

**SKIN DISORDERS IN PRIMARY HEALTH CARE  
IN KWAZULU-NATAL: TESTING FOR SOLUTIONS AFTER  
ASSESSMENT OF BURDEN OF DISEASE, AND EVALUATION OF  
RESOURCES**

**A Thesis Submitted to the Nelson R Mandela School of Medicine,  
University of KwaZulu-Natal**

**In Partial Fulfillment of the Degree of Doctorate of Medicine (MD) in  
Dermatology**

**BY**

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## **DECLARATION**

I hereby declare that this submission is my own work and it has not been submitted to this or any other universities. All sources and references I have used or quoted have been indicated.

Jamila Aboobaker.

## **DEDICATION**

To the memory of my parents Halima and Aboobaker Ebrahim Atcha who instilled in me the value of education.

## **PRESENTATIONS ARISING FROM THIS STUDY**

1. Aboobaker J, Taylor M, Coovadia HM, Abdool-Karim S. Skin Disorders in KwaZulu-Natal: Offering solutions after assessment of burden. National Dermatology Congress (Oral presentation), Sandton Convention Centre, 26-04-2007
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## LIST OF ABBREVIATIONS

Add	-	Addington Hospital
BSC	-	Beatrice Street Clinic
CWD	-	Clairwood Hospital
DOH	-	Department of Health
DFR	-	Durban Functional Region
DUT	-	Durban University of Technology
EDL	-	Essential Drug List
HIV	-	Human Immunodeficiency Virus
KEH	-	King Edward VIII Hospital
KOH	-	Potassium Hydroxide test (for superficial fungi)
KZN	-	KwaZulu-Natal
MAC	-	Minor Aliment Clinic
MRC	-	Medical Research Council
NRMSM	-	Nelson R. Mandela School of Medicine
PHC	-	Primary Health Care
PMH	-	Prince Mshiyeni Hospital
RKKH	-	RK Khan Hospital
SJS	-	Steven Johnsons Syndrome
TB	-	Tuberculosis
TEN	-	Toxic Epidermal Necrolysis (a severe form of drug reaction)
UKZN	-	University of KwaZulu-Natal
USA	-	United States of America

- UVL - Ultra Violet Light
- WR - Wasserman Reaction (Serological test for Syphilis)

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## **EXECUTIVE SUMMARY**

### **BACKGROUND**

Skin diseases are a major public health problem in developing countries<sup>1,2,3</sup>. They account for a high proportion of ambulatory consultations in these environments. In developing countries, skin disorders constitute over 20% of all diseases seen in outpatient clinics<sup>1,2</sup>. The percentage of people afflicted with skin diseases is even higher in rural areas<sup>3,4,5</sup>.

The majority of skin diseases encountered are easily preventable, curable and controllable<sup>1,2,3,4</sup>. Two editorials in the Lancet emphasized this fact and recommended that it is really worthwhile to teach communities and primary health care workers to recognize these common dermatoses which make up 60% to 87% of all dermatoses seen at primary health care level<sup>1,3</sup>. Bechelli et al's study, showed that less than ten dermatoses accounted for over 90% of all the conditions detected<sup>5</sup>.

In most developing countries this case load of high prevalence of skin diseases is not matched by dermatological skills<sup>1,3</sup>.

To establish public health programmes, proper epidemiologic data are essential. No such dermatological information is available for KwaZulu-Natal (KZN) and South Africa.

Furthermore, dermatological services in KZN are poor. There are only 25 dermatologists serving a population of some 11 million people (KZN & northern half of Eastern Cape). Currently, only five dermatologists are in full time public practice in Durban.

The teaching of dermatology to undergraduate medical students is minimal. The students get six x one hour tutorials in the fourth and a similar number in the fifth year of their studies (Personal communication with School of Undergraduate Medical Education, SUME). This inadequacy is not unique to our medical school, which follows the British curriculum. In some medical schools in the USA, students do not see a single patient with skin disease and at best are exposed to twelve hours or less of didactic lectures<sup>29</sup>. This inadequate dermatological education does not equip family practitioners to diagnose and treat common dermatoses.

Even the dermatological education of nurses is poor. Undergraduate nurses get a few lectures on common skin diseases. They get no exposure to skin clinic patients (Personal communication with Naidoo P (Principal) and Subban S (Nurse Tutor) at RK Khan Hospital (RKKH) Nursing College and Senoge S (Nurse Tutor) at Addington Hospital Nursing College).

Primary Health Care nurses get a few lectures in dermatology at the Durban University of Technology (DUT) and University of KZN (UKZN). Practical training in dermatology for Primary Health Care (PHC) nurses is voluntary and only a fraction come to the dermatology clinic at the King Edward VIII Hospital (KEH) during their training.

All this indicates that skin diseases are prevalent and nurses and doctors who are entrusted to recognize and treat these conditions are ill equipped to do so.

## **AIMS**

The study aimed to investigate the prevalence of skin disorders in the Durban Functional Region (DFR) and to evaluate the public service provision of services for skin disorders in order to develop a training programme to improve PHC services. This was essential to reduce the huge backlog of patients with skin diseases waiting for many months to get a dermatology appointment.

## **OBJECTIVES**

The objectives were:

1. To determine the prevalence of skin disorders in DFR.
2. To evaluate existing facilities to manage these conditions.
3. To develop, implement and evaluate a training programme to improve dermatological skills of PHC nurses.
4. To make recommendations based on the results to policy makers.

## **METHODS**

Phase 1 was a descriptive cross sectional study of randomly selected primary health care centres in the Durban Functional Region (DFR) to determine the prevalence of skin diseases. This was undertaken in July, August and September 1998, where 785 patients were examined at thirty health centres.

Phase 2 involved an assessment of public health facilities (where the prevalence study was done) in respect of the competence of the doctors and nurses to diagnose and treat common dermatoses and the availability of dermatological medications.

Phase 3 was a retrospective analysis providing a profile of outpatients that attended the KEH Dermatology clinic over a week in September 2006. Because Phase 1 (prevalence of skin disorders) was done in 1998 when the prevalence of HIV/AIDS was relatively low, another survey was done at the KEH dermatology clinic to determine the current spectrum of skin diseases. This retrospective analysis of outpatients at KEH Dermatology clinic (Phase 3) was undertaken in September 2006. This provided information on the frequencies of skin diseases at the height of the HIV/AIDS epidemic.

Phase 4 comprised the development and training of PHC nurses from the DFR health centres. An illustrated booklet on common dermatoses and the management thereof was prepared to train the PHC nurses.

Phase 5 describes the implementation and evaluation of the training programme on PHC nurses from DFR PHC centres using this manual on common dermatoses.

## **RESULTS**

In the 1998 survey done in the DFR, the prevalence of skin diseases was very high and skin diseases were seen in 90% of patients surveyed. The commonest diseases were eczema or dermatitis, with a prevalence of 23.5% (95% CI 21.39, 25.72), acne 19.9% (95% CI 17.89, 21.97), benign tumors 14.5% (95% CI 12.80, 16.41), pigmentary abnormalities 12.2% (95% CI 10.62, 13.98), superficial fungal infections 8.7% (95% CI 7.36, 10.27), viral infections 6.37% (95% CI 4.81, 8.37), bacterial infections 5.7% (95% CI 4.65, 7.06), scabies & parasitic infections 5.2% (95% CI 4.17, 6.48), psoriasis 1.6% (95% CI 1.09, 2.46), HIV specific

dermatoses 0.6% (95% CI 0.29, 1.17) and drug eruptions 0.5% (95% CI 0.20, 0.99). In the September 2006 survey done at the dermatology clinic at the height of the HIV epidemic, the commonest skin diseases were again eczema with a frequency of 26.8% (95% CI 21.90, 32.22), psoriasis 10.4% (95% CI 7.26, 14.53), superficial fungal infections 10.0% (95% CI 6.98, 14.15), obvious HIV dermatoses 8.4% (95% CI 5.59, 12.24), acne 8.4% (95% CI 5.59, 12.24), viral infections 7.7% (95% CI 5.04, 11.04), drug eruptions 5% (95% CI 2.94, 8.31), cutaneous malignancies 4.7% (95% CI 2.68, 7.91), connective tissue diseases 4.3% (95% CI 2.43, 7.5), bacterial infections 4% (95% CI 2.19, 7.09), vitiligo 4% (95% CI 2.19, 7.09), autoimmune bullous diseases 3.3% (95% CI 1.71, 6.26), congenital dermatoses 2.3% (95% CI 0.82, 4.53) and scabies 0.7% (95% CI 0.12, 2.66). The latter survey also showed that the frequency of all bacterial, viral, fungal and parasitic (scabies) infections was significantly increased in HIV patients ( $p < 0.005$ ). Ten percent of these HIV patients also had atopic eczema and 54.2% had seborrhoeic eczema. The majority of psoriatics were Indians; these were HIV negative ( $p < 0.005$ ). Drug eruptions & Kaposi's sarcoma were also significantly associated with HIV.

Based on this information the author designed and formulated a set of recommendations to improve the dermatological services in the province of KZN. These will be given to Department of Health (DOH). (Appendix 10)

An illustrated booklet was written by the author to train PHC nurses on common dermatological problems. (Appendix 5)

The evaluation of this training showed that the dermatological knowledge of PHC nurses had improved significantly ( $p < 0.005$ ). This was borne out by their pre and post training test score.

## **CONCLUSIONS**

This study was done because the dermatological services in South Africa in general & DFR in particular, are poor because there are not enough dermatologists (especially in the rural areas) and the undergraduate training of medical students and primary health care nurses is inadequate in respect of dermatology. Patients with skin problems are neglected and have to wait for many months for a dermatological consultation.

To improve the dermatological service a prevalence study was mandatory. However, there was a long delay between the epidemiologic prevalence study and training of primary health care nurses.

The two frequency surveys showed that skin diseases were common and that the HIV epidemic had severely impacted on the various skin diseases. Almost 50% of patients with skin diseases had HIV infection. All the known dermatoses (both infective and non-infective) were very extensive in HIV patients and many patients developed opportunistic infections because ARV's were being started very late in the disease (CD4 count of  $\leq 200$ ). All the dermatoses were very difficult to manage in these patients.

Although the number of Dermatologists in KZN has trebled in the last decade, there was no legislation to urge them to practise outside the large cities/towns. Therefore it was imperative to train primary health care nurses to recognize and treat common dermatoses and refer the severe ones to hospitals where there are dermatologists. A teledermatology service was

started and dermatologists participated in the “Flying Doctors” programme for rural public hospitals. Because of the need, several private dermatologists also travel to other towns in KwaZulu-Natal to provide service nearer the patient’s abode.

The pilot programme for the primary health care training showed that the nurses were eager and responsive to the training. This training programme will be recommended to the Department of Health (DOH) and Training Institutions to be regularly conducted to increase the capacity of nurses and even family practitioners to enable them to treat common dermatoses and educate patients to seek treatment early, be compliant with their treatment and prevent those dermatoses that are preventable.

The findings of the epidemiologic study were used to motivate for more staff in the Dermatology Department at the teaching hospitals of the UKZN. Three work studies were done in response to these motivations. The work studies confirmed the necessity for improving the staff structure at the teaching department.

This improvement has resulted in establishing a chair in Dermatology, two principal dermatologists, three senior dermatologists and three dermatologists. The trainee posts have increased from two to twelve in the last ten years. The number of specialists that have qualified has hence increased in the province and this has led to the decrease in waiting time for appointments at all the dermatology clinics served by the teaching department.

Proper training of PHC nurses and doctors in dermatology will alleviate the great demand for dermatology consultations at district and tertiary hospitals.

## CHAPTER 1

### 1.1 INTRODUCTION

Skin diseases are a major public health problem in developing countries<sup>1,2,3</sup>. They account for a high proportion of ambulatory consultations in these environments; in Ghana, skin diseases are reported to be the fifth most frequent diagnostic category<sup>4</sup>. In developing countries, skin disorders constitute over 20% of all diseases seen in outpatient clinics<sup>1,2</sup>. In one study in Brazil, 26% of school children had skin diseases<sup>5</sup>, in another Brazilian study, 37% of school children had common skin problems<sup>6</sup>. The percentage of people afflicted with skin diseases is even higher in rural areas<sup>4,5</sup>. Bechelli and co-workers in rural Brazil found that 87% of the population had treatable skin diseases<sup>5</sup> and in rural areas of upper Egypt the prevalence of skin diseases was 86.9%<sup>7</sup>. Of these, 43.8% had one skin disease, 30.5% had two dermatoses and 12.6% had 3 dermatological problems<sup>7</sup>. In other population studies in Africa, Gibbs found a prevalence of 27% in randomly selected adult Tanzanians<sup>8</sup>; Mahe' et al found a prevalence of 34% in children in Mali<sup>9</sup> and Henderson showed a prevalence of 49% in two districts of Tanzania<sup>10</sup>. In a population study in three villages of Punjab, Pakistan, Porter et al found that 36% of children under five years had skin diseases<sup>11</sup>.

The majority of skin diseases encountered are easily preventable, curable and controllable<sup>1,2,3,4,12,13</sup>. Two editorials in the Lancet emphasized this fact and recommended that it is really worthwhile to teach communities and primary health care workers to recognize these common dermatoses which make up 60% to 87% of all dermatoses seen at primary health care level<sup>1,3</sup>. In Bechelli et al's study, 87% of these diseases consisted of dermatoses

like pediculosis, dermatophytosis and pyoderma<sup>5</sup>. This study also showed that less than ten dermatoses accounted for over 90% of all the conditions detected<sup>5</sup>.

Patients with skin diseases wait for up to 6-8 months to get a dermatological appointment, both in the private and public sector. There is a crucial need to improve dermatological services in KZN.

## **1.2 THE NEED FOR DERMATOLOGICAL SERVICES**

In most developing countries this case load of high prevalence of skin diseases is not matched by dermatological skills. In Nigeria, there were twenty dermatologists for a population of over one hundred million people<sup>14</sup> and in many tropical countries of Africa the ratio is even less favorable<sup>12,13</sup>.

To establish public health programmes, proper epidemiologic data are essential. No such dermatological information is available for KwaZulu-Natal and South Africa except for retrospective analysis of outpatient data of some private dermatology practices and dermatology out patient departments in Pretoria, Johannesburg, Cape Town and Orange Free State<sup>15-27</sup>.

Furthermore, dermatological services in KZN are poor. There are only 25 dermatologists serving a population of some twelve million people (KZN & northern half of Eastern Cape)<sup>28</sup>. Currently, only five dermatologists are in full time public practice in Durban, i.e. the ratio is one dermatologist for 500,000 people. The rest are in private practice in Durban, except for one each in Pietermaritzburg, Richards Bay and Newcastle.

### **1.3 DERMATOLOGY EDUCATION:**

#### **1.3.1 MEDICAL STUDENTS**

The teaching of dermatology to undergraduate medical students is minimal. The students get six x one hour tutorials in the fourth and a similar number in the fifth year of their studies. However, the lectures have been deleted from the new curriculum at the Nelson R Mandela School of Medicine (NRMSM) at UKZN. In these twelve hours they are exposed to patients with common dermatoses. This inadequacy is not unique to our medical school, which follows the British curriculum. In some medical schools in the USA, students do not see a single patient with skin disease and at best are exposed to twelve hours or less of didactic lectures<sup>29</sup>. This inadequate dermatological education does not equip family practitioners to diagnose and treat common dermatoses.

#### **1.3.2 NURSES**

Even the dermatological education of nurses is poor. Undergraduate nurses get eight to ten lectures (45 minutes each) on common skin diseases (Personal communication with Naidoo P (Principal) and Subban S (Nurse Tutor) at RKKH Nursing College and Senoge S (Nurse Tutor) at Addington Hospital Nursing College) and they may nurse an inpatient or two in the wards. They get no exposure to skin clinic patients.

Nurses who do the “bridging course” may be allocated to a dermatology clinic for a month during this post-graduate training.

Primary Health Care nurses get a few lectures in dermatology at DUT and UKZN. Only four hours have been allocated to dermatology. Practical training in dermatology for PHC nurses is voluntary and only a fraction of PHC nurses come to the dermatology clinics at KEH during their training.

All this indicates that skin diseases are common and nurses and doctors who are entrusted to recognize and treat these conditions are ill equipped to do so.

#### **1.4 AIM**

To describe the prevalence and the spectrum of skin diseases in KwaZulu Natal and to evaluate the resources available for their management, in order to design a province wide dermatology service. This was essential to reduce the huge backlog of patients with skin diseases waiting for many months to get a dermatology appointment.

#### **1.5 OBJECTIVES**

**The main objectives are:**

1. To provide a demographic profile of patients attending the DFR health facilities
2. To investigate the prevalence of skin disease in DFR
3. To investigate the patients' perceptions of skin diseases
4. To investigate the prevalence of skin diseases with respect to the HIV/AIDS epidemic
5. To describe the resources available for the management of skin diseases in respect of both the public and private sector, concerning:
  - registered specialists
  - primary health care nurses

- medical officers with experience
  - the medications available in the public and private sector for dermatology
6. To develop a tool to assist in the diagnosis and management of common skin diseases
  7. To pilot and evaluate the use of this guide to diagnose and treat common skin diseases
  8. To make recommendations to the Department of Health (DOH) to improve diagnosis and treatment of skin diseases in Durban

## **1.6 HYPOTHESIS**

Appropriate dermatological training of primary health care providers will improve management and decrease the prevalence of serious skin disorders and, rational solutions for these diseases in KwaZulu-Natal require information about the burden of disease, provision of resources and adequate numbers of trained personnel.

## CHAPTER 2

### 2.1 LITERATURE REVIEW

#### 2.1.1 Introduction

Skin diseases are a major public health problem in developing countries and are among the five most common causes of morbidity and loss of manpower in these regions<sup>1,2,3</sup>. They constitute up to 20% of all diseases seen in out-patient clinics in these regions<sup>2</sup>. The figure is much higher in rural regions<sup>4,5</sup>. The AIDS epidemic has worsened this problem in South Africa as dermatological manifestations occur in over 90% of patients infected with the Human Immunodeficiency Virus<sup>29,30</sup>. The majority of skin diseases encountered are, in principle, easily preventable, curable and controllable<sup>1,2,3,4,12,13</sup>.

#### 2.2 Common Skin Diseases<sup>33</sup>

The skin diseases most prevalent are eczema, acne, psoriasis, skin infections (viral, bacterial, fungal and parasitic) drug eruptions, skin tumours and HIV associated dermatoses<sup>33</sup>.

##### **Eczema**

The term eczema and dermatitis are often used synonymously. There are two main types of eczema. These are atopic and seborrhoeic eczema<sup>33</sup>.

Atopic eczema occurs in patients who have a family history of asthma, hayfever or eczema. It usually starts at the age of three months and presents as an itchy erythematous papular eruption on the face and chest. In the toddler it is mainly seen on the extensor surfaces of the forearms and legs. In the older child and in adult life the rash becomes localized to the

antecubital and popliteal fossae. Atopics may also present with chronic hand and feet eczema especially if they are involved with wet, messy work. It may also present as discoid or nummular eczema. The eczema waxes and wanes and may disappear by the age of two years. It flares up intermittently and becomes vesicular and exudative. In the chronic stage it becomes hyperpigmented and lichenified (exaggerated skin markings). Eczema heals with hyperpigmentation. Patients with eczema are prone to viral infections (like warts, herpes and mollusca) and bacterial infections<sup>33</sup>.

Seborrhoeic eczema may be of two types. The infantile type starts in the first few weeks of life. It is self limiting and presents with a “cradle cap” (which consists of greasy yellow scales on the scalp and eyebrows) and red scaly patches behind the ears, nasolabial folds, neck and napkin areas. It is not itchy and the baby is not irritable. The rash heals with hypopigmentation. If the seborrhoeic dermatitis in an infant does not heal and becomes repeatedly exudative HIV must be suspected<sup>31,34</sup>.

Adult seborrhoeic dermatitis begins at puberty. It is one of the commonest cutaneous manifestation of HIV/AIDS<sup>33</sup>. The patient presents with dandruff and eczema in all the body folds and hairy areas (axillae, pubis). There is blepharitis, and red scaly patches are seen in the nasolabial folds, eyebrows, behind the ears, on neck, groin, between the breasts and scapulae. In HIV patients the eczema flares up repeatedly becoming infected with bacteria and candida. Severe seborrhoeic eczema is seen in HIV infected patients. It is also poorly responsive to treatment in these patients<sup>31,34</sup>.

## **Acne**

Acne is so common that it is often regarded as physiological by the older family practitioners. The primary lesion is the comedone or whitehead. When the sebum is exposed to air it turns black resulting in the blackhead. Organisms in the pilosebaceous follicles cause the red papules and pustules. Severe acne presents with nodules and cysts. The latter heals with a depressed scar. The erythematous and pustular lesions heal with hyperpigmentation. In HIV/AIDS acne is of the nodulocystic variety and may be associated with hidradenitis suppurativa. This is quite resistant to therapy in these unfortunate patients<sup>31,34</sup>.

### **Psoriasis**

Psoriasis is a chronic hereditary inflammatory dermatosis which presents with salmon pink or red plaques covered with silvery scales. The scalp, elbows, knees and navel region are the first to become affected. The thick scales on the scalp give a lumpy/bumpy feeling when one runs one hands through the scalp. Nails show pitting, separation of the nail plate (onycholysis), thickening and discoloration<sup>31,34</sup>. In HIV/AIDS psoriasis is unstable and often becomes erythrodermic.

### **Skin infections**

All skin infections are common in underdeveloped poor communities where there is overcrowding, and poor hygiene due to lack of running water. Bacterial and fungal infections are also common in the heat and humidity of KZN. Patients with HIV are particularly susceptible to all infections. The infections in these unfortunate patients are very gross and severe and poorly responsive to treatment<sup>31,34</sup>.

## **Viral Infections:**

### **Herpes simplex**

Herpes simplex is caused by two types of herpes viruses. Type 1 causes stomatitis and type two causes genital infection. However, either type can cause infection at either sites. Type 2 herpes virus infection is a sexually transmitted disease. The infection starts as little vesicles on the lips or genitalia. The roof of the blister is soon lost causing painful ulcers. The infection is often recurrent. In HIV/AIDS patients large chronic ulcers may develop at any site on the body<sup>31,34</sup>.

### **Herpes zoster**

The varicella zoster virus causes Herpes zoster. Herpes zoster is common in early HIV and may recur in late disease. The rash presents as painful blisters appearing in a dermatome. In the pre HIV era, this disease was seen mainly in the elderly and those who were immunosuppressed with cancer chemotherapy. In the HIV infected patient, there may be more than one dermatome affected. The blisters are large and extensive in these patients<sup>30,31,33,34</sup>.

### **Chicken pox**

Chicken pox caused by the herpes zoster virus, may occur more than once and may be very severe with hemorrhagic blisters in HIV patients<sup>31,34</sup>.

### **Molluscum contagiosm**

Molluscum contagiosum present as umbilicated, pearly papules. These are caused by the pox virus. They are seen mainly in children on the face and trunk. In HIV patients, mollusca are profuse and resistant to treatment<sup>31,34</sup>.

They may become giant and present as grape-like lesions in these patients<sup>31,34</sup>.

### **Warts**

Verrucae or warts are caused by human papilloma viruses. The common warts present as grayish nodules and are seen mainly on fingers or palms. Plane or flat warts present as hyper or hypo pigmented flat papules. Genital warts are sexually transmitted and present as cauliflower-like growths on penis, vulva or perianal regions. On the plantar surfaces of the feet, the warts grow inwards and are painful. All types of warts are common, profuse and persistent in HIV patients<sup>31,34</sup>.

### **Bacterial infections**

The common bacterial infections are impetigo, ecthyma, cellulitis and abscesses. In children, **impetigo** is common and presents with pustules at sites of insect bites, scabies or eczema. In **ecthyma** the multiplicity of organisms cause ulcers with a purulent base. **Cellulitis** caused by streptococci is acute and presents with red, hot and tender swelling, usually on a leg. **Abscesses and furuncles** are caused by staphylococci and present as tender red swellings and are common in HIV patients. HIV patients have a dry, itchy skin which frequently becomes secondarily infected with the development of impetigo, abscesses and cellulitis<sup>31,34</sup>.

### **Scabies**

Scabies is a common parasitic infection which spreads rapidly in overcrowded and poor hygienic conditions. HIV patients are particularly susceptible and develop the crusted or hyperkeratotic scabies. Scabies presents as very itchy, excoriated papules between fingers, on wrists, axillary folds, natal cleft and nipples. Genitalia are frequently affected. In crusted scabies the same areas are affected with thick crusted scales. Secondary impetigo supervenes in children and in HIV patients<sup>31,34</sup>.

### **Superficial fungal infections**

Superficial fungal infections are common in the hot, humid climate like the coastal region of KZN. Muslim men who attend mosque regularly are prone to **tinea pedis** or fungal infection of the feet. Tinea pedis is common in athletes and gym enthusiasts also. This is because of increased sweating in the closed shoes (takkies). It presents as maceration and scaling in the toe webs. **Tinea capitis** presents as scaly bald areas with stubs of broken hairs. Tinea capitis is a disease of children. **Tinea corporis** presents as scaly, well-defined, round patches with a pigmented center and a border consisting of little scaly papules. **Tinea cruris** is a similar rash appearing in the groin. All tineas are very itchy. In HIV patients all these fungal infections are extensive, persistent and difficult to eradicate<sup>31,34</sup>.

**Candida** or thrush occurs in the mouth or vagina as painful, itchy curd-like material stuck on the mucous membranes. Other soggy areas like axilla, groin and infra-mammary regions become red and itchy with candida infection. Candida infection in the pre HIV era was seen in diabetics and patients on steroids or cancer chemotherapy. In HIV patients candida infection is almost universal and systematic therapy is necessary<sup>31,34</sup>.

**Fungal infections of the nails** can occur with dermatophytes that cause tinea or candida albicans. The latter causes paronychia with swollen tender nail folds. The nails develop transverse ridging. When candida invades the nail plate it becomes discolored and dystrophic from the proximal end of the nail plate. Tinea invasion of the nail starts at the distal end and the nail plate becomes thickened and discolored from the distal ends. In HIV patients fungal infection of finger and toe nails is common. The infection is very resistant to treatment<sup>31,34</sup>.

### **Drug eruptions**

Drug eruptions are hypersensitivity reactions to medications. They may be **morbilliform** (measles-like) with generalized little papules and macules, **urticarial** (oedematous red wheals), **erythema multiforme** (target or iris lesions). **Stevens Johnson Syndrome (SJS)** consists of iris lesions with blisters and erosions in the mouth, lips, eyes and genitalia. **TEN** (toxic epidermal necrolysis) presents as large scald-like blisters and necrosis. **Photodermatitis** and **erythema nodosum** also occur as a consequence of allergies to drugs. The former presents with red papular rash in the sun exposed areas of the body and the latter presents with tender red lumps on the shins. Drug reactions are particularly common in HIV patients. One often sees the severe SJS or TEN type<sup>31,34</sup>.

### **Benign tumours**

The common benign tumours in the study were cellular or melanocytic naevi, histiocytoma (dermatofibroma), seborrhoeic warts and dermatosis papulosa nigra<sup>33</sup>.

**Melanocytic naevi or moles** as they are commonly known are benign proliferations of melanocytes. They may be congenital or acquired.

**Congenital melanocytic naevi** present at birth or soon afterwards. They are usually more than 1cm in diameter and are brown to black in colour. With age they become protuberant and hairy with a cerebriform surface. Such giant lesions are disfiguring and can become malignant<sup>33</sup>.

**The acquired melanocytic naevi** present as brown to black macules. Most naevi of this type appear on palms, soles and genitalia. These are called **junctional naevi** because the melanocytic activity is at the junction of the epidermis and dermis. These naevi are seen mainly in childhood<sup>33</sup>.

With maturation the melanocytic activity is both at the junction and in the dermis. This type of naevus is called a **compound naevus**. Clinically this presents as a dome shaped pigmented nodule of about 1cm in diameter. Some compound naevi may have hairs growing out of them. With time the pigmentation gradually disappears. These are then skin coloured and also dome shaped and up to a cm in diameter. The melanocytic activity is within the dermis. These are called **intradermal naevi**<sup>33</sup>.

**Seborrhoeic Keratoses or warts resemble** melanocytic naevi.

These appear on the face and trunk in middle aged individuals. They have a rough keratotic or warty surface and are dark brown, to black in colour and have a “stuck on” appearance. They begin as brown rough macules which gradually become more papular and then nodular. Seborrhoeic warts are less common in Africans. In Africans, Indians and Coloureds the equivalent lesions are **dermatosis papulosa nigra**. These consist of tiny, smooth, darkly

pigmented papules 2 to 4 millimeters in diameter. They appear on the face, neck and upper trunk<sup>33</sup>.

Seborrhoeic warts need to be differentiated from malignant melanoma<sup>33</sup>.

**Malignant melanoma** may arise in a giant congenital melanocytic naevus or less frequently in an acquired melanocytic naevus, especially in patients with the **dysplastic naevus syndrome**. This is usually a hereditary condition, characterized by multiple irregularly pigmented naevi which vary in size and shape<sup>33</sup>.

**Malignant melanoma** should be considered if the following changes occur in a melanocytic naevus<sup>33</sup>:

- Itch
- Enlargement
- Increase or decrease in pigmentation
- Alteration in shape
- Alteration in contour
- Inflammation
- Ulceration
- Bleeding

When such changes occur in a melanocytic lesion, the A, B, C D and E features of malignant melanoma is carefully considered;

**A B C D E of Malignant Melanoma**

- Asymmetry
- Border irregularity
- Colour variability
- Diameter greater than 0.5cm
- Elevation irregularity

Moles that have changed in any way should be referred to a specialist. A specialist would excise and send for histology any suspicious lesion.

**Histiocytoma** also known as dermatofibroma is another common benign tumour. It may follow minor trauma or an insect bite. It occurs mainly on the extremities of adults and usually presents as a solitary firm, discrete nodule. The lesion has an “iceberg” effect in that it feels larger than it appears. The overlying skin is usually pigmented and dimples when the nodule is squeezed<sup>33</sup>.

### **Skin cancers**

#### **Premalignant tumours**

#### **Solar (actinic) Keratoses**

These are discrete, rough, whitish lesions seen on the sun damaged or exposed areas of fair skinned individuals. Albinos are the worst affected. Melanin protects the dark skinned races. UVL causes cumulative damage to the skin. Damage to collagen and elastin causes wrinkling. However epidermal damage causes these keratoses.

These keratoses can turn into malignant squamous cell carcinoma if not treated timeously. Sites commonly affected are lips, backs of hands, bald scalp, face, V of neck, extensor surfaces of forearms and legs<sup>33</sup>.

### **Keratoacanthoma**

Keratoacanthoma is a rapidly growing squamous cell tumor which appears very malignant both clinically and histologically.

This tumor is seen in fair skinned individuals living in countries which experience a lot of sunshine. Most lesions are on the face and backs of hands<sup>33</sup>.

Kerato acanthoma starts as a pink papule which grows to 1cm in a month or two. The central crater is filled with a dark keratinous plug. If left the lesion resolves over 6-12 months leaving an ugly depressed scar. However most are excised because they appear to be malignant due to their rapid growth<sup>33</sup>.

### **Squamous cell carcinoma**

These arise from untreated solar keratoses in fair skinned people. However they can arise as small scaling nodules. They may also occur in chronic ulcers caused by TB of the skin, or deep fungal infections. UVR, X rays and infra red rays predispose to these cancers. Other carcinogens are tar, mineral oils, and inorganic arsenic. Sites where these cancers commonly occur are lips, dorsa hands and ears<sup>33</sup>.

The lesions start as nodules which slowly grow and become ulcerated with rolled edges.

Squamous carcinoma may metastasize by lymphatics<sup>33</sup>.

### **Basal cell carcinoma (rodent ulcer)**

These are the commonest malignant tumours in fair skinned people living in countries with plenty of sunshine. Hence patients with basal cell carcinoma (BCC) have a very sun damaged skin<sup>33</sup>.

The tumours start as little papules that develop into infiltrating plaques or little translucent nodules with prominent visible telangiectasia. They then ulcerate. They do not metastasize but are locally invasive and should be treated before they ulcerate<sup>33</sup>.

To establish public health programmes to address skin diseases, epidemiologic data are essential<sup>1,3,9</sup>. However, there is little true prevalence data based on population studies available for skin diseases. The studies to date, are limited in that they either focus on one disease (e.g. pyoderma in Ghana<sup>4</sup> scabies in Panama<sup>35</sup> or on a non-representative sample (Brazil<sup>5</sup> Zambia<sup>36</sup>, Ethiopia<sup>37</sup>, Kenya<sup>38</sup>).

### 2.3 REVIEW OF SOUTH AFRICAN STUDIES ON SKIN DISEASES

All the South African studies of which there are 12 (tabulated below) were retrospective analyses of the records in private Dermatology practices or in the teaching Dermatology departments in the Pretoria, Johannesburg, Bloemfontein, Cape Town and Stellenbosch areas. These are listed in the table below.

**Table 2.1: Summary of South Africans Dermatological studies (year, authors, population surveyed)**

<b>Year</b>	<b>Authors</b>	<b>Number of persons and population surveyed</b>
1957	Findlay <sup>15</sup>	600 black- Pretoria
1960	Findlay, Scott <sup>16</sup>	4 500 white – Pretoria 5 000 white – Pretoria 4 000 white – Bloemfontein
1962	Schulz, Findlay, Scott <sup>17</sup>	2 000 black – Pretoria 900 black – Pretoria 1 000 black- Bloemfontein
1963	Marshall, Heyl <sup>18</sup>	2 500 white – Cape Town 1 500 coloured – Cape Town
1966	Ross <sup>19</sup>	2 100 Black- Sibasa, Northern Transvaal
1968	Park <sup>20</sup>	4 544 black – Pretoria
1969	Findlay, Park <sup>21</sup>	3 935 black – Pretoria 20 189 white – Pretoria 1 014 Indian – Pretoria
1970	Dogliotti <sup>22</sup>	2 000 black – Johannesburg
1975	Dogliotti <sup>23</sup>	9 474 black – Johannesburg
1978	Floter <sup>24</sup>	2 067 coloured – Stellenbosch 1 730 white – Stellenbosch
1982	Schulz <sup>25</sup>	5 000 black - Pretoria
2003	Hartshorne <sup>26</sup>	7029 All races Johannesburg

The first survey was done in 1957 by Prof. G. Findlay. In this study the relative frequency of skin disease in black patients was calculated as a percentage of the number of dermatological out-patients.

All the subsequent studies were also retrospective analyses of dermatological outpatients' records.

Before 1990 all hospitals and even private practices were segregated and therefore the surveys were of a particular racial group as shown above.

The most recent of these surveys was done in 1999 (thesis published in 2003), when apartheid had already ended and the hospitals were now multiracial. In this study, also retrospective, some 7029 patients' records from 5 different academic, Dermatology departments were analyzed<sup>26</sup>. The findings are summarized in the tables 2 and 3 below.

**Table 2.2: Prevalence (%) of common skin disorders in dermatological outpatients in the Johannesburg area; all races combined (n=7029)<sup>26</sup>**

Disease	Total cases	Percentage	95% Confidence Interval	
			Lower limit	Higher limit
Eczema	2 192	31,15	30.11	32.29
Acne	1 121	15,93	15.10	16.83
Benign tumours	414	5,88	5.36	6.47
Superficial fungal infections	407	5,78	5.26	6.37
Warts	286	4,06	3.62	4.56
Bacterial infections <sup>1</sup>	284	4,03	3.60	4.53
Psoriasis	202	2,87	2.50	3.30
Malignant tumors	199	2,83	2.46	3.25
Other infections <sup>2</sup>	191	2,71	2.36	3.13
Herpes zoster	176	2,50	2.16	2.90
Scabies	170	2,43	2.08	2.81
Urticaria	130	1,85	1.55	2.20
Vitiligo	85	1,21	0.97	1.50
Chloasma	82	1,17	0.93	1.45
Lupus erythematosus	74	1,05	0.83	1.33

1. Includes all coccal infections

2. Includes syphilis, mycobacterial infections and viral exanthems

This table shows the common dermatological disorders in the Johannesburg area. The most prevalent disorder was eczema. Acne was the next most common disease seen. Taken together these two disorders accounted for over 47% of the skin diseases. The skin infections taken together accounted for another 22% of cases. Hence acne, eczema and skin infections account for almost 70% of patients that attend dermatology clinics in the Johannesburg area in 1999. The narrow range of the 95% confidence intervals suggests that the prevalence shown is the true prevalence in the population served.

Benign tumors had a frequency of almost 6%. Over 50% of these were banal; the rest were solar keratoses which occur in the whites. These are premalignant and are preventable. Most of the malignant tumours are squamous cell and basal cell carcinoma which are seen mainly in whites. These are also preventable.

**Table 2.3: Prevalence (%) of common skin disorders in dermatological outpatients in each population group in the Johannesburg area: (n=7029)<sup>26</sup>**

<b>Disease</b>	<b>Black</b>	<b>White</b>	<b>Coloured</b>	<b>Indian</b>
Eczema	32,70	17,79	34,54	30,43
Acne	17,54	7,27	13,92	13,35
Benign tumors	2,45	29,70	6,01	5,28
Superficial fungal infections	5,65	3,64	6,53	11,80
Warts	3,73	4,16	8,08	2,17
Bacterial infections <sup>1</sup>	4,42	2,73	3,78	1,20
Psoriasis	2,09	3,89	4,98	9,62
Malignant tumours	1,40	15,06	0,86	0,93
Other infections <sup>2</sup>	3,03	1,17	2,23	2,17
Herpes zoster	3,19	0,39	0,17	0,31
Scabies	2,63	1,95	1,72	0,93
Urticaria	1,89	0,09	2,58	2,17
Vitiligo	1,25	0,06	1,20	1,55
Chloasma	1,42	0,00	0,52	0,93
Lupus erythematosus	1,06	0,78	1,03	1,55

1. Includes all coccal infections

2. Includes syphilis, mycobacterial infections and viral exanthems.

This table summarizes the common skin diseases in the four population groups in the Johannesburg area.

In the black, coloured and Indian populations eczema was the most common skin disorder. In the white population benign tumors was the most common category of disorders.

In descending order the most common skin disorders in the black population were: eczema, acne, superficial fungal infections, bacterial infections, warts, herpes zoster, other infections, benign tumours, scabies, psoriasis, urticaria, chloasma, malignant tumours, vitiligo and lupus erythematosus.

In descending order the most common skin disorders in the white population were: benign tumours, eczema, malignant tumours, acne, warts, psoriasis, superficial fungal infection, bacterial infections, scabies, other infections, lupus erythematosus, herpes zoster, urticaria and vitiligo.

In descending order the most common skin disorders in the coloured population were: eczema, acne, warts, superficial fungal infections, benign tumours, psoriasis, bacterial infections, urticaria, other infections, scabies, vitiligo, lupus erythematosus, malignant tumours and chloasma.

In descending order the most common skin disorders in the Indian population were eczema, acne, warts, superficial fungal infections, psoriasis, benign tumours, other infections, urticaria, vitiligo, lupus erythematosus, bacterial infections, malignant tumours, chloasma, scabies and herpes zoster.

This study also lists the skin diseases in these multiracial patients and compares them to the previous studies where each race was studied individually as shown in the tables below:-

**Table 2.4a: Prevalence (%) of skin disorders amongst white patients attending the different academic departments from 1960-2003<sup>26</sup>**

Disease	1960 <sup>16</sup>	1967 <sup>27</sup>	1978 <sup>24</sup>	2003 <sup>26</sup>
Benign tumors	5,5	8,8	14,7	29,70
Dermatitis	28,0	25,0	17,7	17,79
Malignant tumours	5,2	3,7	5,0	15,06
Acne	8,0	10,0	10,5	7,27
Bacterial infections	8,4	2,7	3,1	2,73
Superficial fungal infections	6,9	4,2	5,3	3,64
Scabies	2,5	1,0	5,5	1,95
Pityriasis rosea	1,0	1,0	0,9	0,13
Erythema multiforme	0,6	/	0,9	0,26
Psoriasis	3,2	4,0	4,3	3,89
Warts	5,9	4,0	5,3	4,16

Hartshorne<sup>26</sup> in her dissertation stated that the frequency of benign tumors had increased from 1960 to 2003 in the White population and the frequency of malignant tumors had increased threefold<sup>26</sup>. The frequency of eczema or dermatitis had decreased and so had superficial fungal infections<sup>26</sup>. The other common dermatoses in whites had remained constant over the years<sup>26</sup>. However it must be noted that the data was collected over a period of four decades by four different dermatologists at four departments of dermatology and private practices. Since 1994 there has been a transformation of the health systems in South Africa and the data could perhaps be explained by a change in the pattern of presentation. These figures do not reflect the prevalence of the diseases in the population of the different provinces of the country. They reflect more the frequency of the disease as diagnosed at the different dermatology departments of the hospital or private practice. Since 1994 the hospitals are multiracial they

provide a more comprehensive service with more trainee registrars seeing a larger proportion of patients, and the range in frequency may have resulted from a different pattern of presentation.

**Table 2.4b: Prevalence (%) of skin disorders in Black patients attending academic departments from 1957-2003<sup>26</sup>**

<b>Diagnosis</b>	<b>1957<sup>15</sup></b>	<b>1962<sup>17</sup></b>	<b>1975<sup>23</sup></b>	<b>1982<sup>25</sup></b>	<b>2003<sup>26</sup></b>
1. Dermatitis/Eczema	20.0	27.0	13.0	29.0	32.77
2. Acne	7.5	9.2	2.9	11.3	17.54
3. Bacterial infections	20.0	12.5	15.9	4.8	4.40
4. Superficial fungal Infections	5.0	1.9	5.9	5.5	5.65
5. Cosmetic ochronosis	0.0	0.0	0.0	5.2	0.50
6. Scabies	11.0	2.4	1.8	4.3	2.63
7. Psoriasis	1.0	1.5	1.7	1.8	2.09
8. Warts	2.5	2.5	2.4	1.8	3.73

Hartshorne reported that the prevalence of dermatitis or eczema and acne had increased considerably in the Black population that attend dermatology clinics in the Johannesburg area<sup>26</sup>. The prevalence of bacterial infections had decreased and so had scabies and cosmetic ochronosis whilst the prevalence of fungal infections had remained constant<sup>26</sup>. Similarly for this data, these reported prevalences may be a result of a change in the pattern of presentation. However they more likely represent the frequencies of the diseases as detected by the doctors working in these departments in five different hospitals at five different periods in time.

**Table 2.4c: Prevalence (%) of skin disorders in Coloured patients attending the different academic departments from 1963-2003<sup>26</sup>**

<b>Diagnosis</b>	<b>1963<sup>18</sup></b>	<b>1978<sup>24</sup></b>	<b>2003<sup>26</sup></b>
1. Dermatitis	36.7	27.2	34.54
2. Acne	1.7	6.7	13.92
3. Bacterial infections	17.2	8.1	3.78
4. Superficial fungal infections	8.3	8.1	6.53
5. Scabies	6.0	12.8	1.72
6. Psoriasis	3.3	5.3	4.98
7. Warts	5.0	7.2	8.08

Again Hartshorne<sup>26</sup> reported that the frequency of acne had increased considerably in the Coloured population<sup>26</sup>. She also stated that the frequency of warts had also increased from 5% in 1963 to 8% in 1999<sup>26</sup>. On the other hand the frequency of bacterial infections, scabies and superficial fungal infection had decreased<sup>26</sup>. However the frequency of eczema or dermatitis and psoriasis has remained constant<sup>26</sup>. Again these data reflect the frequencies of these diseases as noted in the patient files. All these were retrospective analyses of data from patients' and practice files and perhaps reflect the frequencies of these diseases at the respective dermatology departments.

**Table 2.4d: Prevalence (%) of skin disorders in Indian patients attending the different academic departments from 1969-2003<sup>26</sup>**

<b>Diagnosis</b>	<b>1969<sup>21</sup></b>	<b>2003<sup>26</sup></b>
1. Dermatitis/Eczema	39.0	30.43
2. Acne	9.0	13.35
3. Bacterial infections	11.0	1.20
4. Superficial fungal infections	7.0	11.80
5. Scabies	2.0	0.93
6. Psoriasis	5.0	9.62
7. Warts	2.0	2.17

Hartshorne reported that the frequency of acne, psoriasis and superficial fungal infections had increased amongst the Indian South Africans but the prevalence of eczema or dermatitis, bacterial skin infections and scabies had decreased<sup>26</sup>. The frequency of warts had remained constant at around 2%<sup>26</sup>.

However it must be noted that these studies (Table 2.4a-d) were done at outpatient skin clinics at the various academic hospitals by the Dermatologist in charge. The increasing “prevalence” therefore only refers to these diseases as detected by the clinic doctors in the attending out patients department. It does not indicate the prevalence of these diseases in the community. This is the main limitation of studies surveying hospital or clinic patients. Some of the increase in frequencies may be due to an improved dermatology service being provided and hence more patients will present to these public facilities. Some of the increase may be due to improved dermatological skill of the doctors assessing these patients.

## 2.4 Dermatological studies from other countries

This study also compares the “prevalence” of infective conditions in Johannesburg with that in other African studies as shown below<sup>26</sup>.

**Table 2.5: Prevalence (%) of reported skin infections in South Africa and other African countries (1968-2003)<sup>26</sup>**

Diagnosis	2003 <sup>26</sup>	Zambia 1979 <sup>36</sup>	Kenya 1968 <sup>38</sup>	Uganda 1972 <sup>39</sup>	Mali 1998 <sup>9</sup>	Nigeria 1970 <sup>40</sup>
Superficial fungal infections	5,78	10,8	9,70	5,70	13,6	13,7
Warts	4,06	1,6	2,30	0,14	1,4	0,0
Bacterial infections <sup>1</sup>	4,03	20,3	2,56	20,90	11,1	11,9
Other infections <sup>2</sup>	2,71	0,0	5,90	0,0	1,3	0,0
Herpes zoster	2,50	0,0	0,28	0,20	0,8	0,0
Scabies	2,43	32,2	5,68	6,65	16,6	33,7

des all coccal infection.

- Includes syphilis, mycobacterial infection & viral exanthems.

This table shows the frequency of cutaneous infections in different African populations. Except for warts and herpes zoster all the other infections had lower frequency in the South African study. The frequency of bacterial infections is particularly high in central and West African countries. The frequency of bacterial infections was low in the Kenyan study which was done in the highlands where heat and humidity are relatively low.

These studies should have quoted the prevalences with 95% confidence interval for each of the figures. These figures simply indicate the frequency of a dermatosis in relation to other skin

diseases and not the true frequency in the population. A community study would however be required to determine the true frequency.

Only two studies in the West ever estimated the prevalence of skin diseases in the general population through clinical examination. One was in the UK in 1975<sup>41</sup> and the other in the USA during 1971 to 1974<sup>42</sup> i.e. over three decades ago.

## **2.5 The U.K dermatological study, 1975<sup>41</sup>**

The U.K study, also known as the Lambeth study<sup>41</sup>, was based on a questionnaire on skin symptoms sent to a stratified sample of 2180 adults in Lambeth, London. All positive responders and one fifth of the negative respondents were then interviewed and examined at home by a team of seven doctors and eleven nurses who were first trained in the recognition of common dermatoses<sup>41</sup>.

However, only the exposed areas of the body were examined, that is the face, scalp, neck, forearms, hands, knees and lower legs. The skin disease was classified into trivial, (not justifying medical attention), moderate (just justifying medical attention), and severe (needing early medical attention because of severe symptoms or risk of progression) based on the judgment of the examiner.

The main findings of the study are summarized in Table 2.6<sup>41</sup>.

(1) The overall proportion of the population that had any form of skin disease was 55.5% (95% confidence interval 49.6-61.3%)<sup>41</sup>.

(2) The proportion considered to have skin disease worthy of medical care (i.e. moderate or severe) was 22, 5% (95% confidence interval 17.8-27.2%)<sup>41</sup>.

As shown in Table 2.6 below, the group containing tumors and naevi had the highest prevalence (20.5%) but 90% of these were considered to be trivial by the examiners. In the eczema group on the other hand with an overall prevalence of 9%, more than two thirds were graded as moderate to severe, so that the highest prevalence of conditions justifying medical care fell into this group (6.1%)<sup>41</sup>.

**Table 2.6: Prevalence (%) of examined skin disease in Lambeth (n=2180)<sup>41</sup>.**

Skin condition	Total (Both sexes)		Male		Female	
	All grades	Moderate and severe	All grades	Moderate and severe	All grades	Moderate and severe
Tumours and vascular lesions	20.5	1.4	14.2	0.1	26.4	2.7
Eczema	9.0	6.1	10	8	8.1	4.3
Acne	8.6	3.5	10.9	3.5	6.4	3.5
Scaly dermatoses	8.5	2.9	11.8	3.9	5.3	1.9
Scalp and hair disorders	8.2	1.4	7.9	0.8	9.5	18.9
Prurigo and allied conditions	8.2	3.9	6.1	1.7	9.5	6.0
Erythematous and other dermatoses	7.5	2.1	3.1	2.1	11.7	2.2
Infective and parasitic conditions	4.6	0.7	4.8	1.1	4.4	0.3
Warts	3.4	0.2	3.6	-	3.3	0.3
Nail disorders	3.3	1.9	2.4	1.3	4.2	2.5
Psoriasis	1.6	0.6	2.4	0.4	0.8	0.8
Mouth and tongue disorders	0.9	0.1	1.5	-	0.3	0.1
Chronic ulcer	0.2	-	0.4	-	-	-
Any skin condition	55.5 (49.6-61.4)	22.5 (17.8-27.2)	47.9 (40.0-55.9)	21.3 (14.7-28.0)	60.7 (52.0-69.3)	23.6 (17.0-30.2)

Clear age trends emerged for specific disease groupings, for example acne and warts in younger aged groups; although age, sex and social class trends were not found when all forms of skin disease were considered together, since several conditions had trends in opposite directions<sup>41</sup>.

## **2.6 USA dermatological study (1971-1974)<sup>42</sup>**

A very comprehensive prevalence study of skin disease was done in the U.S.A. between 1971 and 1974<sup>42</sup>. This was a detailed cross-sectional study conducted within the first US Health And Nutrition Examination Survey (HANES-1). The study was conducted on a representative population sample of 20, 749 persons aged 1 to 74 years. This study was designed to measure the nutritional status of the US population (194 million)<sup>42</sup>.

The study was done in the non-institutionalized population. The study also obtained information on the general health status as well as more detailed information on the medical care needs of adults 25-74 years<sup>42</sup>.

As with previous Health Examination Survey programmes, the US Bureau of Census cooperated in the sample design and in initial visits and interviewing at selected eligible households in the 65 primary sampling units (PSU'S) throughout the United States<sup>42</sup>.

The probability sample design used in the study provided for a sampling ratio of poor persons, preschool children, women of childbearing ages and the elderly that was higher than the ratio among others in the civilian non-institutionalized population. A stratified multistage probability design was used<sup>42</sup>.

A detailed structured skin examination was done by 101 dermatologists, most of whom were residents in Dermatology. Clinical findings were backed by laboratory investigations such as mycology culture and skin biopsy, where possible.

Additional household visiting, interviewing, history taking and explaining of the examination portion of the programme were done by the members of the field teams of the whole mobile examination centre. The selected persons for whom an appointment could be made were brought into the specially constructed mobile examination centers which were moved into a central location in each of the PSU's. The teams that traveled into the various survey locations throughout the country included medical and dental examiners as well as technicians and interviewers<sup>42</sup>.

Dermatology residents (Registrars) were trained to do the examination. The dermatology component of the HANES-1 was planned at the request of, and in cooperation with the Committee on Planning for the National Programme for Dermatology of the National Academy of Dermatology. The chairman of the Data Collection Unit was responsible for planning the content of the Dermatology Examination, recruiting the dermatologists and training them on the examination methodology so as to minimize the inter observer variation<sup>42</sup>.

The field data collection began in April 1971 and completed in June 1974. Of the 28, 043 persons 1-74 years selected in the national probability sample to represent 194 million of these ages, 20, 749 (74%) were examined. When adjustments were made for the differential sampling ratios used in the age-sex -income defined population subgroups, this represented an effective response rate of 75.2%<sup>42</sup>.

The findings in this study were shown as national estimates based on weighted observation, that is, the data obtained for each examined person were inflated to the size of the total population of which the sample was representative. However it is clear that some estimates are subject to considerable risk of bias as more than one quarter of the sample and persons in a particular age-sex-income class were not examined (75% response rate)<sup>42</sup>.

The dermatological part of the HANES-1 examination included a complete clinical examination of the skin & subcutaneous tissue that considered normal variations in the texture and color, certain manifestation of ageing, and all pathological changes<sup>42</sup>.

Whenever possible, significant diagnoses such as malignancy were documented by tissue biopsy and suspected infections by Tzanck smear or by culture to identify fungi or bacteria.

Estimates were made of actinic exposure experienced, as well as actinic damage sustained and occupational risks from irritant and allergic contactants. For an examinee with significant hand, foot or generalized problem a judgment was made about the burden to the individual in terms of discomfort or disability, about care sought previously, and about the effect that could be expected from the current best care available at the time. The Dermatological Examination form provided for recording the examiner's findings was divided into 5 parts: The 1<sup>st</sup> gave a summary of the major dermatological findings and procedures as well as significant historical and environmental data. The 2<sup>nd</sup> provided for the information about the skin in general such as colour, texture, ectodermal appendages, vascular lesions, pigmented naevi and those pathological changes that occur in a generalized fashion such as purpura, seborrheic keratoses or warts. The 3<sup>rd</sup> part was for regional findings peculiar to an anatomical area as the head, or neck, such conditions as xanthelasma, chelosis or scrotal tongue. The 4<sup>th</sup> part focused

on disease oriented information giving more detail on such common problems as acne, psoriasis, atopy and others. The 5<sup>th</sup> part represented an effort to evaluate the impact of the dermatological condition observed-how it had modified the individual's life through physical or psychic incapacitation and how it may have precluded a preferred activity<sup>42</sup>.

An estimate was made of the degree of disfigurement the condition had produced as well as the symptoms the individual had suffered. Information was obtained about care sought for the skin problem or if no care was sought, why not? Had it been a matter of knowing about the available therapy on the part of the examinee or his physician? Had it been a problem of finances; or inconveniencies in travel, or the availability at any price or distance? If the person was receiving treatment, a judgment was made by the examiner concerning the adequacy of therapy, and if inadequate, whether the current best care in the present state of the art in medicine would improve the condition<sup>42</sup>.

All lesions that the examiner considered to be fungous or to include fungous in the differential, were scraped, as well as all scaling lesions of the hand and feet and all circumscribed scaling lesions anywhere on the body that might be considered "ringworm" not only by the non dermatological physician but by the layman or the pharmacist. The scrapings were collected between two glass slides and sent for mycological culture on the same day<sup>42</sup>.

Skin biopsies were taken only from adults who consented. With lesions on the head & neck only those where biopsied that were clinically suggestive of malignancy, or of a diagnosis of grave importance such as lupus erythematosus, the granulomatous diseases: tuberculosis, leprosy, sarcoid, and similar conditions. On the covered areas of the body, any significant lesion or any lesion of obscure or uncertain diagnosis was biopsied as needed by the examiner,

but only if the examinees understood the reason for the procedure and consented to biopsy in writing<sup>42</sup>.

Lesions biopsied were photographed wherever possible (but with examinee's consent). These photographs were used in later review to support the diagnosis when the biopsy findings were available<sup>42</sup>.

Both the significant skin pathology and the skin conditions of concern to the examinee were identified and classified by the dermatologist examiner using the Code of Skin Diseases of the Department of Dermatology, New York University<sup>42</sup>.

The biopsy and mycological findings were used to review the initial diagnoses by the coordinator of the Dermatological examination i.e. initial diagnoses were modified. Despite this there was considerable variation among examiners: some conscientious examiners recorded all freckles whereas others underreported banal lesions<sup>42</sup>.

The main findings of this study were<sup>42</sup>:-

1. Nearly one third of the population (i.e. 312 per 1000 population) had one or more significant skin conditions which were considered by the dermatologist to be worthy of evaluation by a physician at least once.
2. The prevalence of significant skin pathology increased rapidly with age from 142 per 1000 children aged 1-5 years to 362 per 1000 youths aged 12-17 years and 365 per 1000 young adults aged 18-24 years due primarily to the increase in acne at puberty

This is shown in the figures below.

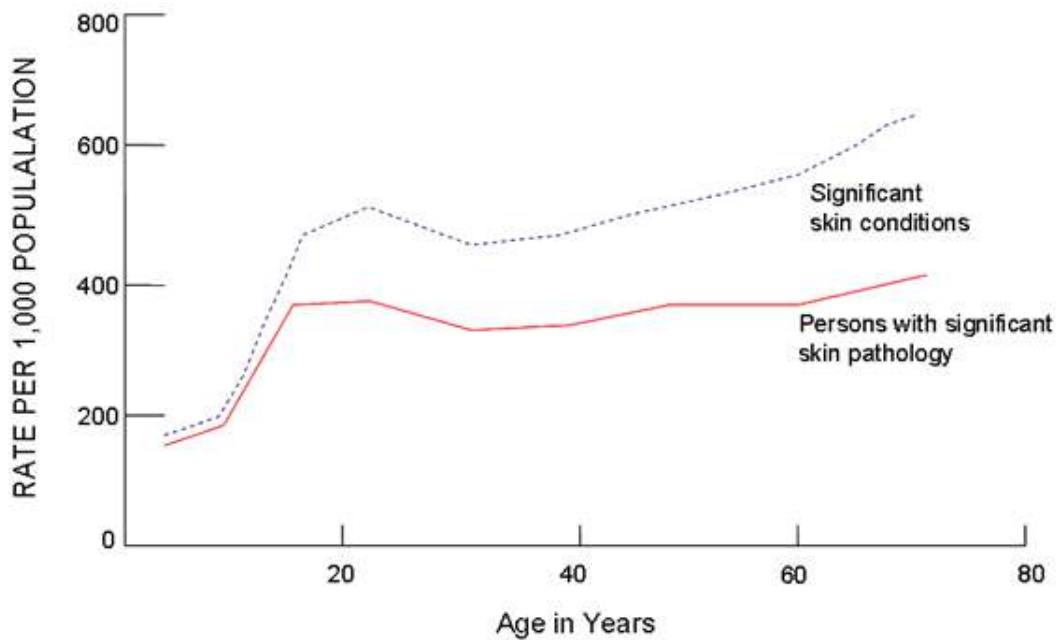


Figure 2.1. Prevalence rates for significant skin pathology and significant skin conditions among persons 1-74 years, by age: United States, 1971-1974<sup>42</sup>

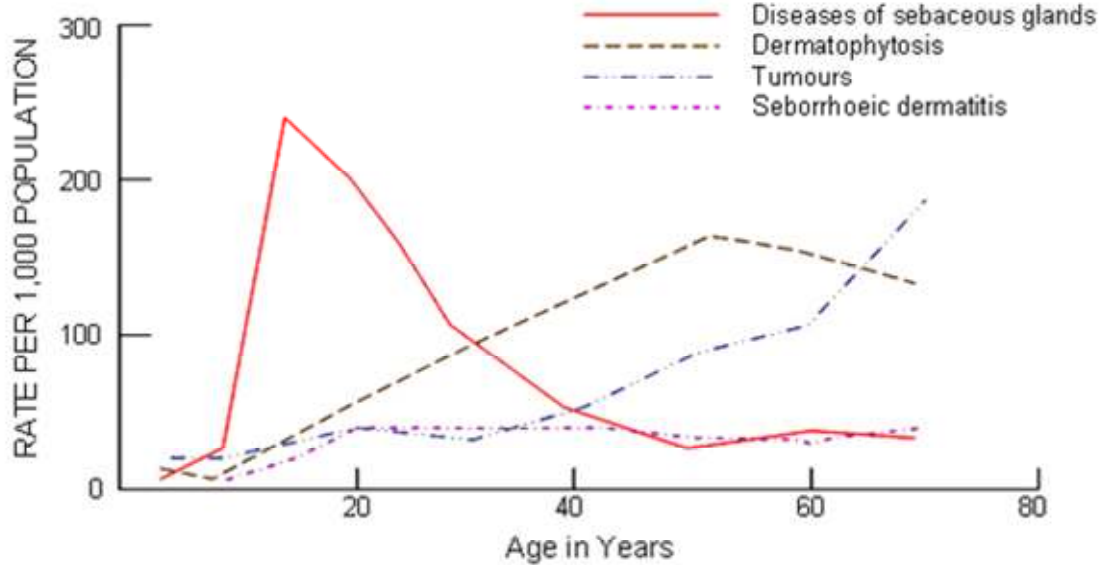
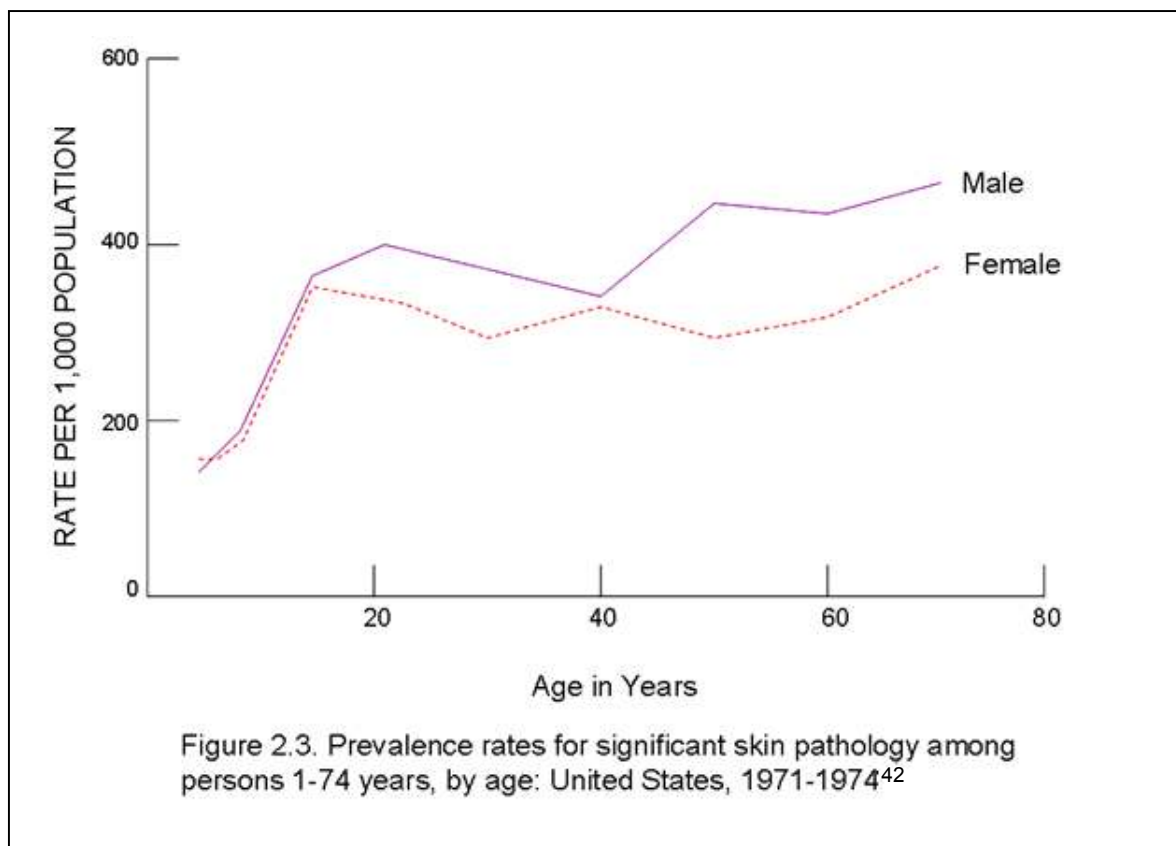


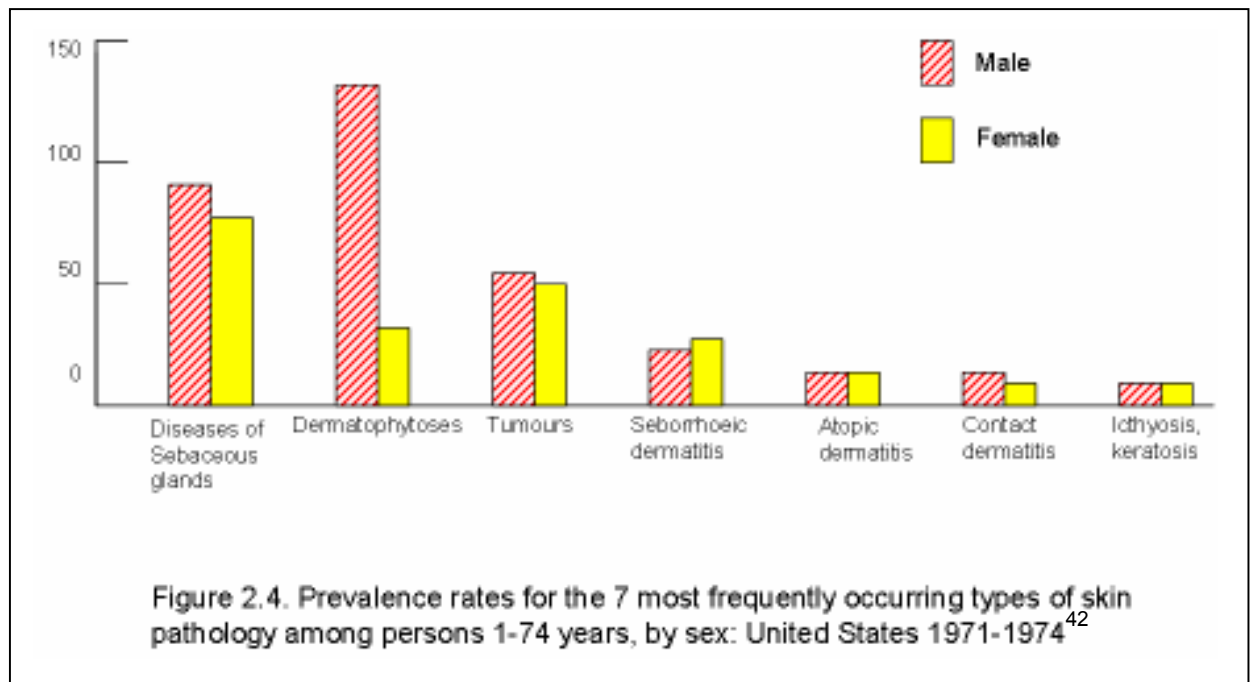
Figure 2.2. Prevalence rates for the 4 most frequently occurring types of skin pathology among persons 1-74 years, by age: United States, 1971-1974<sup>42</sup>

3. After a slight decline at age 25-34 years the prevalence of skin pathology again increased steadily, reflecting the increase in chronic diseases such as psoriasis, vitiligo, malignant and benign tumors, actinic and seborrhoeic keratoses. This is clearly seen in above figures.
4. Significant skin pathology was slightly more common in males, in this study, as shown in the figure below.



5. An additional 12.5 % of the population was deemed to have a skin condition that was clinically inactive at the time of the examination.

The prevalence of common skin diseases is shown in the figure below:



In summary the Lambeth and HANES-1 studies suggest that significant skin disease is extremely common. Even though dermatology is characterized by an enormous range of disease reaction patterns, these prevalence surveys suggest that the bulk of skin disease is made up of less than ten disease groups. The prevalence of skin disease documented in these two large population studies also suggests that most individuals with skin disease do not seek medical help. Knowledge of this “submerged section of the dermatological iceberg” (i.e. patients with skin diseases who do not seek help) is important, as small changes in the population’s perception of the need for medical help can have large effects on the delivery of health care<sup>32</sup>.

## **2.7 Other Studies**

Caution should be applied to prevalence studies with low response rates, as it cannot be assumed that responders share the same characteristics as non-responders<sup>32</sup>. For example a survey of non-respondents to a prevalence survey for skin disease in Australia<sup>42</sup> found that people who did not respond to the initial survey were more likely to have skin cancers than respondents. This important finding emphasizes the need to sample non-responders in general prevalence surveys of skin disease<sup>31</sup>.

A large comprehensive survey of skin disease was conducted in school children in Victoria, Australia in 1996-1997<sup>43-46</sup>. This study involved the examination of 2491 school children by Dermatology registrars and was reported as prevalence of specific diseases like warts<sup>43</sup>, atopic dermatitis<sup>44</sup>, acne<sup>45</sup> and tinea pedis<sup>46</sup>. The prevalence of warts in Australian school children was 22% (varying from 12% in 4 to 6 years old to 24% in 16-18 years old)<sup>43</sup>. The overall prevalence of acne was 36% (varying from 3% in 7 to 9 olds and 93% in 16 to 18 year old)<sup>45</sup>

and the prevalence of tinea pedis (culture positives) was 5.2% varying from 2.1 % in 4 to 6 years old to 9.7 % in 16 to 18 years old<sup>46</sup>.

Another survey of 1006 primary & secondary school children in Hong Kong found that 31% had one or more skin disorders, 70% of whom did not seek medical attention<sup>47</sup>. These surveys suggest that like adults, around 20 to 25% of school children in urban centres have one or more skin diseases<sup>32</sup>.

Skin examination surveys like these are said to underestimate the true burden of skin disease since they will miss many children with infectious skin diseases of short duration such as impetigo and scabies<sup>32</sup>. However, this is not always true as a representative sample of these conditions may be captured in the survey.

The table below summarises the findings of the various population based prevalence studies done throughout the world<sup>32</sup>.

**Table 2.7: Summary of overall prevalence of skin disease in population based studies conducted throughout the world<sup>32</sup>**

<b>Country</b>	<b>Author</b>	<b>Date of survey</b>	<b>Sample size</b>	<b>Study population</b>	<b>Definitions</b>	<b>Overall prevalence of skin disease</b>	<b>Five commonest diagnosis</b>	<b>Comment</b>
UK	Rea <sup>41</sup>	1975	21800	Stratified samples of adults	Examination by team of seven dermatologists and 11 nurses	23%	Eczema Acne Scaly dermatoses Prurigo Erythematous and other disorders	Only 21% had sought medical advice
USA	Johnson <sup>42</sup>	1971-4	28043	65 primary sampling units throughout the USA, population aged 1-74 years	Examination by 101 dermatologists	31%	Diseases of sebaceous glands Fungal diseases Malignant and benign tumours Atopic dermatitis Other eczemas	Detailed survey of usage of health care
Sweden	Larson <sup>48</sup>	1976	8298	School pupils 12 – 16 years old in AC county, North Sweden	Examination by dermatologists	Not stated	Acne, Verrucae Atopic Dermatitis Striae Pigmented lesions	Many children had more than one diagnosis
Faroe	Lomholt <sup>49</sup>	1948	10 984	Survey of seven islands between Norway and Iceland	Examination by dermatologists	5%	Eczema Seborrhoeic dermatitis Neurodermatitis Acne Leg ulcer	Part of detailed psoriasis survey

Mexico	Estrada-Castañón <sup>51</sup>	1990	50 000	41 representative communities in Guerrero state (all ages)	Examination by team of dermatologists and nurses	50% of all households included someone with a skin problem	Pityriasis alba Scabies Pyoderma Acne Melasma	60% of skin conditions could be classified into 10 diagnoses
Brazil	Bechelli <sup>5</sup>	1981	9995	School children of 6 – 16 years in four urban and three rural communities in north – west Brazil	Examination by four dermatologists	26%	Pediculosis capitis, Pityriasis versicolor Pyoderma Pityriasis alba Dermatophytosis	Tropical region with 85% relative humidity
Brazil	Romiti <sup>6</sup>	1976	9414	School children 5 – 15 years in Santos municipality	Examination by dermatologists	37%	Infestations Superficial mycoses Viral infections Eczemas Acne	Different disease spectra seen at local dermatology service
Tanzania	Henderson <sup>10</sup>	1991	958	Complete survey of two administrative units at Mvumi village	Examination by dermatologists	49%	Pyoderma Scabies Pediculosis capitis Dermatophytosis Leg sores	Dry central plateau

Tanzania	Gibbs <sup>8</sup>	1994	1114	254 randomly selected	Examination by dermatologists	27%	Prurigo Scabies Viral warts Pyoderma Papular urticaria	Infectious dermatoses increased in the young. Overcrowding linked with increased skin disease prevalence
Mali	Mahé <sup>9</sup>	1994	1817	Random sample of 30 clusters of children aged less than 13	Examination by dermatologists	34%	Pyoderma Tinea capitis Pediculosis capitis Scabies Mollusca	Pyoderma and scabies significant health problem
Ethiopia	Figuerro <sup>50</sup>	1994	3979	House to house survey in three communities	Examination by dermatologists	14%	Ectoparasites Onchodermatitis Dermatophytosis Pyoderma	Only those who considered themselves to have a skin problem were examined
Pakistan	Porter <sup>11</sup>	1980	444	All children less than 5 years in three villages in Punjab	Examination by research assistants trained by a dermatologist	36%	Pyoderma (54%) of skin diseases Atopic eczema Scabies Warts Other Eczema	Marked variation in prevalence of pyoderma between villages, malathion control of insect population

From all these surveys it is evident that<sup>32</sup>:

1. Skin diseases are very common (Prevalence range 5%<sup>49</sup> - 49%<sup>10</sup>) .
2. Infections and infestations predominate, especially in poor socio-economic populations  
<sup>5,6,8,9,10,11,50</sup> .
3. Skin diseases are very common among the younger age group<sup>5,6,9,11,48</sup> .
4. Most are easily treatable.<sup>1,2,3, 8,12,50</sup> .

However it must be remembered that even within “developing” countries, urban pockets may occur with a disease spectrum very similar to developed countries<sup>32</sup>.

Prevalence data are essential to assess the importance of a health problem and to define priorities. Dermatological problems have rarely been considered a priority or a major health problem by public health authorities and international organizations<sup>12,13,51</sup>. This may be due to a lack of data on skin diseases or because the commonest dermatoses were not lethal. But the high proportion of consultations for skin diseases indicates that it is a major concern for the population. Also, with the emergence of AIDS as the leading scourge of the decade, especially in the province of KwaZulu-Natal<sup>54</sup>, skin diseases can no longer be ignored, as more than 90% of patients infected with the human immunodeficiency virus have dermatological manifestations<sup>30,31,34</sup> .

## **2.8 Cutaneous manifestations of HIV<sup>30,31,34</sup>**

Cutaneous manifestations occur in over 90% of patients infected with the HIV<sup>29,30,33</sup>.

A wide variety of dermatological manifestations including malignancies (e.g. Kaposi's sarcoma), a variety of bacterial, fungal, viral and parasitic infections and several non-infectious disorders may be evident in an HIV infected patient.

Immunosuppression due to HIV results in infective skin diseases with either known pathogens or with unknown exotic pathogens. Most infections with known pathogens present with altered, aggressive or florid clinical patterns. Immune dysregulation related to HIV infection may be responsible for several inflammatory skin diseases and may pave the way for malignancies.

Most cutaneous complications appear and worsen as HIV induced immuno-suppression advances. However certain cutaneous complications occur early in the disease and may be the only clinical manifestation of HIV infection. Such disorders should alert the dermatologist to the diagnosis of HIV infection

The cutaneous complications maybe classified as:-

Infectious

Non-Infectious

Infectious Manifestations:

- Viral infections
- Herpes zoster
  - Herpes simplex (HSV-1& HSV-2)
  - Molluscum contagiosum
  - Viral warts
- Bacterial infections
- Staphylococcal & streptococcal
  - Syphilis
  - Mycobacterial infections
  - Bacillary angiomatosis
- Fungal infections:
- Dermatophytosis
  - Candidiasis
  - Pityrosporum infections
  - Deep (systemic) fungal infections  
(e.g. Histoplasmosis, Cryptococcosis)
- Parasitic Infestations
- Scabies
  - Demodex folliculorum

Non – Infectious Manifestations

Psoriasis

Reiter's syndrome

Seborrhoeic dermatitis

Xeroderma

Papulo-puritic eruption

Eosinophilic pustular folliculitis

Interface dermatitis

Nail & Hair changes

Adverse cutaneous drug reactions

Malignancies

**SEROCONVERSION** (Acute HIV infection) occurs 2–6 weeks after exposure. The primary infection is often asymptomatic, but an acute febrile illness occurs in 30% of cases associated with seroconversion. This usually occurs 2-6 weeks after exposure. There is fever, rigors, lethargy, malaise, sore throat, anorexia, myalgia, arthralgia, headache, photophobia and gastrointestinal symptoms accompanied by a non-specific maculopapular rash with associated palatal or oesophageal erosions. Urticaria may also occur at this stage.

## **INFECTIOUS MANIFESTATIONS**

### **1. VIRAL INFECTIONS**

#### **(i) Herpes Zoster**

This is the commonest cutaneous manifestation occurring in 15-30% of HIV patients. It may erupt early in the disease and may be a presenting sign of HIV or may herald the onset of immunosuppression when seen later in the disease. The eruption is classically multidermatomal with hemorrhagic vesicles that leaves necrotic ulceration and scars. If not treated promptly, it runs a chronic course and may even disseminate.

**(ii) Herpes Simplex (HSV-1 and HSV-2)**

Presents as chronic painful ulcers in HIV patients. anogenital as well as cutaneous ulcers that persist for weeks or months. Perianal lesions are more frequent in homosexuals.

Recurrences become more frequent and lesions are more persistent as the immunodeficiency progresses.

Large ulcers with bullous necrotic margins occur as the CD4 count falls. Rarely atypical ulceration of face and tips of fingers may occur.

**(iii) Molluscum Contagiosum**

These are umbilicated papules caused by a pox virus. In HIV patients the lesions are larger, widespread and more persistent. Face and genitalia are frequently affected. Several mollusca can become confluent to give a “cluster of grapes” appearance.

**(iv) Viral Warts**

These are caused by papova viruses. They are numerous, large and refractory to treatment in HIV patients as the disease advances. Malignant change with intraepithelial carcinoma and florid invasive squamous cell carcinoma may occur.

Condyloma accuminata or genital warts are strikingly voluminous, huge, malodorous with a high chance of malignant degeneration within them. Perianal condylomata are seen in homosexual males.

Extensive verruca plana (flat warts) can resemble pityriasis versicolor and may be akin to epidermodysplasia verruciformis.

## 2. BACTERIAL INFECTIONS

**Staphylococcus aureus** infections are common in HIV disease. Multiple recurrent furunculosis(boils) is common and may be a presenting feature of HIV

**Streptococcus pyogenes** is responsible for ecthyma, impetigo and folliculitis. The lesions of ecthyma may be unusually deep and necrotic. Secondary infection of other dermatoses like scabies, eczema, HSV ulceration is more frequent in HIV.

**Syphilis** in the secondary stage presents with necrotic nodular lesions of lues maligna.

**Mycobacterial** infections can occur as a manifestation of miliary TB or TB gummata may be seen. Papulonecrotic tuberculid is quite frequently seen in HIV patients. Other mycobacteria may cause infections e.g. pustular eruptions due to *M. haemophilium* and *bovis*, sinuses and draining matted lymph nodes due to *M avium intracellulare*

**Leprosy** may occur in HIV patients. The disease is more florid and lepromatous in type.

**BCG vaccine** may cause local and systemic infection in HIV patients and therefore is contraindicated except for children as yet asymptomatic, in areas at risk for TB.

**Giant aphthosis** is another important bacterial infection associated with HIV. Painful aphthae (ulcers) appear in the month.

**Bacillary Angiomatosis** is caused by *R henselae* and *R quintana* which are reservoir in kittens. Angioma like nodules develop on the skin, mucosa and internal organs. Larger lesions may resemble Kaposi's sarcoma. Lesions may bleed and ulcerate.

## 3. FUNGAL INFECTIONS

- (i) **Systemic or deep fungal infections** – in patients with symptomatic HIV (AIDS) cryptococcosis, histoplasmosis, sporotrichosis, candidiasis, actinomycosis, phaeohyphomycosis may be seen. **Cryptococcal** skin lesions are seen commonly on the head and neck as pearly 2-5mm translucent umbilicated papules resembling mollusca. Similar lesions are seen in **histoplasmosis** and **penicilliosis**. Multiple cutaneous ulcers and subcutaneous nodules may also occur as with **sporotrichosis** and **blastomycosis**.
- (ii) **Superficial fungal infections**
- (a) **Dermatophytosis**: over 1/3 of HIV patients have superficial infection with ringworm fungi. The lesions are unusually widespread. Nail involvement is seen as white superficial onychomycosis. Fungal infection of the face may be diffuse, scaly and erythematous and mimics seborrhoeic dermatitis. Palms and soles may show widespread involvement resembling psoriatic keratoderma with thickening and scaling.
- (b) **Candidiasis** – This is the hallmark of HIV infection. Presents in all stages of the disease. Sites affected are – oral mucosa, genitalia, intertrigenous areas, nail fold, nail. Oral mucosal lesions are whitish plaques, erosive lesions and hypertrophic plaques. In advanced disease oesophageal involvement leads to dysphagia and retrosternal pain. Chronic angular stomatitis is frequent. Candidal paronychia with frequent secondary bacterial infections is also common.
- (c) **Pityrosporum Infection - Pityriasis versicolor** presents with florid hypo/hyperpigmented scaly macular eruption that is recalcitrant to

routine topical treatment (selenium sulphide). Recurrence is frequent even after oral ketoconazole therapy.

**Pityriasis folliculitis** is a frequent occurrence presenting with a widespread eruption of itchy follicular pustules over the back and arms.

The fungus is also known to play an important role in the pathogenesis of seborrhoeic dermatitis which in turn is frequent in HIV patients.

#### 4. ARTHROPOD INFESTATIONS

**Scabies** may present atypically with only generalized pruritus without a rash in early HIV. After immunosuppression advanced keratotic or Norwegian scabies may occur.

In this condition the hyperkeratotic areas are infested with millions of mites. The severe hyperkeratosis resembles ichthyosis.

**Demodex folliculorum:** This infestation presents with an itchy follicular, papular eruption distributed over the back, head and neck.

#### NON-INFECTIOUS MANIFESTATIONS

(i) **Psoriasis** – Though psoriasis and HIV infection show a strong association, an overall increased incidence of psoriasis has not been documented in HIV patients. Preexisting psoriasis may worsen, with widespread guttate or plaque type lesions. Complications like pustular psoriasis and erythroderma may develop.

(ii) **Seborrhoeic Dermatitis**

This is the commonest dermatitis in HIV patients. It may be the only sign of HIV infection early in the disease, but extensive dermatitis is usually associated with low

CD4 counts. The dermatitis involves all hairy regions like scalp, face, axillary and pubic areas. The lesions are florid with intense erythema and greasy adherent scaling.

**(iii) Xeroderma/Icthyosiform Dermatosi**

This is characterized by dry, scaly, hyperpigmented lesions especially on extremities and trunk. It is usually encountered in advanced disease and may be related to diverse factors like malnutrition, chronic illness, poor hygiene and arthropod infestation.

**(iv) Papulo-Pruritic Eruption**

This is an eruption of tiny, skin coloured or erythematous itchy papules on neck, face and upper trunk. It is distinct from acneiform eruption, pityrosporum folliculitis and bacterial folliculitis. Though the cause is unclear, it may be a reaction to an internal focus of infection.

**(v) Eosinophilic Pustular Folliculitis**

This a form of chronic, pruritic, pustular eruption. Lesions are sterile. Urticarial lesions and papules may also be present. Histology reveals eosinophilic infiltrate around hair follicles.

**(vi) Nail and Hair Changes**

**NAILS:** A yellowish discoloration of nails is seen in HIV patients infected with pneumocystis carinii pneumonia.

**HAIR:** Thinning of scalp hair with alopecia is very common in HIV infection. Interestingly hypertrichosis with elongation of eyelashes has also been observed<sup>31</sup>.

**(vii) Adverse Cutaneous Drug Reactions**

The incidence of adverse cutaneous drug reactions is very high in HIV disease. The multiplicity of drugs being used, the concomitant viral infections (EBV/CMV) and immune dysregulation may be the major pathogenetic factors<sup>31,34</sup>.

**ANTITUBERCULOSIS DRUGS**

Since pulmonary TB is the commonest opportunistic infection, reaction to anti TB drugs are common. Severe reactions like Stevens-Johnson Syndrome (SJS) and toxic epidermal necrolysis (TEN) may occur, either to an individual drug or their combinations. A maculopapular rash and acneiform eruption are also encountered in these patients.

**TRIMETHOPRIM AND SULFA-METHOXAZOLE (TMP-SMS) AND OTHER SULFONAMIDES**

TMP-SMS and sulfadoxine-pyrimethamine remain the drugs of choice for pneumocystis prophylaxis. Reactions ranging from maculopapular rashes to fixed drug reactions, SJS and TEN may occur frequently to these drugs<sup>31,34</sup>.

**ANTI RETROVIRAL DRUGS**

Hyperpigmentation of skin and nail, hypertrichosis with increased length of eyelashes has been reported with zidovudine<sup>31</sup>.

Nevirapine frequently causes SJS and TEN<sup>31,34</sup>.

**(viii) Kaposi's Sarcoma (K.S)**

The overall incidence of KS in AIDS is 35%. It was seen to occur in homosexual men in USA and Europe. In South Africa it is common in our heterosexual AIDS patients.

It usually presents with purplish patches which progress to plaques and nodules. These lesions may be generalized. However lymphoedema of limbs with nodules (the endemic type of KS) is also frequently seen in the affected patients. Visceral, gastrointestinal and lymph node involvement is also present<sup>31,34</sup>.

## **CHAPTER 3**

### **3.1 Provision of Dermatological services in KwaZulu-Natal**

Dermatological services in KwaZulu-Natal are inadequate. Of the 156 dermatologists in the country only twenty-five are in the Province of KwaZulu-Natal and only five are in full time employment in the Teaching Hospital.

### **3.2 Training for Dermatology**

The paucity of Dermatologists in KwaZulu-Natal is due to the fact that until recently there were only two training posts in the Natal Medical School and its teaching hospital. Also under-graduate teaching in Dermatology is limited because the major specialties take up most of the student's time. A medical student in South Africa is exposed to less than forty hours of teaching in Dermatology. This was reduced to thirty hours at Nelson R. Mandela School of Medicine (NRMSM), UKZN in the new Problem Based Curriculum (PBL), (Personal communication with head of School of Undergraduate Medicine Education at the NRMSM, UKZN). Also, there is no rotation of interns through dermatology. The family or general practitioner is therefore poorly equipped to diagnose and treat dermatological problems. Consequently only a small percentage of the population in the province has access to proper dermatological care. Most patients have to wait for months to consult a dermatologist, both in the private and public sectors. (Personal experience at the Teaching hospitals attached to NRMSM)

### **3.3 The training of medical students in Dermatology in the U.K. and USA**

The poor training of primary care doctors in dermatology is not unique to our country, which follows the British curriculum. A survey of 124 medical schools in the USA<sup>29</sup> revealed that twelve of these schools required no dermatological studies for graduation. The majority of institutions had only 1-19 hours of instruction in dermatology. Further analysis of this survey showed that 10% of medical students are not required to take any dermatology, and 50% of the students are exposed to 12 hours or less of instruction in dermatology, and this in the form of didactic lectures<sup>29</sup>. It therefore appears that a sizeable percentage of students may graduate from medical school without taking care of, or seeing a single patient with skin disease, and that exposure to dermatology may at best consist of a few hours of lectures.

### **3.4 The training of primary health care nurses in KwaZulu-Natal**

A similar deficiency exists in the education of Primary Health Care Nurses who now replace doctors at the Primary Health Care Community Centres or Clinics. Nurses get very little teaching in Dermatology, both in their undergraduate and postgraduate years.

In KwaZulu-Natal the primary health care (PHC) clinics are run by professional nurses who are given some basic PHC training to enable them to treat common diseases. The undergraduate training of nurses is done in Nursing Colleges attached to large hospitals like King Edward VIII, RK Khan and Addington. Currently the nursing college at KEH does only post basic training i.e. Specialist nurse training e.g. Midwifery. In the nineteen seventies and early eighties the dermatology teaching of these nurses consisted of a single 2 - hour lecture

given by a Dermatology Registrar. While I was training in dermatology, in the late seventies and early eighties, it consisted of some information on the common skin diseases seen in KZN: the clinical features, causes and treatment of acne, psoriasis, eczema and skin infections in brief. More emphasis was placed on the nursing management of in-patients with skin diseases like, psoriasis, eczema and infective skin conditions.

Nurses were urged to train and assist patients to apply topical medications. They were informed about the importance of giving systemic treatment, especially life saving systemic corticosteroids for severe inflammatory dermatoses. They were also taught about special intensive care nursing of severe blistering diseases like Stevens Johnson Syndrome, Toxic Epidermal Necrolysis and Pemphigus. They were warned that cross infection should be prevented at all costs to prevent the spread of multi resistant bacteria in wards. They were told that leprosy patients did not need to be isolated. These students were also taught by nursing college staff on how to dress wounds i.e. wound dressings.

From the late eighties onwards, dermatology lectures to nursing students were given by Nurse Tutors themselves. The current teaching of Dermatology to undergraduate nurses consists of ten to twelve lectures of forty-five minutes each in the third year of training. This is less than ten hours in total. They get lectures on infective dermatoses (herpes simplex and zoster, impetigo, fungal infections of the skin and scabies) and non infective conditions (acne, eczema, seborrhoeic dermatitis, psoriasis and contact dermatitis) (see appendix 10), (Personal communication with Naidoo P (Principal) and Subban S (Nurse tutor) at RKK Hospital Nursing College and Sissing S (Principal at Addington Hospital Nursing College). Student nurses spend 4 to 6 weeks in the wards in the third year. Here they may come into contact with Dermatology in-patients and do some practical nursing of Dermatology patients. They learn to

apply topical medications and dress wounds. However the lectures are not concurrent with practical nursing i.e. they may be in the orthopaedic ward during dermatology lectures and visa versa. In the third year of their undergraduate training they may also spend a week in Dermatology Clinics and here they may see a spectrum of dermatology out-patients. They are introduced to dermatology but may not have had any lectures as yet. Student nurses who train at RK Khan and Addington hospitals do not get exposure to Dermatology Clinics, whereas those that train at St Aidan's hospital spend a week at the KEH Dermatology Clinic. Some Staff Nurses who train for the bridging course in Nursing spend a month in Dermatology Clinics. They are more mature and more receptive to learning Dermatology at the outpatients' clinics.

Some Professional Nurses who train in PHC spend only a week in the Dermatology out-patients department for one to two hours per day! The rest of their Dermatology training is done by Medical Officers who themselves have had no postgraduate training in Dermatology. Some PHC nurses interviewed at DFR Health Care Centres were shown only one dermatology case during their training e.g. venous ulcers, as the only Dermatology component. Most of the training of PHC Nurses in KwaZulu-Natal was done at Clairwood or McCord's Hospital.

Some Professional Nurses study for a diploma course in PHC at the Durban University of Technology (DUT). For the past 5 years the author has been conducting the dermatology lectures at the DUT. At the author's request this was increased to 5 lectures on common skin diseases, namely, viral, bacterial, fungal and parasitic infections, psoriasis, eczema, acne, skin tumors and drug eruptions. Modification of these diseases in HIV/AIDS is also shown and discussed. These nurses do not get any practical training on patients. However these nurses have an open invitation to attend the KEH clinic. A few have taken up the offer and spent a

morning or two at the dermatology clinic at KEH during their own time, not as part of the syllabus.

University of KwaZulu-Natal also conducts PHC training. For the past three years the author has been assisting with the Dermatology component. However this comprises only one morning in the whole year of their training. Five hours on that morning are spent discussing the common skin diseases, namely bacterial, viral, fungal and parasitic infections, acne, psoriasis, eczema, drug eruptions and skin tumors. Emphasis is also paid to modifications of these diseases in HIV/AIDS. These nurses spend four days per week at their clinics and return to RK Khan Hospital on Friday mornings for lectures. Dermatology was taught on one of these Friday mornings. The Friday teaching is done by nurses, pharmacists and clinicians.

The above is summarized below:

## TRAINING OF PHC NURSES IN DERMATOLOGY

### UNDERGRADUATES

NURSING COLLEGES	DERMATOLOGY COMPONENT	WHEN
RK KHAN HOSPITAL	<ul style="list-style-type: none"> <li>• 8-10 lectures of 45 minutes each</li> <li>• 4-6 weeks in ward – not concurrent with lectures. May or may not nurse an in-patient with skin disease.</li> <li>• No OPD attachment at dermatology</li> </ul>	3rd year of training
ADDINGTON HOSPITAL	<ul style="list-style-type: none"> <li>• 8-10 lectures of 45 minutes each</li> <li>• 4-6 weeks in ward – not concurrent with lectures. May or may not nurse a dermatology patient.</li> <li>• No OPD attachment at dermatology</li> </ul>	3 <sup>rd</sup> year of training
ST AIDAN'S HOSPITAL	<ul style="list-style-type: none"> <li>• 8-10 lectures</li> <li>• No dermatology in-patients</li> <li>• Spend 1 week to 1 month at Dermatology clinic, King Edward VIII Hospital.</li> </ul>	Both for Enrolled Nurses and for the Bridging course nurses (2 <sup>nd</sup> year of training)

### POST GRADUATE (PHC TRAINING)

DUT	<ul style="list-style-type: none"><li>• 4-5 hours of lectures</li><li>• OPD at KEH - voluntary</li></ul>	One year course
UKZN	<ul style="list-style-type: none"><li>• 4-5 hours of lectures</li><li>• OPD at KEH - voluntary</li></ul>	One year course
McCORD HOSPITAL	<ul style="list-style-type: none"><li>• May spend 1-2 hours per morning at KEH skin clinic for one week</li></ul>	One year course
CLAIRWOOD HOSPITAL	<ul style="list-style-type: none"><li>• May spend one morning at KEH skin clinic</li></ul>	One year course

It is suggested that just four to five hours of lectures in Dermatology is inadequate. Nurses need to be trained on patients so that they can recognize and treat common skin diseases encountered in KZN. This training is best given by a dermatologist, medical officer or nurse trained in Dermatology. The trainer needs to have some knowledge of Dermatology. He/she must be able to recognise and treat common dermatoses so that he/she can impart this knowledge to the PHC worker. Currently the PHC nurse or medical officer has not spent enough time in Dermatology to recognise the common dermatoses. Hence the referral of all these patients to Dermatologists resulting in prolonged waiting for dermatology consultations.

## CHAPTER 4

### 4.1 METHODS

#### 4.1.1 Study Design

A descriptive cross-sectional study was undertaken in four phases followed by a pre/post implementation and evaluation of the training programme.

#### 4.1.2 Phases of the study

**Table 4.8: Summary of phases of study**

Phase 1	Prevalence study of skin diseases in DFR
Phase 2	Assessment of resources for dermatology in DFR
Phase 3	Survey to determine the current spectrum of skin diseases during the HIV epidemic – September 2006
Phase 4	Development of training tool for PHC providers
Phase 5	Implementation & evaluation of training programme

An epidemiologic study was conducted in the DFR in five phases (summarized in above table). Health centers (hospitals & clinics) in the DFR were investigated for the prevalence of skin diseases (Phase I) and the existing resources available for their management were evaluated (Phase 2). Because Phase I was done in 1998 when the prevalence of HIV/AIDS was relatively low, another survey was done at the KEH dermatology clinic to determine the current spectrum of skin diseases (Phase 3). The latter survey was a retrospective analysis of outpatients at KEH Dermatology clinic. An intervention tool was developed in Phase 4 to train the PHC nurses.

A group of 20 primary health care (PHC) nurses were trained to diagnose and manage common skin diseases. This training programme was implemented and evaluated in Phase 5 of the study.

#### **4.1.3 Rationale for selection of eThekweni as study area**

A population based study in the Province of KwaZulu-Natal (KZN) (population 9.6 million)<sup>28</sup> was deemed to be extremely large and was not very feasible because of the large areas involved. Such a study would have been very costly and funds were not forthcoming in the existing economic climate. The researcher was therefore advised by the postgraduate committee to limit her study to the prevalence of skin diseases to health centers in the Durban Functional Region (DFR) and to evaluate the existing dermatological resources in these centers. The population of the Durban Functional Region is 3.2 million<sup>28</sup>. Therefore a third of the total population of KZN is in the metropolitan area of Durban or eThekweni.

The limitations of this study in contrast to one that is population based is that it missed out persons who do not attend the health centers because of inaccessibility, cost or attitude. However, the advantages were that it allowed us to gauge the extent of the problem posed by skin diseases in this region, where a large percentage of the population of KwaZulu-Natal is concentrated. Such information would enable guidelines to be offered to set up proper dermatological services in all of KwaZulu-Natal. Hence, the study was conducted in the Durban Functional Region or eThekweni.

KZN is in the subtropical region of South Africa and falls between latitudes 27° & 31° south. DFR or eThekweni is a coastal district with a hot humid climate and summer rainfall. The day temperature in Durban varies from 23° to 30°C<sup>52</sup>. The annual rainfall varies between 900 & 1050mm. The rest of KZN is also hot but humidity is lower away from the coast<sup>52</sup>.

Durban is the largest city with a population of 3.2 million, with Pietermaritzburg second in size (population – 949,999). The other large cities in KZN are Richards Bay (population – 907,120) and Port Shepstone (population – 720,843)<sup>28</sup>. These are also coastal towns with high humidity and temperatures<sup>52</sup>. The high rate of unemployment ( $\pm 40\%$ )<sup>28</sup> and the abolishing of the influx control laws has resulted in a mass exodus of the rural population to the towns and cities<sup>28</sup>. According to STATS SA, almost 60% of the population of KZN live in eThekweni, Pietermaritzburg, Richard's Bay and Port Shepstone areas<sup>28</sup>.

Many of the unemployed live in informal settlements<sup>28</sup>. These consist of crudely built shacks which abound alongside the suburbs and townships of eThekweni and other towns. Fifteen percent of Africans in KZN live in these informal settlements<sup>28</sup>. The living conditions in these informal settlements are poor with overcrowding and substandard sanitation<sup>28</sup>. Overcrowding and poor sanitation is also present in the rural areas. Twenty percent of Africans in KZN have no toilets<sup>28</sup>, 35% have flushing and chemical toilets; the former in townships and the latter in informal settlements<sup>28</sup>. Tapped water is available in the informal eThekweni settlements, however many families share taps provided by the municipality<sup>28</sup>. Less than 20% of the total population of KZN get piped water. Only 50% of African households get piped water<sup>28</sup>.

The diseases that prevail in such conditions are those of poor socio-economic communities. This applies to skin diseases as well<sup>8,10</sup>.

Because of the similarities in the climate and the fact that a large proportion of the population live in cities and towns, the findings in the DFR study can feasibly be extrapolated to the rest of KZN.

#### **4.1.4 ETHICAL CLEARANCE**

Ethical clearance was obtained from the Ethics Committee of the Nelson R. Mandela School of Medicine.

#### **4.1.5 AUTHORIZATION**

Permission to undertake the study was obtained from the Director of Health Services in the DFR and the City Medical Officer of Health. Permission was also obtained from the person in charge of the selected health centre. An informed written consent (Appendix I) was obtained from each patient or accompanying adult of child examined.

#### **4.1.6 DATA MANAGEMENT**

Data was entered into PC by staff from the Medical Research Council (MRC). These were initially analyzed by a statistician from the MRC. Further analysis was done by Mrs Tonya Esterhuizen, a biostatistician at NRMSM.

### **4.2 PHASE I: PREVALENCE OF SKIN DISEASE**

#### **4.2.1 Study design**

A cross-sectional descriptive study was undertaken.

#### **4.2.2 Sampling**

Multistage, stratified, cluster sampling was used to select participants for inclusion in the study. Health service providers were stratified according to:

- a) Hospitals in the Durban Functional Region (DFR) or eThekweni including some private hospitals. The public hospitals were all administered by the DOH. They were not designated at the time of the study. All levels of care was provided by all hospitals especially if specialists formed part of the staff component, i.e. if specialists were present then tertiary services were provided at those hospitals. However, dermatology services were provided only at KEH. At Addington and RK Khan Hospital dermatology service was provided only once a week. At Clairwood and Hillcrest Hospitals there was no Dermatology service.
- b) Clinics were run by the Provincial Department of Health in the DFR.
- c) City Health Clinics in the DFR were managed by the Municipal Department of Health.

Thirty clusters were randomly selected from the 3 strata, with the number of clusters proportional to the total number of hospitals and clinics in a particular stratum. The table below provides a breakdown of the stratum sizes.

### 4.2.3 DATA INSTRUMENTS

1. Interview questionnaires and data sheets of clinical findings (Appendix 2&3).

The interview questionnaires and data sheets of clinical findings were developed with information from literature<sup>5,9,12,37,53</sup> the chief amongst these was the USA study<sup>42</sup>. Prof Myra Taylor, a senior lecturer in the Department of Community Health, NRMSM, assisted with the development of the questionnaire on “health seeking behavior” which included the patient’s and community’s attitude to skin disease, the perception of skin disease and the attitude of the community to health education.

Prof. R Hay, the current Dean at Queen’s University, Belfast and previously the Dean at the Institute of Dermatology, London University also assisted in the development of the questionnaire. His comments and an editorial in the Lancet<sup>1,3</sup> inspired the study. He read the protocol and gave valuable advice.

3. A list of hospitals and clinics in the DFR was obtained from the Department of Health and City Health Departments. The designation of these clinics and hospitals has been changed in recent years. Each clinic and out patient department of hospital were contacted to determine the average number of patients that are seen there daily.

With the help of Dr Eleanor Gouws, a biostatistician from the M.R.C., the health centers (hospitals and clinics) were randomly selected from those listed by the Department of Health and City Health Department.

**Table 4.9: Health Facilities in the eThekwin metro, KwaZulu-Natal**

<b>Stratum</b>	<b>N (Total number of people seen per day)</b>	<b>n</b>
Hospitals	15 (4580)	6
Provincial Clinics	20 (5605)	8
City Health Clinics	42 (4325)	16
Total	77	30

(N= total number of clusters); (n= number of clusters to be sampled)

From each of these clusters a random sample of approximately 20-25 people was selected, equaling a total sample size of 750 people (In fact the author examined 785 patients.)

The 25 people per cluster were selected using a systematic sampling procedure as advised by the statistician. Two days per week were randomly selected during which systematic sampling was used thus: to select every *i*th person attending the clinic, to make up a sample size of *ni* people per day (with *I* = total number expected to be seen on a particular day divided by the number to be sampled on that day) e.g. if I wanted to do *ni* = 10 per day, and I know that a 100 will attend that particular day, then the interval *I* = 100 divided by 10 = 10. In busy centers like King Edward VIII Hospital and Clairwood Hospital every 10<sup>th</sup> patient was selected. In the less busy City health Clinics every third or fourth patient was selected. One to two visits were made to less busy centers whereas two visits were necessary in busy out-patient clinics and hospitals.

#### **4.2.4 Pilot Study**

The study was piloted at the Beatrice Street Clinic (BSC) where the author provided Dermatology service on one afternoon per week.

#### **4.2.5 Levels of Care**

The levels of care provided by the Department of Health are:

**1<sup>st</sup> Level of care:** Primary Health Care (PHC) is available at all the Primary Health Care Clinics, Community Health Centres and District Hospitals.

**2<sup>nd</sup> Level of Care:** This is provided at District and Regional Hospitals. Patients are referred to these hospitals from PHC Clinics, Community Health Centres or directly from District Hospitals.

**3<sup>rd</sup> Level of Care:** This is provided at Regional or Tertiary Hospitals and patients are referred from District Hospitals. Specialist service is available at tertiary hospitals.

**4<sup>th</sup> Level of Care:** This is the highest level of care, and in UKZN there is only one Central hospital, the Inkosi Albert Luthuli Central Hospital (IALCH). Patients are referred from a regional or Tertiary hospital.

#### **4.2.6 Sample Selection**

The following hospitals and clinics were randomly selected from a list of hospitals and clinics in KZN (Appendix 4).

#### **4.2.6.1 HOSPITALS**

King Edward, Addington, Clairwood, Hillcrest, Entabeni, and Westville Hospitals were selected randomly by the statistician.

At the time of this study KEH was a tertiary hospital but all levels of care were provided. Most of the patients were referred by general practitioners, clinics and other hospitals in KZN and northern half of the Eastern Cape. However, patients with severe illnesses were accepted even if they were self referred. A very large out-patient service was provided.

**Addington** is a District Hospital and patients at the polyclinic (out-patients department) are mostly self referred; some are referred from the clinics in the surrounding areas (e.g. Overport and Clare Estate). The polyclinic sees hundreds of patients daily. Patients on chronic medications also come for their regular treatment monthly or three monthly.

**Clairwood** hospital is a convalescent centre and in-patients are sent from mainly KEH. At the time of the study it had a very large and busy outpatients section. Most of the patients were from local clinics. However many were self referred.

Service at all these hospitals was provided by Medical Officers and PHC nurses.

**Hillcrest** has physically and mentally disabled inpatients. The outpatient service consists of old age pensioners on chronic medications from the surrounding areas. Service at this hospital was provided by professional nurses. None of them had PHC training

**Entabeni** and **Westville** Hospitals were the two private hospitals that were randomly selected for the study. None of the private hospitals had a general outpatient's section. Private dermatologists conducted clinics once a week and saw ten to fifteen patients by appointment. These private hospitals also provided a 24 – hour service for emergencies. Permission to conduct the study was not granted to the author at these two hospitals. However permission was granted by St Augustine's Hospital which was also a private. However on the two days the researcher spent at St Augustine's Hospital, she saw only seven staff cases that had learnt that a dermatologist was doing a survey and decided to come for consultation. It became clear that the only way to get a spectrum of Dermatology patients from private hospitals was through the Dermatologists who conducted clinics there. The statistician had insisted that private hospital patients should be included in the study. The reason for inclusion of private patients was to consider frequency of dermatological disease in the 13% of patients who are on private health insurance or Medical Aids<sup>28</sup>. These patients would not attend the DFR clinics and do not depend on the public sector health service. They would first go to their General Practitioners and then get referred to a Dermatologist. Therefore the Dermatologists in private practice were requested to complete the questionnaires at Westville, Umhlanga and Kingsway hospitals. These were the only private hospitals where Dermatology patients were regularly seen. Thus private patients were included from four different private hospitals to make up the forty to fifty patients I would have obtained from the two private hospitals that were selected by the statistician.

**4.2.6.2 Clinics (KZN Provincial Administration)**<sup>1,3,5,7,11,18,19,21</sup> from the list as obtained from the DOH.

These are run by primary health care nurses and one or two medical officers. The latter are in attendance at the large clinics or Health Centres as they are now called, where patients on chronic medications also attend. Some clinics are run by nurses alone. The service is mainly therapeutic and curative. Acute and chronic diseases are treated.

#### **4.2.6.3 City Health Clinics**<sup>2,3,5,7,9,12,13,18,19,23,24,32,36,37,38,41</sup> as obtained from the DOH.

These are run by primary health care nurses. There may be a Medical Officer at some clinics. The service is mainly preventive and promotive in nature. Baby immunisations, family planning service and minor complaints are also treated. An exception was the Lancer's Road Clinic. Here there are several Medical Officers and PHC trained nurses. TB, STD'S and other complaints are also treated.

In **Chesterville** there were two clinics side by side. One was run by the local authority (City Health) and the other by the Provincial department of health. Both clinics were randomly selected by the statistician. The Provincial Chesterville clinic was more busy with more severe skin problems. PHC nurses provided service at both these clinics. There were no doctors in attendance at either of these clinics.

#### **4.2.7 Interview and Data Collection**

A Zulu speaking retired African nurse assisted me with the data collection. Before her retirement she had worked in the Dermatology Department at KEH for twenty-one years. She was familiar with the Dermatological terms and diseases used in the questionnaire. This nurse

was trained on the use of the questionnaire by practicing on skin clinic patients. She took consent and interviewed the patients. The author personally conducted the clinical examination of all the patients. The exceptions were patients at Kingsway, Westville and Umhlanga Hospitals. The patients at these hospitals were interviewed and examined by the Specialist Dermatologists who filled in the questionnaires during his/her regular clinic at these hospitals. All three dermatologists had been practicing dermatology for more than twenty years.

#### **4.2.7.1 Interview Data as per questionnaire (Appendix 2)**

As mentioned previously the questionnaire was developed with the assistance of Prof M Taylor & Prof R Hay. To reduce bias only one nurse administered the questionnaire.

After taking an informed consent (Appendix 1), the following details were taken during the interview. The questionnaire included:-

##### **(1) Demographic and Socio-Cultural Data**

Information about age, sex, degree of literacy, household occupancy and income, socio economic factors (type of toilets, number of baths per week, soap for bathing, cleanliness of clothes) were obtained during the interview.

##### **(2) Health Seeking Behaviour: (as per questionnaire in Appendix 2)**

The patients were asked about their healthseeking behaviour in relation to the skin disease. This was described under four categories.

##### **(A) Healthseeking behaviour in relation to the skin disease:**

- (i) No treatment
- (ii) Self medication bought over the counter.
- (iii) Use of traditional medicine
- (iv) Use of health service - Clinics

- General practitioners
- Hospitals
- How far are these from home?

**(B) Questions to determine the individual's knowledge and perception of skin disease and other illness.**

- (i) What are the factors that influence you to seek medical help? Is it the disability? (pain, unable to work) cosmetic reasons? (disfigurement) advice from others?
- (ii) What do you see as common skin problems in:
  - (a) babies and small children ? (napkin rash, eczema)
  - (b) school children? ("sores", scabies, head lice)
  - (c) teenagers? (acne, sores)
  - (d) adults? (psoriasis, eczema, acne)
  - (e) old people? (eczema, dry skin, tumours)

These are all common skin diseases seen in the various age groups. The patients were asked about each individual disease; the clinical features of the dermatosis were explained if a patient did not understand a particular condition. The response was either yes or no.

- (iii) Are these similar to skin problems you have encountered in the past?
- (iv) How were these dealt with in the past?

**I Questions to determine the attitude of the community to health education**

- (i) How would you like to learn about preventable and easily treatable skin diseases?
- (ii) Through information in the form of pamphlets or booklets brought home by school children?
- (iii) Health education through the media
  - Radio?
  - Television?
  - Talks given by health workers at clinics / work place?
- (iv) Do you have any suggestions for this type of education?
- (v) Do you feel that there is a need for this education?
- (vi) Whose advice will you take regarding skin diseases, their prevention and control?
  - a nurse
  - family practitioner
  - school teacher

#### **4.2.8 Medical Examination:** (Appendix 3)

The sample for the day was chosen randomly as described under Sampling.

If 150 patients were known to attend the centre on the day of the study and I could examine only 15 for that day, every tenth patient was selected for the interview and examination as per Appendix 2 and 3.

The severity and duration of the dermatosis was noted.

The dermatoses detected during the study were treated. If medication was not available at the centre the patient was referred to King Edward VIII hospital where appropriate treatment was available.

The **social conditions** of the individual were assessed on several criteria:

- (i) Access to water – river, wells or taps.
- (ii) Presence of pit latrines or other sanitation.
- (iii) Personal hygiene was noted and the subject was asked about the number of baths had per week. The subjects were also asked whether soap was used for washing and bathing.

#### **4.3 Phase 2**

Evaluation of health resources for dermatological services in the DFR.

All the health centers where Phase I was done were evaluated in respect of personnel with dermatological skills and medications that were available for the treatment of skin diseases.

Doctors, nurses and pharmacists at these DFR health centers were interviewed regarding their training in dermatology and the medications that were available for management of skin diseases.

#### **4.4 Phase 3**

**Prevalence of Skin Diseases at Dermatology Clinic- September 2006**

This survey, to determine the current spectrum of skin diseases, was necessary because the original survey of the primary health care centers in the DFR was done in 1998, when the HIV/AIDS prevalence was relatively low. The seroprevalence of HIV at antenatal clinics was 22.8% in KZN and 32.5% nationally in 1998 and had increased to 39.1% overall in 2005<sup>54</sup>. Over 90% patients with HIV develop skin disease<sup>29,30,33</sup> and therefore it was important to see how this epidemic had impacted on the current spectrum of skin diseases. However, it must be noted that the prevalence of skin diseases in HIV increases as immunosuppression worsens<sup>33</sup>. Very few patients with HIV related skin diseases were seen in Phase 1 in 1998. But many more were being seen in 2006. The PHC nurses were to be trained on the current spectrum of skin diseases in phase 4 of this study.

Our University bio-statistician was consulted. She looked at the clinic statistics of six months and advised me that a one-week survey would suffice. She stated that since this phase of the study was intended to produce a 'snapshot survey' in the clinic population at that point, the minimum sampling period was estimated at one week to ensure a representative sample. A randomly selected entire week was used to limit possible selection bias caused by variability in patient load over the different days of the week. Due to referral patterns from other clinics, for example, Thursdays tended to have a higher patient load due to referral from other clinics (Immunology and Rheumatology). Thus one entire randomly selected week would provide a representative sample of the spectrum of diseases which could be generalized to past and future weeks of the same population.

We did not identify any seasonal or monthly variability in the number of patients, thus September was chosen, due to convenience of file retrieval, as the month of the survey.

Ethics committee approval was obtained for a retrospective study.

Files of all patients seen from the 18<sup>th</sup> to 22<sup>nd</sup> September 2006 were retrieved. Data were entered on prepared data sheets (appendix 4). Hence, this is a retrospective analysis of out patients seen at King Edward VIII Hospital Dermatology clinic over one week in September 2006.

#### **4.5 Phase 4**

A booklet was written by the author to assist in the training of PHC nurses on Dermatology. (Appendix 5). All the common skin diseases seen in Phases 1 and 3 were included. Extensive use was made of our archives of colour slides of common dermatoses.

#### **4.6 Phase 5**

A group of twenty primary health care nurses were trained to recognize and treat common skin diseases. The matron or sisters running Primary Health Care clinics at Addington, RKKhan, Prince Mshiyeni, Clairwood, Wentworth and Mahatma Gandhi Hospitals and City Health Clinics, Kwa-Mashu and Umlazi Clinics were invited to send their PHC nurses to this training. A group of twenty nurses responded to my request to attend this training. Training was held over one calendar month. It was conducted in the seminar room at B Block (below the Skin Clinic at KEH). They were given lectures in the early mornings. These lectures were well illustrated with colour slides. The lectures were followed by tutorials daily, on patients recruited from the skin clinic. The content of the course is outlined in appendix 6.

Prior to the training their knowledge of dermatology was evaluated by testing them on colour slides of common skin diseases (appendix 6). The results of this test was discussed.

At the end of the training they were re-tested on essentially the same colour slides (appendix 7). The duration of the tests was three hours each. The results are shown in Chapter 5.

#### **4.7 Data Analysis**

Univariate descriptive analyses were undertaken for patients attending DFR clinics. The prevalence of skin diseases in the first study in 1998 and subsequently in 2006 was determined by population group. Bivariate analysis was undertaken using Chi square to investigate associations of skin disease by sex and population group, and by level of care. The paired t-test was used to investigate changes in nurses' scores pre and post training. The level of significance was taken as  $p < 0.05$ .

## CHAPTER 5

### RESULTS

#### 5.1 SECTION 1

The demographic profile of patients attending public health facilities in the Durban Functional Region of KwaZulu-Natal is provided.

##### 5.1.1 Demographic Profile of Patients at DFR Health Centres (1998)

##### 5.1.2 Distribution by Health Centres

A total of 785 patients were interviewed and examined. Of these 182 (23.2%) were from **hospitals** in the DFR, 223 (28.4%) were from **provincial clinics** and 380 (48.4%) were from City Health Clinics.

##### 5.1.3 Patient Distribution by Race

**Table 5.10: Demographic breakdown of patients attending DFR health centres by Race, Number (%). (n= 785)**

<b>Race</b>	<b>Number</b>	<b>(%)</b>	<b>KZN population (%)</b>
Blacks	515	(65.0)	68.3
Whites	87	(11.1)	8.98
Indians	142	(18.1)	19.9
Coloureds	37	(4.7)	2.82

This allocation of patients compares favorably with the population ratios in KZN by race, which is shown in the last column in the above table as calculated at the last census<sup>28</sup>.

#### 5.1.4 Patient Distribution by Age

**Table 5.11: Age (years) of patients attending DFR health centres, number (%), n = 785**

<b>Age</b>	<b>Number</b>	<b>Percentage</b>
0-9 years	143	18.2
10-19 years	87	11.1
20-29 years	226	28.8
30-39 years	152	19.3
40-49 years	79	10.1
> than 50 years	98	12.5

The age distribution of the patients in the survey matched those in the population of KZN and both formed Gaussian curves.

#### 5.1.5 Patient Distribution by Sex

##### **Sex of patients attending DFR health centres**

There were 75.3% females and 24.7% males. Therefore the female to male ratio was 3:1.

#### 5.1.6 Patient Distribution by Education

**Table 5.12: Education level of patients attending DFR health centres (n=785)**

<b>Education Level</b>	<b>Number</b>	<b>Percentage</b>
No education	170	22
Primary School	202	26
Secondary School	367	46
Tertiary	46	6

Almost a quarter of the patients had received no formal education and slightly over a quarter had attended primary school.

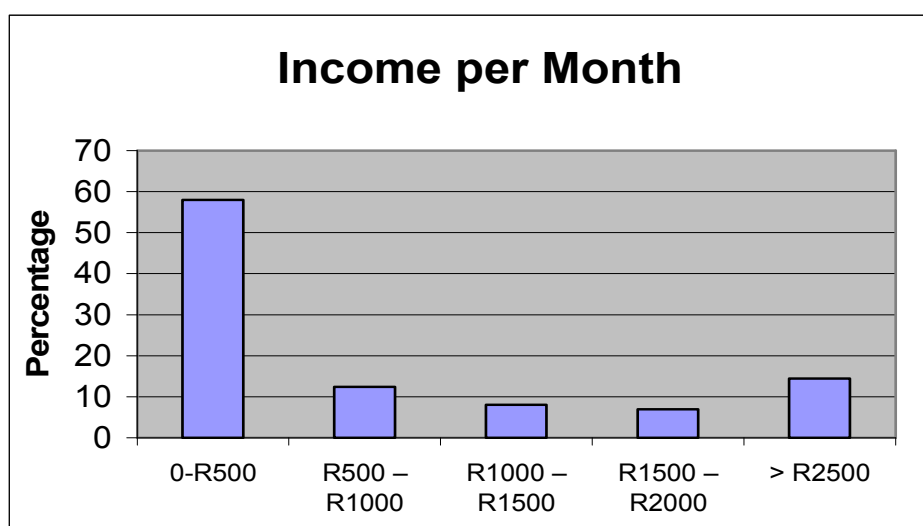
### 5.1.7 Patient Distribution by Occupation

**Table 5.13: Occupation of patients at DFR centres, Number (%) n=785**

Occupation	Number	Percentage
Skilled	64	8
Unskilled	322	40
Professional	37	5
Students	60	8
Unemployed	302	39

Almost 40% of the patients were unemployed and a similar proportion were unskilled. (The current rate of unemployment in the population is 39%<sup>28</sup>).

### 5.1.8 Income



**Fig 5.5: Monthly income levels of patients (%) attending DFR centres, (n=785)**

Almost 60% of the patients had an income of less than R 500 per month. This is not surprising as there is 39% unemployment. Some patients were informally employed as street hawkers, car guards etc.

#### **5.1.9 Overcrowding at Home (n= 785)**

Sixteen percent of patients had a room to themselves, 30% lived two per room, 24% lived 3 to a room, 19% lived 4 to a room and 10% of patients were crowded to more than 5 per room. Thus over 50% of patients lived in crowded circumstances.

#### **5.1.10 Socio Economic Factors**

Seventy four percent of patients had flushing **toilets at home**, 23.4% had pit latrines and 2.6% had septic tanks.

Two percent of patients had less than **one bath per week**, 30.2% had two to three baths weekly, 4.8% had four to five baths per week and 63% had daily baths.

**Soap** was used for bathing by all the patients.

Ninety seven percent of patients had access to tap **water**, 2.5% used river water and 0.5% used water from a well.

Less than 1% of patients wore **clothes** that were very dirty, 2.3% wore dirty clothes, 74% had clean clothes, and 22.6% had very clean clothes. Thus the hygienic state and socio-economic factors of the patients studied was very good.



## 5.2 SECTION II

### Information about dermatological problems

#### 5.2.1 Duration of skin disease

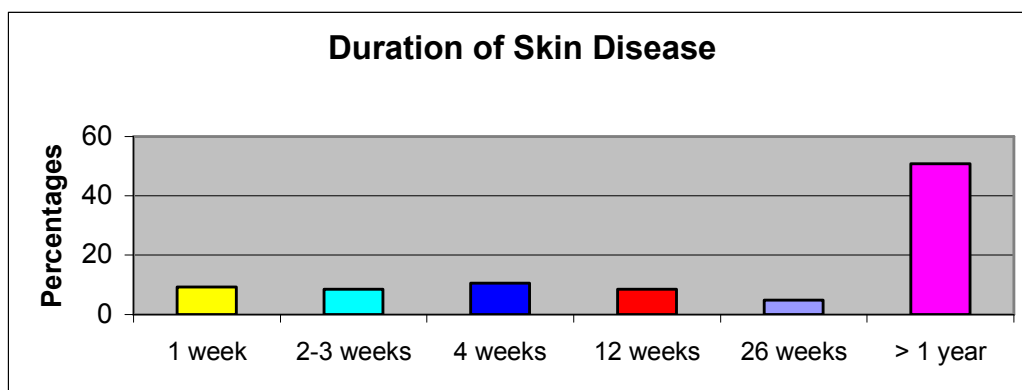


Fig 5.6: Duration of skin disease in patients attending DFR health centres, n=785

The duration of skin disease varied from 1 week in 9.2% to more than one year in 50.8%.

Thus acute skin problems were seen in 28.3%. The majority (64.1%) of patients had chronic skin conditions

#### 5.2.2 Cosmetic appearance

The **cosmetic appearance** of the skin was important to only 52.9% of those interviewed. The rest were not concerned about their cosmetic appearance.

#### 5.2.3 Previous treatment of skin disease:

Of the patients interviewed 51.9% had previous treatment for skin disease, either the current problem, or in the past. Previous treatment was obtained from a **clinic** for 35% patients, from a **private doctor** for 21.9% patients, and **over the counter** medication for 24.3% of the patients.

Nineteen percent of patients had been to the **Inyanga or traditional healer**. Of these 14.2% had been given medication by **mouth or enema**, 9% had **topical** treatment and 12% had **skin scarification**, the rest could not remember what form of treatment was given. The **cost** of the Inyanga treatment was R10 in 3.7%, between R10-R30 in 6.2% and more than R30 in 11.8%. Fifteen percent of those interviewed believed in traditional medicine but 19% had been to an Inyanga. Some patients had been taken by their parents in childhood. Only 8.3% stated that the traditional medicine improved their condition. 84.5% of patients reported that they believed in Western conventional medicine.

#### **5.2.4 Use of Health Facilities**

Fifty one percent of those that were interviewed had used **hospitals**, 31.2% had been to **general practitioners** and 85.9% had been to **local clinics**.

The **distance** of the health facility varied from less than 0.5 km for 44.5% of the patients to more than 15km in 21.1% of cases. In 22.9% of the patients the facility was 5-10km away and for 8.4 % the facility was 10-15 km away.

The **time spent** in reaching the facility varied from less than 30 minutes for 55% of patients to 1 hour for 22.9%. For the rest of the patients the time spent was 30 minutes.

The majority of patients (87.9%) used the particular facility because of the ease of attendance; 69% of patients stated that they were advised to attend the facility.

### 5.2.5 Knowledge of Common Skin Diseases in Different Age Groups

The patient's knowledge or awareness of common skin diseases that occur in the various age groups is tabulated below. The clinical features of the disease were explained to patients who did not know the condition by the diagnostic dermatological term.

**Table 5.14: Patients' knowledge of Common Skin Diseases in Different Age Group**

**a) Patients' knowledge of Common Dermatoses in Babies and Small Children n=785**

<b>Disease</b>	<b>Percentage of patients who knew skin diseases</b>
Nappy rash	86.6
Infantile Eczema	64.1
Craddle cap	56.1
Pityriasis Alba	53.1
Other	14.2

**b) Patients' knowledge of Common Dermatoses in School Children n=785**

<b>Disease</b>	<b>Percentage of patients who knew skin diseases</b>
Bacterial Infections(Sores)	83.5
Eczema	64.6
Chickenpox	71.6
Measles	72.5
Other	15.4

c) **Patients' knowledge of Common Dermatoses in Teenagers n=785**

<b>Disease</b>	<b>Percentage of patients who knew skin diseases</b>
Acne	92.7
Bacterial Infection(Sores)	74.4
Eczema	52.5
Psoriasis	16.5
Other	10.4

d) **Patients' knowledge of Common Dermatoses in Adults n= 785**

<b>Disease</b>	<b>Percentage of patients who knew skin diseases</b>
Eczema	66.3
Psoriasis	42.6
Adult acne	69.8
Tumors	16.4
Other	10.7

e) **Patients' Knowledge of Common Dermatoses in Old age n=785**

<b>Disease</b>	<b>Percentage of patients who knew skin diseases</b>
Asteatosis or dry skin	85.5
Eczema	40.3
Tumors	16.8
Other	11.8

Thus a majority of patients that attend health centres are aware of the common dermatoses seen in the various age groups.

### **5.2.6 Knowledge of Treatment of Skin Diseases in the Past**

Thirty two percent of patients believed that skin diseases now are similar to skin diseases in the past. 12.5% of patients believed that inyangas treated skin diseases and 49.4% believed that nurses treated skin diseases when they were young. Forty two percent of patients had no knowledge regarding who treated skin diseases in the past.

### 5.2.7 Preferred Methods of Health Education

A very large percentage of the population indicated that they would like to learn about skin diseases either from pamphlets brought home from school or through magazines (periodicals), newspapers, television or radio. This is shown graphically in the diagram below:

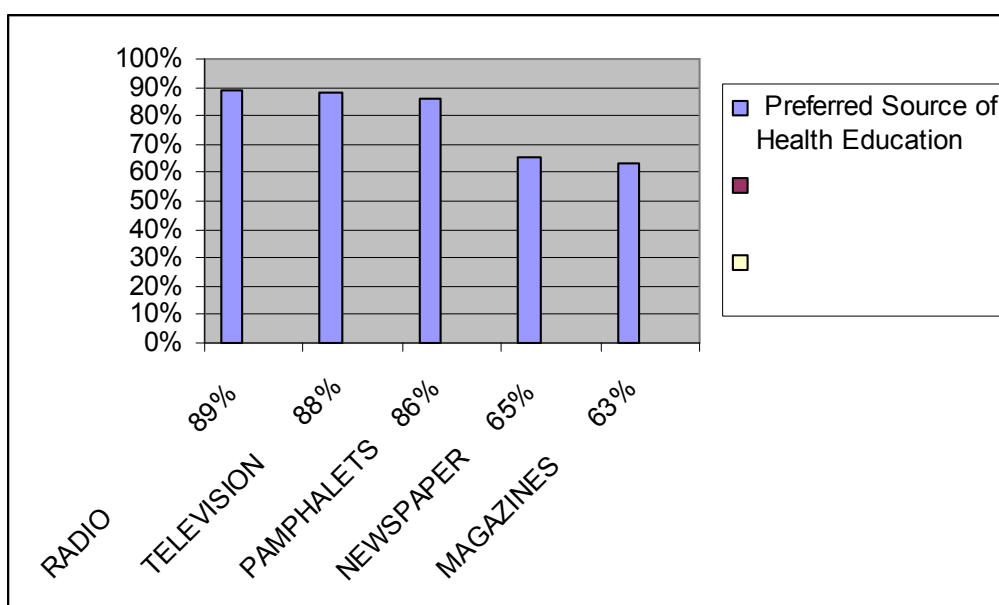


Fig 5.7: Preferred methods of health education in DFR health centres n=785

Thus media is an important tool in health education.

### 5.2.8 Attitude to Health Education

Almost all the patients (98.7%) felt that health education was necessary. Ninety three percent of patients would like to learn from health workers at clinics; 89.3% would take health related advice from doctors and 87.9% from nurses. Other respected

advisors would be teachers for 27.4%, family members for 25.4% and friends 20.8%.

Thus health workers have an important role in health education.

### **5.3 SECTION III**

#### **5.3.1 Other diseases**

Forty nine percent of patients had other diseases besides the skin problems: 3.1% had **hypertension**, 0.8% had **heart disease**, 1.4% had **diabetes** and 43.7% had other reasons for attending the health facility. These varied from **immunisation** for babies, other childhood diseases, **influenza** and **family planning**.

### **5.4 SECTION IV**

#### **5.4.1 Skin Diseases**

More than a total of 150 different skin diseases were seen in the total population. Some patients had more than one dermatological problem.

**Hair and scalp** abnormalities were seen in 8.4% of patients, **oral mucosal abnormalities** (mainly pigmentation) were seen in 4.6% and **nail changes** were seen in 12% of patients.

All skin diseases were diagnosed clinically. **Special investigations** were required in 13%. Of these, **skin biopsy** was deemed necessary in 4.1%, **skin scrapings for KOH** was necessary in 6.1%. The others required **serological tests** like WR and HIV. The tables below list the commonest skin diseases in order of frequency and according to various races.

**Table 5.15: Prevalence of common skin diseases in the DFR Health Care Centres in 1998,  
Number (%) (n = 785)**

Skin Disease	Number	Percent	95% Confidence Interval	
			Lower limit	Higher limit
Eczema/ dermatitis	356	23.5	21.39	25.72
Acne Vulgaris	301	19.9	17.89	21.97
Benign tumours	220	14.5	12.80	16.41
Pigmentary abnormalities	185	12.2	10.62	13.98
Superficial fungal infections	132	8.7	7.36	10.27
Bacterial infections	87	5.7	4.65	7.06
Scabies & other parasitic infections	79	5.2	4.17	6.48
Nail dystrophy	55	3.6	2.77	4.73
Viral Infections	47	3.1	2.31	4.14
Psoriasis	25	1.6	1.09	2.46
Warts	13	.9	0.48	1.50
HIV specific dermatosis	9	.6	0.29	1.17
Drug Rash	7	.5	0.20	0.99
Total	1516	100.0		

Eczema or dermatitis was the commonest skin disease in the patients seen at the selected Health centres. Acne was a close second. Pigmentary dermatoses, which caused much distress in the pigmented patients, was the fourth commonest skin disease seen. However if all the infective conditions were considered together these formed the commonest group of skin diseases (24.2%) seen in the health centres. Psoriasis and drug reactions were amongst the least common skin diseases.

**Table 5.16: Prevalence of Common skin diseases at Health Care Centres in the DFR by Race (n = 785)**

Disease	Black	White	Indian	Coloured	p value
Eczema/ dermatitis	22.1%	15.7%	<b>32.8%</b>	20.7%	p < 0.0005
Acne Vulgaris	<b>22.8%</b>	14.5	13.8%	20.7%	p = 0.015
Benign tumours	9.0%	<b>42.2</b>	13.8%	24.1%	p < 0.0005
Pigmentary dermatoses	13.3%	7.8	12.8%	10.3%	
Superficial fungal infections	8.1%	4.8	<b>12.8%</b>	9.2%	p = 0.017
Bacterial infections	<b>7.5%</b>	3.0	2.6%	3.4%	p = 0.009
Scabies & other parasitic infections	6.1%	3.6	2.6%	4.6%	
Viral infections	<b>4.3%</b>	.6	1.3%	1.1%	p = 0.012
Psoriasis	.4%	<b>4.8</b>	3.6%	2.3%	p < 0.0005
Nail dystrophy	4.1%	3.0	3.3%	1.1%	
Warts	1.2%		0.7%		
HIV specific dermatosis	9%				
Drug Rash	5%				

From the table it is evident that the five commonest skin diseases in each race varies. Amongst Africans, acne was the commonest skin problem. This was followed by eczema or dermatitis, then pigmentary dermatoses, benign tumours and superficial fungal infections. Amongst Whites benign tumours was the most common skin disease, eczema was the next most common problem, then came acne, pigmentary dermatoses and superficial fungal infections. Amongst the Indian patients eczema was the most common skin disease, this was followed by acne, benign tumours, pigmentary dermatoses and superficial fungal infections. Amongst Coloureds, benign tumours was the most common skin problem. This was followed by acne, eczema, pigmentary dermatoses and superficial fungal infections.

5.4.2 It is further noted that eczema and superficial fungal infections were significantly increased amongst the Indians ( $p < 0.0005$  and  $p = 0.017$ ), benign tumours and psoriasis significantly increased amongst the Whites ( $p < 0.0005$ ) and acne, bacterial, viral infections significantly increased amongst the Africans ( $p = 0.015$ ,  $0.009$  and  $0.012$ ).

5.4.3 In respect of sex differences in disease frequencies, eczema, acne, benign tumors and pigmentary dermatoses were significantly more common in females ( $p < 0.005$ ,  $p = 0.013$ ,  $p = 0.006$  and  $p = 0.0037$  respectively) and superficial fungal, bacterial and parasitic infections were significantly more common in males ( $p = 0.007$ ,  $0.020$  and  $0.001$  respectively).

**Table 5.17: Types of Eczema seen at DFR Health Care Centres in total, numbers(%) and prevalence by race (n=785)**

Disease	All races combined		95% Confidence Interval		Percent in each population group			
	Total	Percent	Lower limit	Higher limit	Black	White	Indian	Coloured
Atopic eczema	94	26.5%	21.96	31.36	22.7%	50.0%	28.0%	27.8%
Seborrhoeic eczema	57	16.1%	12.44	20.33	19.4%	15.4%	10.0%	11.1%
Xerosis-Asteatotic eczema	51	9.3%	10.94	18.50	6.2%	11.5%	17.0%	
Intertrigo	33	5.9%	6.56	12.89	7.6%		3.0%	11.1%
Varicose Stasis	33	.85	6.56	12.89	.9%		1.0%	
Eczema-uncategorised	21	14.54	3.78	9.01	13.7%	15.4%	16.0%	11.1%
Keratosis pilaris	19	3.4%	3.33	8.35	2.4%		7.0%	
Solar dermatitis	12	1.7%	1.84	5.97	1.4%		3.0%	
Blepharitis	11	.3%	1.63	5.62	.5%			
Pityriasis alba	8	9.3%	1.05	4.55	9.5%		10.0%	16.7%
Contact dermatitis	7	5.4%	0.86	4.19	7.1%		2.0%	11.1%
Solar dermatitis	6	2.3%	0.69	3.82	2.4%		1.0%	11.1%
Sudaminous eruption	3	2.0%	0.22	2.62	2.8%	3.8%		
Napkin dermatitis	1	2.8%	0.01	1.80	3.3%	3.8%	2.0%	
Total	356	100%						

Atopic eczema was the most common type and it was seen most frequently in Whites, then Indians, Coloureds and was least common in the Africans. On other hand seborrhoeic eczema was most common in the Africans, then Whites, Coloureds and least common amongst Indians.

**These differences were not significant.**

**Table 5.18: Types of Cutaneous tumours seen at DFR Health Care Centres in total, number (%) and prevalence by race (n=785)**

Disease	All races combined		95% Confidence Interval		Percent in each population group			
	Frequency	Percent	Lower limit	Higher limit	Black	White	Indian	Coloured
Cellular naevus	65	29.7%	23.70	36.12	46.5%	17.1%	21.4%	19.0%
Histiocytoma	53	5.5%	18.71	30.40	10.5%		4.8%	4.8%
Epidermal naevus	21	.9%	6.14	14.4	1.2%		2.4%	
Seborrhoeic warts and skin tags	20	24.2%	5.78	13.89	15.1%	27.1%	31.0%	38.1%
Dermatosis Papulosa Nigra	12	9.1%	2.98	9.57	10.5%	1.4%	16.7%	14.3%
Solar elastosis, Lentiginos & Erythema	10	9.6%	2.33	8.45	1.2%	27.1%		4.8%
Solar keratosis	9	4.1%	2.91	7.88		12.9%		
Trichofolliculoma	6	1.8%	1.11	6.12	2.3%		2.4%	4.8%
Chery angioma	4	4.6%	0.58	4.90	1.2%	8.6%	2.4%	9.5%
Sebaceous cyst	4	1.4%	0.58	4.90	2.3%	1.4%		
Syringomata	3	1.8%	0.35	4.26	3.5%		2.4%	
Lipoma	3	.5%	0.35	4.26	1.2%		2.4%	
Parotid tumour	2	.5%	0.16	3.60	1.2%			
Capillary heamangioma	2	2.7%	0.16	3.60	1.2%	2.9%	7.1%	
Strawberry heamangioma	2	.9%	0.16	3.60	2.3%			
Mastocytoma	1	.5%	0.02	2.90			2.4%	
Dysplastic naevi	1	.9%	0.02	2.90		1.4%		4.8%
Xanthelasma	1	.5%	0.02	2.90			2.4%	
Fibrous papilloma	1	.5%	0.02	2.90			2.4%	
Total	220	100%						

Melanocytic or cellular nevi was the most common benign tumour, and histiocytoma was a close second. Both were common in the Africans. Solar keratoses, although classified under benign tumours is a premalignant condition, and in this study was seen in the Whites only.

**Table 5.19: Types of superficial fungal infections seen at DFR Health Care Centres, total, number (%) and prevalence by race (n=785)**

Disease	All races combined		95% Confidence Interval		Percentage in each population group			
	Frequency	Percent	Lower limit	Higher limit	Black	White	Indian	Coloured
Tinea pedis	47	11.4%	27.60	44.46	3.9%	12.5%	25.6%	12.5%
Tinea unguium	15	6.8%	6.72	18.35	2.6%	12.5%	15.4%	
Tinea corporis	15	3.8%	6.72	18.35	3.9%		5.1%	
Tinea cruris	12	8.3%	5.00	15.67	7.8%	12.5%	7.7%	12.5%
Tinea capitis	11	7.6%	4.44	14.76	11.7%			12.5%
Tinea versicolor	10	35.6%	3.90	13.85	33.8%	62.5%	30.8%	50.0%
Candidiasis	9	4.5%	3.36	12.92	5.2%		2.6%	12.5%
Chronic paronychia	6	9.1%	1.86	10.50	13.0%		5.1%	
Maceration toe webs	5	11.4%	1.40	9.06	15.6%		7.7%	
Vaginal thrush	1	.8%	0.04	4.77	1.3%			
Oral thrush	1	.8%	0.04	4.77	1.3%			
Total	132	100%						

Tinea pedis was the most common superficial fungal infection and it was most frequently seen in the Indians: twice as common compared to Coloureds and Whites. Onychomycosis (tinea unguium) was the next most common fungal infection and again it was most frequent in the Indians.

**Table 5.20: Pigmentary disorders seen at DFR Health Care Centres, total, number (%) and prevalence by race (n=785)**

Disease	All races combined		95% Confidence Interval		Percentage in each population group			
	Total	Percent	Lower limit	Higher limit	Black	White	Indian	Coloured
Chloasma	68	36.8%	29.89	44.18	38.7%	23.1%	25.6%	77.8%
Vitiligo	24	10.8%	8.65	18.88	5.6%	30.8%	23.1%	
Guttae Hypomelanosis	20	7.0%	6.89	16.42	2.4%	15.4%	17.9%	11.1%
Secondary leucoderma	17	4.9%	5.60	14.54	4.0%	7.7%	7.7%	
Cafe au lait patches	13	2.7%	3.95	11.98	3.2%		2.6%	
Buccal pigmentation	9	2.7%	2.39	9.33	3.2%		2.6%	
Achromic naevus	6	13.0%	1.33	7.25	12.9%	7.7%	15.4%	11.1%
Ochronosis	6	9.2%	1.33	7.25	13.7%			
Becker's naevus	5	3.2%	1.00	6.53	4.8%			
Linea nigra	5	.5%	1.00	6.53	.8%			
Lentigines	3	.5%	0.42	5.05	.8%			
Naevus of Ota	2	.5%	0.19	4.26	.8%			
Acanthosis nigricans	2	1.1%	0.19	4.26	.8%		2.6%	
Mongolian patches	1	3.2%	0.03	3.44	4.0%		2.6%	
Dermatomal	1	.5%	0.03	3.44	.8%			
Lentigines	1	1.6%	0.03	3.44	.8%	15.4%		
Ash leaf macules	1	.5%	0.03	3.44	.8%			
Acral lentigines	1	1.1%	0.03	3.44	1.6%			
Total	185	100.0%						

Melasma or chloasma is the most common pigmentary abnormality and it is most frequently seen in Coloureds, then Africans and Indians and least common in Whites. Vitiligo, the next most frequent pigmentary abnormality is commonest amongst Whites but causes most distress in the Indians and Africans. It was not seen in amongst Coloureds.



**Table 5.21: Cutaneous bacterial infections in DFR Health Care Centres total, number (%) and prevalence by race (n=785)**

Diseases	All races combined		95% Confidence Interval		Percentage in each population group			
	Frequency	Percent	Lower limit	Higher limit	Black	White	Indian	Coloured
Infected eczema	22	25.3%	16.85	35.95	21.1%	40.0%	37.5%	66.7%
Impetigo	19	21.8%	13.98	32.23	26.8%			
Pyoderma	8	9.2%	4.34	17.81	5.6%	40.0%	25.0%	
Phlectenula conjunctivitis	8	1.1%	4.34	17.81	1.4%			
TB of the skin	6	2.3%	2.83	14.97	1.4%		12.5%	
Secondary syphilis	5	1.1%	2.13	13.50	1.4%			
Folliculitis barbae	4	5.7%	1.48	12.00	7.0%			
Abscess	3	6.9%	0.89	10.45	7.0%			33.3%
Pitted keratolysis	2	3.4%	0.40	8.84	1.4%	20.0%	12.5%	
Folliculitis legs	2	2.3%	0.40	8.84	1.4%		12.5%	
Ecthyma	2	2.3%	0.40	8.84	2.8%			
Cellulitis	1	9.2%	0.06	7.13	11.3%			
Erythrasma	1	4.6%	0.06	7.13	5.6%			
Acute paronychia	1	1.1%	0.06	7.13	1.4%			
Chancroid	1	1.1%	0.06	7.13	1.4%			
Gingivitis	1	1.1%	0.06	7.13	1.4%			
Papulonecrotic tuberculid in HIV	1	1.1%	0.06	7.13	1.4%			
Total	87	100%						

The commonest bacterial infection was infected eczema which was most frequent in the Coloureds, then Whites, Indians and least common in Blacks. It must be remembered that eczema was least common in Africans. Impetigo, another common bacterial infection was seen

only in Africans. Most of the other bacterial infections are also seen most frequently in Africans.

**Table 5.22: Cutaneous Viral Infections seen at DFR Health Care Centres total, number (%) and prevalence by race (n=785)**

Diseases	All races combined		95% Confidence Interval		Percentage in each population group			
	Frequency	Percent	Lower limit	Higher limit	Black	White	Indian	Coloured
Herpes simplex	27	25.0%	32.33	58.31	25.0%		33.3%	
Herpes genitalis	15	6.7%	15.11	38.12	5.8%	100.0%		
herpes zoster	4	45.0%	2.16	17.01	46.2%		33.3%	100.0%
Molluscum Contagiosum	4	6.7%	2.16	17.01	7.7%			
Warts - common	3	1.7%	1.30	14.82	1.9%			
Warts - plantar	3	5.0%	1.30	14.82	3.8%		16.7%	
Warts -genital	1	1.7%	0.09	10.14	1.9%			
Warts - mucosal	1	1.7%	0.09	10.14	1.9%			
Warts - plane	1	5.0%	0.09	10.14	3.8%		16.7%	
Vial exanthem	1	1.7%	0.09	10.14	1.9%			
Total	60	100.0%						

Cutaneous viral infections were also frequently seen in Africans, however non genital herpes simplex was most common in Indians and herpes genitalis was seen in Whites and Africans only. Herpes Zoster was not seen in Whites. Whites did not have any other cutaneous infection except for herpes genitalis.

**Table 5.23: Cutaneous Parasitic Infections seen at DFR Health Care Centres, total, number (%) and prevalence by race (n=785)**

Diseases	All races combined		95% confidence interval		Percentage in each population group			
	Frequency	Percent	Lower limit	Higher limit	Black	White	Indian	Coloured
Scabies -uninfected	36	47.4%	34.46	57.12	46.6%	33.3%	62.5%	50.0%
Scabies -infected	19	22.4%	15.45	35.22	27.6%			25.0%
Scabies -eczematized	13	5.3%	9.39	26.86	6.9%			
Pedicolosis capitis	4	3.9%	1.63	13.15			37.5%	
Pedicolosis pubis	4	1.3%	1.63	13.15	1.7%			
Lichen urticatus	2	17.1%	0.44	9.69	15.5%	50.0%		25.0%
Cutaneous larva migrans	1	2.6%	0.07	7.82	1.7%	16.7%		
Total	79	100.0%						

By far the most common parasitic infection was scabies and it was most common in the Africans. Head lice were seen only in Indians and pubic lice only in Africans.

#### **5.4.2 Skin Diseases and Gender of Patients**

Eczema was significantly increased in males (p<0.005)

Similarly acne is increased in females (p=0.003)

Benign tumors in females (p=0.006)

Pigmentary dermatoses in females (p=0.0037)

Superficial fungal infections in males (p=0.007)

Bacterial infection in males (p=0.020)

Parasitic infections in males (p=001)

The other diseases were not related to the sex of the patient seen.

### 5.4.3 Relationship of Skin Disease & Health Care Centres

Benign Tumors were significantly increased at Hospitals ( $p < 0.005$ ) compared to provincial and city health clinics. This may be because doctors were present at hospitals and definite treatment would be offered there which was not available at clinics.

Scabies and Parasitic infection were significantly increased at City Health Clinics ( $p < 0.005$ ) than at hospitals and provincial clinics were entirely free even before transformation of health and were the first port of call for treatment of minor ailments in which category these infections would fall. Scabies was relatively easy to diagnose and treatment for this would be available at these clinics.

## 5.5 Phase II

In the phase II of the study the health resources in the various centers were evaluated.

Hospitals	7 (includes 3 Private Hospitals)
Provincial Clinics	8
City Health Clinics	16

### Hospitals

**5.5.1 King Edward VIII Hospital** is now a regional hospital. At the timer of the study it was a tertiary hospital but was providing all levels of care.

The population of KZN was aware that all specialist care was available at KEH and patients from all over KZN and northern half of Eastern Cape were referred to KEH for specialist care. The survey was done at the minor ailment clinic (MAC) which was a very busy medical out-patient area of the hospital. The service here was provided by 8 medical officers. None of these doctors had any postgraduate training in dermatology. Patients with severe or extensive skin diseases were sent directly to the Dermatology Clinic where 2 specialists and 4 trainee

registrars provided specialist dermatology service. Mild skin diseases, if diagnosed by the medical officers were treated at the MAC.

All medications for Dermatologic conditions (primary, secondary and tertiary levels) are available at KEH. However potent topical steroids, expensive anti-fungals and tertiary level drugs were restricted to Dermatology only.

### **5.5.2 Addington Hospital**

Polyclinic, where the survey was done, treated 1<sup>st</sup> level patients and patients on chronic medications. The service is provided by medical officers and primary health care nurses. These nurses had PHC training at CWD and Mc Cord's hospitals. However the training was done by a doctor who had no postgraduate training in Dermatology. Some of these nurses had spent 5 to 10 hours at the dermatology clinic at KEH during their PHC training. Mild skin diseases that are diagnosable are treated at the Polyclinic. All other skin diseases were referred to the skin clinic at Addington hospital. These clinics are run by a Dermatology Registrar. However the waiting time for Dermatology appointment at the skin clinic is more than 6 months.

Only 1<sup>st</sup> and 2<sup>nd</sup> level medications are available at Addington Hospital.

### **5.5.3 Clairwood Hospital**

This is a convalescent hospital. In-patients came from KEH medical, surgical, obstetric, gynecology and paediatric wards. The out-patients are first level or primary care patients from local clinics who are on chronic medications and discharged from KEH. Service is provided

by medical officers and PHC nurses. None of these doctors have had any postgraduate training in Dermatology. Primary health care training of Nurses was done at CWD by one of the medical officers who herself had no postgraduate training in Dermatology. (She had not spent anytime in a Dermatology training centre). Most of the dermatological patients are referred to KEH. Only 1<sup>st</sup> level medications are available at CWD.

#### **5.5.4 Hillcrest Hospital**

This is a specialized hospital looking after long term physically and mentally disabled patients in-patients.

Outpatient services are provided to pensioners on chronic medications. Service is provided by nurses. These nurses have no PHC training.

Medications on EDL were available.

#### **5.5.5 Private Hospital**

None of the private hospitals had out-patient dermatology service.

Private Dermatologists provided service to patients on an appointment basis. Permission to do this study was not granted at the 2 hospitals that were chosen by the statistician. The only way private patients could be included in the study was by asking private Dermatologists to fill in the questionnaires while conducting their clinics. To obtain forty to fifty patients required by the statistician three dermatologists who conducted private clinics at Umhlanga, Westville and

Kingsway hospitals obliged. All of them had been in dermatology practice for over twenty years.

#### **5.5.6 City Health Clinics**

These are run by the eThekweni Local Authority and provide preventive and promotive health care, including baby immunization and family planning service. Minor ailments like influenza are also treated. The clinics are run by nurses who have had some primary health care training. Several medical officers conduct the Lancers Road Clinic. Here TB and sexually transmitted diseases are also treated.

The medical officers & nurses attend the annual refresher courses held during the July holidays. One Dermatology lecture is given during these refresher courses and many years the author conducted the Dermatology slide show lasting for ±90 minutes.

Only 1<sup>st</sup> level medications as listed in the Essential Drug List (EDL) are available. Very often items like benzyl benzoate, and topical acne preparations were not available. Therefore even scabies and acne were not treatable. For eczema patients only aqueous cream and 1% hydrocortisone cream were available. Antibiotics like penicillin, doxycycline and trimethoprim/sulphamethoxazole were available. The only antifungals were benzoic acid (Whitfield's ointment) and nystatin cream.

#### **5.5.7 Provincial clinics**

These were run by the provincial department of health. These generally see more patients than the City Health Clinics. The clinics are run by Medical Officers and nurses who have had

primary health care training. The PHC training had been conducted at Clairwood & McCord's Hospitals by a medical officer who had no Postgraduate Dermatology training. Some of these nurses had a five to ten hours of training at the Dermatology clinic at KEH. Some have had PHC at DUT. As mentioned previously the Dermatology component consisted of one to two of a slide show on some common dermatoses. In recent years the time allocated for Dermatology has increased to one morning in the year ( $\pm$  4 hours).

Practical training on patients was lacking. Some PHC nurses now do a University diploma at UKZN. Again only one morning in the year is allocated to Dermatology. The author provides this training, discussing common dermatoses on clinical slides. Again, practical training has been lacking in these courses.

All EDL medications are available at these clinics. The supply is considerably better than that at City Health Clinics. More acute and more severe conditions are seen at these clinics compared to the City Health Clinics.

None of the pharmacists at hospitals or clinic had special training in dermatology. The smaller provincial and city health clinics had no pharmacists. The PHC nurses dispensed medicines from cupboards.

## **5.6 Phase III**

Phase 3 was done to assess the spectrum of skin diseases at the height of the HIV/AIDS epidemic. This was a retrospective review of all the patients seen at the Dermatology clinic at KEH over a week in September 2006.

### **5.6.1 Demographic Findings**

A total of two hundred and fifteen patients were seen in this week. There were 46.9% males and 53.1% females. Africans comprised 73.2% of patients, Indians 21.1%, Whites 4.7% and Coloureds 0.9%.

One hundred and sixty patients were from the DFR; thirty six were from northern KwaZulu-Natal extending from Tongaat to Manguzi, including patients from Nkandla, Nongoma and Melmoth, thirteen were from the south including High Flats and Umtata in the Eastern Cape, the rest were from the Midlands of KwaZulu-Natal. As King Edward VIII Hospital is a tertiary regional hospital all were referred patients: one hundred and thirty one patients were referred from hospitals, forty eight were from DFR clinics, and nineteen patients were referred by specialists and general practitioners in private practice. The referral pathway was not stated in the rest of the files.

### **5.6.2 Clinical findings**

A total of two hundred and ninety nine skin diseases were detected in the two hundred and fifteen patients that were seen in this week. These are tabulated below in descending order of frequency.

**Table 5.24: Prevalence of skin diseases at KEH skin clinic, September 2006, number (%), n=215**

Disease	Number	Percent	95% Confidence Interval	
			Lower limit	Higher limit
Eczema	80	26.8%	21.90	32.22
Psoriasis	31	10.4%	7.26	14.53
Fungal infections	30	10.0%	6.98	14.15
HIV dermatoses	25	8.4%	5.59	12.24
Acne	25	8.4%	5.59	12.24
Viral infections	23	7.7%	5.04	11.47
Drug eruptions	15	5.0%	2.94	8.31
Malignancies	14	4.7%	2.68	7.91
Connective tissue diseases	13	4.3%	2.43	7.50
Bacterial infections	12	4.0%	2.19	7.09
Vitiligo	12	4.0%	2.19	7.09
Autoimmune bullous diseases	10	3.3%	1.71	6.26
Congenital dermatoses	7	2.3%	0.82	4.53
Other	2	.7%	0.12	2.66
Total	299	100.0		

Table 24 shows that at 26.8%, eczemas still remain the commonest group of skin conditions.

Two thirds of these were atopic eczema and 30% were seborrhoeic eczema.

It also shows that 45.6% of all dermatoses consisted of eczema, psoriasis and acne. As a group, skin infections (fungal, viral, bacterial and HIV) accounted for 30.1% of the diseases. Another 21.3% of the dermatoses were due to skin malignancies and auto-immune skin diseases (drug eruptions, connective tissue diseases, vitiligo and auto-immune bullous diseases).

Superficial fungal infections were the third commonest skin problem at 10% in this survey.

There were twelve patients with tinea corporis, eight patients with tinea unguium, five with tinea capitis, two with tinea versicolor and three with candidiasis.

The prevalence of acne was 8.4% in this survey. Only two patients were HIV positive. In HIV/AIDS acne was severe and nodulocystic. In addition these two patients with acne also had hidradenitis suppurativa and required isotretinoin to control the disease.

Viral infections of the skin were seen in 7.7% of patients. HIV/AIDS was seen in 83.3% of patients with viral infections. The commonest viral infection was warts which were seen in eleven patients. Herpes virus infections were seen in six patients, and molluscum contagiosum was seen in five patients. One patient had a pityriasis rosea. All the viral infections in HIV patients were persistent. All the HIV/AIDS patients had more than one viral infection. Often warts, herpes and mollusca were seen in the same patient.

The prevalence of bacterial infections was low at 4% of whom 83% of patients were Africans and 80% of these patients were HIV positive. Most of the infections were mixed streptococcal and staphylococcal. Three cases of cutaneous TB were seen, two of which were due to hypersensitivity to a systemic TB focus.

There were two Africans patients with scabies, both were HIV positive. Drug eruptions were prevalent at 5% in this King Edward survey.

Sixty percent of patients with drug eruptions were Africans; Indians and Whites comprised 20% each. HIV/AIDS was seen in 40% of patients with drug eruptions, who were all Africans.

There were two patients with erythrodermas, three with urticarias, three had erythema nodosum, two had TEN and five had photodermatitis.

Dermatological malignancies were seen in 4.7% of patients in the KEH survey. Fifty percent of these patients were Whites who had solar keratoses, squamous cell carcinoma, basal cell carcinoma and malignant melanoma. Forty two percent of malignancies were Kaposi's sarcoma and these were seen in Africans patients who had HIV/AIDS.

Connective tissue diseases (lupus erythematosus, dermatomyositis, scleroderma) and autoimmune bullous diseases showed a prevalence of 4.3% and 3.3% respectively. Both were common in African patients; 70% and 80% respectively. One third of the patients with connective tissue diseases were HIV positive and only one patient with autoimmune bullous disease was HIV positive.

### **5.6.3 Duration of skin diseases**

The **duration of skin diseases** varied from less than 1 month in 10% to more than 10 years in 11.2%. Majority of patients (55.4%) had their skin disease for less than a year.

### **5.6.4 Severity of disease**

The skin disease was noted to be **severe** in 10.6% of patients and **mild** in only 1.4%. The extent of the disease was **moderate** in the rest of the patients. This classification is arbitrary: if <10% of the body surface area (BSA) is affected the disease is classified as mild, 10% - 30% of BSA involvement would be regarded as moderate and, >30% BSA involvement would be classified as severe.

### 5.6.5 Other diseases

Twelve percent of patients were attending KEH for **other diseases** like diabetes, hypertension, asthma, heart disease etc. The rest attended KEH only for their skin disease.

**Table 5.25: Skin diseases at KEH skin clinic, September 2006, in total, number (%) and prevalence % by race (n=215)**

Diseases	Frequency	Percent	95% Confidence Interval		African	Indian	White	Coloured
			Lower limit	Higher limit				
<b>Eczema</b>	80	26.8	21.90	32.22	80.0%	18.8%	0%	1.3%
<b>Psoriasis</b>	31	10.4	7.26	14.53	32.3%	67.7%	0%	0%
<b>Fungal infections</b>	30	10.0	6.98	14.15	82.8%	10.3%	6.9%	0%
<b>HIV dermatoses</b>	25	8.4	5.59	12.24	100.0%	.0%	0%	0%
<b>Acne</b>	25	8.4	5.59	12.24	70.8%	16.7%	8.3%	4.2%
<b>Viral infections</b>	23	7.7	5.04	11.47	90.9%	9.1%	0%	0%
<b>Drug eruptions</b>	15	5.0	2.94	8.31	60.0%	20.0%	20.0%	0%
<b>Malignancies</b>	14	4.7	2.68	7.91	41.7%	8.3%	50.0%	0%
<b>Connective tissue diseases</b>	13	4.3	2.43	7.50	69.2%	30.8%	0%	0%
<b>Bacterial infections</b>	12	4.0	2.19	7.09	83.3%	8.3%	8.3%	0%
<b>Vitiligo</b>	12	4.0	2.19	7.09	66.7%	25.0%	0%	8.3%
<b>Autoimmune bullous diseases</b>	10	3.3	1.17	6.26	80.0%	20.0%	0%	0%
<b>Congenital dermatoses</b>	7	2.3	1.03	4.97	85.7%	14.3%	0%	0%
<b>Other</b>	2	0.7	0.12	2.66	100.0%	.0%	0%	0%
<b>Total</b>	299	100.0			73.8%	20.4%	4.8%	1.0%

This table shows that psoriasis, a chronic dermatosis, was the second most common problem at 10.4%. As seen in Table 25 the majority of these patients were Indians at 67.7%, the rest were Africans.

Page 110, Table 5.24 lists the frequency of 299 different skin diseases detected in the 215 patients' files surveyed in Phase 3 of this study.

Some patients had more than one dermatosis; some had as many as seven different types of dermatoses. Almost 43% of the patients were HIV positive (Table 5.26). In these patients some dermatoses were specifically due to HIV viz HIV dermatoses (PPE, EF), opportunistic fungal infections, viral infections (Herpes simplex, zoster, molluscum), erythrodermic psoriasis, seborrhoeic dermatitis and severe drug eruptions. PPE, Ef are seen only in HIV. All the other skin diseases listed are coincidental but are more severe and persistent in the HIV patients.

This anomaly can be explained as follows: this was a retrospective survey of files of all patients seen during one week in September 2006. These patients were seen by Registrars and Consultants working at the Dermatology Clinic, KEH. All clinical diagnoses were noted. "HIV dermatoses" referred to diagnoses made by these doctors and usually referred to the papulo-pruritic eruption (PPE) and eosinophilic folliculitis (EF) which are usually regarded as "specific" HIV dermatoses in contrast to other diagnoses like Kaposi Sarcoma, opportunistic fungal infections (cryptococcosis, histoplasmosis), psoriasis, seborrhoeic eczema, etc. In these patients HIV was suspected and the test done, after counseling and obtaining consent. Sometimes a skin biopsy would be done to confirm the diagnosis and exclude papulonecrotic tuberculid which sometimes resembled these conditions. It seems that in four cases the diagnosis was wrong and the HIV test was negative. These patients may have had papular

urticaria, bacterial folliculitis or acne which also resembles these conditions. Most patients are shown to consultants but sometimes a registrar would not call a consultant for help. The more experienced the registrar, the better the clinical acumen and more accurate the diagnosis.

**Table 5.26: Prevalence of HIV at KEH skin clinic September 2006, total, number (%) (n=215)**

Disease	HIV Negative	95% Confidence Interval		HIV Positive	95% Confidence Interval		Total
		Lower limit	Higher limit		Lower limit	Higher limit	
Eczema	34(66.7%)	20.15	36.56	17(33.3%)	11.43	28.22	51
Psoriasis	17(77.3%)	8.49	21.49	10(22.7%)	5.62	19.51	22
Fungal infections	13(56.5%)	5.97	17.72	10(43.5%)	5.62	19.51	23
HIV dermatoses	4(17.4%)			19(82.6%)	13.19	30.61	23
Acne	17(89.5%)	8.49	21.49	2(10.5%)	0.38	8.38	19
Viral infections	3(16.7%)	0.63	7.50	15(83.3%)	9.71	25.79	18
Drug eruptions	5(45.5%)	1.51	9.70	6(54.5%)	2.90	15.30	11
Malignancies	5(62.5%)	1.51	9.70	3(37.5%)	0.85	9.91	8
Connective tissue diseases	8(66.7%)	3.06	12.82	4(33.3%)	1.40	11.38	12
Bacterial infections	2(20.0%)	0.28	6.34	8(80.0%)	4.10	11.38	10
Vitiligo	7(87.5%)	2.52	11.80	1(12.5%)	0.06	6.76	8
Auto immune bullous diseases	6(85.7%)	2.00	10.76	1(14.3%)	0.06	6.76	7
Congenital dermatoses	2(66.7%)	0.28	6.34	1(33.3%)	0.06	6.76	3
<b>Total</b>	<b>123(57.2%)</b>			<b>92(42.8%)</b>			<b>215</b>

In Table 5.26, 42.8% of the patients had HIV/AIDS, but 17.4% (4 patients) of dermatoses clinically diagnosed as HIV dermatoses turned out to be HIV negative.

This anomaly can be explained as follows: this was a retrospective survey of files of all patients seen during one week in September 2006. These patients were seen by Registrars and Consultants working at the Dermatology Clinic, KEH. All clinical diagnoses were noted. “HIV dermatoses” referred to diagnoses made by these doctors and usually referred to the

papulo-pruritic eruption (PPE) and eosinophilic folliculitis (EF) which are usually regarded as “specific” HIV dermatoses in contrast to other diagnoses like Kaposi Sarcoma, opportunistic fungal infections (cryptococcosis, histoplasmosis), psoriasis, seborrhoeic eczema, etc. In these patients HIV was suspected and the test done, after counseling and obtaining consent. Sometimes a skin biopsy would be done to confirm the diagnosis and exclude papulonecrotic tuberculid which sometimes resembled these conditions. It seems that in four cases the diagnosis was wrong and the HIV test was negative. These patients may have had papular urticaria, bacterial folliculitis or acne which also resembles these conditions. Most patients are shown to consultants but sometimes a registrar would not call a consultant for help. The more experienced the registrar, the better the clinical acumen and more accurate the diagnosis.

Less than 10% of atopic eczema patients had HIV/AIDS whereas 54.2% of seborrhoeic eczema patients had this infection. Of the atopics 73.6% were Africans, 24.5% were Indians and 1.9% Coloureds. In the seborrhoeic eczema group 95.8% were Africans and 4.2% Indians.

Table 26 shows that viral and bacterial infections were significantly increased in patients with HIV infection. Also the specific HIV disease e.g.s papulo pruritic eruption and eosinophilic folliculitis correlated well with the patients serology of HIV. Other diseases like acne, psoriasis, vitiligo and auto immune bullous diseases did not correlate with HIV.

#### **5.6.6 Further analysis**

Of these data showed that all bacterial, viral, and fungal infections were significantly increased in HIV patients ( $p < 0.005$ ). Seborrhoeic eczema was also significantly increased in HIV infected patients as was Kaposi’s sarcoma. Except for one Indian all the HIV positive patients

were Africans. **Analysis also showed that there was a statistically significant difference in disease proportion by race. Only psoriasis was significantly increased in Indian patients.**

Statistical analysis also showed a highly significant association between diseases and HIV infection. Most HIV patients had several dermatoses: some had as many as seven different cutaneous manifestations of the disease.

## **5.7 Phase IV**

A training manual of common skin diseases was developed (Appendix 5) by the author.

Short texts on all the common dermatoses seen in Phases 1 and 3 were written. All the colour slides of common dermatoses are included.

## **5.8 Phase V**

### **Implementing and Evaluating a Dermatological Training Module**

AIM: The main aim was to train PHC nurses to recognize and treat common dermatoses. The overall aim was to reduce the long waiting time for patients requiring dermatological appointments. Many patients that attended the Dermatology clinic at the Teaching hospital were inappropriately referred as many had minor skin complaints. They were referred from PHC clinics, district hospitals and GP's because of the inability of the referring person to diagnose and treat common dermatoses. Because of the long waiting time for an appointment, many patients with extensive or acute dermatoses turned up at the skin clinic without appointments. These had to be seen as urgent cases without appointments because of the severity of the rash. This made a mockery of the appointment system. Hence it was imperative to train PHC nurses (and later OPD doctors at District hospitals and general practitioners) to recognize and treat common skin problems.

## **METHODS**

A letter of invitation to a free training on common dermatoses was faxed to the managers of all the large PHC clinics and hospitals in the eThekweni area. The nursing managers were asked to identify the PHC nurse (who would benefit from this training) at their clinic or hospital to attend this training course.

Twenty professional nurses participated in the training. One nurse had to leave because of some family crisis. They were from Addington Poly-Clinic, RK Khan, Wentworth, Prince

Mshiyeni and Mahatma Gandhi hospitals, KwaMashu Poly Clinic, Phoenix Health Centre, Kwa Dabeka Clinic and City Health Clinics. Their names were sent by the nursing manager of each hospital or clinic.

The programme and contents of the course of training is outlined in appendix 6. The duration of the training was over one calendar month and it was conducted in the seminar room in the new Block of KEH. The nurses were evaluated before and after the training.

They were given lectures in the early mornings. The lectures were informal with much discussions during them. The lectures were well illustrated with many clinical photographic slides from our departmental archives. The rest of the morning was spent on clinical teaching on patients with common dermatoses. Six to eight cases were chosen by me from our outpatient clinic. The nurses clerked the patients in groups of twos or threes. The patients were then discussed with the whole group. Because the class was small (19 nurses) and the course was held over 4 weeks the author got to know each participant quite well.

In the afternoons they were shown some procedures like cryotherapy, wound dressings, wet wraps, ointment application, podophyllin application to warts etc. They were also taken to the ward to show the spectrum of inpatients. Mr Harry Basdeo from 3M Pharmaceuticals conducted a workshop on “Management of Wounds and Ulcers”. At the end of the course an examination was held. This consisted of a three hour examination of clinical slides (Appendix 7). A similar test was given prior to the teaching (Appendix 8). The results of the tests are shown in Table 27.

## RESULTS

**Table 5.27: Assessment pre/post training for PHC Nurses. Number (%) (n=20)**

<b>PRE TRAINING SCORE 03/10/2006</b>	<b>POST TRAINING SCORE 30/10/2006</b>	<b>% Improvement Pre and Post training</b>
115.5 (46.57)	251 (84.79)	38.22
64 (25.81)	225 (76.01)	50.02
92 (37.10)	214.5 (72.47)	35.37
58 (23.39)	210.5 (71.11)	47.72
64 (25.81)	208 (70.27)	44.46
30 (12.10)	201 (67.91)	55.81
99 (39.92)	194 (65.54)	25.62
99 (39.92)	192.5 (65.03)	25.11
50.5 (20.36)	183.5 (61.99)	41.63
63 (25.40)	182 (61.49)	36.09
52 (20.97)	171.5 (57.94)	36.97
51(20.56)	169 (57.09)	36.53
36.5 (14.72)	167.5 (56.59)	41.87
50 (20.16)	151 (51.01)	30.85
27.5 (11.09)	151 (51.01)	39.92
52 (20.97)	140 (47.30)	26.33
50.5 (20.36)	132 (44.60)	24.24
47 (18.95)	128.5 (43.41)	24.46
40 (16.13)	121.5 (41.05)	23.92
47 (18.95)	ABANDONED COURSE	
<b>1188.5 (Total)</b>	<b>3394 (Total)</b>	
<b>57.5 (23.2%) (Mean)</b>	<b>178.6 (59.8%) (Mean)</b>	<b>36.66% Mean improvement</b>

One person abandoned the course due to a family crisis. All improved their score 200% to 300%. Some as much as 400% to 500%. Four PHC nurses obtained less than 50% correct answers post training. Prior to training all obtained less than 50% score. There was a 36.6%

improvement in the scores. According to the statistician there was a highly significant improvement in the nurses' score after the training ( $p < 0.005$ ).

## **DISCUSSION**

The nurses were receptive to the teaching. This is evident in their test scores. Prior to the training all nurses obtained below 50% in the test scores. In fact the majority of the nurses obtained below 25%. After the training only four nurses obtained below 50%. The majority had very good scores. There was a statistically significant improvement in the dermatological knowledge of the nurses after the training ( $p < 0.005$ ).

Thus PHC nurses can be trained to recognize and treat common skin diseases. This will help to alleviate the many patients waiting for prolonged time for a dermatological appointment.

An important aspect of this training is to reassess them perhaps a year later to determine how much of Dermatology was remembered. This will enable one to reschedule a training session. Ideally the PHC nurses (and doctors) need to attend refresher courses on Dermatology to renew and update their knowledge. This will be recommended to the DOH.

The training was of short duration and the students were not invited to critique the course and provide comments to improve further such training. There was no formal follow up and evaluation to determine any possible gaps in the knowledge and retention of information gained at the course.

The one off test would not indicate whether the participants would implement the knowledge gained to the benefit of the patients. The PHC management were not approached to encourage

such in-service training. However the training institutions who sent their representatives, and other PHC nurses, have requested that such training be conducted annually.

**Limitations of the training course**

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## CHAPTER 6

### 6.1 DISCUSSION

This study provides prevalence data on dermatological problems in eThekweni where a third of the KZN population resides.

In most countries the practice of dermatology and of many other medical specialities, is based on the diagnosis and treatment of individual patients, either in private practice, if they can afford it, or in state hospitals<sup>1,3,12,13</sup>. While this provides adequate cover for some patients with skin disease, the poor or those who live in rural areas where specialist medical care is not available receive only minimal attention<sup>1,3,12,13</sup>. The trained dermatologists in most developing countries, as in South Africa are generally based in cities<sup>1,2,3,12,13</sup>. As the findings of Phase 2 demonstrated in KwaZulu-Natal, the largest and most populated province, the majority of dermatologists are in cities: only five are in full time state service in the teaching hospital and the rest are in private practice. The majority of rural patients therefore rely on community medical officers in rural hospitals and primary health care nurses in clinics. As described previously, the dermatological training of these doctors and nurses has been minimal. Even in urban areas, patients with skin diseases wait for many months to see a dermatologist. We thus see that there is a major imbalance between supply in terms of expertise and demand for appropriate management.

Skin diseases are ubiquitous and prompt many people to seek health care. They cause substantial disability and misery and yet are neglected by many health authorities<sup>12,13</sup>. Also it must be remembered that many skin diseases are easily treatable and it is possible to teach primary health care providers to diagnose and treat the commonest dermatoses<sup>3,12,13</sup>.

In this study a total of 785 patients were surveyed for skin diseases and a total of 150 different skin diseases were noted; some patients had more than one dermatosis. Admittedly some of the skin diseases were banal and some were conditions that could not be improved with currently available treatment. However, there were many conditions that could be treated and prevented.

The bulk of the dermatoses seen comprised less than ten diseases and 24.2% of these were infective in nature. As a group, infections of the skin comprised the most prevalent conditions. This compares with prevalence of infections in developing countries<sup>3,6,12</sup>. Eczema and acne are the next most prevalent conditions and this is found in developed Western countries<sup>49</sup>. This clearly shows the mixed first and third world conditions we see in this mixed population of our region.

The study sample was representative of the DFR population in terms of the demographic profile of the last census<sup>28</sup>. There was a fair distribution of patients from all the randomly selected health centers in the DFR. The busiest health centers were the provincial clinics and the general outpatients at KEH, CWD and Addington hospitals. Twice as many city health clinics were therefore selected by the statistician to get a fair representation of this category of patients.

The proportion of Whites and Coloureds seen at the health centers were slightly more than their relative proportion in the population. This may be because most of the Whites that attend these low-fee health centers are pensioners and unemployed. Many of the Coloureds were scholars and mothers who had brought their babies for immunization.

This study also showed that health provision for Dermatology is poor especially in the rural areas where there are no dermatologists at all. PHC nurses have to deal with the bulk of dermatological conditions as only referred patients are allowed to come to the teaching hospital where these Dermatologists practice. It is therefore evident that to improve Dermatological services one has to target the PHC nurses. Therefore these nurses were trained to recognize and treat the common dermatoses that were detected in this prevalence study.

The age distribution of patients in this DFR study was similar to the age distribution of the population in the last census<sup>28</sup> and formed a Gaussian curve. The childhood skin diseases seen in the DFR study were similar to childhood dermatoses seen in other prevalence studies of children<sup>5,9,11,47</sup>.

In the last census females outnumbered the males: 53.2 % females against 46.8 % males<sup>28</sup>. However in this study there were three times as many women as men. This could be explained by the fact that men were at work, women were caregivers of the babies that came for immunization and women also came for the family planning services that is offered free at the city health clinics.

Almost a quarter of the patients had received no formal education and slightly over a quarter had only attended primary school. The figures are very similar to those obtained at the last census<sup>28</sup>. This is probably because education was not compulsory during the apartheid regime. Now that education up to the age of 16 years is compulsory, the educational level of the population will improve. This will hopefully improve the health of the population.

In this study the proportion of the patients interviewed who were unemployed or doing unskilled work was very close to those published by Statistics SA<sup>28</sup>.

According to the last census the average household consisted of 3.93 persons<sup>28</sup>. Amongst the patients in this study there was a larger proportion of Africans and Indians and a lower proportion of Whites and Coloureds. The latter two groups are more affluent and had less overcrowding. Many Africans in the DFR live in small informal houses and overcrowded city apartments. This explains the overcrowding in 29% of patients in this study.

In the DFR health centers most of the patients interviewed had flushing toilets. Some of these are the chemical toilets supplied by the municipality at informal settlements. According to the last census, 1% of eThekweni population had no toilets and 0.3% had bucket toilets<sup>28</sup>. The majority of patients (63%) had daily baths and all used soap for bathing. Piped water is available in most informal settlements in eThekweni. According to the last census, only 1% of the population in eThekweni depended on river, rain or stagnant water<sup>28</sup>. Thus the hygienic state and socio economic factors of the patients studied was very good, and there was a low prevalence of diseases due to poor hygiene.

The majority of skin diseases are chronic. This would include diseases like eczema, acne, tumors, pigmentary problems and psoriasis. The acute dermatoses would be the infective conditions which formed just over 24% of the dermatoses. Thus the patients' recall of the duration of their diseases fitted in closely to our prevalence figures.

The cosmetic appearance of the skin was important to almost half of the patients. This is especially so when the exposed areas of the skin are affected as in acne, psoriasis and pigmentary problems of the face<sup>55,57</sup>. Quality of life studies show that visible skin disorders have a severe psychological impact on patients<sup>55,56,57</sup>. The other dermatoses would cause itching, pain and discomfort.

Almost 52% of patients had previously sought treatment for their skin disease. These would be mainly for chronic diseases. Only 22% of patients had been to a private doctor. This is in keeping with our finding of the relatively low income of the majority of patients (80% of patients had an income of less than R1500 per month). The majority had been to a free clinic, again confirming their low household income. Just under a quarter of those interviewed had bought medicines over the counter indicating the role of pharmacies in providing for health needs. Pharmacists are another group of health workers who need to be educated about common skin diseases. Nineteen percent of patients had been to a traditional healer, but only 8.3% believed in their efficacy. This emphasizes the importance of Western medicine in providing for the health needs of our community. However even in affluent societies alternative or complementary medicines are used by persons suffering from chronic diseases<sup>58</sup>. In this study in the UK over a third of the patients with skin diseases, mainly chronic conditions sought alternative, non-conventional treatment.

The majority of patients had been to their local clinics. It is encouraging to note that the vast majority of patients would use their local clinics. The distance of these clinics from their homes was less than half a kilometer for many patients and was less than ten kilometers for a quarter of patient<sup>5</sup>. The time spent in travelling to the clinics was less than half an hour for the

vast majority. The clinics are therefore very accessible for most patients. The longest time spent was one hour and this was for traveling to KEH or BSC. Patients traveled this long distance because medications for their chronic diseases were available at those centers. It is also encouraging to note that the majority of patients attended a particular facility because of ease of attendance. A very large percentage also attended the facility because they were advised to. It is therefore extremely important to train PHC nurses to recognize and treat common skin problems in the community. Hence the importance of making PHC work effectively.

A vast majority of patients had some knowledge of common skin diseases in the various age groups. This indicates that a dermatological health education programme targeted to the community could play an important role in decreasing common dermatoses by teaching about prevention, seeking early treatment and enhancing compliance.

An overwhelming majority of patients preferred radio, television and pamphlets as a means of health education. It is well known that radio plays a very important role in health education. All radio stations have frequent health programmes with a wide listenership. Thus media is an important tool in health education.

Almost all the patients felt that health education was necessary and an overwhelming majority indicated that they would like to learn from health workers at clinics. Thus health workers at clinics have an important role in health education.

Almost half the patients interviewed had come to the clinic for other diseases. Some had come to get their medication for chronic diseases like hypertension, heart disease or diabetes, baby

immunisation, family planning, other childhood diseases or influenza. Thus it seems that just over half of the patients came for their skin diseases. It is therefore extremely important to teach primary health care workers about common skin diseases.

Of the patients seen some patients had more than one dermatological condition. Some conditions were banal like striae or benign naevi but many were distressing to the patients and required treatment. Most of the conditions fell into less than ten different diseases which are easily treatable<sup>3,12,13</sup>. These are the conditions which have to be taught to PHC nurses, doctors and family practitioners.

These common diseases include eczema (atopic and seborrhoeic), acne, benign tumors (melanocytic naevi, seborrhoeic warts), pigmentary diseases (melasma, vitiligo), superficial fungal infections (tineas, candida), bacterial infections (impetigo), viral infections (herpes, warts), scabies and skin cancers. Although very few skin cancers were seen in this study, they are preventable and curable if detected early<sup>33</sup> and therefore PHC workers need to learn about them. Skin cancers occur mainly in White patients and Albinos. The proportion of Whites in this study was small.

The top three skin conditions in this survey were the same as in Hartshorne's survey done in the five academic dermatology departments in Johannesburg<sup>26</sup>. If all the infective conditions of the skin are considered together, they made up the most prevalent skin diseases in this study (Phase 1). In Hartshorne's study all the skin infections taken together were the second most prevalent conditions, eczema being the most prevalent.

Comparison of this study with others is difficult because the methodologies were different. Most of the epidemiological studies including the South African ones were retrospective surveys of dermatology department records, not of general health centers. Some studies were true prevalence studies of the population. The latter would give true prevalences of diseases in the population. These are summarized in Table 2.7<sup>32</sup>. The author had initially planned to conduct a population study but was advised against it because of the high costs and high prevalence of violence in KZN.

The commonest skin diseases amongst the four races in the DFR varied. Acne had the highest prevalence in Africans, whilst eczema was most prevalent in the Indians and benign tumors were most prevalent in Whites, and in the Coloured population. In Hartshorne's study, eczema was most prevalent in Coloureds, then Africans and Indians and was least prevalent in Whites (18%) in whom benign tumours was the most prevalent dermatosis (30%). In her study acne was the second most common dermatosis in Africans, then Coloureds and Indians. Benign tumours increase with age and sebaceous gland problems like acne are common in the younger patients<sup>41,42</sup>.

In the September survey (Phase 3) eczema was again the most prevalent condition with psoriasis the next most prevalent condition. The three chronic conditions (eczema, psoriasis and acne) made up 45.6% of conditions and all the infective conditions together accounted for 30% of the diseases seen. Thus infections had increased in the decade since the first survey. This was largely due to the increasing prevalence of HIV<sup>59-64</sup>. Bacterial and viral infections were especially prevalent in the HIV positive patients. The majority of HIV conditions were infective in nature. It is well known that all skin infections are more severe and persistent in

HIV as the CD4 count falls with progressive disease<sup>29,30,31,33,34,61,62,63</sup>. Even the noninfective conditions like seborrhoeic dermatitis and psoriasis become worse, extensive and are resistant to treatment<sup>30,31,33,62,64</sup>.

The high prevalence of acne in our study, (highest prevalence in Africans and second highest in the Coloureds) can be attributed to the increasing use of cosmetics especially moisturisers and topical steroids used to treat pigmentary abnormalities<sup>26</sup>. The latter are sold by street vendors<sup>65</sup>. Acne is also aggravated with progestogenic contraceptives which are commonly used in family planning clinics. The parenteral progestogenic contraceptives are cheap and cost effective and are recommended especially to women from low socio-economic background as compliance with oral contraceptives is poor amongst them. In the September 2006 survey (Phase 3) at the dermatology department at KEH, the prevalence of acne was the fourth highest affecting 8.4% of the patients. The vast majority (70.8%) of these were Africans. Only ten and half percent of these were HIV positive. Thus the majority of patients with acne did not have HIV. However those that were HIV infected had severe nodulo-cystic acne with hydra adenitis suppuritiva.

Eczema was the most prevalent disease in both surveys of the study. In Hartshorne's study<sup>26</sup> eczema was also the most prevalent. In both phases atopic eczema was more prevalent than seborrhoeic eczema. Urbanisation is said to increase the prevalence of atopic eczema<sup>66</sup>, which explains the increasing prevalence. In Hartshorne's study seborrhoeic eczema had a higher prevalence than atopic eczema and was almost twice as common. This was attributed to the HIV/AIDS epidemic. Seborrhoeic eczema occurs in 20-40% of HIV positive patients<sup>34</sup>.

The pigmentary dermatoses (especially vitiligo and melasma) are most distressing to the brown and black skinned individuals. In Hartshorne's study<sup>26</sup> melasma was most prevalent in the Africans, then Indians and Coloureds and was not seen in Whites. In Phase 1 of this study melasma was most prevalent in Coloureds, then Africans and Indians and lowest prevalence in Whites. Overall the prevalence of melasma was 1.15% which is lower than Hartshorne's figure of 1.42%. This may be because ours was an incidental finding whereas in Hartshorne's study those patients had gone to the Dermatology departments for the disease. It was the presenting skin problem in her study which was done in a tertiary centre in Johannesburg. Vitiligo and leucoderma were most common in Indians both in this and in Hartshorne's study<sup>26</sup>. Cosmetic ochronosis caused by skin lightening creams was seen in only six patients who were all Africans. This is because the high concentration of hydroquinone which causes this condition has been limited to 2% in cosmetics<sup>67</sup>. This legislation was passed at the request of dermatologists who saw far too many patients with this disfiguring, untreatable condition in the 1970's and 1980's<sup>68,69</sup>.

Superficial fungal infections were most prevalent in the Indian population both in this study and Hartshorne's study<sup>26</sup>. The prevalence of superficial fungal infections was higher in the DFR study (8.7%) compared to the Johannesburg study (5.78%)<sup>26</sup>. This is probably because of the higher heat and humidity of eThekweni. It is well known that fungi thrive in warm, moist environment and fungal infections have a higher prevalence in this type of climate<sup>7,9,32,37,38,39,40</sup>. Tinea pedis was the commonest fungal infection both in this study and the Johannesburg study<sup>26</sup>, and again, the highest prevalence was amongst the Indians. A study done in Durban in 1998<sup>70</sup> showed that Muslim (Indian) men, attending mosques regularly had a significantly high prevalence of tinea pedis (85%). This was attributed to the spread of

fungi organisms in the communal ablution areas and prayer carpets of the mosques. Fungi survived in the moist humid conditions and closed shoe wearers were the most prone to this infection<sup>70</sup>.

In Phase 3 of the study fungal infections were the third most prevalent dermatoses affecting 10% of the patients. The prevalence was highest in Africans (82.8%). The majority were HIV positive. All infections are common in immunosuppressed individuals<sup>34,59,60</sup>. The infection affects skin, hair and nails and becomes more persistent with worsening of HIV/AIDS<sup>34,61,63</sup>.

Bacterial infections were the sixth most prevalent skin condition in this study which the highest prevalence was in Africans. In developing countries skin infections account for a major proportion of skin disorders and are a good indicator of socio-economic conditions, lack of hygiene and overcrowding<sup>1,2,13,53</sup>. This prevalence is similar to Hartshorne's study<sup>26</sup> and reflects the better socio-economic conditions in these urban populations. In Phase 3, bacterial infections were again not very common and came tenth on the list of common dermatoses. The prevalence was highest in Africans (83.3%) and 80% of these were HIV positive, again confirming that infections are highly prevalent in this immunosuppressive condition<sup>34,61,63</sup>.

Viral infections were the eight most prevalent conditions in Phase 1 of the study and the highest prevalence of this group of infections was in Africans. However in Phase 3 the viral infections had increased and comprised the fifth most prevalent condition. Over 90% were in Africans and 83.3% were in HIV positive patients. Most viral infections, especially herpes zoster, simplex and genitalis, warts and mollusca are very prevalent in HIV/AIDS<sup>31,34,61</sup>. The herpes infections are often recurrent and warts and mollusca are persistent and difficult to

eradicate<sup>31,34,63</sup>. The prevalence of viral infections was higher in this study in comparison to Hartshorne's study because KZN has a higher prevalence of HIV/AIDS<sup>54</sup>. Warts were more prevalent in White children but with the increasing prevalence of HIV in Africans this disease has become increasingly more prevalent in Africans<sup>61,63</sup>. Many patients with HIV had several viral infections at the same time i.e. warts, mollusca and herpes simplex were often seen in the same patient.

Scabies, a disease of overcrowding and poor socio-economic status<sup>4,35,53</sup>, was the seventh most prevalent disease in Phase 1. The prevalence of scabies was also low in Hartshorne's study<sup>26</sup>. Scabies epidemics follow a natural cyclical pattern which has been ascribed to "herd immunity"<sup>5,71,72</sup>. In the author's experience high prevalence of scabies was seen after the floods in the early eighties and during the unrest in the early nineties. More than ten cases were seen daily at the KEH dermatology department.

Psoriasis had a low prevalence in phase 1 but in Phase 3 it was the second most common skin disease and the prevalence was highest in Indians (67.7%). The prevalence is high because psoriasis is a chronic, incurable disease and a fair proportion of patients seen at KEH are Indians (21%). Only 22.7% were HIV positive. This is statistically significant ( $p < 0.05$ ). In Hartshorne's study<sup>26</sup>, psoriasis was most prevalent in Indians. In her study psoriasis was the seventh most prevalent dermatosis but amongst the Indians it was the fourth commonest dermatosis. This is probably due to genetic factors. However the exact pattern of inheritance is not known. Although the prevalence of psoriasis is low in Africans<sup>19,25,26</sup> many cases of psoriasis are unmasked by HIV/AIDS and severe, unstable and erythrodermic psoriasis are seen in these patients<sup>59,62,63,64</sup>.

Drug eruptions had increased in prevalence at Phase 3. It is now common knowledge that HIV infected patients are prone to drug reactions – both because of the many drugs they are taking for the various infections and as a result of immune reconstitution syndrome<sup>34,59,62,63</sup>. The drug reactions in HIV infected patients are usually of the severe type.

Very few dermatological malignancies were seen in Phase 1 and only nine cases of solar keratosis, a premalignant condition were seen. This may be because patients know that treatment for malignancies is only available at tertiary centers. Skin cancers caused by ultra violet light (UVL) are seen mainly in Whites and Albinos<sup>33</sup>. Under half the malignancies were Kaposi's sarcoma and these were only in African patients who had HIV/AIDS. This is the commonest cancer in HIV/AIDS<sup>34,59,61,63</sup>.

In Phase 1 very few connective tissue diseases (lupus erythematosus, dermatomyositis) and autoimmune bullous diseases) were seen. This is because the severe autoimmune systemic diseases are treated only at tertiary centers. In Phase 3 the prevalence of these was 4.3% and 3% respectively. Both were common in African patients, 70% and 80% respectively. One third of connective tissue diseases were HIV positive and only one patient with autoimmune bullous disease had HIV. This again highlights the impact of HIV on skin diseases<sup>59</sup>.

Benign tumors were significantly increased at hospitals and scabies and parasitic infections were significantly increased at City Health Clinics. This is understandable as scabies treatment should be available at clinics and tumors need to be accurately diagnosed before

they can be treated. This is done at tertiary hospitals. Hence patients sought treatment at appropriate health centres.

The evaluation of Dermatological Services in Kwazulu-Natal showed that it was very inadequate. There were limited supply of qualified Dermatologists and they were all based in the cities (Durban, Pietermaritzburg, Richards Bay and Newcastle).

Private hospitals in Durban only recently permitted Dermatologists to practice on their premises. Some Dermatologists, who were practising there, were asked to leave in the 1970's and 1980's. Dermatologists were told that they did not bring enough revenue to the hospitals because they treated mostly ambulatory patients and conducted all the procedures in their offices instead of using theatre facilities. Only in the last decade have they been given rooms in private hospitals. Currently all the private hospitals in Durban have dermatologists either on their premises or using rooms on 'time share' where booked patients are seen for their skin conditions.

In the public sector, Dermatology service is provided by the Dermatology Department based at KEH. The number of qualified full time dermatologists here are limited. This is the only referral centre for dermatological problem for the whole of KZN and northern half of the Eastern Cape. To reduce waiting time for patients the author motivated for and started service at 4 other metropolitan hospitals (Add, PMH, RKK, IALCH). As the waiting time for appointments at RKK and ADD was 6 to 8 months, daily clinics were started last year. With continued pressure on the department of health (DOH) more full time and training posts were created. In the last decade twelve new Dermatologists have qualified from the teaching

department and five have relocated to Durban having qualified in Stellenbosch, Medunsa, Pretoria and Bloemfontein. Some private Dermatologists from Durban travel to other areas in the province to provide dermatological services nearer the patients place of abode. The full time dermatologists also participate in the Red Cross Flying Doctors programme and provide teledermatology to rural hospitals. None of the public sector DFR centres that were part of the Phase 1 study had proper Dermatological services.

None of the doctors at any of the hospitals or clinics had postgraduate or in-service dermatology training at KEH. Most of the patients with dermatological problems are seen by PHC nurses. As mentioned previously their training in Dermatology was quite limited.

Besides the poor knowledge of Dermatology amongst the doctors and nurses dealing with skin diseases, the medications required by these patients were also limited. At some clinics even benzyl benzoate and acne lotions were not available. This prevented treatment of very common diseases like acne and scabies. For eczema, the most prevalent dermatosis, only the generic hydrocortisone cream was available at some centres. The authors experience shows that this generic product is ineffective and several requests were made to the DOH to provide a better equivalent steroid. Emollients which are the mainstay of atopic eczema patients were also lacking or inappropriate at many centres. The only topical antifungal preparation for tinea (Whitfield's ointment) that was available can cause irritation in the groin and face. The only topical antibacterial available was povidone iodine which is a potent sensitizer and causes contact dermatitis.

Thus it is evident that skin diseases are common and the resources available for their management are totally inadequate. However, this study suggests that this situation can be feasibly improved and recommendations have been made towards achieving this.

## 6.2 STRENGTHS AND LIMITATIONS OF THE STUDY

Ideally a population based study should be undertaken to determine the true prevalence in the population, but this would be very expensive and clinic based surveys are more feasible as undertaken in this study. Furthermore clinic based surveys indicate the type of problems being presented, and can be used to educate providers about these problems.

A strength of this study was that it was undertaken by an experienced dermatologist on PHC clinic patients to determine the prevalence of skin diseases in KwaZulu-Natal.

The training of PHC nurses on common skin diseases proves that simple training programmes can contribute substantially to improving the competence of health workers.

## CHAPTER 7

### CONCLUSIONS AND RECOMMENDATIONS

Dermatological epidemiologic data are necessary to assess the extent of the problem and to define priorities so that the limited resources in developing country could be better utilized. Prevalence data is required in order to plan and develop appropriate intervention programmes for the dermatological health of the community, but population based prevalence surveys are very costly to undertake. Clinic based surveys are more feasible and should be undertaken every five years to plan for service delivery.

As a clinician in an academic post the author's priorities were to improve dermatological services by reducing the backlog of prolonged waiting time for dermatology appointments at KEH. In the public sector there were only two specialists and two trainee registrars to whom all patients with skin diseases from the whole of KZN and northern half of Eastern Cape were referred. The survey undertaken by the author has resulted in increasing the staff structure and hence improvement in service delivery.

The epidemiological studies have determined the prevalence of skin diseases and were conducted in the DFR which was deemed to be representative of KZN. More than 90% of patients at randomly selected health centres had skin problems. The bulk of skin diseases comprised less than ten dermatoses. Eczema, acne and skin infections were the commonest skin problems and these need to be effectively treated.

HIV/AIDS has severely impacted on the spectrum of skin diseases<sup>59-64</sup>, worsened all the common dermatoses and some new dermatoses have emerged viz epidemic Kaposi's Sarcoma, erythroderma and unstable psoriasis, papular pruritic eruption and eosinophilic folliculitis, opportunistic fungal infections. Warts, herpes simplex and zoster, chicken pox and molluscum contagiosum were frequently seen. HIV patients had multiple skin diseases and some had as many as seven different dermatoses. Drug eruptions in HIV patients were severe and TEN and Steven Johnsons Syndrome (SJS) were not uncommon. For these severe diseases trained personnel are needed to diagnose and adequately manage patients. More incentives are needed to encourage specialists to work in rural areas.

However, the study also showed that there are insufficient dermatologists in the province, despite the new graduates from UKZN and relocation from other provinces. There were none in the rural areas. The teaching of Dermatology to medical students, (the future family practitioners) and PHC nurses is inadequate. The latter was borne out by the poor test scores that PHC nurses obtained before their training.

It is recommended that the teaching time for dermatology in undergraduate medical and nursing training institutions is increased to cater for the current and future needs. The request by the author to permit undergraduate medical students to spend a minimum of a week in dermatology was however denied by SUME. The author's recommendation to SUME is that medical students spend at least one to two weeks in Dermatology during the fourth year of study. They can learn first hand about the common dermatoses seen in the OPD, the dermatological emergencies, see how in-patients are treated (especially with topical agents), and notice the response to treatment. An important part of dermatological treatment is

explanation of how and where to apply each topical agent used. All this is best appreciated at the dermatology department. This knowledge will enhance adherence in their future patients.

The recommendations suggested by the author are feasible and can be easily implemented within available resources.

The author also recommends that undergraduate nurses spend at least two weeks in a dermatology department. The eight to ten lectures they get are adequate but they need to spend two weeks in the Dermatology OPD where they will see common diseases. They will learn to take history relevant to dermatology. They will assist with procedures and dressings. They would also learn to manage dermatology patients in the ward.

The PHC training should include dermatology lectures and teaching around patients, preferably in small groups. The training is best done by dermatologists in the dermatology outpatient clinic where common conditions are seen. The author recommends that this occurs at KEH.

Ideally the trainee group should be small and consist of 10-12 persons. Because the response to the authors request for PHC nurses was so tremendous, twenty nurses were trained in this study. One PHC nurse withdrew from the training on the second day. The author believes the results of this training would have been better if the group was smaller. Hence, the author recommends a small group of ten to twelve nurses for clinical training. The syllabus recommended is in Appendix 6. This addresses common dermatological conditions and the training of nurses using this programme improved their knowledge. Traditional healers will

also need some training to recognize prevalent skin diseases and refer appropriately. They could then be included in further studies.

The author is willing to do this dermatology training annually at KEH. It is recommended that the trained group return for in-service training for one week annually thereafter. This will be recommended to the DOH, Nursing Colleges, DUT and UKZN. Further evaluation of the training will be required in order to identify how such training can be improved. The recommendations for this training (Appendix 10) will be given to the DOH.

All medications listed on the EDL for Dermatology should be available at all PHC centres i.e. provincial and city health clinics and district hospitals where PHC workers will first see patients with common skin diseases. This recommendation will be made to the DOH.

Regarding health education, pamphlets on common skin diseases are available from the South African Medical Association. These could be translated in the various languages and made available in the waiting rooms at PHC. Similarly videos can be made and shown in waiting rooms and on TV as patients overwhelmingly desired health education on TV and radio.

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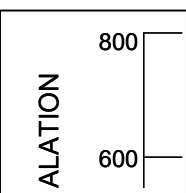
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## **PHASE 4 – PRIMARY HEALTH CARE IN DERMATOLOGY –TRAINING MODULE**

**The ten commonest skin diseases found in this study are listed below:**

- 1) Eczema
- 2) Acne
- 3) Benign Tumours
- 4) Pigmentary Dermatoses
- 5) Superficial Fungal Infections
- 6) Bacterial Infections
- 7) Scabies and Parasitic Infections
- 8) Viral Infections
- 9) Psoriasis
- 10) HIV Cutaneous Manifestations

Atopic and Seborrhoeic dermatitis were the commonest types of eczema.

Cellular naevi and seborrhoeic warts were amongst the commonest types of benign tumours. Chloasma and vitiligo were the commonest types of pigmentary abnormalities. The other common conditions were all infective in nature except for psoriasis. Although psoriasis is not common, it is a chronic incurable dermatosis and therefore important to be recognized at primary care level.

HIV cutaneous manifestations were not common at the time of the study (1998) but the prevalence of HIV has increased considerably in recent years. Cutaneous

manifestations occur in over 90% of those infected with the HIV (ref); some of them have more than one skin disease (ref). It is therefore important that this group of skin diseases form part of the PHC training. Skin cancers are very common in the fair skinned individuals of South Africa due to the excessive UVL exposure. Early recognition and treatment is obviously important. This will also form part of the PHC training.

Thus the PHC training will consist of recognition and treatment of the following skin diseases:-

- 1) Atopic eczema
- 2) Seborrhoeic eczema
- 3) Pityriasis alba
- 4) Stasis Eczema
- 5) Acne
- 6) Seborrhoeic warts and its differentiation from other pigmented lesions
- 7) Early skin cancers (especially in the Whites, including Albinos).
- 8) Chloasma
- 9) Vitiligo
- 10) Superficial fungal infections including tinea and candida infections
- 11) Common bacterial infections (impetigo and syphilis)
- 12) Common viral infections (herpes simplex, zoster, molluscum, contagiosum, warts)
- 13) Scabies, and insect bites

14) Psoriasis

15) HIV Cutaneous manifestations. In HIV patient's seborrhoeic dermatitis, psoriasis and all the infections are extremely common and very severe.

16) Bullous eruptions. These form the bulk of dermatological emergencies. If not recognized and sent to a Dermatologists rapidly they can be fatal. It is important for PHC workers to recognize this group of skin diseases and refer them timeously.

To make a dermatological diagnosis one has to take a brief relevant history and examine the patient who has been fully undressed.

The morphology or physical appearance of the rash and its distribution has to be evaluated.

The terms used to describe morphology are:-

1. **Macule** is a small (1cm) circumscribed discoloration of the skin. It may be circular, oval or irregular.
2. **Patch** is a large macule.
3. **Papule** is a small (pinhead to a pea size i.e.  $\pm$  1cm) solid, elevated lesion.
4. **Plaque** is a broad (more than 1cm in diameter) elevated lesion.
5. **Nodule** is larger than a papule, is solid, and may be elevated or may have depth to it i.e. palpable under the skin
6. **Vesicle** is a small fluid filled lesion.
7. **Bulla** is a large fluid filled lesion
8. **Pustule** is a small pus filled lesion

9. **Hives** or wheals are transient, edematous, flat elevations of various sizes.

They develop suddenly but disappear slowly and are itchy

10. **Erosion** refers to loss of all or portions of the epidermis

11. **Ulcer** is an excavation that results from the loss of epidermis and dermis.

12. **Fissure** is a linear cleft or crack through the epidermis or rarely through the dermis as well.

13. **Excoriation** is an abrasion produced by scratching the skin.

14. **Scales** refer to visible peeling or desquamation on the surface of the skin

15. **Crust** is a mixture of scale and serum or blood from weeping or exudative lesions.

The arrangement of, lesions often provides a clue to the diagnosis.

1. **Annular** where the centre is different from the border. Examples of annular lesions are seen in tinea corporis, urticaria as it resolves from the centre, erythema multiforme where iris or target lesions appear.

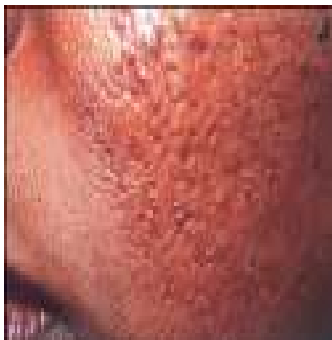
2. **Grouped** where similar lesions occur in clusters – examples of these are seen in herpes simplex, herpes zoster, insect bites, warts.

3. **Linear** where similar lesions occur in a line usually at sites of trauma e.g. psoriasis, lichen planus, excoriations, warts

This is called Köebner phenomenon

## **ACNE VULGARIS**

Acne vulgaris was the single most common skin disease in this survey, affecting some 20% of the patients seen. It is a disorder of the pilosebaceous apparatus, peaking in adolescence. Acne is characterised by comedones (blackheads and whiteheads), papules, pustules, cysts and scars





Acne may be graded as mild (Fig)



moderate(Fig)



or severe. (Fig)

The causative factors in acne are:

1. Excessive sebum production.
2. Hormonal – androgenic hormones from testes, ovaries and adrenals act on the sebaceous glands to increase sebum production.

3. Poral occlusion which occurs with oily cosmetics and on abnormality of desquamation. The retention of sebum and bacteria leads to rupture of the follicle with intense inflammation.
4. Mechanical – excessive scrubbing or rubbing leads to rupture of occluded follicles.
5. Bacterial – Propionibacterium acnes, a normal skin commensal colonises the pilosebaceous ducts, breaks down triglycerides in sebum to fatty acids which is proinflammatory.
6. Genetic - acne is familial but its mode of inheritance is unknown.

**The aggravating factors** in acne are:-

1. Drugs:

- Steroids both topical and systemic, progestogenic contraceptives which includes depo provera injections
  - Isoniazid used for TB
  - Anticonvulsants - phenytoin
  - Lithium given to bipolar patients
  - Iodides, bromides in cough syrup
2. Occupational exposure to chlorinated hydrocarbons, tar derivatives and oils.

3. Cosmetics – greasy hair preparations, ointments and moisturisers.
4. Mechanical factors like chin straps.

### **CLINICAL FEATURES**

The early lesion is the comedone. Open comedones are blackheads due to discoloured sebum (Fig). Closed comedones are skin coloured (FIG). Pustules, erythematous papules (Fig) and cysts (Fig) are the other lesions.

Acne is confined to the face, shoulders, upper chest and back (Fig)

If acne is not treated, scars develop. These include post inflammatory hyperpigmented macules and depressed or ice pick scars (Fig). Hypertrophic scars (keloids may develop in some patients) (Fig).



## Comedonal Acne





**Severe Acne**



**Severe Acne**



## **TREATMENT**

### **General Measures**

- The nature of acne must be explained.
- Explain to the patients that diet does not play a role in acne.
- A drug history must be taken.
- Advise the use of non-comedogenic water based cosmetics

### **Topical Agents**

These alone will suffice for mild acne.

- Degreasing agents are used to reduce oiliness of the skin: 2% phenol + 2% salicylic acid in 50% alcohol.
- Topical retinoids are useful for comedogenic acne. The topical retinoids are Retin A cream, Differin gel and Isotretinoin (Isotrex gel). These are used at night only. A sunscreen is advised for use during the day.
- Benzoyl peroxides are antibacterial in nature and are effective in inflammatory lesions – papules and pustules. 2% - 10% benzoyl peroxides are available
- Topical erythromycin and clindamycin are useful for pustular acne.

All acne topicals should not be applied around the eyes and at the corners of the mouth and nose. Neither should they be applied on the neck.

**Oral agents:** These are used in combination with topicals

- Antibiotics – Doxycycline 100mg daily for 3-6 months
  - Erythromycin 500mg 12 hourly for 2-3 months, then 250mg 12 hourly for 3 months
  - Clotrimazole 2 tablets 12 hourly for 1 month, then 1 tablet 12 hourly for  $\pm$  6 months

Organisms frequently become resistant after about 6-8 months and one may need to change from one antibiotic to another.

- Hormones – Cyproterone acetate with the contraceptive pill (Minerva) is useful in women with moderate to severe acne.
- Oral Retinoids – very effective in nodulocystic acne.
- These are highly teratogenic and are given to women only after a negative pregnancy test and while on an effective contraceptive. Should be restricted to Dermatologists only.

## ECZEMA OR DERMATITIS







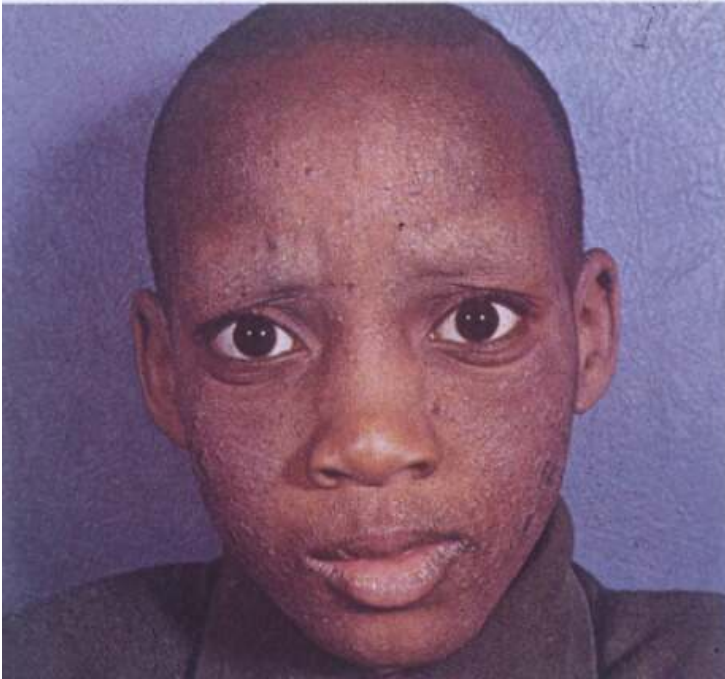








involvement of popliteal areas.







The term eczema and dermatitis is often used synonymously. As a group eczema was the commonest skin disease with a prevalence of 23.5% in this study.

Eczema may be acute or chronic. Acute eczema starts as tiny erythematous papules. (fig) which becomes vesicular and then exudative(fig). This leads to

crusting. Secondary bacterial infection commonly supervenes (fig). The herpes virus can also readily inoculate eczema leading to eczema herpeticum (fig) Eczema is very itchy. Constant scratching leads to lichenification which is characterized by hyperpigmentation, thickening and exaggerated skin markings (Fig). This is a feature of chronic eczema.

## **ATOPIC DERMATITIS**

Atopic Dermatitis is the result of a hereditary tendency to develop allergy to many foods and inhaled substances. There is usually a past or family history (first degree relatives) of asthma and hayfever in these patients.

In infants the eczema starts after the age of two months and presents as tiny erythematous papules with vesicles which rupture and produce crusted areas on the cheeks, forehead, neck and chest. The central face is not affected (fig). This is seen in children of all ages. (fig) The napkin area may be affected (fig). The rash is itchy; the baby is irritable and does not feed well. In the toddler the rash is mainly on the extensor surfaces of the forearms and legs (Fig). The wrists are often affected (Fig). In the older child the eczema becomes localized to the antecubital fossae and popliteal fossae (Fig). The involvement of both the extensors and flexors indicates a poor prognosis. Most children get better by the age of two.

In adults discoid plaques are often seen (Fig). Chronic hand eczema occurs in adults who are involved in wet, messy jobs (hairdressers, mechanics, housewives, chefs and domestic workers). (Fig)

Lip licking causing eczema around the mouth is common (Fig) and so is nipple eczema (Fig).

Atopics have a generally dry skin and ichthyosis vulgaris is seen in 30%-40% of these patients. The eczema waxes and wanes. Bacterial infection flares the eczema and so does exposure to the herpes virus. (Fig)

## **MANAGEMENT**

- Atopic mothers must be encouraged to exclusively breast feed their infants for at least 4 months. When introduced to solids eggs, peanuts, wheat, fish, soya and chicken should be avoided. Food preservatives and tartrazine (artificial colorants) must also be avoided.
- Moisturisers are the mainstay of treatment because all atopics have a dry skin. They are best applied immediately after bath when the skin is damp. A soap substitute like aqueous cream is used. Bubble baths are contraindicated.
- Woolen and acrylic clothes cause itching and must be avoided.
- Household pets and feather in pillows and duvets must be discouraged. Mattress, pillows, blankets, carpets and upholstered

furniture collect house dust mite, a common allergen. Ultraviolet light kills house dust mites, so exposure of these items to UVL is encouraged.

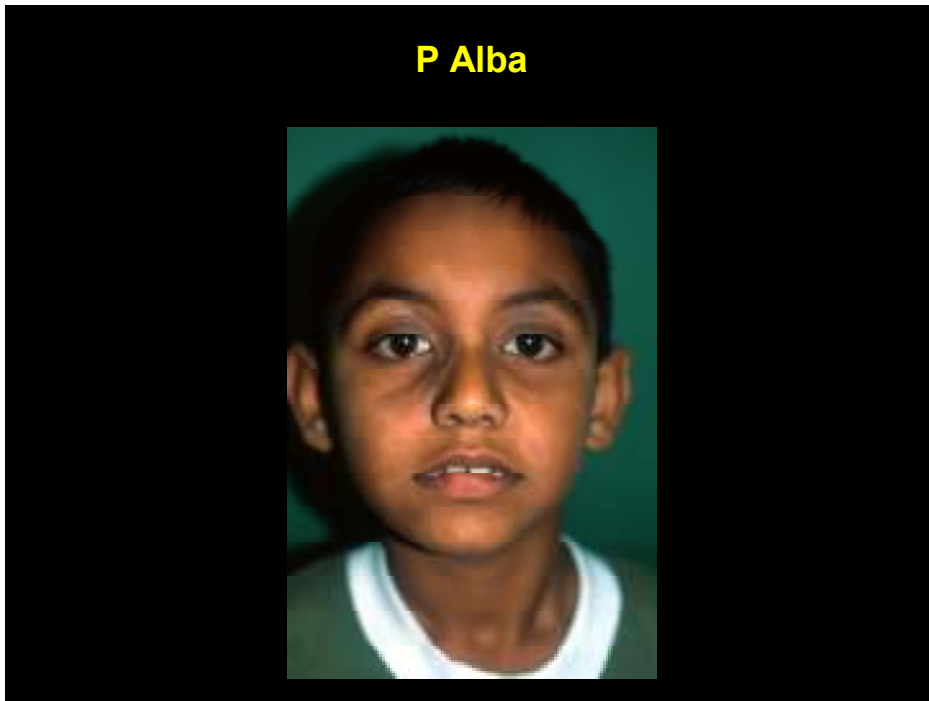
- Patients with extensive, uncontrolled chronic eczema or with complications must be sent to a referral centre where Dermatologists are available.
- Topical steroids are used sparingly and intermittently (weekends). On the face, only 1% hydrocortisone should be used. Chronic, lichenified areas may need more potent steroid ointments. Creams are used for acute eczema and ointments for the chronic lichenified stage.
- Topical tar ointments are also of benefits for chronic plaques:
- For acute exudative eczema light pink (1:10,000) potassium permanganate ( $\text{KMnO}_4$ ) soaks are advised. Exudative eczema will also benefit from a course of oral antibiotics.
- Sedating oral antihistamines are effective for nights.

### **PITYRIASIS ALBA**

Pityriasis Alba is a mildly eczematous rash seen in children who may have an atopic background. UVA probably plays a causative role.

### **CLINICAL FEATURES:**

The rash is characterized by hypopigmented patches with slight scaling, seen mainly on the cheeks, forehead and outer surfaces of the arms. The children generally have a dry skin and may be atopic. Self treatment with over the counter medications like topical antihistamines or antifungal creams causes an eczematous change (Fig). In the differential diagnosis **pityriasis versicolor** , **vitiligo** and **tuberculoid leprosy** should be excluded.



**P Alba**



**P Alba**





### **TREATMENT**

A low potency corticosteroid cream (1% hydrocortisone) and a moisturizing sunscreen is advised. The mother must be reassured that this is not a fungal infection and is a self limiting condition.

### **STASIS ECZEMA**

This is seen in patients with varicose veins who may have had a deep vein thrombosis in the past. Prolonged standing, inactivity and obesity are contributing factors.

### **CLINICAL FEATURES**

The rash is usually on the lower leg on the medial side. There may be odema, and the skin bound down (Fig). An ulcer may be present (Fig). The rash is characterized by ill defined hyperpigmentation and lichenified eczema. Contact dermatitis to topical medicaments may cause a superimposed subacute or acute eczema. Secondary bacterial infection supervenes intermittently.

### **TREATMENT**

Compression bandages or stockings and Bisgaard exercises are advised. Eczema is treated with low potency corticosteroid cream which should be applied intermittently. Sensitisers like lanolin and topical antihistamines must be avoided. Antibiotics are given when the rash is exudative.

### **SEBORRHOEIC DERMATITIS**

































Seborrhoeic Dermatitis is seen in infancy and then again during adolescence and adult life.

**Infantile Seborrhoeic Dermatitis** is self limiting, and is seen in the first few weeks of life. It presents as a yellowish greasy, scaly rash on the scalp, and eyebrows (fig), (known as cradle cap) and erythematous scaly patches in the naso-labial folds, behind the ears (fig) napkin area and other flexures (fig). Scaly round patches may be scattered over the trunk (Fig). The rash is usually not itchy. It heals with hypo-pigmented patches (fig). However if there is coexistent

HIV infection the seborrhoeic dermatitis is persistent, becomes more severe and develops recurrent secondary bacterial and fungal (candida) infections (Fig).

### **MANAGEMENT OF INFANTILE SEBORRHOEIC DERMATITIS**

- 1% Sulphur in 1% Salicylic Acid ointment is applied to scalp several times a day.
- Daily wash with a mild shampoo.
- 1% hydrocortisone cream twice a day to the erythematous areas for a week.
- In the HIV infected baby, systemic antibiotics, light pink  $\text{KMnO}_4$  soaks and nystatin cream will be necessary when the rash is exudative and infected.

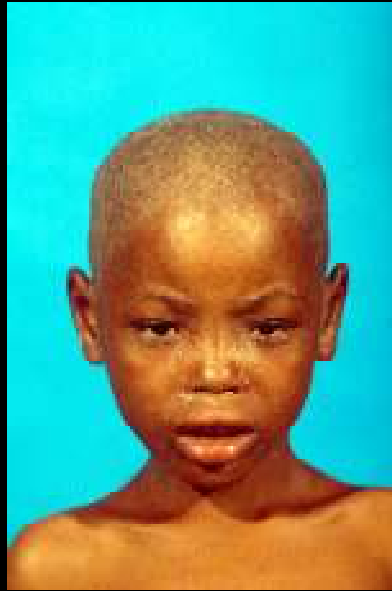
### **SEBORRHOEIC DERMATITIS IN ADULTS**

Adult Seborrhoeic Dermatitis presents as erythematous scaly patches in hairy areas where there are large seborrhoeic glands ie: the nasolabial folds, axillae, groin, scalp, eyebrows and chest. In the severe forms secondary infection occurs leading to exudation (fig) and malodour. This was the first HIV cutaneous manifestation noted in the eighties. It is still a very common dermatological manifestation of HIV.





**HTLV – Seborrhoeic Dermatitis**















## **MANAGEMENT**

- 2% Sulphur in 2% Salicylic Acid in an emulsifying base to be applied several times a day to the scalp.
- Tar or Zinc pyrithione shampoo to wash the scalp.

- Light pink KMnO<sub>4</sub>soaks when the rash is exudative.
- Diluted topical steroid cream is advised for the flexures; for the face 1% hydrocortisone cream is recommended.
- Short courses of systemic antifungals are also useful for severe cases in the HIV infected patient. The latter is best restricted to hospitals where dermatologists are in attendance.

## **BENIGN TUMOURS**

The common benign tumours in the study were cellular or melanocytic naevi, histiocytoma (dermatofibroma), seborrhoeic warts and dermatosis papulosa nigra.

**Melanocytic naevi or moles** as they are commonly known are benign proliferations of melanocytes. They may be congenital or acquired.

**Congenital melanocytic naevi** present at birth or soon afterwards. They are usually more than 1cm in diameter and are brown to black in colour (Fig). With age they become protuberant and hairy with a cerebriform surface. Such giant lesions are disfiguring (Fig) and can become malignant.

**The acquired melanocytic naevi** present as brown to black macules. Most naevi of this type appear on palms, soles and genitalia (Fig). These are called

**junctional naevi** because the melanocytic activity is at the junction of the epidermis and dermis. These naevi are seen mainly in childhood.

With maturation the melanocytic activity is both at the junction and in the dermis.

This type of naevus is called a **compound naevus** (fig). Clinically this presents as a dome shaped pigmented nodule of about 1cm in diameter. Some compound naevi may have hairs growing out of them. With time the pigmentation gradually disappears. These are then skin coloured and also dome shaped and up to a cm in diameter (Fig). The melanocytic activity is within the dermis. These are called **intra-dermal naevi**.

**Seborrhoeic Keratoses or warts resemble** melanocytic naevi.

These appear on the face and trunk in middle aged individuals. They have a rough keratotic or warty surface and are dark brown, to black in colour and have a “stuck on” appearance. They begin as brown rough macules (fig) which gradually become more papular and then nodular (fig). Seborrhoeic warts are less common in Africans. In Africans, Indians and Coloureds the equivalent lesions are **dermatosis papulosa nigra** (fig). These consist of tiny, smooth, darkly pigmented papules 2 to 4 millimeters in diameter. They appear on the face, neck and upper trunk.

Seborrhoeic warts need to be differentiated from malignant melanoma.

**Malignant melanoma** may arise in a giant congenital melanocytic naevus or less frequently in an acquired melanocytic naevus, especially in patients with the **dysplastic naevus syndrome**. This is usually a hereditary condition,

characterized by multiple irregularly pigmented naevi which vary in size and shape.

**Malignant melanoma** should be considered if the following changes occur in a melanocytic naevus:

- Itch
- Enlargement
- Increase or decrease in pigmentation
- Alteration in shape
- Alteration in contour
- Inflammation
- Ulceration
- Bleeding

When such changes occur in a melanocytic lesion, the A, B, C D and E features of malignant melanoma should be carefully considered;

**A B C D E of Malignant Melanoma**

- Asymmetry
- Border irregularity
- Colour variability
- Diameter greater than 0.5cm
- Elevation irregularity

Moles that have changed in any way should be referred to a specialist. A specialist would excise and send for histology any suspicious lesion.

**Histiocytoma** also known as dermatofibroma is another common benign tumour. It may follow minor trauma or an insect bite. It occurs mainly on the extremities of adults and usually presents as a solitary firm, discrete nodule. The lesion has an “iceberg” effect in that it feels larger than it appears. The overlying skin is usually pigmented and dimples when the nodule is squeezed.

#### **TREATMENT:**

All these benign tumours do not require treatment except for cosmetic reasons. Seborrhoeic warts and dermatosis papulosa nigra lesions may be cauterized or frozen with liquid nitrogen. **If there is any diagnostic doubt about a pigmented lesion it should be excised and sent for histology.**

## **SKIN CANCERS**











## **PREMALIGNANT TUMOURS**

### **SOLAR (ACTINIC) KERATOSES**

These are discrete, rough, whitish lesions seen on the sun damaged or exposed areas of fair skinned individuals living in our country. Albinos are the worst affected. Melanin protects the dark skinned races. UVL causes cumulative damage to the skin. Damage to collagen and elastin causes wrinkling. However epidermal damage causes these keratoses.

These keratoses can turn into malignant squamous cell carcinoma if not treated timeously. Sites commonly affected are lips, backs of hands, bald scalp, face, V of neck, extensor surfaces of forearms and legs.

#### **Treatment**

- Albinos and Whites should be educated from childhood to keep out of the sun, especially between 9am and 4pm. They should be encouraged to wear hats, long sleeves, long trousers and darkglasses. They should also be encouraged to wear gloves when driving or gardening. Sunscreens must be used on the face and other areas that are exposed to UVL.
- Patients with these keratoses should be sent to centres where liquid nitrogen is available, as freezing destroys these early premalignant lesions.
- Effudix, a topical chemotherapeutic is effective in eradicating these lesions

- Photodynamic therapy at tertiary centres is a new form of therapy.
- Aldara(imiquimod) can also be used.
- Suspicious lesions should be biopsied to exclude malignancy.

### **KERATO ACANTHOMA**

Keratoacanthoma is rapidly growing squamous cell tumor which appears very malignant both clinically and histologically.

This tumor is seen in fair skinned individuals living in countries which experience a lot of sunshine. Most lesions are on the face and backs of hands.

Kerato acanthoma starts as a pink papule which grows to 1cm in a month or two.

The central carter is filled with dark keratinous plug. If left the lesion resolves over 6-12 months leaving an ugly depressed scar. However most are excised because they appear to be malignant due to their rapid growth.

### **SQUAMOUS CELL CARCINOMA**

These arise from untreated solar keratose in fair skinned people. However they can arise as small scaling nodules. They may also occur in chronic ulcers caused by TB of the skin, or deep fungal infections. UVR, X rays and infra red rays predispose to these cancers. Other carcinogens are tar, mineral oils, and inorganic arsenic. Sites where these cancers commonly occur are lips, dorsa hands and ears

The lesions start as nodules which slowly grow and become ulcerated with rolled edges.

Squamous carcinoma way metastasize by lymphatics

## **TREATMENT**

A biopsy is taken from the rolled edge to make a positive diagnosis

The tumour is excised in a hospital with a 0.5cm clear border and sent to the pathologist to see if it has been fully excised

## **BASAL CELL CARCINOMA (RODENT ULCER)**

These are the commonest malignant tumours in fair skinned people living countries with plenty of sunshine. Hence patients with basal cell carcinoma (BCC) have a very sun damaged skin.

The tumours start as little papules that develop into infiltrating plaques or little translucent nodules with prominent visible telangiectasia. They then ulcerate. They do not metastasize but are locally invasive and should be treated before they ulcerate.

## **TREATMENT**

- When small they can be curetted and the base cauterized.
- The superficial type can be treated with photodynamic therapy.
- If large they are excised by a plastic or dermatologic surgeon.

## **SUPERFICIAL FUNGAL INFECTIONS**

### **TINEA VERSICOLOR**

**Tinea Versicolor** (Pityriasis Versicolor) is a very superficial fungal infection caused by *Pityrosporum* yeasts which are common commensals in sebaceous follicles. Only susceptible individuals get infection. Common in hot and humid climate of KZN.

### **CLINICAL FEATURES**

Hypopigmented macules and patches with fine scales (Fig) are seen. In light skinned areas the macules may be hyperpigmented (Fig).



## **SPECIAL INVESTIGATION**

Diagnosis is confirmed by a KOH preparation. Scrape the scaly areas onto a glass slide, put a drop of 20% potassium hydroxide, heat the slide gently and look under the microscope. Short branching hyphae and spores are seen.

## **TREATMENT**

- Any topical antifungal is effective.  
However reinfections are frequent from contaminated clothes, swimming pools, gyms, etc.
- Selenium sulphide (Selsun shampoo) applied to whole trunk, neck and arms – left on for 1-2 hours. Then shower.
- Oral ketoconazole 400mg on day 1. Repeat a week later.
- Intraconazole 400mg daily x 1 week

## **CANDIDIASIS**

Candidiasis is caused by the commensal yeast *Candida albicans*. It forms pseudohyphae when it causes an opportunistic infection.

The predisposing factors are:-

- Obesity with excessive sweating leading to maceration in the body folds and toe webs.
- Broad spectrum antibiotics hence may be seen in acne patients
- Diabetes mellitus
- Steroid therapy
- Immunodeficiency as in HIV/AIDS

### **Clinical Features**

#### **Oral candidiasis:**

White curd - like lesions appear on the tongue, buccal mucosa and inner lips (Fig). When these adherent curds are removed with a spatula, the erythematous base can be seen. Patients with dentures develop **angular stomatitis** and red painful areas under the dentures.

#### **Genital Candidiasis:**

This presents as itchy vulvo-vagnits or balanitis where mucosal curd like lesions are seen. The infection spreads to groin flexures. The infection also spreads to the sexual partner.

## Candida



### **Candidal Intertrigo;**

Maceration in the deep folds with red patches spreading outwards. Sattelite red macules appear at the periphery of the patches. Tiny pustules may be seen. The rash is itchy and causes burning pain. Sites involved are the groin, axillae, inframammary regions, web spaces of the hands and feet.

### **Chronic Paronychia:**

Candida and Staphylococcus epidermidis cause this infection of the nail folds in persons who do much wet work. The cuticles of the nails are damaged and these commensals enter the proximal and lateral nail folds causing low grade infection. The swelling or bolstering of nail folds cause transverse grooves and ridges on the affected finger nails. (Fig). Candida can invade the nail plate and cause candidal onychomycosis

## Chronic Paronychia



### Treatment

- Underlying predisposing factors must be sought and treated or eliminated
- Hands and body folds must be kept dry.
- Topical antifungals like nystatin is given for mouth and genital infection.
- Castellani's paint is effective for toe and finger webs, body folds and chronic paronychia. Paronychia will not heal until the cuticle is repaired.
- Oral antifungals (ketoconazole, itraconazole or fluconazole) is given to immunosuppressed patients with extensive candidiasis.
- Chronic Paronychia can lead to candidal onychomycosis. This is proven with nail microscopy. Oral itraconazole may then be required. Griseofulvin is not effective against candida organisms.

## TINEA CAPITIS

This is a superficial fungal infection of the scalp. Occurs in prepubertal children. Infection is acquired usually from household pets, occasionally from cattle.

### CLINICAL FEATURES:

Round patches of alopecia which are scaly. Black dots caused by broken hair stubs are seen (Fig). Sometimes the patches of alopecia are small and the whole scalp is diffusely affected (fig). Less frequently localized boggy, inflamed, swollen area of alopecia is seen (fig). The latter is called a **kerion** and this is caused by dermatophytes from infected cattle.



### **Tinea Capitis**



### **Atopica Areata**



**SPECIAL INVESTIGATION**

Scrapings of hair and scales in a KOH preparation will show hyphae and spores in infected hairs.

Culture of hair and scales will identify the fungal species.

Differential Diagnosis: **Alopecia areata**: Here the bald patches are smooth and shiny



**TREATMENT**

- Oral antifungals are essential eg: Griseofulvin 15mg/kg for 6-8weeks.  
Tablets are taken after a fatty meal.
- Povidone – iodine shampoo to reduce shedding of spores.
- Important to tell caregivers at crèches to prevent spreading to other children. Sharing combs and pillows will spread the infection.

### **TINEA CORPORIS (BODY), CRURIS (GROIN) AND FACIEI (FACE)**

Caused by dermatophyte fungi from infected humans or pets.

#### **CLINICAL FEATURES**

Any area of the body may be infected. Tinea cruris refers to groin infection which is more common in males. Rash presents as round patches with a very characteristic well defined papular and scaly edge. The central area is clear and hyperpigmented (Fig). Rash is very itchy. With chronic scratching the centre may become lichenified (Fig) but the well defined papular border is very characteristic. If the rash is mistreated as eczema with corticosteroid cream the pruritus is relieved but the areas affected enlarge with the characteristic pink border still visible (Fig). Rash is extensive in patients infected with HIV or if patients are on steroid therapy (Fig).

Differential Diagnosis of **Tinea corporis is discoid (nummular) eczema**. There is no well defined border and no central clearing.

Tinea cruris has to be differentiated from **intertrigo** and **seborrhoeic eczema**.

There is no well defined edge in either of these conditions.

**Intertrigo**



**T. Facei**



**Tinea Corporis**



**Tinea Incognito**



## **Tinea Corporis**



### **SPECIAL INVESTIGATION**

KOH preparation from the spreading edge will show the branching hyphae.

Scraping can be sent to laboratory if facilities for KOH are not available.

### **TREATMENT**

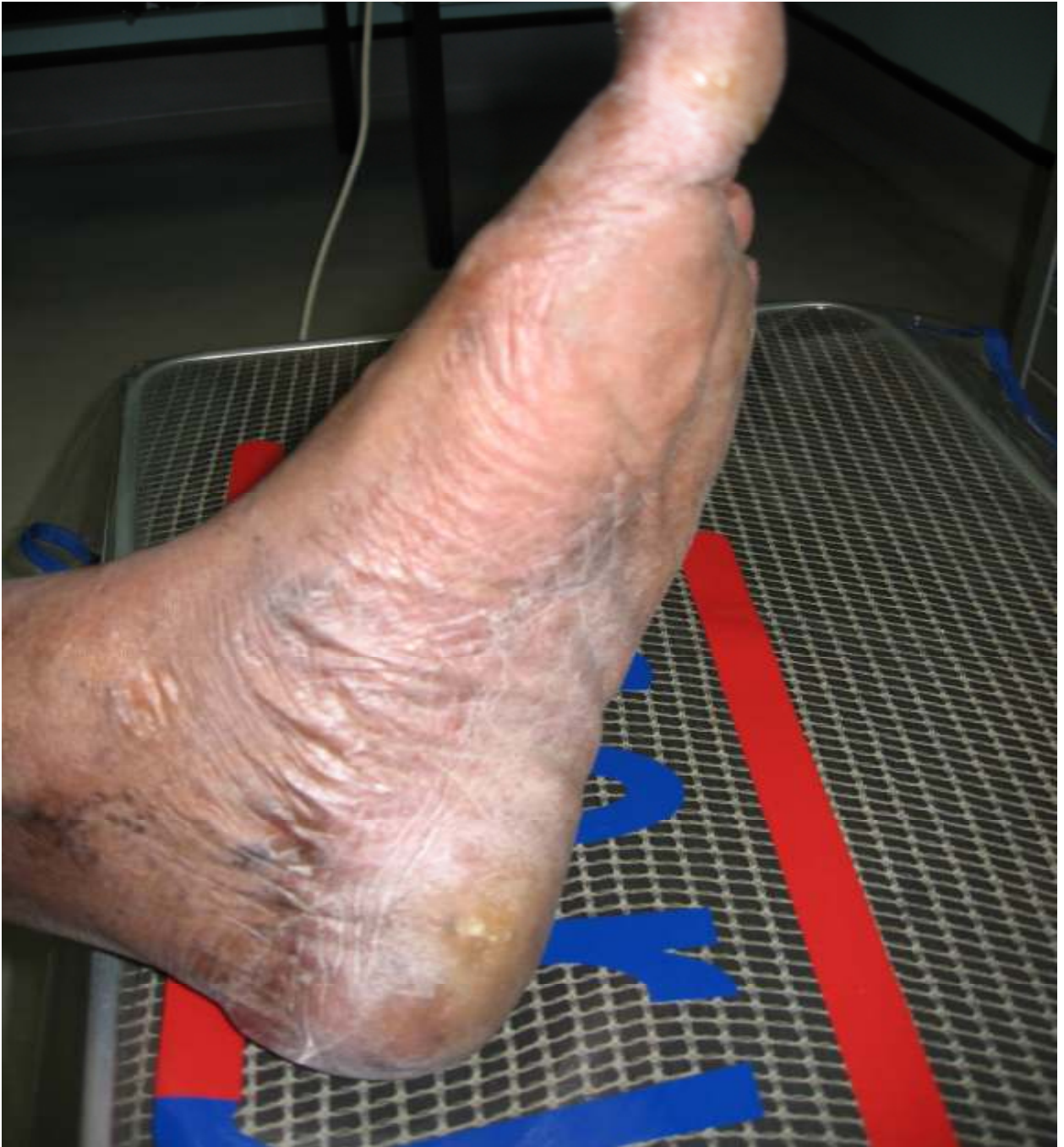
If only a small area is affected, a topical antifungal like terbinafine will suffice. For extensive areas – oral griseofulvin 15m/kg for 6 to 8 weeks is necessary to prevent relapse. Occasionally the dermatophyte may be resistant to griseofulvin.

Then intraconazole or terbinafine may be necessary.

### **TINEA PEDIS (FOOT), TINEA MANUUM(HAND)**

**SUPERFICIAL FUNGAL INFECTION –  
TINEA PEDIS**







**Tinea Pedis**



**Tinea Unguim**



Caused by dermatophyte fungi. Feet infection is acquired from public pools, infected carpets in hotels, mosques and communal showers in gyms, etc. Hand infection is not common.

### **CLINICAL FEATURES**

Infection starts on the soles of the feet or between the toes as little vesicles. Blisters breakdown quickly to leave desquamation (Fig). There may be maceration of especially the fourth web space. The rash is itchy, especially in the acute stage. In chronic infection both feet may be affected. Hand infection usually remains unilateral. In chronic cases there is considerable scaling. The spreading edge is clearly visible (Fig).

### **SPECIAL INVESTIGATION**

A KOH preparation to confirm the diagnosis is essential because eczema and psoriasis also present with scaly, vesicular and pustular eruption on palms and soles. Tinea is usually unilateral, **eczema** and **psoriasis** are usually bilateral symmetrical.

### **TREATMENT**

After confirming the diagnosis an antifungal cream is advised.

- For the scaly type whitefield`s ointment is useful.
- Terbinafine applied daily for one week is effective for localized tinea pedis.
- For macerated toe webs open sandals are advised. Castellani`s paint is prescribed.

- Systemic treatment : Griseofulvin 15mg/kg for 4-8 weeks
  - Intraconazole 400mg daily for 1 week.
  - Terbinafine 250mg daily for 2 to 4 weeks

### **TINEA UNGUIUM (NAILS)**





This is a dermatophyte infection of the nail plate.

Infection usually starts from the tips of the nails, rarely from the lateral nail folds.

The nails become discolored, thickened and then crumble.

Fingernail infection, especially, is a source of recurrent infections in the patient.

Secondary candida invasion can also occur.

### **SPECIAL INVESTIGATION**

KOH examination of nail scrapings is essential. Culture of the nail clipping will indicate which species of dermatophyte is causing the infection.

Histology of the nail clipping is also useful in making the diagnosis.

**TREATMENT** of nail infection should be limited to a dermatologist because the effective antifungals are all very expensive.

- Fingernail infection requires 2-3 months of oral treatment and toe nails require at least 4 months of treatment. Success with griseofulvin is very low.
- Intraconazole is given as a 7day pulse each month, at a dose of 200mg twice a day, for 2-3 months for fingernail and 3-4 months for toe nails.
- Terbinafine 250mg daily for same duration as the above drug.
- One can also give a month of intraconazole or terbinafine and then continue treatment with amorolfine (a good topical agent) for 6 months.

## **PIGMENTARY DERMATOSES**

### **CHLOASMA (MELASMA)**

Cholasma presents as symmetrical hyperpigmented patches on the cheeks, forehead and upper lips. The edges are scalloped or lace like (Fig) Occurs in pregnancy, menopause or whilst on hormonal contraceptives. Usually in women. Sometime seen in men also.

May resolve spontaneously in some patients.

**TREATMENT** is unsatisfactory.

Bleaching creams are given under Dermatologist's supervision. Sunscreens and cover mark advisable.

Perfumed cosmetics are not advisable.

## **VITILIGO**

Vitiligo is an autoimmune disease characterized by sharply defined depigmented patches. Associated autoimmune diseases like diabetes mellitus, thyroid disorders and pernicious anemia may coexist. It is familial in 30% of cases.

Vitiligo may be generalized or segmental (Fig). The generalized type is characterized by depigmented patches distributed in a symmetrical fashion, usually on the backs of hands, knees, ankles, neck and around the eyes. The course of the disease is unpredictable. It may remain static, spread rapidly or repigment spontaneously.







## Vitiligo



### TREATMENT

- Potent topical steroids are used as first line treatment.
- Vitex – a pseudocatalase inhibitor
- Sunscreens to prevent sunburn.
- Covermark to cover the white patches
- Psoralens with UVA in tertiary hospital
- Punch grafts

### BACTERIAL INFECTIONS

#### IMPETIGO

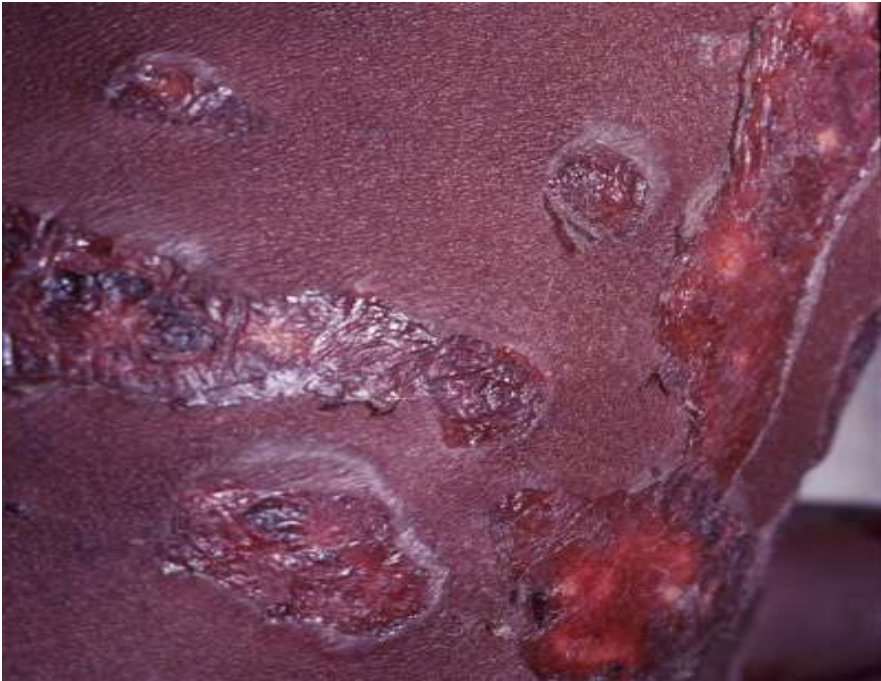
This is a common bacterial infection, caused by *Staphylococcus pyogenes* and *Streptococcus pyogenes*. It is common in the heat and humidity of KwaZulu Natal, especially in children from poor socio-economic areas. Impetigo is contagious and easily spreads from one area of the body to another.

Lesions start as small erythematous papules which rapidly become bullous and then pustular, discharging honey coloured crusts (Fig).





In small babies the bullous phase may persist for a day or so giving rise to bullous impetigo. When the blisters breakdown, round erosions are seen (Fig).



The commonest sites are face and hands. Impetigo often complicates **eczema**, **scabies**, **pediculosis capitis**, **insect bites** and **contact dermatitis**. In severe impetigo there may be lymphadenitis, fever and malaise.

## TREATMENT

- Crusts have to be gently removed with wet dressings or  $\text{KMnO}_4$  soaks.
- Topical antibacterials are applied to the affected areas and in the nasal vestibules to eradicate staph carriage.
- If extensive infection is present a systemic antibiotic e.g. Flucloxacillin 250mg is given 6 hourly for 5 – 7 days

## SYPHILIS

This is a sexually transmitted disease caused by *Treponema pallidum*.

**Primary Stage** is characterized by the chancre which appears at the site of contact (penis, vulva) with the infected partner, within 3-8 weeks. The chancre is a firm, painless ulcer with little discharge (Fig) It may be missed if it is in the vagina or cervix.

## Chancre



**Secondary Stage** usually appears within 2-6 months after the chancre.

Initially this phase begins with malaise, fever and generalized lymphadenopathy.

The early rash consists of brownish maculo papules with some scaling. The palms and soles are characteristically involved (Fig). Moth eaten alopecia is seen (Fig) The rash may resemble a **drug eruption, guttate psoriasis or lichen planus.**





The rash is not itchy, unless there is associated HIV infection.

This rash heals without treatment and is later followed by more persistent papular and annular lesions. The lesions are often around the mouth (Fig). **Mucous patches** are painful (Fig) and flat moist papules occur in the genital area and body folds, even in the toe webs. These are called **condyloma lata**



The rash of secondary syphilis is nodular with or without ulceration if there is coexisting HIV. This is called **Lues maligna** (Fig).



**Tertiary stage** presents with gumma which perforates through the palate (Fig) and may give rise to ulcerating plaques and nodules. Keratitis causing blindness may occur (Fig)



**Congenital syphilis** can cause spontaneous abortion or a macerated still birth if the infection is acquired early in pregnancy. If infection occurs later in pregnancy, the baby is born with rash that resembles secondary syphilis (Fig). Other



complications in the baby include pseudoparesis due to osteitis, hepatosplenomegaly, keratitis, abnormal teeth and a saddle nose deformity.

### **SPECIAL INVESTIGATIONS**

The VDRL or TPHA are positive in high titres in the secondary stage. Low titres are present in the tertiary stage or in partially treated patients. The test is negative in the early primary stage. FTA (fluorescent treponema antibody) test is a more specific test which remains positive for life

### **TREATMENT**

- The spirochaetes are sensitive to penicillin.
- Benzathine penicillin in a dose of 2.4 mega units weekly for 2 weeks.
- If there is associated HIV, the patient is given procaine penicillin 1 million units daily for 10 days with probenecid.
- If the patient is allergic to penicillin erythromycin 500mg 6 hourly for 2 weeks or doxycycline 100mg 12 hourly for 2 weeks may be given.

## TUBERCULOSIS















## **LEPROSY**

Leprosy is a chronic infection caused by *Mycobacterium leprae*. It is acquired by droplet infection. The incubation period is 5-7 years.

Although it is a rare disease it is important for PHC workers to be able to recognize the condition because if left untreated the complications are very disabling (blindness, foot drop, trophic ulcers, claw hands).

### **Clinical Features**

The type of leprosy a patient gets depends on his /her immunity. Those with a high resistance develop tuberculoid leprosy (paucibacillary) and those with low immunity develop lepromatous (multibacillary leprosy). Between these two poles lies borderline leprosy; those with more tuberculoid features have borderline tuberculoid (BT) leprosy and those near the lepromatous pole have borderline lepromatous (BL) leprosy.

**Tuberculoid Leprosy** presents with hypopigmented well defined anaesthetic patches. The superficial nerve in the vicinity of the lesions may be thickened and palpable.



The following conditions in the differential diagnosis are considered. None of these conditions will have a decreased or loss of sensation:

**Vitiligo** – here the patch is totally depigmented .

**Pityriasis alba** – hypopigmented scaly macules and patches, seen mainly in children on the face.

**Pityriasis versicolor** may present with hypopigmented scaly macules and patches which are seen mainly on the neck, back and chest. A KOH preparation made from the scales will reveal the fungal mycelia and spores.

**Post inflammatory hypopigmentation and depigmentation** from any cause like psoriasis ,ect.

**Lepromateus Leprosy** presents with generalized nodules,papules or an erythematous infiltrated thickened skin. There may be thickened peripheral nerves. There is glove and stocking anaesthesia.

In the differential diagnosis **Sarcoidosis, mycosis fungoides, neurofibromatosis** have to be considered.







### **Special Investigations**

- A skin biopsy will help to confirm the diagnosis.
- Biopsy of sensory nerve is helpful if there are no specific skin lesions.
- Smears from the nose and skin in lepromatous leprosy will reveal the acid fast bacilli on Fite stains.

## **Treatment.**

Multidrug therapy is now used to prevent resistant strains of *M. leprae*.

- Dapsone 100mg daily .
- Clofazamine 100mg daily and 300mg monthly
- Rifampicin 400 – 600mg monthly.

Tuberculoid patients are treated for 6 months and lepromatous for 2 years.

## **Reactions**

Two types of reactions occur during treatment. Special care is required in managing these patients.

**Type I** is seen in patients with Tuberculoid Leprosy.

This is the reversal reaction. The lesions become red, nerves become painful and paralysis may occur. The reaction is treated with chloroquine, non steroidal anti inflammatory drugs and oral steroids.

**Type 2** reaction is called **erythema, nodosum leprosum** and is seen in lepromatous reaction. It is an antibody/antigen reaction and presents with red painful nodules, nerve palsies, arthritis iridocyclitis and lymphadenopathy.

This is treated as above plus thalidomide.

The household contacts of lepromatous patients need to be followed up.

## PARASITIC INFECTIONS

### SCABIES

Scabies is caused by the mite ***Sarcoptes scabiei***. It spreads by close personal contact and may even be sexually transmitted. The mite burrows into the outer keratin layer of the skin where the female lays its eggs. The inflammatory reaction of the patient to the mites and its eggs cause the itching.

### CLINICAL FEATURES

Several members of the family are affected. The predominant symptom is the intense pruritus which is worse at night.

The skin lesions are nonspecific except for the borrows. These are tiny (less than 1cm long and a few millimeters wide) and often excoriated. The other lesions are excoriated papules, pustules and eczematous areas. Secondary bacterial infection frequently leads to crusting. Hence impetigo and eczema at sites where the mite usually burrows into skin is seen. These sites are between and sides of fingers, wrists, naval, natal cleft, axillary folds, nipples, elbow points and genitalia (Fig). In patients with good hygiene there may be only a few papules on the thighs. However they complain bitterly about the itching. In little babies the predominant lesions are on the palms and soles (Fig). Face may be affected in babies.

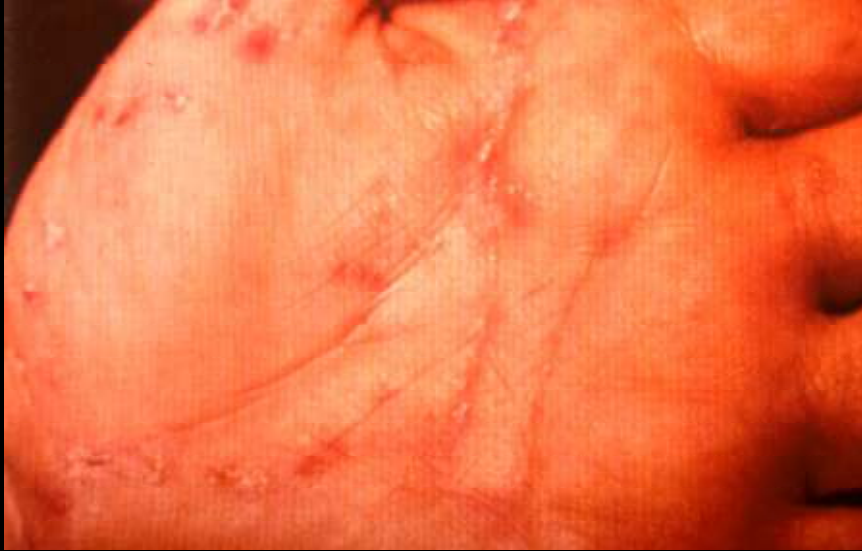
**Norwegian or Crusted** scabies is seen in the immunosuppressed. This presents as thick scaly crusting at the usual sites of scabies (Fig). The nails are also thickened and dystrophic (Fig).. Hundreds of mites are found in the scales.

Patients with crusted scabies give rise to an epidemic in an institution or old age home.

**Sarcoptes scabiei, parasite causing scabies**



**Papules and burrows on palms**



**Itchy papules involving web spaces and inner wrists**



**Crusted papules involving web spaces**



**Itchy papules involving axilla**



**Scabies involving elbows, buttocks and trunk**



**Crusted papules with secondary bacterial infection**



**Scabies with impetigo**



**Scabies with impetigo**



**Crusted (Norwegian scabies)**



**Crusted (Norwegian scabies)**



**SPECIAL INVESTIGATIONS**

One can extract the mite with a sharp needle from the intact burrow and observe it under the microscope.

## **TREATMENT**

All the members of the household have to be treated at the same time whether they all are itchy or not. Strangely some infected persons may not itch and cause reinfection.

Written instructions must be given to the patient and enough medication must be prescribed for the whole family. The instructions are different for each particular scabicide.

### **Benzyl Benzoate Lotion (Ascabiol)**

- 1<sup>st</sup> Night: Bath. Apply lotion from neck to toes. The whole body except the face is covered with the lotion. Particular attention is paid to all the flexures where the mite is burrowed.  
The lotion is reapplied after 15 minutes.
- 2<sup>nd</sup> Night: No bath. The lotion is applied twice as on first night.
- 3<sup>rd</sup> Day: Bath.
- All clothes and linen must be washed and dried in sunshine. Bedding that cannot be washed (pillows, mattress, etc) must be put outside as UVL kills the mites.
- Clothes should preferably be ironed.

### **Gamma benzene hexachloride lotion (Quellada)**

This is not used in children under 2 years because it is absorbed from skin and crosses the blood – brain barrier and is neurotoxic.

- **1<sup>st</sup> day:** Bath and apply to whole body except the face. Leave on skin for 24 hours.
- **2<sup>nd</sup> day:** Bath and put on clean clothes. Treat clothes and bedding as above.

**5% Sulphur ointment** is used for small babies and in patients who have grossly infected eczematized scabies. This is applied over the whole body from head to toes, once daily, for five days.

**Eurax cream (1% crotamiton)** can also be used for small babies.

This is also applied daily from head to toes for five days, after a bath.

For secondary bacterial infection systemic antibiotics like Flucloxacillin is given at the same time as the topical treatment.

If eczema remains after the treatment, a diluted corticosteroid cream may be used.

An antihistamine like phenegan is prescribed for nights for two weeks as pruritus lasts for this period, despite eradication of the mites.

Patients with crusted scabies must be referred to a hospital. All other members of the house or institution are treated as above.

### **PEDICULOSIS CORPRIS**

Also known as Vagabond's disease is seen in the homeless individuals. The lice are in the seams of clothes. Clinically one sees hyperpigmentation and numerous excoriations.

Treatment is as for scabies.

### **PEDICULOSIS CRURIS**

This is caused by the crab louse. It is a sexually transmitted disease. The patient presents with severe itching and the lice engorged with blood are seen in the pubic and chest hairs.

Treatment is as for scabies. Patient should be advised to shave the body hair.

## **PEDICULOSIS CAPITIS**

Can be common in school girls. This is also contagious. Nits which are the, eggs laid by the lice are brown, shiny and stuck to the hair in contrast to dandruff which can be shaken off. Lice are usually seen in the hairs in the occipital region. Secondary bacterial infection causes tender cervical lymphadenopathy.

## **TREATMENT**

- A mixture of vinegar, cooking oil and paraffin ( $\frac{1}{3}$  each) is applied to the scalp and left overnight.
- The hair is washed the next morning.
- Nits and dead lice are combed out.
- Treatment may need to be repeated a week later.

## **PAPULAR URTICARIA**

This condition, also known as lichen urticatus is common in the heat and humidity of KZN. It is caused by a hypersensitivity reaction to the bites of insects like fleas, mosquitoes, mites and bugs.

## **CLINICAL FEATURES:**

This eruption is seen mainly in children. The rash is characterised by erythematous urticarial papules capped by a punctum or tiny vesicle (Fig). In highly allergic children large bullae may appear at the site of the bites.

Face, legs, forearms and the midriff area are usually affected. Flea bites, particularly form papules in a line. The condition is very itchy and excoriations may be complicated by impetigo.

## **TREATMENT**

- A moderately potent topical steroid applied daily for a few days is sufficient.
- Oral antihistamines are given to control the pruritus.
- Oral antibiotics and mupirocin ointment is given if secondary bacterial infection is seen.
- Insect repellents are helpful.
- Eradication of insects in pets and around the house is also advised.

## **VIRAL INFECTIONS**

### **HERPES SIMPLEX**

There are 2 types of herpes simplex viruses (HSV)

- type I which causes oral herpes
- type II which causes genital herpes.

**ORAL HERPES SIMPLEX** is acquired in childhood. The initial or primary infection is usually very severe and presents with painful, umbilicated blisters in

the mouth, tongue or lips (Fig) The draining lymph nodes are enlarged and tender. There is malaise and fever. The ulcers that result from the blisters take about 7 to 10 days to heal. However the virus remains latent in the regional nerves.



**GENITAL HERPES** is a sexually transmitted disease. The primary infection is also severe and is characterised by umbilicated blisters on the genitalia which leave painful ulcers or erosions (Fig).



**RECURRENT HERPES** results from the latent virus and is precipitated by high fever, sunburn, menstruation and stress. The recurrent infection is characterized by umbilicated blisters appearing at the sites where the primary infection had occurred. The recurrent attacks are less severe (Fig).



### Complications

- Secondary bacterial infections causing impetigo may complicate herpes infections
- Patients with eczema may develop inoculation of their skin with the virus if exposed to someone with active infection resulting in **eczema herpeticum**.(Fig)



- Recurrent herpes may cause recurrent erythema multiforme.
- In patients with coexistent HIV the ulcers are huge and persistent (Fig).
- Oral antivirals (acyclovir, famciclovir or valciclovir) are given to immunocompromised patients with HIV/AIDS, patients with eczema herpeticum, if there are frequent genital recurrences or if erythema multiforme complicates recurrent herpes.
- Topical antivirals are only used by ophthalmologists for corneal infections. These should be discouraged to prevent the development of resistant herpes virus in the community.

## **CHICKENPOX (VARICELLA)**

Chickenpox is caused by the varicella virus. It is a droplet infection i.e. it spreads by the respiratory route. The incubation period is 14 days.

### **CLINICAL FEATURES**

The disease starts with fever, malaise and headache. This is followed by the rash which begins as erythematous papules. These rapidly become umbilicated vesicles with clear fluid, which later becomes pustular. Within a few days the blisters breakdown to leave crusts. These clear to leave hyperpigmented or depigmented and sometimes with depressed scars. The blisters appear in crops and are distributed mainly on the trunk and sparsely on the peripheries i.e. centripetal distribution.

Complications: - Pneumonitis with pulmonary opacities on CXR

- Secondary bacterial infection causing impetigo.(Fig)
- Hemorrhagic or lethal infection in the immunocompromised.

Chickenpox may occur a second time in HIV patients.



**TREATMENT**

The simple uncomplicated cases will require only calamine lotion. In the immunocompromised an antiviral like acyclovir can be given in the early stage of the infection Oral Flucloxacillin is needed if secondary bacterial infection occurs.

### **HERPES ZOSTER (SHINGLES)**

Shingles is caused by the varicella or chickenpox virus. After an attack of chickenpox the virus remains latent in the sensory ganglion. These viruses reactivate when the patient's immunity falls. This could be due to severe stress, HIV infection, old age or immunosuppressive therapy. A patient with active shingles can cause chickenpox in the unexposed.

### **CLINICAL FEATURES**

Infection starts with burning pain in the dermatome where the rash will appear in a few days. If the chest dermatome is affected myocardial infarction or pleuritis may be suspected. With abdominal dermatomes, cholecystitis, appendicitis or urinary tract infection may be misdiagnosed before the rash appears.

The rash is localized to one or two adjacent dermatomes on one side of the body (Fig). The rash starts as painful papules which become umbilicated vesicles on an erythematous base (Fig). The blisters appear in crops. In a severe infection the blisters may be large and hemorrhagic (Fig). Suspect HIV if more than one dermatome is affected (Fig) or if the blisters are disseminated over the body in addition to the dermatome (Fig).





## **COMPLICATIONS**

- Secondary bacterial infection
- Motor nerve involvement causing paralysis of the relevant muscles.
- Corneal ulcers if the ophthalmic division of the trigeminal nerve is affected (if blisters are seen on the side of the nose).

- Persistent neuralgic pain after the acute episode. This may be prevented if acyclovir is given within 2 to 3 days of the rash.

## **TREATMENT**

- If severe zoster is seen in a young patient, HIV should be suspected. HIV should also be suspected if more than one dermatome or disseminated lesions are seen.
- Acyclovir is given within 48 to 72 hours of infection. However the immunocompromised patient will benefit from oral acyclovir as long as vesicles are visible.
- Analgesics are given in full doses for the acute attack.
- For the rash calamine lotion in the vesicular stage or, mupirocin ointment in the crusted stage is prescribed.
- Oral Flucloxacillin is given if bacterial infection is seen.
- **Post herpetic neuralgia** is prevented if acyclovir is given timeously.
- Carbamazepine is given if post herpetic neuralgia develops.

## **WARTS (VERRUCAE)**

Warts are caused by human papilloma viruses (HPV). They are spread by direct contact. There are many species of HPV (over 60 types) Different species cause different types of warts. The species that cause genital warts (types 6, 11, 16 and

18) are oncogenic. They are believed to play a causative role in carcinoma of the cervix.

**COMMON WARTS** (HPV types 1, 2 and 4) are skin or grey coloured papules and have a rough warty surface (Fig). They are commonly seen on the fingers and palms of children. On the face they have filiform appearance (Fig).



**PLANTAR WARTS** occur on the soles of the feet. Because of pressure they grow inward and are painful. They may be anywhere on the feet and are not localized to pressure sites.

Warts must be differentiated from **plantar callosities** which are seen at pressure sites. The latter are more painful on direct pressure. Plantar warts are more painful on pinching or lateral pressure. Paring a plantar wart will show bleeding

points (Fig). In contrast paring a plantar callosity will lead to the soft core.

Removal of this core will relieve the pain of the callosity.

**Plantar wart due to HPV( note central bleeding points)**





**GENITAL WARTS** (types 6, 11, 16 and 18) are sexually transmitted. They become cauliflower like and can become profuse (Fig) in HIV patients (Fig). In homosexuals they are perianal (Fig).



**Genital warts( condyloma  
accuminata due to HPV)**



**Giant enital warts( condyloma accuminata due to HPV**



In patients with HIV they are very resistant to all forms of treatment.

**FLAT (PLANE) WARTS** are seen mainly in children. They occur mainly on the face and dorsal surfaces of the hands. In patients with HIV they become generalized. These warts are characteristically hypopigmented, or skin coloured, smooth topped papules, varying in size from 2 to 4mm in size.



All warts demonstrate Koebner phenomenon i.e. warts appear in a line at sites of scratching or trauma (Fig).

## TREATMENT

Warts do disappear spontaneously; hence treatment must not be too destructive.

Warts should never be excised as they recur in the excision scar. Warts may recur after any form of treatment until the patient develops enough immunity to eradicate them.

The therapeutic options available are:

- **Cryotherapy:** Warts are frozen with liquid nitrogen. If the freezing is done properly a blister will form and the wart comes off in the roof of the blister. Pain limits the degree of freezing. Repeat freezing is done at intervals of 2 weeks.

- **Cautery:** After giving a local anesthetic the wart is burned with an electric cautery.
- Salicylic/lactic acid 16.7% each, made up in colloidian flex (**Salactol or duofilm**) is applied to the wart under elastoplast occlusion. The surrounding area is protected with vaseline first. The affected area is initially soaked in a hot water to soften the skin and the surface pared off with a scraper. This procedure is repeated daily.
- **Podophyllin 25%** in Tinc Benz Co is effective for genital warts. The surrounding normal skin is protected with vaseline. The podophyllin is applied with a cotton wool swab made on an orange stick. The patient is warned to wash off the paint after 4-6 hours. This procedure is repeated weekly. Podophyllin should not be used in pregnancy. If the area is very macerated or sore the next application is delayed for a week. Sitz baths and castellain's paint will help.
- **Aldara or Imiquimod** is very expensive and not available in the state sector.

In HIV/AIDS warts are profuse and resistant to all forms of treatment.

## **MOLLUSCUM CONTAGIOSUM**

This is a chronic infection caused by a pox virus. The condition spreads by contact.

## **CLINICAL FEATURES**

Molluscum contagiosum is characterised by pearly, umbilicated papules, 2-4 mm in diameter (Fig) on the face and neck. In HIV patients they are profuse, generalized and large (giant mollusca) (Fig). Like warts they can get better spontaneously by the patient's own immunity. However they may spread by contact while awaiting spontaneous resolution. Secondary bacterial infection may also occur. If large and numerous umbilicated lesions are present in a HIV/AIDS patient, biopsy and culture should be done to exclude systemic fungal infection like cryptococcosis and histoplasmosis

## **TREATMENT**

- Duofilin or Salactol wart lotion may be applied daily to the individual lesions. Vaseline is used to protect the surrounding normal skin.
- Liquid N<sub>2</sub> can be used to freeze the individual lesions.
- Light cautery under EMLA anesthetic is also used to eradicate the lesions.

## **PSORIASIS**

Psoriasis is a chronic hereditary dermatosis characterized by erythematous papules and plaques covered with silvery scales.

It has a worldwide prevalence of 1 to 3%.

The exact cause is not known. Genetics plays a part but the mode of inheritance is not known.

The various trigger factors that precipitate or aggravate psoriasis are:

- **Trauma** – psoriasis demonstrates the Köebner phenomenon where psoriasis occurs at sites of trauma.
- **Infection** – Streptococcal infection gives rise to acute guttate psoriasis. HIV infection gives rise to severe, explosive eruptions presenting as erythrodermic, Reiters like or generalized plaques.
- **Drugs** – Antimalarials, beta blockers and lithium worsen or trigger off psoriasis in some patients.
- **Sunlight** – most patients improve with UVL. However a small proportion of patients get worse. Sunburn can precipitate psoriasis in the exposed areas of the body. This is a form of the Köebner phenomenon.
- **Hormonal** – Usually psoriasis improves during pregnancy and may relapse in the post partum period.
- **Alcohol** and cigarette smoking worsen psoriasis

- **Stress** aggravates or precipitates psoriasis in many patients.

## **CLINICAL FEATURES**

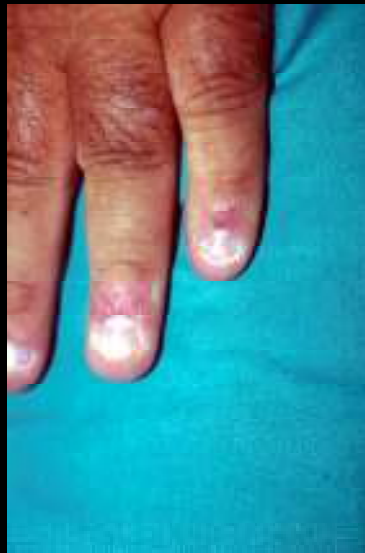
There are different patterns of psoriasis.

1. **Chronic plaque psoriasis** is the commonest type. Here one sees erythematous or well defined pink plaques covered with thick silvery scales. The sites affected are the elbows, knees, lower back (Fig) and scalp. The nails may show large pits (fig) onycholysis, discoloration and subungual keratosis (Fig) Tinea Unguium has to be ruled out in nail dystrophy. Thick scales on the scalp gives a lumpy – bumpy feeling when one runs ones fingers through the hair. The hairline is usually affected (Fig). Unlike seborrhoeic dermatitis there is no exudation from the scalp.

## Psoriasis



## Nail Psoriasis



**Psoriasis**



**Plantar Kertoderma Psoriasis**



**Psoriasis**



**Psoriasis**



2. **Guttae psoriasis** presents suddenly with a generalized erythematous scaly maculo-papular eruption (Fig). It usually follows a streptococcal sore throat in children or adolescents. This type resembles a drug eruption or secondary syphilis. The rash is usually self limiting. However in some patients plaques may develop later.



3. **Inverse type** presents with flexural involvement. The plaques in the flexures are well defined and have a glazed appearance with no scales (Fig). It is commonly misdiagnosed as fungal infection or candidiasis. In tinea there is a central clearing and a well defined papular border, whereas in candidia one sees red patches with satellite lesions at the periphery.

4. **Pustular psoriasis** is rare. The **generalized** type presents with red patches with pustules at the periphery. The patient is usually very sick with malaise and fever. **Localised pustular psoriasis** presents with painful itchy, pustular and scaly rash symmetrically seen on palms and soles. (insteps). Tinea has to be excluded by making a KOH preparation and looking under a microscope..
5. **Erythrodermic psoriasis** is seen when psoriasis becomes unstable either with tar preparations, steroid withdrawal or HIV infection. The whole body becomes red and scaly.
6. **Arthropathy** may be associated with psoriasis in upto 5% of patients. The arthritis may resemble rheumatoid arthritis, ankylosing spondylitis or may be quite mutilating. The rheumatoid factor is negative.

## TREATMENT

- 6% - 10% tar in 2%-5% Salicylic Acid ointment is applied to the scaly plaques – once a day on the scalp and 3 to 4 times a day to the body areas. Liberal use of ointment is encouraged.
- Anthralin in soft paraffin is also very effective in the chronic plaque type of psoriasis. Short contact of 1-2 hours is encouraged.

- Tar and Anthralin cannot be used on the face and sensitive areas of axillae, groin and genitalia. For psoriasis of the face 1% hydrocortisone cream is advised; and for flexures and genitalia a diluted moderately potent steroid cream is advised.
- Pustular psoriasis of palms and soles may require more potent topical steroids. These patients should be referred to specialists.
- Pustular and erythrodermic psoriasis also require hospitalization and are best managed by specialists. Only emollients or 2% salicylic acid ointment will be tolerated in these patients. They need systemic treatment.
- Calcipotriol is restricted to less than 100 gm per week. Because of its cost and side effect of hypercalcaemia it should be restricted to dermatologists.
- Systemic treatment with psoralen and UVA (PUVA), methotrexate, oral retinoids and cyclosporin should be restricted to dermatologists.

## **HIV CUTANEOUS MANIFESTATIONS**

Skin diseases occur in over 90% of patients infected with the human immunodeficiency virus (HIV).

The earliest manifestation of HIV infection is the acute **seroconversion rash** which occurs within 3-6 weeks of exposure.

This presents as a morbilliform (measles like) maculo – papular exanthem seen mainly on the trunk, upper arms, palms, soles, and mucous membranes. There is associated fever, malaise, headache and lymphadenopathy. The rash lasts for 3 to 4 days and disappears spontaneously.

The other cutaneous manifestation may be classified as :-

Infective dermatoses

Non – infective dermatoses

Neoplastic conditions

### **INFECTIVE HIV DERMATOSES:**

1. All the **viral** infections discussed previously are seen in HIV infected patients.

**Recurrent herpes simplex** infections are seen at the usual sites in the mouth and on the genitalia. Unusual sites are also affected as seen on the ear (Fig). As the CD4 count falls the herpes ulcers are large and chronic and are seen mainly in the perianal (homosexuals) and genital areas. (fig)



**Herpes zoster** in the HIV patients is severe with large, often haemorrhagic bullae. Multiple dermatomes (Fig) and dissemination is seen (Fig). The zoster ulcers may persist for weeks if not treated. Herpetic and post herpetic neuralgia is severe.



**Chicken pox (Varicella)** may be recurrent and haemorrhagic vesicles are often seen (Fig). Secondary bacterial infection may supervene (fig).

Patients respond well to oral acyclovir

**Molluscum Contagiosum** presents with generalized (fig) and often giant umbilicated papules and sometimes nodules. The lesions are persistent. When profuse and nodular, skin biopsy and culture is mandatory to exclude systemic mycoses like cryptococosis(Fig) and histoplasmosis (fig)



**Warts (Verrucae)** are numerous, large and persistent (fig). **Genital warts** are profuse (fig) and can become malignant. Multiple **plane warts** (fig) are also frequently seen in children. Warts frequently recur after treatment.



Eptein Barr Virus causes **oral hairy leukoplakia**\_(fig)which presents as whitish, lacy ridges on the sides of the tongue.

**2. BACTERIAL INFECTIONS** are recurrent in the HIV patients.

The xerosis (dry skin) is universal in HIV/AIDS. The consequent pruritus causes non specific eczema which becomes secondarily infected (fig).

**Ecthyma** (Fig) develops.

Insect bites and scabies becomes **impetiginised** (fig)

**Bacillary angiomatosis** is a bacterial infection caused by *Bartonella hensalae*.

Kittens are reservoirs for these organisms. The disease presents as a generalized eruption consisting of haemorrhagic papules and nodules with ulceration(fig). The mucosa may also be studded with these lesions. It responds well to oral erythromycin.

**Syphilis** in the secondary stage presents as nodules and ulcers(Fig) when there is coexisting HIV. This is called Lues maligna. Patients respond to parental penicillin which is given for 3 to 4 weeks.

**Tuberculosis** presents as **papulo- necrotic tuberculid** (PNT) or **erythema induratum**.

**PNT** presents as papules and ulcerating nodules distributed mainly on the face, ears, extensor surfaces of forearms, legs and buttocks(fig).

**Erythema induratum** presents as tender, nodules seen mainly on the calves (fig). The mantoux in these patients is strongly positive. These patients respond well to full anti TB treatment.

**Leprosy** in HIV patients is lepromatous in type (fig)

## **FUNGAL INFECTIONS**

Dermatophyte and candida infections are frequent, chronic and extensive (fig) . Some dermatophyte infection are resistant to griseofulvin. Terbenifine and intraconazole may then become necessary.

**Onychomycosis** is also common and is responsible for recurrent tinea infection in the patient.

**Candidiasis** of the mouth spreads to the pharynx and esophagus. For these patients ketoconazole or fluconazole is given.

Systemic mycoses seen are **cryptococcosis** (fig) and **histoplasmosis**. These are opportunistic infections that occur in AIDS patients. These patients are very sick with a high mortality. Intravenous amphotericin – B is necessary.

## **NON INFECTIVE HIV MANIFESTATIONS**

**Psoriasis** is common. It is often explosive giving rise to erythroderma.(fig)

**Reiters** – like hyperkeratotic plaques (fig) are also seen not infrequently.

These patients are also very sick and septicaemia may develop if not intensively treated, Also, one cannot use the chemotherapeutic drugs (methotrexate and cyclosporine) in these patients because of further immunosuppression. Oral retinoids are then essential for these patients.

**Papular pruritic eruption** and **eosinophilic folliculitis** are also seen in HIV/AIDS. These present as urticarial, erythematous (Fig) papules and pustules (fig) which are very pruritic. The lesions are seen mainly on the face, upper trunk and arms. The pustules are sterile and do not respond to antibiotics and even antihistamines do not control the pruritus. UVB may then be necessary. Pityrosporum yeasts and the Demodex mites may play a role in causing these eruptions.

**Acne** in HIV/AIDS patients is often severe i.e. the nodulocystic variety is seen.

**Acne fulminans** (fig) and **hydraadenitis suppuritiva** (fig) is sometimes seen with acne. These patients require Roaccutane.

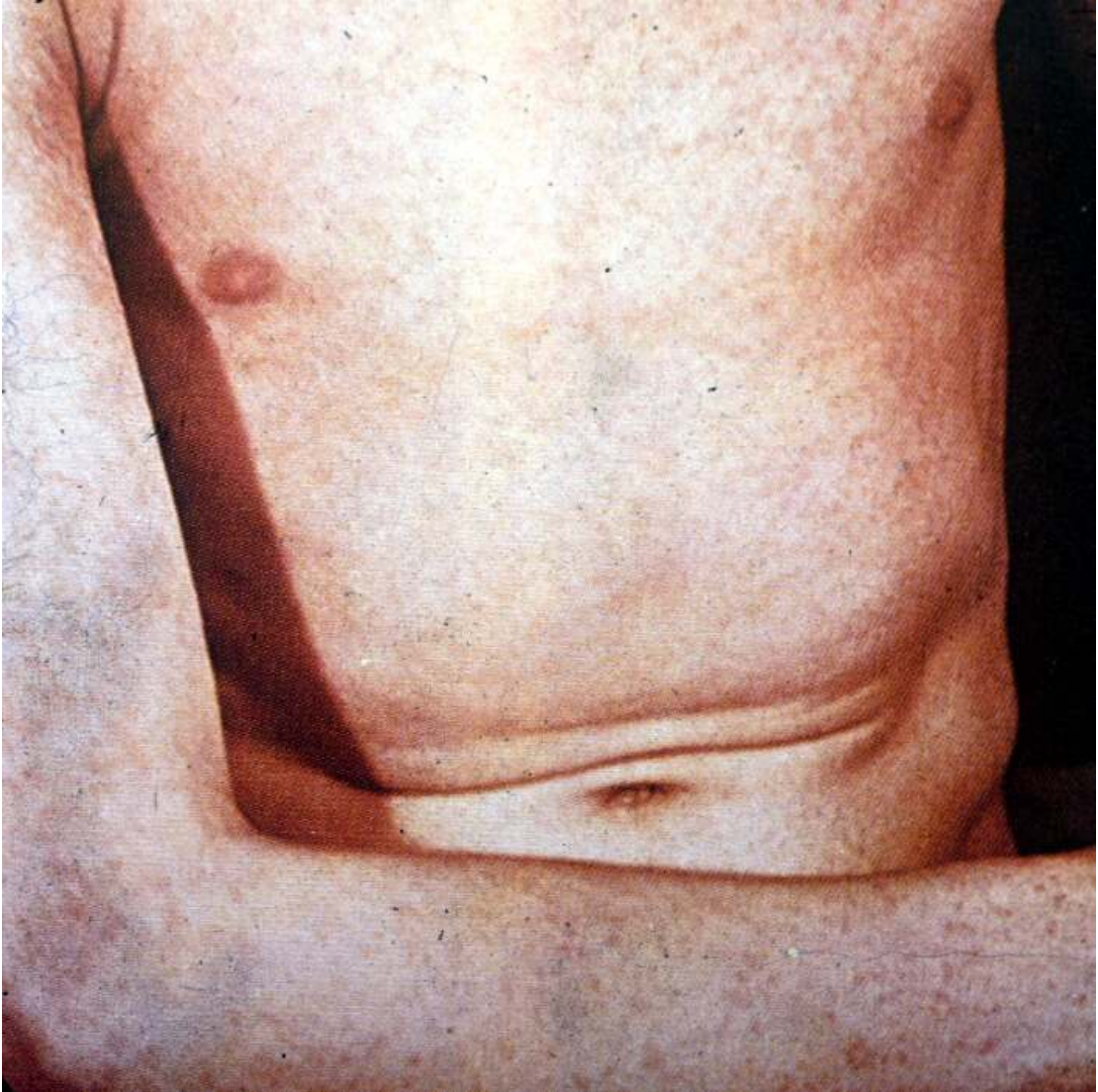
**Adverse Drug Eruptions** are frequent in HIV patients. They range from the mild to life threatening and may be due to single or multiple drug combinations. The

underlying immuno dysregylation is believed to be the cause of these eruptions .

The rash ranges from morbilliform (fig) to Stevens Johnson Syndrome (fig), Vasculitus (fig) and erythroderma (fig) are also frequently seen. One can not determine the offending drug in most cases.

The common drugs implicated are sulphonamides, trimethoprim, penicillin and nevirapine.

One can correlate the CD4 count with a specific HIV cutaneous disease.











**CORRELATION OF CD4+ COUNT WITH SPECIFIC HIV ASSOCIATED DISORDER**

>500 CD4 <sup>+</sup> / mm <sup>3</sup>	<500 CD4 <sup>+</sup> / mm <sup>3</sup>	<250 CD4 <sup>+</sup> / mm <sup>3</sup>	<50 CD4 <sup>+</sup> /mm <sup>3</sup>
Acute retroviral syndrome	Oropharyngeal	Eosinophilic folliculitis	Large, non healing herpes simplex, perirectal ulcers and other mucocutaneous HSV
Oral hairy leukoplakia	candidiasis(thrush)	Seborrheic dermatitis,	Giant mollusca
Vaginal candidiasis	Herpes zoster	Mollusca	Disseminated
Seborrheic dermatitis	Psoriasis, refractory	Bacillary angiomatosis	cytomegalovirus
Psoriasis	Eruptive atypical naevi	Milliary/extrapulmonary	Acquired ichthyosis
Kaposi's sarcoma	and melanoma	tuberculosis	
		Herpes simplex,	
		Cryptococcosis,	
		Histoplasmosis,	
		Non-Hodgkins	
		lymphoma	

## NEOPLASTIC HIV DERMATOSES

**Kaposi Sarcoma** is the commonest malignancy seen.

These present as hyperpigmented and purplish macules, plaques and nodules which may be disseminated over the body. The palate is invariably involved.

Lymphadema of the affected limbs is also frequently seen. Antiretroviral treatment (ARV<sup>S</sup>) prevent Kaposi's Sarcoma. Radiotherapy for localized lesions

and chemotherapy for generalised Kaposi sarcoma is best given in a specialist centre.

### **Primary Cutaneous Neoplasms**

**Squamous and basal cell carcinoma** are similar to those in immunocompetent patients.

Fair skin, family history of skin cancer and cumulative sun exposure are known risk factors. However the tumours appear earlier and more often on unexposed sites such as the trunk. Metastases are also more common. Invasive SCC of anus and cervix are also seen and HPV is believed to be the cause.

**Malignant melanoma** and multiple dysplastic naevi may be seen in HIV patients. The naevi tend to be larger and more atypical in appearance.

## **BULLOUS DISEASES OF THE SKIN**

**Blisters** in the skin may arise under the stratum corneum (subcorneal) within the epidermis (intra epidermal) or under the epidermis(sub epidermal)

Bullous diseases account for the bulk of dermatological emergencies and many may have fatal outcome if not treated timeously. This is because patients lose fluids and electrolytes from the blisters and can develop severe sepsis. Both sepsis and fluid loss can result in shock.

### **Epidermolysis Bullosa**

This is a congenital hereditary condition. The baby is born with blisters or blisters and erosions appear soon afterwards. The blisters are st sites of pressure (elbows, knees, ankles, sacrum) or trauma (Fig). The babies have to be handled with care and sticky tapes should be avoided. The lesions should be covered with paraffin gauze and sent to tertiary centre.

### **Bullous Impetigo**

Bullous Impetigo is common in children. It is caused by *Staphylococcus aureus*. The blisters are subcorneal and flaccid. When the blisters breakdown erosions are seen (fig). The lesions are grouped and located usually in the flexures (fig). The patients are treated with Flucloxacillin and a topical antibiotic like mupirocin.

**Staphylococcal scalded skin syndrome (SSSS).** This is caused by a toxin released by some strains of staphylococcus aureus. The skin becomes red, painful and large flaccid bullae which are subcorneal are seen (fig). The

organisms are not in the blister fluid but are in the umbilicus, conjunctiva, throat or in a wound.



Patient responds well to parental penicillin which should be given expeditiously.

### **Acute eczema**

Acute eczema presents as a vesicular rash. The blisters breakdowns rapidly to cause an exudative rash.

Acute eczema is commonly seen with **contact dermatitis to plants** such as poison ivy or primula. The blisters are usually linear. (fig)

**Pompholyx** is a very itchy vesicular, eczematous eruption seen on the fingers and palms. The blisters appear like sago grains (fig). Feet may be affected.

The blister in eczema are intra epidermal

### **Treatment of vesicular eczema:**

- Light pink potassium permanganate soaks two to three times a day.
- Moderately potent steroid creams are applied after the soaks.

### **Autoimmune Bullous Eruptions**

There are several chronic bullous eruptions caused by autoimmune mechanisms.

We confirm the diagnosis by doing a skin biopsy for histology and immunofluorescence.

**Pemphigus vulgaris** is a serious bullous eruption which affects middle aged men and women (Fig). The skin and mucous membranes especially in the mouth are affected (Fig). The blisters arise on normal looking skin. The blisters are in the epidermis, just above the basal layer of the epidermis. When the bullae break down, very painful erosions are left (fig) The disease can be quite extensive and has a high mortality if not treated. Corticosteroids are life saving, but cause diabetes, hypertension, predisposition to infection. Patients with this disease should be sent to a tertiary centre.

**Pemphigus Foliaceus** is a superficial blistering eruption where the bullae are subcorneal. The blisters are flaccid and breakdown rapidly to cause superficial erosions and scaling (fig). The rash starts on the scalp and spreads to the face and then the trunk and limbs (like falling leaves). The mucosa is very rarely affected). If extensive it presents as an exfoliative dermatitis. There is low grade secondary infection causing malodour.

Septicaemia, protein loss causing oedema, are common complications. These patients should also be referred to a tertiary centre for management.

### **Bullous Pemphigoid**

**Bullous Pemphigoid** is also an autoimmune blistering condition seen in elderly patients. The blisters are subepidermal and therefore tense. The mucous membrane may rarely be affected. The tense bullae appear on an erythematous base (Fig). The rash is mainly in the flexures or medial aspects of the arms and thighs (fig). The rash is also itchy. These patients should also be sent to a tertiary centre where dermatologists will treat the patients

### **Chronic Bullous Disease of Childhood.**

Chronic Bullous Disease of Childhood is a self limiting ( $\pm 1$  year) blistering disease seen in children. The blisters are subepidermal.

The rash presents as itchy tense bullae on an erythematous base (fig). Jewel like clusters (fig) are frequently seen (fig) distributed mainly on the face (perioral) (fig) and pelvic region (around the genital) (fig) The extensor surfaces of the limbs (fig) are also affected and so is the scalp. Usually there are no associated systemic diseases.

These patients respond well to Dapsone with or without low dose systemic steroids. These patients should also be referred to a dermatologist.

## **Toxic Epidermal Necrolysis (TEN)**

Toxic Epidermal Necrolysis is usually due to drug hypersensitivity or toxicity.

Sometimes a severe Stevens Johnsons Syndrome can progress to TEN.

The rash starts suddenly as erythematous painful areas that rapidly develop into blisters with sheets of skin sloughing off (fig).

The mucous membranes of the mouth. Eyes and genitalia are affected(fig)

TEN is a dermatological emergency and may be fatal because of infection, loss of fluid and electrolytes and associated liver and renal damage.

TEN has to be differentiated from SSSS. The latter usually occurs in infants and children. On skin biopsy the blisters in SSSS are subcorneal, whertean in TEN the whole epidermis is necrotic and the blister is subepidermal .

The patient has to be treated in an intensive care unit with central venous lines, intravenous fluids and electrolytes replacement. Corticostreoids are given for the first 24 -48 hours. Intravenous immunoglobulin is useful. Special hygiene of eyes and mouth is essential : - Saline cleansing and antibacterial ointment (chloromycetin) for eyes and mupirocin ointment for mouth to prevent bacterial infected blisters. There should be no creases on bedding, patients should be handled with care and sticky tapes should be avoided. Heparin is given to prevent deep vein thrombosis. Adequate analgesia is also essential.

