Research Article

Cuestiones de Fisioterapia

Medicine

PREVALENCE AND CUTANEOUS MANIFESTATIONS OF SKIN DISORDERS AMONG ELDERLY PATIENTS ATTENDING A DERMATOLOGY OUTPATIENT DEPARTMENT: A HOSPITAL-BASED CROSS-SECTIONAL STUDY

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Abstract

Background: The global and Indian populations are ageing rapidly, and age-related decline in skin-barrier function, immunosenescence and a rising burden of chronic disease make cutaneous disorders exceptionally common among older adults. Contemporary region-specific data describing the pattern of geriatric dermatoses in South India remain limited. Objectives: To determine the prevalence of skin disorders among elderly patients (aged >=60 years) attending a dermatology outpatient department in South India, to characterise the spectrum and clinical manifestations of these disorders, and to describe the accompanying comorbidity, polypharmacy and risk-factor profile. Methods: This hospital-based cross-sectional study analysed 300 consecutive patients aged >=60 years attending a tertiary-care dermatology outpatient service. Each patient underwent a complete dermatological examination; data on demographics, diagnosis, body site, morphology, severity, symptoms, comorbidities, polypharmacy, risk factors and diagnostic basis were recorded on a structured proforma. Descriptive statistics were computed and associations tested using the chi-square test, with $p < 0.05$ considered significant. Results: The mean age was 71.7 years (SD 7.4; range 60-84) with a male predominance (168; 56.0%; M:F 1.27:1). At least one skin disorder was present in 246 of 300 patients (82.0%). Xerosis was the single commonest diagnosis (46; 15.3%), followed by fungal infection (44; 14.7%) and eczematous dermatitis (40; 13.3%). Infective dermatoses collectively (fungal, bacterial, viral and scabies) formed the largest disease category, affecting 90 patients (30.0%). The lower limb was the commonest site and dry scaling the commonest morphology; pruritus (58.1%) was the dominant symptom, and the mean lesion duration was 186.7 days. The population carried a heavy burden of hypertension (58.7%), polypharmacy (>=5 drugs; 50.3%) and diabetes mellitus (43.3%). Diabetes was not significantly associated with the presence of any skin disorder (chi-square = 0.11, $p = 0.74$). Conclusion: A very high proportion (82.0%) of elderly dermatology attendees had at least one skin disorder, typically of long duration. Xerosis was the commonest specific diagnosis and infective dermatoses the largest category, against a background of substantial comorbidity and polypharmacy. The findings support dedicated geriatric-dermatology services, emollient and skin-care education, and attention to polypharmacy in South India.

Keywords: geriatric dermatology; elderly; xerosis; skin disorders; prevalence; polypharmacy; South India

INTRODUCTION

Population ageing is one of the defining demographic transitions of the twenty-first century. The number of people aged 60 years and older worldwide is rising faster than any other age group, and India is no exception: the country's elderly population is projected to exceed 300 million by the middle of the century, making the health needs of older adults an increasingly urgent public-health priority. Ageing is accompanied by progressive structural and functional changes in the skin, and cutaneous disorders are among the most frequent, yet frequently under-recognised, health problems in this age group [1,7].

The skin is the largest and most visible organ, and its ageing is driven by both intrinsic (chronological) and extrinsic (predominantly photo-induced) processes. Intrinsic ageing produces epidermal thinning, flattening of the dermo-epidermal junction, reduced sebaceous and eccrine gland activity, impaired barrier repair and diminished stratum-corneum hydration, whereas cumulative ultraviolet exposure adds elastosis, dyspigmentation and an increased risk of premalignant and malignant lesions [7,8,12]. These changes predispose the elderly to xerosis, pruritus, eczematous reactions and impaired wound healing. In parallel, immunosenescence - the age-associated decline in innate and adaptive immune competence - increases susceptibility to infective dermatoses, including fungal, bacterial, viral and parasitic infestations [1,7]. Environmental and behavioural factors such as chronic sun exposure, smoking and reduced skin care further accelerate cutaneous ageing and disease [9,13].

Geriatric dermatoses matter for several reasons. Although rarely life-threatening in isolation, they contribute substantially to symptom burden, sleep disturbance, secondary infection, social withdrawal and impaired quality of life. Chronic pruritus, in particular, is a common and distressing complaint in older adults and is often multifactorial, relating to xerosis, systemic disease, neuropathy and polypharmacy [5,6]. Older patients frequently carry multiple chronic comorbidities - hypertension, diabetes mellitus, chronic kidney disease and malignancy - and are exposed to multiple concurrent medications, so that polypharmacy is both a marker of frailty and a direct cause of drug-related dermatoses [1]. Age-related changes in allergen handling also modify patterns of contact sensitisation in the elderly [10], while immobility and comorbidity predispose to pressure-related skin damage [11]. Recognising the locally prevailing pattern of disease is therefore essential for rational, age-appropriate care.

The epidemiology of geriatric skin disease is shaped by climate, socioeconomic conditions and healthcare access, and patterns reported from temperate European and North American clinics [2,3] may differ substantially from those in tropical South India, where a warm, humid climate favours infective dermatoses and where a large proportion of older adults have limited formal education and variable access to dermatological care. Indian perspectives on dermatology for the elderly have highlighted xerosis, infective dermatoses and eczematous conditions as leading concerns [1], but contemporary hospital-based data specifically characterising the prevalence and clinical manifestations of skin disorders among elderly outpatients in South India remain limited. Comparative data from other developing regions, such as urban Cairo, similarly emphasise the influence of climate and access on the pattern of skin disease [4].

The present study was undertaken to address this gap. The objectives were to determine the prevalence of skin disorders among patients aged >=60 years attending a tertiary-care dermatology outpatient department in South India, to describe the spectrum of primary diagnoses and their clinical manifestations (body site, morphology, severity and symptoms), and to characterise the accompanying comorbidity, polypharmacy and risk-factor profile, thereby informing the case for dedicated geriatric-dermatology services.

MATERIALS AND METHODS

Study design and setting

This was a hospital-based cross-sectional prevalence and clinical-profile study conducted in the Department of Dermatology, tertiary care teaching hospital, India, during six months. The department provides outpatient and inpatient dermatological services to an urban and rural catchment population and functions as a referral centre for the surrounding region.

Study population

Consecutive patients aged 60 years and above (>=60 years) attending the dermatology outpatient department during the study period were considered for inclusion. Patients unwilling to participate and those with incomplete records were excluded. A total of 300 eligible elderly patients were enrolled.

Ethical considerations

The study was approved by the Institutional Ethics Committee ([IEC approval number and date]). Written informed consent was obtained from every participant before enrolment, and confidentiality of patient information was maintained throughout. The study was conducted in accordance with the principles of the Declaration of Helsinki.

Data collection

Data were recorded on a structured, pre-tested proforma. Demographic and socioeconomic variables included age, sex, residence (urban/rural), educational attainment and occupation. Each patient underwent a complete dermatological examination of the whole skin surface, hair, nails and accessible mucosae under adequate illumination. For each patient the following were recorded: the presence or absence of any skin disorder; the primary clinical diagnosis; the anatomical body site involved; the predominant morphology of the lesions; the estimated body-surface area (BSA) involved and clinical severity; the duration of the presenting lesion; and the presenting symptoms (pruritus, erythema, scaling, pain and ulceration). Comorbidities and risk factors documented for all patients included hypertension, diabetes mellitus, chronic kidney disease, chronic lung disease, malignancy, atopy or dry-skin tendency, smoking, alcohol use, immunosuppression, topical corticosteroid use, recent hospitalization, daily sun-exposure hours and weekly bathing frequency. Polypharmacy was defined as the concurrent use of five or more regular medications. The diagnostic basis for each case (clinical examination alone; clinical examination with laboratory investigation; histopathology; or clinical examination with dermoscopy) was also recorded.

Statistical analysis

Data were compiled and analysed using standard statistical software. Continuous variables were summarised as means with standard deviations (SD) and ranges, and categorical variables as frequencies and percentages. The overall prevalence of skin disorders was calculated as the proportion of patients with at least one diagnosed skin disorder. Associations between categorical variables - specifically the association between diabetes mellitus and the presence of any skin disorder - were tested using the chi-square (chi-square) test. A p value < 0.05 was considered statistically significant. Given the cross-sectional design, associations are interpreted as statistical, not causal.

RESULTS

Demographic and socioeconomic profile

A total of 300 elderly patients were studied. The mean age was 71.7 years (SD 7.4; range 60-84). Men

outnumbered women, with 168 males (56.0%) and 132 females (44.0%), giving a male-to-female ratio of 1.27:1. By age band, 123 patients (41.0%) were aged 60-69 years, 115 (38.3%) were aged 70-79 years, and 62 (20.7%) were aged 80 years and above. The majority resided in urban areas (177; 59.0%) compared with rural areas (123; 41.0%). Educational attainment was generally modest: 87 patients had secondary schooling, 86 had primary schooling, 75 had no formal schooling and 52 had higher education. The demographic and socioeconomic profile is summarised in Table 1.

Table 1: Demographic and socioeconomic profile of the study population (N = 300)

Characteristic	Category	n	%
Age (years)	Mean +/- SD	71.7 +/- 7.4	-
	Range	60-84	-
Age group	60-69 years	123	41.0
	70-79 years	115	38.3
	>=80 years	62	20.7
Sex	Male	168	56.0
	Female	132	44.0
	M:F ratio	1.27:1	-
Residence	Urban	177	59.0
	Rural	123	41.0
Education	Secondary	87	29.0
	Primary	86	28.7
	No formal schooling	75	25.0
	Higher	52	17.3

Prevalence and spectrum of skin disorders

At least one skin disorder was present in 246 of the 300 patients, giving an overall prevalence of 82.0%; the remaining 54 patients (18.0%) had no diagnosed skin disorder. Among all 300 encounters, xerosis was the single commonest specific diagnosis, recorded in 46 patients (15.3%), followed closely by fungal infection in 44 (14.7%) and eczematous dermatitis in 40 (13.3%). Psoriasis was diagnosed in 29 patients (9.7%) and scabies in 21 (7.0%). Less frequent diagnoses included bacterial infection (13; 4.3%), viral infection (12; 4.0%), urticaria (12; 4.0%), acneiform/follicular disorders (9; 3.0%), pigmentary disorders (8; 2.7%), benign tumours (6; 2.0%), premalignant lesions (4; 1.3%) and other inflammatory dermatoses (2; 0.7%). The full distribution is shown in Table 2 and Figure 1.

When grouped by disease category, infective dermatoses - comprising fungal (44), bacterial (13), viral (12) and scabies (21) - collectively accounted for 90 patients, representing 30.0% of all patients and approximately 36.6% of those with a disorder, thereby forming the largest single disease category. Fungal infection predominated within this group. Eczematous dermatitis and psoriasis were the leading non-infective inflammatory disorders.

Table 2: Distribution of primary skin disorders among 300 elderly patients

Primary skin disorder	n	% of all encounters
Xerosis	46	15.3
Fungal infection	44	14.7
Eczematous dermatitis	40	13.3
Psoriasis	29	9.7
Scabies	21	7.0
Bacterial infection	13	4.3
Viral infection	12	4.0
Urticaria	12	4.0
Acneiform/follicular	9	3.0
Pigmentary disorder	8	2.7
Benign tumour	6	2.0
Premalignant lesion	4	1.3
Other inflammatory	2	0.7
No disorder	54	18.0
Total	**300**	**100.0**

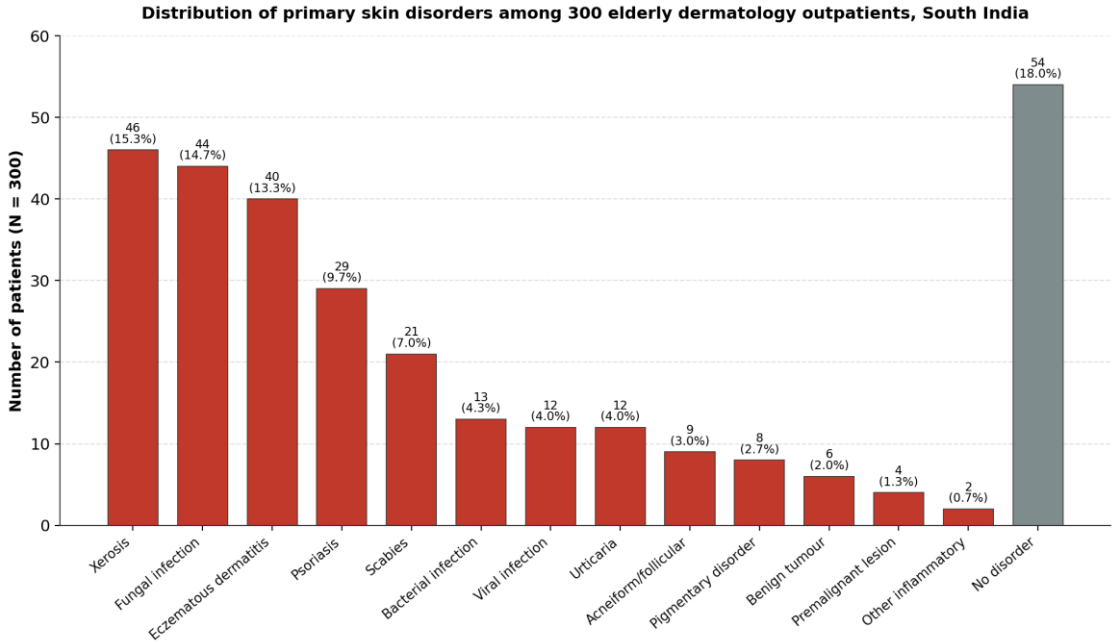

Figure 1: Distribution of primary skin disorders among 300 elderly dermatology outpatients in South India, with counts and percentages of all encounters. Xerosis was the single commonest diagnosis; the "no disorder" group (54; 18.0%) is shown for completeness.

Clinical manifestations

Among patients with a diagnosed disorder, the lower limb was the commonest anatomical site of involvement (66 cases), followed by the face (41), trunk (40), upper limb (36), foot (17), groin (16) and scalp (15); 11 patients had multiple-site involvement and 4 had nail disease. The predominant morphology was dry scaling (54 cases), followed by erythematous plaque (45), papule (38), hyperpigmented patch (27), vesicle/pustule (24) and nodule (21); mixed morphology (15), ulcer/crust (9), wheal (7) and hypopigmented patch (6) were less frequent. The mean lesion duration was 186.7 days, indicating that many disorders were long-standing, and the mean body-surface area involved was 4.4%, with extensive or severe BSA involvement recorded in 92 patients (30.7%).

Pruritus was the dominant presenting symptom, reported in 58.1% of patients with a disorder, followed by erythema (54.9%), scaling (36.2%), pain (17.1%) and ulceration (14.6%). The diagnostic basis was clinical examination alone in 140 patients, clinical examination with laboratory investigation in 71, histopathology in 18 and clinical examination with dermoscopy in 17. The clinical features are summarised in Table 3.

Table 3: Clinical features of skin disorders - body site, morphology, symptoms, severity and diagnostic basis

Domain	Category	n / value
Body site	Lower limb	66
	Face	41
	Trunk	40
	Upper limb	36
	Foot	17
	Groin	16
	Scalp	15
	Multiple sites	11
	Nail	4
Morphology	Dry scaling	54
	Erythematous plaque	45
	Papule	38
	Hyperpigmented patch	27
	Vesicle/pustule	24
	Nodule	21
	Mixed	15
	Ulcer/crust	9
	Wheal	7

	Hypopigmented patch	6
Symptoms (% of disorder cases)	Pruritus	58.1%
	Erythema	54.9%
	Scaling	36.2%
	Pain	17.1%
	Ulceration	14.6%
Severity	Mean lesion duration	186.7 days
	Mean body-surface area involved	4.4%
	Extensive/severe BSA involvement	92 (30.7%)
Diagnostic basis	Clinical examination alone	140
	Clinical + laboratory	71
	Histopathology	18
	Clinical + dermoscopy	17

Comorbidities, polypharmacy and risk factors

The study population carried a heavy comorbidity and polypharmacy burden. Across all 300 patients, hypertension was the commonest comorbidity (58.7%), followed by polypharmacy defined as the concurrent use of five or more drugs (50.3%) and diabetes mellitus (43.3%). An atopic or dry-skin tendency was present in 30.0%, smoking in 16.3%, topical corticosteroid use in 14.0%, recent hospitalization in 14.0%, alcohol use in 12.0% and immunosuppression in 7.3% (Figure 2). Considering the pattern of chronic disease, 81 patients had hypertension alone, 73 had diabetes alone and 42 had both diabetes and hypertension; chronic kidney disease was present in 14, chronic lung disease in 10 and malignancy in 6. The mean daily sun exposure was 3.4 hours and the mean bathing frequency was 4.5 times per week. These findings are summarised in Table 4.

Table 4: Comorbidities, polypharmacy and risk factors (N = 300)

Factor	n / value	%
Hypertension	176	58.7
Polypharmacy (>=5 drugs)	151	50.3
Diabetes mellitus	130	43.3
Atopy / dry-skin tendency	90	30.0
Smoking	49	16.3
Topical corticosteroid use	42	14.0
Recent hospitalization	42	14.0
Alcohol use	36	12.0
Immunosuppression	22	7.3

Hypertension alone	81	27.0
Diabetes alone	73	24.3
Diabetes + hypertension	42	14.0
Chronic kidney disease	14	4.7
Chronic lung disease	10	3.3
Malignancy	6	2.0
Mean sun exposure (h/day)	3.4	-
Mean bathing frequency (times/week)	4.5	-

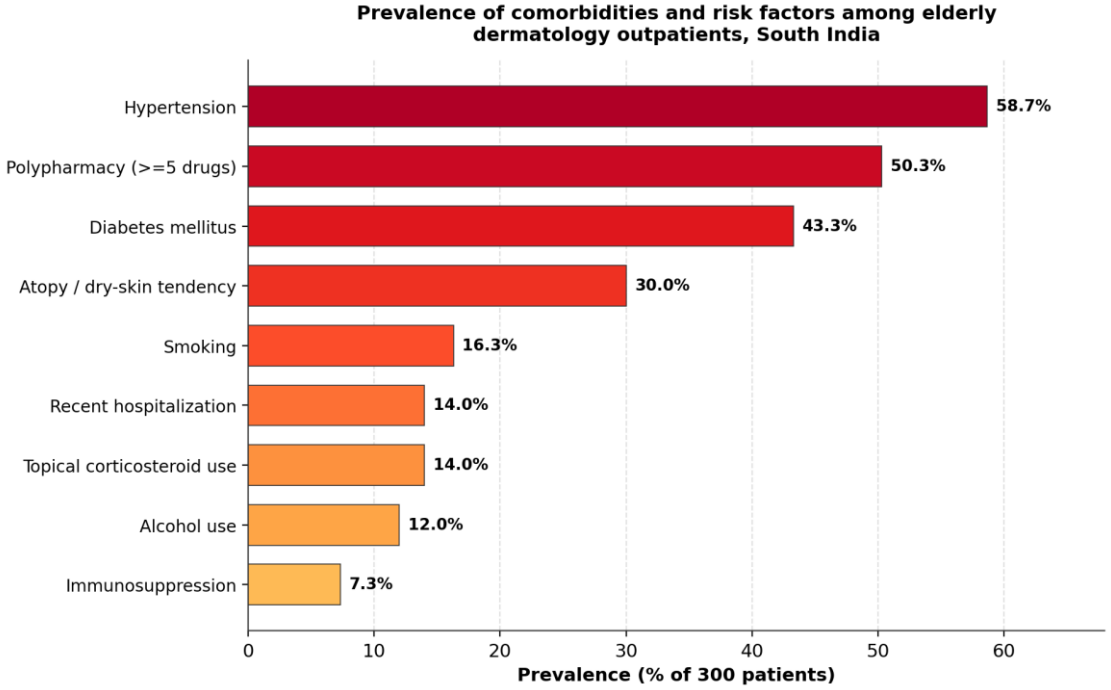

Figure 2: Ranked prevalence (%) of comorbidities and risk factors among 300 elderly dermatology outpatients in South India. Hypertension, polypharmacy and diabetes mellitus were the most frequent.

Association analysis

The association between diabetes mellitus and the presence of any skin disorder was examined. Diabetes was not significantly associated with the presence of a skin disorder (chi-square = 0.11, p = 0.74), indicating that, in this cross-sectional sample, diabetic and non-diabetic elderly patients did not differ significantly in the likelihood of having a diagnosed skin disorder.

DISCUSSION

In this hospital-based cross-sectional study of 300 elderly patients attending a dermatology outpatient department in South India, at least one skin disorder was present in 82.0% of attendees, most often of long duration. Xerosis was the single commonest specific diagnosis, infective dermatoses collectively formed the largest disease category, pruritus was the dominant symptom, and the population carried a substantial comorbidity and polypharmacy burden. Taken together, these findings characterise a distinctive geriatric-

dermatology profile with direct implications for service planning in South India.

The very high prevalence of skin disease observed here is consistent with the wider literature demonstrating that cutaneous disorders are near-universal in older adults. An Indian perspective on dermatology for the elderly has emphasised that virtually all older individuals harbour at least one identifiable skin change, ranging from physiological xerosis to overt dermatoses [1]. Hospital-based European experience, such as that from a public skin outpatient clinic in Siena, similarly documents a high load of multiple concurrent diagnoses in geriatric attendees [2], and population-based data from northern Finland confirm a high prevalence of skin disease and a substantial need for treatment even in middle-aged adults [3]. Our figure of 82.0% falls within the broad range reported internationally, with the residual proportion reflecting patients attending for reassurance, follow-up or non-cutaneous concerns.

Xerosis emerging as the commonest single diagnosis is biologically coherent and echoes prior reports. Age-related skin-barrier decline - reduced sebaceous and eccrine output, impaired stratum-corneum lipid synthesis, diminished natural moisturising factor and slower barrier repair - predisposes older skin to dryness, fissuring and secondary eczematisation [7,8,12]. Xerosis is also the leading substrate for senile pruritus, and the dominance of pruritus (58.1%) among our patients is in keeping with the recognised centrality of dry skin to itch in later life [5,6]. The prominence of dry scaling as the commonest morphology and the lower limb as the commonest site further reinforces xerosis and asteatotic eczema as core geriatric problems, since the shins are classically affected. These observations underline the value of simple, inexpensive interventions - regular emollient use, reduced bathing frequency with lukewarm water, and avoidance of harsh soaps - that could plausibly reduce a large share of the symptom burden in this population.

Infective dermatoses forming the largest disease category, with fungal infection predominating, reflects the interaction of a warm, humid South Indian climate with age-related immunosenescence [1,7]. Superficial fungal infections thrive in heat, humidity, occlusion and moisture, conditions common in this setting, while the age-associated decline in immune competence increases susceptibility to fungal, bacterial, viral and parasitic disease. Comparable climate-driven patterns have been described in other hot regions such as Cairo, where infective and eczematous dermatoses dominate the outpatient load [4]. The appreciable frequency of scabies (7.0%) is notable and is consistent with the crowding, institutional exposure and diagnostic challenge that characterise scabies in the elderly, in whom presentations are often atypical. This infective preponderance contrasts with the pattern in temperate clinics, where eczematous and neoplastic conditions tend to feature more prominently [2,3], and highlights the importance of local, climate-sensitive epidemiological data for South India.

Eczematous dermatitis and psoriasis were the leading non-infective inflammatory disorders in our cohort. Eczematous reactions in the elderly are frequently multifactorial, arising from xerosis, stasis, contact sensitisation and drug exposure; age-related changes in allergen handling modify contact-sensitisation patterns in older patients and warrant consideration when eczema is refractory [10]. The comparatively modest but definite frequencies of premalignant (1.3%) and benign neoplastic (2.0%) lesions are a reminder that cumulative photodamage contributes to cutaneous ageing and to the risk of keratinocyte dysplasia [8,12], and that socioeconomic factors influence the stage at which cutaneous neoplasia is detected and its outcomes [13]. Given the modest educational profile of our population, opportunistic examination for premalignant and malignant lesions during routine dermatology visits is prudent.

A striking feature of this cohort was the heavy burden of systemic comorbidity and polypharmacy: hypertension in 58.7%, five or more concurrent medications in 50.3% and diabetes mellitus in 43.3%. This

profile is clinically important for several reasons. Polypharmacy is a recognised driver of cutaneous adverse drug reactions, xerosis and pruritus, and its presence in half of our patients underscores the need for systematic medication review as part of geriatric-dermatology assessment [1]. Comorbid diabetes and chronic kidney disease predispose to infection, pruritus and impaired wound healing, and immobility and comorbidity increase the risk of pressure-related skin damage, an important preventable cause of morbidity in frail elderly patients [11]. Smoking, present in 16.3%, is an established accelerant of cutaneous ageing and impaired healing [9]. Although hormonal and menopausal influences on skin ageing are well described in women [12], the male predominance in our attendees may reflect health-seeking behaviour and occupational sun exposure rather than true differences in disease burden.

Importantly, diabetes mellitus was not significantly associated with the presence of any skin disorder (chi-square = 0.11, p = 0.74). This null finding should be interpreted with caution and not overstated. Because skin disease was almost ubiquitous in this elderly sample (82.0%), the statistical power to detect a difference between diabetic and non-diabetic patients in the simple presence or absence of any disorder is limited by a ceiling effect; diabetes may still be relevant to the type, severity or chronicity of specific dermatoses rather than to their mere occurrence. The cross-sectional design precludes any causal inference, and the association is reported honestly as non-significant.

The collective picture - a very high prevalence of long-standing skin disease, dominated by xerosis and infective dermatoses, with pruritus as the leading symptom and a heavy comorbidity and polypharmacy background - makes a strong case for dedicated geriatric-dermatology services in South India. Practical priorities include structured emollient and skin-care education, climate-appropriate management and prevention of fungal infection, routine review of polypharmacy, opportunistic screening for premalignant lesions, and integration of dermatological care with the broader management of chronic disease in older adults.

CONCLUSION

In this hospital-based cross-sectional study from South India, a very high proportion of elderly dermatology outpatients (82.0%) had at least one skin disorder, typically of long duration. Xerosis was the single commonest diagnosis, reflecting age-related skin-barrier decline, while infective dermatoses collectively formed the largest disease category, with fungal infection predominating in keeping with the warm, humid climate and age-related immunosenescence; eczematous dermatitis and psoriasis were the leading non-infective inflammatory disorders, and pruritus was the dominant symptom. The population carried a heavy comorbidity and polypharmacy burden, with hypertension, diabetes and the use of five or more medications each affecting a large share of patients, though diabetes was not significantly associated with the presence of any skin disorder.

REFERENCES

1. Verma SB. Dermatology for the elderly: an Indian perspective. Clin Dermatol. 2011;29(1):91-6. doi:10.1016/j.clindermatol.2010.07.012
2. Rubegni P, Poggiali S, Nami N, Rubegni M, Fimiani M. Skin diseases in geriatric patients: our experience from a public skin outpatient clinic in Siena. G Ital Dermatol Venereol. 2012;147(6):631-6.
3. Sinikumpu SP, Huilaja L, Jokelainen J, et al. High prevalence of skin diseases and need for treatment in a middle-aged population. A Northern Finland Birth Cohort 1966 study. PLoS One. 2014;9(6):e99533. doi:10.1371/journal.pone.0099533
4. El-Khateeb EA, Imam AA, Sallam MA. Pattern of skin diseases in Cairo, Egypt. Int J Dermatol.

2011;50(7):844-53. doi:10.1111/j.1365-4632.2010.04840.x

5. Norman RA. Xerosis and pruritus in elderly patients, Part 1. Ostomy Wound Manage. 2006;52(2):12-4.
6. Patel T, Yosipovitch G. The management of chronic pruritus in the elderly. Skin Therapy Lett. 2010;15(8):5-9.
7. Zouboulis CC, Makrantonaki E. Clinical aspects and molecular diagnostics of skin aging. Clin Dermatol. 2011;29(1):3-14. doi:10.1016/j.clindermatol.2010.07.001
8. Lorencini M, Brohem CA, Dieamant GC, Zanchin NIT, Maibach HI. Active ingredients against human epidermal aging. Ageing Res Rev. 2014;15:100-15. doi:10.1016/j.arr.2014.03.002
9. Morita A. Tobacco smoke causes premature skin aging. J Dermatol Sci. 2007;48(3):169-75. doi:10.1016/j.jdermsci.2007.06.015
10. Piaserico S, Larese F, Recchia GP, et al. Allergic contact sensitivity in elderly patients. Aging Clin Exp Res. 2004;16(3):221-5. doi:10.1007/BF03327387
11. Thomas DR. Prevention and treatment of pressure ulcers. J Am Med Dir Assoc. 2006;7(1):46-59. doi:10.1016/j.jamda.2005.10.004
12. Quatresooz P, Pierard-Franchimont C, Gaspard U, Pierard GE. Skin climacteric aging and hormone replacement therapy. J Cosmet Dermatol. 2006;5(1):3-8. doi:10.1111/j.1473-2165.2006.00215.x
13. Ortiz CAR, Goodwin JS, Freeman JL. The effect of socioeconomic factors on incidence, stage at diagnosis and survival of cutaneous melanoma. Med Sci Monit. 2005;11(5):RA163-72.