

# Skin diseases in geriatrics and their effect on the quality of life: A hospital-based observational study

Meghna Kandwal<sup>1</sup>, Rashmi Jindal<sup>2</sup>, Payal Chauhan<sup>2</sup>, Samarjit Roy<sup>2</sup>

<sup>1</sup>Undergraduate Student, Himalayan Institute of Medical Sciences, <sup>2</sup>Department of Dermatology, Venereology and Leprosy, Himalayan Institute of Medical Sciences, Swami Rama Himalayan University, Dehradun, Uttarakhand, India

## ABSTRACT

**Background:** World's population is aging at a very fast pace with 8.5% of current population being aged 65 years and above. Indian figures also reflect the exponential growth in number of older people. With advancing age a myriad of health-related problems arise. Due importance is given to diseases associated with high mortality such as malignancies, diabetes, and cardiovascular illness. However, skin diseases though being prevalent lack priority. This study is being conducted to identify the common geriatric dermatoses prevalent in sub-Himalayan region of Uttarakhand and also to assess their effect on the quality of life. **Aims:** The aims of this study are to study the pattern and frequency of dermatoses in patients aged 60 years and above and to assess the effect of dermatoses on their quality of life. **Methods:** In total, 117 patients aged 60 years and above presenting to Dermatology outpatient department were recruited from 1<sup>st</sup> August 2018 to 31<sup>st</sup> October 2018 after obtaining written informed consent. Socio-demographic details, presence of co-morbidities, and dermatological complaints were recorded on a data collection form. Skin diseases were categorized into seven categories for statistical analysis. For assessing the effect of dermatoses on the quality of life of participants, Dermatology Life Quality Index was administered. **Results:** Out of 117 patients, two-thirds were males. Mean age of patients was  $68.60 \pm 7.011$ . Out of total, 40% patients had one or more comorbidity. Erythematous-squamous disorders were the commonest dermatoses seen in 40% patients. This was followed by infections and infestations (33.3%). In total, 17% patients had senile pruritus and age-related skin disorders. Around 16% reported moderate to large effect on their quality of life. **Conclusion:** Skin diseases are an important cause of psycho-social morbidity among geriatric population. Their special needs must be addressed by making appropriate changes in national health policies. It is imperative to include skin health as a component to assess the overall wellbeing of geriatrics.

**Keywords:** Dermatoses, elderly, geriatrics, skin diseases

## Introduction

World's older population continues to grow at an unprecedented rate with 8.5% of people aged 65 years and above. This number is further expected to double by 2050.<sup>[1]</sup> Indian population census data 2011 reports 104 million Indians above the age of 60 years making 8.6% of total population. For Uttarakhand, this figure is even higher (8.9%).<sup>[2]</sup> Aging is a complex interplay of intrinsic

and extrinsic factors. All organ systems bear the brunt of aging resulting in their diminished functional abilities. Skin being the boundary between inside and outside gets exposed to harmful effects of mechanical as well as chemical insult. With advancing age, structurally skin becomes atrophic and functionally its barrier function capacity and ability to repair following injuries decrease. This makes it susceptible to infections, dryness, and pruritus. Furthermore, the basic fact of looking old has a negative effect on quality of life, social interactions, and self-esteem.<sup>[3]</sup> This coupled with predisposition to skin ailments directly affects functional and social well-being. Over the years, various programmes for prevention and control of communicable and non-communicable diseases have been launched nationally but

**Address for correspondence:** Dr. Rashmi Jindal,

Department of Dermatology, Venereology and Leprosy, Himalayan Institute of Medical Sciences, Swami Ram Nagar, Doiwala, Dehradun - 248 140, India.

E-mail: rashmijindal98@gmail.com

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there is a lack of such initiative for skin health. Information about the prevalence of skin disorders in elderly in different geographical regions will help in streamlining the preventive and curative policies. This study is being undertaken to identify the common geriatric dermatoses prevalent in sub-Himalayan region of Uttarakhand with an attempt to assess their effect on the quality of life.

## Objectives

1. To study the pattern and frequency of dermatoses in patients aged 60 years and above.
2. To assess the quality of life in patients aged 60 years and above with cutaneous diseases using Dermatology Life Quality Index (DLQI).

## Methods

This prospective, observational study was conducted in “Department of Dermatology, Himalayan Institute of Medical Sciences, Dehradun” (Uttarakhand) after obtaining ethical clearance. All patients aged 60 years and above presenting to Dermatology outpatient department were recruited from 1<sup>st</sup> August 2018 to 31<sup>st</sup> October 2018 after obtaining written informed consent.

A sample size of 117 was calculated using the formula:

$$n = Z^2_{\alpha/2} PQ/l^2,$$

where  $n$  is the required sample size;  $Z$  is 1.96 at 0.05 level of significance;  $P$  is the unknown prevalence of cutaneous manifestations in geriatric population (as 50%);  $Q$  is  $1-P$  (50%); and  $l$  is 20% relative error.

Information regarding age, gender, educational status, place of residence, known comorbidities (diabetes mellitus, hypertension, coronary artery disease, hypothyroidism, renal diseases, liver disease, and pulmonary disease), and dermatological complaints were recorded on a data collection form. This was followed by a complete general physical examination and muco-cutaneous examination. Diagnosis was established by clinical examination and ancillary tests wherever required. The dermatoses were categorized into seven different groups including erythematous-squamous diseases, infectious diseases (fungal, bacterial, viral infections, and infestations), benign neoplasm, precancerous lesions (leukoplakia, actinic keratosis, and Bowen’s disease), skin cancer (basal cell carcinoma, Squamous cell carcinoma, mycosis fungoides, and kaposi sarcoma), age-related skin changes (xerosis, senile lentigo, senile pruritus, senile comedo, angioma, and nail ridging), and the others (leg ulcer, insect bite, sarcoidosis, in growing toe nail, corn, vasculitis, and vitiligo).

The educational status of the study participants was categorized into illiterate, elementary education (classes I–VIII), secondary/senior secondary education (classes IX–XII), and college degree/

diploma as per the criteria obtained from the website of the Ministry of Human Resource Development, Government of India.<sup>[4]</sup> The place of residence was categorized as being urban, or rural, with an urban area being defined as per the census of India 2011.<sup>[5]</sup>

For assessing the quality of life of participants, DLQI questionnaire was administered to patients.<sup>[6]</sup> The total score was interpreted as follows:

“DLQI score 0–1 = no effect on the patient’s quality of life.

DLQI score 2–5 = small effect on the patient’s quality of life.

DLQI score 6–10 = moderate effect on the patient’s quality of life.

DLQI score 11–20 = large effect on the patient’s quality of life.

DLQI score 21–30 = very large effect on the patient’s quality of life.”

The relation of gender, level of education, place of residence, and specific dermatoses with DLQI scores was analyzed.

Statistical analysis was done using statistical package for social sciences (SPSS) version 22. The one sample Kolmogorov-Smirnov test was employed to determine whether the data sets differed from a normal distribution or not. Normally distributed data were analyzed using parametric test, and non-normally distributed data were analyzed using non-parametric test. Descriptive statistics were calculated for quantitative variables, and frequency along with percentage was calculated for qualitative and categorical variables.  $P < 0.05$  was considered statistically significant.

## Results

In total, 117 consecutive patients 60 years and above were recruited, and out of these 78 (66.6%) were males and 39 (33.4%) were females. Age of patients ranged from 60 years to 91 years with a mean age of  $68.60 \pm 7.011$ . Most patients (56.4%) were in age group 60–69 years. Distribution of patients in different age group is depicted in Table 1.

A total of 47 (40%) patients had one or more associated comorbidities. Hypertension and diabetes mellitus were the commonest comorbidities with 13.6% patients having both and 11.1% and 8.5% patients having only hypertension and diabetes mellitus, respectively. In total, 31.6% patients were illiterate, 19% each had received elementary education or secondary/senior secondary education, and 29% had attended college. In total, 68.3% patients were residing in rural dwellings.

Most common skin diseases noted were erythematous-squamous disorders constituting 40% of the total skin disorders seen. This was followed closely by infections [Figure 1] and

infestations (33.3%). Senile pruritus and age-related skin changes [Figure 2] were seen in 17% patients. The distribution of skin diseases according to gender is shown in Table 2. Endogenous eczema and psoriasis [Figure 3] were the most prevalent erythematous-squamous disorders. Among infections and infestations fungal infections including dermatophytosis, candidiasis, and onychomycosis [Figure 4] were most frequently seen. One patient each had actinic keratosis [Figure 5] and basal cell carcinoma [Figure 6].

Dermatology life quality index ranged from 0 to 16 with a mean of  $3.37 \pm 2.96$ . Overall, 16.2% patients reported moderate to large effect of their dermatoses on the quality of life with further 46.2% reporting small effect [Table 3].

### Discussion

India became an ageing country in 2001 with population of persons aged 60 years and above exceeding 7%.<sup>[2]</sup> With this large proportion

composed of older adults, there is a need to address their health issues. Whereas adequate importance is given to systemic diseases, skin health lags far behind. Proper attention and response to skin health can improve the quality of life of elderly persons with resultant better social engagements. In the present study, out of 117 patients aged above 60 years 16.2% reported moderate to large effect of their dermatoses on the quality of life usually in the form of fewer social interactions and feeling of self-consciousness. Indian literature on the effect of dermatoses on the quality of life of geriatric population is lacking. In a study from United Kingdom, patients aged 65 years and

**Table 1: Distribution of patients in different age groups**

Age group (Years)	n=117			
	Male		Female	
	No.	Percentage	No.	Percentage
60-69	37	31.6	29	24.7
70-79	35	29.9	09	7.6
≥80	06	5.1	01	0.8
Total	78	66.6	39	33.4



**Figure 1:** 62-year-old lady with infective ulcer over leg caused by pseudomonas aeruginosa and concomitant vitiligo



**Figure 2:** 65-year-old man with senile comedones over the left side of forehead. Dermoscopy (Dermlite DL2 hybrid) showing comedo-like openings with brown-black follicular plugs against a yellowish background (Inset)



**Figure 3:** 70-year-old man with chronic plaque psoriasis. Dermoscopy (Dermlite DL2 hybrid) revealing uniformly arranged dot vessels over a reddish background and prominent white scales (Inset)



**Figure 4:** 68-year-old lady with onychomycosis of finger nails

**Table 2: The distribution of skin diseases**

Disease	Male n=78		Female n=39		Total n=117
	No.	Percentage	No.	Percentage	
Psoriasis	10	12.8	01	2.5	11
Lichen planus	3	3.8	01	2.5	4
Contact dermatitis	3	3.8	01	2.5	4
Stasis dermatitis	02	2.5	01	2.5	03
Lichen simplex chronicus	01	1.3	01	2.5	2
Urticaria	04	5.1	01	2.5	05
Endogenous eczema	11	14.1	07	17.9	18
Fungal infections	19	24.3	09	23.0	28
Viral infections	02	2.5	00	0.0	02
Bacterial infections	01	1.3	00	0.0	01
Scabies	03	3.8	01	2.5	04
Hansen's disease	02	2.5	00	0.0	02
Senile pruritus and age related skin changes	13	16.7	07	17.9	20
Benign neoplasms	00	0.0	01	2.5	01
Precancerous lesions	01	1.3	00	0.0	01
Cutaneous malignancies	00	0.0	01	2.5	01
Others	03	3.8	05	12.8	08
Total	78	100	39	100	117

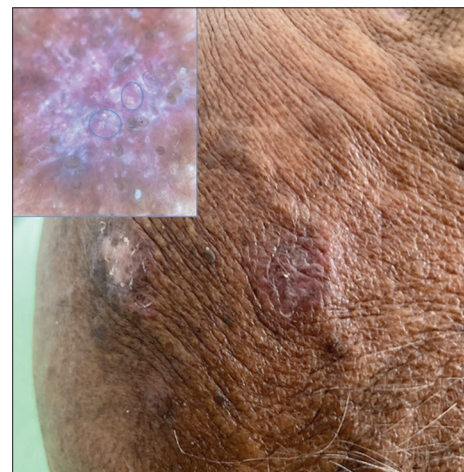
**Table 3: Dermatology life quality index scores of study population**

DLQI score	n=117			
	Male		Female	
	No.	Percentage	No.	Percentage
0-1 (no effect)	19	16.2	11	9.4
2-5 (small effect)	42	35.9	26	22.2
6-10 (moderate effect)	14	11.9	00	0.0
11-20 (large effect)	03	2.6	02	1.7
21-30 (very large effect)	00	0.0	00	0.0

**Table 4: Statistical correlation of dermatology life quality index with gender, educational status, area of residence, and diagnosis**

		p
DLQI	Gender	0.076
	Male	
	Female	
DLQI	Residence	0.433
	Rural	
	Urban	
DLQI	Educational status	0.687
	Illiterate	
	Elementary	
	Secondary/Senior secondary	
	College degree/Diploma	
DLQI	Diagnosis	0.054
	Erythematous-squamous	
	Infections and infestations	
	Benign neoplasm, precancerous lesions	
	Skin cancer	
	age-related skin changes others	

above having skin rashes had significantly poor quality of life even worse than those having skin cancers.<sup>[7]</sup> Further, their quality of life



**Figure 5:** 75-year-old man with actinic keratosis over forehead. Dermoscopy (Dermlite DL2 hybrid) showing background erythema, white circles around yellow keratotic plugs and rosette sign (blue circles) (Inset)

was negatively correlated with their disease extent. In the present study, there was no statistically significant difference between DLQI scores of men and women or those living in rural or urban areas. Further, the diagnosis and educational status also did not statistically correlate with DLQI [Table 4]. Skin diseases being visible affect the social life of those affected. For elderly population, this is even more significant as with decrease in professional engagements there is an increase in social interactions. Further in India this is in the form of engagement with grandchildren, thus with visible skin ailment older people are forced to stay away fearing transmission of disease. This gravely affects their mental health.

In Indian geriatrics, papulo-squamous disorders and infections constitute a major proportion of dermatoses. The prevalence of erythematous-squamous disorders has ranged from

Table 5: Comparison of Indian studies

Study	No. of patients	Erythemato-squamous disorders (%)	Infections and infestations (%)	Benign neoplasms (%)	Precancerous and cancerous lesions (%)	Pruritus (%)
Pavithra et al. <sup>[8]</sup> (Goa, 2010)	411	31.6	33.6	80.0	0.7	9.2
Raveendra et al. <sup>[9]</sup> (Karnataka, 2014)	200	43.0	32.0	100.0	0.0	-
Jindal et al. <sup>[10]</sup> (Uttarakhand, 2016)	1380	38.9	29.9	1.1	1.2	9.0
Talukdar et al. <sup>[11]</sup> (Assam, 2016)	360	40.8	38.0	100.0	3.1	3.3
Kshetrimayum et al. <sup>[12]</sup> (North East India, 2017)	250	32.8	33.9	0.0	4.0	-
Goyal et al. <sup>[13]</sup> (Rajasthan, 2017)	610	14.1	15.7	39.9	0.5	5.0
Ali et al. <sup>[14]</sup> (Hyderabad, 2017)	200	59.5	43	3.5	1.0	9.5
Ghosh A et al. <sup>[15]</sup> (Gujarat), 2017	500	14.6	49.2	7.6	2.4	64
Agarwal et al. <sup>[16]</sup> (New Delhi), 2019	500	76.2	91.8	0.0	2.4	56.4
Present study	117	40.0	33.3	0.8	1.6	14.5



**Figure 6:** 69-year-old lady with pigmented basal cell carcinoma over scalp. Dermoscopy (Dermlite DL2 hybrid) revealing linear telangiectasias (Blue arrows), large blue-grey globules, and structureless areas over the periphery and central ulceration (Inset)

14.1% to 76.2% [Table 5].<sup>[8-16]</sup> In our study, 40% patients had erythemato-squamous disorders including psoriasis, eczema-dermatitis, lichen planus, drug eruptions, and urticaria. This major subgroup of geriatric dermatoses can be effectively managed with simple skin care routine. Liberal use of emollients and less use of chemical containing products can prevent aggravation of these disorders. Next common subgroup is infections and infestations. One-third of our study subjects suffered from them. Other Indian studies have reported their prevalence to be in the range of 15.7–43%.<sup>[8-14]</sup> Aged skin is predisposed to infections due to its impaired barrier function. Maintaining proper hygiene and hydration will curb most of these infections and infestations. With advancing age, motor skills are diminished making it difficult for older adults to carry their routine activities including bathing and washing. In India, though the prevalent joint family system ensures adequate care of elderlies, still with more number of nuclear families emerging there is need to establish an effective social security system to look after older population.

Senile pruritus and other age-related skin diseases were seen in 17% of our patients, which is higher than reported from other

parts of India. Since the study was conducted in the months of August, September, and October during which the temperature in the region starts to cool down a bit making the skin dry and, thus, prone to pruritus. Only 0.8% patients presented with benign neoplasms. Other Indian studies have reported up to 100% patients having benign neoplasms.<sup>[9,10]</sup> Our figures are low because only the patients coming with primary complaint of benign neoplasm were noted and active search for incidental benign neoplasms were not made. Incidence of precancerous and cancerous lesions in our region was quite less (1.6%). Other studies have reported variable prevalence ranging from 0% to 4%.<sup>[9-11]</sup>

Development of comorbidities puts a lot of financial and psychological stress on the well being of old patients. The presence of skin ailments further aggravates this stress. In our study, 40% patients have diabetes, hypertension, or kidney disease. Other studies have reported this prevalence to be 15–60%.<sup>[8-13]</sup> Another effect of co-morbidities is the side effects of drugs prescribed to treat them. Many can have detrimental effect on the skin hydration and well being.

To conclude, old age should be the golden age of one's life where one should be able to reap the benefits of working hard for their family and society. There needs to be reforms at higher level to attain this. With increasing proportion of geriatrics, establishment of dedicated geriatric clinics providing multispecialty medical care under one roof will not only be desirable but also cost effective. Further to improve the skin health standardized skin care guidelines should be adopted and propagated. Gerontodermatology can be identified as a super specialty program and dermatologists should be motivated to work in this field. The efforts need to be strengthened at the level of primary health care. Medical officers at the primary health center need to be educated regarding geriatric dermatoses. As elderly people tend to contact the primary care physicians located near them, this knowledge will help the physician to identify and manage the geriatric dermatoses efficiently. Further one needs to be vigilant of the effect of skin disease on their family and social life.

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## Conflicts of interest

There are no conflicts of interest.

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