

ORIGINAL ARTICLE

SKIN DISEASE IN ELDERLY: A CROSS-SECTIONAL SURVEY IN A TERTIARY CARE CENTER OF BANGLADESH

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Abstract:

Background: Aging is a natural physiological process that affects various organs, including the skin. The elderly population in Bangladesh is rapidly increasing, necessitating an understanding of the common skin diseases affecting this demographic. The aim was to investigate the frequency, patterns, and associated factors of skin diseases among elderly patients attending a tertiary care center in Bangladesh. **Methods:** This cross-sectional survey was conducted during January 2024 to April-2024, at the department of Dermatology & Venereology in Mugda Medical College Hospital, Dhaka, Bangladesh. A total of 233 elderly patients aged 60 years and above were enrolled using consecutive sampling technique. Data were collected using a structured questionnaire capturing demographics, clinical presentations, and comorbidities, followed by clinical examinations. The data were analyzed using Statistical Package for Social Sciences (SPSS), version-23.0. **Results:** The mean age of the study patients was 65.64±5.54 years, with a nearly balanced gender distribution (48.92% male, 51.07% female). Common clinical presentations included itching (84.12%), redness (14.16%), and blistering (3%). Plaques (51.07%) and papules (46.35%) were the most frequent primary lesions, while scaling (53.21%) and erosion (36.05%) were common secondary lesions. Non-infectious skin diseases were more prevalent (58.79%) than infectious diseases (41.2%), with dermatitis (37.76%) and fungal infections (21.03%) being the most frequent conditions. A significant association was observed between educational level and infectious skin diseases with the study patients ($p=0.001$), with fungal infections more common among no formally educated patients. Similarly, diabetic-non-diabetic cases showed a significant association with infectious-non-infectious skin diseases ($p=0.001$). **Conclusion:** Skin diseases in elderly population can present with diverse clinical picture where dermatitis and fungal skin infections are more common. Patient's educational status and comorbidities may play a role in acquiring particular illnesses.

Keywords: Elderly, Skin, Disease, Infectious, Non-infectious, Association

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Introduction:

The global population is experiencing a significant increase in the proportion of elderly individuals, defined as those aged 60 years and above. In Bangladesh, this demographic shift is particularly notable, with projections indicating that by 2050, approximately 20% of the population will be elderly, up from 8% in 2020.^{1,2} This rapid growth presents unique health challenges, notably a rise in chronic conditions, including dermatological diseases, which substantially impact the quality of life among older adults.³ Aging induces several physiological changes in the skin, such as thinning of the epidermis, loss of elasticity, and decreased sebaceous gland activity, leading to conditions like xerosis (dry skin), pruritus, and increased susceptibility to infections.^{4,5} In South Asia, including Bangladesh, studies have highlighted a high prevalence of skin diseases among the elderly, with fungal infections, eczema, and pruritus being particularly common.^{6,7} In Bangladesh, the burden of skin diseases among the elderly is further exacerbated by socio-economic constraints, environmental factors, and limited access to healthcare, particularly in rural settings.^{8,9} Despite the growing elderly population, there remains a notable lack of recent, comprehensive research focusing on geriatric dermatological health in the country. The available studies are few, often geographically limited or outdated, failing to reflect the current disease patterns and healthcare needs of this age group.¹⁰ This lack of reliable and up-to-date data hampers the formulation of clinical guidelines and effective public health strategies tailored to the needs of older individuals. Moreover, underdiagnosis and undertreatment of skin diseases in this population can lead to prolonged discomfort, functional decline, and increased healthcare costs.¹¹ Addressing these challenges requires a thorough understanding of the prevalence and nature of skin diseases in the elderly within the local context. Therefore, the present study aims to evaluate the frequency, patterns, and associated factors of skin diseases among elderly patients attending a tertiary care center in Bangladesh. Understanding the spectrum of geriatric dermatoses is essential for developing targeted interventions, improving clinical care, and informing national health policy to better serve the growing elderly population.

Methods:

This cross-sectional survey was conducted from January to April 2024 at the Department of Dermatology & Venereology, Mugda Medical College Hospital, Dhaka, Bangladesh. Prior to enrollment, all participants were informed about the study's objectives, procedures, potential risks, and benefits,

and written informed consent was obtained. A consecutive sampling technique was followed and a total of 233 elderly patients aged 60 years and above, of all sexes, who presented to the outpatient department with dermatological complaints during the study period were enrolled in this study. Skin conditions were diagnosed based on established guidelines from the World Health Organization (WHO)(2020) and the National Guidelines for the Management of Dermatological Disorders in Bangladesh(2016).Data were collected using a structured questionnaire capturing demographic details, clinical symptoms, comorbidities, including diabetes, hypertension and relevant lifestyle factors.. Potential confounders, such as age, sex, and comorbid conditions, were documented to allow for stratified or adjusted analyses during statistical evaluation. The data were analyzed using Statistical Package for Social Sciences (SPSS), version 23.0. Descriptive statistics summarized the demographic and clinical characteristics of the skin diseases. Chi-square tests were performed to assess the association between education level and infectious skin diseases among the study patients. Association was also assessed between diabetic and non-diabetic cases and infectious skin diseases among the study patients, where $P < 0.05$ considered as the level of significance with 95% CI.

Results:

A total of 233 elderly patients aged ≥ 60 years, irrespective of sex, attending the OPD at the department of Dermatology & Venereology in Mugda Medical College Hospital for dermatological concerns were enrolled in this study. Regarding demographic characteristics distribution, the most frequent 212 (90.98%) were aged 60-74 years, with a mean age of 65.64 ± 5.54 years. The sex distribution was nearly balanced, with 114(48.9%) male and 119 (51.1%) female. The most frequent 125(53.65%) patients had no formal education, while 108(46.35%) patients had received any level of formal education. Occupationally, among males, 51 (44.73%) were retired, while 35(30.7%) worked in elementary jobs. Among the female patients, the majority (88.59%) were housewives, with smaller proportions in other occupations. Regarding the comorbidities distribution, the most frequent 106 (45.5%) patients had hypertension and 85 (36.5%) patients had diabetes. Among the study patients, 31 (13.3%) were smokers, while 61 (26.2%) patients consumed non-smoking tobacco (Table-1).

Table-I*Distribution of the study subjects by demographic characteristics (N=233).*

Age Group (years)	Frequency	
	N	%
60-74	212	90.98
75-89	21	9.02
Total	233	100
Mean age(years)	65.64±5.54	
Gender		
Male	114	48.92
Female	119	51.07
Educational Status		
Having no formal education	125	53.65
Having any level of formal education	108	46.35
Occupation by gender		
Male		
Retired	51	44.73
Businessman	20	17.54
Sales man	8	7.01
Elementary	35	30.70
Female		
Retired	10	8.77
Businessman	1	0.87
Sales man	2	1.75
Elementary	5	4.38
Housewife	101	88.59
Comorbidities		
Diabetes	85	36.5
Hypertension	106	45.5
Smoking Status		
Smoker	31	13.3
Non-smoke tobacco consumption	61	26.2

Age group: (60-74) years=older persons, (75-89) years=elderly persons (World Report on Ageing and Health-2015 by WHO).

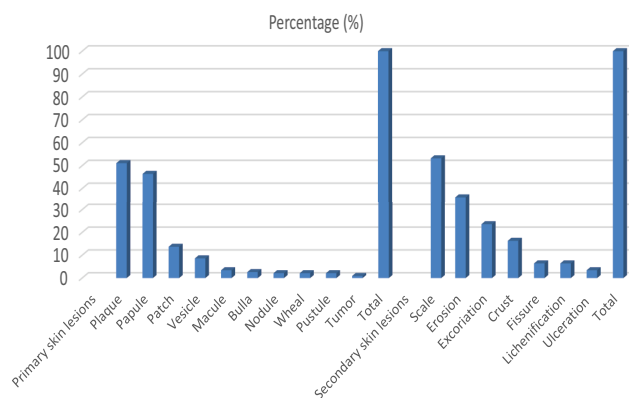
Regarding the distribution of clinical presentations, itching was the most commonly reported symptom, affecting 196(84.12%) patients. Redness was reported by 33 (14.16%) patients, while blisters were noted in 7 (3%) patients. Scaling and other unspecified symptoms each accounted for 24 (10.3%) patients. Pain was reported by 18 (7.72%) patients, followed by skin thickening in 16(6.89%) and pigmentary changes in 14 (6%) patients (Table-2). Regarding the distribution of primary and secondary skin lesions, plaques were the most commonly reported lesion, occurring in 119

(51.07%) patients, followed closely by papules in 108(46.35%) patients. Patches were noted in 32(13.73%) patients, while vesicles were observed in 20 (8.58%) patients. Less frequently reported lesions included macules in 8 (3.43%), bullae in 6 (2.57%), nodules, wheals, and pustules, each reported in 5 (2.14%) patients. Tumors were the least frequent skin lesion, seen in only 2 (0.85%) patients while, among the secondary skin lesions, scaling was the most frequently reported lesion, affecting 124(53.21%) patients. Erosion was noted in 84(36.05%) patients, while excoriation was observed in 55(23.60%) patients and crusting occurred in 38 (16.30%) patients. Less commonly reported lesions included fissures and lichenification, each present in 15 (6.43%) patients, and ulceration, which was the least frequent, occurring in 8(3.43%) patients (Fig-1).

Table-II*Distribution of clinical presentations among the study participants (N=233).*

Clinical Presentations	Frequency	
	N	%
Itching	196	84.12
Redness	33	14.16
Blister	7	3
Scale	24	10.3
Others	24	10.3
Pain	18	7.72
Skin thickening	16	6.89
Pigmentary change	14	6

Multiple responses were counted in clinical presentations of the study patients.

**Fig-1:** Distribution of skin lesions observed among the study patients (N=233).

Among the study patients, non-infectious skin diseases were the most commonly reported, affecting 137 (58.79%) patients, while infectious skin diseases were observed in 96 (41.20%) patients. Among the infectious skin diseases, fungal infection was observed the most common in 49(21.03%) patients and followed scabies 34 (14.59%), bacterial infection 12(5.15%) and viral infection 6(2.57%), while among the non-infectious skin diseases, 137(58.79%), dermatitis was the most frequent diagnosis, affecting 88 (37.76%) patients and followed psoriasis, 12 (5.15%) ,urticaria 7 (3%) , lichen planus and malignant skin tumors, each 6 (2.57%) , bullous diseases and pigmentary skin diseases, each in 4 (1.71%) , drug reactions 3 (1.28%) , discoid lupus erythematosus, psychiatric skin disease each 2(0.85%) and, acquired perforating dermatosis, benign skin tumors, chilblains, chronic arsenicosis, mycosis fungoides, and vasculitis, each affecting a single patient 1 (0.42%) respectively (Table-3).

Table- III

Distribution of patterns of skin diseases diagnosed among the study patients (N=233).

Patterns of skin diseases	Frequency	Percent
Infectious	96	41.20
Fungal infection	49	21.03
Scabies	34	14.59
Bacterial infection	12	5.15
Viral infection	6	2.57
Non-infectious	137	58.79
Dermatitis	88	37.76
Psoriasis	12	5.15
Urticaria	7	3.0
Lichen Planus	6	2.57
Malignant skin tumour	6	2.57
Bullous disease	4	1.71
Pigmentary skin disease	4	1.71
Drug reaction	3	1.28
Discoid Lupus Erythematosus (DLE)	2	0.85
Psychiatric skin disease	2	0.85
Acquired perforating dermatosi	1	0.42
Benign skin tumour	1	0.42
Chilblain	1	0.42
Chronic Arsenicosis	1	0.42
Mycosis fungoidis	1	0.42
Vasculitis	1	0.42

Association between educational level of the study patients with the infectious skin diseases among the study patients was observed statistically significant ($p=0.001$). Fungal infections were the most common, affecting 34(14.59%) of individuals with no formal education compared to 15(6.43%) with having any level of education. Scabies was also more prevalent in the no education group in 20(8.58%) patients than in the educated group 14(6.0%) patients. Similarly, bacterial infections were recorded in 8(3.43%) patients without having formal education, while only 4(1.71%) with having any level of education were affected. Viral infections were the least common but still showed a disparity, with 5(2.14%) patients occurring in the no education group versus only 1(0.42%) patients in the any level of educated group. The statistically significant difference suggests that lower education levels are associated with a higher prevalence of infectious skin diseases ($p=0.001$) (Table-IV).

Table-IV

Association of educational level with infectious skin diseases with the study patients (n=233).

Infectious skin diseases	Educational Level		P-value
	No formal education N (%)	Having any level of education N (%)	
Fungal infection	34(14.59)	15(6.43)	$P<0.001^s$
Scabies	20(8.58)	14(6.0)	
Bacterial infection	8(3.43)	4(1.71)	
Viral infection	5(2.14)	1(0.42)	

Chi-square test was performed to determine the association between educational status and pattern of skin diseases, where $P<0.05$ considered as the level of significance with 95% CI. S= significant.

Among the diabetic patients (n=85), the most frequent 45(52.94%) had infectious skin diseases and 40(47.05%) patients had non-infectious skin diseases, while, among the non-diabetic patients (n=148), the most frequent, 90(60.81%) patients had non-infectious skin diseases and 58(39.18%) patients had infectious skin diseases. The association between diabetic-non-diabetic cases and infectious-non-infectious skin diseases among the study patients also observed statistically significant ($p=0.001$) (Table-5).

Table-V

Association between diabetic-non diabetic cases and infectious-non-infectious skin diseases with the study patients (N=233).

Diabetic Status	Infectious Status		P-value
	Infectious (N)	Non-infectious (N)	
Diabetic cases	45	40	P<0.001 ^s
Non-diabetic cases	58	90	

Chi-square test was performed to compare the group frequencies, where P<0.05 considered as the level of significance with 95% CI. S= Significant.

Discussion:

The demographic characteristics of the study population reveals that the majority of the study patients were within the age group of 60-74 years (90.98%), aligning with the World Health Organization's classification of older adults¹². The mean age was 65.64±5.54 years, which is consistent with similar demographic patterns observed in aging populations in South Asia.¹³ However, this differs from the European scenario where life expectancy and health care advancements have led to a higher proportion of patients aged 75 years and above in dermatological studies.¹⁴ The gender distribution in this current study was nearly balanced, with a slightly higher presentation of females (51.1%) compared to males (48.9%). This gender pattern aligns with findings from Pakistan and Sri Lanka, where females slightly outnumber males in geriatric dermatological research due to longer female life expectancy.¹⁵ However, in African studies, male dominance has been more commonly observed, possibly due to healthcare access disparities.¹⁶ Educational status showed that 53.65% of the participants had no formal education, which could influence health literacy and health-seeking behaviors. This lack of formal education is similarly observed in rural settings of South Asia but contrasts with European countries where formal education levels among older adults are generally higher.^{17,18} Regarding occupation, a significant proportion of female participants (88.59%) were housewives, while the male group showed diversity with retired (44.73%), elementary jobs (30.7%), and businessmen (17.54%). These occupational patterns are partially align with another study in India.¹⁹ Comorbidities such as hypertension (45.5%) and diabetes (36.5%) were prevalent. Similar patterns are reported in South Asia where non-communicable diseases are rising.²⁰ A European study reported slightly lower hypertension rates due to better preventive healthcare services.²¹ The most common clinical presentation was itching (84.12%), followed by redness (14.16%) and scaling (10.3%). This distribution closely mirrors findings in

Nepal, where pruritic conditions dominated dermatological complaints.²² Another European study showed lower rates of pruritic disorders due to better dermatological care and awareness.²³ In terms of skin disease patterns, non-infectious diseases (58.79%) were more common than infectious conditions (41.20%). Dermatitis was the leading non-infectious disease, while fungal infections and scabies were the most common infectious diseases. These findings differ from African regions where infectious skin diseases like bacterial and parasitic infections often predominate due to limited sanitation.²⁴ Educational level and infectious skin diseases showed significant association (p<0.05). Infectious skin diseases were more prevalent among the patients with no formal education, reflecting health literacy disparities. Similar trends were also observed in rural African study.²⁵ A statistical significant association was also found between diabetic-non-diabetic cases and infectious-non-infectious skin diseases with the study patients (p<0.05), with fungal infections being more common among diabetic patients. This finding is align with another South Asian study.²⁷

Conclusion:

This study highlights a high prevalence of both infectious and non-infectious skin conditions among the elderly in Bangladesh, emphasizing the need for targeted dermatological care and preventive strategies, particularly for those with lower educational levels and comorbid diabetes.

Limitations:

Cross-sectional structure of this study limits causal interpretations, and the use of purposive sampling from a single tertiary care center restricts generalizability to the broader Bangladeshi elderly population. Reliance on self-reported data and basic clinical examinations without advanced diagnostics may have led to misclassification of skin conditions. Unexamined factors such as environmental exposures and medication use could influence the findings.

Conflict of Interest:

The authors stated that there is no conflict of interest in this study

Funding:

This research received no external funding.

Ethical consideration:

The study was conducted after approval from the ethical review committee of Institutional Review Board, of Bangabandhu Sheikh Mujib Medical University, Dhaka, Bangladesh. The confidentiality and anonymity of the study participant was maintained.

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