Introduction

Burns and related injuries are still the major cause of mortality and disability around the world, always causing physical, psychological and economic loss in different societies; therefore, it is considered as one of the major health complications. Every year, approximately 2.4 million cases of burn injury occur in the world 1.5 million of which require treatment, 750,000 are hospitalized, and 170, 000 die annually due to burn injuries **(Partridge 2017).**

A burn is an injury to the skin caused by heat, chemicals, electric current, or radiation, involves the partial or complete destruction of the skin and its appendages (hair follicles, nails, and sweat glands), the resulting effects are influenced by the type of the burning agent, duration of contact time, and type of tissue that is injured **(Freeman 2017).**

Burns are among the most devastating injuries an individual can experience. Burns can be painful and disfiguring and require long hospitalizations. Burn injury can be life threatening or fatal. Most burns occur in the home and are preventable. Often, the burn injury is the result of the individual's own action. Feelings of anger and

guilt can complicate recovery, the individual may have self-image disturbances, and family relationships can be strained **(Bluestein and Javaheri 2017).**

Quality of life is considered as a multidimensional construct. Physical, psychological, social, and spiritual aspects have been identified as domains that are of great importance to a patient's total well-being. It can be considered a measure of an individual's health, as well as a way of quantifying how much a disease or disability affects a person's life. It may consequently help in deciding the best treatment to improve individual health or foster residual potential (**Tedstone and Terrier 2017)**.

Burns are traumatic causing both physical and psychological sequelae. The individual is faced with body image issues, functional disability and social, sexual and economic difficulties. Measuring the physical and psychological outcome of patients with burn injury is necessary to optimise the multidisciplinary treatment and restore QOL **(Herndon and Blakeney 2017)**.

Advances in treatment and critical care have largely improved the survival following burns; therefore, the awareness about the quality of life will help the nurses as a member of the health care team to lead and improve the quality of life of the patients with burns. Nurses have a

key role in helping the burn patients to adapt to their new body image and the processes that lead to changes in their lives due to the injuries **(Harris 2017).**

The burn unit nurses play a key role in helping to guide the patients' reactions in a manner that will assist them in dealing with the many challenges they face in the recovery process. The burn care is a multidisciplinary approach, the burn nurse will spend the greatest amount of time with the patients and their families during the physical and emotional healing process **(Minimas 2017).**

Significance of the study:

Burns are the fourth most common type of trauma worldwide, and its related injuries. It is the major cause of mortality and disability around the world, always causing physical, psychological and economic loss in different societies; therefore, it is considered as one of the major health complications. Accordingly, most patients with burns experience a profound impairment in QOL **(WHO 2017).**

Aim of the Study

This study aims to:

Assess quality of life among patients with burns.

Research Questions:

1-Does burn affect patients' quality of life?

2-What is the most quality of life domain affected among the patients with burns?

Review of Literature

Anatomy and Physiology of the Skin

The anatomy of the skin is complex and there are three layers: 1- **Epidermis**, the outer layer of the skin, composed of five layers from outside to inside (dermis): Stratum corneum, Stratum lucidum, Stratum granulosum Stratum spinosum, and Stratum basale. 2- **Dermis** formed by connective tissue where nerves, blood vessels, sebaceous glands, lymph vessels, sweat glands and hair follicles reside. 3- **Hypodermis** or subcutaneous tissues where larger blood vessels and nerves are located (**Catania, Huang, James and Ohr 2015).**

The skin is the elastic, self-generating, waterproof covering of the body. It played an important role in the fluid and temperature regulation mechanism of the body, if an enough area of the skin is injured the ability to maintain this control would be lost. The skin acts also as a protective barrier against heat, cold, chemicals, fungi, bacteria and viruses. The major functions of the skin are: thermoregulation, prevention of loss of body fluid, protection from infection and injury, secretion and sensory reception (**Janice and Kerry 2014).**

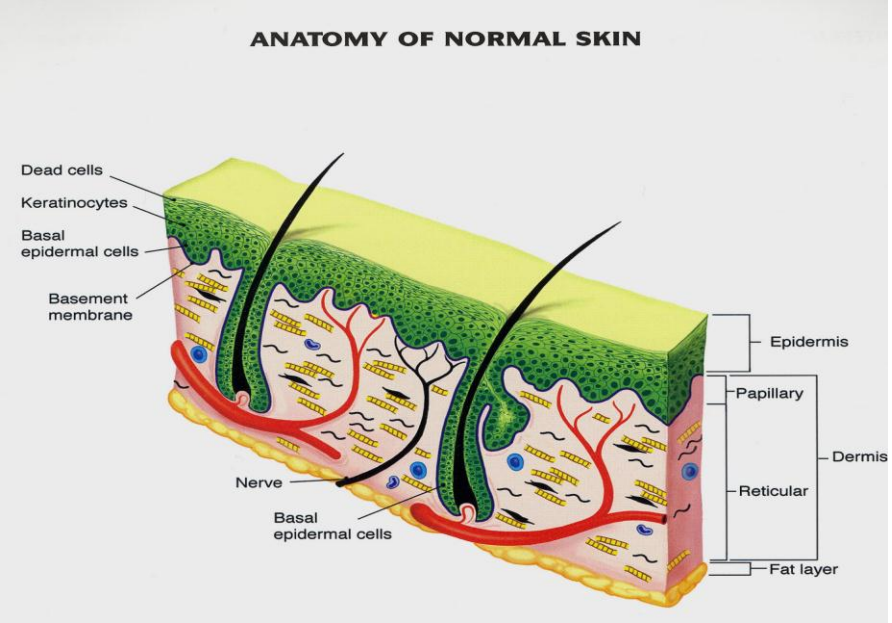

Fig. 1: Layers of the skin. *Adopted from aimatmelanoma.org,* by AIM at Melanoma Foundation, Inc., (2015), Retrieved from http://www.aimatmelanoma.org Accessed on 20 September 2017.

Definition of burn injury:

Burns are defined as a disorder either in one or in all cells layers forming a skin. The disorder was provoked by close contact with hot liquids causing scalds or with hot solid objects causing contact burns or with flame and open fire **(American Burn Association 2017).**

Pathophysiology of burn:

The knowledge about pathophysiology of burns, and their effects both locally and systemically is necessary to ensure effective management to the patient with a burn

injury. Tissue burn involves direct coagulation and microvascular reactions in the surrounding dermis. Large injuries are associated with a systemic response. This results clinically in interstitial edema in distant organs and soft tissues, with an initial decrease in cardiac output and the metabolic rate (**Forth 2014)**.

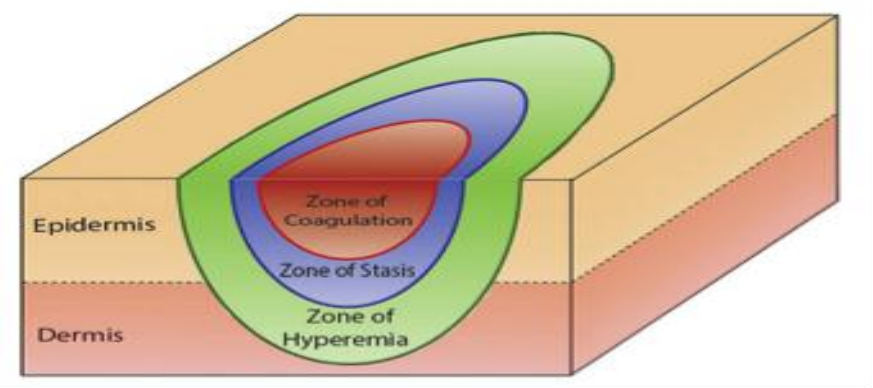

Fig. 2: Burn Model *Adopted from aimatmelanoma.org*, by AIM at Melanoma Foundation, Inc., (2015), Retrieved fromhttp://www.ponderingem.com/wpcontent/uploads/2017/07/Jacksons-Burn-Model.png Accessed on 20 December 2017.

Types of Burns:

A burn injury usually results from an energy transfer to the body. There are many types of burns as Cutaneous, Chemical, Electrical current burns. **Cutaneous burns** are injuries to the skin caused by the application of heat, cold, or caustic chemicals. When heat is applied to the skin, the depth of injury is proportional to the contact temperature, duration of contact, and the thickness of the skin. The

depth of the injury largely determines healing potential and the need for surgical intervention such as skin grafting **(Davison, Loiselle and Nickerson 2016).**

Chemical burns cause injury to tissues via a wide range of caustic reactions, including radical alteration of pH, and direct toxic effects on metabolic processes. **Electrical injuries** have become a more common form of trauma with a unique pathophysiology and with high morbidity and mortality. Clinical manifestations range from transient unpleasant sensations without apparent injury to massive tissue damage **(Curinga, etal. 2016).**

Flame burn Chemical burn Electrical burn

Fig. 3: Types of Burns *Adopted from Photos courtesy of the Phoenix society of Burn survivors, Inc.,(2015)* Retrieved from **http:// www.ameriburn.org. Accessed on 20 September 2017.**

Classification of burn:

Burns can be classified according to the depth of tissue destruction and the total body surface area.

1-According to the depth of tissue destruction:

Burns are classified depending on the depth of the injury as superficial (**First-degree**), partial thickness (**Second-degree**) or full thickness (**third-degree**) **and Fourth-degree**. **First-degree burns** involve only the epidermis. The skin is hot, red, painful, and may be slightly swollen. **Second-degree burns** damage the dermis and the epidermis. The skin is red, hot, and painful; blisters form and tissue around the burn is edematous. The skin may appear glossy from leaking fluid. Third-degree and fourth-degree burns are full-thickness burns **(Centers for Disease Control and Prevention, 2017).**

In third-degree burns all dermal structures are destroyed and cannot be regenerated. Subcutaneous tissue is also damaged. Full-thickness burns can be white, tan, brown, black, charred, or bright red in color. **Fourth-degree burns,** which extend to the underlying muscles and bones, appear white to black or charred with dark networks of thrombosed capillaries visible inside the wound **(Janice and Kerry 2014).**

A-First degree **B- Second degree**

C- Third degree **D- Fourth degree**

Fig. 4: Classification of burn depths. *Adopted from Medical Student LC,* by MedSite Builder, (2017), Retrieved from: **http://www.medstudentlc.com/page.php?id=84 Accessed on 20 September 2017.**

2-Classification of burn according to total body surface area:

Burn can also be assessed in terms of total body surface area (TBSA) by the following methods: **The rule of nines,** estimate the total body surface area (TBSA) burned on an adult by using 9 or multiples of 9 (figure5). It can be calculated as follows: head 9%, chest (front) 9%, abdomen (front) 9%, upper/mid/low back and buttocks 18%, each arm 9% (front 4.5%, back 4.5%), groin 1%, and each leg 18% total (front 9%, back 9%). Although the rule

of nines provides a rapid method for calculating the size of the burn injury, it can lead to an over estimation of the TBSA burned **(Wedro 2012).**

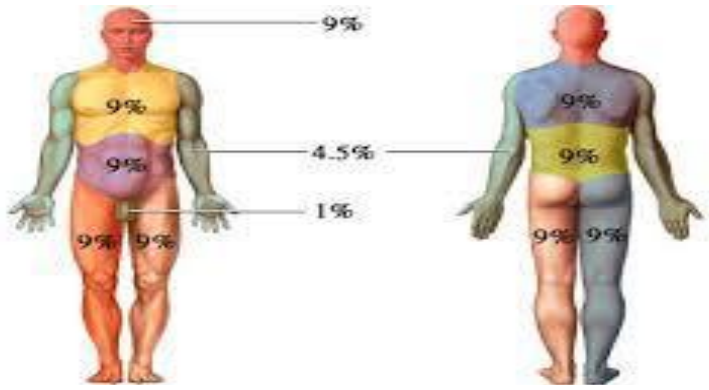

Fig. 5: Burn percentage in adults: Rule of Nine. *Adopted from e medicine health,* by Medicine Net, Inc., (2017), Retrivedfrom:**http://www.emedicinehealth.com/burn_percentage_in_adults_rule_of_nines/article_em.htm Accessed on 20 September 2017.**

Other common method for measuring burn size is the **Lund-Browder** the "**Lund and Browder**" method is the more precise method of estimating the extent of a burn. It recognizes that the percentage of TBSA of various anatomic parts, especially the head and legs, and changes with growth. By dividing the body into very small areas and providing an estimate of the proportion of TBSA accounted for by such body parts, one can obtain a reliable estimate of the TBSA burned **(Minimas 2017).**

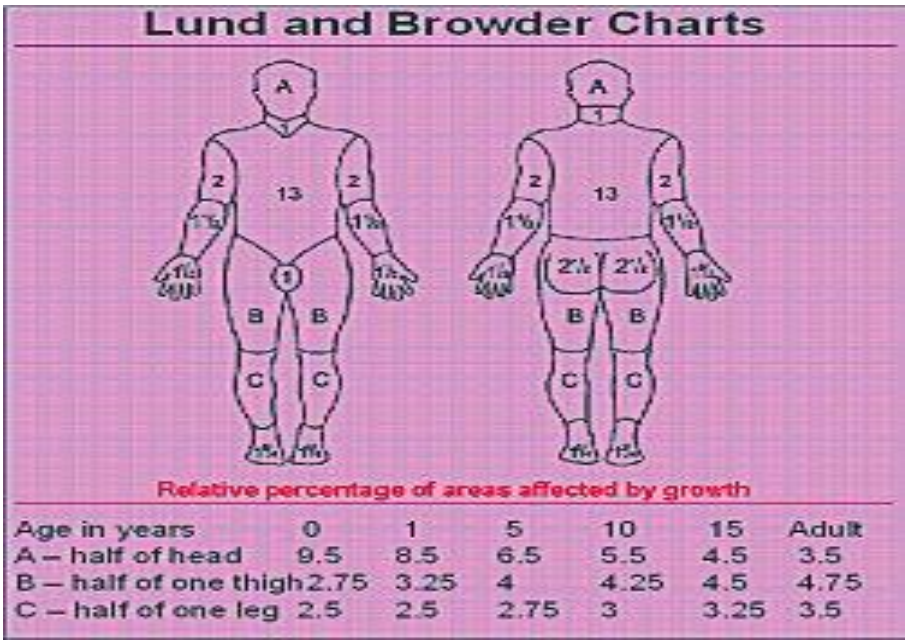

Fig. 6: Classification of burn according to **Lund and Browder**" method *,Adopted from e medicine health,* by Medicine Net, Inc.,(2017),**https://encryptedtbn0.gstatic.com/images?q=tbn:ANd9GcRZ6qk5yTAbs6edOIWV1y3aVa_-K04YA6yQQ-rzFzIvymmfthjF** Accessed on 20 September 2017.

The "**rule of palm**" is another way to estimate the size of a burn. The palm of the person who is burned (not fingers or wrist area) is about 1% of the body. Use the person's palm to measure the body surface area burned (**Linton 2014**).

Palm method

Fig. 7: Classification of burn according to the "**rule of palm** *Adopted from e medicine health*, by Medicine Net, Inc., (2017), Retrived **from**[**https://encryptedtbn0.gstatic.com/images?q=tbn:ANd9GcRZ6qk5yTAbs6edOIWV1y3aVa_K04YA6yQQ-rzFzIvymmfthjF**](https://encryptedtbn0.gstatic.com/images?q=tbn:ANd9GcRZ6qk5yTAbs6edOIWV1y3aVa_K04YA6yQQ-rzFzIvymmfthjF)**Accessed on 20 September 2017.**

Complications of the burn injury:

The complications of the injury vary up to a great extent depending on the affected location, tissue and the degree of severity. Scar formation and deformity due to burns cause psychological discomfort in patients**.** Both type of Systemic and local complications is caused by burn. Fluid loss and breakdown of skin integrity is major contributor of systemic complications. Contractures, scarring and eschars are the local complications of burn injury (**Rowan and Chung 2015**).

The risk of developing systemic complications is directly proportional to the **TBSA** involved in burn injury.

Following are the risk factors of severe systemic complications and mortality. Burns of more than 40% of TBSA Age of greater than 60 year or less than 2 year Presence of concurrent smoke inhalation or major trauma hypovolemia and infection are the most common systemic complications (**Singh, Devgan, Bhat and Milner 2015**).

The Local complications as Eschar "rigidness and death of tissue caused by deep burns". Respiration can be compromise by an eschar around the thorax and viability of limbs and digits is endangered by ischemia. Scarring and contractures due to healing of deep burns; contracture deformities can appear at the joints depending on the extent of the scar (**Jonason and Richard 2013).**

The bacterial growth on damaged skin along with immunosuppression causes wound infection, invasive sepsis and may lead to death. The mortality rate caused by hypovolemia and hyperosmolar shock is reduced with the increase of resuscitation procedures in burn patients (**Lee, Joory and Moiemen 2015)**.

Medical Management:

Serious burns require immediate medical care. Once the client has stabilized the focus of care shifts to wound healing and restoring function. Surgical intervention may

be necessary. Medical immediate care initially, medical management of the client involves keeping an open airway, maintaining an adequate level of oxygenation (**Smeltzer, Bare, Hinkle and Cheever 2014**).

Replacing body fluids and electrolytes, monitoring kidney function, controlling pain, and protecting the burns with sterile dressings to minimize the loss of body temperature and the risk of infection ***(*Davison et al., 2016*).***

The first aid: whereas the severity of a burn is determined by the intensity of the stimulus and the duration of its action on the skin, it is fundamental to stop it. In first aid, even rescuers must be careful to not to be involved with a burn. To avoid this, it is advisable to wear protective equipment such as gloves, masks, suits, eyeglasses, flame-retardants, etc. If the cause is an electrical current exposure, the material to be used must be insulating **(Paprottka, Krezdorn and Young 2016).**

At this point, it is important to remove flaming clothing and those that are impregnated with toxic substances. Removing jewels, belts and other accessories is also essential, as they may be overheated by the burning cause, is a further source of heat. It is, therefore, appropriate to wipe the body of the victim with abundant