

# Evaluation of Incidence of Dermatological Changes in Diabetic Patients: A Clinical Study

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## ABSTRACT

**Background:** Diabetes mellitus described by hyperglycemia, is the most widely recognized endocrine disorder. The researchers have estimated that by year 2030 the number of patients affected by Diabetes Mellitus will be increased to 552 million. The present study was planned to evaluate the incidence of dermal changes in diabetic patients.

**Materials and Methods:** The study was conducted in the department of dermatology, Index Medical College Hospital & Research Centre, Indore, Madhya Pradesh (India). For the study, 40 patients reporting to the outpatient department were selected. Patients were asked about different clinical details and were noted. The demographic details of each patient were obtained. A complete dermatological examination was carried out for each patient and the observations were noted for further evaluation.

**Results:** The age of patients ranged between 25 to 80 years. The mean age of the patients was  $52.21 \pm 12.32$  years. The duration of diabetes mellitus in all patients was 5 years or more. The no. of male patients was 19 and female patients were 21. Xerosis was the most common skin lesion diagnosed in diabetic patients (n=18) followed by diabetic dermopathy

(n=14). Bacterial infections were present in 7 patients and fungal infections were diagnosed in 5 patients.

**Conclusion:** Skin lesions are commonly seen in the diabetic patients. Most commonly seen skin lesions in diabetic patients are Xerosis and diabetic dermopathy.

**Keywords:** Diabetes; Skin lesions; Skin manifestations; Xerosis.

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## INTRODUCTION

Diabetes mellitus (DM), described by hyperglycemia is the most widely recognized endocrine disorder.<sup>1</sup> The researchers have estimated that by year 2030 the number of patients affected by DM will be increased to 552 million. The International Diabetes Federation (IDF) documents the total number of diabetic subjects to be around 61.3 million in India and this is further set to raise to 101.2 million by the year 2030.<sup>2</sup> While all other complications of diabetes have been extensively studied, the aspect of dermatological complications is relatively unexplored. Available data suggest that skin dryness and scleroderma-like changes of the hand represent the most common cutaneous manifestations of diabetes mellitus seen in up to 49% of the patients.<sup>3</sup> They are interrelated and also related to diabetes duration. Timing of appearance of various cutaneous lesions in young patients with diabetes might be potentially useful for the research of their pathogenesis (i.e., derangement of epidermal lipid metabolism), therapeutic intervention (i.e., application of moisturizers or antifibrosing agents), or predicting microvascular complications.<sup>2,3</sup>

Hence, the present study was planned to evaluate the incidence of dermal changes in diabetic patients.

## MATERIALS AND METHODS

The study was conducted in the department of dermatology, Index Medical College Hospital & Research Centre, Indore, Madhya Pradesh (India). The ethical approval for the protocol of the study was approved before beginning the study. For the study, 40 patients reporting to the outpatient department were selected.

### Inclusion Criteria:

- Age of patients ranging between 25 to 80 years
- Patients diagnosed with diabetes mellitus for 5 years or more
- Presence of skin lesions on the body surface of patients

### Exclusion Criteria:

- Patients aged less than 25 years
- Patients with systemic conditions other than diabetes
- Patients on long term corticosteroids therapy
- Pregnant women

A total of 40 patients were included in the study. A written informed consent was obtained from the patients after explaining them about the procedure and advantages of the study. Patients were asked about different clinical details and were noted. The demographic details of each patient were obtained and tabulated for further assessment. The demographic data obtained from the patient included age, sex, duration of diabetes mellitus. A complete dermatological examination was carried out for each patient and the observations were noted for further evaluation. To confirm the diagnosis, relevant microbiological and histopathological examination were carried out for each patient.

**RESULTS**

The current study included a total of 40 patients. The age of patients ranged between 25 to 80 years. The mean age of the patients was 52.21±12.32 years. The duration of diabetes mellitus in all patients was 5 years or more. The no. of male patients was 19 and female patients were 21. Table 1 shows the frequency of different type's skin lesions in diabetic patients. Xerosis was the most common skin lesion diagnosed in diabetic patients (n=18) followed by diabetic dermopathy (n=14). Seborrheic keratosis skin infections were established in 12 patients each. The least common skin lesion found in diabetic patients was Asteatotic eczema with diagnosed in only 1 patient.[Figure 1]

Table 2 shows the frequency of different bacterial and fungal infections in diabetic patients. We observed that bacterial infections were present in 7 patients. Impetigo contagiosa was diagnosed in 2 patients; Boils in 3 patients; erythrasma and folliculitis in 1 patient each. Fungal infections were diagnosed in 5 patients. Dermatophytosis was diagnosed in 2 patients whereas Candidal infection was diagnosed in 3 patients.

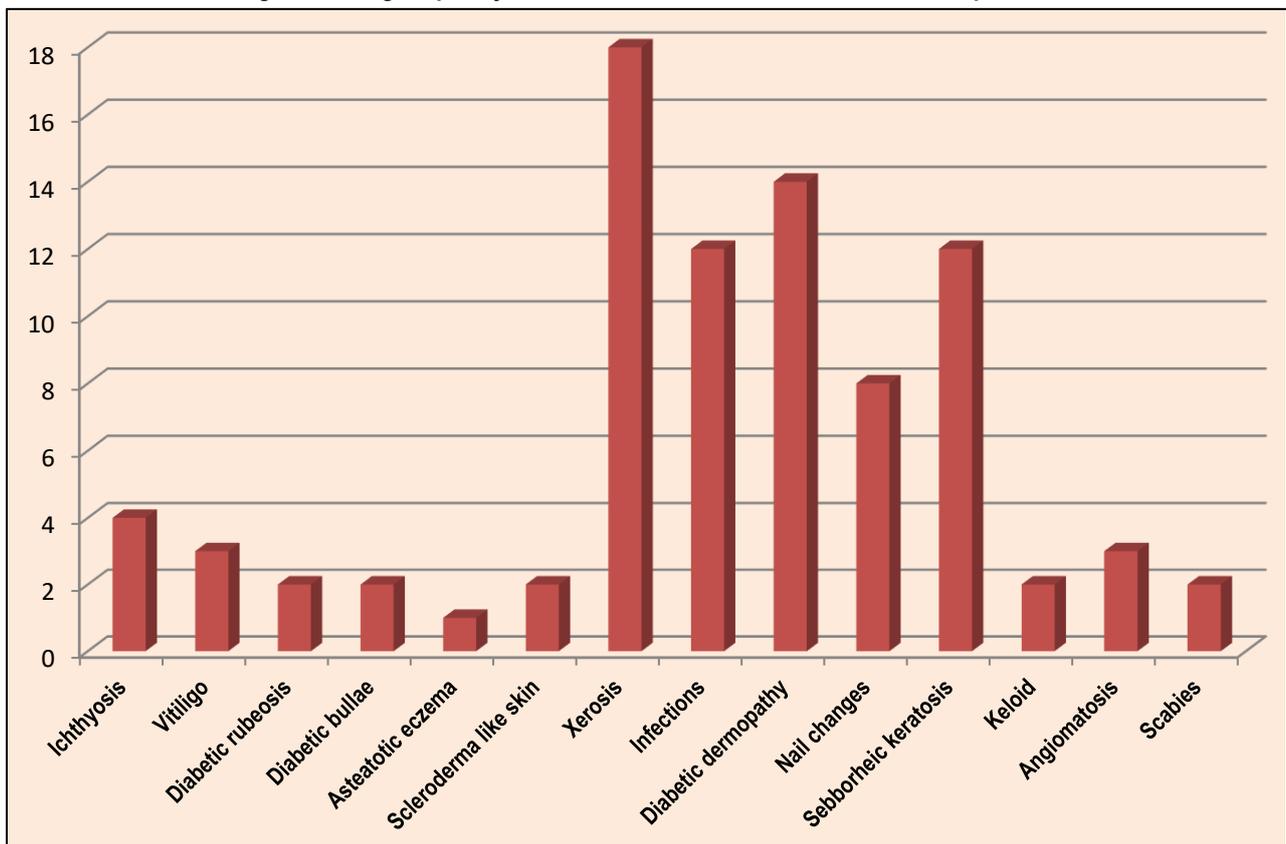
**Table 1: Frequency of various skin lesions observed in diabetic patients**

Types of skin lesions	No. of patients
Ichthyosis	4
Vitiligo	3
Diabetic rubeosis	2
Diabetic bullae	2
Asteatotic eczema	1
Scleroderma like skin	2
Xerosis	18
Infections	12
Diabetic dermopathy	14
Nail changes	8
Seborrheic keratosis	12
Keloid	2
Angiomatosis	3
Scabies	2

**Table 2: Frequency of different bacterial infections and fungal infections in diabetic patients**

Type of skin Infection	No. of patients	
Bacterial infections	Impetigo contagiosa	2
	Boils	3
	Erythrasma	1
	Folliculitis	1
Fungal infections	Dermatophytosis	2
	Candidal	3

**Fig 1: Showing frequency of various skin lesions observed in diabetic patients**



## DISCUSSION

Cutaneous signs of diabetes mellitus generally appear after the primary disease has developed but may appear coincidentally with its onset, or even precede diabetes by many years. Although the mechanism for many diabetes-associated skin conditions remains unknown, the pathogenesis of others is linked to abnormal carbohydrate metabolism, other altered metabolic pathways, atherosclerosis, microangiopathy, neuron degeneration, and impaired host mechanisms.<sup>4</sup> Association of at least 30% of patients with diabetes mellitus with some type of cutaneous involvement was observed during the course of their chronic disease.<sup>5,6</sup> Most documented studies have shown the incidence of cutaneous disorders associated with diabetes to be between 30% and 71%.

In the present study, we observed that Xerosis was the most common skin lesion diagnosed in diabetic patients (n=18) followed by diabetic dermopathy. Bacterial and fungal infections in diabetic patients were observed commonly.

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Ghosh K et al<sup>7</sup> conducted a single-focus observational cross-sectional investigation was done trying to discover the predominance of different skin signs in diabetes patients (DM) and their connection with diabetes control and intricacies. Skin manifestations display more than 12 months among those reporting at diabetes center were incorporated into the examination. Aside from statistic information and sort, patients were likewise screened for micro vascular complexities and control of diabetes over most recent 3 months. Sixty (n = 60) diabetes patients (Type 1 DM, 9 patients and Type 2 DM 51 patients) were found to have different skin lesions. Thirty-one (51.67%) patients given irresistible conditions, vascular complications were available in 21 (35%) and dermatomes were available in 50 (83.33%) patients. Pyoderma, diabetic dermopathy, and pruritus without skin lesions were observed to be most normal signs in infective, vascular and different group, individually. Larger amount of HB1AC was found in persistent with diabetic bulla, scleredema, lichen planus, and acanthosis nigricans. Patients with psoriasis and vitiligo had measurably noteworthy lower level of glycosylated hemoglobin. Nonetheless, no relationship of any sort of skin appearance with DM with other microangiopathic complications was found in this examination. Romano G et al<sup>8</sup> performed a research with the objective to survey the predominance and the principle clinical connections of skin manifestations in diabetes mellitus, 457 diabetic subjects successively going to an outpatient center experienced a dermatological examination. Neurovascular foot lesions were excluded. Thirty-five of 64 IDDM patients (54%) had skin modifications mostly comprising of vitiligo (9% of all patients), psoriasis (9%) and dermatitis (8%). The most successive manifestations seen in 240/393 NIDDM subjects (61%) were correspond to to by infections (20% of all patients) and diabetic dermopathy (12.5%), while different injuries were not normal. NIDDM patients with skin infections had a more awful metabolic control, and those with diabetic dermopathy had a more prominent

pervasiveness of neuropathy and large vessel disease than patients without skin manifestations. These information demonstrate that the pervasiveness of skin lesions in a vast, unselected diabetic populace is higher than anticipated and show that, by and large, a watchful dermatological examination and a superior metabolic control are required keeping in mind the end goal to enhance personal satisfaction in these patients. Ragunatha S et al<sup>9</sup> analyzed the effect of control of diabetes on the pattern of cutaneous lesions. A sum of 500 back to back patients was examined. Point by point history, clinical examination and pertinent examinations were done to analyze diabetic complexities and cutaneous lesions. Dermatoses with or without known pathogenesis were connected with age, sex, fasting plasma glucose (FPG), term of diabetes, and complexities of DM. Larger part of patients had all around controlled (FPG<130 mg/ml, 60%) sort 2 DM (98.8%). No measurably critical distinction between the patients with or without DM particular cutaneous lesions was seen with reference to age and sexual orientation appropriation, span of DM and FPG. Indications of insulin resistance, acrochordon (26.2%), and acanthosis nigricans (5%) were normal, trailed by parasitic (13.8%) and bacterial (6.8%) contaminations. Eruptive xanthoma (0.6%), diabetic foot (0.2%), diabetic bulla (0.4%), diabetic dermopathy (0.2%), summed up granuloma annulare (0.2%), and insulin responses (6.2%) and lipodystrophy (14%) were likewise observed. The creators presumed that very much controlled diabetes diminishes the predominance of DM-particular cutaneous lesions related with ceaseless hyperglycemia.

Chatterjee N et al<sup>10</sup> analyzed the prevalence and pattern of skin disorders among diabetic patients from Eastern region of India. This study was conducted in the General Medicine and Endocrinology departments of a Medical College and Hospital in Eastern India. The data were collected prospectively and systematically in a pre-established proforma, where clinical findings along with investigations were recorded. Six hundred and eighty (680) diabetic patients were examined, there were (64.8%) male and (35.1%) were female, of them 95.3% were Type 2 diabetics while 4.7% were Type 1. 73.9% were found to have skin lesions. Thirteen (13) (41%) Type1 diabetics demonstrated skin lesions commonest being diabetic xerosis, infections and diabetic hand. Among Type 2 diabetics 490 (75.61%) showed skin lesions. Here infections, xerosis, hair loss beneath the knees, diabetic dermopathy were the most frequent. Majority of patients (67%) had combination of more than one type of skin lesion. There was statistically significant correlation of skin lesions with duration of diabetes, however similar correlation could not be demonstrated regarding metabolic control. It was concluded that involvement of skin is inevitable and multifarious in diabetes mellitus. Higher prevalence is seen in Type 2 diabetic population. The duration of diabetes is positively correlated with lesions and infective dermatologic manifestations were associated with higher HbA1C values.

## CONCLUSION

On the basis of results of current study, we conclude that skin lesions are commonly seen in the diabetic patients. Most commonly seen skin lesions in diabetic patients are xerosis and diabetic dermopathy.

## REFERENCES

1. Bud JL, Oledur JE. Fitzpatrick's Dermatology in General Medicine. 6th ed. Vol. 2. New York, Toronto: McGraw Hill Companies; Diabetes mellitus; pp. 1651–61.
2. Sicree R, Shaw J, Zimmet P. Diabetes and impaired glucose tolerance. In: Gan D, editor. Diabetes Atlas. International Diabetes Federation. 3rd ed. Belgium: International Diabetes Federation; 2006. pp. 15–103.
3. Wild S, Roglic G, Green A, Sicree R, King H. Global prevalence of diabetes: Estimates for the year 2000 and projection for 2030. *Diabetes Care*. 2004;27:1047–53.
4. Bhat YJ, Gupta V, Kudyar RP. Cutaneous manifestations of diabetes mellitus. *Int J Diabetes Dev Ctries*. 2006;26:152–5.
5. Giligor RS, Lazarus GS. Skin manifestations of diabetes mellitus. In: Rifkin H, Raskin P, editors. *Diabetes Mellitus*. Louana: Brady Co.; 1981. pp. 313–21.
6. Romano G, Morretti G, Di benedetto A. Skin lesions in diabetes mellitus: Prevalence and clinical correlations. *Diabetes Res Clin Pract*. 1998;39:101–6
7. Ghosh K, Das K, Ghosh S, et al. Prevalence of Skin Changes in Diabetes Mellitus and its Correlation with Internal Diseases: A Single Center Observational Study. *Indian Journal of Dermatology*. 2015;60(5):465-469. doi:10.4103/0019-5154.164363
8. Romano G, Moretti G, Di Benedetto A, Giorè C, Di Cesare E, Russo G, Califano L, Cucinotta D. Skin lesions in diabetes mellitus: prevalence and clinical correlations. *Diabetes Res Clin Pract*. 1998 Feb;39(2):101-6.
9. Rangunatha S, Anitha B, Inamadar AC, Palit A, Devarmani SS. Cutaneous disorders in 500 diabetic patients attending diabetic clinic. *Indian Journal of Dermatology*. 2011;56(2):160-164.
10. Chatterjee N, Chattopadhyay C, Sengupta N, Das C, Sarma N, Pal SK. An observational study of cutaneous manifestations in diabetes mellitus in a tertiary care Hospital of Eastern India. *Indian Journal of Endocrinology and Metabolism*. 2014;18(2):217-220.

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