SKIN DISEASES AND THEIR IMPACT ON QUALITY OF LIFE AMONG PATIENTS AT MUHIMBILI NATIONAL HOSPITAL AND MUHAS ACADEMIC MEDICAL CENTER

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DISSERTATION REPORT

TITLE

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By

Yamikani Celebu Mastala, MBBS

A Dissertation submitted in Fulfillment of Requirement for the Degree of Master of Medicine in Internal Medicine of

Muhimbili University of Health and Allied Sciences
October, 2019

CERTIFICATION

The undersigned certifies that, he has read and hereby recommend for examination by Muhimbili University of Health and Allied Sciences a dissertation entitled: "***Skin diseases and their impact on quality of life among patients at Muhimbili National Hospital and Muhas Academic Medical Center***" in partial fulfillment of requirement for the degree of Master of medicine in Internal Medicine of Muhimbili University of Health and Allied Sciences.

_____

Prof. K Pallangyo

(Supervisor)

_____

Date

DECLARATION AND COPYRIGHT

I, **Yamikani Celebu Mastala** declare that, this **dissertation** is my own original work and has not been accepted for a similar degree in any other University.

Signature**: …….** Date**: …….**

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Glory be to God for his blessings and protection throughout my studies.

DEDICATION

I dedicate this work to my parents, Mr and Mrs Mastala and my son Arsene and the rest of the family.

ABSTRACT

Background: Skin diseases are a common cause of ill health in developing countries like Tanzania. The effect of a skin disorder on quality of life of a patient which is ignored many times is often of more importance than the presence of skin lesions. To adequately meet the dermatologic needs of the growing population, it is necessary to have a better knowledge of local skin disease spectrum and their impact on quality of life. This will inform on better clinical practice and health planning.

Objectives: To describe types of skin diseases, their distribution and impact on quality of life among medical patients at Muhimbili National Hospital and Muhas Academic Medical Center (MAMC) in Dar es Salaam, Tanzania.

Methodology: A descriptive hospital based cross-sectional study was conducted from July 2018 to December 2018. All patients admitted to the tertiary dermatology units on account of skin disease and those attending skin clinic for the first time at the two hospitals were recruited. A total of 608 patients aged ≥14 years were enrolled. Socio-demographic and clinical data was collected using a questionnaire. Diagnosis was made on clinical grounds and laboratory investigations were done whenever necessary. Dermatology life quality index questionnaire was used to assess the impact of skin disease on quality of life. Data was analyzed using SPSS version 20.0 and a p-value of ≤ 0.05 with 95% Confidence interval were considered to be significant. Ethical clearance was sought from MUHAS ethical committee of research and communication.

Results: There were 580 (95.4%) outpatients of which 56.4% (327/580) were females. The common diseases among outpatients were atopic dermatitis 31.2%, acne 13.6%, pityriasis versicolor 8.3% and tinea 7.4%. There were 28 (4.6%) admitted patients of which 82.1% (23/28) were females and autoimmune disorders (32.1%) was the commonest diagnosis. The most common reason for admission was severity and extent of illness (65.4%). The mean length of hospital stay days (SD) was highest in autoimmune disorders 22.18(9.7). Females had significantly high mean dermatology life quality index scores (SD) than males among outpatients (11.05(6.8) vs 9.58(6.7), p=0.023) as compared to inpatients (17.9(8.4) vs 15.8 (4.1), p=0.594). Highest mean dermatology life quality index scores (SD) were seen in inflammatory dermatoses and autoimmune disorders among both

outpatients and inpatients. The proportion of dermatology life quality index scores (SD)>10 was high among inpatients than outpatients (67.9% vs 47.1%, p=0.012).

Conclusion: Eczematous dermatitis and autoimmune disorders were most common skin diseases seen among outpatients and inpatients respectively. Different types of skin diseases varied on effect of quality of life. Further studies are needed to pinpoint root causes of the disease spectrum and to widen up knowledge on inpatient dermatology.

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LIST OF ABBREVIATIONS

AD	Atopic Dermatitis
BCC	Basal Cell Carcinoma
CLQI	Children Life Quality Index
GDALYs	Global Disability Adjusted Life Years
DALYs	Disability Adjusted Life Years
DLQI	Dermatology Life Quality Index
HAART	Highly Active Antiretroviral Therapy
HIV/AIDS	Human Immunodeficiency Virus/ Associated Immunodeficiency Syndrome
HRQL	Health Related Quality of Life
ICD	International Classification of Disease 10 classification of human disease
ICU	Intensive Care Unit
IRB	Institutional Review Board
KS	Kaposi's sarcoma
LOS	Length of hospital stay
MAMC	Muhas Academic Medical Center
MNH	Muhimbili National Hospital
MUHAS	Muhimbili University of Health and Allied Sciences
OPD	Out-Patient Department
PPE	Pruritic Papular Eruption of HIV/AIDS
QoL	Quality of Life
SPSS	Statistical Package of Social Sciences
SCC	Squamous Cell Carcinoma
STG	Standard Treatment Guidelines
UK	United Kingdom
UNAIDS	United Nations Programme on HIV/AIDS
USA	United States of America
WHO	World Health Organization

DEFINITION OF TERMS

Skin disease in this study refers to disorders of predominantly the superficial layers of the skin (e.g pyoderma, dermatitis), deep skin and soft tissue infections (e.g. erysipelas, cellulitis and abscess), and diseases with occasional or accessory skin features (e.g leprosy, endemic treponematoses).

Classification of skin diseases in this study was based on International Statistical Classification of Diseases and Related Health Problems (ICD-10) which contains guidelines for recording and coding various diseases. The study classifies skin diseases as follows:

- Infections of the skin and subcutaneous tissue
- Autoimmune disorders
- Eczematous dermatitis
- Papulosquamous disorders
- Inflammatory dermatoses
- Cutaneous malignancies
- Skin appendage disorders
- Pigmentary disorders
- Benign neoplastic and fibrous tumours of skin
- Other skin disorders

As it is the case in other branches of medicine, health-related quality of life assessment is needed in dermatology: it provides additional measures of disease status relevant to the patient for clinical decision-making, including selection of treatment and monitoring; it gives an ability to effectively asses both existing and novel management techniques; and it provides a way of comparing with systemic diseases when arguing for more resources for dermatology.

Dermatology life quality index (DLQI) is a validated tool that is used to asses health related quality of life in patients with skin disease.

CHAPTER ONE

1.0 INTRODUCTION

1.1 Background

Dermatology is the study of the skin and its appendages and of their diseases. It is an immense field with numerous potential abnormalities -comprising about 1500 distinct diseases and many variants according to International Classification of Disease 10 (ICD 10). There have been various attempts to name and categorize skin diseases and the ways are still evolving but the ICD 10 index, a comprehensive list, with subclasses has been fairly precise (1).

Skin diseases are highly prevalent in developing countries and cause high morbidity (2–6). The types of skin diseases between countries and even within a country differs due to different prevailing factors like genetic constitution, climate, socioeconomic status, occupation, education, hygiene standards, customs, nutritional status and quality of medical care (7–11). Reports on the types of skin diseases in different parts of Nigeria favored dermatitis, infections and HIV/AIDS related dermatoses as leading causes of skin diseases (12–14). Dermatitis has been reported to be the most common diagnosis in South Africa and the second diagnosis in England (15,16). A study in Ghana reported more skin infectious and dermatitis cases as compared to UK which had more premalignant and malignant diseases, benign tumors and dermatitis (17). Although previous studies have reported lower rates of skin malignancies in Africa (18), albinism has been noted to be a chief contributing factor (19,20). With regard to types of skin disease commonly encountered in admitted patients, bullous diseases followed by psoriasis, dermatitis and neoplasm are among the leading causes (15,16,21–23).

Most skin conditions do not constitute a direct threat to life, but their chronic and incurable nature has a powerful negative impact on the quality of life of the afflicted patients (24–26). Mallon et al observed that though acne may be a trivial disease, it has levels of social, psychological and emotional problems great as those reported by patients with asthma, epilepsy, diabetes, back pain or arthritis (26). Psoriasis, vitiligo, atopic dermatitis (AD) and acne were noted to affect quality of life particularly in patients who were younger, single with a low income status among outpatients in Brazil (27) with AD having a negative

impact on quality of sexual life (28). In a study from Saudi Arabia patients with papulosquamous disorders recorded the highest mean Disability Life Quality Index (DLQI) scores, followed by immunological disorders, eczematous dermatitis, and miscellaneous disorders with mean DLQI higher among females (29).

The recent global burden of skin disease report showed Tanzania to have global disability adjusted life years (DALYS) rate of 677-740 per 100,000 individuals (all skin conditions combined) (5). A study at the Kilimanjaro Christian Medical Centre, Tanzania noted skin or soft tissue infections (7.9%) to be among the leading reasons for seeking medical care highlighting the burden of skin disease in the country (30). Studies done in the 1970s in different parts of Tanzania estimated skin disease to account for between 20 and 60% of all medical problems with the majority of conditions being infective (31). KJ Pallangyo in Tanzania observed an increase of HIV/AIDS related dermatoses as immunity goes down (32). Interestingly, it has been noted that majority of skin diseases are transmissible so they can be prevented and controlled (7,8,26).

1.2 Literature Review

Despite the fact that skin diseases are very common and responsible for ill health; few studies have been done in dermatology in Tanzania to determine their effect on quality of life.

There have been studies that have looked at the factors influencing the types of skin diseases. A study at Hyderabad, Pakistan found skin problems to be fairly common among children and women and people who do not practice hygiene. The study in particular noted that children of less than 10 years age suffer from infectious skin disease dominated by scabies (45.5%). It was also discovered that majority of the patients belong to rural or slum areas (77.2%), low socio-economic strata (68.9%), and dwell in overcrowded families (82%) and had inadequate water (36). Socioeconomic status, personal hygiene and level of awareness were seen to be predisposing factors to skin infections. Not only that but also the impact of skin infections on quality of life was noted more among acne patients in Mauritius (37). A Tanzanian study in pediatric patients confirmed that skin infections are still the main cause of dermatological consultations in children although with a reduced prevalence and also noted an increase on inflammatory skin conditions attributed to HIV pandemic (38).

The HIV/AIDS pandemic has a significant impact on spectrum of skin diseases. The UNAIDS report highlighted HIV/AIDS as a global health problem, with an estimated 38.8 million people living with HIV worldwide in 2013 (39). It is further reported that Sub-Saharan Africa harbors 70% of all new infections. The HIV/AIDS pandemic plays a big role on the pattern of skin disease of a particular population (10,40,41). Oninla at a tertiary hospital in Nigeria observed that oral/esophageal/vaginal candidiasis (41.1%), pruritic purpura eruption (PPE) (24.4%), dermatophytic infections (8.9%), and herpes zoster (3.8%) are among the most common dermatoses in HIV/AIDS patients (41). Bakari et al. found a similar trend among HIV/AIDS infected police officers in Dar es Salaam, Tanzania in which fungal infections, herpes zoster, PPE, seborrheic dermatitis and Kaposi's sarcoma (KS) were common with KS and PPE being associated with severe immunodeficiency (42). These studies demonstrated that prevalence and types of skin

disease in immunocompromised patients is different from that of immunocompetent populations.

Various skin disease surveys conducted in a number of developing countries have concluded that skin diseases are more common in children and adolescents, with infections and infestations being high on the list. A study in Northern India found an overall point prevalence of one or more identifiable/apparent skin conditions of 38.8% among children with skin infections (11.4%), pityriasis alba (8.4%), dermatitis/nonspecific eczemas (5.2%), and infestations (5.0%) as leading causes. The results were attributed to low socioeconomic status, malnutrition, overcrowding, and poor standards of hygiene (43). An Australian survey on skin infection, housing and social circumstances in children living in remote indigenous communities concluded that poor housing conditions is a major underlying factor in poor child health, including high rates of skin infections. The study provided evidence that new and modern housing with effective removal of human waste contributes to reduction in skin infections (44). Tungiasis having not been observed much in a number of studies has been reported to be a public health concern with high morbidity in parts of rural western Tanzania (45). Abdel-Hafez et al.(46) conducted a survey in Egypt community which revealed 86.93% of the studied population to have at least one skin disease in which parasitic skin infestation (27.40%) with pediculosis lead followed by eczema/dermatitis (19.82%).

The pattern of skin disease has been studied a lot in outpatients across the globe. Rweyemamu et al. in Tanzania demonstrated that types of skin diseases treated included noninfectious dermatoses (63.8%) and infectious dermatoses (36.2%) (47). The most common infectious dermatoses were dermatitis variants (40%), pyoderma (19%) and superficial mycoses (12%). This trend is further supported by studies in India and Pakistan in which non-infectious dermatoses dominate (48,49). Almost all geo-political zones of Nigeria have also shown a similar trend favoring non-infectious dermatosis which has been explained by an increase in urbanization and the attending socio-economic burden (12,50–52). However, Onayemi et al.(53) in North east Nigeria reported infectious and parasitic skin diseases to account for the majority of skin problems in which young patients dominated and this was attributed to overcrowding, poor environmental hygiene and the high humidity of the region. A study at KwaZulu-Natal hospital found acne 44.3%,

eczemas 15.9%, dyschromias infections, and hair disorders, in that order, to be the five most common disorders encountered (54). The study noted a changing trend on the prevalence of skin diseases in Africans as infective disorders used to top the list.

In contrast, Baur et al. (55) in a tertiary care hospital in Kolkata, India observed scabies to be the most common infectious type (20.4%) while acne (12.4%) the most common noninfectious dermatoses among outpatients. Furthermore, socio-economic status, tobacco use, over-crowding and positive history of contact were significantly associated with infectious type of dermatoses. Most Indian patients in Saurashtra region had non-infective disorders with psoriasis, lichen lesions and skin malignancies being common in age groups of 41-60 years of age, 21-40 years of age and above 40 years of age respectively. The study also noted that squamous cell carcinoma was more common in males, while basal cell carcinoma was more common in females (56). Similarly, eczema and psoriasis than infections dominate in elderly patients in Northern Tanzania (57).

A hospital based study at Muhimbili National Hospital (MNH) in Tanzania found that 59.5% of admitted medical patients had at least one skin disease with many cases being non-infectious dermatoses (18). The study further concluded that dermatological disorders are rarely documented as primary or additional diagnoses by referring or admitting physicians. A retrospective study of patients admitted to dermatology unit in Brazil found that most frequent admissions were due to eczema/dermatitis (17.5%) and cutaneous infections (15.9%). Among the patients admitted, 3.7% were transferred to the intensive care unit (ICU) and 2.5% died in which many were due to immunobullous diseases (58). Conversely, Parajuli S (59) in a 4 year retrospective study in Nepal reported a slightly different trend favoring drug reactions (21.6%), immunobullous diseases (14.5%) and connective tissue diseases (14.1%) as common reasons for admission with 0.8% mortalities. Interestingly, this study also reported leprosy to be among common causes of admission in Nepal though attributed to its high endemicity in the region. This is very different to what previous studies in United Kingdom(UK), United States of America (USA) and Scotland found in which psoriasis was the common reason for hospital admission (21,22,60). Similar to other studies, Jobanputra and Bachmann (22) at Groote Schuur Hospital in Cape Town reported most admissions to a dermatology unit to

comprised of extensive eczema, psoriasis and drug reactions. The study further observed that the extent and severity of skin involvement was the major indication for admission, although lack of home facilities and psychosocial problems were contributing factors. An Australian study on pattern of admissions and inpatients characteristics at a tertiary hospital found dermatitis or eczema and ulcers to be the most frequent reason of admission. It also noted 10 days to be the average length of hospital stay with ulcers accounting for longest duration (61).

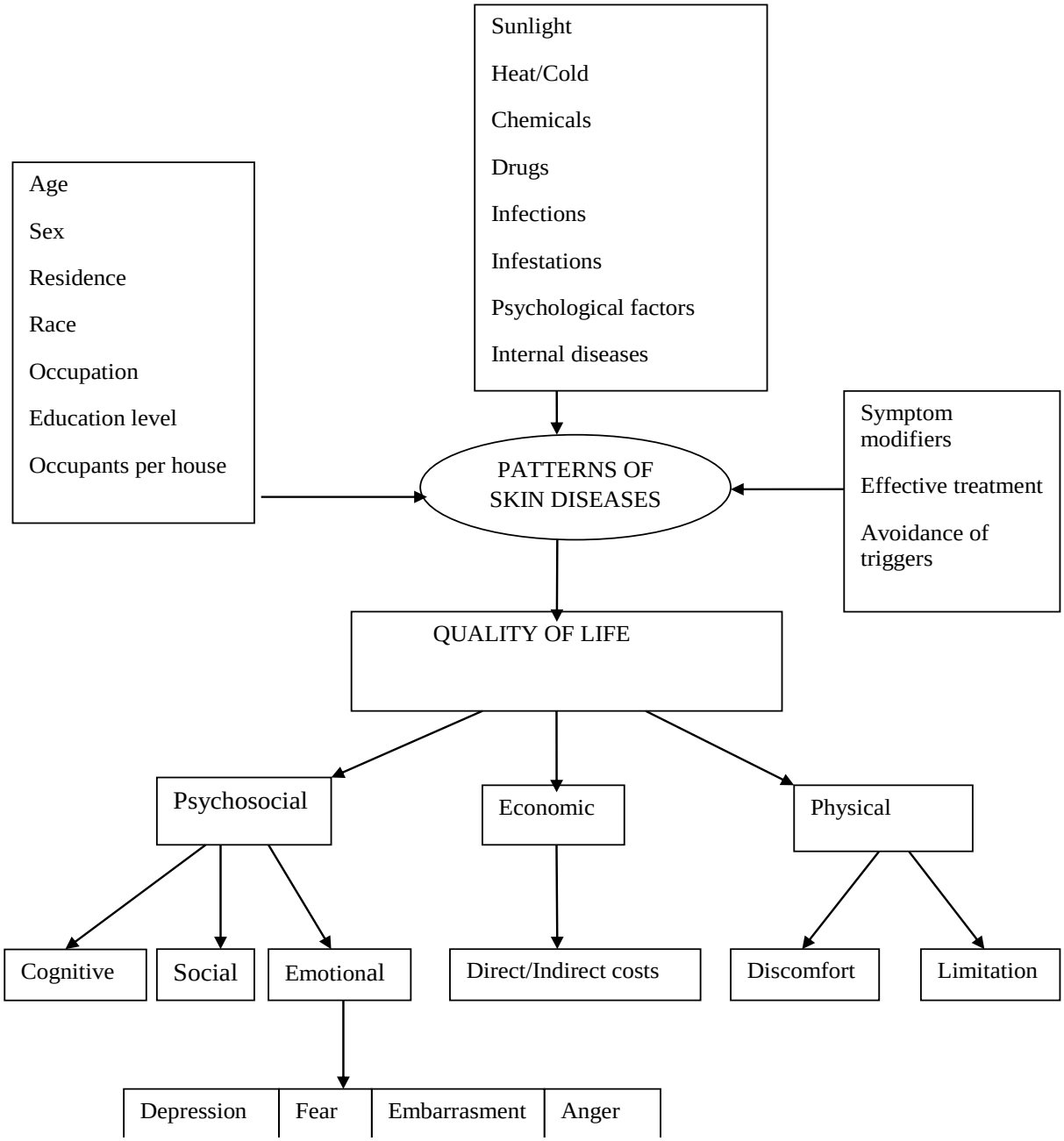
Skin conditions do not pose a direct threat to life, but their chronic debilitating and incurable nature has a significant negative impact on the quality of life of the afflicted patients. A number of studies have demonstrated the impairment of life quality due to skin disease (29,62,63). Nepal community members were noted to have a significant DLQI scores. In this particular survey, the community members were troubled most by symptoms such as itchiness, soreness, pain, stinging and were also equally affected by feeling of self-consciousness and embarrassment (64). A survey and simple needs assessment of people of Cambodia concluded that common skin conditions were scabies, eczema and acne with scabies being more costly to the patient. Sleep interruption and missing classes or work were the quality of life aspects that were also noted in the survey (65). A comparative study of impairment of quality of life in children with skin disease and children with other chronic childhood diseases was conducted in Ninewells Hospital, Dundee and Perth Royal Infirmary. The study found Children Life Quality Index (CLQI) scores in the following descending order AD (33%), followed by urticaria (28%), psoriasis (27%) and alopecia (19%). These were compared with children with other chronic diseases like cerebral palsy which had the highest score (38%), followed in descending order by those with generalized AD (33%), renal disease (33%), cystic fibrosis (32%), urticaria (28%), asthma (28%) and psoriasis (27%). Conditions like epilepsy (24%) and enuresis (24%) scored higher than diabetes (19%), localized eczema (19%), alopecia (19%) and acne (16%). The study concluded that health related quality of life (HRQL) impairment in children with chronic skin disease is at least equal to that experienced by children with many other chronic diseases of childhood (66).

Simpson et al. characterized AD burden in a multinational study in adults with moderate to severe disease who had been living with AD for nearly all their lives. They concluded that

itchiness, sleep disturbances, and depression greatly influenced quality of life (67). A similar study observed uncomfortable physical symptoms followed by embarrassment and self-consciousness about the body appearance to affect quality of life in patients with skin diseases in Klang, Malaysia (68). Eckert concluded that AD and psoriasis are both associated with a substantial humanistic impact which indicates need for more effective treatments of AD(66). E A Kouotou noted that alteration of patient QoL was linked to that of their family in AD children (69). G. Sanclemente et al in a multicenter study on impact of skin disease on quality of life in Colombia noted that psoriasis, contact dermatitis, atopic dermatitis, urticaria and warts were among skin conditions with highest Skindex-29 scores. The study further concluded that even asymptomatic lesions in the population was associated with some degree of unwellness (70).

Vitiligo though predominantly asymptomatic has been noted to have significant psychological effects. A study in Moshi, Tanzania found a moderate impairment of quality of life of African vitiligo patients. Not only that but also participation limitation, stigma, and behavior were among the factors reviewed to affect quality of life in vitiligo patients (71). K Chilicka observed a significant improvement in the general quality of life in acne patients after applying a series of cosmetological treatments (72). In comparison, post inflammatory hyperpigmentation with acne markedly impact negatively self-perceptions and social/emotional functioning (73). Diseases such as alopecia, hirsutism, vitiligo are associated with low symptomatic impairment and high psychosocial impairment as compared to psoriasis, lichen and pemphigus which have both high symptomatic and psychosocial impairment (74). A study in Malaysia noted that disease severity, single status, working status, sports activities, nail dystrophy, exposed area involvement, itch, disturbed sleep, stress, and infection determined quality of life in psoriatic patients (75). Parasitic skin infection particularly scabies and tungiasis have a significant negative impact on quality of life as seen in African school children (76,77). Autoimmune bullous dermatoses have been shown to severely impact quality of life particularly in relation to symptoms and feelings, daily and leisure activities limitation (78).

1.3 Conceptual Framework



CHAPTER TWO

2.0 PROBLEM STATEMENT AND OBJECTIVES

2.1 Problem Statement

Reports from several studies done in Sub-Saharan Africa indicate that the proportion of patients attending skin clinics with chronic non infective conditions has been increasing over time. By and large most of the common non infective skin conditions are incurable and/or tend to be of chronic nature with exacerbations and remissions. The changing pattern and types of skin diseases has been attributed to rapid urbanization, improved socioeconomic conditions and improved hygiene. In addition people with HIV infection are more susceptible to inflammatory disorders and hypersensitivity to drugs and tend to respond poorly to treatment. It has been shown that dermatological diseases affect almost all aspects of patients' lives: financial, social, physical and psychological impacts. The effect of skin disease on quality of life of a patient which is ignored many times is often of more importance than the discomfort of having a rash or the presence of skin lesions.

There is scarcity of information on types of skin diseases and their impact on the quality of life in patients attending health care facilities in Tanzania. There are no published local studies that looked at skin disease types and their impact on quality of life.

2.2 Study Rationale

Skin diseases are a common cause of ill health in Tanzania and have been exacerbated by the HIV epidemic. There is changing types of common skin diseases from infective to non-infective which are often chronic with exacerbations and remissions. Such diseases are likely to have significant impact on the quality of life to those affected. The impact of different types of skin diseases on the quality of life of those affected is influenced by the character of the individual affected, and sociocultural factors of a community. Knowledge on the types of common skin disease seen in hospitals and their respective impacts on quality of life is essential to guide patient management and to guide policy makers in aligning resources accordingly. This study aims at describing the types of skin diseases seen at Muhimbili National Hospital (MNH) and Muhas Academic Medical Center (MAMC).

2.3 Hypothesis

If there is better knowledge of skin disease spectrum and their impact on quality of life, clinical practice will improve and policy makers will have evidence- based information to align resources accordingly.

2.4 Research Questions

- What are the types of skin diseases among new patients attending OPD skin clinic at MNH and MAMC?
- What are the types of skin diseases among patients admitted to the medical wards on account of skin disease at MNH and MAMC?
- What is the impact of skin diseases on the quality of life among patients attending MNH and MAMC?

2.5 Objectives

2.5.1 General objective

- To describe types of skin diseases, their distribution and impact on quality of life among medical patients.

2.5.2 Specific objectives

- To determine the types of skin diseases among new patients attending OPD skin clinic at MNH and MAMC.
- To determine the types of skin diseases among patients admitted to the medical wards on account of skin disease at MNH and MAMC.
- To determine the impact of skin disease on quality of life among patients attending dermatological service at MNH and MAMC.

CHAPTER THREE

3.0 RESEARCH METHODOLOGY

3.1 Study design

This was a hospital based descriptive cross-sectional study among admitted patients and outpatients attending MNH and MAMC.

3.2 Study Site

Muhimbili National Hospital and Muhas Academic Medical Center are located in Dar es Salaam, Upanga and Mloganzila respectively. Dar es Salaam is a highly populated city estimating 4.36 million according to 2012 census+ Tanzania. The United Republic of Tanzania is located in Eastern Africa between longitudes 28°E and 40°E; latitudes 1°S and 12°S. MAMC was just newly established at the time of data collection. There is bidirectional flow of patients between the two facilities and the same team of dermatologists provide clinical care at both facilities.

3.3 Study population

The target study population was patients admitted in medical wards on accounts of skin disease and patients attending the study outpatient skin clinics for the first time at the time of the study. Study participants also included patients referred from other hospitals. All patients who came for follow up and had received prior treatment at the study clinics were not included as this might have altered the disease and quality of life.

3.4 Inclusion Criteria

i) All patients admitted in the medical ward on accounts of dermatological condition.

ii) All new patients attending the Outpatient skin clinic.

3.5 Period of Study

The study was done from July 2018 to December 2018. The period was chosen out of convenience and a 6 month study duration was meant to generate number of cases fair enough to understand the disease spectrum.

3.6 Determination of Sample Size

The sample size for this study was obtained using consecutive sampling technique because of availability of patients. A sample size of 430 patients was calculated using the Kish-Leslie formula as shown below: n=Z2P (100−P)/ε2

Whereby:

n =minimum sample size required

Z = standard normal deviation was set at 1.96 (corresponding to confidence level of 95%)

P = Proportion of 50% was used as there was no study in our region that looked specifically at dermatological patients admitted and those attending clinic.

ε = marginal error used was 5.0%

n=1.962 X0.495 (1−0.495)/0.05

n = 384.16

Therefore, the minimum sample size was approximately 400 patients.

The power of this study was 80% with a non-response rate (f) of 10%.

With the inclusion of an error due to non-response, the final sample size was calculated using the formula: N= (nX 100)/ (100−f)

Therefore, the sample size used was 427 patients.

3.7 Sampling Technique

Consecutive sampling technique was used. All participants meeting inclusion criteria were included.

3.8 Variables

3.8.1 Dependent variables

Quality of life

3.8.2 Independent variables

Age, sex, occupation, race, education level, co-morbidities, symptoms, disease duration

3.8.3 Confounding variables

Comorbidities

Psychological issues other than caused by skin disease.

3.9 Techniques for Data Collection

A questionnaire (Annex VI) was completed by a physician for all the patients admitted and patients attending dermatology clinic at MNH and MAMC from July 2018 to December 2018. Clinical diagnoses were verified by a dermatologist and where necessary laboratory investigations were done. The questionnaire consisted of demographics of the patients, reason for OPD attendance/admission, comorbidities, number of admissions and duration of hospitalizations for dermatological diseases, clinical diagnosis, and complications and referrals to other department, final outcome plus duration of hospital stay for admitted patients who were followed up to hospital discharge. Dermatology life quality index (DLQI) questionnaire (Annex III) was used to assess the impact of skin disease on quality of life (62). DLQI questionnaire has 10 questions on different domains on quality of life. Each question was scored: very much=3, a lot=2, a little=1, and not at all=0. The DLQI score is calculated by summing the score of each question resulting in a maximum of 30 and a minimum of 0. The higher the score, the more quality of life is impaired. DLQI score is indicated for patients 16 years old or above.

3.10 Tools for Data Collection

Data was collected using patient record files and Dermatology Life Quality Index Form (DLQI) and additional questions for interviews. The DLQI form and questionnaire were completed by physician/ research assistant.

3.11 Supervision and Monitoring

Supervision and monitoring was done by Prof Pallangyo and other dermatologists practicing at the two facilities.

3.12 Data Management and Analysis

Data was verified and cleaned on daily basis before entering into a computer and analyzed using Statistical Package for the Social Sciences (SPSS) windows programme version 20. Summary statistics and frequency tables were produced and Chi-square tests and fisher's exact test were used to compare proportions of categorical variables. An independent t-test was used to compare means. The level of significance used was P value less than 0.05.

3.13 Ethical Consideration

Ethical clearance was sought from the Institutional Review Board (IRB) of the Muhimbili University of Health and Allied Sciences (MUHAS). Permission to conduct the study in the medical wards and outpatient clinic of MUHAS teaching hospitals was sought from the hospital authorities. Fully informed verbal and written consent was obtained for patients atleast 18 years of age. For participants between 14 and 18 years who were seen at adult clinics, a consent was obtained from guardians while both consent and assent got obtained from every participant in the study. The risks and benefits of participating in the study were explained. Study participants were informed about their rights of participation in the study. Not only that, but they were also told that a refusal would not affect their subsequent care. All participants information was kept confidential.

CHAPTER FOUR

4.0 RESULTS

A total of 608 patients with a skin disease were enrolled in the study of which 28 were inpatients. The sociodemographic characteristics of the study population were as shown in **Table 1**. Mean age (±SD) of patients was 38.75(±17.2) years with a range of 14 years to 88 years. There were 258(42.4%) male patients with mean age 39.9(±18.5) years and 350(57.6%) female patients with mean age 37.9(±16.10) years. There were more male than female patients in the age categories of 14-23 years (23.3% vs 19.4%) and 54+ years (24.8% vs 19.1%) but with no statistical differences. It was seen that almost all patients attained a formal education (99.6% males vs 98.6% females, $p<0.001$). The household size of 4-6 persons was seen in 64.3% among the respondents. With regard to occupation, many male than female patients were ever employed (67.9% vs 51.6%, $p<0.001$). Many patients were seen at MNH than MAMC (68.9% vs 31.1%) of which there were more males than females at MNH and less males than females at MAMC (75.2% vs 64.3%, 24.8% vs 35.7%, $p=0.004$). Outpatients significantly outnumbered inpatients (95.4% vs 4.6%) and there were more male than female patients among outpatients as compared to inpatients group which had few males than females (98.1% vs 93.4%, 1.9% vs 6.6%; $p=0.007$). There were no significant differences in the other sociodemographic characteristics between men and women (**Table 1**).

Table 1: Sociodemographic characteristics of 608 study respondents

Characteristics	Male n=258	Female n=350	p value
Age(years)			
Mean(±SD)	39.9(±18.5)	37.9(±16.1)	
14-23	60(23.3)	68(19.4)	0.219
24-33	61(23.6)	96(27.4)	
34-43	42(16.3)	65(18.6)	
44-53	31(12.0)	54(15.4)	
54+	64(24.8)	67(19.1)	
Marital status			
Single	92(35.7)	121(34.6)	0.849
Married	126(48.8)	182(52.0)	
Divorced	8(3.1)	9(2.6)	
Widow	32(12.4)	38(10.9)	
Education			
No formal	1(0.4)	5(1.4)	<0.001*
Primary	33(12.8)	96(27.4)	
Secondary	97(37.6)	135(38.6)	
College/University	127(49.2)	114(32.6)	
Household size			
1-3	31(12.0)	51(14.6)	0.016
4-6	163(63.2)	228(65.1)	
7-9	53(20.5)	69(19.7)	
10-12	11(4.3)	2(0.6)	
Occupation			
Self employed	94(36.5)	105(30.0)	<0.001*
Employed	81(31.4)	76(21.7)	
Unemployed	83(31.5)	169(48.3)	
Patient status			
Outpatient	253(98.1)	327(93.4)	0.007
Inpatient	5(1.9)	23(6.6)	
Facility			
MNH	194(75.2)	225(64.3)	0.004*
MAMC	64(24.8)	125(35.7)	

SD, standard deviation; MNH, Muhimbili National Hospital; MAMC, Muhas Academic Medical Center * $p \leq 0.05$

Table 2 shows the clinical characteristics seen among the 608 study subjects. About 38.3% (233/608) of patients had received prior treatment before clinic visit. Comorbidities were seen in 15.6% (95/608) among all patients and their proportions were as follows: hypertension 4.1%, HIV 3.8%, diabetes 2.5% and asthma 2.0%. Skin disease duration of less than 1 month was seen in 32.4% patients with minimum duration being 1 day and maximum 17.3 years. Only 14.5% of patients presented with more than one skin disease. Sleep disturbance was noted in 60.5% of our respondents. Only 2.5% patients presented with complications from skin disease which included eye complications, neuropathic pain, lymphedema, renal failure, pericardial effusion and anemia. The complications were seen more in female than male patients (3.7% vs 0.8%, p=0.031). The other clinical characteristics were seen in the two genders with no significant difference.

Table 2: Clinical characteristics among 608 study respondents

Variable	Male n= 258	Female n=350	p value
Previous treatment	109(42.2)	124 (35.4)	0.57
Presence of comorbidity			
Hypertension	10(3.9)	15 (4.3)	0.918
HIV	11(4.3)	12 (3.4)	0.968
Diabetes	8(3.1)	7 (2.0)	0.412
Asthma	2(0.8)	10 (2.9)	0.081
Others	15(5.8)	24 (6.9)	0.832
Disease duration			
<1 month	78(30.2)	119 (34.0)	0.372
Local remedy use	38(14.7)	36 (10.3)	0.98
More than one skin disease	34(13.2)	54 (15.4)	0.255
Complications	2(0.8)	13 (3.7)	0.031*
Sleep disturbance	146(56.6)	222 (63.4)	0.099

*$p \leq 0.05$

Table 3 shows various categories of skin diseases seen among 580 study outpatients. Eczematous dermatitis was the most common cause of patient visit to the clinic with 42.4%, followed by infections and infestations (25.2%), skin appendages disorders (15.0%), papulosquamous disorders (8.1%), benign neoplastic skin disease and fibrous tumours (6.7%), inflammatory dermatoses (4.8%), pigmentary disorders (4.7%), autoimmune disorders (3.8%), cutaneous malignancies (1.6%), nutritional skin disorders (0.5%), disorders of abnormal keratinization (0.3%), genetic disorders (0.2%) and miscellaneous skin disorders (3.6%). Eczematous dermatitis were more frequent in females than males (49.2% vs 33.6%, p=0.002). Infections and infestations were more common in males than females (30.4% vs 21.1%, p=0.023). Autoimmune disorders were twice as common in females compared to males (4.9% vs 2.4%, p=0.005). Other main disease groups were seen in two genders with no significant difference.

Table 3: Various categories of skin diseases among 580 outpatients

Disease category	Male n=253	Female n=327	Total n=580	p value
Eczematous dermatitis	85(33.6)	161(49.2)	246 (42.4)	0.002*
Infections/Infestations	77(30.4)	69(21.1)	146(25.2)	0.023*
Skin appendages disorders	38(15.0)	49(15.0)	87(15.0)	0.750
Papulosquamous disorders	27(10.7)	20(6.1)	47(8.1)	0.066
Benign neoplastic skin disease and fibrous tumours of skin	19(7.5)	20(6.1)	39(6.7)	0.730
Inflammatory dermatoses	11(4.3)	17(5.1)	28(4.8)	0.969
Pigmentary disorders	14(5.5)	13(3.9)	27(4.7)	0.093
Autoimmune disorders	6(2.4)	16(4.9)	22(3.8)	0.005*
Cutaneous malignancies	3(1.2)	6(1.8)	9(1.6)	0.349
Nutritional Skin Disorders	1(0.4)	2(0.6)	3(0.5)	0.564
Disorders of abnormal keratinization	1(0.4)	1(0.3)	2(0.3)	1.000
Genetic disorders	1(0.4)	0(0)	1(0.2)	1.000
Miscellaneous skin disorders	9(3.5)	12(3.7)	21(3.6)	0.752

* $p \leq 0.05$

Table 4. Shows the breakdown of the various categories of skin diseases seen. This table reveals that in eczematous dermatitis group, atopic dermatitis (73.6%) was the commonest skin disease followed by seborrheic dermatitis (12.6%) and unspecified eczema (7.3%). Atopic dermatitis was seen more in males than females (76.5% vs 72.0%, p=0.030). In papulosquamous disorders group, psoriasis (74.5%) was the most common. There was no gender difference despite psoriasis being more frequent in males than females (77.8% vs 70%, p=0.065). It was followed by lichen planus (17.0%). Inflammatory dermatoses comprised more of urticarial disorders (82.1%) followed by adverse drug eruptions (14.3%). Acne contributed 90.8% cases in skin appendage disorders. In infections and infestations group, fungal infections were most common (70.5%) especially pityriasis versicolor (32.9%) and tinea (29.5%). They were followed by bacterial infections (12.3%), viral infections (9.6%) and parasitic infestation (7.5%). In pigmentary disorders, vitiligo was common (81.5%). Other diseases in this group were albinism, melasma and idiopathic hypomelanosis guttate. Cutaneous malignancy group had 71.4% cases of Kaposi sarcoma (KS) which were more frequent in females than males (83.3% vs 66.7%, p=0.039). In autoimmune disorders group, lupus erythromatosus was common (50%) and was seen more in females than males (52.6% vs 33.3%, p=0.038). In benign neoplastic and fibrous skin disorders, keloid was the most common (71.8%) while xeroderma pigmentosum was the only gernodermatoses seen. In miscellaneous group, prurigo nodularis was the common (38.1%) followed by pruritic papular eruption of HIV (19.0%).

The overall proportions of the common individual diseases among the 580 outpatients were as follows: atopic dermatitis 31.2%, acne 13.6%, pityriasis versicolor 8.3%, tinea 7.4%, seborrheic dermatitis 5.0%, keloids 4.8%, urticaria 4.0%, vitiligo 3.8% and unspecified eczema 3.1%.These 10 conditions consisted of 69.0% (480/696) of all individual skin diseases that patients presented with.

Table 4: Categories of skin diseases and their breakdown among 580 outpatients

Disease	Males (n=253)	Females (n=327)	Total (n=580)	p value
Eczematous dermatitis	85	161	246	
Atopic dermatitis	65(76.5)	116(72.0)	181(73.6)	0.030*
Contact dermatitis	3(3.5)	3(1.9)	6(2.4)	1.000
Photodermatitis	0(0.0)	6(3.7)	6(2.4)	0.261
Seborrheic dermatitis	9(10.6)	22(13.7)	31(12.6)	0.176
Exfoliative dermatitis	2(2.4)	0	2(0.8)	0.436
Lichen Simplex chronicus	2(2.4)	0	2(0.8)	0.190
Unspecified eczema	4(4.7)	14(8.7)	18(7.3)	0.089
Papulosquamous disorders	27	20	47	
Psoriasis	21(77.8)	14(70.0)	35(74.5)	0.065
Lichen planus	5(18.5)	3(15.0)	8(17.0)	0.305
Lichen nitidus	0	1(5.0)	1(2.1)	1.000
Pityriasis rosea	1(3.7)	2(10.0)	3(6.4)	1.000
Inflammatory dermatoses	12	16	28	
Urticarial disorders	11(91.7)	12(75.0)	23(82.1)	0.860
Erytherma multiforme minor	1(8.3)	0	1(3.6)	0.047
Adverse drug eruptions	0	4(25.0)	4(14.3)	0.57
Skin appendages disorders	38	49	87	
Acne	33(86.8)	46(93.9)	79(90.8)	0.990
Alopecia totalis	1(2.6)	1(2.0)	2(2.3)	1.000
Miliaria profunda	0	1(2.0)	1(1.1)	1.000
Hyperhidrosis	4(10.5)	1(2.0)	5(5.7)	0.190
Infections/Infestations	77	69	146	
Viral Infections	10(13.0)	4(5.8)	14(9.6)	
Warts	8(10.4)	2(2.9)	10(6.8)	0.012*
Molluscum contagiosum	1(1.3)	2(2.9)	3(2.1)	1.000
Herpes simplex	1(1.3)	0	1(0.7)	0.436
Bacterial Infections	13(16.9)	5(7.2)	18(12.3)	
Leprosy	2(2.6)	2(2.9)	4(2.7)	1.000
Folliculitis	7(9.1)	1(1.4)	8(5.5)	0.091
Cellulitis	3(3.9)	1(1.4)	4(2.7)	0.190
Others	1(1.3)	1(1.4)	2(1.4)	1.000
Fungal Infections	50(64.9)	53(76.8)	103(70.5)	
Candidiasis	0	3(4.3)	3(2.1)	0.261
Pityriasis versicolor	23(29.9)	25(36.2)	48(32.9)	0.568
Intertrigo	5(6.5)	2(2.9)	7(1.2)	0.015
Tinea	20(26.0)	23(33.3)	43(29.5)	0.716
Others	2(2.6)	0	2(1.4)	1.000
Parasitic Infestation	4(5.2)	7(10.1)	11(7.5)	
Scabies	4(5.2)	7(10.1)	11(7.5)	0.763
Pigmentary disorders	14	13	27	
Vitiligo	10(71.4)	12(92.3)	22(81.5)	0.707
Albinism	1(7.1)	1(7.7)	2(7.4)	1.000

Idiopathic guttate hypomelanosis	2(14.3)	0	2(7.4)	0.190
Melasma	1(7.1)	0	1(3.7)	0.436
Cutaneous malignancies	3	6	9	
Squamous Cell Carcinoma	1(33.3)	1(16.7)	2(22.2)	0.436
Kaposi`s Sarcoma	2(66.7)	5(83.3)	7(77.8)	0.039*
Autoimmune disorders	3	19	22	
Mixed connective tissue disorders	2(66.7)	3(15.8)	5(22.7)	1.000
Lupus erythematosis	1(33.3)	10(52.6)	11(50.0)	0.038*
Systemic sclerosis	0	3(15.8)	3(13.6)	0.261
Dermatomyositis	0	1(5.3)	1(4.5)	1.000
Pemphigus Vulgaris	0	2(10.5)	2(9.1)	1.000
Benign neoplastic skin disease and fibrous tumours of skin	19	20	39	
Syringoma	1(5.3)	2(10.0)	3(7.7)	0.507
Steotocytoma multiplex	1(5.3)	0	1(2.6)	0.436
Keloids	13(68.4)	15(75.0)	28(71.8)	0.897
Seborrheic Keratosis	2(10.5)	0	2(5.1)	0.190
Actinic keratosis	1(5.3)	1(5.0)	2(5.1)	1.000
Dermatofibroma	1(5.3)	2(10.0)	3(7.7)	1.000
Genetic disorders	1	0	1	
Xeroderma pigmentosum	1(100.0)	0	1(100)	0.436
Disorders of abnormal Keratinization	1	1	2	
Darriers disease	0	1(100.0)	1(50)	1.000
Keratosis pilaris	1(100.0)	0	1(50)	0.436
Nutritional skin disorders	1	2	3	
Pellagra	0	2(100.0)	2(66.7)	0.190
Vitamin A deficiency	1(100.0)	0	1(33.3)	1.000
Miscellaneous skin disorders	9	12	21	
Panniculitis	2(22.2)	2(16.7)	4(19.0)	1.000
Prurigo nodularis	1(11.1)	7(58.3)	8(38.1)	0.144
Erythema marginatum	1(11.1)	0	1(4.8)	0.436
Xerosis cutis	1(11.1)	1(8.3)	2(9.5)	1.000
Pyogenic granuloma	1(11.1)	0	1(4.8)	0.436
Oral mucositis	0	1(8.3)	1(4.8)	0.436
Pruritic papular eruption of HIV	3(33.3)	1(8.3)	4(19.0)	0.323

* $p \leq 0.05$

Table 5 shows the top 10 skin diseases by age among 580 outpatients seen. There were many patients seen in the following age categories: 14-23 (21.6%), 24-33 (25.9%) and 54+ (21.7%). Atopic dermatitis was commonest in the 14-23 year group and 54+ year group (p=0.012). Acne was commonest between 14-33 years (48.5%) and its frequency decreased in adulthood (0.8% in 44+ years, p<0.001). The frequencies of tinea, psoriasis, vitiligo and urticaria were seen to increase with age, especially 44+ years and above (p<0.001, p=0.035, p<0.001, p=0.021 respectively).

Table 5: Top 10 skin diseases by age (years) among 580 outpatients

Disease	**Age categories(years)**					**P-value**
	14-23 (n=125)	**24-33 (n=150)**	**34-43 (n=99)**	**44-53 (n=80)**	**54+ (n=126)**	
Atopic dermatitis	57(45.6)	42(28.0)	25(25.3)	22(27.5)	35(27.8)	0.012*
Acne	29(23.2)	38(25.3)	11(11.1)	0	1(0.8)	<0.001*
Pityriasis versicolor	10(8.0)	12(8.0)	10(10.1)	12(15.0)	4(3.2)	0.015*
Tinea	3(2.4)	4(2.6)	9(9.1)	9(11.3)	18(14.3)	<0.001*
Psoriasis	6(4.8)	2(1.3)	7(7.1)	8(10.0)	12(9.5)	0.035*
Seborrheic dermatitis	8(6.4)	9(6.0)	5(5.1)	3(3.4)	6(4.8)	0.995
Keloids	7(5.6)	5(3.3)	6(6.1)	3(3.4)	7(5.6)	0.572
Urticaria	1(0.8)	12(8.0)	2(2.0)	1(1.3)	7(5.6)	0.021*
Vitiligo	2(1.6)	1(0.7)	0	4(5.0)	15(11.9)	<0.001*
Unspecified eczema	2(1.6)	3(2.0)	4(4.0)	6(7.5)	3(2.4)	0.126
Others	0	22(14.8)	20(20.2)	12(15.0)	18(14.1)	

* $p \leq 0.05$

Inpatients comprised of 4.6% (28/608) of the study population of which 71.4% (20/28) were admitted at MNH. Females were 82.1% (23/28) with mean age of 41(±14) years and males had a mean age of 31.8(±11.2) years. The frequency of patients per age group (years) among inpatients were as follows; 14-23 (10.7%), 24-33 (28.6%), 34-43(28.6%), 44-53 (17.9%) and 54+ (14.3%).

The categories and breakdown of skin diseases among patients admitted at the two teaching hospitals is shown in **table 6**. The most common disease category was autoimmune disorders (32.1%) which comprised of mixed connective tissue disorders (22.2%), systemic lupus erythematosis (55.6%), pemphigus foliaceus (11.1%), and pemphigus vulgaris (11.1%). This was followed by inflammatory dermatoses group (17.9%) which had Stevenson's Johnson Syndrome (60.0%) and adverse drug eruption (40.0%). Cutaneous malignancies group (17.9%) had 5 cases of Kaposi`s sarcoma, squamous cell (SCC) and basal cell carcinoma (BCC). Eczematous dermatitis (14.3%) comprised of 4 cases; atopic dermatitis (2), seborrheic dermatitis (1) and exfoliative dermatitis (1). Infections group (10.7%) had one case herpes zoster and two cellulitis cases. Hypertrophic scars (1) and pyoderma gangreonosum (1) were the other disorders. Patients with autoimmune disorders and skin infections had the lowest mean ages (±SD) (33.65(±3.70), 31.5(±14.34) respectively.

The reasons for admission were as follows; severe illness (65.4%), for observation/investigations (26.9%) and concurrent medical problem (7.7%). No patient was admitted for academic reasons or based on patient request.

Table 6: Categories and breakdown of skin diseases among 28 inpatients

Disease	Mean age(±SD)(Range)	Total (n=28)
Eczematous dermatitis	**46.5(±11.09) (33-48)**	**4(14.3)**
Atopic dermatitis		2(7.1)
Seborrheic dermatitis		1(3.6)
Exfoliative dermatitis		1(3.6)
Autoimmune disorders	**33.65(±3.70) (16-48)**	**9(32.1)**
Mixed connective tissue disorders		2(7.1)
Lupus erythematosus		5(17.1)
Pemphigus foliaceus		1(3.6)
Pemphigus vulgaris		1(3.6)
Infections	**31.5(±14.34) (16-40)**	**3(10.7)**
Herpes zoster		1(3.6)
Cellulitis		2(7.1)
Inflammatory dermatoses	**43.0(±16.80) (38-45)**	**5(17.9)**
Stevenson's Johnson syndrome		3(10.7)
Adverse drug eruptions		2(7.1)
Cutaneous malignancies	**41.25(±15.73) (28-64)**	**5(17.9)**
Kaposi`s sarcoma		2(7.1)
Squamous cell carcinoma		2(7.1)
Basal cell carcinoma		1(3.6)
Other	**41.5(±13.43) (32-51)**	**2(7.1)**
Hypertrophic scars		1(3.6)
Pyoderma gangreonosum		1(3.6)

Table 7 shows the mean of length of hospital stay (LOS±SD) per disease category. The average LOS among all inpatients was 12.32(±8.07) days, with a median stay of 10 days and a range of 1 to 35 days. There were 345 total inpatient bed days during the study period. Pemphigus vulgaris had the longest hospital stay with 35 days. The outcomes of the admitted patients included 24(85.7%) discharges and 4(14.3%) transfer out to other departments. There was no death or ICU admission.

Table 7: Categories of skin disease and associated length of hospital stay (LOS) (days)

Disease category	n=28	LOS mean (±SD)	Range
Eczematous dermatitis	4(14.3)	12.05(±5.7)	6 – 18
Autoimmune disorders	9(32.1)	22.18(±9.7)	8 – 35
Infections	3(10.7)	7.36(±0.5)	7 – 8
Malignancies	5(17.9)	9.56(±3.7)	4 – 14
Inflammatory dermatoses	5(17.9)	18.2(±5.1)	4– 22
Others	2(7.1)	9.18(±2.7)	1 – 10

SD: standard deviation; LOS, length of hospital stay

Dermatology Life Quality Index (DLQI) profile of the study respondents

The DLQI profile of the study respondents is shown in **table 8**. DLQI scores ranged from 1 to 30 and mean DLQI score for the study population was 10.41(±6.82) indicating a large effect of skin diseases on patient's quality of life (QoL). Females had high mean DLQI scores than males (11.05 vs 9.58, p=0.023).

Table 8: Patients' response to dermatology life quality index (DLQI) among 573 outpatients

S.no	Items in question	Males (n=252)	Females (n=321)	Total (n=573)
1	**Over the last week, how itchy, sore painful or stinging has your skin been**			
	Very much	25(9.9)	38(11.8)	63(11.0)
	A lot	99(39.3)	138(43.0)	237(41.4)
	A little	91(36.1)	107(33.3)	198(34.6)
	Not at all	37(14.7)	38(11.8)	75(13.1)
2	**Over the last week, how embarrassed or self-conscious have you been because of your skin**			
	Very much	46(18.3)	79(24.6)	125(20.9)
	A lot	125(49.6)	190(59.2)	315(52.6)
	A little	77(30.6)	49(15.3)	126(21.0)
	Not at all	4(1.6)	3(0.9)	7(1.2)
3	**Over the last week, how much has your skin interfered with you going shopping or looking after your home or garden**			
	Very much	27(10.7)	37(11.5)	64(11.2)
	A lot	58(23.0)	107(33.3)	165(28.8)
	A little	64(25.4)	66(20.6)	130(22.7)
	Not at all	103(40.9)	110(34.3)	213(37.2)
	Not relevant	0	1(0.3)	1(0.2)
4	**Over the last week, how much has your skin influenced the clothes you wear**			
	Very much	16(6.3)	32(10.0)	48(8.4)
	A lot	61(24.2)	84(26.2)	145(25.3)
	A little	96(38.1)	111(34.6)	207(36.1)
	Not at all	79(31.3)	93(29.0)	172(30.0)
	Not relevant	0	1(0.3)	1(0.2)
5	**Over the last week, how much has your skin affected any social or leisure activities**			
	Very much	18(7.1)	38(11.8)	56(9.8)
	A lot	60(23.8)	91(28.3)	151(26.4)
	A little	70(27.8)	83(25.9)	153(26.7)
	Not at all	101(40.1)	101(31.5)	202(35.3)
	Not relevant	3(1.2)	8(2.5)	11(1.9)
6	**Over the last week, how much has your skin made it difficult for you to do any sport**			

	Very much	18(7.1)	33(10.3)	51(8.9)
	A lot	54(21.4)	68(21.2)	122(21.3)
	A little	41(16.3)	67(20.9)	108(18.1)
	Not at all	106(42.1)	105(32.7)	211(36.8)
	Not relevant	33(13.1)	48(15.0)	81(14.1)
7A	**Over the last week, has your skin prevented you from working or studying**			
	Yes	78(31.0)	133(41.4)	211(36.8)
	No	174(69.0)	188(58.6)	362(63.2)
7B	**If "No", over the last week how much has your skin been a problem at work or studying**			
	A lot	14(8.0)	24(12.8)	38(10.5)
	A little	47(27.0)	41(21.8)	88(24.2)
	Not at all	113(64.9)	123(65.4)	237(65.3)
8	**Over the last week, how much has your skin created problems with your partner or any of your close friends or relatives**			
	Very much	12(4.8)	16(5.0)	28(4.9)
	A lot	30(11.9)	40(12.5)	70(12.2)
	A little	64(25.4)	105(32.7)	169(29.5)
	Not at all	145(57.5)	154(48.0)	299(52.2)
	Not relevant	1(0.4)	6(1.9)	7(1.2)
9	**Over the last week, how much has your skin caused any sexual difficulties**			
	Very much	15(6.0)	6(1.9)	21(3.7)
	A lot	15(6.0)	25(7.8)	40(7.0)
	A little	30(11.9)	42(13.1)	72(12.6)
	Not at all	102(40.5)	149(46.4)	251(43.8)
	Not relevant	90(35.7)	99(30.8)	189(33.0)
10	**Over the last week, how much of a problem has the treatment for your skin been, for example by making your home messy, or by taking up time**			
	Very much	6(2.4)	10(3.1)	16(2.8)
	A lot	24(9.5)	35(10.9)	59(10.3)
	A little	50(19.8)	89(27.7)	139(24.3)
	Not at all	145(57.5)	165(51.4)	310(54.1)
	Not relevant	27(10.7)	22(6.9)	49(8.6)

Each question was scored: very much=3, a lot=2, a little=1, and not at all=0. The DLQI is calculated by summing the score of each question resulting in a maximum of 30 and a minimum of 0. The higher the score, the more quality of life is impaired. Mean score for the current cohort was 10.41 ± 6.82 indicating very large effect of skin diseases on patient's QoL. Only patients atleast 16 years of age were included in analysis. Data is based in outpatients (n=573).

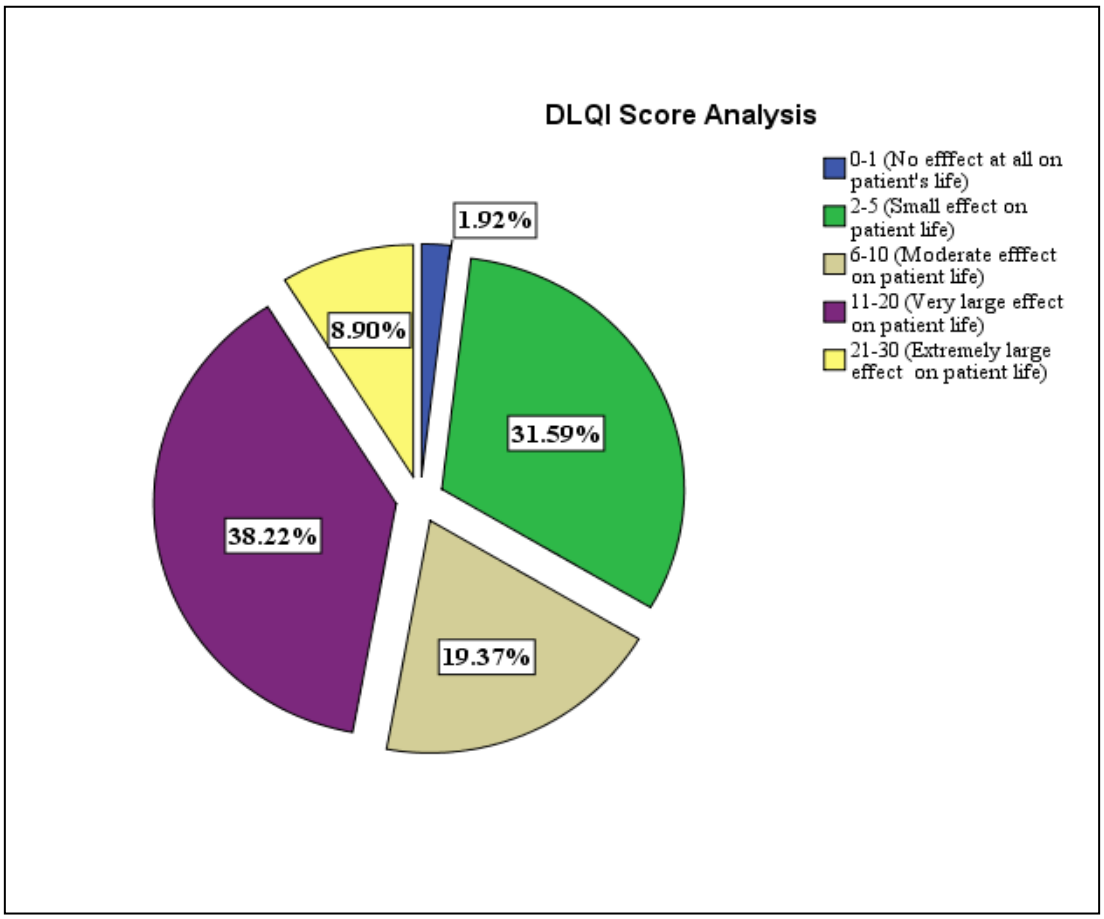
Table 9. Shows the distribution of total DLQI scores and their mean per each question. The highest mean scores were seen in questions of feelings (1.97), symptoms (1.50), work and school (1.39) while lowest were seen in questions of personal relationships (0.68), treatment (0.53) and sexual activity (0.38).

Table 9: Individual question mean scores in DLQI questionnaire among 573 outpatients

Questions	Description of patient QoL	Males (n=252)		Females (n=321)		Total (n=573)	
		scores	mean	scores	mean	scores	mean
1	Symptoms	364	1.4	497	1.5	861	1.50
2	Feelings	463	1.8	666	2.1	1131	1.97
3	Daily activities	261	1.0	391	1.2	652	1.14
4	Wearing clothes	266	1.1	375	1.2	641	1.12
5	Social and leisure	244	1.0	379	1.2	623	1.09
6	Sport	203	0.8	302	0.9	505	0.88
7	Work and school	309	1.2	488	1.5	797	1.39
8	Personal relationship	160	0.6	233	0.7	393	0.68
9	Sexual activity	105	0.4	110	0.3	215	0.38
10	Treatment	116	0.5	189	0.6	305	0.53

QoL, quality of life; DLQI, dermatology life quality index; QoL

Figure 1. Shows the distribution of levels of effect of skin disease on patient life as follows; very large effect (38.2%), small effect (31.6%), moderate effect (19.4%), extremely large effect (8.9%) and no effect (1.9%). It was noted that 47.1% of the patients had DLQI score of more than 10.



*Results are based on patients aged >16 years old

Figure 1: Effect on patient quality of life (n=573) among outpatients

Table 10. summarizes mean DLQI scores per skin disease category. High mean DLQI scores were seen in inflammatory dermatoses, autoimmune disorders, and eczematous dermatitis and papulosquamous disorders. Benign neoplastic and fibrous tumours and pigmentary disorders had the lowest mean DLQI scores in both genders.

Table 10: Skin disease category and their effect on quality of life (QoL) among 573 outpatients

Disease category	**Effect on QoL**			**DLQI Mean(±SD)**		
	DLQI≤5	**DLQI >5≤10**	**DLQI>10**	**Males**	**Females**	**Total**
Inflammatory dermatoses (n=25)	-	1(4.0)	24(96.0)	20.0(±5.93)	19.2(±3.44)	19.6(±4.61)
Autoimmune disorders (n=15)	1(7.1)	-	13(92.8)	15.0(±5.21)	15.8(±5.13)	15.8(±4.9)
Eczematous dermatitis (n=208)	16(7.7)	52(25.1)	139(67.1)	11.7(±5.66)	13.5(±5.08)	12.8(±5.36)
Papulosquamous disorders (n=45)	9(20.0)	11(24.4)	25(55.6)	11.3(±6.16)	13.3(±7.15)	12.2(±6.59)
Infections/Infestations (n=131)	65(49.6)	34(26.0)	32(24.4)	7.6(±6.28)	8.3(6.97)	7.92(±6.60)
Skin appendages disorders (n=66)	49(74.2)	7(10.6)	10(15.1)	5.6(±4.8)	5.0(±3.95)	5.29(4.3)
Benign neoplastic and fibrous tumours (n=25)	24(80.0)	2(6.7)	4(13.3)	4.4(±2.40)	5.8(±6.31)	5.1(±4.86)
Pigmentary skin disorders (n=27)	23(85.2)	2(7.4)	2(7.4)	2.6(±0.9)	4.9(±5.5)	4(±4.38)
Other diseases (n=27)	3(11.5)	4(15.4)	19(73.0)	15.5(±6.24)	12.5(±5.31)	13.6(±5.76)

SD, standard deviation; DLQI, dermatology life quality index; QoL, quality of life

Table 11 shows the levels of effect of skin disease among patients with the top 10 individual skin diseases in this study. High DLQI mean scores were seen in patients with urticaria, atopic dermatitis, seborrheic dermatitis, unspecified dermatitis and psoriasis. The frequencies of patients with atleast large impact on QoL were high among these conditions. Lowest DLQI means were seen in acne, keloid and vitiligo in both genders.

Table 11: Skin disease and effect on quality of life (QoL) among 573 outpatients

Disease	Effect on patient QoL					Mean DLQI (±SD)		
	No effect	Small effect	Moderate effect	Very large effect	Extremely large effect	Males	Females	Total
Atopic dermatitis (n=151)	-	10(6.6)	32(21.2)	98(64.9)	11(7.3)	11.6(±4.83)	14.5(±5.03)	13.4(±5.14)
Acne (n=62)	1(1.6)	48(77.4)	6(9.7)	7(11.5)	-	4.7(±3.72)	4.7(±3.52)	4.73(±0.58)
Pityriasis versicolor (n=44)	1(2.3)	28(63.6)	10(22.7)	5(11.4)	-	5.1(±2.65)	5.3(±4.07)	5.23(±0.43)
Tinea (n=41)	-	24(58.5)	11(26.8)	4(9.8)	2(4.9)	6.2(±4.9)	6.6(±5.29)	6.45(±0.06)
Psoriasis (n=33)	-	4(12.1)	9(27.3)	13(39.4)	7(21.2)	12.3(±6.4)	15.1(±7.45)	13.6(±6.87)
Seborrheic dermatitis (n=26)	-	1(3.8)	6(23.1)	17(65.4)	2(7.7)	16.3(±5.85)	11.6(±4.16)	13.2(±0.13)
Urticaria (n=22)	-	-	1(4.5)	14(63.6)	7(31.8)	20.2(±6.21)	18.8(±3.59)	19.5(±4.87)
Vitiligo (n=21)	1(4.8)	20(95.2)	-	-	-	2.6(±0.52)	2.6(±0.92)	2.60(±0.74)
Keloids (n=20)	1(5.0)	17(85.1)	1(5.0)	1(5.0)	-	3.7(±1.66)	3.9(±3.75)	3.82(±0.90)
Unspecified eczema (n=18)	-	1(5.6)	9(50.0)	8(44.4)	-	6.5(±3.65)	11.1(±3.86)	10.1(±4.1)

SD, standard deviation; DLQI, disability quality life index; QoL, quality of life

Among admitted patients, the mean DLQI score (±SD) was 17.5(±7.8). Female patients had high mean DLQI scores than male patients, 17.9(±8.4) vs 15.8(±4.1). The distribution by levels of effect on QoL were as follows: small effect 10.7%, moderate effect 21.4%, very large effect 25.0% and extremely large effect 42.9%. The mean DLQI scores (±SD) per disease category were high in inflammatory dermatoses 25.6(±1.1), autoimmune disorders 22.4(±3.3), dermatitis 16.25(±7.8) and infections 10.6(±3.4).

Table 12 shows that there were no significant differences between various sociodemographic characteristics and DLQI scores between males and females.

Among clinical characteristics, it was seen that many patients with disease duration less than a month had DLQI scores >10 as compared to DLQI scores ≤ 10 in both sexes (42.6% vs 22.5%, p<0.001 in males; 44.0% vs 21.2%, p<0.001 in females). Females had significantly high mean DLQI scores (±SD) than males among outpatients (11.05(±6.8) vs 9.58(±6.7), p=0.023) than inpatients (17.9(±8.4) vs 15.8(±4.1), p=0.594). The proportion of patients with DLQI scores >10 was high in admitted patients than outpatients (67.9% vs 47.1%, p=0.012). There were no significant differences between DLQI scores and other clinical characteristics.

Table 12: Sociodemographic characteristics and effect on patient quality of life (n=573)

Variable		DLQI ≤ 10	DLQI>10	p value
No formal education	M	0	1(1.0)	0.393
	F	4(2.7)	1(0.6)	0.198
Never employed	M	44(29.3)	32(33.0)	0.543
	F	65(43.3)	79(48.5)	0.363
Unmarried	M	75(50.0)	48(49.5)	0.937
	F	63(42.0)	85(52.1)	0.072
Comorbidity	M	20(13.3)	15(15.5)	0.639
	F	22(14.7)	21(12.9)	0.647
Age <39 years	M	86(57.3)	53(54.6)	0.677
	F	81(54.0)	104(63.8)	0.078
Household size >4	M	99(66.0)	74(76.5)	0.085
	F	105(70.0)	102(62.6)	0.166
Inpatients	M	2(1.6)	3(2.8)	0.321
	F	6(4.9)	13(8.0)	0.252

* p ≤ 0.05; M, male; F, female; DLQI, dermatology life quality index; DLQI>10 signifies large impairment on patient quality of life

About 60.6% (368/608) patients had their sleep pattern affected by skin disease. There were no differences between males and females with regard to sleep disturbance (56.8% vs 62.6%, p=0.154). The proportion of inpatients with sleep disturbance was high compared to outpatients (78.6% vs 59.2%, p=0.041). The distribution of effect on sleep by skin disease was as follows: atopic dermatitis 98.1%, urticarial 82.6%, unspecified eczema 77.8%, psoriasis 61.8% and seborrheic dermatitis 33.4%. There was a statistically significant relationship between effect on sleep and atopic dermatitis ($p<0.000$) and urticaria ($p<0.000$). By main skin group, sleep disturbance was seen in eczematous dermatitis (Crude OR 9.17, 95% CI 2.19-38.31) and inflammatory dermatoses (Crude OR 14.5, 95% CI 2.01-104.6).

CHAPTER FIVE

5.0 DISCUSSION

Skin diseases have a serious impact on quality of life of patients and significant burden to developing countries.

The DLQI mean score(±SD) in this study 10.41(±6.82) was comparable to findings from studies in Lahore, Pakistan 13.02(±5.77) (79) and Nepal 10.7 (range 7-19) (80). Saleem et al. at a public healthcare institute in Quetta city, Pakistan reported mean DLQI score(SD) of 16.76(±2.54) indicating a very large effect of skin diseases on patient's QoL (81). The levels of effect of skin disease on patient QoL revealed that 66.5% of the patients had at least a moderate effect and only 1.9% had no effect at all. A number of studies in Saudi Arabia (82), Brazil (27), India (83) and other parts of the world (84) have demonstrated a considerable impairment of quality of life in patients with skin diseases. In this study DLQI mean scores were considerably high in females compared to males (11.05 vs 9.58, p=0.023) which may be due to several factors. In general females are more conscious of their body image than men. Secondly, in many cultures females are expected to have attractive looks and the skin is central in this regard. Hence more use of skin preparations by women compared to men. Furthermore females have a lower thresh hold to changes/abnormalities on the skin than men.

The high proportion of comorbidities in this study, 15.6% (95/608), might contribute to the large impairment on quality of life observed among the participants. Some studies have reported low prevalence rates of comorbidities among patients with skin diseases: Seirafi et al. (85) in Iran 2% (47/481) and Juno Joel et al. (86) in India 5%. HIV immunosuppression and uncontrolled diabetes are associated with eczematous dermatitis and infective dermatitis respectively. The prevalence of HIV infection in Tanzania is substantially higher than in Iran or India and could in part account for the observed differences.

The majority of patients were affected much by feelings of self-consciousness, embarrassment and symptoms. Mean DLQI scores were highest for domain of feelings (1.97), followed by symptoms (1.5) and the least was on sexual activity (0.38). This might be due to the fact that though the majority of the skin diseases seems trivial in nature, their effect on individual's perception is significant. Uncomfortable physical symptoms,

embarrassment and self-consciousness about body appearance were noted to be the chief reasons for patients seeking dermatology care in Klang, Malaysia (68). Sleep disturbance was seen in 60.6% of all patients. The mechanism of sleep deprivation in patients with skin diseases may be explained by the cutaneous symptoms of pruritus and pain. Not only that but also some conditions are associated with systemic inflammatory disorders.

Eczematous dermatitis was the commonest dermatoses in the two facilities (42.4%) among outpatients. These findings are similar to those reported by Rweyemamu et al in Tanzania (31.7%) (47), Aman S, et al in Pakistan (31.07%) (48), and other studies in Nigeria (51,52). Eczematous dermatitis presents in a variety of ways including scaling, papules, erythematous, vesicular, exudative, and itchy or burning cutaneous eruptions. The duration of such lesions may be acute, subacute or chronic with a number of associated secondary cutaneous manifestations. The study revealed that atopic dermatitis (31.2%) was the commonest cause of eczematous dermatitis, a finding which correlates with other studies (47,87). Atopic dermatitis was seen more in females and young patients (<33 years) which was similar to reports from other studies in Tanzania and Iran (47,88). On the other hand, the prevalence of contact dermatitis was low (1.0%). In keeping with these findings, Atraide et al. in Nigeria reported low frequency of contact dermatitis (3.0%) (87). In contrast, Shenefelt (89) reported contact dermatitis to be common type of dermatitis seen in a Mediterranean island of Crete, Greece (30%) just as King Edward Medical University/Mayo Hospital, Lahore, Pakistan (22.5%) (48). It is possible that we misdiagnosed some patients with contact dermatitis since allergy tests were not done routinely at the two skin clinics hence the low prevalence of this condition.

The quality of life was seen to be significantly impaired in patients with eczematous dermatitis. As reported by previous studies, eczematous dermatitis has high symptomatic impairment (72–75). Similar to our study, G. Sanclemente et al in Colombia reported atopic dermatitis to be among conditions with highest skindex-29 scores (70). In our study, high odds of sleep disturbance were seen among patients with eczematous dermatitis (Crude OR 9.17, 95% CI 2.19-38.31). The frequency of patients with sleep disturbance with atopic dermatitis was high (41.8% vs 2.1%, $p<0.001$). The chronic, recurrent nature plus acute severe exacerbations of eczematous dermatitis explains the poor quality of life associated with the condition.

Infections/infestations were the second largest group of observed disorders (25.2%). This is different to initial findings decades ago when infections/ infestation were the commonest skin disease in most regions of the country, and other parts of Africa (7,31). The high frequency is attributed to the warm and highly humid climate, overcrowding, and poor personal and environmental hygiene in the city. Fungal infections were the most common type of infection in our study (17.8%) with comparable higher frequencies in previous studies in Tanzania (36.1%) and Nigeria (23.8%) (47,50).

Bacterial infections (3.1%) were the second commonest type of infection in this study. This finding was comparable to reports from other regions (48,82,87). In contrast bacterial infections were the commonest (19.1%) cause of skin diseases especially in children in a study by Rweyemamu et al in the same country (47).

Viral warts was the most common viral infection among our study population (1.7%). Only one case of sexually transmitted infection (STI) (0.2), lymphogranuloma venereum (LVG), was seen and is likely to be due to the fact that in Dar es salaam STI patients are normally attended at designated clinics other than skin clinics.

Parasitic skin infections and scabies were relatively uncommon and accounted for 1.7% of total dermatoses which is lower than findings from other studies; D Rweyemamu et al in Tanzania, 3% (47), Baur et al. in India, Kolkata, 20.4% (55) and Devi T et al. in India, Imphal, 8.97% (90).The low frequency of scabies and other parasitic infections in our study might be attributed to the fact that such conditions are easily identified and treated in the communities and peripheral hospitals.

The DLQI mean score (±SD) of infections and infestations category was low as compared to eczematous dermatitis category, 7.92(±6.60) vs 12.8(±5.36). The difference might be due to the fact that the majority of skin infections in this study were not severe. Sleep disturbance was noted in all cases of scabies (3% vs 0, $p<0.004$) which is attributed to severe pruritus associated with it.

In this study, acne was found in 13.6% of all cases, mostly in females ($p=0.990$) and young adults of which 85% were less than 33 years of age ($p<0.001$). Similar high occurrence of acne has been reported in KwaZulu-Natal hospital, South Africa (44.3%) (54) and a tertiary care hospital in Kolkata, India (12.4%) (55). A previous study in Tanzania found

high frequency of acne among male patients (47). Similarly, M.T. Noorbala et al. in Iran found acne to be the common disorder in age group between 15-24 years but with no gender difference (88). The high acne frequencies might be explained by its high occurrence among the young populations. This study had 46.9% patients aged 33 years and below.

Benign neoplastic skin diseases and fibrous tumours of skin were the fifth commonest skin disorders among outpatients (6.7%). Keloids were noted to be the commonest disorder in this group (71.8%). Despite their benign nature, these conditions have a significant effect on quality of life as far as body appearance is concerned. As with other studies, there was no sex and age predilection.

Pigmentary disorders accounted for 4.7% of all cases, among which vitiligo was the most frequent presentation (81.5%). This kind of trend has also been reported in other regions of Africa and Asia (47,48,82). There was no significant difference in the prevalence of vitiligo among males and females in this study. Vitiligo cases were seemingly on the increase probably due to the cosmetic impact patients and fear of more sinister underlying diseases (52). Pigmentary disorders have been reported to pose a lot of psychosocial stigma and affects quality of life especially in adults. Pigmentary abnormalities are usually associated with low symptomatic impairment but high psychosocial impairment hence QoL impairments reported herein (74).

Papulosquamous skin disorders were also observed to be common (8.1%). Although rarely life threatening, its impact on quality of life can be devastating to the patients. This study noted psoriasis to be common in this category (74.5%) which is similar to other regions (47,55,57). The frequency of psoriasis was high in patients aged above 34 years (77.2%) with no sex predilection. These findings are similar to those reported by Noorbala et al in Iran in which psoriasis was commonly observed in patients aged above 35 years but with a male predominance (88). Papulosquamous disorders had a high impairment on QoL with mean DLQI score of 12.2(±6.59). A number of studies have reported similar findings (71-74). Psoriasis had a mean DLQI scores of 13.6(±6.87) which is similar to reports by G. Sanclemente et al in Colombia (70). The frequency of psoriatic patients with sleep disturbance was not different to those without (5.7% vs 5.4% p=0.889) despite 62% of all

psoriatic patients having reported sleep disturbances. Psoriasis is an example of a disorder that is associated with multiple comorbidities which includes hypertension, diabetes, metabolic syndrome, obesity, cardiovascular events and psychiatric disorders which can affect the course of sleep disorders. Gupta et al. in a systematic review reported high incidences of obstructive sleep apnea, restless leg syndrome and insomnia all mediated possibly by pruritus and pain (91). In addition psoriasis is chronic condition associated with relapses and hugely affects body outlook.

Inflammatory dermatoses were the sixth common disease category (4.8%) which consisted of urticaria, adverse drug eruptions and others. Urticaria is a skin disease with significant morbidity and a wide spectrum of causes. In this study, urticarial disorders affected 4.0% of the study subjects, which is similar to reports from previous studies in Tanzania (4.3%) (47) and Pakistan (4.06%) (48). Drug eruptions accounted for 0.3 % of cutaneous disorders in this study seen at clinics. The frequency of adverse drug eruptions was noted to be low compared with studies from Nigeria (5.8%) (13)and Greece (2.3%) (17,92). Drugs commonly incriminated were sulphonamides, antibiotics and anticonvulsants like carbamazepine. The inflammatory dermatoses had mean DLQI score of 19.6(±4.61) signifying very large impairment to QoL just as other studies have reported (71-74). High odds of sleep disturbance were seen with inflammatory dermatoses (Crude OR 14.5, 95% CI 2.01-104.6). Almost all urticarial patients had their sleep disturbed (5.7% vs 0.4%, $p<0.001$). All these were attributed to high symptomatology of these conditions.

The frequency of cutaneous malignancies was 1.6% in the present study seen at outpatient clinics. In Pakistan (0.03%) (48) and Nigeria (0.2%) (13) the frequencies of cutaneous malignancies were much low while a study performed in Greece had 2.7% (93). HIV associated Kaposi`s sarcoma (KS) was the common disorder in this subgroup (83.3%). The frequency of KS was low compared to a study in the same region among the elderly by Mponda et al. (4.2%) (57). Apart from KS, the other cutaneous malignancies seen in this study occurred in people with albinism. Similar trends have been seen in Nigeria (87) and infact albinism has been noted to be a chief contributing factor. It has been suggested that a lot needs to be done in creating awareness on the avoidance of direct ultra-violet rays which has been highly implicated in majority of skin malignancies (94). The low frequency of cutaneous malignancy in this study might be explained by the presence of dark

complexion in almost all of the patients, which provides sufficient protection from sun light. Not only that but also racial and cultural differences may explain the low prevalence (1.6%) of skin malignancies in this study compared to reports from Western countries (17). The mean DLQI score for cutaneous malignancies was low 5.1(±4.86) compared to other disease categories. The low frequency of cutaneous malignancies cases might explain the differences.

A wide range of skin conditions may develop as a consequence of HIV infection as reported by Pallangyo (32). In this study Kaposi's sarcoma was the commonest skin-related complication of HIV and accounted for 1.2% of skin diseases. Recognizing this condition is important, because it is seen frequently in HIV/AIDS patients and sometimes treated as acne. Pruritic papular eruption of HIV is another skin disorder in HIV infected patients and accounted for 0.7% of the skin diseases seen in our dermatology clinics. This figure is similar to a previous study recently conducted in our department (18). The study noted a low frequencies of candidiasis (0.2%), herpes zoster (0.2%) as compared to previous studies (7). Oninla et al. at a tertially hospital in Nigeria (41) and Bakari et al in Dar es Salaam, Tanzania (42) reported candidiasis, fungal infections, herpes zoster, pruritic papular eruption, KS and seborrheic dermatitis to be the common cutaneous manifestation of HIV.

Autoimmune skin disorders were also seen in the clinics (3.8%) comprising connective tissue disorders (91.9%) and immunobullous skin disorders (8.1%) in this subgroup. Lupus erythromatosus (50%) was common among female patients (p=0.038). Lupus erythromatosus is known to be much prevalent in females than males although the cause of the sex predilection is not established. Autoimmune skin disorders had mean DLQI of 15.8(±4.9). Similar to other studies, these conditions are associated with both high symptomatic impairment and high psychosocial impairment (71-74).

The only genodermatosis observed in this study was a case of xeroderma pigmentosum (XP). XP is a very rare skin disorder where a person becomes highly sensitive to sunlight, has premature aging of skin and is at high risk of developing cancers. There were many other skin disorders seen in our study, but the numbers of patients presenting with these diseases were small.

Because of several factors including advances in dermatological care increasing number of patients are being treated at outpatient departments. Despite this, inpatient treatment remains an important and sometimes crucial therapeutic option for some patients with dermatological problems. In this study the mean age of admitted patients was 40.11(±14.2) years with a range of 16 years to 79 years and mean ages in males and females were 31.8(±11.2) years and 41(±14) years respectively. The majority of admitted patients were females (82.1%) and 67.9%% of admitted patients were aged below 43 years. Mgonda et al (18) at the same facility (MNH) reported a mean age of 36.7(±17.9) years with a range of 7 to 84 years among patients with skin diseases admitted in medical wards. Not only that, but also that study had more females 57% as compared to males 43% and 52% of all patients were aged below 44 years. The proportion of comorbidities among admitted patients in our study was 50% of which the common conditions were HIV 17.7%, hypertension 3.6%, diabetes 3.6% and aneamia 3.6%. Mgonda et al reported comorbidities in 23% (87/384) patients comprising mainly of HIV 17.9%, hematological disorders 6%, diabetes 5.7% and hypertension 3.9%. In contrast to Mgonda et al, this study recruited only patients with skin disease as the main reason of hospitalization.

The majority of patients admitted was on account of autoimmune skin disorders (32.1%). In this group, lupus erythematosus (55.6%) was the commonest diagnosis and contributed 17.9% cases among all admissions. A number of patients were also admitted because of cutaneous malignancies (17.9%). These consisted of 5 cases each of KS, SCC and BCC. Retrospective studies in Nepal (59) and Brazil (58) reported similar trends of admissions. However, Mgonda et al in Dar es Salaam (18) apart from reporting similar trends on autoimmune diseases, cutaneous malignancies and inflammatory dermatoses, also added that all the KS patients were HIV infected which was similar to finding in this study. Different to what we found, other studies in United Kingdom(UK), United States of America and Scotland reported psoriasis as the common reason of admission (21,60,95). In Iran, bullous skin disorders and psoriasis were the common reasons for hospitalization (34). The striking differences in pattern of common diseases found in this study compared to that reported from, UK and Iran is likely due to different genetic constitution, climate, age and HIV prevalence. It was seen in this study that the mean DLQI scores of admitted patients was high 17.5(±7.8) and 42.9% patients had their quality of life affected to

extremely large effect. Inflammatory dermatoses and autoimmune disorders were associated with high mean DLQI scores, 25.6 (±1.44) and 22.4(±3.3) respectively. The reasons for admission were severe illness (65.4%) and for observation/investigations (26.9%). Similarly, the severity and extent of the disease (39.3%), outpatient treatment failure (18.4%) and need for further observation and/or investigations (16.5%) were the most common reasons for hospitalization among admitted patients in Karachi, Pakistan (96).

It was seen that the length of hospital stay means (±SD) (days) per diagnosis category were distributed as follows; autoimmune disorders 22.18(±9.7) days, inflammatory dermatoses 18.2(±5.1) days, eczematous dermatitis 12.05(±5.7) days, cutaneous malignancies 9.56(±3.7) days and infection 7.36(±0.5) days. In Iran, Razi hospital (39), neoplasms had the longest mean hospital stay followed by infectious diseases while in Sa˜o Paulo, Brazil (36) it was immunobullous diseases. In this study, pemphigus vulgaris had the longest hospital stay duration. The majority of the patients in this study got discharged while few got transferred to surgical and oncology departments especially those with cutaneous malignancies. There was no death among the admitted patients as compared to the studies reported above. It was seen that sleep disturbance was common among inpatients as compared to outpatients (78.6% vs 59.2%, p=0.041). Not only that, but also the proportion of patients with QoL affected to a very large extent was high in admitted patients than outpatients (67.9% vs 47.1%, p=0.012). As noted, the majority of inpatients had severe illness (65.4%) with probably high symptomatic impairment on quality of life.

5.1 Study Strengths and Limitations

This is one of very few studies that looked into quality of life among patients with skin diseases in our country. The study was conducted at tertiary health facilities which to a large extent manages highly selected patients and may not represent the situation in the community and hence the findings cannot be extrapolated to other situations. Assessment of quality of life using DLQI questionnaire introduced a recall bias as some patients could not properly recall on some domains of the tool. Some inpatients were very sick while others had acute presentations which made it difficult to administer the DLQI tool among other admitted patients.

CHAPTER SIX

6.0 CONCLUSION AND RECOMMENDATION

6.1 Conclusion

This study provides useful information about the spectrum of dermatological disorders in patients seeking medical care at the two specialized teaching hospitals. Eczematous dermatitis and autoimmune disorders were most common skin diseases seen among outpatients and inpatients respectively. A large impact on QoL was observed among patients with skin disorder. Different types of skin diseases varied on effect of QoL.

6.2 Recommendation

Further studies are needed to pinpoint the root causes of the current disease spectrum as well as to widen up knowledge on inpatient dermatology.

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8.0 APPENDICES

8.1 Annex 1: Informed Consent Form – English Version

Muhimbili University of Health and Allied Sciences

Consent to participate in the study on Skin diseases and their impact on quality of life among patients at Muhimbili National Hospital and Muhas Academic Medical Center

Dear Sir/Madam,

My Name is Dr. Yamikani Mastala, a resident doctor in the department of Internal Medicine at Muhimbili University of Health and Allied Sciences (MUHAS). I am conducting a research study on Skin diseases and their impact on quality of life at Muhimbili National Hospital and Muhas Academic Medical Center.

Purpose of the study: The aim of this study is to determine the types of skin diseases, their distribution and impact on quality of life among patients attending Muhimbili National Hospital and Muhas Academic Medical Center.

How to participate: Participants who are willing to participate in this study will have to sign a consent/assent form.
Short interview will be done.

Confidentiality: Information obtained from you will be kept confidential and shall be very helpful in this study as well as promoting better health of patients with skin diseases.

Costs: You will not be required to pay any amount for your participation in this study.

Voluntary participation and the right to withdraw from the study: Your participation is voluntary and you have the right to withdraw from participating in this study at any time. Whatever your decision may be, it will have no effect in any way to your rights to care and treatment.

Risks: There is no risk in participating in this study.

Benefits: Your participation in this study will help us get information from that will be useful in contributing to improve the quality of care of patients with skin diseases.

Contact persons: If you have any inquiries about this study, please do not hesitate to contact:

Dr. Yamikani Mastala
Principal Investigator
Muhimbili University of Health and Allied Sciences (MUHAS)
Department of Internal Medicine
P.O. Box 65001 Dar es Salaam.
Tel. 0685658350

OR

Prof K Pallangyo
Supervisor for this research.
Muhimbili University of Health and Allied Sciences (MUHAS)
Department of Internal Medicine
P.O. Box 65001 Dar es Salaam.

In case of any information about your rights as a participant in this study please contact:

The Chairperson of Research and Publication Committee

Muhimbili University of Health and Allied Sciences (MUHAS)

P.O. Box 65001 Dar es Salaam

Tel. 022-2152489

I will be grateful if you willingly agree to participate in this study.

I have understood the above information and my questions have been answered by the investigator to my satisfaction. I am willingly agree to take part in this research.

Name of the participant: _____

Signature of the participant: _____ Date: _____

Signature of Investigator: _____ Date: _____

8.2 Annex 2: Informed Consent Form – Swahili Version

MUHIMBILI UNIVERSITY OF HEALTH AND ALLIED SCIENCES

Ruhusa ya kushiriki utafiti kuhusu "Wigo wa magonjwa ya ngozi na athari katika maisha.

Mimi naitwa Dr.Yamikani Mastala ni mwanafunzi wa udhamili chuo kikuu cha tiba Muhimbili. Ninafanya utafiti kuangalia wigo wa magonjwa ya ngozi na athari zake katika maisha.

Dhumuni la utafiti huu: Kujua wigo wa magonjwa ya ngozi na athari zake katika maisha

Ushiriki: Kama unakubali kushiriki huu,taarifa zako za matibabu zitatumika kwenye utafiti huu.

Usiri: Taarifa zote za uchunguzi zitaingizwa kwenye kompyuta na nambari ya utambulisho; jina halitanukuliwa.

Madhara: Tunategemea kwamba hakuna madhara yoyote yatokanayo na utafiti huu.

Haki ya kujitoa kwenye utafiti: Kushiriki katika utafiti huu ni hiari na kutokubali kushiriki au kujitoa hautaadhibiwa au kupoteza haki yako ya matibabu.

Kutokea kwa madhara: Tunategemea kwamba hakuna madhara yoyote yatokanayo na utafiti huu.

Faida za kushiriki kwenye utafiti: Kutokana na utafiti huu itatusaidia kubolesha tiba kwa wagonjwa wa ngozi.

Kwa mawasiliano zaidi: Kama una maswali kuhusu utafiti huu uwe huru kuwasiliana na mtafiti, Dr Yamikani Mastala, Chuo kikuu cha afya na tiba Muhimbili, P.O Box 65001, Simu 0685658350, barua pepe: ymastala@gmail.com
Kama una swali kuhusu haki yako kama mshiriki wasiliana na Prof. K Pallangyo,msimamizi wa utafiti, P.O Box 65001,simu 0713 224 052, barua pepe: Kpallangyo@gmail.com

Je, umekubali kushiriki? …….. ..
Mshiriki hajakubali kushiriki …….
Nimesoma maelezo na kuyaelewa vizuri, na nimekubali kushiriki kwenye utafiti huu.
Sahihi ya mshiriki ……
Sahihi ya mtafiti ……..
Tarehe ……..

8.3 Annex 3: Dermatology Life Quality Index English Version

DLQI

Hospital No: Date:

Name: Score: ☐

Address: Diagnosis:

The aim of this questionnaire is to measure how much your skin problem has affected your life OVER THE LAST WEEK. Please tick ☑ one box for each question.

1.	Over the last week, how **itchy**, **sore**, **painful** or **stinging** has your skin been?	Very much	☐
		A lot	☐
		A little	☐
		Not at all	☐
2.	Over the last week, how **embarrassed** or**self conscious** have you been because of your skin?	Very much	☐
		A lot	☐
		A little	☐
		Not at all	☐
3.	Over the last week, how much has your skin interfered with you going **shopping** or looking after your **home** or **garden**?	Very much	☐
		A lot	☐
		A little	☐
		Not at all	☐
	Not relevant ☐		
4.	Over the last week, how much has your skin influenced the **clothes** you wear?	Very much	☐
		A lot	☐
		A little	☐
		Not at all	☐
		Not relevant	☐

5. Over the last week, how much has your skin affected any **social** or **leisure** activities?

- Very much ☐
- A lot ☐
- A little ☐
- Not at all ☐
- Not relevant ☐

6. Over the last week, how much has your skin made it difficult for you to do any **sport**?

- Very much ☐
- A lot ☐
- A little ☐
- Not at all ☐
- Not relevant ☐

7. Over the last week, has your skin prevented you from **working** or **studying**?

- Yes ☐
- No ☐
- Not relevant ☐

If "No", over the last week how much has your skin been a problem at **work** or **studying**?

- A lot ☐
- A little ☐
- Not at all ☐

8. Over the last week, how much has your skin created problems with your **partner** or any of your **close friends** or**relatives**?

- Very much ☐
- A lot ☐
- A little ☐
- Not at all ☐
- Not relevant ☐

9. Over the last week, how much has your skin caused any **sexual difficulties**?

- Very much ☐
- A lot ☐
- A little ☐
- Not at all ☐
- Not relevant ☐

10.	Over the last week, how much of a problem has the **treatment** for your skin been, for example by making your home messy, or by taking up time?	Very much	☐
		A lot	☐
		A little	☐
		Not at all	☐
		Not relevant	☐

Please check you have answered EVERY question. Thank you

8.4 Annex 4: Dermatology Life Quality Index Swahili Version

Hospital No: Date:

Address: Diagnosis: Score

Lengo la dodosohilinikupimakiasiganimatatizo yako ya ngozi yameleta athari kwenye maisha yako katika jumalililoisha. Wekaalama ya vema kwenye majibu.

1. Ni kiasigani kwa juma lililoisha ngozi yako imewashwa, umepatavidonda, au maumivu?

Sana mno ❒
Sana ❒
Kidogo ❒
Sijapata ❒

2. Kwa juma lililokwisha nikiasigani tatizo la ngozi yako limekuaibisha au limekunyima raha?

Sana mno ❒
Sana ❒
Kidogo ❒
Sijapata ❒

3. Kwa juma lililokwisha nijinsigani tatizo la ngozi yako lime athiri kazi zako kama kwenda sokoni au kufanya kazi za nyumbani?

Sana mno ❒
Sana ❒
Kidogo ❒
Sijapata ❒

4. Kwa juma lililokwisha ni jinsigani matatizo ya ngozi yako yameathiri aina ya uvaaji wako wa nguo?

Sana mno ❒
Sana ❒
Kidogo ❒
Sijapata ❒

5. Kwa juma lililokwisha nikiasigani matatizo yako ya ngozi yameathiri shughuli zako za kijamii kama mapumziko.

Sana mno ❒
Sana ❒
Kidogo ❒
Sijapata ❒

6. Kwa juma lililokwisha nikiasigani matatizo yako ya ngozi yameathiri shughuli zako za kimichezo?

Sana mno ❒
Sana ❒
Kidogo ❒
Sijapata ❒

7.Kwa juma lililokwisha matatizo yako ya ngozi yamekuzuia kufanyakazi au kusoma?

Ndiyo ❒
Hapana ❒
Haliusiani ❒

Kama ndiyo kwajuma lililokwisha nikiasigani tatizo lako la ngozi imekuletea shida?

Sana ❒
Kidogo ❒

8. Kwa juma lililokwisha nijinsigani matatizo yako ya ngozi yameleta athari kwa mpenzi wako au marafiki wako?

Sana mno ❒
Sana ❒
Kidogo ❒
Sijapata ❒
Hakuna kabisa ❒

9. Kwa juma lililopita nijinsigani matatizo yako ya ngozi yamekuletea shida kwenye kujamiiana.

Sana mno ❒
Sana ❒
Kidogo ❒
Sijapata ❒
Hakuna kabisa ❒

10. Kwa juma lililokwisha nikiasigani tatizo lako la ngozi limeletashida nyumbani kwako?

Sana mno ❒
Sana ❒
Kidogo ❒
Sijapata ❒
Hakuna kabisa ❒

Tafadhali angalia kama umejibu maswali yote asante.

8.5 Annex 5: Health Questionnaire English Version

Patient Number

Demographics

1) Sex: Male: _____ (1) Female: _____ (2)
2) Age: _____ Years
3) Occupation: _____
4) Address: _____
5) Level of Education:

1. No formal education
2. Primary school
3. Secondary school
4. College
5. University

6) Size of household (number of occupants): _____
7) What is your monthly income: _____ (Tanzanian Shilling)

Skin disease-history

8) Duration of skin disease----------
9) Previous treatment for skin disease? Yes_____(1) No_____(2)
10) Reason for admission?…….
11) Number of previous admission with same condition?.....
12) Other comorbidities?.....
13) Any time off work/school because of skin disease? Yes _____(1)
    No_____(2)
14) Does it prevent sleep? Yes _____ (1) No_____(2)
15) Local cause…….
16) Local remedy yes no

Examination of Skin

17) What is the main skin disease?.....

18) Are there other skin diseases? Yes _____(1) No_____(2)

19) List other diseases are there?.....

20) Body site affected?.....

21) Disease severity? Mild (1)Moderate_____(2)severe_____(3)

Other

22) Treatment available in Tanzania? Yes _____(1) No_____(2)

23) What treatment?.....

24) Any complications?.....

25) Referrals to other department?.....

26) Final outcome?.....

27) Duration of hospital stay?.....

8.6 Annex 6: Health Questionnaire Swahili Version

Hospital Number----------

Demographics

1. Jinsia: Me: _____ (1) Ke _____ (2)
2. Umri: _____ Miaka
3. Kazi _____
4. Anwani/Mahaliunapoishe ?_____
5. Kiwangochako cha elimu ni?:
   a) sikusoma
   b) elimu ya msingi
   c) elimu ya secondary
   d) elimu ya chuo
6. Idadi ya watu unaoishi nao nyumbani kweno ni?_____
7. kipatochako kwa mwezi ni wastani shilingi gani? _____ (Tanzanian Shilling)

Skin disease-history

8. muda wa ugonjwa wako wa ngozi ni?……
9. ushawahi kutibi waugonjwa wa ngozi siku za nyuma?

Ndiyo_____ Hapana_____

10. Uliwashi kuja marangapi kiliniki hiyi?……
11. Sababu ya kulazwa ni ipi?(**Admitted patients**)
12. Ushawahi lazwa marangapi kwasababu ya ngozi?.....
13. Matatizo mengine zaidi ya tatizo la ngozi?.....
14. Ushawahi kukosa shule/kuyenda kazini kwasababu ya ugonjwawa ngozi?

Ndiyo_____ Hapana_____

15. ugonjwawako wa ngozi unakuzuia kupata usingizi?

Ndiyo_____ Hapana_____

16. Umeshawahi kutumiadawa za kienyezi kwa tatizo la ngozi?……

Examination of Skin

17. What is the main skin disease?.....

18. Are there other skin diseases? Yes _____(1) No_____(2)

19. List other diseases are there?.....

20. Body site affected?.....

21. Disease severity? Mild _____(1)Moderate_____(2)severe _____(3)

Other

22. Treatment available in Tanzania? Yes _____(1) No_____(2)

23. What is the treatment?.....

24. Any complications?.....

25. Referrals to other department?.....

26. Final outcome?(**Admitted patients**).....

27. Duration of hospital stay? (**Admitted patient**).....