

# The Burden of Dermatoses: Evidence from Bangladesh

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**Abstract:** *Background:* Skin diseases are one of the common health problems seen in developing countries and differ in different regions depending on social, economic, racial and environment factors. Epidemiological studies of skin diseases are rather rare in Chittagong.

*Objectives:* To determine the pattern and prevalence of skin diseases in the Chittagong region.

*Methods:* This is a descriptive retrospective study is carried out using registered records of patients attending the dermatology clinic in Chittagong Medical College hospital between the periods 2003 and 2011.

*Results:* The total number of patients was 41997. There were more males 21,359 (51%) than females 20,638 (49%). The prevalence rate is 7. Infective dermatoses (Bacterial, Viral, Fungal, Parasitic) were the most common (53.88%) followed by Eczema (17.28%), Papulosquamous diseases (11.20%), Acne vulgaris (5.48%), Vitiligo (4.23%), Chronic arsenism (2.55%), Urticaria (2.25%), Genodermatoses (0.87%), Drug reactions (0.67%), Connective tissue diseases (0.43%), Neoplastic skin diseases (0.40%) and Blistering diseases (0.40%). Among all dermatoses scabies ranked the highest 10,987 (26.16%).

*Conclusions:* The study revealed more than 53% of the diseases are of infectious origin. The high proportion of transmissible disease demands a preventive approach. This study provides a preliminary baseline data for future epidemiological and clinical research and will contribute to proper health care planning and the establishment of essential drug list for dermatological used.

**Keywords:** Skin diseases, Prevalence, Chittagong, Bangladesh.

## INTRODUCTION

The number of skin diseases has been estimated at as high as 3000, not counting questionable or ill-defined subtypes a number higher than in any other organ of the body. Every individual as affected by skin problems during their lifetime [1]. The proportion of patients with dermatological problems visiting general practitioners (GPs) is reckoned to be 20 to 30% [2]. According to WHO prevalence studies of the general population in developing countries reported high prevalence figures for skin diseases (21 – 87%) [3]. Distribution of skin diseases differs from country to country and even city to city. Some factors like genetic, environment, race, occupation, nutrition and habits can influence the pattern of skin diseases [4-7]. Skin diseases have always maintained a place of relevance in health care delivery spanning from primary to tertiary health care in developing countries [8]. There are not enough previous recorded dermatologic studies regarding the pattern of skin disorders in Bangladesh [9]. Chittagong Medical College Hospitals (CMCH) Chittagong is the oldest tertiary care and teaching hospital, in this region of Bangladesh. The department of Dermatology of CMCH receives all skin patients from

Chittagong districts and neighboring districts. Epidemiological studies of skin diseases are rather rare in Chittagong. The main purpose of this study is to analyze the prevalence and pattern of skin diseases in Chittagong, Bangladesh and hopes to provide accurate baseline data for planning intervention. Appraisal of the current status is of utmost importance of health planning and resource allocation.

## METHODOLOGY

This is a descriptive retrospective cross-sectional study was carried out using registered records of patients attending the dermatology clinic in CMCH during the period between 2003 and 2011. Referrals come from the general outpatient department, and other outpatient clinics within the hospital including the pediatric outpatient clinic. Similarly, the secondary hospitals and private hospitals within and outside the metropolis send in their referrals for dermatology consultations. The register of dermatology clinic included registration number, name of the patient, weight, age groups, sex, diagnosis, treatment and advice. Individuals less than 18 years were regarded as children while those above 18 years were adults. All the patients were seen and examined by dermatologists who confirmed all the diagnosis by clinical, laboratory and some time by skin biopsy for histopathology, skin scrapping for mycology, slit skin smear and Ziehl-Nelson stain were also carried out for

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acid fast bacilli. Patients were examined under day light for skin diseases, the skin diagnosis were recorded for the study. The skin diseases seen were categorized into mainly (i) infective and (ii) non-infective dermatoses. Finally, they were sub divided into 15 groups based on etiologic and morphologic criteria. Cases of HIV infection and STI were excluded from the study. The frequencies of each skin diagnosis and that of the group were noted. Descriptive statistics in the form of frequency distribution tables and percentage were used for the analysis. Microsoft Excel 2007, bar diagram was used. The data thus obtained from the records was compared with studies from other parts of the world and from other regions of Bangladesh.

## RESULTS

A total 41,997 patients had attended in our department of dermatology. Among the attendees 21,359 (51%) were male and 20,638 (49%) were female. Total patient below 18 years were 17,441 (42%) and above 18 years were 24,556 (58%). Male less than 18 years were 8,872 (21%) and more than 18 years were 12,487 (30%) while female less than 18 years were 8,569 (20%) and more than 18 years were 12,069 (29%) respectively (Figure 1). Common skin diseases were infective dermatoses 22,628 (53.88%) and non-infective dermatoses 19,369 (46.12%). Infective dermatoses were parasitic 11091 (26.41%), fungal 7638 (18.19%), viral 2965 (7.06%) and bacterial 934 (2.22%), (Figure 2). Non-infective dermatoses were Eczema 7,255 (17.28%) followed by Papulosquamous diseases 4,702 (11.20%), Acne vulgaris 2,452 (5.84%), Vitiligo 1,776 (4.23%), Chronic arsenism 1,072 (2.55%), Urticaria 947 (2.25%), Genodermatoses 365 (0.87%), Drug reactions 283 (0.43%), Neoplastic skin disease 168 (0.40%) and Blistering disease 167



Figure 1: Borderline lepromatous leprosy.

(0.40%), (Figure 3). Scabies 10,987 (26.16%) is the most common infective dermatoses (Table 1) while eczema 7255 (17.28%) is the most common non-infective dermatoses (Table 2).



Figure 2: Erythema nodosum leprosum.



Figure 3: Lepromatous leprosy.

## DISCUSSION

This is a descriptive retrospective cross-sectional study. The study is carried out using registered records of patients attending dermatology treatment clinics in the CMCH during the period between 2003 and 2011. The study is conducted to determine the spectrum of skin diseases in the Chittagong region. It may not entirely reflect the true prevalence of skin diseases in this region, but because of the large number of patients and larger period of study involved, it probably provides

**Table 1: Distribution of Infective Dermatoses**

Distribution of Infective Dermatoses (n = 22,628)		
Name of Diseases	Frequency	Prevalence (%)
Parasitic	11091	26.41
Scabies	10987	26.16
Pediculosis	60	0.14
Demodicitis	23	0.05
Cutaneous Leishmaniasis	21	0.05
Fungal	7638	18.19
Tinea Cruris	1699	4.05
Tinea Corporis	1534	3.65
Tinea Versicolor	1203	2.86
Candidiasis	1197	2.85
Intertrigo	705	1.68
Onychomycosis	437	1.04
Paronychia	393	0.94
Tinea Capitis	200	0.48
Tinea Pedis	159	0.38
Tinea Unguium	63	0.15
Tinea Manum	48	0.11
Viral	2965	7.06
Viral Wart	1058	2.52
Herpes Simplex	585	1.39
Chicken Pox	473	1.13
Molluscum Contagiosum	470	1.12
Genital Wart	217	0.52
Herpes Zoster	112	0.27
Measles	50	0.12
Bacterial Infections	934	2.22
Impetigo	394	0.94
Leprosy	155	0.37
Folliculitis	154	0.37
Tuberculosis	90	0.21
Furunculosis	60	0.14
Others	81	0.19

a rough index to what can be found in this area. This is to serve as a baseline upon which future studies shall be built, compare with past studies for the purposes of effective planning of people's oriented dermatological services and prudent allocation of scarce resources. The prevalence of skin diseases in Sri Lanka, India, Tanzania, Egypt, UK and Romania are 47.6%, 11.2%,

**Table 2: Distribution of Non-Infective Dermatoses**

Distribution of Non-Infective Dermatoses (n = 19,369)		
Name of the Disease	Frequency	Prevalence (%)
Eczema	7255	17.28
Atopic Dermatitis	1846	4.40
Contact Dermatitis	1772	4.22
Seborrhoeic Dermatitis	1528	3.64
Pompholyx	867	2.06
Lichen Simplex Chronicus	799	1.90
Nummular Eczema	91	0.22
Naphy Dermatitis	90	0.21
Undetermined Type	262	0.62
Papulosquamous Diseases	4702	11.20
Psoriasis	2095	4.99
Lichen Planus	1499	3.57
PRP	489	1.16
P.Rosea	524	1.25
Parapsoriasis	95	0.23
Genodermatoses	365	0.87
Ichthyosis	141	0.34
Epidermolysis Bullosa	83	0.20
Neurofibromatosis	82	0.20
Darrier's Disease	25	0.06
Incontinentia Pigmenti	18	0.04
Tuberous Sclerosis	16	0.04
Connective Tissue Diseases	182	0.43
SLE	63	0.15
Scleroderma	39	0.09
Dermatomyositis	38	0.09
Rheumatoid Arthritis	22	0.05
MCTD	20	0.05
Neoplastic Skin Diseases	168	0.40
Premalignant Skin Disease	51	0.12
SCC	48	0.11
BCC	44	0.10
Melanoma	25	0.06
Bullous Diseases	167	0.40
Pemphigus Vulgaris	120	0.29
Bullous Penphigoid	21	0.05
Dermatitis Herpetiformis	19	0.05
CBDC	7	0.02
Acne Vulgaris	2452	5.84
Vitiligo	1776	4.23
Chronic Arsenism	1072	2.55
Urticaria	947	2.25
Drug Reaction	283	0.67

26.9 - 34.7%, 89.6%, 22.5% and 22.8% respectively as described by different studies [10-16]. The prevalence

of skin diseases in the general population has varied from 6.3% to 11.6% in various studies [17]. In our study the prevalence rate is 7. This study conformed to other studies. The pattern of skin diseases is influenced by developing economy, illiteracy, social backwardness varied climate, industrialization, religious, ritual and cultural factors. Skin disease forms a substantial part of the total spectrum of all health.

The prevalence of infective dermatoses is the highest 53.88% (n= 22,628) which encountered both infection and infestation. It is reported as 68.5% by Gupta *et al.*, 40.4% by Dayal and Gupta and 40.1% by Mahta of India [18-20]. Among the parasitic skin diseases scabies ranked the highest 99.06% (n = 10,987). It is accounted 26.16% among all skin diseases. The higher frequency of scabies could possibly be due to large rural population attending our hospital belonging to low socio-economic condition. There is lack of health education, poor sanitation, and poor hygiene and overcrowding populace both in slums of cities and rural areas. It is recognized that in poorer communities scabies is a risk factors for potentially life threatening post streptococcal glomerulonephritis [21]. The prevalence of scabies in school children of India is 5% [22]. The prevalence of scabies in British school children is much lower than that of our study [23].

Of the 41,997 patients fungal infections accounted 18.19% and among the infective dermatoses fungal infection is 33.75% (n = 7,638/22,628). The most common fungal infection is tinea cruris (4.05%) followed by Tinea corporis (4.05%), Tinea versicolor (2.86%), Candidiasis (2.85%), Intertrigo (1.68%), Onychomycosis (1.04%), Paronychia (0.94%), Tinea capitis (0.48%), Tinea pedis (0.38%), Tinea unguium

(0.15%) and Tinea manum (0.11%). The high prevalence of fungal infections is likely to be related to the warm humid climate of this region. No cases of deep mycosis are recorded. The prevalence of fungal infections In Sri Lanka, Tunisia, India, Iraq and Saudi Arabia is 14.3%, 16.38%, 15.1%, 13.7% and 4.5% respectively (Table 3) [24-29]. Viral dermatoses accounted 13.10% (n = 2,965) among the infective dermatoses and 7.06% of all skin disease. Viral wart is most common viral skin dermatoses followed by Herpes simplex (1.39%), Chicken pox (1.13%), Molluscum Contagiosum (1.12%), Genital wart (0.52%), Herpes zoster (0.27%) and Measles (0.12%). Bacterial infections are 4.13% (n = 934) among the infective dermatoses and 2.22% in all skin diseases. Most common bacterial infections are Impetigo (0.94%) followed by Leprosy (0.37%) (Figures 1-3), Bacterial folliculitis (0.37%), Cutaneous tuberculosis (0.21%), Furunculosis (0.14%) and others (0.19%). Patients with Impetigo and dermatophyte infections are recorded mainly in rainy and summer seasons while scabies was mostly seen in winter and rainy seasons.

Eczema ranked the second in all dermatoses 17.28% (n = 7,255), where Atopic dermatitis (AD) is the most common (25.44%, n=1,846) followed by Contact dermatitis 24.42% (n = 1772), Seborrheic dermatitis 21.06% (n = 1528), Pompholyx 11.96% (n = 867), Lichen simplex chronicus 11.01% (n = 799), Nummular Eczema 1.25% (n = 91), Naphy dermatitis 1.24% (n = 90), and undetermined type 3.61% (n = 262). Two other studies in Faridpur and Dhaka have found similar findings ranged from 19.2% to 20.2% in our country. In India it is 15% - 20%, and in Abu Dhabi and Saudi Arabia 20.98% and 18.64% respectively [24, 26, 28]. The prevalence of dermatoses may be influenced by

**Table 3: Pattern of Certain Common Skin Diseases (%) in Different Countries**

Disease Group	India [24] (Calcutta)	Kenya [25]	Abu Dhabi [26]	Canada [27]	Saudi Arabia [28] (Asir)	Sri Lanka [10]	Nigeria [29]	Bangladesh (Chittagong)
Eczema	15-20	28.1	20.98	39.2	25.68	9.58	23	17.28
Pyoderma	30-40	6.4	2.55	5.7	3.19	1.27	10	1.44
Acne	3.5	3.9	9.07	7.3	5.45	5.98	6	5.84
Superficial mycoses	15-20	9.5	8.5	4.3	6.15	14.34	67	18.18
Psoriasis	0.5-1.5	3.2	4.49	4.7	2.10	0.44	15	4.9
Vitiligo	4	2.9	3.18	Not reported	3.03	1.22	29	4.23
Viral wart	2	2	5.47	6.8	2.49	1.88	11	2.51
Lichen planus	0.5-1.5	1.6	0.95	Not reported	1.32	Not reported	5	3.56

seasonal and climate change. This was quite evidence in atopic dermatitis and seborrhoeic dermatitis noted predominately in winters. The extend of the contribution of other implicated factors like indoor and outdoor environmental factors such as non-electric heating system couple with poor ventilation within household, the presence of visible and mouldy odor in homes are needed to be investigated as possible factors predisposing to growing prevalence of AD in Chittagong. Papulosquamous disease group constitute 11.20% (n = 4,702) of all dermatoses where Psoriasis is the most common (4.99%, n=2,095) followed by Lichen planus (3.57%), PRP (1.16%), Pityriasis rosea (1.25%) and Parapsoriasis (0.23%). Prevalence of psoriasis is recorded from 0.5% to 4.77% in other studies of different countries [24-29]. The impact on quality of life of psoriasis is as significant as other chronic conditions such as diabetes, hypertension, arthritis and depression [30]. We found acne vulgaris is the commonest disorder of the appendages with a prevalence of 5.84% (n = 2,452), where male and female (55%) are 45% and 55% respectively. Patients below 18 years are 58% (n=1,422) and above 18 years are 42% (n =1030). Acne vulgaris may not seem to qualify as severe diseases at first glance, but psychological impact and wellness and the social abilities are sometimes disgusting. Vitiligo accounted 4.28% (n = 1,776) of all diseases where male and female are 49.60% and 50.40% respectively. The development of pigmentary change is an important source of concern in many communities like us. It creates social problem like marriage issue, getting job and other social performances.

Chronic Arsenism accounted 2.55% (n=1,072) of all patients where male and female are 53.45% and 46.55% respectively. Bangladesh is facing with the largest mass poisoning of a population in history because ground water used for drinking has been



**Figure 4:** Raindrop pigmentation in chronic arsenism.

contaminated with naturally occurring inorganic arsenic. It is estimated that about 77 million inhabitants of Bangladesh are at risk of drinking arsenic contaminated water [31]. Chronic ingestion of arsenic from drinking water is associated with the occurrence of skin cancer [32]. Chronic Arsenism also leads to multiorgan diseases, disfigurement, social problems (Figures 4, 5). The Bangladesh government (GOB) is implementing a project to replace shallow tube wells by deep tube wells (Figures 6, 7).



**Figure 5:** Palmar hyperkeratosis with squamous cell carcinoma in arsenism.



**Figure 6:** Red spout indicates not safe for use.

Urticaria accounted 2.25% (n=947), where male and female are 48.36% and 51.64% respectively. All cases are recorded as chronic urticaria as the acute urticaria sometimes presented as medical emergency and they usually get admitted in medical ward also. In the majority, the cause of urticaria is immunogenic but a very few cases are associated with autoimmune diseases. Genodermatoses accounted 0.87% (n=365). Ichthyosis is the most common (0.34%) followed by Epidermolysis bullosa (0.20%), Neurofibromatosis (0.20%), Darrier's disease (0.06%), Incontinentia pigmenti (0.04%), Tuberous sclerosis (0.04%).



**Figure 7:** Green spout indicates safe for use.

Epidermal and dermal nevi, vascular malformations are very rare and not recorded in this study. Drug reactions accounted 0.67% (n=283) only. The incidence of drug reactions necessitating hospital admission ranges from 3% to 8%. This low figure is due to the attendance of patients to emergency and medicine OPD those need hospital admission. The patients of drug reactions were attended on an ambulatory sector and not on an emergency basis in dermatology. Connective tissue diseases accounted 0.43% (n=182). Systemic lupus erythematosus (0.15%) was the most common followed by Scleroderma (0.09%), Rheumatoid arthritis (0.05%) and Mixed connective tissue disease (0.05%). The exact figure of rheumatoid arthritis may be high as these patients usually attend medicine and rheumatology OPD. Most of the collagen vascular disease patients only visit Dermatology OPD when cutaneous manifestations are there. Neoplastic skin diseases accounted only 0.40% (n=168). Premalignant skin diseases (Actinic keratosis, Leukoplakia, Bowen's disease, Dysplastic nevi) are most common (0.12%) followed by Squamous cell carcinoma (0.11%), Basal cell carcinoma (0.10%) and malignant melanoma (0.06%). As a tropical country the prevalence of skin cancer in Bangladesh is relatively low due to deep brown complexion of people protecting from ultraviolet ray (UV-rays) and lack of genetic predisposition gene. Blistering disorders accounted 0.40% (n=167), where pemphigous vulgaris is the most common (0.29%) followed by bullous pemphigoid (0.05%), dermatitis herpetiformis (0.05%) and chronic bullous disease of childhood (0.02%). Other diseases like metabolic disorders, alopecia, benign tumors are found in insignificant numbers. It is revealed most common dermatoses encountered are infections and

infestations. It is due to the lack of education. Patients may not report for treatment unless compelled by the severity of the symptoms. Up to 80% of the populace suffering from skin problems may not seek medical help [33]. To minimize this burden health education is therefore necessary to curb transmissible disease and morbidity and to improve the health status of the population and by all these means to improve the quality of life also. The limitation of the study is that it is hospital based and findings may be difficult to extrapolate to the general population. However, this type of study is still necessary because it gives account of ongoing changes and will be reference point for future community based studies.

## CONCLUSION

Skin diseases remain a low priority for many health authorities despite the large demand for services. The study revealed more than 53% of the diseases are of infectious origin. The high proportion of transmissible disease demands a preventive approach. This study provides a preliminary baseline data for future epidemiological and clinical research and at the same time will contribute to proper health care planning. A suitable and skin friendly health policy is needed to improve dermatological care to address common skin diseases at all level of health care delivery system in our country.

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