# AN OBSERVATIONAL STUDY ON DERMATOLOGICAL CHANGES IN A COHORT OF CKD PATIENTS

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## ABSTRACT

**Background:** Chronic kidney disease (CKD), also known as chronic renal failure (CRF), is a progressive loss of renal function over a period of months or years. Chronic kidney disease is divided into 5 stages of increasing severity. Each stage is a progression through an abnormally decreasing and deteriorating glomerular filtration rate (GFR), which is usually determined indirectly by the serum creatinine level. Nonspecific skin manifestations are found in over half of all end-stage renal disease (ESRD) patients. Among the most common of these are pigmentary change, nail changes, and xerosis/ichthyosis. Specific changes associated with the etiology of renal failure are also common, including changes associated with diabetes, connective tissue disorders, and genetic disorders such as Fabry disease

**Aim and Objectives:** The study will try to find out incidence of dermatological changes in patients of Chronic Kidney Disease(CKD).

**Materials and Method**s: The is a prospective, observational study conducted on patients with chronic kidney disease, both hospitalized patients and those visiting outpatient department (OPD) of ICARE Institute of Medical Sciences & Research & Dr. Bidhan Chandra Roy Hospital, Haldia.

Patient having stable renal function were selected in the case study, that means patient with CKD stage 3 onwards but without any AKI component were the study population. Those having rapid change in renal parameters, i.e, AKI on CKD were not selected.

## RESULT AND DISCUSSION

Our study found that 60(55.6%) patients had no skin changes and 48(44.4%) patients had skin changes. We found that 34 (31.5%) patients had Pruritus, 28 (25.9%) patients had hyperpigmentation, 8(7.4%) patients had hypopigmentation. 18 (16.7%) patients had excoriation, 26 (24.1%) patients had Xeosis, 17(15.7%) patients had Icthyosis, 2(1.9%) patients had SPG, 2(1.9%) patients had YSH, 17(15.7%) patients had PD, 3(2.8%) patients had P & E, no patient had PCT, 7(6.5%) patients had ASD-ASS, no patient had CALPHXS, no patient had NFD.

It was found that 25(23.1%) patients had HHN, 4(3.7%) patients had AL, 10(9.3%) patients had KOILNCH, 9(8.3%) patients had ONCHOLSS, no patient had B/F N, no patient had Beau's LNS,

no patient had Clubbing, no patient had LR, 4(3.7%) patients had OMCSIS, 4(3.7%) patients had OMCSIS, 1(0.9%) patients had SUNHKRS, 1(0.9%) patients had TOL LKNK, no patient had SPLHRG, 3(2.8%) patients had PPND, no patient had ONCDYST, no patient had ONCORXS and no patient had MUE LN.
It was found that 5(4.6%) patients had CNDSIS, 16(14.8%) patients had AG CHEILS, 10(9.3%) patients had GINGVTS and 1(0.9%) patients had FIS TNG.
We found that 11(10.2%) patients had of ALOPECIA, 20(18.5%) patients had BRLTL HR and 11(10.2%) patients had SPR BD HR.
In stage V (D), pruritus, EXCRN, HYPEPGN, HYPOPGN, xerosis, ICTHS, PD and ASD-ASS were found to be significantly higher than other stages. One patient was found to have P & E in each of stage IV, stage V (ND) and stage V (D). None of our patient were found to have PCT, CALPHXS, NFD. In stage V (D), HHN, KOILNCH, ONCHOLSS and OMCSIS were the nail findings found to be significantly higher than other stages.

None of our patient were found to have B/F N, Beau's LNS, LR, SPLHRG, ONCDYST, ONCORXS and MUE LN. In the oral changes CNDSIS, AG CHEILS and GINGVTS were found to be significantly higher in stage V (D). In stage V (D), BRLTL HR and SPR BD HR were the hair findings found to be significantly higher than other stages.

## CONCLUSION

We conclude that xerosis, pruritus, pigmentary and nail changes were the most common skin disorders in patients with CRF in our environment.

## INTRODUCTION:

Chronic kidney disease (CKD), also known as chronic renal failure (CRF), is a progressive loss of renal function over a period of months or years[1,2]. Chronic kidney disease is divided into 5 stages of increasing severity. Each stage is a progression through an abnormally decreasing and deteriorating glomerular filtration rate (GFR), which is usually determined indirectly by the serum creatinine level[1,2]. All individuals with either kidney damage or a GFR < 60 ml/min/1.73 m2 for 3 months are classified as having chronic renal disease[1,2]. End-stage renal disease (ESRD) is considered the fifth stage of CKD, and can lead to uremic syndrome, which can cause death in patients with this condition if toxins accumulate in the body[3]. Patients with CKD on hemodialysis (HD) experience many dermatological symptoms during treatment. Since these symptoms are only detected in advanced cases of the disease, they are not valuable in the diagnosis of kidney failure[4]. Complete and precise examination of skin, hair, nails, and mucosal membranes may reveal a wide variety of the following symptoms including hyperpigmentation, xerosis, ichthyosis, pruritus, onychomycosis, onycholysis, splinter hemorrhages, subungual hyperkeratosis, brittle hair, and sparse body scalp hair[5-8]. Historically, diagnosis in medicine was based primarily on obtaining an accurate history and performing a visual inspection. The accessibility of easily obtainable, sophisticated laboratory tests and diagnostic equipment has greatly enhanced the ability of the medical profession to accurately diagnose a multitude of diseases.
There are several pigmentary changes that have been reported in ESRD patients, including hyperpigmentation, pallor, a slate-grey discoloration, and a yellow skin hue. Pallor is likely related

to anemia, while the slate-grey discoloration is due to hemosiderin deposition[9]. Yellowing of the skin may be seen due to the deposition of carotenoids and urochromes within the skin and subcutaneous tissue. Hyperpigmentation is most prominent in sun-exposed areas and is attributed to increase in skin melanin due to excessive beta-melanocyte stimulating hormone[10]. Ichthyosiform skin changes, characterized by dry skin, thick rhomboidal scales, and fissures are frequently observed. Theories regarding the etiology of xerosis in renal failure include observed structural skin alteration with fragmentation of elastic fibers and atrophy of eccrine sweat and sebaceous glands, loss of stratum corneum integrity, and hypervitaminosis A with resultant alteration in maturation of the stratum corneum. Diuretic treatment may also play a role[11]. Management of xerosis with emollients containing salicylic acid or urea and a gentle skin care regimen may be beneficial. Pruritus is reported in 12–90% of patients and may have a severe impact on quality of life. Patients may present with excoriations, skin lichenification (thick, leathery skin patches due to irritation), prurigo nodularis ("scratch bumps"), and accentuation of perforating disorders (disorders resulting in transepidermal elimination of altered collagen and dermal debris) due to the Koebner phenomenon[12]. In the Koebner phenomenon, skin lesions develop in areas of trauma[13].

**AIM AND OBJECTIVES:**

The present study will try to find out incidence of dermatological changes in patients of Chronic Kidney Disease(CKD) in outpatient deparment(OPD) in ICARE Institute of Medical Sciences & Research & Dr. Bidhan Chandra Roy Hospital, Haldia.

**MATERIALS AND METHODS:**

The present is done on both hospitalized patients and those visiting outpatient department OPD, Patient having stable renal function were selected in the case study, that means patient with CKD stage 3 onwards but without any AKI component were the study population. Those having rapid change in renal parameters, i.e, AKI on CKD were not selected.

**Study design:** It is a prospective, observational hospital based study.

**Sample size:** 108

**RESULTS:**

Our study found that 60(55.6%) patients had no skin changes and 48(44.4%) patients had skin changes. We found that 34 (31.5%) patients had Pruritus, 28 (25.9%) patients had hyperpigmentation, 8(7.4%) patients had hypopigmentation. 18 (16.7%) patients had excoriation, 26 (24.1%) patients had Xerosis, 17(15.7%) patients had Icthyosis, 2(1.9%) patients had SPG, 2(1.9%) patients had YSH, 17(15.7%) patients had PD, 3(2.8%) patients had P & E, no patient had PCT, 7(6.5%) patients had ASD-ASS, no patient had CALPHXS, no patient had NFD.

It was found that 25(23.1%) patients had HHN, 4(3.7%) patients had AL, 10(9.3%) patients had KOILNCH, 9(8.3%) patients had ONCHOLSS, no patient had B/F N, no patient had Beau's LNS, no patient had Clubbing, no patient had LR, 4(3.7%) patients had OMCSIS, 4(3.7%) patients had OMCSIS, 1(0.9%) patients had SUNHKRS, 1(0.9%) patients had TOL LKNK, no patient had SPLHRG, 3(2.8%) patients had PPND, no patient had ONCDYST, no patient had ONCORXS and no patient had MUE LN.

It was found that 5(4.6%) patients had CNDSIS, 16(14.8%) patients had AG CHEILS, 10(9.3%) patients had GINGVTS and 1(0.9%) patients had FIS TNG.

We found that 11(10.2%) patients had of ALOPECIA, 20(18.5%) patients had BRLTL HR and 11(10.2%) patients had SPR BD HR.

In stage V (D), pruritus, EXCRN, HYPEPGN, HYPOPGN, Xerosis, ICTHS, PD and ASD-ASS were found to be significantly higher than other stages. One patient was found to have P & E in each of stage IV, stage V (ND) and stage V (D). None of our patient were found to have PCT, CALPHXS, NFD. In stage V (D), HHN, KOILNCH, ONCHOLSS and OMCSIS were the nail findings found to be significantly higher than other stages. None of our patient were found to have B/F N, Beau's LNS, LR, SPLHRG, ONCDYST, ONCORXS and MUE LN. In the oral changes CNDSIS, AG CHEILS and GINGVTS were found to be significantly higher in stage V (D). In stage V (D), BRLTL HR and SPR BD HR were the hair findings found to be significantly higher than other stages.

**Table 1: Distribution of Skin Changes**

| Skin Changes | Frequency | Percent |
|---|---|---|
| **No** | 60 | 55.6% |
| **Yes** | 48 | 44.4% |
| **Total** | 108 | 100.0% |

**Table 2: Association of Skin Changes: Stage**

| | STAGE | | | | |
|---|---|---|---|---|---|
| **Skin Changes** | **Stage III** | **Stage IV** | **Stage V (D)** | **Stage V (ND)** | **TOTAL** |
| **No** | 21 | 18 | 7 | 14 | 60 |
| Row % | 35.0 | 30.0 | 11.7 | 23.3 | 100.0 |
| Col % | 77.8 | 64.3 | 25.9 | 53.8 | 55.6 |
| **Yes** | 6 | 10 | 20 | 12 | 48 |
| Row % | 12.5 | 20.8 | 41.7 | 25.0 | 100.0 |
| Col % | 22.2 | 35.7 | 74.1 | 46.2 | 44.4 |
| **TOTAL** | 27 | 28 | 27 | 26 | 108 |
| Row % | 25.0 | 25.9 | 25.0 | 24.1 | 100.0 |
| Col % | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |

**Table 3: Association of SEX : Stage**

| | STAGE | | | | |
|---|---|---|---|---|---|
| **SEX** | **Stage III** | **Stage IV** | **Stage V (D)** | **Stage V (ND)** | **TOTAL** |
| **Female** | 5 | 14 | 11 | 10 | 40 |
| Row % | 12.5 | 35.0 | 27.5 | 25.0 | 100.0 |
| Col % | 18.5 | 50.0 | 40.7 | 38.5 | 37.0 |
| **Male** | 22 | 14 | 16 | 16 | 68 |
| Row % | 32.4 | 20.6 | 23.5 | 23.5 | 100.0 |

| | | | | | |
|---|---|---|---|---|---|
| Col % | 81.5 | 50.0 | 59.3 | 61.5 | 63.0 |
| **TOTAL** | 27 | 28 | 27 | 26 | 108 |
| Row % | 25.0 | 25.9 | 25.0 | 24.1 | 100.0 |
| Col % | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |

**Table 4: Association of Pruritus: Stage**

| **STAGE** | | | | | |
|---|---|---|---|---|---|
| **Pruritus** | **Stage III** | **Stage IV** | **Stage V (D)** | **Stage V (ND)** | **TOTAL** |
| **No** | 23 | 23 | 10 | 18 | 74 |
| Row % | 31.1 | 31.1 | 13.5 | 24.3 | 100.0 |
| Col % | 85.2 | 82.1 | 37.0 | 69.2 | 68.5 |
| **Yes** | 4 | 5 | 17 | 8 | 34 |
| Row % | 11.8 | 14.7 | 50.0 | 23.5 | 100.0 |
| Col % | 14.8 | 17.9 | 63.0 | 30.8 | 31.5 |
| **TOTAL** | 27 | 28 | 27 | 26 | 108 |
| Row % | 25.0 | 25.9 | 25.0 | 24.1 | 100.0 |
| Col % | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |

**Table 5: Association of EXCRN : Stage**

| **STAGE** | | | | | |
|---|---|---|---|---|---|
| **EXCRN** | **Stage III** | **Stage IV** | **Stage V (D)** | **Stage V (ND)** | **TOTAL** |
| **No** | 26 | 27 | 14 | 23 | 90 |
| Row % | 28.9 | 30.0 | 15.6 | 25.6 | 100.0 |
| Col % | 96.3 | 96.4 | 51.9 | 88.5 | 83.3 |
| **Yes** | 1 | 1 | 13 | 3 | 18 |
| Row % | 5.6 | 5.6 | 72.2 | 16.7 | 100.0 |
| Col % | 3.7 | 3.6 | 48.1 | 11.5 | 16.7 |
| **TOTAL** | 27 | 28 | 27 | 26 | 108 |
| Row % | 25.0 | 25.9 | 25.0 | 24.1 | 100.0 |
| Col % | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |

**Table 6: Association of HYPEPGN : Stage**

| **STAGE** | | | | | |
|---|---|---|---|---|---|
| **HYPEPGN** | **Stage III** | **Stage IV** | **Stage V (D)** | **Stage V (ND)** | **TOTAL** |
| **No** | 25 | 25 | 12 | 18 | 80 |
| Row % | 31.3 | 31.3 | 15.0 | 22.5 | 100.0 |
| Col % | 92.6 | 89.3 | 44.4 | 69.2 | 74.1 |
| **Yes** | 2 | 3 | 15 | 8 | 28 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Row | % | 7.1 | 10.7 | 53.6 | 28.6 | 100.0 |
| Col % | | 7.4 | 10.7 | 55.6 | 30.8 | 25.9 |
| **TOTAL** | | 27 | 28 | 27 | 26 | 108 |
| Row | % | 25.0 | 25.9 | 25.0 | 24.1 | 100.0 |
| Col % | | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |

**Table 7: Association of HYPOPGN : Stage**

| **STAGE** | | | | | | |
|---|---|---|---|---|---|---|
| **HYPOPGN** | | **Stage III** | **Stage IV** | **Stage V (D)** | **Stage V (ND)** | **TOTAL** |
| **No** | | 27 | 28 | 19 | 26 | 100 |
| Row | % | 27.0 | 28.0 | 19.0 | 26.0 | 100.0 |
| Col % | | 100.0 | 100.0 | 70.4 | 100.0 | 92.6 |
| **Yes** | | 0 | 0 | 8 | 0 | 8 |
| Row | % | 0.0 | 0.0 | 100.0 | 0.0 | 100.0 |
| Col % | | 0.0 | 0.0 | 29.6 | 0.0 | 7.4 |
| **TOTAL** | | 27 | 28 | 27 | 26 | 108 |
| Row | % | 25.0 | 25.9 | 25.0 | 24.1 | 100.0 |
| Col % | | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |

**Table 8: Association of Xerosis : Stage**

| **STAGE** | | | | | | |
|---|---|---|---|---|---|---|
| **Xerosis** | | **Stage III** | **Stage IV** | **Stage V (D)** | **Stage V (ND)** | **TOTAL** |
| **No** | | 25 | 26 | 10 | 21 | 82 |
| Row | % | 30.5 | 31.7 | 12.2 | 25.6 | 100.0 |
| Col % | | 92.6 | 92.9 | 37.0 | 80.8 | 75.9 |
| **Yes** | | 2 | 2 | 17 | 5 | 26 |
| Row | % | 7.7 | 7.7 | 65.4 | 19.2 | 100.0 |
| Col % | | 7.4 | 7.1 | 63.0 | 19.2 | 24.1 |
| **TOTAL** | | 27 | 28 | 27 | 26 | 108 |
| Row | % | 25.0 | 25.9 | 25.0 | 24.1 | 100.0 |
| Col % | | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |

**Table 9: Association of ICTHS : Stage**

| **STAGE** | | | | | | |
|---|---|---|---|---|---|---|
| **ICTHS** | | **Stage III** | **Stage IV** | **Stage V (D)** | **Stage V (ND)** | **TOTAL** |
| **No** | | 26 | 26 | 17 | 22 | 91 |
| Row | % | 28.6 | 28.6 | 18.7 | 24.2 | 100.0 |
| Col % | | 96.3 | 92.9 | 63.0 | 84.6 | 84.3 |

| | | | | | |
|---|---|---|---|---|---|
| **Yes** | 1 | 2 | 10 | 4 | 17 |
| Row % | 5.9 | 11.8 | 58.8 | 23.5 | 100.0 |
| Col % | 3.7 | 7.1 | 37.0 | 15.4 | 15.7 |
| **TOTAL** | 27 | 28 | 27 | 26 | 108 |
| Row % | 25.0 | 25.9 | 25.0 | 24.1 | 100.0 |
| Col % | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |

**Table 10:**

| **ASSOCIATION OF** | **Stage III** | **Stage IV** | **Stage V (D)** | **Stage V (ND)** | **TOTAL** |
|---|---|---|---|---|---|
| **SGD** | | | | | |
| **Yes** | 1 | 0 | 1 | 0 | 2 |
| Row % | 50.0 | 0.0 | 50.0 | 0.0 | 100.0 |
| Col % | 3.7 | 0.0 | 3.7 | 0.0 | 1.9 |
| **YSH** | | | | | |
| **Yes** | 0 | 1 | 0 | 1 | 2 |
| Row % | 0.0 | 50.0 | 0.0 | 50.0 | 100.0 |
| Col % | 0.0 | 3.6 | 0.0 | 3.8 | 1.9 |
| **PD** | | | | | |
| **Yes** | 0 | 2 | 8 | 7 | 17 |
| Row % | 0.0 | 11.8 | 47.1 | 41.2 | 100.0 |
| Col % | 0.0 | 7.1 | 29.6 | 26.9 | 15.7 |
| **P & E** | | | | | |
| **Yes** | 0 | 1 | 1 | 1 | 3 |
| Row % | 0.0 | 33.3 | 33.3 | 33.3 | 100.0 |
| Col % | 0.0 | 3.6 | 3.7 | 3.8 | 2.8 |
| **PCT** | | | | | |
| **No** | 27 | 28 | 27 | 26 | 108 |
| Row % | 25.0 | 25.9 | 25.0 | 24.1 | 100.0 |
| Col % | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| **ASD-ASS** | | | | | |
| **Yes** | 0 | 0 | 7 | 0 | 7 |
| Row % | 0.0 | 0.0 | 100.0 | 0.0 | 100.0 |
| Col % | 0.0 | 0.0 | 25.9 | 0.0 | 6.5 |
| **CALPHXS** | | | | | |
| **No** | 27 | 28 | 27 | 26 | 108 |
| Row % | 25.0 | 25.9 | 25.0 | 24.1 | 100.0 |
| Col % | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |

| | | | | | | |
|---|---|---|---|---|---|---|
| **NFD** | | | | | | |
| **No** | | 27 | 28 | 27 | 26 | 108 |
| Row | % | 25.0 | 25.9 | 25.0 | 24.1 | 100.0 |
| Col % | | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| **HHN** | | | | | | |
| **Yes** | | 2 | 4 | 15 | 4 | 25 |
| Row | % | 8.0 | 16.0 | 60.0 | 16.0 | 100.0 |
| Col % | | 7.4 | 14.3 | 55.6 | 15.4 | 23.1 |
| **AL** | | | | | | |
| **Yes** | | 0 | 1 | 2 | 1 | 4 |
| Row | % | 0.0 | 25.0 | 50.0 | 25.0 | 100.0 |
| Col % | | 0.0 | 3.6 | 7.4 | 3.8 | 3.7 |
| **KOILNCH** | | | | | | |
| **Yes** | | 0 | 1 | 6 | 3 | 10 |
| Row | % | 0.0 | 10.0 | 60.0 | 30.0 | 100.0 |
| Col % | | 0.0 | 3.6 | 22.2 | 11.5 | 9.3 |
| **ONCHOLSS** | | | | | | |
| **Yes** | | 0 | 0 | 8 | 1 | 9 |
| Row | % | 0.0 | 0.0 | 88.9 | 11.1 | 100.0 |
| Col % | | 0.0 | 0.0 | 29.6 | 3.8 | 8.3 |
| **B/F N** | | | | | | |
| **No** | | 27 | 28 | 27 | 26 | 108 |
| Row | % | 25.0 | 25.9 | 25.0 | 24.1 | 100.0 |
| Col % | | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| **Beau's LNS** | | | | | | |
| **No** | | 27 | 28 | 27 | 26 | 108 |
| Row | % | 25.0 | 25.9 | 25.0 | 24.1 | 100.0 |
| Col % | | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| **Clubbing** | | | | | | |
| **Yes** | | 1 | 0 | 1 | 0 | 2 |
| Row | % | 50.0 | 0.0 | 50.0 | 0.0 | 100.0 |
| Col % | | 3.7 | 0.0 | 3.7 | 0.0 | 1.9 |
| **LR** | | | | | | |
| **No** | | 27 | 28 | 27 | 26 | 108 |
| Row | % | 25.0 | 25.9 | 25.0 | 24.1 | 100.0 |
| Col % | | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| **OMCSIS** | | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| **Yes** | | 0 | 0 | 4 | 0 | 4 |
| Row | % | 0.0 | 0.0 | 100.0 | 0.0 | 100.0 |
| Col % | | 0.0 | 0.0 | 14.8 | 0.0 | 3.7 |
| **ALOPECIA** | | | | | | |
| **Yes** | | 1 | 2 | 5 | 3 | 11 |
| Row | % | 9.1 | 18.2 | 45.5 | 27.3 | 100.0 |
| Col % | | 3.7 | 7.1 | 18.5 | 11.5 | 10.2 |
| **SKN BX** | | | | | | |
| **NODO** | | 25 | 26 | 24 | 21 | 96 |
| Row | % | 26.0 | 27.1 | 25.0 | 21.9 | 100.0 |
| Col % | | 92.6 | 92.9 | 88.9 | 80.8 | 88.9 |
| | | | | | | |

**DISCUSSION AND CONCLUSION:**

The present study is prospective, observational Study that includes hundred and eight cases of chronic kidney disease (CKD) stage III onwards in our OPD in our tertiary care hospital.

Our study found that 60(55.6%) patients had no skin changes and 48(44.4%) patients had skin changes.

**Kolla PK et al [97] (2012)** found that 113 male and 30 females. **Dorchhom K et al [104] (2014)** found that mean age of patients was 38.7±7.4 years. Gender ratio was 1.32:1 (male: female).

**Rashpa RS et al [100] (2018)** found that 122 (M:F = 77:45) patients aged 21–85 (Mean ± SD = 57.5 ± 14.0) years having CKD . **Chanda GM et al [93] (2017)** found that 72 were males and 28 were females. We found that 40 patients were female and 68 were male. The male: female ratio was 1.7:1.

We found that in CKD stage III, 5(18.5%) patients had female and 22(81.5%) patients had male. In stage IV, 14(50.0%) patients had female and 14(50.0%) patients had male. In stage V (ND), 10(38.5%) patients had female and 16(61.5%) patients had male. In stage V (D), 11(40.7%) patients had female and 16(59.3%) patients had male.

**Chanda GM et al [93] (2017)** found that the common nonspecific manifestations observed were xerosis in 59% (dialytic 61.03%, nondialytic 38.98%), pallor in 57% (dialytic 49.1%, nondialytic 50.9%), pruritus in 38%, (dialytic 63.16%, nondialytic 36.84%), pigmentation in 32% (dialytic, 65.63%, nondialytic 34.37%),

We found that 6(22.2%), 10(35.7%), 12(46.2%) and 20(74.1%) patients had skin changes stage III, stage IV, stage V (ND) and stage V (D) respectively . Association of skin changes vs. stage was statistically significant (p=0.0012).

We found that overall 48(44.4%) patients had skin changes. Pruritus was the most common symptom and hyperpigmentation was the most common sign, Xerosis was the third most common finding mainly associated with those having pruritus. In the skin changes 18 patients had excoriation, 17 patients had Icthyosis ,17 patients PD , 2(1.9%) patients had SPG, 2(1.9%) patients had YSH, 3(2.8%) patients had P & E , 7(6.5%) patients had ASD-ASS.

Oral changes had found 16(14.8%) patients had AG CHEILS, 10(9.3%) patients had GINGVTS, 5(4.6%) patients had CNDSIS, and 1(0.9%) patients had FIS TNG. Hair changes had found that 20(18.5%) patients had BRLTL HR, 11(10.2%) patients had of ALOPECIA, and 11(10.2%) patients had SPR BD HR

We conclude that xerosis, pruritus, pigmentary and nail changes were the most common skin disorders in patients with CRF in our environment.

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**Conflicts of interest**
There are no conflicts of interest

**REFERENCES:**

1. Goddard J, Turner AN, Cumming AD, Stewart LH. Kidney and urinary tract disease. In: Boon NA, Colledge NR, Walker BR, Hunter JA, eds. *Davidson's Principles and Practice of Medicine.* 20th ed. Edinburgh: Churchill Livingstone, Elsevier; 2006: 455-518.
2. Watnick S, Morrison G. Kidney. In: Tierney LM, McPhee SJ, Papadakis MA, eds. *Current Medical Diagnosis and Treatment.* 43rd ed. New York: McGraw-Hill; 2004:863-98.
3. Bargman JM, Skorecki K. Chronic Kidney Disease. In: Fauci A, Braunwald E, Kasper D, Hauser S, Longo D, Jameson JL, Loscalzo J, eds. *Harrison's Principles of Internal Medicine.* 17th ed. New York: McGraw-Hill, Companies, Inc; 2011:1761-1772.
4. Dyachenko P, Shustak A, Rozenman D. Hemodialysis-related pruritus and associated cutaneous manifestations. *Int J Dermatol*. 2006;45:664-667.
5. Sweeney S, Cropley T. Cutaneous changes in renal disorders. In: Freedberg IM, Eisen AZ, Wolff K, et al, eds. *Fitzpatrick's Dermatology in General Medicine.* 6th ed. New York: McGraw-Hill; 2003:1041-1045.
6. Udayakumar P, Balasubramanian S, Ramalingam KS, Lakshmi C, Srinivas CR, Mathew AC. Cutaneous manifestations in patients with chronic renal failure on hemodialysis. *Indian J Dermatol Venereol Leprol*. 2006;72(2):119-125.
7. Adelbaqi-Salhab M, Shalhub S, Morgan MB. A current review of the cutaneous manifestations of renal disease. *J Cutan Pathol*. 2003;30(9):527–538
8. Robinson-Bostom L, DiGiovanna JJ. Cutaneous manifestations of end-stage renal disease. *J Am Acad Dermatol*, 2000;43(6):975–986

9. Lupi O, Rezende L, Zangrando M, Sessim M, Silveira CB, Sepulcri MA, Duarte DJ, Cardim P, Fernandes MM, Santos Oda R: Cutaneous manifestations in end-stage renal disease. An Bras Dermatol 2011;86:319–326.
10. Udayakumar P, Balasubramanian S, Ramalin-gam KS, Lakshmi C, Srinivas CR, Mathew AC: Cutaneous manifestations in patients with chronic renal failure on hemodialysis. Indian J Dermaol Venerol Leprol 2006;72:119–125.
11. Abdelbaqi-Salhab M, Shalhub S, Morgan MB: A current review of the cutaneous manifestations of renal disease. J Cutan Pathol 2003;30:527–538.
12. Lindsay PG: The half-and-half nail. Arch In-tern Med 1967;119:583–587.
13. Brewster UC: Dermatologic manifestations of end-stage renal disease. Hosp Phys 2006;42:31–35.