THE PREVALENCE OF DEPRESSION AMONG PATIENTS WITH BURNS ADMITTED AT KENYATTA NATIONAL HOSPITAL.

A DISSERTATION IN PART FULFILMENT OF THE REQUIREMENT FOR THE AWARD OF THE DEGREE OF MASTER OF SCIENCE IN CLINICAL PSYCHOLOGY OF THE UNIVERSITY OF NAIROBI.

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DECLARATION

I, Lucy M. Macharia, do declare that this dissertation is my own original work. It has not been presented to any other University for the purpose of obtaining a degree or diploma.

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DEDICATION

I dedicate this work to my parents,

Solomon Njamuku and Loise Ngubia.

I wish to further dedicate this research to all people who have suffered burns in their lives; there is hope in life regardless how devastating it may be.

ACKNOWLEDGEMENTS

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ABBREVIATIONS AND ACRONYMS

BDI: Beck's Depression Inventory

BMS: Body Model System

CDC: Centre For Disease Control

DALYS: Disability Adjusted Life Years

DSM-1V: Diagnostic and Statistical Manual of Mental Disorders

ICD-10: International Classification of Disease Number 10

IFAD: International Fund Agricultural Development

IFM: Minnesota Impedance Cardiograph

KNH: Kenyatta National Hospital

MDD: Major Depressive Disorder

MNS: Mental Neurological Substance use disorders

PTSD: Post Traumatic Stress Disorder

SCID-1: Structured Clinical Interview for DSM-1V Axis 1 psychiatric disorders

TBSA: Total Body Surface Area

WHO: World Health Organization

YLD: Years Lived with Disability

DEFINITION OF OPERATIONAL TERMS

Depression: Depression manifests itself in many ways. Some patients show sadness; they may cry openly or have a sad facial expression, change in appetite, weight loss or gain, sleep disturbances particularly early morning awakenings with the inability to go back to sleep and diminished psychomotor activity with motor retardation.

Disfigure: to spoil the beauty, or to deform.

Morbidity: sickliness, unwholesomeness.

Mortality: frequency of number of deaths especially in relation to population.

Prototype: pattern

Psychological distress: mental and emotional discomfort

Scar: wound or sore.

Trauma: a wound, injury, an emotional shock that maybe the origin of a neurosis.

Burn: to consume or injure by fire, or great heat.

Contracture: shortening due to spasm, or paralysis of muscle, etc.

ABSTRACT

Burn injuries are devastating, sudden and unpredictable forms of trauma which affect the victim both physically and psychologically. Depression is one of the psychological complications that follow burn patients which has an effect on physical functioning and recovery on the burn survivor. While, modern treatments developed in the last 60 years have significantly improved the outcome of large burns which can be fatal, especially in children and young adults, little emphasis has been put in respect of psychological treatment thus, leaving the patients with both physical and psychological disabilities.

OBJECTIVE

The objective of this study was to establish the prevalence of depression among patients with burns admitted at Kenyatta National Hospital.

SITE

The study was carried out at KNH. burns' unit and Ward 4D which cater for burn patients.

STUDY DESIGN

The study design for this research was a cross-sectional descriptive study.

STUDY POPULATION & SAMPLING METHOD

The study participants were in-patients with burns who were 18 years of age and above, who gave consent and those who were medically stable.

The Sample population was made up of 101 patients, computed on a three month admission record, of which 55 were recruited. Purposive sampling method was used.

DATA ANALYSIS

Data was analyzed using SPSS Version 17.0: descriptive statistics was used and data presented in tables, pie charts and graphs**.**

INSTRUMENTS;

A structured socio-demographic questionnaire & Beck's Depression Inventory scale were used to assess for depression.

RESULTS

The data was analyzed according to SPSS Version 17 and presented at 95% confidence interval.

Fifty five participants were recruited in the study, 30 patients were male (54.4%), and 25 were female (45.5%). The mean age was 31.5 years. Depression was found in 47(85.5%) of the patients, 6 (10.9%) had mild depression, 26 (47.3%) had moderate and 15(27.3%) had severe depression. Flame burns caused by stove and kerosene lamp were most common. Depression was associated to the length of hospital stay with p-value of 0.011 and the level of income earned by the patient with a p-value 0.014.

CONCLUSION

Depression was present in 47 (85.5%) of patients following burn injury. This study shows the importance of psychological assessment during treatment of burn patients and hence holistic treatment following burn injury.

CHAPTER ONE

1.1 INTRODUCTION AND BACKGROUND TO THE STUDY

"Burn injuries are shocking, sudden and unpredictable forms of trauma which affect the victim both bodily and psychologically." [1]

The bodily, mental and social effect on the individual hospitalized for burn wounds starts at the moment of injury and extends throughout the person's life. [1] These injuries have a significant impact on survivors and their families and include lengthy hospital stays, loss of income, post-burn disfiguring, physical complications, contractures, keloids and scaring, and psychological complications which include depression. [2]

A burn is defined as any injury to tissues of the body caused by hot objects or flame, electricity, chemicals ,radiation or gasses in which the extent of the injury is determined by the nature of the agent, length of time exposed, body part involved and depth of burn. The treatment of burns includes pain relief, careful asepsis, prevention of infection, and regulation of body temperature, maintenance of fluids and electrolytes and good nutrition. [3]

While on treatment, the burn survivor patient goes through a number of phases and procedures that elicit physiological and psychological, responses and reactions with chronic pain which is experienced through physical therapy, reconstructive surgery and skin grafting causing the patient to sometimes exhibit agitation [4]. Due to these experiences, patients with burns are likely to suffer depression following burn injury.

The most prevalent disorders in burn patients at follow- up, from two comprehensive reviews of literature were found to be anxiety and depression which also occur together generally. [5] [6]

Due to physical and psychological impairment one half of all burn patients become permanently disabled, and that on surviving the burn, the patient is faced with many challenges physically, psychologically, and spiritually. This makes the first year after the burn very difficult because it becomes a time of vocational and emotional adjustment.

1.2 PROBLEM STATEMENT

According to WHO [7] global statistics, major depression is the leading cause of disability. Depression ranks fourth out of the ten (10) leading causes of global burden of diseases and was expected to rise to second position in the next twenty (20) years. It is estimated 121 million people suffer from depression worldwide. A study done by APA [8] on a selected sample of 311 burn survivors, found that the level of depression was between 20-30%

Professor Ndetei states that depression is a major cause of lost productivity and pain caused to individual and families and more so the cost to human life through suicidal attempts and actual suicide. [9] Depression affects all people across the races, social economic status and cultural backgrounds. About 5-6% of the general population will suffer from depressive symptoms across the lifespan. The screening of depression, and consequently their treatment is essential in primary healthcare and more so for patients who have undergone physical trauma such as burns.

In the recent past, Kenya has experienced several fire tragedies, often stretching the abilities of local hospitals to cope .Since January 2009, a series of fire tragedies have occurred. The Daily Nation reported [10] that, Nakumatt Downtown Supermarket Nairobi had suffered a tragic fire accident, where twenty nine people died and unknown numbers of casualties were taken to hospital. In another incident, a fuel tanker exploded near Molo where more than one hundred and thirty people died and

many sustained serious burn injuries. [11] In September of 2011, another fire tragedy occurred, at Sinai a slum area near Pipeline estate in Nairobi, where over one hundred and twenty people died and more than one hundred sustained serious burns. [12]

As a result of these tragedies, survivors were left with burn injuries which have long lasting effects on the victims and their families. The researcher has observed on a number of times that burn patients like keeping to themselves, easily tear and express feelings of helplessness which are similar to the symptoms observed in depressed patients. It is with this view in mind that the researcher wishes to investigate the prevalence of depression among patients admitted at the KNH in Kenya. KNH is one of the largest and oldest national referral hospital in Kenya with a burns' unit.

1.3 JUSTIFICATION OF THE STUDY

"The burn injury is catastrophic both physiologically and psychologically to the patient and the family. It is one of the most challenging and arduous types of injury to treat." *[13]*

A depressed mood or depressed feelings are expected responses to any loss or threatened loss to human beings. Since an injury such as a burn may involve loss of body limbs, body function, loss of love and approval, loss of job and of family work roles, a lot of fear and anxiety can result to depressed feelings and permanent disability. [14]

This study seeks to gather information on depression and its effect on burned patients while undergoing treatment in a hospital setting. The data obtained would further sensitize the health care providers on the mental health problems and in turn the need to improve health care beyond the physical care of burns.

In this regard the research is of significance in highlighting the impact of depression on patients who are going through treatment so that along with physical treatment,

psychological treatment can be put in place to complement medication for faster recovery and better results.

CHAPTER TWO

2.1 LITERATURE REVIEW

This chapter will cover definition of burns, incidence of burn, psychological distress arising from burns, factors predicting adjustment, depression, symptoms of depression, mental disorders before burn injury, mental disorders after burn injury, depression after burn injury and psychological treatment of burn patients.

A burn is defined as an injury to tissues of the body caused by hot objects or flame, electricity, chemicals, steam or hot liquids radiation or gases. The extent of the injury is determined by the nature of the agent, length of time exposed, body part involved and depth of burn. The treatment of burns includes pain relief, careful asepsis, prevention of infection, and regulation of body temperature, maintenance of fluids and electrolytes and good nutrition. [15] [3]

2.2 INCIDENCE

It is difficult to record the true incidence of injury, death or disability from burns each year in Kenya and throughout the world over because an unknown number of episodes are never reported. Accidental and intentional burn injuries vary across age groups, gender, income and global region. Most burn injuries occur in a home setting, with cooking as the most common activity. [16]

2.3 PSYCHOLOGICAL DISTRESS IN BURNS

Burn patients suffer from many mental and emotional problems. Psychological distress means the range of feelings experienced by people who are highly stressed due to situational reasons such as physical injury to those who are distressed out of how they perceive the injury. In an event unexpected and unpredictable such as burn accident, people experience extreme shock and they get emotionally overwhelmed.

The consequences are varied psychological reactions such as intense fear, horror, emotional numbness and helplessness.

Pain, experienced through physical therapy, reconstructive surgery, and skin grafting, is one of the most difficult challenges in burn care. The world of a burn patient is engulfed with thoughts of when the next dressing of the wound is expected, when next to go back to theatre, uncertainty of the future based on level of the perceived incapacity. The complications of the burn injury cannot be under-estimated. All these issues put together explain the degree of psychological distress burn patients' experience. [17]

A study by Smith et al. [4] found maladaptive behavior such as aggression and dissociation which caused the patients to exhibit agitation, depression and anxiety, in anticipation of pain due to burn injury resulting to uncooperative behavior such as crying and shouting.

The cause of the burn has a psychological impact on the burn survivors. The question of how one got burnt and what transpired, elicits a lot of emotional responses. Sometimes, there are guilt feelings, anger, bitterness and self-blame, loss of self esteem and major depressive disorder among other reactions. Sometimes patients may get psychologically stuck and the healing process is hindered or becomes very slow.

The location of the burn on the body, for instance on the head, neck, face, and hands causes psychological distress in burn patients because the scars are visible and may not be covered with dressing or clothing.

The burn victim looses self esteem, the body image and psychological well-being also get affected which lead to depression. [18]

Studies by Malt and Ugland, [19] suggested that scarring and burns in areas which are visible like burned hands made a poorer psychological adjustment than burns in other areas.

The location of the burn may imply that the patient suffers a physical deformity or disability. The impact may be lifetime functional impairment, resulting in the patient being dependent on family members or significant others. The patient experiences neglect and emotional detachment which finally lead to helplessness and depression. In the aftermath of burns, women and girls experience more psychosocial issues though a higher number of men than women and also a higher number of boys than girls sustain burns. [4]

2.4 FACTORS PREDICTING ADJUSTMENT

Studies done by Wallace & Lees [20], Quested et al, [21] and Browne et al, [22] found that there was no relationship between severity of the burn and subsequent psychological adjustment. Malt & Ugland [19] found that longer hospitalization, incidence of scarring, deviant behavior in hospital and the nature of the burn accident all contributed to post- discharge adjustment.

Quested et al, [21] reported that severity of injury was associated with the degree of disability, while pre-injury level of psychological adjustment predicted psychological adjustment after burn injury. Noronha, and Faust [23] found that the environment for which the burn patient is treated either over stimulates or under stimulates burn patients, which may lead to difficulties with psychological adjustment.

Browne et al, [22] found that patients with avoidance coping strategies, poor problem solving skills, few recreational activities and less social support tended to be less well

adjusted. In another study, Brown et al. [24] reported that favorable psychological adjustment, was associated with less functional disability for men and good problem solving skills for women.

Family support and family relationships affect the psychological well being of a person. Infrequent visitations during hospitalization are also associated with poorer outcome because the patients experience loneliness and feelings of abandonment. Large family size and higher socioeconomic status were associated with better outcome. [25]

Noronha & Faust, [23] found that socioeconomic status was a key factor in mental and emotional adjustment and in the development of adaptive behaviors following burn trauma. Some burn injuries can be acute life-threatening events which may predispose the burn patient to serious, long-term physical and psychological impairment of which depression and pain are significant.

2.5 DEPRESSION

"Depression is an abnormal emotional state characterized by exaggerated feelings of sadness, melancholy, dejection, worthlessness, emptiness, and hopelessness that are inappropriate and out of proportion to reality. The overt presentations, which are extremely variable, range from a slight lack of motivation and inability to concentrate to severe physiologic alterations of body functions and may represent symptoms of a variety of mental and physical conditions, a syndrome of related symptoms associated with a particular disease, or a specific mental illness."[3]

The Diagnostic and Statistical Manual of Mental Disorders and the International Classification of Diseases Number 10 categorize the symptoms as shown below. [26]

2.6 SYMPTOMS OF DEPRESSION INCLUDED IN DSM-IV AND ICD-10

(Table 4.5.2.1).

	SYMPTOMS OF DEPRESSION	DSM-IV	ICD-10
	Depressed mood most of the day, nearly every day	+	+
	Markedly diminished interest or pleasure in all ,or almost all ,activities most of the day or nearly everyday	+	+
	Loss of energy or fatigue nearly everyday	+	+
	Loss of confidence or self esteem	_	+
	Unreasonable feelings of self-reproach or excessive or inappropriate guilt ,nearly everyday	+	+
	Recurrent thoughts of death or suicide or any suicidal behavior	+	+
	Diminished ability to think or concentrate ,or indecisiveness ,nearly everyday	+	+
	Psychomotor agitation or retardation nearly everyday	+	+
	Insomnia or hyper insomnia nearly everyday	+	+
	Change in appetite (decrease or increase with corresponding weight change)	+	+

KEY:

+ Indicates that the symptoms is included

- indicates that the symptom is not included

The symptoms of depression cause clinically significant distress or impairment in social, occupational, mental, perception, behavioral and spiritual aspects of life.

Depression manifests itself in many ways. Some patients show sadness; they may cry openly or have a sad facial expression, change in appetite, weight loss or gain, sleep disturbances particularly early morning awakenings with the inability to go back to sleep and diminished psychomotor activity with motor retardation.

It is often difficult to diagnose a depressed state solely from biological body functioning and pattern because a physically traumatic injury particularly a burn

elicits many metabolic changes due to trauma, shock and pain experienced by burn victim.

However, a depressed condition will be considered when the loss caused by trauma or burn becomes distorted in the person's mind and when there is an affiliated decrease in the patient's sense of worthiness as a person. For instance, the amputee views himself as "just a cripple" or the burn patient views themselves as "a disfigured nobody". The change in body image is often altered due to the injury and therefore the self concept is altered thus predisposing one to depressive symptomatology. [14]

Depression in burn patients is triggered by several factors. In some cases, an ongoing pre-burn depression is present. In case of new onset, depression may be related to pain, or is as a response to grief and mourning because of material damage or personal loss of a loved one with whom they shared the burn injury, or body image change that occur due to disfigurement.

2.7 MENTAL DISORDERS BEFORE BURN INJURY

Mental disorders before burn injury have been shown to predispose one to injury, to exacerbate the symptoms of depression and to predict a poorer prognosis than those without psychological disorders prior to the burn injury. The prevalence of mental illness before burn injury was reported to be 28-75 %. [5]

Dyste r-Aas et al [27], in a study of 73 patients with burn injuries found that 66% of the participants had been diagnosed with at least one psychiatric disorder. While the prevalence of depression in that study sample was 41%. Another psychiatric illness worth mentioning was alcoholic disorders at 32%. Those patients with mood disorders and anxiety disorders were more likely to be depressed at 12 months, whereas those

with lifetime affective disorder, substance use disorder and psychiatric co-morbidity were more likely to have symptoms of PTSD.

A study by Tucker [28], found that patients with a previous psychiatric history achieved poor post-burn psychological adjustment. Further, the study found neuroticism scores from the Eysenck Personality Inventory were associated with greater levels of depression, anxiety, and post burn adjustment while anxiety and depression were moderately elevated in burn patients' pre-discharge but dropped to low and normal within passage of time [25].

2.8 MENTAL DISORDERS AFTER BURN INJURY

Wiechman et al, [29], in their study on Rates, Trends, and severity of depression after Burn Injuries using Beck's Depression Inventory showed that at 1 month 54% of patients had symptoms of moderate to severe depression and at 2 years 43% of the patients still had moderate to severe depression. In this study it was observed that women had higher depression scores than men at each period of the study.

This is consistent with other studies that point out that, women more than men have higher incidences of psychological disorders. It was found that symptoms of depression and anxiety generally occurred together, with prevalence rates between 25% and 65%, one year post-burn: and those symptoms subsided after that period.

2.9 DEPRESSION AFTER BURN INJURY

As the burn victim becomes more aware of the physical and psychological impact of the injuries, the patient starts to consider and to understand the difficult situation as a burn patient who could be nursing very serious wounds. The patient may experience grief because of the loss experienced, in terms of lost body parts, loss of loved ones,

loss of job and work roles which predisposes the patient to feelings of hopelessness and depression. A US study done using SCID-1 by Fauerbach et al, [30], found that, at discharge from hospital 4% of patients had major depression, and by 12 month follow-up,11% had MDD.

A study by Dalal et al, [17] stated that recovery began after discharge from hospital when the patient started to re-integrate into the society. Mood disorder during hospitalization in a study by Madianos et al [31] and 20% at 12 month follow-up. Face disfigurement was significantly associated with the presence of psychiatrist illness, at least during the acute hospitalization. Psychological impairment was found to be 45.5%. Five years after burn injury, patients with disfigurement on the hands or face reported symptoms of depression as compared to those with no visible burns, according to a study on psychological adjustment. [32]

A study done by the APA [8] using The Short Mood and Feelings Questionnaire, which is a self rating report measure of symptoms of depression where an exploratory, cross-sectional, self selected sample of 311 burn survivors were included, who were at least 3 years post- burn to determine the frequency and correlates of symptoms of depression, experienced by long-term burn survivors. The results showed that 20-30% of the sample reported clinically significant symptoms of depression. Due to the traumatic nature of the burn accident and the painful treatment in burn care psychopathological responses such as depression and post-traumatic stress disorder (PTSD), have been found in 13-23% and 13-45% of cases, respectively in burn patients. Pre-burn depression and female gender in combination with facial disfigurement were identified as the risk factors associated with post-burn depression.

Another prospective study by Ulrich et al, [33] examined associations between pain, depression and physical functioning in a sample of burn injury survivors. Questionnaires were completed by 54% of the original sample of adult burn survivors shortly after discharge from burn care and 1- and 2-year follow-ups. The results showed that pain and depression were associated with poorer physical functioning over time, but associations varied according to the time span under consideration. The results also showed that the association between pain and physical functioning was strongest among persons with higher depression scores. Thus the study concluded that pain and depression may contribute independently to compromises in physical functioning and their co-occurrence, of pain and depression, represents even greater risk for reduced physical functioning over time among burn survivors.

A study was done by Tabassum et al. [1] using case series in Pakistan. Fifty patients were included in the study done at the Department of Burns, for duration of 12 months. Its objective was to determine the frequency of anxiety and depression in burn victims. Beck Depression Inventory and Beck Anxiety Inventory were applied to evaluate anxiety and depression in burn patients. The study was done on patients with 1% - 50% burns and the results were that anxiety was present in 82% and depression in 58% patients following burn injury. The study highlighted the importance of simultaneous evaluation and management of anxiety and depression in burn victims since acute anxiety can aggravate the severe pain and the current research aims at investigating the impact of depression during treatment and post burn adjustment.

2.10 PSYCHOLOGICAL TREATMENT OF BURN PATIENTS

Burn patients may experience psychological distress, namely acute stress disorder, severe pain, depression, anger, grief, and even post traumatic stress disorder. Treatments in burn patients include cognitive behavior therapy and pharmacological interventions which are helpful to patients suffering from depression. Treatment of social problems includes cognitive-behavioral therapy, social skills training, problem solving skills and community interventions while sexual health promotion and counseling may reduce problems in sexual life. [34]

CHAPTER THREE

3.1 INTRODUCTION

The chapter entails the research scope, Study area, study design, study population, sample size and sampling procedures, research instruments, data analysis, inclusion criteria, exclusion criteria, ethical consideration.

3.2 RESEARCH SCOPE

3.2.1 PURPOSE OF THE STUDY

The purpose of this study was to determine the prevalence of depression among patients with burns admitted at KNH.

3.3 OBJECTIVES

3.3.1 GENERAL OBJECTIVE

To determine the prevalence of depression among adult burn patients in KNH.

3.3.2 SPECIFIC OBJECTIVES

To determine the association between depression and socio-demographic factors, like age, gender, occupation, socio-economic status, level of education and religion.

3.4 HYPOTHESIS

3.4.1 NULL HYPOTHESIS

The prevalence of depression among adult burn patients in KNH was not higher than that found in the general population.

3.4.2 ALTERNATIVE HYPOTHESIS

The prevalence of depression among adult patients with burns in KNH was higher than that found in the general population.

3.5 RESEARCH QUESTIONS

Was there an increased level of depression among patients at burns' unit and ward 4D in KNH.?

Was there a correlation between length of stay in hospital, and prevalence of depression among burn inpatients at the KNH?

What was the association between depression and socio-demographic factors such as age, gender, level of education, and occupation?

3.6 ASSUMPTIONS OF THE STUDY

The following were the assumptions of the study:

There was an increased level of depression among patients admitted at the burns' unit and Ward 4D at Kenyatta National Hospital.

That depression impacted negatively on the patient's psychosocial life.

The patients were willing to give authentic and uninfluenced answers.

That the BDI was a good measure for depression following burn injury.

3.7 SITE OF THE STUDY

The study was based at the Kenyatta National Hospital in Nairobi.KNH is the largest national referral hospital in Kenya and serves as a training institution for the University of Nairobi, Kenya Medical Training College and other Learning Institutions within the surrounding.

3.8 REASON FOR CHOICE OF SUDY SITE

KNH offers highly specialized burn care services with a Burns' Unit which is also the intensive care unit for burn care. The Burns' unit has 20 bed capacity. Patients are transferred to Ward 4D which is able to accommodate 25 adults and also has room for children. The researcher found KNH as the most suitable place for this study.

3.9 STUDY DESIGN

The study used a questionnaire as a survey instrument. A cross-sectional survey in the burns' unit and Ward 4D was carried out involving the eligible participants who gave consent to the interview. Data was collected using a socio demographic questionnaire and the Beck's Depression Inventory.

3.10 STUDY POPULATION

The study population comprised of adult burn patients from Kenyatta National Hospital ward 4D and the burns' unit. While most patients in ward 4D are burn patients, the ward also admits patients with keloids, wound ulcers and those requiring reconstructive surgery. The bed capacity for adult burn patients is 25 in ward 4D and 13 in burns' unit. The capacity is sometimes stretched to accommodate beyond this capacity according to the demands at a particular time.

While the above mentioned wards admit both children and adults, the researcher will only interview the adult burn injury patients. This is because the adult patients are able to express their own feelings, are capable of understanding the research questionnaires which also require interactive responses with the researcher.

The study population was derived from considering the average number of patients that are admitted within a month at KNH. The table below shows the number of adult burn patients admitted at KNH in a period of three months:

Month	**Patients in ward 4D**	**Patients in burns unit**
July 2012	24	11
August 2012	20	15
September 2012	16	15
Totals	60	41
Average:	**20**	**14**

From the above table the researcher then deduces that the average study population in a given month is (20 + 14) =34 patients. It was observed that many burn patients stayed in hospital for at least two months before discharge which enabled the researcher to meet the purposive sample size of 55 patients in a period of six months. The researcher interviewed all eligible adult burn patients who gave consent. Since depression sets in after the critical phase, patients admitted within the period of research also qualified to be interviewed.

3.11 SAMPLE SIZE

The Burns' Unit has a total of 41patients while ward 4D has a total of 60 patients in three months. Since the patients stay long in hospital because of the long process of treating burns, the total for the two wards was deduced to be the study population.

Hence 41+60=101

The Sample size for this study was calculated using Yamane Taro's formula [35]. The formula is as follows:

$$n=\frac{N}{1+N(e)^2}$$

Where n= sample size

N=population

e=precision level of $^{+}$.10% at 95% confidence Interval.

The formula when substituted gives:

$$\frac{101}{1+101(0.1)^2}=50.24$$

According to Israel [36], the sample size can be further adjusted by adding 10% to the sample size to compensate for persons that the researcher is unable to cater for non response.

Hence:

50*10%= 5

50+5 =55

The formula gave a sample size of 55 which was used for this study.

3.12 SAMPLING METHODS

The researcher used purposive sampling method in this study until the desired sample of 55 was achieved according to the inclusion criteria.

3.13 INCLUSION CRITERIA

All adult patients with burn injuries admitted in the burns' unit at KNH and Ward4D at the time of research.

Patients who were above the age of eighteen and were medically stable were interviewed until the sample size was realized.

Patients who gave consent.

3.14 EXCLUSION CRITERIA

Patients below the age of 18 years.

Patients who do not consent.

Patients who were critically ill.

Patients who had not suffered burns.

3.15 DATA COLLECTION PROCEDURE

In the burns' unit and Ward 4D, study participants were selected according to the inclusion criteria.

After explaining and signing of the consent form, the social demographic questionnaire was administered by the clinician after which the BDI which was the study instrument was administered. The completed forms were put in a large envelope for safe and custody. The procedure continued until the required number of study participants was achieved.

3.16 DATA COLLECTION INSTRUMENT

SOCIO-DEMOGRAPHIC QUESTIONNAIRE

The social demographic questionnaire was a researcher developed interview schedule which gathered participant information such as age, religion, marital status, social economic status and site of the burn.

BECK'S DEPRESSION INVENTORY

The BDI-II[37]is a 21 item self report instrument for measuring the presence and severity of depression in adults .The respondent was required to select one of four options ranging from 0-3, with increasing scores reflecting higher severity of a given symptom of depression, [38].The BDI-II is a paper and pencil test . It can be self

administered or examiner administered. Due to its brevity, ease of administration, scoring, congruence with the DSM-IV and its strong psychometric characteristics, the BDI-II was deemed to be the most appropriate test for depression among burn patients at KNH. The cutoffs are represented as follows: 0–10: minimal depression; 11-16 mild depression; 17–30 moderate depression, 31–40 severe depression and >40 extreme depression.

3.17 DATA ANALYSIS

Data was entered in the computer using Statistical Package for the Social Sciences (SPSS) Version 17.0 after which it was analyzed by a stastician.

The data was presented in tables, pie charts and bar graphs.

SOME OF THE DUMMY TABLES EXPECTED ARE SHOWN BELOW

A table showing the different levels of depression e.g. mild, moderate and severe depression.

A table showing the level of depression in burn patients.

A table showing the relationship between socio-demographic factors and the levels of depression.

LEVELS OF DEPRESSION IN BURN PATIENTS

LEVEL OF DEPRESSION	BDI-SCORE	NO OF PARTICIPANTS	% PERCENTAGE
MINIMAL	11-16		
MILD	17-20		
MODERATE	21-30		
SEVERE	31-40		
EXTREME SEVERE	>40		

RELATIONSHIP BETWEEN SOCIAL DEMOGRAPHIC AND DEPRESSION

SDQ	DEPRESSION YES/NO	TOTAL NO	x^2(dx)	P-VALUE
Age-18-35				
Age-35-50				
Age-50-60				
>60				
Gender-male				
Gender-female				
Marital status				
single-				
Married				
Widowed				
Divorced				
Separated				
Education-none				
Primary				
Secondary				
Post-Secondary				

3.18 ETHICAL CONSIDERATION AND DATA CONFIDENTIALITY

The proposal was presented to the Kenyatta National Hospital Ethical and Research committee for approval. Participants were included after they agreed and signed the consent form.

The researcher observed participant's confidentiality and privacy in accordance with Kenyatta National Hospital ethic and research committee. The researcher sought informed consent from the participants after explaining the study. The researcher observed privacy of the participants. Names were not required since the researcher used serialized codes. The participants were informed that they could withdraw from the study if they felt uncomfortable and no victimization would be meted because of doing so.

The participants were free to contact the researcher in case they wished to discuss or seek clarification on the issues. There was no cash benefit to the participants. However, those found to require further medical follow up were referred to the appropriate clinic at KNH

CHAPTER FOUR

4.0 DATA ANALYSIS, PRESENTATION AND INTERPRETATION

4.1 INTRODUCTION

The purpose of this chapter is to analyze the variables in the study.

4.2RESULTS

The study was conducted at the Kenyatta National Hospital, Ward 4B and Burns Unit which is a tertiary care health facility. The duration of the study was six months beginning from mid November 2012 and concluded in April 2013. The study population comprised of hospitalized patients who had suffered burn injury between 1% and 54% TBSA and who had been in hospital for a minimum of two weeks. All the participants were selected by using purposive sampling techniques based on the inclusion criteria. Ward 4B receives patients with ulcers, contractures and a few road traffic accident cases. Patients were included irrespective of gender and mode of referral. All patients, who were 18 years and above, and were willing to participate in the study were interviewed.

The researcher administered the socio-demographic questionnaire together with the Beck's Depression Inventory Questionnaire.

4.3 RESULTS PRESENTATION

A total of 55 burns patients were enrolled into the study that comprised 30 males (54.5%) and 25 females (45.5%). Most of the patients (80%) were 40 years and below (figure1), 34(61.8%) were married, 15(27.3%) were single while 6(10.9%) were separated or divorced.

The patients were mainly Christian with 29(52.7%) Protestants,20(36.4%) Roman Catholics and the rest were 2(3.6%) Muslims,3 (5.5%) others and1(1.8%) without any religion. Majority (94.5%) of the patients were from both parent families. Single parent families who never married were two-thirds of the single parent families. A third of the single parent families were through divorce or separation. 36(65.5%) were residents of Nairobi while 18(32.7%) were resident outside Nairobi and 1(1.8%) came from Sudan. Literacy level was high with only 3.6% who had never gone to school while primary, secondary and post-secondary levels of education were reported among 52.7%, 29.1% and 14.5% of the patients respectively (figure 2). More than a half (54.5%) lived with nuclear family members while 14.5% lived alone and 10.9% lived with parents (figure 3).

Table 1: Socio-demographic characteristics

Variable	Frequency (%)
Gender	
Male	30 (54.5)
Female	25 (45.5)
Marital status	
Single	15 (27.3)
Married	34 (61.8)
Separated/divorced	6 (10.9)
Religion	
Roman catholic	20 (36.4)
Protestant	29 (52.7)
Muslim	2 (3.6)
Others	3 (5.5)
None	1 (1.8)
Type of family	
Both parents	52 (94.5)
Single parent	3 (5.5)
Single parent	
Single through divorce /separation	1(33.3)
Never married	2 (66.7)
Residence	
Nairobi	36 (65.5)
Out of Nairobi	18 (32.7)
E. Africa (Sudan)	1 (1.8)

Occupational status Formal employment Casual worker Unemployed Self-employed	 6 (10.9) 15 (27.3) 11 (20.0) 23 (41.8)
Level of income Less than Ksh 10000 More than Ksh 10000	 42 (76.4) 13 (23.6)
House structure Stone house Iron sheets house Wooden house Mud house/ Matofali	 22 (40.0) 19 (34.5) 1 (1.8) 13 (23.6)

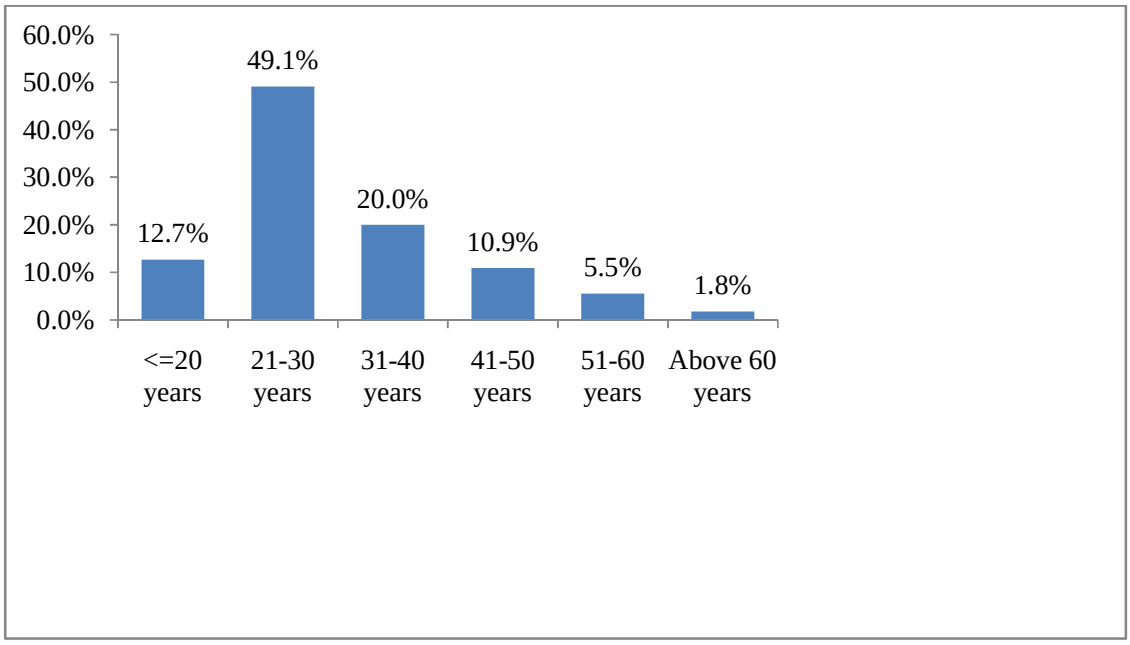

Figure 1: Age distribution

Mean age (SD) – 31.5 (10.9)

Range – 18-69 years

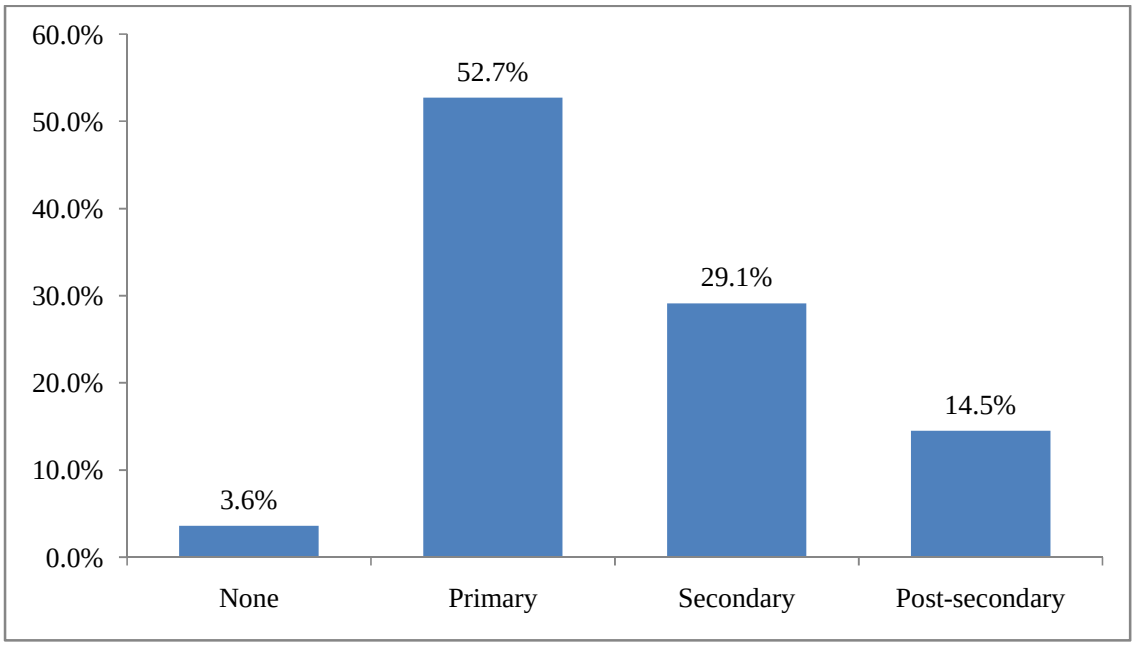

Figure 2: Education levels

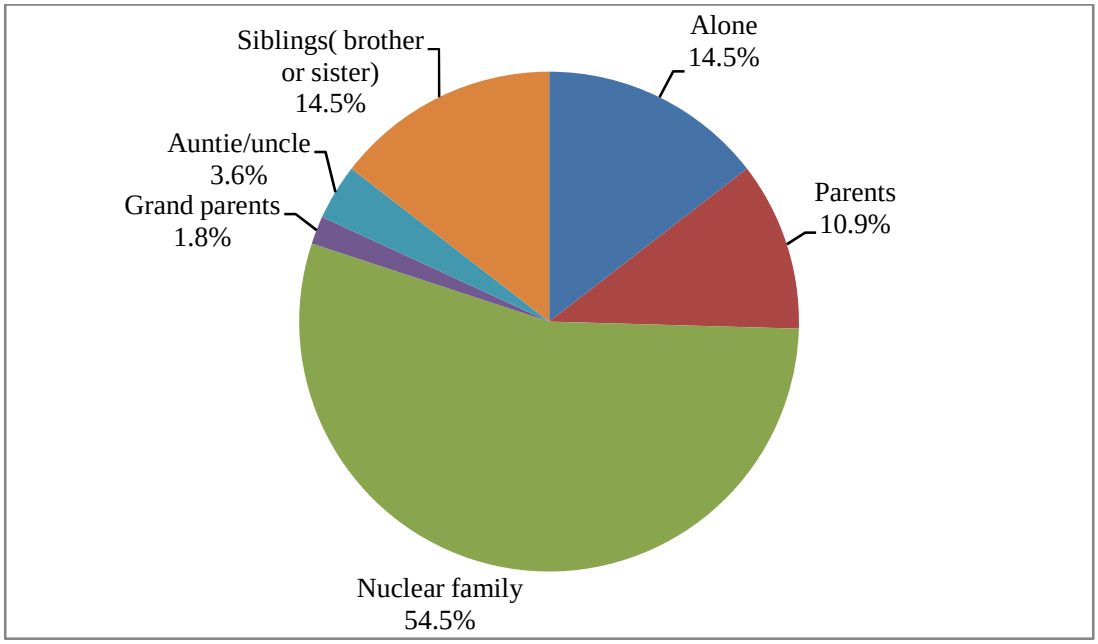

Figure 3: Composition of participant's household

Socio-economic characteristics

Unemployment rate was at 20% while 41.8% were self-employed, 27.3% casual labourers and 10.9 % were in formal employment. More than three-quarters (76.4%) earned less than Kshs 10,000/=per month. 40%, of the patients lived in rental stone houses,34.5%,lived in iron sheet houses while 23.6% and 1.8% lived in mud houses or houses made from clay bricks and wooden houses respectively (Table 2).

Table 2: Socio-economic characteristics

Variable	Frequency (%)
Occupational status	
Formal employment	6 (10.9)
Casual worker	15 (27.3)
Unemployed	11 (20.0)
Self-employed	23 (41.8)
Level of income	
Less than Ksh 10000	42 (76.4)
More than Ksh 10000	13 (23.6)
House structure	
Stone house	22 (40.0)
Iron sheets house	19 (34.5)
Wooden house	1 (1.8)
Mud house/ Matofali	13 (23.6)

History of mental illness

History of previous mental illness was reported among 20% of the patients.

Table 3: History of mental illness in the family

Variable	Frequency (%)
Mental illness	
Suffered mental illness	11 (20.0)
No	44 (80.0)
Mental illness	
Father suffers mental illness	2 (18.2)
Grand parent	3 (27.3)
Sibling	2 (18.2)
Cousin	2 (18.2)

Duration of burns

The median duration of burns was 44 days with majority (41.8%) of the burns ranging between 29 to 84 days (1 to 3 months) while a quarter (25.5%) was more than 3 months. Majority (80%) of the patients had burns with size less than 40% while 12.7% had burns more than 40% in size. Slightly more than a half (50.9%) of the patients suffered burns on their face, trunk and limbs while 36.4% suffered limbs only (figure 4). Most burns (63.6%) were caused by flames while the rest were as a result of scalds (18.2%), electrical (10.9%) and chemical (7.3%) (figure 5).

Table 4: Burns history

Variable	Frequency (%)
Duration of burn	
Median (IQR)	44 (20 – 95)
Duration of burn	
0 – 14 days	9 (16.4)
15 – 28 days	9 (16.4)
29 – 84 days	23 (41.8)
>84 days	14 (25.5)
Size of burn in percentage	
Unknown	4 (7.3)
0 - 20	22 (40.0)
21 - 40	22 (40.0)
>40	7 (12.7)

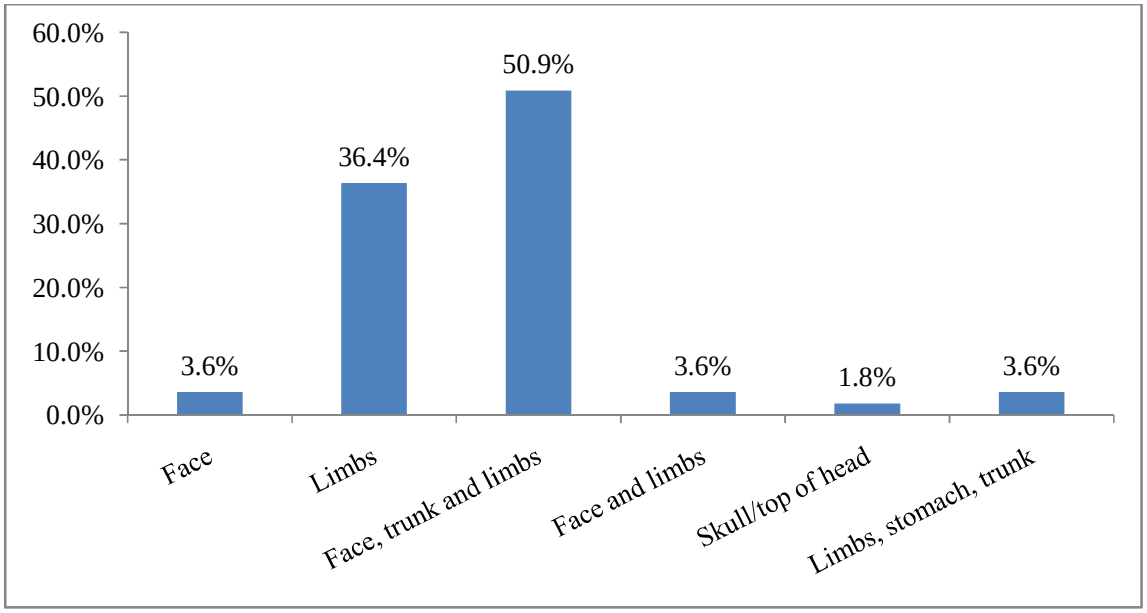

Figure 4: Location of burns

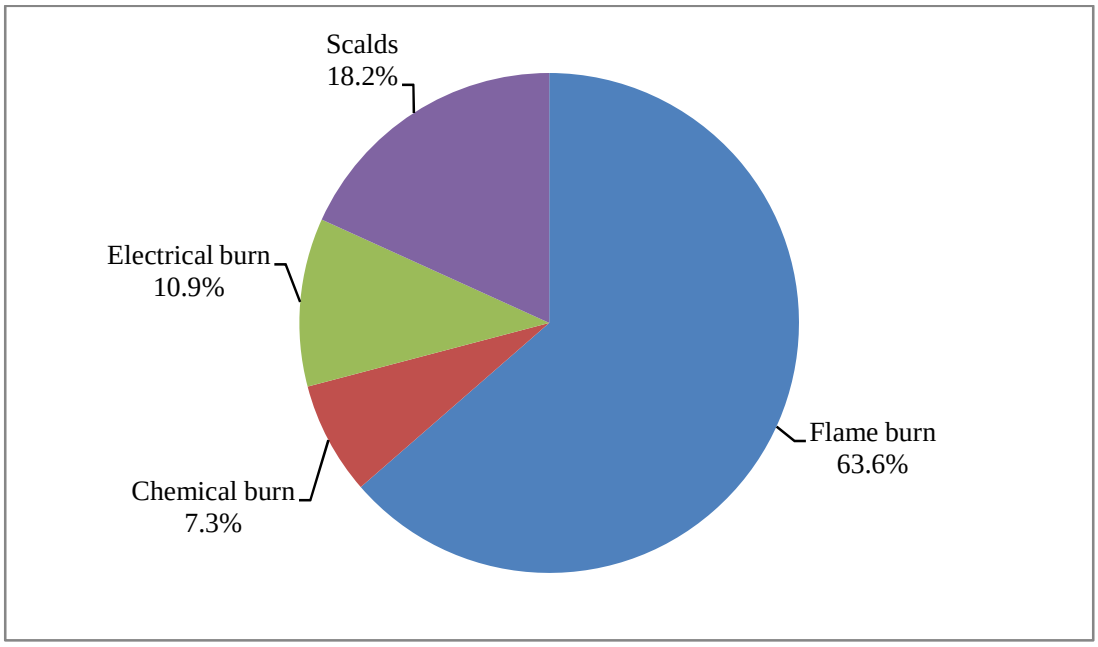

Figure 5: Cause of burns

Depression

A high proportion 47 (85.5%) of the patients had depression, 6 (10.9%) had mild, 26 (47.3%) moderate, while 15(21.3%) had severe depression.

Table 5: Prevalence of depression

Variable	Frequency (%)
Prevalence of depression	
Depression	47 (85.5)
Normal	8 (14.5)
Severity of depression	
Minimal depression	8 (14.5)
Mild depression	6 (10.9)
Moderate depression	26 (47.3)
Severe depression	10 (18.2)
Extreme depression	5 (9.1)

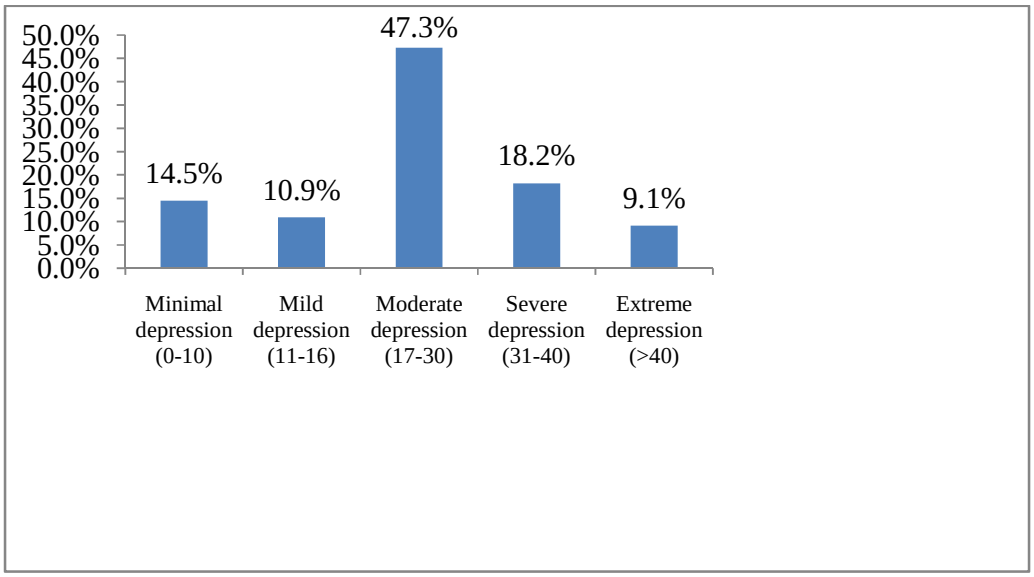

Figure 6: Depression levels

Factors associated with depression among burns patients

Depression was associated with the level of income of the patients (p=0.013). The patients whose income levels were less than Kshs. 10,000 were more likely to be depressed compared to those with higher incomes, OR 8.1 (95% CI 1.6-40.1). Also, the patients who had stayed for longer (>28 days) had a higher likelihood of being diagnosed with depression than those who had stayed for a shorter period, OR 8.6 (95% CI 1.6-49.3), p=0.011. All the other factors were not significantly associated with depression among the patients (Table 6). Both low income and long duration of burns were independently associated with depression among patients (Table 6).

Table 6: Factors associated with depression

Variable	Prevalence of depression		P value
	Depression (n=47)	Normal (n=8)	
Age in years			
<=20 yrs	6 (12.8)	1 (12.5)	0.185
26-30 yrs	21 (44.7)	6 (75.0)	
>30 yrs	20 (42.6)	3 (12.5)	
Gender			
Male	27 (57.4)	3 (37.5)	0.446
Female	20 (42.6)	5 (62.5)	
Educational level			
<=Primary	30 (63.9)	1 (12.5)	0.112
Secondary	11 (23.4)	5 (62.5)	
Post-secondary	6 (12.8)	2 (25.0	
Religion			
Roman catholic	18 (38.3)	2 (25.0)	0.362
Protestant	24 (51.1)	5 (62.5)	
Others	5 (10.6)	1 (12.5)	
Occupational status			
Formal employment	4 (8.5)	2 (25.0)	0.907
Casual worker	14 (29.8)	1 (12.5)	
Unemployed	10 (21.3)	1 (12.5)	
Self-employed	19 (40.4)	4 (50.0)	
Levels of income			
Less than Ksh 10,000	39 (83.0)	3 (37.5)	0.013
More than Ksh 10,000	8 (17.0)	5 (62.5)	
Duration of burn			
28 days or less	12 (25.5)	6 (75.0)	0.011
>28 days	35 (74.5)	2 (25.0)	
Duration of burn			
Median (IQR)	44 (28–95)	23 (12–63)	0.124
Size of burn in %			
0 - 30	29 (65.9)	2 (28.6)	0.096
>30	15 (34.1)	5 (71.4)	

Variable	Prevalence of depression		P value
	Depression (n=47)	Normal (n=8)	
Cause of burn			
Flame burn	29 (61.7)	6 (75.0)	0.317
Chemical burn	3 (6.4)	1 (12.5)	
Electrical burn	5 (10.6)	1 (12.5)	
Scalds	10 (21.3)	0	
Location of burn			
Face	2 (4.3)	0 (0.0)	0.726
Limbs	17 (36.2)	3 (37.5)	
Face, trunk and limbs	24 (51.1)	4 (50.0)	
Face and limbs	2 (4.3)	0 (0.0)	
Skull/top of head	1 (2.1)	0 (0.0)	
Limbs, stomach, trunk	1 (2.1)	1 (12.5)	

Table 7: Factors Significantly associated with depression

Variable	OR (95% CI)	P value
Duration > 28 days	11.5 (1.6-82.9)	0.016
Income <Kshs 10,000	10.9 (1.6-73.4)	0.014

CHAPTER FIVE

5.0 DISCUSSION

5.1 SOCIO DEMOGRAPHIC CHARACTERISTICS

The distribution of male and female was 49.3% and 50.7% respectively according to the integrated household Budget Survey 2005/2006 while the current study observed a higher proportion of male respondents,30(54.5%) as compared to female,25(45.5%).This study compares with Tabassum [1], where male patients were 60% as compared to female patients (40%). The mean age of participants in this study was 31.5 years, while results observed by Tabassum *et.al* [1] were 33.64 years. Gender was not significant in respect of depression. Yet common literature suggests females are more prone than male.[39]

According to Wiechman [29] depression scores were not related to age, length of hospitalization or total burns surface area while in the current study, length of hospital stay was associated to depression with a p-value of 0.011. This is consistent with the study by Malt and Ugland [19] which found that long hospital stay predicted negative psychological adjustment. The duration of hospital stay was considered to be the time the patient was admitted up to the time of interview.

Most burn injuries occurred in the home setting, where cooking activity was the most common resulting in the injuries. With more than half of Kenyan households using only one room for sleeping; there is crowding in the house which makes the family prone to accidents. In the current study most of the participants were using Kerosene because many were casual workers who don't have a lot of time to light charcoal and go to work on time, others were self employed who used kerosene to do their business

like cooking food for customers and male respondents were more likely prone to accidents at work; doing family business and making food for themselves. Two men were attacked by thugs who used petrol and burned them. The female respondents were burned when cooking for their families. This study is consistent with the findings of Peck [16],who reported cooking as the most common activity resulting in burn injuries.

The most common cooking fuel in Kenya is wood used by close to 63% of the households. Although wood is widely used in rural areas (83% of the households), urban household rely on charcoal (41%), kerosene (27%) and liquid petroleum gas or natural gas (22%).26% of Kenyans live in urban areas, according to the Statistical Bureau [40].

Flame related burn injuries (stove, kerosene lamp, small kerosene lamp, which is locally made) were most common, present in 63.6%. These three caused most of the flame injuries most likely because kerosene oil is widely used as domestic fuel in Kenya and often gets adulterated with petrol which closely compares with the study by Tabassum et.al [1] where stove and kerosene lamp were commonly used in Pakistan causing the most common burns.

Most of the participants had burns of Total Burn Surface Area (TBSA) of 40%, 44(80%) as compared to the findings by Tabassum *et.al* [1] where majority of the patients had sustained 25% burns.

Ward 4D admits children less than 20% TBSA, adults less than 30% and above that are admitted in burns unit ward which offers burns' critical care service. Special area burn cases admitted at burns' unit include face, genitalia, foot and joints to children. The researcher sought information on the size of the burn from the patient files.

The location of the burn did not show a significant association with the burn injury in this study as opposed to studies by Malt and Ugland [19] which suggested that scaring and burns in areas which were visible like hands made poorer psychological adjustment than burns in other areas.

In this study, a significant number of patients showed depression, 47(85.5%). The reason for this high rate was due to the anticipation of pain associated with management of burn which could induce emotional responses and sometimes psychopathological states.

In the current study, patients were still undergoing treatment in hospital. The high rate of depression might be due to the emotional experiences during the regular hospital procedures. The researcher noted that many patients were anxious about going to theatre, grafting, nursing donor sites and having repeats of grafting. These made the treatment very unpredictable causing the patients to experience psychological distress.

A study done by Tabassum *et.al*, [1] using case series in Pakistan to determine the frequency of anxiety and depression in burn victims in duration of 12 months found that 58% patients had depression following burn injury. The Journal of Burn Care Rehab [29] reports that Cobb et.al [41] supports the view that patients' psychological reactions during burn treatment complicated patients' physical recovery. Some of the

psychological reactions stated, cited depression to influence physical and psychological functioning. In addition, the nature of depression complicates treatment further due to the cognitive, emotional, social and psychological symptoms which may each influence different aspects of recovery following burn injury. The current study applied to patients in hospital yet many studies done on burn patients are post discharge, 1 year after, 2 years after and even 5 years after the burn injury, which may moderate the level of depression.

In the current study, the majority of the participants had more than 6 years of schooling compared to the baseline (2008-2009)[42] demographic survey. This may be as a result of the Free Primary Education, which has enabled more pupils to access education. However, education was not associated to depressive symptoms.

Kenya ranks 128th among 169 low-income countries in the United Nations Development Programmer's Human Development Index, which measures development in terms of life expectancy, educational attainment and standard of living.. Nearly half of the country's 40 million people are poor or unable to meet their daily nutritional requirements. Although in some respects conditions have improved since the early 1980s, the poverty rate has remained steady at about 48%, JLIFAD (July 2011).[43] In the current study, there is an association between the level of income and depressive symptoms. 42% earned less than Ksh. 10,000/= per month, which includes 21% who earned less than Kshs. 5,000/= per month. Since many of the patients were either casual workers or unemployed, the family social responsibilities were a burden, which elicited emotional responses, such as concerns about the settlement of the hospital bill and provision of daily bread to the family. In this study the researcher observed that family support improved psychological

adjustment and subsequent healing. Settle[25] reported that family support had a higher socioeconomic status were associated with better outcome after burn injury.

Lipowski [44] states that depressed mood is prevalent in any serious injury or any illness that involves a significant loss and that studies on depression have found that the presence of depression is a serious impediment to recovery, of which view the researcher in the current study supports.

Patients who were depressed were referred to the relevant areas for clinical support.

5.2 CONCLUSION

Burn patients require bio psycho-social support while undergoing treatment in hospital and be continued while discharged and until full rehabilitation. Flame burn was the most common cause of burn injury and there is need to educate the community on the risks of using stove and kerosene lamp and the small kerosene lamp which is locally made in Kenya.

The prevalence of depression among burn patients was higher, 47 (85.5%) compared to the prevalence of depression in the general population which is between (3 and 5%) according to an international study by Ustun [45].

5.3 LIMITATIONS

The study is devoid of follow up on patients which may help with further investigations.

5.4 RECOMMENDATIONS

There is need to improve psychosocial support in the burns' unit at the Kenyatta National Hospital to improve the care of burn patients through the use of clinical psychologists and counseling psychologists both qualified and in training.

There is need for further research, using a larger sample for comparison of results with the current study.

Burn patients require to be assessed for depression from time to time in order to identify and refer appropriately for clinical support and management.

REFERENCES

1. Tabbassum A., Asud F., Aurangzeb, & Malik N., (2009). *Anxiety and Depression in Burn Patients. Department of Psychiatry&Behavioural Sciences, Department of Community Medicine, Department of Surgery, Wah Medical College,Wah,Pakistans.* 21(1)
2. Nthumba P.M. & Oliech J.S. (2005) Outcome of Moderate and Severe Thermal Injuries at KNH. *East and Central Africa Journal of Surgery, Volume 10 No. 2*
3. Anderson D. M., Keith J., Norvak P.D., et al, (2002) Mosby's Medical, Nursing & Allied Health Dictionary. 6th edition page 501. Mosby, Inc.
4. Smith,S. J., Smith, K. R. Rainey, S. L. & Delgiorno, J. (2006) Psychology of Burns. *Journal of Trauma Nursing ; Volume 13, Number 3:106*
5. Patterson D.R., Everett J.J., Bombandier C.H., Quested K.A., et al. (1993). Psychological Effects of Severe Burn injuries. Psychol Bulletin 113:362-378.
6. Malt U. F., (1980). Long-term psychosocial follow-up studies of burned adults: Review of Literature.Burns.6:190-197
7. World Health Organization (2000), Global burden of disease. Geneva Switzerland.
8. American Psychiatric Association (2010), the frequency and correlates of symptoms of depression experienced by long term burn survivors. Psyc. INFO Database Record.
9. Ndetei D. M. (2010). Your A-Z on Mental Health. Acrodile Publishing Ltd.
10. Daily Nation 30th January (2009). Nakumatt Down Town Supermarket Fire. Kenyan newspaper. Published by: Nation Media Group Limited.
11. Daily Nation 4th February (2009).A dark day for Sachangwan. Kenyan newspaper. Published by: Nation Media Group Limited.

12. Daily Nation September13th (2011).Nairobi Pipeline Fire. Kenyan newspaper. Published by: Nation Media Group Limited.
13. Wagner, M. M., MSN, RN (1981) Care of the Burn-Injured Patient. A Multidisciplinary Involvement, pg.ix. , PSG Publishing Company, Inc.
14. Blumenfield M., Schoeps M. M. (1993). Psychological Care of the Burn and Trauma Patient. Pg.101-102.Williams & Wilkins.
15. Low, J F . (2007). It's Not Just a *Burn*. Physical and Psychological Problems after Burns. Acta University Upsaliensis. Digital Comprehensive Summaries of Uppsala Dissertations from the Faculty of Medicine.242.69 pp. Uppsala.
16. Peck M. D. (2011) Epidemiology of burns throughout the world. Part 1: Distribution and risk factors, Burns: *Journal of International Injuries. 37(7):1087-100.*
17. Dalal P.K., Saha R., & Agarwal M. (2010).Psychiatric Aspects of Burn Injury.India *Journal of Plastic Surgery:43(Suppl):S 136-143.*
18. Williams E. E. and Griffiths T.A., (1991). Psychological consequences of burn-injury. Burns. 17:4,78-480.
19. Malt U.,& Ugland O. M. (1989).A long-term follow-up study of burned adults. A cta Psychiatrica Scardinavica Supplement 80:94-102
20. Wallace, L. and Lees, J. (1988) A Psychological follow- up Study of adult patients discharged from a British Burn Unit. *Burns, 14 (1),* 39-45.
21. Quested K. A., Patterson D. R., Boltwood M. D. et al. (1988). Relating mental health and physical function to rehabilitation status at three months post-burn. *Journal of Burn Care and Rehabilitation 9:87-89.*
22. Browne G., Byrne B., Brown B. et al. (1985). Psychosocial adjustment of burn survivors. Burn 12:28-35

23. Noronha D. O. & Faust J. (2007).Identifying the variables impacting post-burn Psychological adjustment: A meta analysis. *Journal of Pediatric Psychology; 32(3):380-391.*

24. Brown B., Roberts J., Browne G.,et al.,(1988) Gender differences in variables associated with psychosocial adjustment to a burn injury. Research in Nursing and Health 11:23-30

25. Settle J. A. D. (1996), Principles and Practice of Burn Management pg.4443-450.Churchill Livingstone.

26. Gelder M.G., Andreasen N.C., Lopez-Ibol Jr , et al,(2009)New Oxford Textbook Of Psychiatry,2nd edition Vol.1 Page 633. Oxford University Press.

27. Dayster: Aas. J, Willebrand M., Wikehutt B.,et al (2008) Major Depression & Post Traumatic Stress Disorder Symptoms following severe burn injury in relation to lifetime psychiatric morbidity, *Journal of Trauma ,64(5) 1349-1356*

28. Tucker P (1987) psychosocial problems among adult burn victims. Burns 13:7-14

29. Wiechman S.A., Ptacek J.T, Patterson D. R., et al,(2001). Rates, Trends, and Severity of Depression after Burn Injuries. *Journal of Burn Care Rehabilitation. 22:417-424.*

30. Fauerbach J. A., Lawrence J., Haythornthwaite J., et al,(1997).Pre-burn psychiatric history affects post trauma morbidity. Psychosomatics. 38:374-385.

31. Madianos M. G., Papaghelis M., Ionnvich J.et al,(2001). Psychiatric Disorders in Burn Patients: A follow up study. Journal of Psychotherapy Psychosomatization. 70:30-37

32. Pallua N., Kunsebeck H. W. & Noah E. M. (2003). Psychological adjustments 5 years after burn injury. Burns 29:143-152.

33. Ulrich P.M., Azuay S. W.& Patterson D. R. (2009) Pain, Depression and functioning following burn injury. Rehabilitation psychology, 54:211-216

34. Van Loey N. E.,& Van Son M. J. (2003).Psychopathology and psychological problems in patients with burn scars: epidemiology and management. American *Journal of Clinical. Dermatology: 4(4) 245-72.*

35. Yamane Taro (1967).Statistics, An Introductory Analysis, 2nd Ed .Harper and Row.

36. Israel G. D. (1992).Sampling the Evidence of Extension Program Impact. Florida Mechanical and technological University. MI

37. Beck A. T., Steer R. A. & Brown G. K. (1996b).Beck Depression Inventory 2nd Ed. San Antonio, Tx. The Psychological Corporation.

38. Strauss E., Sherman E. M. S., &Spreen O., (2006).A Compendium of Neuropsychological Tests. Administration, Norms, and Commentary 3rd Ed. Oxford University Press: New York.

39. WHO (2008)-Global Burden of Disease Burden 2004 update(2008) Global Burden of Disease & risk factors(2006) www.who. Int/topics/global_ burden_of_disease.

40. Kenya Bureau of Statistics (2008-2009).

41. Cobb N, Maxwell G, Silverstein P, The relationship of patient stress to burn injury, J Burn care Rehabil 1991;12:334-8.

42. Kenyan demographic and health survey, 2008-09.

43. Enabling Poor People to overcome poverty,IFAD,2011.

44. Lipowski Z J Psychosocial reactions physical illness. Can Med Assoc J 1983;128;1069-72

45. Ustun TB, Sartorius N (eds), MENTAL ILLNESS in the general health care. An international study Chichester Wiley, 1995.

APPENDIX A

INFORMED CONSENT EXPLANATION

INFORMED CONSENT EXPLANATION

My name is Lucy Macharia, a clinical psychology student at the University of Nairobi. I am doing a study entitled The Prevalence of Depression among burn patients admitted in Kenyatta National Hospital as part of my master's degree. My supervisors are Dr. John Mburu and Dr. Pius A. Kigamwa. from the Department of Psychiatry, Faculty of Medicine, College of Health Sciences, University of Nairobi.
Institution: Department of Psychiatry, Faculty of Medicine, College of Health Sciences, University of Nairobi.

The purpose of the study is to assess the level of depression among patients with burns in Ward 4 and Burns' Unit. The procedure will involve asking the patients to answer questions on their feelings for a period of 2weeks.

Benefits of this study There was no direct benefit for participation in this study. However the benefit is to gather information that will enable better screening and intervention of people with depression in Kenya following burn injuries.

Risk of the study the risk is that due to individuals' varying appraisal of similar circumstances, some subjects may find certain questions distressing. Those subjects found to need further medical intervention, were referred to the appropriate clinic in KNH.

Voluntarism: your agreement to enroll in the study is voluntary and you may withdrawal from the study at any time. There was no penalty or loss of benefit in which you are otherwise entitled due to refusal to participate in the study.

Confidentiality: All the information obtained from this study was regarded with outmost confidentiality and the name of participant was not recorded anywhere in the study or in the resulting publications.

After you read the explanation please feel free to ask any questions that will allow you to understand clearly the nature of the study. Thank you for participating in this research study.

CONTACTS:

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Supervisors: Dr. John Mburu Telephone No: 0733-918-774

Dr. Pius Kigamwa telephone No: 0722-521-261

Prof. Guantai- Telephone no: 2726300-9 the Chair Person of the University of Nairobi/Kenyatta National Hospital Ethics Committee.

CONSENT FORM

I the undersigned do hereby volunteer to participate in this research study. The nature and purpose have been fully explained to me by Lucy Macharia. I understand that all the information given / obtained was treated with outmost confidentiality and was used for this study only.

Signed _____ Date _____

Signed _____ _____ Date_____

Lucy Macharia.

APPENDIX B:

DEMOGRAPHIC QUESTIONAIRE

Name code: _____

Date of interview _____dd /mm /yyyy)

Date of birth_____(dd /mm/yyyy)

1) Age _____(Years)

a) sex

i) female ☐

ii) male ☐

b) Marital status

i) Single ☐

ii) Married ☐

iii) Divorced ☐

iv) Widowed ☐

c) Educational level

i) None ☐

ii) Primary ☐

iii) Secondary ☐

iv) College/University(post-secondary) ☐

d) Religion

i) Roman Catholic ☐

ii) Protestant ☐

iii) Muslim ☐

e) Others please specify _____ ☐

2) What do you do to earn a living?(specify)

Level of income

Less than 5000

5001-10000

10001-15000

More than 15000.

3) What Family do you come from?

a) Both parents ☐

b) Single parent ☐

4) If single parent (specify)

a) Mother ☐

b) Father ☐

5) Single parenthood through;

a) Divorce ☐

b) Never married ☐

c) Death ☐

Medical History

6) Have you suffered mental illness in your life?

a) Yes ☐

b) No ☐

7) Is there anybody who has suffered mental illness in your family

a) Yes ☐

b) No ☐

c) If yes, specify? _____

Residence

8) Who do you live with now?_____

9) What type of house do you live in?

a) stone house ☐

b) iron sheet house ☐

c) wooden house ☐

d) mud house ☐

Burns

10) When did you sustain the burn? (actual date)_____

(dd/mm/yyyy)

11) When were you admitted to the hospital?_____

(From the file)

12) What is the size of burn (%)? (From the

file)_____

13) Location/ area of burn _____

a) Face ☐

b) Trunk ☐

c) Limbs ☐

14) What caused the burn injury?

a) Flame burn ☐

b) Chemical burn ☐

c) Electrical burn ☐

d) Scalds ☐

e) Others Specify_____ ☐

APPENDIX C

Beck Depression Inventory

NAME:_____ **DATE:**_____

On this questionnaire are groups of statements. Please read each group of statements carefully. Then pick out the one statement in each group which best describes the way you been feeling this **PAST WEEK, INCLUDING TODAY.** Circle the number beside the statement you picked. If several statements in the group seem to apply equally well, circle each one.
Be sure to read all the statements in each group before making your choice.

1. **0** I do not feel sad
   1 I feel sad
   2 I am sad all the time and I can't snap out of it
   3 I am so sad or unhappy that I can't stand it

2. **0** I am not particularly discouraged about the future
   1 I feel discouraged about the future
   2 I feel I have nothing to look forward to
   3 I feel that the future is hopeless and much that things cannot improve

3. **0** I do not feel like a failure
   1 I feel I have failed more than the average person
   2 As I look back on my life, all I can see are a lot of failures
   3 I feel I am a complete failure as a person

4. **0** I get as much satisfaction out of things as I used to
   1 I don't enjoy things the way I used to
   2 I don't get real satisfaction out of anything anymore
   3 I am dissatisfied or bored with everything

5. **0** I don't feel particularly guilty
   1 I feel guilty a good part of the time
   2 I feel guilty most of the time
   3 I feel guilty all of the time

6. **0** I don't feel I am being punished
   1I feel I may be punished
   2 I expect to be punished
   3 I feel I am being punished

7. **0** I don't feel disappointed in myself
   1 I am disappointed in myself
   2 I am disgusted in myself
   3 I hate myself

8. **0** I don't feel I am any worse than anybody else
   1 I am critical of myself for my weaknesses or mistakes
   2 I blame myself all of the time for my faults
   3 I blame myself for everything bad that happens

9. **0** I don't have any thoughts of killing myself
   1 I have thoughts of killing myself, but I would not carry them out
   2 I would like to kill myself
   3 I would kill myself if I had the chance

10. **0** I don't cry any more than usual
    1 I cry more now than usual
    2 I cry all the time now
    3 I feel irritated all the time now

11. **0** I am no more irritated by things than I ever am
    1 I am slightly more irritated by things now more than usual
    2 I am quite annoyed or irritated a good deal of the time
    3 I feel irritated all of the time now

12. **0** I have not lost interest in other people
    1 I am less interested in other people than I used to be
    2 I have lost most of my interest in other people
    3 I have lost all of my interest in other people

13. **0** I make decisions about as well as I ever could
    1 I put off making decisions more than I used to
    2 I have greater difficulty in making decisions than before
    3 I would kill myself if I had the chance.

14. **0** I don't feel that I look any worse than I used to
    1 I am worried that I am looking old or unattractive
    2 I feel that there are permanent changes in my appearance that make me look unattractive
    3 I believe that I look ugly

15. **0** I can work about as well as before
    1 It takes an extra effort to get started at doing something
    2 I have to push myself very hard to do anything
    3 I can't do any work at all

16. **0** I can sleep as well as usual
    1 I don't sleep as well as I used to
    2 I wake up 1-2 hours earlier than usual and find it hard to get back to sleep
    3 I wake p several hours earlier than I usually do and cannot get back to sleep

17. **0** I don't get more tired than usual
    1 I get tired more easily than I used to
    2 I get tired from doing almost anything
    3 I am too tired to do anything

18. **0** My appetite is no worse than usual
    1 My appetite is not as good as it used to be
    2 My appetite is much worse now
    3 I have no appetite at all anymore

19. **0** I haven't lost much weight, if any, lately
    1 I have lost more than five pounds
    2 I have lost more than ten pounds
    3 I have lost more than fifteen pounds

20. **0** I am no more worried about my health than usual
    1 I am worried about my physical problems such as aches and pains, or upset stomach or constipation
    2 I am very worried about physical problems and it's hard to think of much else
    3 I am so worried about my physical problems that I cannot think about anything else

21. **0** I have not noticed any recent changes in my interest in sex
    1 I am less interested in sex than I used to be
    2 I am much less interested in sex now
    3 I have lost interest in sex completely

Suggested interpretation of the scale (Beck 1978)

0-9 Normal Range
10-15 Mild Depression
16-19 Mild-Moderate Depression
20-29 Moderate-Severe Depression
30-63 Severe Depression

APPENDIX D:

BUDGET

The research will take a period of ten days excluding weekends and the projected total cost to completion is Ksh 93500/ =as follows:

ITEM	COST (Ksh)
Transport to hospital to see patients	10,000
Data entry and analysis	30,000
Typing, printing, and binding	20,000
Purchase of stationary	7,000
Approval by ethics committee	1,000
Air time for making telephone calls	10,000
Miscellaneous	15,000
Totals	93,000

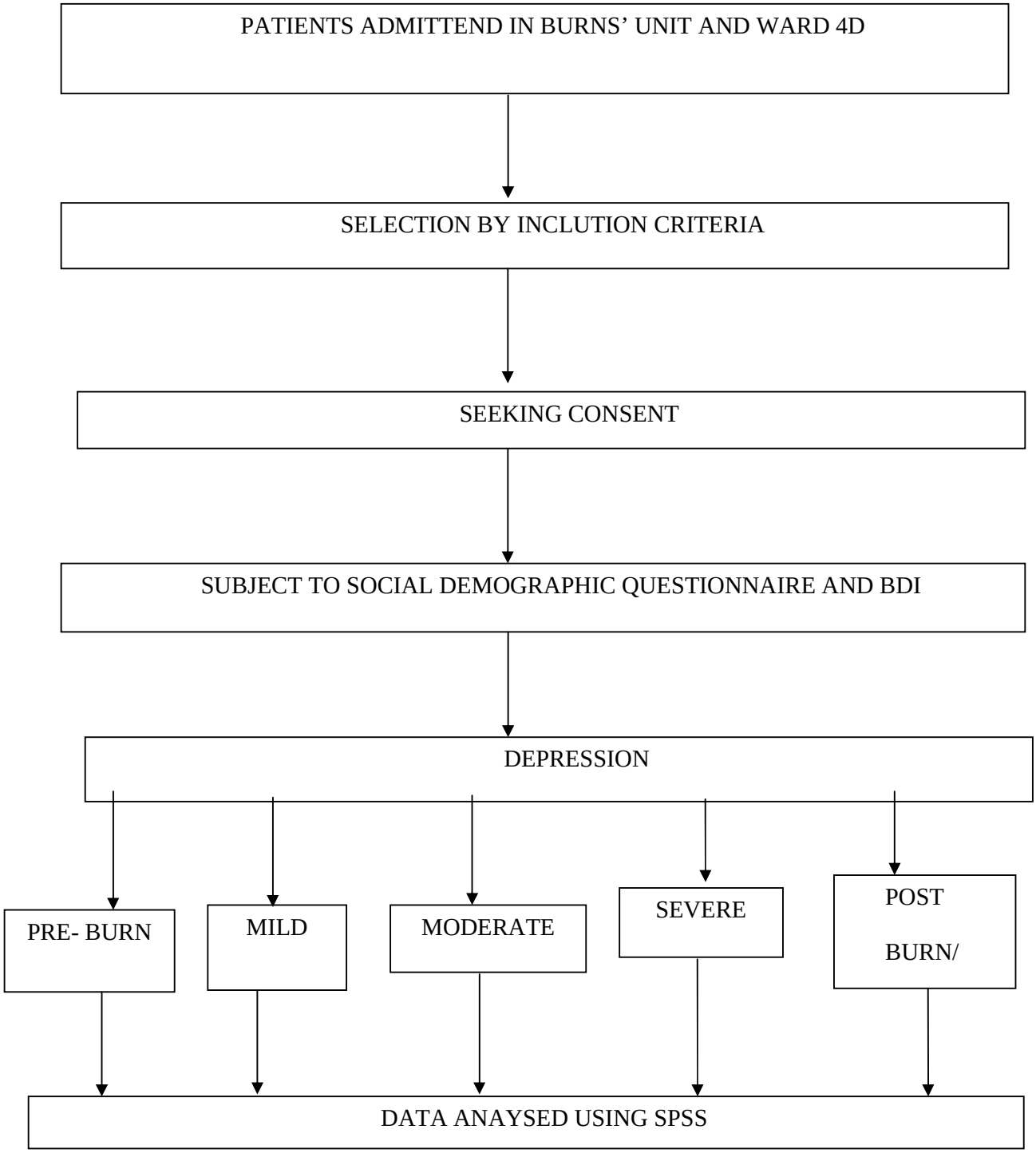
APPENDIX E:

TIME SCHEDULE

MONTH	Nov,2011-March 2012	April 2012	May 2012-October 2012	November 2012-May 2013	January 2013-s June 2013
Development of proposal					
Approval by Psychiatric Department					
Approval by Ethics Committee					
Data collection & Analysis					
Results Presentation					

APPENDIX F:

FLOW CHART



APPENDIX G

APPROVAL LETTER FROM ETHICS

UNIVERSITY OF NAIROBI
COLLEGE OF HEALTH SCIENCES
P O BOX 19676 Code 00202
Telegrams: varsity
(254-020) 2726300 Ext 44355
Ref: KNH-ERC/A/302

KNH/UON-ERC
Email: uonknh_erc@uonbi.ac.ke
Website: www.uonbi.ac.ke
Link:www.uonbi.ac.ke/activities/KNHUoN

KENYATTA NATIONAL HOSPITAL
P O BOX 20723 Code 00202
Tel: 726300-9
Fax: 725272
Telegrams: MEDSUP, Nairobi
25th October 2012

Lucy Muthoni Macharia
Dept.of Psychiatry
College of Health Sciences
University of Nairobi

Dear Lucy

Research proposal: "The prevalence of Depression among patients with burns admitted at Kenyatta National Hospital" (P287/05/2012)

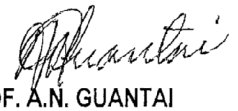
This is to inform you that the KNH/UoN-Ethics & Research Committee (KNH/UoN-ERC) has reviewed and **approved** your above revised proposal. The approval periods are 25th October 2012 to 24th October 2013.

This approval is subject to compliance with the following requirements:

a) Only approved documents (informed consents, study instruments, advertising materials etc) will be used.
b) All changes (amendments, deviations, violations etc) are submitted for review and approval by KNH/UoN ERC before implementation.
c) Death and life threatening problems and severe adverse events (SAEs) or unexpected adverse events whether related or unrelated to the study must be reported to the KNH/UoN ERC within 72 hours of notification.
d) Any changes, anticipated or otherwise that may increase the risks or affect safety or welfare of study participants and others or affect the integrity of the research must be reported to KNH/UoN ERC within 72 hours.
e) Submission of a request for renewal of approval at least 60 days prior to expiry of the approval period. (*Attach a comprehensive progress report to support the renewal*).
f) Clearance for export of biological specimens must be obtained from KNH/UoN-Ethics & Research Committee for each batch of shipment.
g) Submission of an *executive summary* report within 90 days upon completion of the study
This information will form part of the data base that will be consulted in future when processing related research studies so as to minimize chances of study duplication and/or plagiarism.

For more details consult the KNH/UoN ERC website **www.uonbi.ac.ke/activities/KNHUoN**

Yours sincerely



PROF. A.N. GUANTAI
SECRETARY, KNH/UON-ERC

c.c. The Deputy Director CS, KNH
The Principal, College of Health Sciences, UoN
The Dean,School of Medicine, UoN
The Chairman, Dept. of Psychiatry, UoN
The HOD, Records, KNH
Supervisors: Dr. John Mburu, Dept.of Psychiatry, UoN
Dr. P. Kigamwa,Dept.of Psychiatry,UoN

APPENDIX H

STUDENT ID