regimen to meet changing demands. Nutritional assessment should review any relevant features such as preexisting medical conditions, malnutrition, malabsorption, dental disease, drug dependency and alcoholism, all of which may impact the nutritional status of the patient. Nutritional monitoring following burn injury may be complex and may be aided by an objective assessment of resting energy expenditure through the use of indirect calorimetry (Soeters, et al., 2004). Implementation of early enteral feeding has been shown to improve outcomes and should be considered the first choice in suitable patients. Enteral nutrition can be started safely within hours of burn injury and was shown to reduce caloric deficit and improve nitrogen balance. Preservation of gut mucosal integrity as a barrier to bacterial translocation may also reduce rates of sepsis. Goal directed nutritional support is essential in improving outcomes following burn injury (Saito, et al., 1987).

Psychologist and social worker

Burn injury can have a devastating impact on the emotional and psychological wellbeing of a patient and their families. Depending on the mechanism of injury, bereavement, deliberate self-harm and non-accidental injury may raise further issues that impact the psychological health of the patient. Psychologist, psychiatrist and social workers in the multidisciplinary team provides expertise in assisting patients and their families to cope with the effects of the injury and manage the transition to come to terms with the grief and consequences of the injury. The patient's mental state will impact on various aspects of their care, including pain tolerance, anxiety level, motivation and addressing the psychological aspects of a patient care facilitates their overall treatment. Disfigurement with the loss of facial and body image is also a bereavement experience and how this is addressed in the early stages may be critical in the long term (Partridge and Robinson,

1995). Caregivers may also require support from psychosocial expertise in dealing with the emotional issues of treating severely injured patients.

According to burn unit protocol team of MOH this team member should be well trained over burns management and cover all needs of burn injury care that include physicians, surgeons, anesthetists, intensivisits, nurses, dieticians, physiotherapists, social workers and others (MOH, 2012).

According to British Burn Association (BBA), the team of burn care consist of burn nurses, burn surgeon, burn anesthetist, intensivist, physical therapists, dietician, psychologist, social worker, pediatrician, playing specialist and teacher (BBA, 2001).

According to European standards of the burn team should be consist of burn unit or center director**,** Staff physicians, Staff nurses, physical and occupational therapists, dietitian and available of social service (EBA, 2002).

2.2.23 Reporting data

Sound and reliable information is the foundation of decision-making across all health system building blocks, and is essential for health system policy development and implementation, governance and regulation, health research, human resources development, health education and training, service delivery and financing. The health reporting data provides the underpinnings for decision-making and has four key functions: data generation, compilation, analysis and synthesis, and communication and use.The health information system collects data from the health sector and other relevant sectors, analyses the data and ensures their overall quality, relevance and timeliness, and converts data into information for health-related decision-making. The health information system is sometimes equated with monitoring and evaluation but this is too reductionist a perspective. In addition to being essential for monitoring and evaluation, the information

system also serves broader ends, providing an alert and early warning capability, supporting patient and health facility management, enabling planning, supporting and stimulating research, permitting health situation and trends analysis, supporting global reporting, and underpinning communication of health challenges to diverse users. Information is of little vale if it is not available in formats that meet the needs of multiple users policy-makers, planners, managers, health care providers, communities, individuals. Therefore, dissemination and communication are essential attributes of the health information system (WHO, 2008b).

A good reporting data brings together all relevant partners to ensure that users of health information have access to reliable, authoritative, useable, understandable, comparative data.

2.2.24 Protocol

Protocol is an agreed standardized way of performing a task. A process that is repeatable and reproducible.

The advantages of protocol are enables all procedures to be undertaken in a standard manner, lead to inter-operator independence, any member of staff produce same/similar results, enables new staff to familiarize themselves with studies quickly, enables all staff to perform less frequently performed studies safely without relying on memory, provides a consistent presentation of data it encourages confidence in results, providing written instructions enables minor disciplinary/corrective action to be taken for deviations from the accepted department procedure, enables audit procedure and it prevents all/some errors. It allows procedures to be performed without background knowledge, lets the staff work without having to think too much, allows employment of less well qualified or experienced staff with consequent saving to department budget, on the other hand there are

many disadvantages like it is lead to mindless working, leading to lack of interest in the work, misunderstandings may lead to misuse - is this dependent on how well written protocols are; is it possible to be foolproof, useful individual adaptations employment of less well qualified or experienced staff may lead to issues of diminished patient care and image quality (Institute for Innovation and Improvement, 2008).

2.2.25 Coordination with other services

Lack of coordination is widely considered to be one of the key causes of poor quality health care. Care coordination is essentially the communication and interaction of care across all healthcare providers the patient needs and across every medical condition the patient has. It greatly increases the efficiency of care as well as reduces unnecessary and redundant treatments, thereby lowering healthcare costs overall. Currently, the system isn't perfect. There are many challenges in implementing a care coordination system including administrative burdens. Regardless, implementing better care coordination is crucial to solving many problems in our healthcare system, from increasing the quality of care patients receive to reducing unnecessary spending.

Care coordination is foundational to the health care reform goals of improving the quality of care for individuals and populations via the efficient and effective use of resources. The increased complexity of care, growing numbers of patients and exploding health care costs heighten the need for better integration of care without increased expenditures. Very convincing evidence indicates that uncoordinated care greatly increases health care costs, but there is still a need to identify "best practices" and describe models and interventions that achieve patient-centered, high-quality care (Robinson, 2010).

Care coordination involves deliberately organizing patient care activities and sharing information among all of the participants concerned with a patients care to achieve safer

and more effective care. The means that the patients' needs and preference are known ahead of time and communicated at the right time to the right people and that this information is used to provide safe, appropriate and effective care to the patient.

Chapter Three

3. Methodology

3.1 Introduction

In this chapter the researcher described the methodology that used in this research. The adopted methodology to accomplish this study used the following techniques: the information about the study design, study population, study sample, eligibility criteria, period of the study, pilot study, statistical data analysis, content validity and reliability

3.2 Study design

The design of the study is triangulated between quantitative and qualitative designs. Quantitative part is represented by descriptive, analytical the data registered in both burn units for burn patients admitted to the burn units in 2014 and cross sectional for assessing facilities, services and multidisciplinary team in two burn units.

Qualitative part will be conducted with a focus groups form burn care provider for depth inquiry from two burn units.

3.3 Study setting

The study performed at the MOH hospitals in the Gaza governorates at Al Shifa and Nasser hospital.

3.4 Study population

It includes data of all burn patients files who were admitted in burn units in Gaza governorates in year 2014 were 458 burn patients. In addition to the burn care providers who working in burn units, the total number was 52 health care providers. 31 health care

providers working in the burn unit of Shifa hospital while 21 health care providers working in the burn unit of Nasser hospital.

3.5 Sample size and sampling techniques

For epidemiology of burn injuries the study population is burn patients admitted to burn units in Shifa and Nasser hospitals for the year 2014 and relevant data. For health care provider the population size is relatively small, so the researcher considered the population as the sample of the study. For qualitative part 5 member of health care provider invited for focus groups from two hospitals for deep probing of the problem.

3.6 Period of the study

The study was conducted in the second half of year 2015 according to the timetable that has been prepared for the study and end in March 2016.

3.7 Eligibility criteria

The eligibility for the study consists of inclusion and exclusion criteria.

3.7.1 Inclusion criteria

- For burn patient who is admitted in burn units in both hospitals.

- For health care provider who are working in the burn units in both hospitals.

3.7.2 Exclusion criteria

- Burn patients whom are treated in an emergency department.

- Health care provider who are not working in the burn department.

3.8 Instruments/Tools

The researcher used four instruments for evaluating the burn services provided in burn units which included:

The first instrument was direct observational checklist. The researcher adopted the International Burn Care standard with some modification (Annex1).

The second instrument was a structured questionnaire which was designed by the researcher based on the review of the literature and experience in the health care field (Annex 2). The face to face questionnaire was designed in English language and took 15 minutes to complete.

The third instrument was a focus group meeting with health care providers in two burn units (Annex 3)

The forth instrument was records of burn patients retrospectively for year 2014.

3.9 Pilot study

After revision and modification of the study questionnaire by filing related specialists, a pilot study sample conducted consisting of 4 health care provider form two burn units to detect it is suitability and if there will be difficulty in it is filling.

3.10 Response rate

The response rate for this study was 100%.

3.11 Ethical considerations

- An ethical approval asked for from School of Public Health at Al-Quds University and an official letter from Helsinki Committee.

- An Administrative approval asked from the Director General of MOH.

- To guarantee participants rights, a covering letter indicating that the participation is voluntary and confidentiality will be assured for all of them.

3.12 Data collection

For epidemiology of burn injury data of 2014 was already available in the form of an Excel database transcribed and entered by a hospital staff in charge of statistics of the burns units. A copy of database was handed to the researcher.

For an observation checklist, the researcher filled a prepared checklist in two burn units with direct observation and asked the director of the unit; time allocated for filling was one hour.

For multidisciplinary team the researcher himself collected data by using a face to face questionnaire. Consent form was obtained from the participants for participating in the study after clarifying the purpose of the study and confirmed the anonymity and confidentiality of information. Time allocated for a face to face questionnaire was about 15 minutes.

For focus groups the researcher conducted 2 focus groups with a health care provider one in each burn unit. A focus group was taped using recorder and taking notes during the interview with each group. The collected data were coded, categorized and transcribed for analysis and interpretation.

3.13 Validity for quantitative part

The researcher organized the questionnaire in a way that enable the reader to read it easily. The layout of questionnaire in addition to its structure was appealing and its format was professional.

The questionnaire and observational checklist were submitted to an expert panel with experience and knowledge in the field as arbitrates who make suggestions and judgment about the adequacy of the questionnaire. The experts expressed their opinions and suggestions about the clarity, ease, simplicity, comprehensiveness of items and statement of the questionnaire and therefore the researcher had some change in the questionnaire, such as delete or merge or reformulation of some items (Annex 6).

3.14 Reliability for quantitative part

Reliability is a condition for validity; it is about the consistency of the measurement. The following steps were performed to assure instrument's reliability:

- Standardization of methods and instrument
- Daily checking and validation
- Conducting the data entry in the same day of data collection
- Re-entry of 5% of data after finishing the data entry assured correct entry procedure and decrease entry errors.
- The researcher conducted data collection by himself.

3.15 Qualitative part

In this study and to maintain the trustworthiness of the qualitative part; peer check was done through experts to enrich the key informative interview questions when required. Then, check representativeness was done to ensure no significant group were overlooked. In addition, get their feedback on the major findings to assure accuracy and transparency of the transcripts.

Again, recording the interviews enhanced tracking up facts and re-checking the accuracy of the transcripts and recordings will be kept for tracking at any time.

3.16 Data analysis

The collected data analyzed using statistical package of social sciences (SPSS version 20) by the researcher himself. Many different statistical tests used, through the frequency of the study factors and description of the study population. The analysis included frequency table, mean, percentage and percentage mean to disseminate the study factors.

For qualitative data the data were collected in text narratives and audio records, the data were summarized after reading and listening to each question and transcribe each participant's response, including only the relevant and useful portions of the discussion, the final step was extracting the themes from the summarized data and rewrite the final result in the form of text narrative.

3.17 Limitation of the study

- Lack of data about patients referred to abroad hospitals.
- Few studies from surrounding Arab countries.
- Weakness health information system.
- Lack of data base related to the burn patients.
- Perceptive of burn patient.

Chapter Four

4. Results and discussion

In this chapter, the researcher demonstrates the results of the analysis and discusses findings on the light of previous analogous studies. The present study was conducted to evaluate health services provided in the governmental burn units. The researcher divided this chapter into four; Firstly, epidemiology of burn injury in Gaza governorates (incidence rate for admitted burn patients in burn units, incidence by governorates, mortality rate, gender, age and season of burn injuries). Secondly, the availability of essential facilities and services in both burn units by using an observational checklist. The third part, assess the multidisciplinary team in both burn units in Gaza governorate. The final part results of focus groups.

4.1 Descriptive analysis

4.1.1 The incidence rate of burn patients admitted in burn units

In 2014 the number of patients treated in emergency department were 2987 patients of Shifa hospital. In Nasser hospital there were not data registered about patients were treated in emergency department. According to the archive patients' files of both hospitals Shifa and Nasser for the year 2014, 458 burn patients were hospitalized for at least one day in both burn units. At Gaza strip level, this study was calculated the incidence rate of burn patients admitted to burn units in Gaza governorates, which was 25.5 per 100,000 for the year 2014 for all ages. This result is higher than incidence rates of Dokter, et al. (2014) in the Netherlands which was 4.66 per 100,000 per year, Barret, et al. (1999) in Catalonia in Spain who reported that incidence rate was 6.6 per 100,000 per year for admission burn patients. Onarheim and Vindenes (2004) in Norway reported that incidence rate for hospitalized burn patient 13.5 per100,000 per year and Song and Chua (2005) in Singapore

reported that the incidence rate 7.0 per 100,000 per year for admission burn patients. Research finding is higher than the report of WHO (2002b) in the Americas, which was 19 per 100,000 per year. Research result is lower than studies of Othman (2010) in the Sulaymaniyah province in Iraq that reported 40.4 per100,000 per year for admission burn patients, Brusselaers, et al. (2010) in Europe was from 2 to 29 per 100,000 per year and Rajpura (2002) in UK reported 29.0 per 100,000 per year. Research finding is lower than the report of WHO (2002b) was reported the incidence in the EMR was 187 per 100,000 per year and in (SEA) which was 243 per 100,000 per year.

Regarding to governorates the highest incidence rate of burn patients admitted to hospital was 50.8 per 100,000 for the year of 2014 observed in Khanyounis governorate due to massive the Israeli attacks on east of Khanyounis (Al Zana), followed by Gaza governorate with 23.5 per 100,000 for the same year and the lowest incidence rate of burn patients was 11.5 per 100,000 per year of 2014 observed in the middle zone as shown in the figure (1.1)

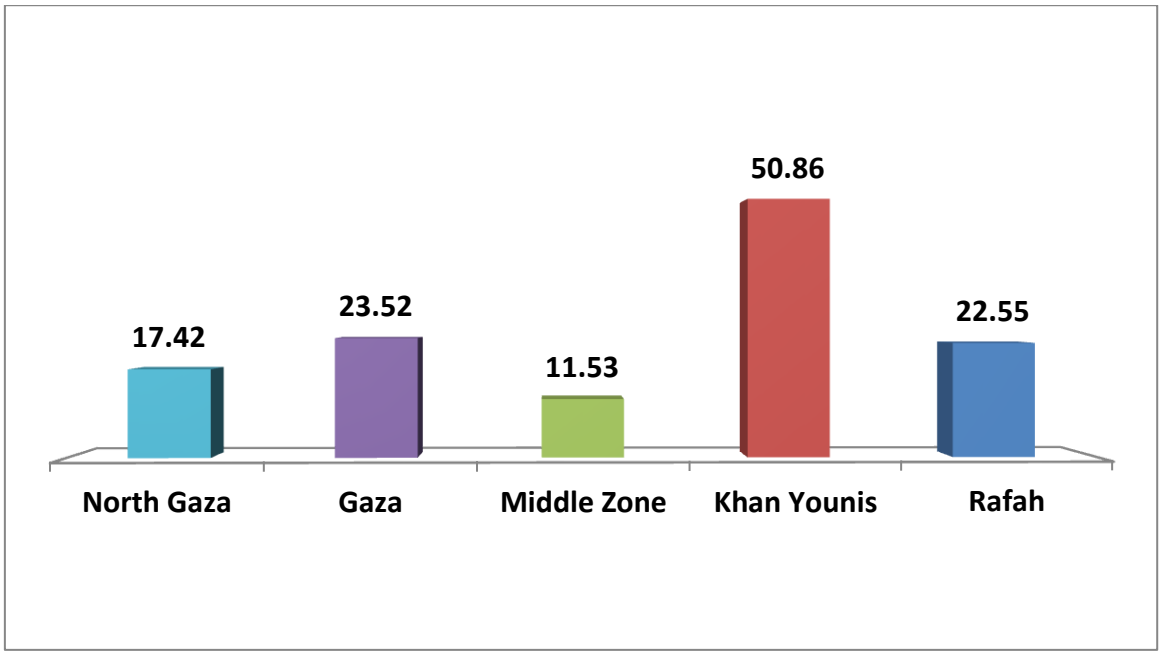


Figure (1.1): Incidence rate of burn injuries according to the governorate per 100,000

4.1.2 Mortality rate

According to the archive patients' files of both hospitals Shifa and Nasser for the year 2014, were 16 burn patients were died. All ages mortality rate for burn patients was (0.89 per 100,000) (8.9 per one million) for the year 2014. This study reported lower than the mortality rate of reports of WHO (2004) in SEA 11.6 deaths per 100,000 population per year, the EMR 6.4 deaths per 100,000 population per year, Africa 6.1 deaths per 100,000 population per year. This study reported lower mortality rate than studies of Othman and Kendrick (2010) in Iran from 4.6 to 5.6 per 100,000 per year, Batra (2003) in India, the mortality rate was 15.1 deaths per 100,000 per year and Othman (2010) in the Sulaymaniyah city of Iraq mortality rate from burn injuries was 8.0 per 100,000 per year.

4.1.3 Gender

Regarding to the gender of burn patients in Gaza governorates, 276 (60.3%) were male and 182 (39.7%) were female as shown in figure (1.3). This study consistent with studies of Haik, et al. (2007) reported in Israel that 68% were male and 32% were female, Fadaak, et al. (1999) in Saudi Arabia reported 61.5% were male and 38.5% were female, Brusselaers, et al. (2010) in European reported that male predominance of 55% to 75% and Othman and Kendrick (2010) in EMR reported a higher proportion of males suffering burns compared to females. While this study inconsistent with studies reported by Hemeda, et al. (2003) in Egypt reported that 53.1% female and 46.8% male, Jagannath, et al. (2011) in India reported 77.8% were female and 22.2% were male.

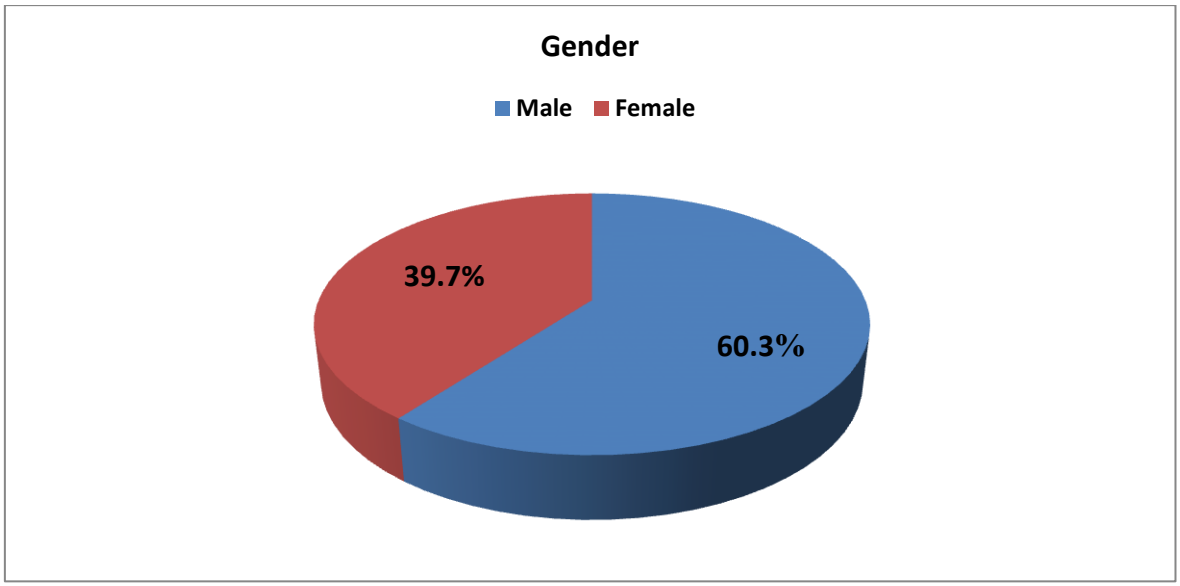
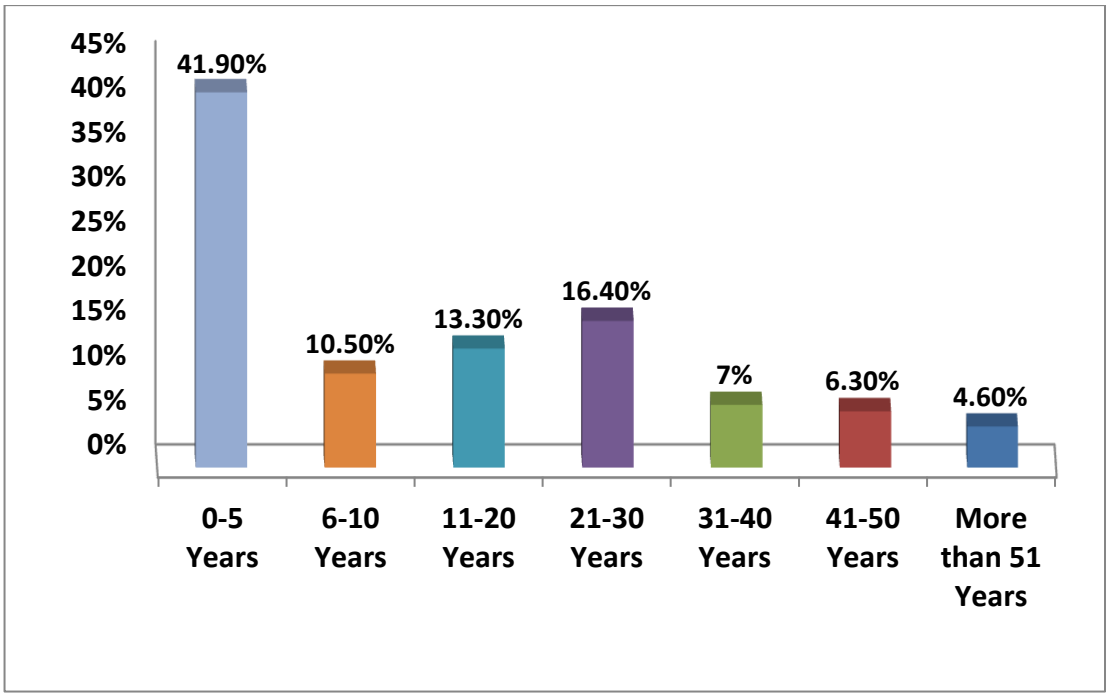


Figure (1.3): Percentage distribution of burn patients according to gender

4.1.4 Age

Concerning to age children under 5 years of age has been the most frequently affected, constituting approximately 41.9% of the total patients admitted to the burn unit of Shifa and Nasser hospital as shown in figure (1.4). The 21-30 years age group ranked next in frequency 16.4%. The age group more than 51years ranked last one 4.6%. Our study is lower than studies of Brusselaers, et al. (2010) reported in European children less than 5 years account for 50% to 80% of all childhood burns and Othman and Kendrick (2010) reported in EMR burns in childhood occur in the 0-5 year age group was 78%. My study consistent with studies of Golshan, et al. (2013) reported in SEA the majority of the injury burden appears to be among younger children below the age of 5 years, Othman (2010) reported in Sulaymaniyah of Iraq children 0-5 years of age comprised 32%, and Fadaak, et al. (1999) reported in Saudi Arabia children under 5 years of age were 39% of the total burn patients. According to this results we should do campaign to mothers in home about impact of burn injuries, how to avoid burn injury, keep children away from hot places like kitchen by using media.



Figure(4.4): Distribution of burn patients by their age group

4.1.5 Season of burn injuries

As shown in figure (4.5) regarding to season of burn injuries in the current study summer was the most season of burn injuries in Gaza governorates in the year 2014 comprising 34.9% this high percentage due to the war 2014 and school vacation then winter 27.1% after that spring 19.2% and the last one are autumn 18.8%. A finding consistent with studies Delgado, et al. (2013) burn injuries in Peru peaked in the summer season. On the other hand Goodarzi, et al. (2014) reported in Iran that the highest number of burn injuries occurred in winter 29.11%, Jagannath, et al. (2011) reported in a majority of burn patients 37.78% were admitted during winter season and Othman (2010) reported in Sulaymaniyah in Iraq winter was the most common season of burn injuries comprising 31% all burn injuries.

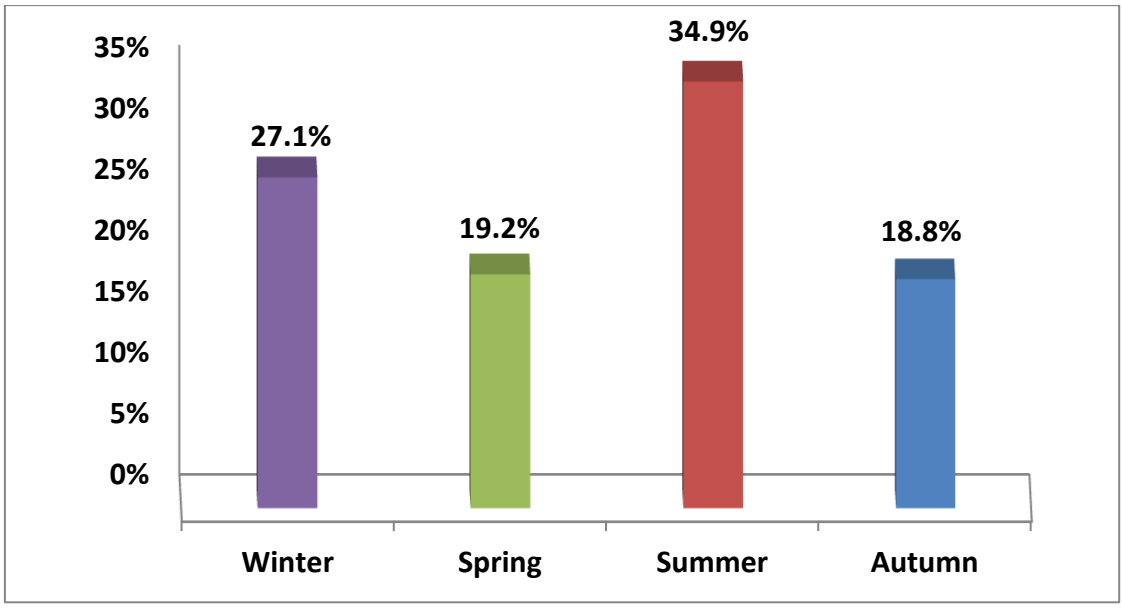


Figure (4.5): Distribution of burn injuries by season

4.2.1 Essential facilities and services

In this part, the researcher presented the parameters that in the checklist. Data were organized through the use of an extraction sheet. Data was collected from the burn units in both hospitals included in the study by direct observation and asking the director of the burn unit about the items included in the checklist. The total number of checklists was two (one from burn unit in Shifa hospital and one from burn unit in Nasser hospital). The researcher checked for availability of items. For the purpose of discussing the points, including in the checklist, the results of the checklist analysis are presented below.

The researcher observed that 57.1% of essential facilities and services were available in Shifa burn unit while, 42.8% were available in Nasser hospital as shown in table (2.1). These results indicated that nearly half of facilities and services needed to offer care for the burn patients were unavailable in burn units in Gaza governorates. In the present difficult situation in Gaza governorates, it is important to mention that making the unavailable facilities and services needs much effort by MOH.

Table (2.1): Availability of essential facilities and services

No	Item	Findings	
		Shifa	**Nasser**
1.	Is there burn care ward specifically for burn injured patients.	**Yes**	**Yes**
2.	Are there appropriate burn beds for all burn admissions	**Yes**	**No**
3.	Is there sufficient single-bedded thermally controlled cubicles to care for burn injured patients that require them.	**No**	**No**
4.	Are there adult and children cared for in separate facilities.	**No**	**No**
5.	Is there temperature controlled operations theatre for providing critical care for burn patients.	**Yes**	**No**
6.	Is there skin substitute products in the burn unit.	**No**	**No**
7.	Is there medical aesthetic service for burn patients.	**No**	**No**
8.	Are there rehabilitation facilities for both inpatients and out-patients.	**Yes**	**Yes**
9.	Is there pediatric intensive care unit located in the same hospital of burn unit.	**No**	**No**
10.	Is there adult intensive care unit located in the same hospital of burn unit.	**Yes**	**Yes**
11.	Is there critical care for neonates located on the same hospital of the burn unit.	**Yes**	**Yes**
12.	Is there an emergency department located on the same hospital of the burn unit.	**Yes**	**Yes**
13.	Are there other services (general/pediatric surgery, orthopedic surgery, radiology, laboratory, physiotherapy service)at the same hospital of the burn unit.	**Yes**	**Yes**
14.	Is there an education service for children and young people who is with burn injury.	**No**	**No**

4.2.2 Observational round

4.2.2.1 Burn unit in Shifa hospital

According to the observation of burn unit in Shifa hospital that consists mainly from three areas;

1. Burn ward: consists of six rooms for burn patients, every room contains two bed, two rooms for wound dressing and whirlpool, one room for physiotherapy and one playing room. In addition to nursing station.

2. Burn intensive care unit: consists of three beds. Each bed has a monitor and mechanical ventilator. In addition to bronchoscope for diagnosis and treatment of inhalation injury.

3. Operation room: that where all surgical procedure necessary for burn patients is performed. The room is equipped with all equipment necessary to perform operations to burn patients, including operation table, anesthesia machine, overhead lights, warmer machine and recovery room.

Burn unit in Shifa hospital offer burn care services for the middle zone, Gaza governorate and north governorate.

4.2.2.2 Burn unit in Nasser hospital

The burn unit of Nasser hospital that consist of one room at women surgical ward that contain five beds for children under 13 years old and adult female burn patient and one dressing room. For adult burns patients take care in men surgical ward. This unit serves Kanyounis and Rafah governorates. Now there is new burn unit under construction in Nasser hospital that contains intensive care unit, one operation room and burn ward.

4.3 Descriptive characteristics of the study participants

Table (4.3): Distribution of participants by characteristics variables

Hospital		**Shifa**		**Nasser**	
		No.	**%**	**No.**	**%**
Gender	**Male**	27	87.1	9	42.8
	Female	4	12.9	12	57.2
	Total	31	100	21	100
Age	**20-30 years old**	8	25.8	10	47.8
	31-40 years old	14	45.1	4	19
	41-50 years old	4	12.9	4	19
	51-60 years old	5	16.2	3	14.2
	Total	31	100	21	100
Profession	**Physician**	10	32.2	4	19
	Nurse	14	45.1	12	57,1
	Head of Dep. for nurse	5	16.1	3	14.2
	Physiotherapist	2	6.6	2	9.5
	Total	31	100	21	100
Qualification	**Diploma**	4	12.9	7	33.3
	Bachelor	14	45.1	12	57.1
	Postgraduate	13	42	2	9.6
	Total	31	100	21	100
Years of experience	**1-4 years**	3	9.6	4	19
	5-9 years	14	45.2	12	57.1
	More than 10 years	14	45.2	5	23.9
	Total	31	100	21	100

4.3.1 Gender

Concerning to gender about 87.1% of participants in burn unit of Shifa hospital were male and 12.9% were female with nature of medical job, it is difficult for female employees to work in the burn unit. On the other hand, in a burn unit in Nasser hospital about 42.8% were males and 57.2% were females, as shown figure (3.1).

This result indicates that female in the burn unit of Nasser hospital is higher than males, this result from the location of burn unit in women surgical ward and all nurses in women surgical ward is female and they are working in the burn unit in the evening, night periods and during weekend and vacation.

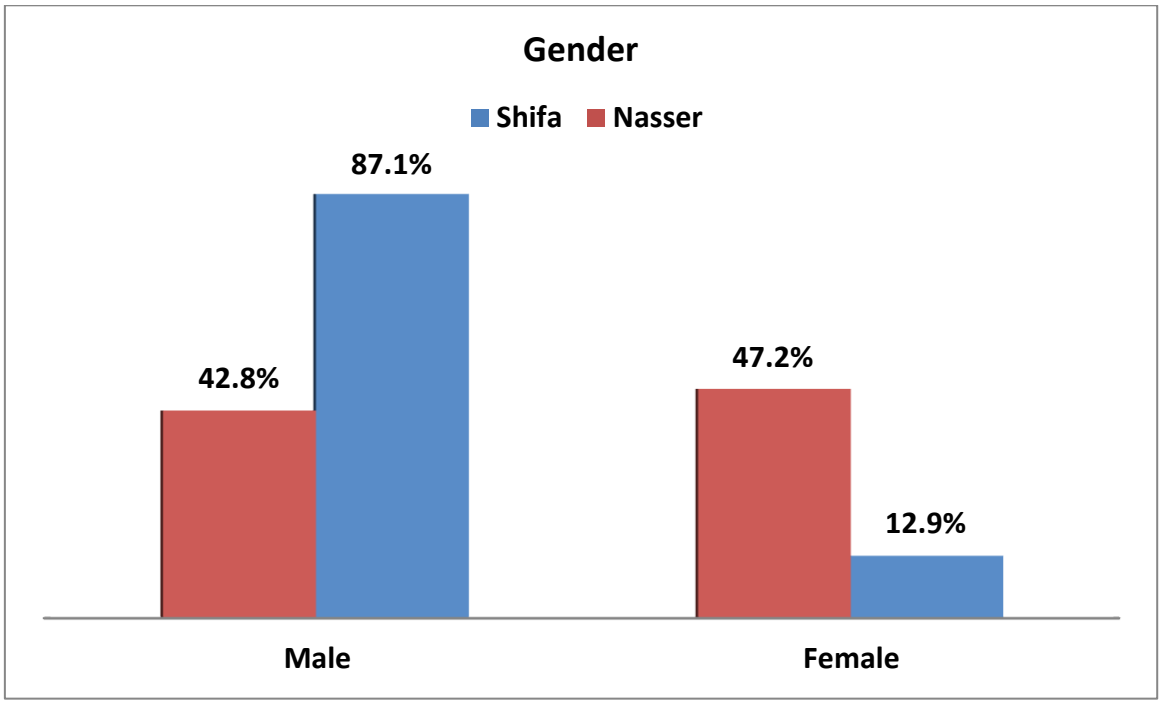


Figure (3.1): Percentage distribution of participants in burn units according to gender

4.3.2 Age

As shown in figure (3.2), the participants were from different age groups, but the prominent age group was participants whose age were between (31-40) years represents 45.1%in a burn unit in Shifa hospital, while age group (41-50) years was the lowest which constituted 12.9%. In burn unit in Nasser hospital the high percentage in the age group 20-30 years old which constituted 47.8%, the lowest percentage in age group (51-60) years old was 14.2%. according to above should invest them in training and educate him with advance course in burn care.

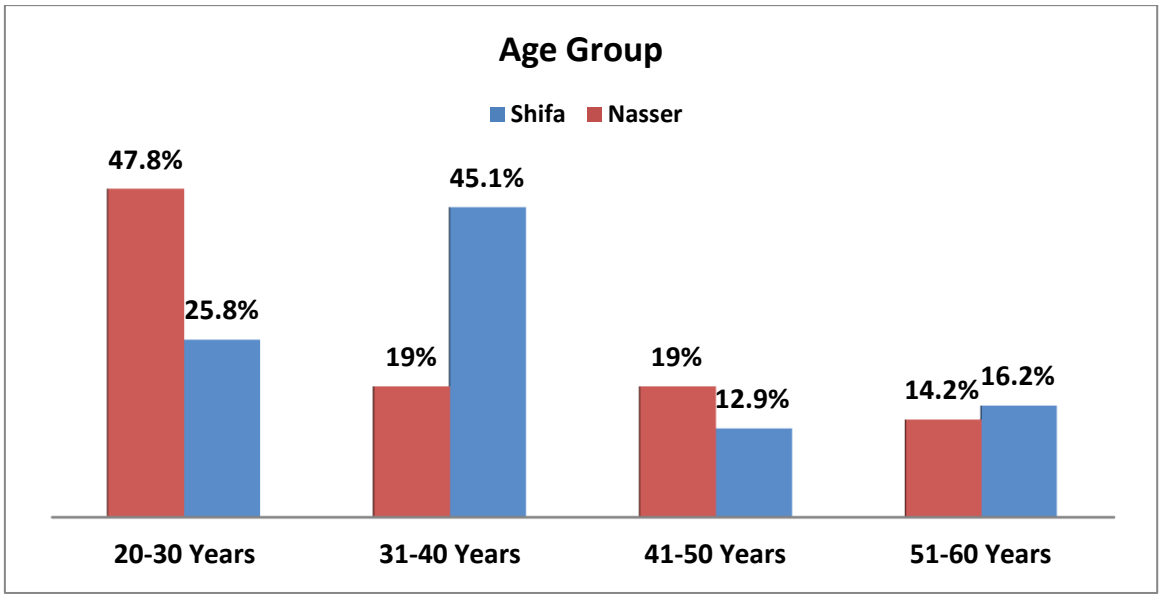


Figure (3.2): Percentage distribution of participants in burn units regarding to age categories

4.3.3 Profession

As shown in figure (3.3), the total number of health care provider in both burn units was 52 participants. About 61.2% in a burn unit in Shifa hospital where nurses, while in burn unit of Nasser hospital were 71.5% nurses. Physicians in the burn unit of Shifa hospital were 32.2%, while in a burn unit of Nasser hospital were 19% physician. About 6.6% were physiotherapists in burn units in Shifa, while in a burn unit of Nasser hospitals were 9.5% physiotherapists. For burn unit of Nasser hospital the number of physicians is 4 and 2 nurses in the morning period.

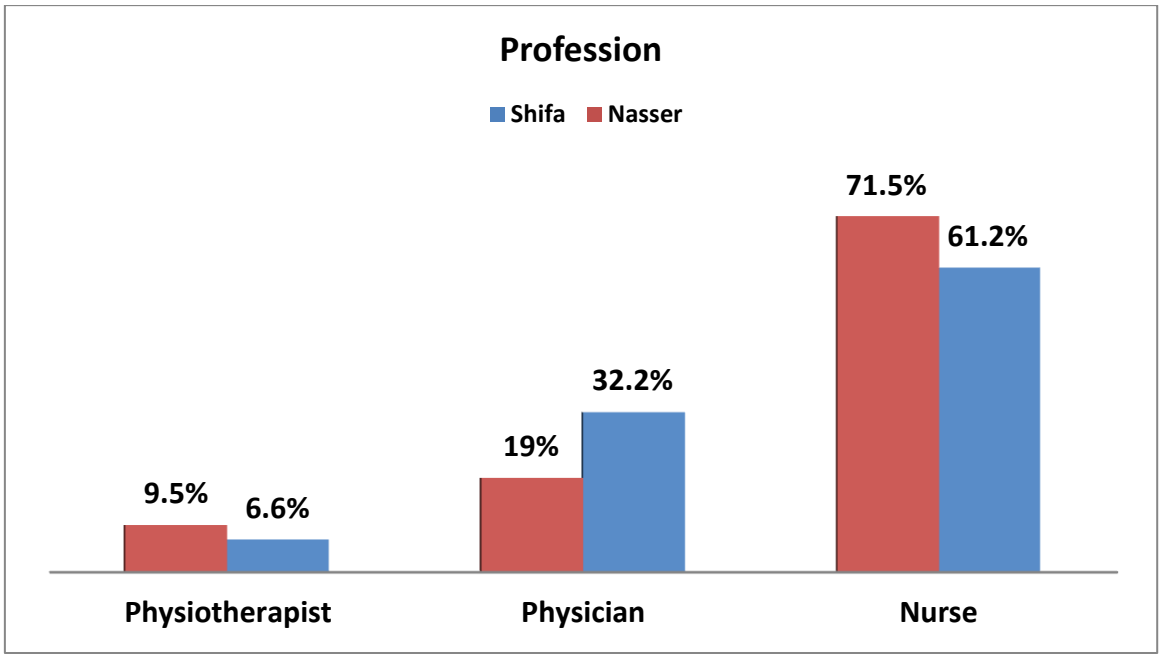


Figure (3.3): percentage distribution of participant according to profession

4.3.4 Qualification

Regarding to the qualification of participants the table (4.3) shown that participants who have a bachelor degree are most prominent in burn unit of Shifa hospital, which constituted 45.1%, while 42% of participants have a postgraduate degree and only 12.9% have diploma degree. In burn unit of Nasser hospital about 57.1% of participants have a bachelor degree, while 33.3 % of participants have a diploma degree and only 9.6% have postgraduate degrees.

4.3.5 Years of experience

Concerning to years of experience as shown in table (4.3) that 45.2% of participants in a burn unit of Shifa hospital have experienced (5-9) years, 45.2% have experience (more than 10) years and only 9.6% have experience (1-4) years. In burn unit of Nasser hospital about 57.1% of participants have experience(5-9) years, 23.9% have experience (more than 10) years and only 19% have experience (1-4) years.

4.4 Availability of multidisciplinary team

This part discusses the availability of multidisciplinary team in both burn units in Gaza governorates as follows:

4.4.1 Availability of intensivist

Concerning to availability of intensivist in a burn unit of Shifa hospital the researcher noted that mean percentage 30.32% of health care provider agreed on availability of intensivist in the burn unit, while in burn unit of Nasser hospital mean percentage 31.43% of health care provider. The overall mean percentage for availability of intensivist was 30.87% as shown in table (4.1). According to Palestine national protocols for burns care and management should available one intensivist in the burn unit of Shifa hospital. In many instances the role of burn intensivist is currently filled by the burn an anesthetist. These results indicated the need to employ or sort intensivist to offer quality care to burn patients in governmental hospitals.

Table (4.1): Distribution participants' responses by the availability of intensivist

			Shifa	Nasser	Total
Available of intensivist in burn unit.	**Highly disagree**	**No**	17	15	32
		%	54.9	71.4	61.5
	Disagree	**No**	13	3	16
		%	41.9	14.3	30.8
	Not sure	**No**	0	1	1
		%	0	4.8	1.9
	Agree	**No**	1	1	2
		%	3.2	4.8	3.9
	Highly agree	**No**	0	1	1
		%	0	4.8	1.9
	Total	**No**	31	21	52
		%	100	100	100
	Mean		**1.52**	**1.57**	**1.54**
	Mean %		**30.32**	**31.43**	**30.87**

4.4.2 Availability of anesthetist in burn unit

Regarding to availability of anesthetist in a burn unit of Shifa hospital the researcher reported that mean percentage 45.16% of health care provider agreed on availability of anesthetist in the burn unit, while in burn unit of Nasser hospital mean percentage 30.48% of health care provider. The overall mean percentage for availability of anesthetist was 37.82% as shown in table (4.2). According to Palestine national protocols for burns care and management should available 4 residents in intensive care or anesthesiology in the burn unit at Shifa. These indicated the need to employ or sort anesthetist to offer care to burn patients in both burn units.

Table (4.2): Distribution participants' responses by the availability of anesthetist

			Shifa	Nasser	Total
Available of anesthetist in burn unit.	**Highly disagree**	**No**	6	12	18
		%	19.4	57.1	34.7
	Disagree	**No**	18	8	26
		%	58.1	38.2	50
	Not sure	**No**	1	0	1
		%	3.2	0	1.9
	Agree	**No**	5	1	6
		%	16.1	4.7	11.5
	Highly agree	**No**	1	0	1
		%	3.2	0	1.9
	Total	**No**	31	21	52
		%	100	100	100
	Mean		**2.26**	**1.52**	**1.89**
	Mean %		**45.16**	**30.48**	**37.82**

4.4.3 Availability of sufficient number of plastic surgeons

For availability of a sufficient number of plastic surgeons in the burn unit of Shifa hospital the researcher noted that mean percentage 58.06% of health care provider agreed on the availability of a sufficient number of plastic surgeons, while in burn unit of Nasser hospital

mean percentage 43.81% of health care provider. The overall mean percentage for availability of a sufficient number of plastic surgeons was 50.93% as shown in table (4.3). According to Palestine national protocols for burns care and management should available4 specialized burn surgeons in the burn unit of Shifa hospital. These indicated the need to employ physicians to offer care to burn patients in both burn units.

Table (4.3): Distribution participants' responses by the availability of sufficient number of plastic surgeons

			Shifa	Nasser	Total
Availability of sufficient number of plastic surgeons in burn unit	**Highly disagree**	**No**	1	5	6
		%	3.2	23.8	11.6
	Disagree	**No**	15	9	10
		%	48.4	42.9	19.3
	Not sure	**No**	2	5	7
		%	6.4	23.8	13.4
	Agree	**No**	12	2	14
		%	38.8	9.5	26.9
	Highly agree	**No**	1	0	15
		%	3.2	0	28.8
	Total	**No**	31	21	52
		%	100	100	100
	Mean		**2.90**	**2.19**	**2.54**
	Mean %		**58.06**	**43.81**	**50.93**

4.4.4: Availability of director for plastic surgeons

The vast majority of health care provider about the availability of director for plastic surgeons in the burn unit of Shifa hospital was 95.48%, while in the burn unit of Nasser hospital was 78.10% of health care provider. The overall mean percentage for availability director for plastic surgeons was 86.79% as shown in table (4.4).

Table(4.4): Distribution participants' responses by the availability of director for plastic surgeons

			Shifa	Nasser	Total
Available of director for plastic surgeons in burn unit.	**Highly disagree**	**No**	0	2	2
		%	0	9.5	3.8
	Disagree	**No**	0	2	2
		%	0	9.5	3.8
	Not sure	**No**	1	0	1
		%	3.2	0	1.9
	Agree	**No**	5	9	14
		%	16.2	42.9	26.9
	Highly agree	**No**	25	8	33
		%	80.6	38.1	63.6
	Total	**No**	31	21	52
		%	100	100	100
	Mean		**4.77**	**3.90**	**4.33**
	Mean %		**95.48**	**78.10**	**86.79**

4.4.5 Availability of clinical pharmacist

Regarding to availability of clinical pharmacist in a burn unit in Shifa hospital the researcher reported that mean percentage 33.55% of health care provider agreed on availability of clinical pharmacist in a burn unit. According to Palestine national protocols for burns care and management should available clinical pharmacist on call, while in the burn unit of Nasser hospital mean percentage 27.26% of health care provider. The overall mean percentage for availability of clinical pharmacist was 30.58% as shown in table (4.5). These indicated the need to employ a clinical pharmacist to offer care to burn patients.

Table (4.5): Distribution participants' responses by the availability of clinical pharmacist

			Shifa	Nasser	Total
Available of clinical pharmacist in a burn unit.	**Highly disagree**	**No**	12	13	15
		%	38.7	61.9	28.8
	Disagree	**No**	18	8	26
		%	58.1	38.1	50
	Not sure	**No**	0	0	0
		%	0	0	0
	Agree	**No**	1	0	1
		%	3.2	0	1.9
	Highly agree	**No**	0	0	0
		%	0	0	0
	Total	**No**	31	21	52
		%	100	100	100
	Mean		**1.68**	**1.38**	**1.53**
	Mean %		**33.55**	**27.62**	**30.58**

4.4.6 Availability of a pediatrician

Regarding to availability of the pediatrician in a burn unit in Shifa hospital the researcher reported that mean percentage 32.26% of health care provider agreed on availability of pediatrician in burn unit. According to Palestine national protocols for burns care and management should available pediatrician on call, while in the burn unit of Nasser hospital mean percentage 25.71% of health care provider. The overall mean percentage for availability of pediatrician was 28.98% as shown in table (3.6). These indicated the need to employ or sort pediatrician to offer care to burn patients.

Table (4.6): Distribution participants' responses by the availability of a pediatrician

			Shifa	Nasser	Total
Availability of a pediatrician in burn unit.	**Highly disagree**	**No**	14	16	30
		%	45.2	76.2	57.7
	Disagree	**No**	16	4	20
		%	51.2	19	38.5
	Not sure	**No**	0	1	1
		%	0	4.8	1.9
	Agree	**No**	1	0	1
		%	3.2	0	1.9
	Highly agree	**No**	0	0	0
		%	0	0	0
	Total	**No**	31	21	52
		%	100	100	100
	Mean		**1.61**	**1.29**	**1.45**
	Mean %		**32.26**	**25.71**	**28.98**

4.4.7 Availability of dietitian

Regarding to availability of dietitian in a burn unit of Shifa hospital the researcher reported that mean percentage 29.03% of health care provider agreed on availability of dietitian in the burn unit. According to Palestine national protocols for burns care and management should available one dietitian, while in the burn unit of Nasser hospital mean percentage was 28.57% of health care provider. The overall mean percentage for availability of dietitian was 28.8% as shown in table (4.7). These indicated the need to employ dietitian to offer nutritional needs to burn patients.

Table (4.7): Distribution participants' responses by the availability of dietitian

			Shifa	Nasser	Total
Available of dietitian in burn unit.	**Highly disagree**	**No**	19	13	32
		%	61.3	61.9	61.5
	Disagree	**No**	11	7	18
		%	35.5	33.3	34.7
	Not sure	**No**	0	1	1
		%	0	4.8	1.9
	Agree	**No**	1	0	1
		%	3.2	0	1.9
	Highly agree	**No**	0	0	0
		%	0	0	0
	Total	**No**	31	21	52
		%	100	100	100
	Mean		**1.45**	**1.43**	**1.44**
	Mean %		**29.03**	**28.57**	**28.8**

4.4.8 Availability of nursing supervisor

The vast majority of health care provider about availability of nursing supervisor in the burn unit of Shifa hospital was 96.13%, while in the burn unit of Nasser hospital was 84.76% of health care provider. The overall mean percentage for availability nursing supervisor was 90.44% as shown in table (4.8).

Table (4.8): Distribution participants' responses by the availability of nursing supervisor

			Shifa	Nasser	Total
Available of nursing supervisor in burn unit.	**Highly disagree**	**No**	0	0	0
		%	0	0	0
	Disagree	**No**	0	0	0
		%	0	0	0
	Not sure	**No**	0	2	2
		%	0	9.5	3.8
	Agree	**No**	6	12	18
		%	19.4	57.1	34.6
	Highly agree	**No**	25	7	32
		%	80.6	33.3	61.6
	Total	**No**	31	21	52
		%	100	100	100
	Mean		**4.81**	**4.24**	**4.52**
	Mean %		**96.13**	**84.76**	**90.44**

4.4.9 Availability of sufficient number of nurses

Regarding to availability of sufficient number of nurses in a burn unit of Shifa hospital the researcher reported that mean percentage 52.9% of health care provider agreed on the availability of a sufficient number of nurses in the burn unit. According to Palestine national protocols for burn care and management should available 32 nurses in burn and operation theatre and intensive care, while in burn unit of Nasser hospital mean percentage was 42.8% of health care provider. The overall mean percentage for availability of a sufficient number of nurses was 47.88% as shown in table (4.9). These indicated the need to employ nurses to offer care to burn patients.

Table (4.9): Distribution participants' responses by the availability of sufficient number of nurses

			Shifa	Nasser	Total
Available of sufficient number of nurses in a burn unit.	**Highly disagree**	**No**	6	9	15
		%	19.4	42.8	28.7
	Disagree	**No**	11	12	23
		%	35.5	57.2	44.2
	Not sure	**No**	3	0	3
		%	9.7	0	5.8
	Agree	**No**	10	0	10
		%	32.2	0	19.4
	Highly agree	**No**	1	0	1
		%	3.2	0	1.9
	Total	**No**	31	21	52
		%	100	100	100
	Mean		**2.65**	**2.14**	**2.39**
	Mean %		**52.9**	**42.8**	**47.88**

4.4.10 Availability of sufficient number of physiotherapists

For availability of a sufficient number of physiotherapists in a burn unit of Shifa hospital the researcher noted that mean percentage 82.58% of health care provider agreed on the availability of a sufficient number of physiotherapists. According to Palestine national protocols for burns care and management should available 4 physiotherapists in the burn unit of Shifa hospital. While in burn unit of Nasser hospital mean percentage was 81.90% of health care provider. The overall mean percentage for availability of a sufficient number of plastic surgeons was 82.24% as shown in table (4.10).

Table (4.10): Distribution participants' responses by the availability of sufficient number of physiotherapists

			Shifa	Nasser	Total
Available of sufficient number of physiotherapists in burn unit	**Highly disagree**	**No**	0	0	0
		%	0	0	0
	Disagree	**No**	2	0	2
		%	6.5	0	3.8
	Not sure	**No**	1	0	1
		%	3.2	0	1.9
	Agree	**No**	19	19	38
		%	61.3	90.5	73.1
	Highly agree	**No**	9	2	11
		%	29	9.5	21.2
	Total	**No**	31	21	52
		%	100	100	100
	Mean		**4.13**	**4.10**	**4.11**
	Mean %		**82.58**	**81.90**	**82.24**

4.4.11 Availability of occupational therapist

Concerning to availability of occupational therapist in a burn unit of Shifa hospital the researcher noted that mean percentage 36.77% of health care provider agreed on availability of the occupational therapist. According to Palestine national protocols for burns care and management should available one occupational therapist in the burn unit of Shifa hospital. While in burn unit of Nasser hospital mean percentage 34.29% of health care provider. The overall mean percentage for availability of occupational therapist was 35.53% as shown in table (4.11).

Table (4.11): Distribution participants' responses by the availability of occupational therapist

			Shifa	Nasser	Total
Available of occupational therapist in burn unit.	**Highly disagree**	**No**	11	12	23
		%	35.5	57.1	44.2
	Disagree	**No**	17	6	23
		%	54.8	28.6	44.2
	Not sure	**No**	1	0	1
		%	3.2	0	1.9
	Agree	**No**	1	3	4
		%	3.2	14.3	7.8
	Highly agree	**No**	1	0	1
		%	3.2	0	1.9
	Total	**No**	31	21	52
		%	100	100	100
	Mean		**1.84**	**1.71**	**1.77**
	Mean %		**36.77**	**34.29**	**35.53**

4.4.12 Availability of psychologist

For availability of a psychologist in a burn unit of Shifa hospital the researcher reported that mean percentage 54.84% of health care provider agreed on availability of psychologist. According to Palestine national protocols for burn care and management should available one psychologist or psychiatrist in the burn unit of Shifa hospital. While in burn unit of Nasser hospital mean percentage 28.57% of health care provider. The overall mean percentage for availability psychologist was 41.7% as shown in table (4.12).

Table (4.12): Distribution participants' responses by the availability of psychologist

			Shifa	Nasser	Total
Available of psychologist in burn unit.	**Highly disagree**	**No**	2	12	14
		%	6.5	57.1	26.9
	Disagree	**No**	15	9	24
		%	48.4	42.9	46.1
	Not sure	**No**	4	0	4
		%	12.9	0	7.7
	Agree	**No**	9	0	9
		%	29	0	17.4
	Highly agree	**No**	1	0	1
		%	3.2	0	1.9
	Total	**No**	31	21	52
		%	100	100	100
	Mean		**2.74**	**1.43**	**2.08**
	Mean %		**54.84**	**28.57**	**41.7**

4.4.13 Availability of social worker

For availability of social worker in a burn unit of Shifa hospital the researcher reported that mean percentage 34.19% of health care provider agreed on the availability of social worker. According to Palestine national protocols for burns care and management should available one social worker in the burn unit of Shifa hospital. While in burn unit of Nasser hospital mean percentage 28.57% of health care provider. The overall mean percentage of availability social worker was 28.52% as shown in table (4.13).

Table (4.13): Distribution participants' responses by the availability of social worker

			Shifa	Nasser	Total
Available of social worker in burn unit.	**Highly disagree**	**No**	14	18	32
		%	45.2	85.7	61.7
	Disagree	**No**	15	3	18
		%	48.4	14.3	34.6
	Not sure	**No**	0	0	0
		%	0	0	0
	Agree	**No**	1	0	1
		%	3.2	0	1.9
	Highly agree	**No**	1	0	1
		%	3.2	0	1.9
	Total	**No**	31	21	52
		%	100	100	100
	Mean		**1.71**	**1.14**	**1.42**
	Mean %		**34.19**	**22.86**	**28.52**

4.4.14 Summary of availability of multidisciplinary team

Burn injuries are a very serious injury that needs special, professional, sophisticated and long care. A multidisciplinary team is required. This team should be well trained in burns management and cover all needs of burn injury care. The team should include physician, surgeons, anesthetists, intensivists, nurses, dieticians, physiotherapists, social worker and others. Nearly two third of multidisciplinary team elements were unavailable in two burn units of Shifa and Nasser hospitals in Gaza governorates.

4.5 Focus groups results

The researcher conducted two focus groups, one at the burn unit of Shifa hospital and one in the burn unit of Nasser hospital. Each group consisted of five health care providers who were working in the burn unit. Notes were taken during the interview with each group and recorded by recorder. Every group took between 30-45 minutes. The interview was directed by the researcher. Volumes of data are gathered throughout the data collection process which requires the researcher to complete a reduction in data through categorizing and identifying similar themes. This process allows the researcher to interpret findings more easily.

Focus groups interview perceptive concentrated on three themes:

1. What about protocol.
2. What about reporting of data related to burn patients.
3. What about coordination with other services.

Each interview started with introduction and welcoming the health care providers, then informing the health care providers about the purpose of the interview, then asking the health care providers to express their perspectives.

firstly i started with introduction of evaluation it is a critical tool for demonstrating a program's impact and assessing quality improvement, quality of care, and cost. Evaluation findings may be used to assess the effectiveness of the care coordination program, determine return on investment and identify future programmatic needs. Then about protocol this an agreed standardized way of performing a task. A process that is repeatable and reproducible and it has some advantages like it enables all procedures to be undertaken in a standard manner, lead to inter-operator independence, any member of staff should

produce same/similar results and enables new staff to familiarize themselves with studies quickly.

Then i asked the health care providers in a burn unit in Shifa hospital to talk about protocols in the burn unit. The results showed that all participants said we have protocols (Palestine National Protocols for burns care and management) and it is established after the end of Operation Cast Lead in 2009 after an assessment from the UK team this assessment identified that severity and heavy burden of burns casualties in GS necessitated immediate intervention. Following the assessment a plan was develop to upgrade burns services in GS through renovation work, the provision of necessary equipment, educational training and capacity development for doctors and nurses working in MOH burns units and emergency rooms, as well as the development of National Burns Protocols to ensure consistent quality of care and management of server burns. All of them agreed on implementation of protocols, every health care provider have a hardcopy of protocol, it contains 16 protocols covering all aspects of burn management and applicable in the burn unit exclude protocol of the team member of burn unit, nutritional management of burns patients, antibiotics protocol and infection prevention protocol. All of participants said there are some barriers to application these protocols such as shortage of supplies like shoes cover, patient gown, alcohol hand rub, shortage of human resources specially dietician, lack of support by management one of them said" I requested many times to get dietician but no responses".

3out of 5 said we have some opportunities like donation form international organization.

In burn unit of Nasser hospital, 3 out of 5 said that nearly half of protocols are applicable. About the availability of protocols with health care providers one of them said "I do not have a hardcopy of protocols" another one said "I have hard copy but i do not remember where i put it". About barrier of implementation of protocol all participants said there are great difficulties to applicable protocols such as inappropriate separate ward for burn

injuries one of them said" I do not have close observation for burns patients", do not have enough equipment and supplies needed to care burn patients, shortage of nurses in after noon, night shift there are not enough number of nurse to follow the care and needs of burn patient one of them said " I work with one old female nurse in morning period"

In addition, shortage of physicians inhabit implementation of protocol because there is not enough number of physicians to cover the burn unit one them said " In an afternoon, night period and weekend there is no physician in burn unit the general practitioner who admit the burns patients to burn unit" and presence of visitors and family members.

According to above we should ensuring the availability of burn management protocols through checking the availability of protocol at the burn unit in place of wound management, printing enough copies of protocol and distribute it, explain protocol for health care providers, provide training to health care providers about protocol (on job training) and provide the job aids about burn protocol.

The secondly i introduced importance of reporting data is the foundation of decision-making across all health system building blocks, and is essential for health system policy development and implementation, governance and regulation, health research, human resources development, health education and training, service delivery and financing. In addition to being essential for monitoring and evaluation, the information system also serves broader ends, providing an alert and early warning capability, supporting patient and health facility management, enabling planning, supporting and stimulating research, permitting health situation and trends analysis, supporting global reporting, and underpinning communication of health challenges to diverse users. I asked the health care providers about reporting of data for burns patients in the burn unit of Shifa hospital. The results showed that all participants said we have burn admission form or chart that fill by

physician who admitted burn patient, that contain high volume of data and it's divided into subheading socio-demographic information of burn patients, history of illness, circumstances of burn injury, cause, percentage, name of surgical procedure, physical examination and discharge status and it consider comprehensive data form and secretary fill it into the computer (Excel Software) after patient discharge. I asked health care providers what about analysis of data all of them said that this work of management of hospital form analysis to write the final report and we received a copy of this report . What about dissemination of results of report all of them said we do not care with this issue.

In burn unit of Nasser hospital the results showed that all participants said we have reporting of data for burns patients like name, age, gender and location. 4 out of 5 said we do not have form or chart like Shifa hospital, all of them agreed on that we do not have enough resources like secretary and doctors to fill data but two of them said in one time "we do not have burn admission form". I asked them about data analysis we do not interfere with this task, the secretary of hospital director who do this report and other statistics. I asked them do you use this report in planning one out of five said "yes i benefited from report without it we cannot built new burn unit. I asked health care providers do you think that data enough, all of them agree on that is very little data and if we have enough human resource we can do more shifa hospital.

According to above should encourage the availability of needed resources like equipment, computer and records. Explain the importance of reporting data for burn patients, sharing results using results.

Thirdly theme i asked health care providers about coordination with other services after i gave information about importance of coordination in health care. I asked the health care providers in a burn unit in Shifa hospital to talk about coordination with other services. All of them need for coordination with other services due to the complexity of caring for

patients with burns, many participants emphasized the importance of coordination with other specialists such as psychologist, intensivist, anesthesiologist and clinical pharmacist. All health care providers felt that specialist knowledge can contribute crucially to burn patients and where this coordination did take place. However, many participants 4 out of 5 expressed that the difficulties of coordination were unlimited due to time constraints of specialist, overload of work and inadequate number of health workers..

In burn unit of Nasser hospital all health care providers agreed that coordination is not smooth because severe shortage of physicians, absent of management and overload work on health care providers . One of them said "I called with specialist three times every time said I am going to you until the morning shift finished and he did not come for burn patient" and another one said "I called with intenivist from my cell phone to examine burn patient suffering from dyspnea and he came after long time"

There was a clear consensus amongst participants that coordination with other services and specialist should be considered and strengthened trough gaining commitment from management and sorting or employee new health care workers to help in improve of burn patients care

Palestine national protocols for burns care and management funded by Medical Aid for Palestinians (MAP) in 2012 after the end of Operation Cast Lead in 2009 by assessment team from the UK, including both Dr. Sweeang and Ghassan Abu Sitta.

The data collected from health care providers in this study offer an important insight into the perspectives of those themes should be involved in the delivery of care for burn patients.

Chapter Five

5. Conclusion and recommendations

5.1 Conclusion

One of the most important goals of any health system in the world is to provide high quality health services, respond to the needs and expectation of service users.

This study might be a step in the development of health services provided for burn patients by providing a baseline and identifying needs to be addressed in future.

This descriptive and cross sectional study aimed to evaluate the burn services provided in governmental hospitals in Gaza governorates. The participants of the study consisted of 52 health care providers. The study result showed that incidence rate 25.5/100,000 in year 2014 for hospitalized burns patients and high incidence rate was observed in Khanyouins governorate was 50.86/100,000 in the year 2014. The mortality rate for burns patients was 0.89/100,000 in the year 2014. Regarding to gender the male were 60.3% and female were 39.7%. The majority of burn injuries were in the age group under five of age was 41.9%. Regarding to facilities and services nearly half of facilities and services were unavailable in two hospitals. For Multidisciplinary team nearly two third of multidisciplinary team elements were unavailable in two burn units. Focus groups results indicated compliance with Palestine national protocols for burns care and management, reporting of data related to burn patients and coordination with other services were weak.

In conclusion, the results emphasized the importance of availability of facilities and services and multidisciplinary team to minimize the unwanted complications that could affect the quality of burn patients.

5.2 Recommendations

In the light of the study results, the researcher recommends the following:

- Strength Inter-sectoral coordination because burns are not only related to the health sector.
- Support burn units with staff, especially surgeons and nurses.
- Encourage multi-disciplinary team in caring for burns patients, including intensivist, clinical pharmacist, occupational therapist, anesthesiologist, social worker, psychotherapist, dietician and pediatrician.
- Provide training and professional development learning opportunities through Telehealth support for nurses and allied health professionals.
- MOH is required to expand their facilities and services for burn patients.
- Enhancing health information system specially in burn units in order to develop an appropriate burn care services based on evidence.
- Supporting infrastructure of burn units such as equipment, supplies.
- Improve the structure and design in burn units to suitable to burn patient condition.
- Integrate and coordinate with other relevant disciplines to achieve psychosocial care, including psychiatry, social services.
- Education and awareness promotion, public awareness through different communication channels and education through schools could be provided about burn related safety practices and more importantly about immediate first aid management of burns before arrival in hospital.

5.3 Suggestions for further research

- To carry out a study to examine the quality of life among burn patients.
- To carry out a study of costing of burn injuries management.
- To carry out a study of psychological impact of adult burn patients.

References

Abu Mughasieeb, M. (2015), "Post traumatic Stress Disorder and Depression Disorder among Children victims of burns in Gaza governorates: Comparative study. Master thesis, Jerusalem- Palestine.

Al Mousawi, A., Mecott-Rivera, G., Jeschke, M. and Herndon, D. (2009), "Burn Teams and Burn Centers: The Importance of a Comprehensive Team Approach to Burn Care" Clinical Plastic Surgery, 36, 4, 547–554.

Aspinwall, K. (1996), "Becoming learning organization: the implications for professional development" Management in Education, 10, 4, 7-9.

Barret, JP., Gomez, P. and Solano, I. (1999), " Epidemiology and mortality of adult burns in Catalonia" Burns, 25, 4, 325-9.

Batra, A. (2003), " Burn mortality: recent trends and sociocultural determinants in rural India" Burns, 29, 3, 270-5.

Brusselaers, N., Monstrey, S., Vogelaers, D., Hoste, E. and Blot, S. (2010), "Severe burn injury in Europe: a systematic review of the incidence, etiology, morbidity, and mortality" Critical Care, 15, 5, 3-11.

British Burn Association (2001). www.baps.co.uk.[Electronically accessed Dec. 22 2015], BBA.

El-Sabbah, S. (2004), " Unintentional Injuries among Children in Gaza Stirp: An Epidemiological Assessment" Master thesis, Jerusalem- Palestine.

Celis, M., Suman, OE., Huang, TT., Yen, P., and Herndon, DN. (2003),"Effect of a supervised exercise and physiotherapy program on surgical interventions in children with thermal injury" Journal Burn Care Rehabilitation, 24, 1, 57–61.

Donabedian, A. (1996),"The effectiveness of quality assurance" International Journal Quality Health Care, 8, 401- 407.

Delgado, J., Ramírez-Cardich, M., Gilman, R., Lavarello, R., Dahodwala, N., Bazán, A., Rodríguez, V., Cama, R., Tovar, M. and Lescano, A. (2013), "Risk factors for burns in children: crowding, poverty, and poor maternal education" Injury Prevention, 2002, 8, 39-40.

De Sousa, A., Sonavane, S. and Kurvey, A. (2013),"Psychological issues in Adult Burn Patients" Delhi Psychiatry Journal, 16, 1, 24-8.

Dokter, J., Vloemans, AF., Beerthuizen, GI., van der Vlies, CH., Boxma, H., Breederveld, R., Tuinebreijer, WE., Middelkoop, E. and van Baar, ME. (2014)," Epidemiology and trends in severe burns in the Netherlands" Burns, 40, 7,1406-4.

Edelman, LS.(2007),"Social and economic factors associated with the risk of burn injury. Burns, 33, 8, 958.

Esselman, PC. (2007),"Burn rehabilitation: an overview" Archives of Physical and Medical Rehabilitation, 88, 2, 3–6.

European Burn Association (2002). http://www.britishburnassociation.org/european-standards. [Electronically accessed Aug. 6 2015], EBA.

Fadaak, R., Balial, S., Hegazi, M., AI-Hoqail, R. and AI-Awad, N. (1999), " Analyses and outcome of 835 burn injury admissions to the burn unit, King Fahd Hospital, AL-Khobar, Saudia Arabia" Annals of Burns and Fire Disasters, 12, 4.

Forjuoh, SN.(1996),"Burn repetitions in Ghanaian children: prevalence, epidemiological characteristics and socio environmental factors" Burns, 22,7, 539.

Golshan, A., Patel, C. and Hyder, A. (2013), "A systematic review of the epidemiology of unintentional burn injuries in South Asia" Journal of Public Health 14, 2013,1-9.

Goutos, I., Dziewulski, P. and Richardson, PM. (2009),"Pruritus in burns: review article" Journal of burn care & research, 30, 2, 221–8.

Gilbert, M. (2014), Brief report on Gaza. Gaza City. Occupied Palestinian Territory, July 2014.

Goodarzi, M., Reisi-Dehkordi, N., Daryabeigi, R. and Zargham-Boroujeni, A. (2014), "An epidemiologic study of burns: Standards of care and patients' outcomes" Iran Journal of Nursing and Midwifery Research, 19, 4, 385–389.

Granger, J. (2009),"An Evidence-Based Approach to Pediatric Burns" Pediatric Emergency Medicine Practice, 6, 1, 2-8.

Haik, J. Tessone, A. Givon, A. Orenstein, A. and Peleg, K. (September 2007), "Burns in Israel: Demographic, Etiologic and Clinical Trends, 1997–2003" The Israel Medical Association Journal, 9, 2007, 659-60.

Health Cluster, (2014), Joint Health Sector Assessment Report, Gaza Strip.

Heinemann, G., and Zeiss, A. (2002), Team performance in health care: assessment and development. New York: Kluwer Academic/ Plenum publishers.

Hemeda, M., Maher, A. and Mabrouk, A. (2003), " Epidemiology of burns admitted to Ain Shams University Burns Unit, Cairo, Egypt" Burns, 29,4, 353-8.

Hermans, M. (2005),"A general overview of burn care" Journal of International Wound, 2, 3, 206-220.

Herndon, D. (2007),"Chapter 1: History of treatments of burn "Total burn care (3th ed.) Saunders Elsevier. p1-6.

Herndon, D. (2012), "Chapter 4: Prevention of Burn Injuries" Total burn care (4th ed.) Edinburgh: Saunders. p. 46.

Herndon, DN and Blakeney, PE. (2007), "Teamwork for Total Burn Care: Achievements, Directions, and Hopes" Philadelphia, PA: Saunders; p. 9-13.

Hettiaratchy, S. and Papini, R. (2004),"Initial management of a major burn: assessment and resuscitation." British Medical Journal (Clinical research ed.), 329,7457, 101–3.

International Monetary Fund (2014), Report to The Ad Hoc Liaison Committee, September 12, 2014. West Bank and Gaza: IMF.

Institute for Innovation and Improvement, 2008. http:// www.institute.nhs.uk/quality_and.../protocol_based_care.html[Electronically accessed May. 26 2016].

Jagannath, S.,Vinay, T. and Madhavi, R. (2011), "Study of socio-demographic profile of burn cases admitted in shrichhatrapatishivajimaharaj general hospital, Solapurnnational" Journal Of Community Medicine, 2, 1, 20-22.

Krishnamoorthy, V., Ramaiah, R. and Bhananker, S. (2012), "Pediatric burn injuries" International Journal Critical Illness Injury Sciences 2, 3, 128–134.

Madison, KC. (2003),"Barrier function of the skin" The Journal of Investigative Dermatology, 121, 2, 231-41.

Mancuso, MG., Bishop S. and Blakeney, P. (2003), "Impact on the family: psychosocial adjustment of siblings of children who survive serious burns". Journal of Burn Care and Research,2003, 24, 2.

Marcus, J., Hollander, Jo., Ann, M. and Helena, K. (2010), "Evaluation of Health care Services: Asking the Right Questions to Develop New Policy and Program-Relevant Knowledge for Decision-Making Healthcare Quarterly, 13, 4, 40-42.

McKibben, JB., Ekselius, L.0., Girasek, DC., Gould, NF., Holzer, C.and Rosenberg, M. (2009), "Epidemiology of burn injuries II: psychiatric and behavioral perspectives" International Review of Psychiatry, 21, 6, 512-21.

Melvin, L. (1989), "Status report on interdisciplinary medical education" Archives of Physical Medicine and Rehabilitation, 70, 273–276.

Ministry of Health (2012), Palestine National protocols For Burns Care and Management. State of Palestine Ministry of Health: MOH.

Ministry of Health (2014a), National Health Strategy 2014-2016. State of Palestine Ministry of Health: MOH.

Ministry of Health (2014b), daily situation report August 2014. Gaza Strip: MOH.

Partridge, J. and Robinson, E. (1995), "Psychological and social aspects of burns" Burns, 21, 6, 453–7.

Mahdavi, M., Nozary, B., Tavakoli, S., Ayaz, M., Azmoudeh, F. and Momeni, M. (2013), "Human Split-Thickness Skin Allograft: Skin Substitute in the Treatment of Burn" International Journal Organ Transplant Medicine,4, 3, 96–101.

Morris, J. and Fadd, A. (1978), "The mental health team on a burn unit: a multidisciplinary approach" Journal of Trauma, 18, 9, 658–663.

Office for the Coordination of Humanitarian Affairs (2014), Gaza Crisis Appeal- August 2014, Occupied Palestinian Territory: OCHA.

Onarheim, H. and Vindenes, H.(2004),"Hospital admissions for burns" Tidsskr Nor Laegeforen (Article in Norwegian), 124, 16, 2130-2.

Orgill, DP. and Piccolo, N (2009),"Escharotomy and decompressive therapies in burns" Journal of burn care & research, 30, 5, 759–68.

Othman, N. (2010), "Epidemiology of burn in Sulaymanityah province of Iraq" Thesis submitted to the University of Nottingham for the degree of Doctor of Philosophy 2010.

Othman, N. and Kendrick, D. (2010), "Epidemiology of burn injuries in the East Mediterranean Region: A systematic review" BioMedCentral Public Health,10, 83, 2-10.

Palestinian Academic Society for the Study of International Affairs (2008): [Electronically accessed Feb 26 2015]: PASSIA.

Palestinian Central Bureau of Statistics (2012), Living Standards in the Palestinian Territory: Expenditure, Consumption, Poverty, 2011. Ramallah-Palestine: PCBS.

Palestinian Central Bureau of Statistics (2014), Palestinians at the End of 2014: Ramallah, Palestine: PCBS.

Peck, M. (2011), "Epidemiology of burns throughout the world. Part I: Distribution and risk factors" Journal of the International Society for Burn Injuries, 37, 7, 1087–100.

Proksch, E., Brandner, JM. and Jensen, JM. (2008), "The skin: an indispensable barrier" Experimental Dermatology, 17,12,1063–72.

Rajpura, A. (2002), "The epidemiology of burns and smoke inhalation in secondary care: a population based study covering Lancashire and South Cumbria" Burns, 28, 2, 121-30.

Robinson, K. (2010), "Care coordination: a priority for health reform". Policy, Policies & Nursing Practice, 11,4, 266-274.

Rothberg, J. (1981), "The rehabilitation team: Future direction" Archives of Physical Medicine and Rehabilitation, 62, 407–10.

Saito, H., Trocki, O. and Alexander, J. (1987),"The effect of route of nutrient administration on the nutritional state, catabolic hormone secretion and gut mucosal integrity after burn injury" Journal of Parenteral and Enteral Nutrition, 11, 1, 1–7.

Shakespeare, PG. (1994),"Who should lead the burn care team? Burns, l9, 6, 490–4.

Soeters, PB., van de Poll, MC., van Gemert, WG. and Dejong, CH. (2004), "Amino acid adequacy in pathophysiological states" Journal of Nutrition, Jun, 134, 6, 1575–82.

Song, C. and Chua, A. (2005), "Epidemiology of burn injuries in Singapore from 1997 to 2003" Burns, 31, 1, 18-26.

Smith, JS., Smith, KR. and Rainey, SL. (2006),"The Psychology of burn care" Journal of Trauma Nursing, 2006, 13, 105-6.

Tanaka, H., Aoki, D. and Shimazaki, S. (2005),"Skin allograft and skin bank" Nihon GekaGakkaiZasshi (Article in Japanese), 106,12, 755-9.

Wake Health (2015), http://www.wakehealth.edu/General-Surgery/Burn-Center/Burn-Center-Team.htm. Last Updated: 12-17-2015[Electronically accessed Dec. 20 2015].

William, MK. (2006), Introduction to Evaluation. http: World Health Organization (2014a), Media Centre. http://www.who.int/mediacentre/factsheets/fs365/en/ [Electronically accessed March. 4 2015].

www.socialresearchmethods.net/kb/intreval.htm. [Electronically accessed march 1 2015].

Woodson, LC., Herndon, DN., Dekker, M. and Barret-Nerin, JP.(2005), Anesthesia for Acute Burn Injuries; In Principles and Practice of Burn Surgery. New York, NY: p. 103-133.

World Health Organization (2002a), Injury: A leading cause of the global burden of disease, 2000, Geneva: WHO.

World Health Organization (2002b), The injury chart book: a graphical overview of the burden of injuries, Geneva: WHO.

World Health Organization (2004), Summary: Deaths (000s) by cause, in WHO Regions (a), WHO.

World Health Organization (2006), World Health Report 2006: working to gather for health. Geneva: WHO.

World health organization (2008a), plan for burn prevention and care, Geneva, Switzerland: WHO.

World health organization (2008b), Health Information System, Geneva, Switzerland: WHO.

World Health Organization (2010), Facts about injuries, Burns. http://www.ameriburn.org/WHO-ISBI Burn Factsheet.pdf on 19 February 2010. [Electronically accessed March 3 2015]: WHO.

World Health Organization, (2014a) Fact Sheets.http://www.who.int/mediacentre/factsheets/fs365/en[Electronically accessed Feb 22 2015]:WHO. Updated April 2014.

World Food Program (2013), Gaza Watch 18 July 2013, Palestine: WFP.

Yeroshalmi, F.,Sidoti, E.,Adamo, A., Lieberman, B. and Badner, V. (2011), "Oral Electrical Burns in Children-A Model of Multidisciplinary Care: case report" Journal of Burn Care & Research, 32, 2, 27-9.

Annex (1): Observation checklist

Hospital……

Date……/….. /……..

	Essential facilities and services	Available	Not available
1.	Is there burn care ward specifically for burn injured patients.		
2.	Are there appropriate burn beds for all burn admissions.		
3.	Is there sufficient single-bedded thermally controlled cubicles to care for burn injured patients that require them.		
4.	Are there adult and children cared for in separate facilities.		
5.	Is there temperature controlled operations theatre for providing critical care for burn patients.		
6.	Is there skin substitutes products in burn unit.		
7.	Is there medical aesthetic service for burn patients		
8.	Are there rehabilitation facilities for both in-patients and out-patients.		
9.	Is there pediatric intensive care unit located on the same hospital of burn unit.		
10.	Is there adult intensive care unit located on the same hospital of burn unit.		
11.	Is there critical care for neonates located on the same hospital of burn unit.		
12.	Is there emergency department located on the same hospital of burn unit.		
13.	Are there other services (general/pediatric surgery, orthopedic surgery, radiology, laboratory, physiotherapy service)at the same hospital of the burn unit.		
14.	Is there education services for children and young people who is with burn injury.		

Observation round in burn unit:

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……
……

Annex (2): Questionnaire for health care providers

بسم الله الرحمن الرحيم

جامعة القدس- فلسطين

كلية الدراسات العليا

كلية الصحة العامة

الأخ الزميل / الأخت الزميلة :

تحية طيبة وبعد،،،،

أنا الباحث علاء جميل عبد الرحمن طالب ماجستير بجامعة القدس كلية الدراسات العليا- برنامج الصحة العامة تخصص ادارة صحية أقوم بهذا بإجراء هذا البحث كمتطلب رئيسي من متطلبات الحصول علي شهادة الماجستير، حيث ان الدراسة تهدف الي تقييم الخدمات الصحية الحكومية المقدمة في وحدات الحروق الحكومية-قطاع غزة.

يرجى التكرم بالإجابة علي جميع أسئلة الاستبانة بكل أمانة وصدق ،مع العلم أن مشاركتك في هذه الدراسة طوعية ،كما أن البيانات التي سيتم جمعها سيتم استخدامها للبحث العلمي فقط. هذه الاستبانة سوف تستغرق حوالي ١٥دقيقة لاستكمالها. مهما تكن المعلومات التي تعطيها سوف تبقي سرية وطي الكتمان ولن يطلع عليها أحد باستثناء الباحث.

كل الشكر والتقدير لكم

الباحث

علاء جميل عبد الرحمن

Serial Number:……

Data:…….

Gender: Male ( ) Female( )

Age:……...

Profession: Physician ( ) Nurse ( ) Other health profession ( )……..

Qualification: Diploma ( ) bachelor ( ) Postgraduate ( )

Years of Experience: 1-4 years( ) 5-9 years ( ) more than 10 years ( )

No		Highly disagree	Disagree	Not sure	Agree	Highly agree
1.	Available of intensivist in burn unit.					
2.	Available of anesthetist in burn unit.					
3.	Available of sufficient number of plastic surgeons in burn unit.					
4.	Available of director for plastic surgeons in burn unit.					
5.	Available of clinical pharmacist in burn unit.					
6.	Available of a pediatrician in burn unit.					
7.	Available of dietitian in burn unit.					
8.	Available of nursing supervisor in burn unit.					
9.	Available of sufficient number of nurses in burn unit.					
10.	Available of sufficient number physiotherapists of in burn unit.					
11.	Available of occupational therapist in burn unit.					
12.	Available of psychologist in burn unit.					
13.	Available of social worker in burn unit.					

Annex (3)

Focus groups interview themes:

4. What about protocol.

5. What about reporting of data related to burn patients.

6. What about coordination with other services.

Annex (4): Ethical approval from Helsinki Committee

المجلس الفلسطيني للبحث الصحي

Palestinian Health Research Council

تعزيز النظام الصحي الفلسطيني من خلال ماسسة استخدام المعلومات البحثية في صنع القرار

Developing the Palestinian health system through institutionalizing the use of information in decision making

Helsinki Committee

For Ethical Approval

Date: 03\08\2015

Number: PHRC/HC/42 /15

Name:

الاسم: علاء جميل عبد الرحمن

We would like to inform you that the committee had discussed the proposal of your study about:

نفيدكم علماً بأن اللجنة قد ناقشت مقترح دراستكم حول:-

Evaluation of Health Services Provided at the Governmental Burn Units-Gaza governorates

The committee has decided to approve the above mentioned research. Approval number PHRC/HC/42 /15 in its meeting on 03/08/2015

و قد قررت الموافقة على البحث المذكور عاليه بالرقم والتاريخ المذكوران عاليه

Signature

Member

Member

Chairman

Genral Conditions:-

١٠. Valid for 2 years from the date of approval.

١١. It is necessary to notify the committee of any change in the approved study protocol.

١٢. The committee appreciates receiving a copy of your final research when completed.

Specific Conditions:-

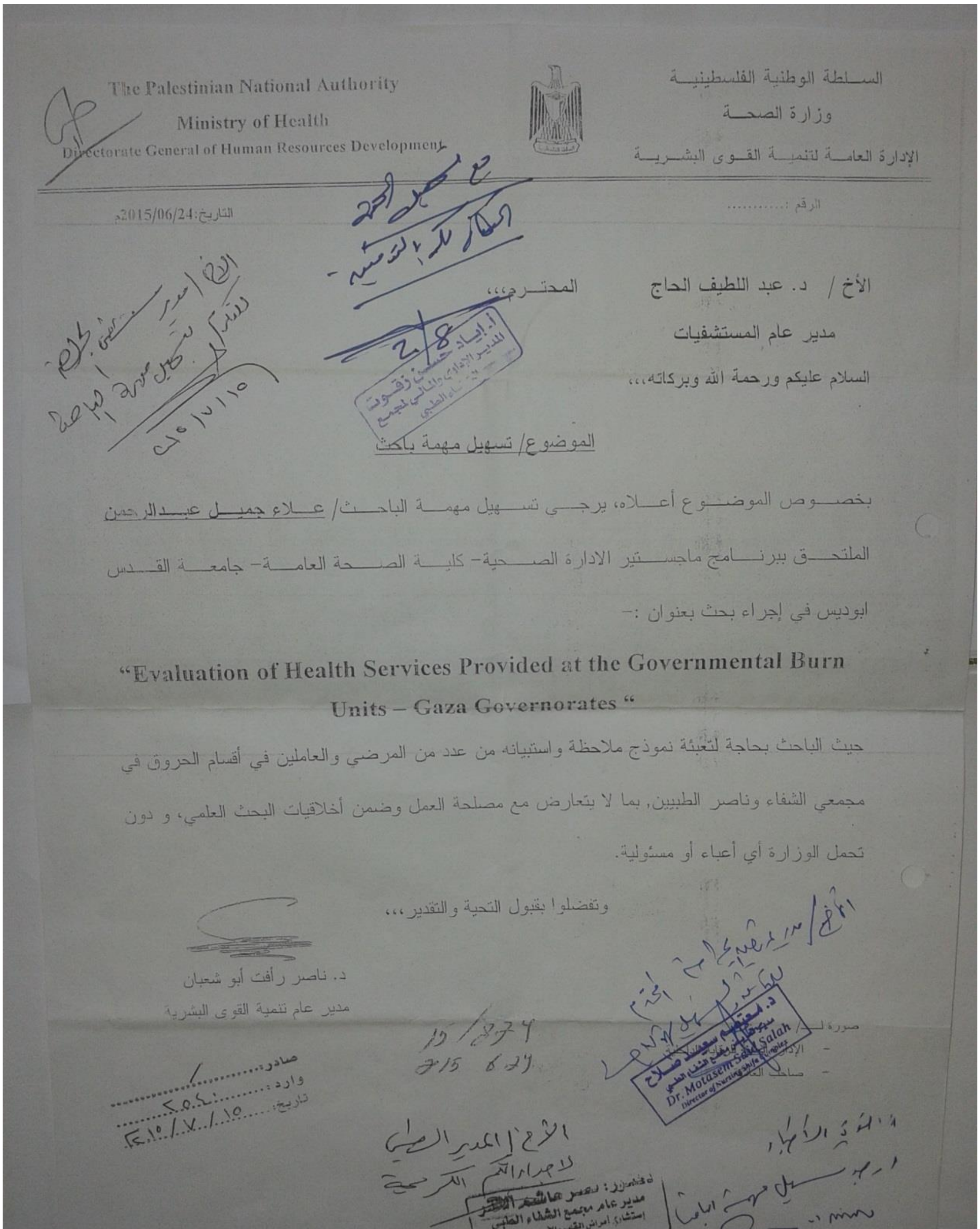
The subject was approved following the World Medical Association Declaration of Helsinki-Ethical principles for medical research involving human subjects, adopted by the 18th World Medical Association General Assembly, Helsinki, Finland, June 1964 and amended by the 59th WMA General Assembly, Seoul, Korea, October 2008.

E-Mail:pal.phrc@gmail.com

Gaza - Palestine غزة - فلسطين

شارع النصر - مفترق العيون

Annex (5):Approval from Al Shifa hospital



The Palestinian National Authority
Ministry of Health
Directorate General of Human Resources Development

السلطة الوطنية الفلسطينية
وزارة الصحة
الإدارة العامة لتنمية القوى البشرية

الرقم :..........

التاريخ:2015/06/24م

الأخ / د. عبد اللطيف الحاج المحترم،،،
مدير عام المستشفيات

السلام عليكم ورحمة الله وبركاته،،،

الموضوع/ تسهيل مهمة باحث

بخصوص الموضوع أعلاه، يرجى تسهيل مهمة الباحث/ علاء جميل عبدالرحمن الملتحق ببرنامج ماجستير الادارة الصحية- كلية الصحة العامة- جامعة القدس ابوديس في إجراء بحث بعنوان :-

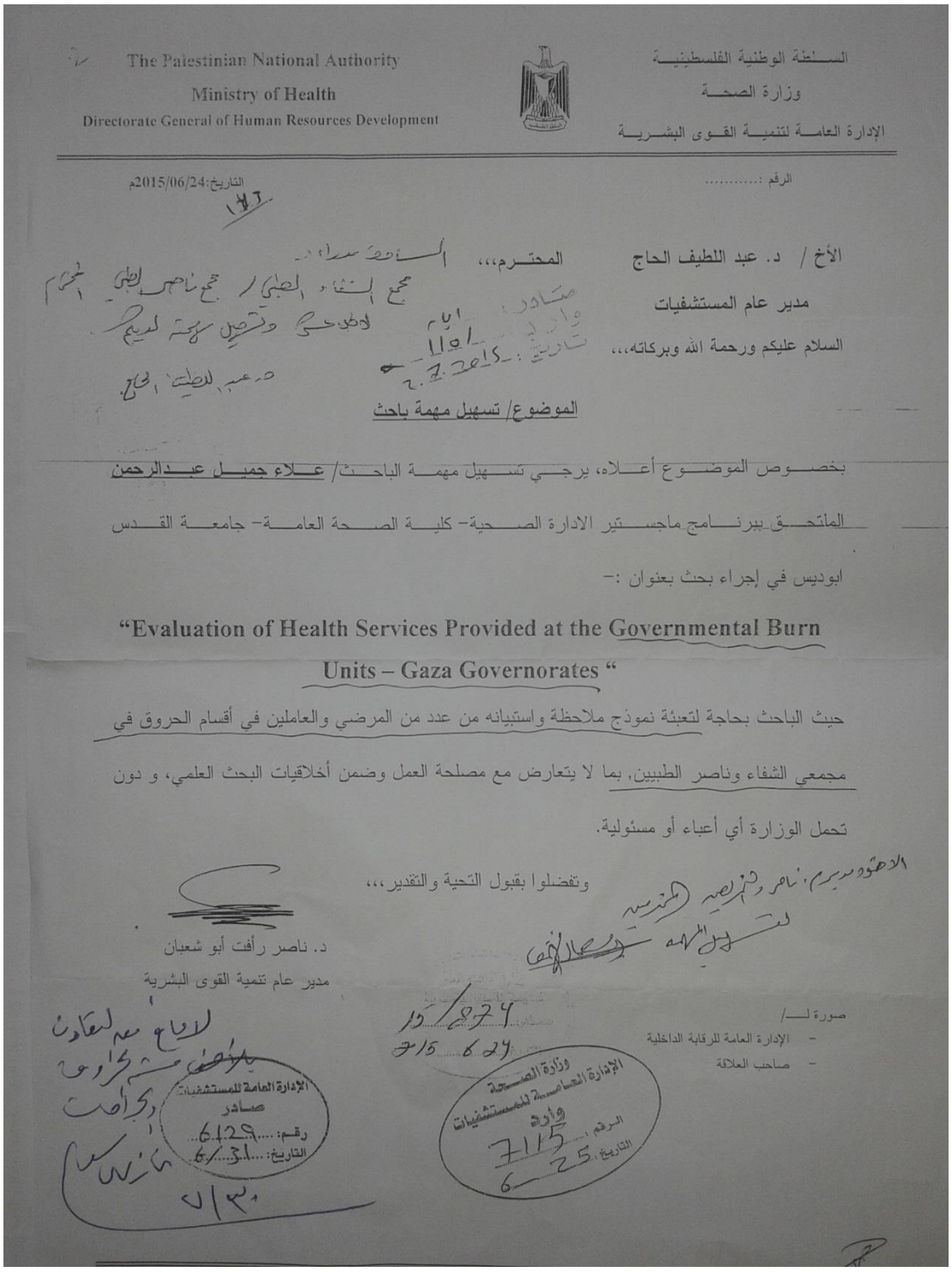
"Evaluation of Health Services Provided at the Governmental Burn Units – Gaza Governorates "

حيث الباحث بحاجة لتعبئة نموذج ملاحظة واستبيانه من عدد من المرضي والعاملين في أقسام الحروق في مجمعي الشفاء وناصر الطبيين, بما لا يتعارض مع مصلحة العمل وضمن أخلاقيات البحث العلمي، و دون تحمل الوزارة أي أعباء أو مسئولية.

وتفضلوا بقبول التحية والتقدير،،،

د. ناصر رأفت أبو شعبان
مدير عام تنمية القوى البشرية

Annex (6): Approval from Nasser hospital



السلطة الوطنية الفلسطينية
وزارة الصحة
الإدارة العامة لتنمية القوى البشرية

The Palestinian National Authority
Ministry of Health
Directorate General of Human Resources Development

الرقم :.....

التاريخ:2015/06/24م

الأخ / د. عبد اللطيف الحاج
مدير عام المستشفيات

المحترم،،،

السلام عليكم ورحمة الله وبركاته،،،

الموضوع/ تسهيل مهمة باحث

بخصوص الموضوع أعلاه، يرجى تسهيل مهمة الباحث/ علاء جميل عبدالرحمن الملتحق ببرنامج ماجستير الادارة الصحية- كلية الصحة العامة- جامعة القدس ابوديس في إجراء بحث بعنوان :-

"Evaluation of Health Services Provided at the Governmental Burn Units – Gaza Governorates "

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وتفضلوا بقبول التحية والتقدير،،،

د. ناصر رأفت أبو شعبان
مدير عام تنمية القوى البشرية

صورة لـــ/
- الإدارة العامة للرقابة الداخلية
- صاحب العلاقة

وزارة الصحة
الإدارة العامة للمستشفيات
وارد
الرقم: 715
التاريخ: 6-25

الإدارة العامة للمستشفيات
صادر
رقم: 6129
التاريخ: 6/31

Annex (7): List of arbitrates

Dr. Mohammed Abudaya

Dr. Yehia Abed, Al-Quds University

Dr. Bassam Abu Hamad, Al-Quds University

Dr. Ketam Abu Hamad, Al-Quds University

Dr. Yousif El-Jeash, The Islamic University

Dr. Mazen Abu qamer, World Vision Association

Dr. Nafiez Abu Shaban, head of burn unit of Shifa hospital

Dr. Abed AL-Karem Radowan, The Islamic University

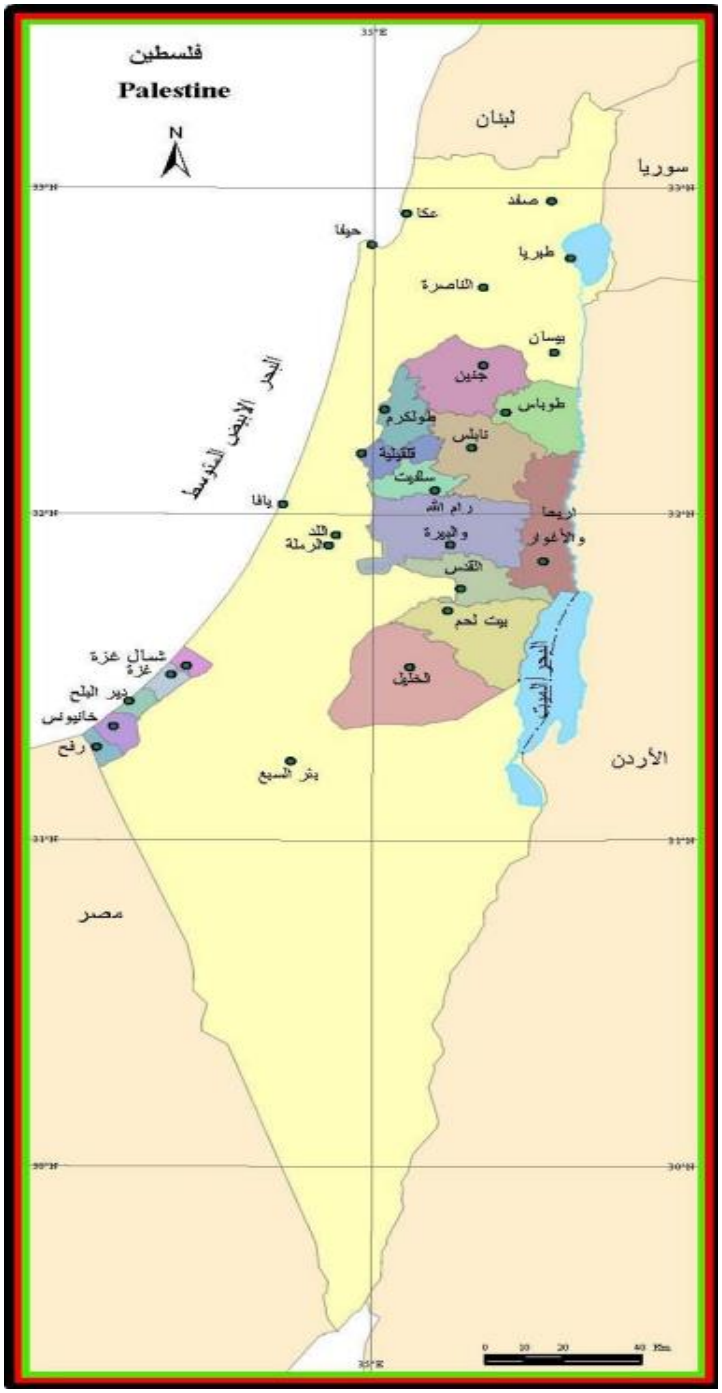
Dr. Ali Ghanem, Queen Mary University

Dr. Ioannis Goutos, Queen Mary University

Dr. Motasem Sallah, director of nursing of Shifa hospital

Annex (8)

خريطة فلسطين



عنوان الدراسة: تقييم الخدمات الصحية الحكومية المقدمة في وحدات الحروق محافظات–غزة

اعداد: علاء جميل عبد الرحمن

اشراف: د. محمد أبو دية

ملخص الدراسة

يمكن أن تكون الحروق سببا ممكنا للموت والتشوه والاعاقة الدائمة مدي الحياة. في فلسطين و مع استمرار الاحتلال والاجتياحات العسكرية الاسرائيلية يصبح خطر الاصابة بالحروق أعلى وأشد يضاف الي ذلك أن هناك مخاطرة أعلى بالتعرض للحروق المنزلية بسبب عدم توفر مصادر الوقود و التيار الكهربائي. لذلك فان العناية المناسبة للحروق تعد ملحه من أجل تقليل خطر الوفاة والاعاقة الدائمة مدي الحياة وكذلك من اجل تحسين جودة حياة الاشخاص الذين عانوا من الحروق.

تقدم معظم المؤسسات الصحية في قطاع غزة خدمات متنوعة، ومع ذلك فليس جميع هذه الخدمات شاملة. تعتبر وحدتي الحروق في مستشفى الشفاء بغزة ومستشفى ناصر في خانيونس اللتان تقدمان خدمات الصحية لمرضي الحروق.

تعتبر هذه الدراسة الاولي التي تهدف الي تقييم الخدمات الصحية الحكومية المقدمة لمرضى الحروق من اجل تحسين نوعية الخدمات المقدمة لهم في محافظات غزة.

قام الباحث بتجميع البيانات الكمية الموجودة في ارشيف كل المستشفيان الخاصة بمرضى الحروق لعام 2014، وقد تم استخدام استبانة محكمة خاصة فيما يتعلق بالمرافق والخدمات لمعرفة مدى كفاءة المستشفى لتقديم الخدمات الصحية لمرضي الحروق و استبانة اخري فيما يتعلق بالفريق متعدد التخصصات اعتمادا علي قراءة الادبيات المتعلقة بهذا الشأن، بالإضافة الى عقد جلستين مع مجموعتين بؤريتين، واحدة في وحدة الحروق في مستشفى الشفاء والثانية في وحدة الحروق في مستشفى ناصر بخانيونس، وقد كانت أدوات الدراسة المستخدمة في الدراسة من اعداد الباحث، وللتأكد من صدق وثبات أدوات الدراسة فقد تم اجراء دراسة استطلاعية من 10 افراد من مقدمي الرعاية الصحية لمرضي الحروق، ولتحليل النتائج فقد تم استخدام برنامج الاحصاء (SPSS version 20) وقد تم استخدام المعالجات الاحصائية التالية: التكرار، النسب المئوية، المتوسط الحسابي، الوزن النسبي.

أفادت نتائج الدراسة أن معدل الاصابة بالحروق في محافظات غزة التي تحتاج الي دخول المستشفى بلغت 25.5/100,000 في عام 2014 وكانت محافظة خانيونس تمثل المعدل الاعلى بإصابات الحروق وكانت 50.8/100,000 و كانت اقل معدل في الاصابات الحروق محافظة الوسطي وكانت 11.53/100,000 حالة وفيما يتعلق بمعدل الوفيات الناتجة عن الاصابة بالحروق كانت 0.89/100,000 في محافظات قطاع غزة. وفيما يتعلق بالجنس كان الرجال يشكلون 60.3% والاناث 39.7% والنسبة الأعلى تم ملاحظتها فيما يتعلق بالعمر كانت الفئة العمرية من عمر يوم وحتي خمس سنوات يشكلون 41.9% من اجمالي حالات الدخول في وحدتي الحروق وكانت الفئة العمرية الاكثر من51 سنة تشكل اقل نسبة وكانت 4.6% من اجمالي حالات الدخول، كما اظهرت النتائج ان العدد الاكبر لإصابات الحروق حدثت في فصل الصيف. فيما يتعلق بالمرافق الاساسية والخدمات اللازمة لتقديم الرعاية لمرضي الحروق كانت 57.1% منها متوفرة في وحدة الحروق التابعة

لمستشفى الشفاء بينما كانت 42.8% من المرافق والخدمات الاساسية متوفرة في وحدة الحروق التابعة لمستشفى ناصر. أما فيما يتعلق بالفريق متعدد التخصصات في وحدات الحروق لوحظ نقص شديد في عناصر الفريق متعدد التخصصات.

أوصت الدراسة ان خدمات الحروق ذات أولوية وتحتاج إلى مزيد من الدعم والعمل على توفير فريق متعدد التخصصات لتقديم خدمات صحية لمرضى الحروق. كما أظهرت الحاجة الي توظيف أعداد كافية من الأطباء والمرضين من أجل تقديم خدمة علاجية نوعية لمرضي الحروق.