Epidemiological profile of patients presenting to dermatology department of a tertiary care hospital during nationwide lockdown due to COVID-19: a retrospective study from north India

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ABSTRACT

Background: The COVID-19 pandemic has seen an unprecedented lockdown with restrictions on human movement and interaction, imposed throughout the world to contain the spread of the disease. This gave us the unique opportunity to study the pattern of patients presenting to the dermatology out-patient department during this period.

Methods: The study was a retrospective observational study involving the assessment of patient records from 25th March 2020 to 7th June 2020. This period corresponds to the duration of strictly imposed nationwide lockdown which was relaxed with phased resumption from 8th June 2020, termed as unlock 1.

Results: A decrease in the absolute as well as proportional number of patients was seen in majority of the cases with a statistically significant proportional decline being seen in cases of allergic contact dermatitis (p-value = 0.007), acne (p value < 0.001), male pattern hair loss (p value < 0.001) and female pattern hair loss (p value < 0.001), verrucae (p value = 0.01), seborrheic dermatitis (p value < 0.001), ephelids (p value < 0.001), melasma (p value < 0.001), post-inflammatory hyperpigmentation (p value = 0.006). However, there were certain disorders whose proportionate representation increased significantly during the lockdown period contrary to prevalent belief. These disorders included urticaria (p value < 0.001), herpes zoster (p value < 0.001), scabies (p value = 0.01), generalized pruritus (p value < 0.001) and prurigo (p value < 0.001).

Conclusions: Disorders like acne, male pattern hair loss, female pattern hair loss, verrucae, seborrheic dermatitis, ephelids, melasma and post-inflammatory hyperpigmentation which do not cause significant morbidity showed a significant decrease in proportional representation. The proportionate representation of disorders like urticaria, herpes zoster, scabies, generalized pruritus and prurigo increased significantly during the lockdown period.

Keywords: Coronavirus, COVID, Dermatology, India, Lockdown, Skin disorders, Stress

INTRODUCTION

Pandemics are large scale outbreaks of infectious diseases that spread over vast geographic areas crossing international boundaries and affecting a large number of people. The increase in global trade and travel over the past century has greatly amplified the prospects for spread of pandemics. The latest threat to global health, in this series of pandemics, is the Coronavirus disease 2019 (COVID-19). In the month of December 2019, several clusters of patients presenting with unexplained pneumonias were reported from Wuhan, China; which could not be accounted for based on prevalent causes.¹ The Chinese government notified WHO of the epidemic...
on 3rd January 2020 and the causative organism was identified as a novel coronavirus (2019-nCoV) on 7th January 2020. The WHO finally declared COVID-19 as a global pandemic on 11th January 2020.

Consequently, a complete lockdown of entire population with restrictions on travel, public events and gatherings, closure of schools, universities and public places, was effected by countries across the globe. The government of India announced a country wide lockdown on 24th March 2020, effective from midnight. The lockdown was initially supposed to last for a period of 3 weeks but was subsequently extended till 30th May 2020, thus lasting for more than 2 months. On May 31st, the government announced that the continuing lockdown would be extended till 30th June 2020 with phased resumption beginning on 8th June 2020, termed as ‘Unlock 1’.

Restrictions are since being lifted in a graduated manner.

The lockdown saw an unprecedented restriction on movement, aggregation and interaction of entire population across the country. Healthcare services were also hit, with routine out-patient departments and clinics closed across the country and non-essential surgeries postponed. The department of dermatology in our tertiary care hospital also saw a dip in the number of patients during the lockdown period from an average of 600-1000 patients per day to around 10 per day at the beginning of the lockdown, which increased steadily to around 60-80 patients towards the end of lockdown period. This gave us a unique opportunity to study the characteristics and profile of dermatology patients presenting during the lockdown period, conditions that made them seek consultation amidst strict restrictions and the possible link of stress and fear related to the novel coronavirus with exacerbation of skin disorders, if any.

This study was conducted to study the epidemiological profile of patients presenting to the dermatology department of our tertiary care hospital during the nationwide lockdown in India due to COVID-19 and compare it with the routine patient demographics. The role of stress and fear, owing to the apprehensions regarding the disease, in the causation of dermatological disorders was also evaluated.

METHODS

The study was a retrospective observational study which involved the assessment of patient records presenting to the department of dermatology from 25th March 2020 to 7th June 2020. The former date represents the start of nationwide lockdown while the latter concluded the strictly imposed segment of lockdown, with phased resumption termed as ‘Unlock 1’ beginning from 8th June 2020. The demographic and clinical data of patients presenting during this period was obtained from the departmental registers and was compared with that of patients presenting during the same period in the previous year. The data from both these groups was compiled in the form of a master chart and subjected to statistical analysis. Discrete variables were compared using the chi-square test and p-value less than 0.05 was taken as significant. We also tried to seek an explanation for any differences that existed.

RESULTS

A total of 3054 patients presented to the out-patient department of dermatology in our tertiary care hospital during the lockdown period of 75 days, making an average of around 40 patients per day.

During the very initial days of stringent lockdown, the number of patients reduced to as low as 10 patients per day which gradually consolidated to around 70-80 towards the end of lockdown period. In comparison, the number of patients presenting during a similar time period in the previous year was around 30100 patients with an average of around 401 patients per day. The demographic and clinical profile of the patients presenting during the lockdown and pre-lockdown era is tabulated and compared in Table 1.

The absolute number of patients decreased in each age group. However, a significant decline in the relative proportion (percentage) of patients was seen only in age groups of less than 10 years and more than 60 years (Table 1). The decline in the number of patients in other age groups was proportionate to the overall decrease in number of patients.

The proportion of male patients was significantly more as compared to females during the lockdown period reversing the pre-lockdown trend (p value =0.011). Similarly, a trend reversal was also seen in residence with significantly more patients from urban areas visiting during the lockdown period (p value <0.001).

A decrease in the absolute as well as proportional number of patients was seen in majority of the cases with a statistically significant proportional decline being seen in cases of allergic contact dermatitis (p value =0.007), acne (p value <0.001), male pattern hair loss (p value <0.001) and female pattern hair loss (p value <0.001), verrucae (p value =0.01), seborrheic dermatitis (p value <0.001), ephelids (p value <0.001), melasma (p value <0.001), post-inflammatory hyperpigmentation (p value =0.006).

However, there were certain disorders whose proportionate representation increased significantly during the lockdown period contrary to prevalent belief. These disorders included urticaria (p value <0.001), herpes zoster (p value <0.001), scabies (p value =0.01), generalized pruritus (p value <0.001) and prurigo (p value <0.001).
### Table 1: Comparison of demographic and clinical data during lockdown and pre-lockdown era.

| Characteristic                        | Groups                        | Lockdown       | Pre-lockdown   | p-value |
|---------------------------------------|-------------------------------|----------------|----------------|---------|
| Age group (years)                     |                               |                |                |         |
| ≤10                                   | 8.51% (260/3054)              | 10.04% (3021/30100) | 0.007   |         |
| 11-20                                 | 9.76% (298/3054)              | 8.97% (2699/30100) | 0.14    |         |
| 21-30                                 | 24.69% (754/3054)             | 23.36% (7033/30100) | 0.1     |         |
| 31-40                                 | 25.47% (778/3054)             | 24.08% (7249/30100) | 0.08    |         |
| 41-50                                 | 17.88% (546/3054)             | 16.74% (5038/30100) | 0.11    |         |
| 51-60                                 | 8.71% (266/3054)              | 9.77% (2941/30100) | 0.06    |         |
| >60                                   | 4.97% (152/3054)              | 7.04% (2119/30100) | <0.001  |         |
| Gender                                |                               |                |                |         |
| Male                                  | 52.19% (1594/3054)            | 49.79% (14987/30100) | 0.011   |         |
| Female                                | 47.81% (1460/3054)            | 50.21% (15113/30100) |         |         |
| Residence                             |                               |                |                | <0.001 |
| Urban                                 | 63.33% (1934/3054)            | 32.03% (9640/30100) |         |         |
| Rural                                 | 36.67% (1120/3054)            | 67.97% (20460/30100) |         |         |
| Diagnosis                             |                               |                |                |         |
| Urticaria                             | Urticaria without angioedema  | 6.52% (199/3054) | 3.06% (922/30100) | <0.001 |
|                                      | Urticaria with Angioedema     | 0.26% (8/3054)  | 0.33% (98/30100) | 0.55   |         |
|                                      | Dermographism                 | 0.16% (5/3054)  | 0.14% (41/30100) | 0.69   |         |
| Inflammatory disorders                | Psoriasis                     | 3.01% (92/3054) | 2.72% (819/30100) | 0.35   |         |
|                                      | LP & Lichenoid eruption       | 0.85% (26/3054) | 1.17% (352/30100) | 0.11   |         |
|                                      | Alopecia areata               | 1.8% (55/3054)  | 1.85% (558/30100) | 0.83   |         |
|                                      | Pityriasis rosea              | 0.49% (15/3054) | 0.42% (128/30100) | 0.59   |         |
|                                      | Erythrodema                   | 0.16% (5/3054)  | 0.22% (67/30100) | 0.50   |         |
|                                      | Erythema multiforme           | 0.46% (14/3054) | 0.73% (219/30100) | 0.09   |         |
| Exogenous eczemas                     | ABCD                          | 0.06% (2/3054)  | 0.14% (42/30100) | 0.28   |         |
|                                      | ACD                           | 1.8% (55/3054)  | 2.59% (781/30100) | 0.007  |         |
|                                      | PACD                          | 1.34% (41/3054) | 1.01% (303/30100) | 0.08   |         |
|                                      | Phytophotodermatitis          | 0.33% (10/3054) | 0.24% (73/30100) | 0.37   |         |
|                                      | ICD                           | 2.36% (72/3054) | 1.94% (584/30100) | 0.11   |         |
| Idiopathic photodermatoses           | CAD                           | 0.13% (4/3054)  | 0.1% (31/30100)  | 0.65   |         |
|                                      | Polymorphic light eruption    | 4.16% (127/3054) | 3.6% (1085/30100) | 0.12   |         |
| Disorders of sebaceous glands         | Acne                          | 3.96% (121/3054) | 6.11% (1839/30100) | <0.001 |
|                                      | Perioral dermatitis           | 0.49% (15/3054) | 0.29% (89/30100) | 0.066  |         |
|                                      | Rosacea                       | 0.13% (4/3054)  | 0.14% (41/30100) | 0.94   |         |
|                                      | Nevus sebaceous               | 0.13% (4/3054)  | 0.08% (25/30100) | 0.39   |         |
| Hair loss                             | MPHIL                         | 0.33% (10/3054) | 2% (604/30100)  | <0.001 |
|                                      | FPHIL                         | 0.69% (21/3054) | 2.86% (860/30100) | <0.001 |
|                                      | Telogen effluvium             | 0.06% (2/3054)  | 0.07% (22/30100) | 0.88   |         |
|                                      | Traction alopecia             | 0.03% (1/3054)  | 0.06% (18/30100) | 0.55   |         |
| Bacterial infections                  | Abscess                       | 0.06% (2/3054)  | 0.14% (42/30100) | 0.28   |         |
|                                      | Breast abscess                | 0.06% (2/3054)  | 0.12% (36/30100) | 0.39   |         |
|                                      | Cellulitis                    | 0.46% (14/3054) | 0.4% (122/30100) | 0.66   |         |
|                                      | Furuncle                      | 5.63% (172/3054) | 4.99% (1504/30100) | 0.12   |         |
|                                      | Carbuncle                     | 0.09% (3/3054)  | 0.19% (60/30100) | 0.22   |         |
|                                      | Impetigo                      | 0.19% (6/3054)  | 0.27% (83/30100) | 0.41   |         |
|                                      | Sycosis barbae                | 0.06% (2/3054)  | 0.05% (14/30100) | 0.64   |         |
|                                      | Leprosy                       | 0.03% (1/3054)  | 0.02% (6/30100)  | 0.64   |         |
| Viral infections                      | Molluscum contagiosum         | 0.92% (28/3054) | 1.12% (337/30100) | 0.30   |         |

Continued.
| Characteristic                          | Groups                                | Lockdown       | Pre-lockdown   | p-value |
|----------------------------------------|---------------------------------------|----------------|----------------|---------|
| **Disorders**                          |                                       |                |                |         |
| Benign proliferations                  | Herpes simplex                        | 0.36% (11/3054)| 0.28% (85/30100) | 0.44    |
|                                        | Viral exanthema                        | 0.29% (9/3054) | 0.25% (75/30100) | 0.63    |
|                                        | Varicella                             | 1.31% (40/3054)| 1.75% (528/30100) | 0.07    |
|                                        | Herpes zoster                          | 4.26% (130/3054)| 1.4% (422/30100) | <0.001  |
|                                        | PHN                                   | 0.98% (30/3054)| 0.69% (207/30100) | 0.06    |
|                                        | Verrucae                              | 1.24% (38/3054)| 1.89% (565/30100) | 0.01    |
|                                        | HFMD                                  | 0.06% (2/3054) | 0.19% (58/30100)  | 0.11    |
| **Infestations/ insects**              | Scabies                               | 10.94% (334/3054)| 8.9% (2680/30100) | 0.01    |
|                                        | Pediculosus capitis                   | 0.29% (9/3054) | 0.32% (96/30100)  | 0.82    |
|                                        | Insect bite                           | 1.7% (52/3054) | 1.34% (404/30100) | 0.10    |
|                                        | Paedrus dermatitis                    | 0.26% (8/3054) | 0.33% (98/30100)  | 0.55    |
| **Fungal infections**                  | Pityriasis versicolor                 | 2.26% (69/3054)| 1.8% (542/30100)  | 0.07    |
|                                        | Intertrigo                            | 0.85% (26/3054)| 1.13% (341/30100) | 0.15    |
|                                        | Dermatophytooses                      | 9.92% (303/3054)| 9.55% (2876/30100)| 0.51    |
|                                        | Oral candidiasis                      | 0.13% (4/3054) | 0.2% (62/30100)   | 0.37    |
| **Vesiculobullous diseases**           | Bullous pemphigoid                    | 0.13% (4/3054) | 0.06% (18/30100)  | 0.14    |
|                                        | Pemphigus                             | 0.52% (16/3054)| 0.32% (98/30100)  | 0.07    |
| **Scarring**                           | Post burn scarring                    | 0.33% (10/3054)| 0.19% (60/30100)  | 0.14    |
|                                        | Keloid/hypertrophic scar              | 0.33% (10/3054)| 0.43% (131/30100) | 0.38    |
| **Benign proliferations/ tumours**     | DPN                                   | 0.06% (2/3054) | 0.05% (16/30100)  | 0.78    |
|                                        | Acrochordon                           | 0.29% (9/3054) | 0.36% (110/30100) | 0.53    |
|                                        | Epidermoid cyst                       | 0.33% (10/3054)| 0.29% (90/30100)  | 0.78    |
| **Keratinization disorders**           | Ichthyosis                            | 0.16% (5/3054) | 0.13% (39/30100)  | 0.62    |
|                                        | Keratosis pilaris                     | 0.09% (3/3054) | 0.07% (21/30100)  | 0.57    |
|                                        | Palmoplantar keratoderma              | 0.06% (2/3054) | 0.07% (22/30100)  | 0.88    |
| **Psychological, sensory and neurological disorders** | Dhat syndrome                        | 0.19% (6/3054) | 0.26% (80/30100)  | 0.47    |
|                                        | ED                                    | 0.13% (4/3054) | 0.13% (38/30100)  | 0.94    |
|                                        | Premature ejaculation                 | 0.06% (2/3054) | 0.06% (19/30100)  | 0.96    |
|                                        | Dermatitis artefacta                 | 0.13% (4/3054) | 0.08% (25/30100)  | 0.39    |
|                                        | Generalized pruritus                  | 4.58% (140/3054)| 1.13% (341/30100) | <0.001  |
|                                        | Prurigo                               | 0.46% (14/3054)| 0.14% (42/30100)  | <0.001  |
|                                        | Lichen simplex chronic               | 0.39% (12/3054)| 0.66% (198/30100) | 0.08    |
| **Cutaneous adverse drug reaction**    | Maculopapular rash                    | 0.36% (11/3054)| 0.53% (161/30100) | 0.2     |
|                                        | FDE                                   | 0.91% (28/3054)| 0.72% (219/30100) | 0.24    |
|                                        | AGEP                                  | 0.06% (2/3054) | 0.07% (21/30100)  | 0.93    |
| **Endogenous eczema**                  | Nummular Eczema                       | 4.7% (144/3054)| 4.36% (1312/30100) | 0.35    |
|                                        | Seborrheic dermatitis                 | 1.18% (36/3054)| 2.22% (670/30100) | <0.001  |
|                                        | Pompholyx                             | 0.06% (2/3054) | 0.13% (39/30100)  | 0.33    |
|                                        | Eyelid eczema                         | 0.06% (2/3054) | 0.14% (41/30100)  | 0.30    |
|                                        | Atopic dermatitis                     | 0.13% (4/3054) | 0.19% (60/30100)  | 0.41    |
|                                        | Pityriasis alba                       | 0.91% (28/3054)| 1.25% (378/30100) | 0.10    |
| **Benign proliferations**              | Seborrheic keratosis                  | 0.16% (5/3054) | 0.17% (52/30100)  | 0.90    |
|                                        | Actinic keratoses                     | 0.03% (1/3054) | 0.05% (16/30100)  | 0.63    |
|                                        | Papilloma                             | 0.13% (4/3054) | 0.07% (20/30100)  | 0.20    |
|                                        | Lipoma                                | 0.06% (2/3054) | 0.08% (24/30100)  | 0.78    |
|                                        | Ephelids                              | 0.13% (4/3054) | 0.8% (242/30100)  | <0.001  |
| **Disorders of**                       | Vitiligo                              | 1.6% (49/3054) | 1.74% (525/30100) | 0.57    |

Continued.
| Characteristic | Groups                                      | Lockdown     | Pre-lockdown  | p-value |
|---------------|--------------------------------------------|--------------|---------------|---------|
| Pigmentation  | Melasma                                    | 1.11% (34/3054) | 3.65% (1098/30100) | <0.001 |
|               | Exogenous ochronosis                        | 0.03% (1/3054)   | 0.07% (22/30100)   | 0.41   |
|               | PIH                                         | 0.88% (27/3054)   | 1.5% (453/30100)   | 0.006  |
| Naevi         | Nevus depigmentosus                        | 0.19% (6/3054)   | 0.19% (57/30100)   | 0.93   |
|               | Melanocytic nevus                           | 0.06% (2/3054)   | 0.1% (30/30100)    | 0.56   |
| Connective tissue disorders | DLE                                        | 0.16% (5/3054)   | 0.07% (22/30100)   | 0.09   |
|               | SLE                                         | 0.06% (2/3054)   | 0.03% (9/30100)    | 0.30   |
|               | Morphea                                     | 0.09% (3/3054)   | 0.05% (16/30100)   | 0.32   |
|               | Dermatomyositis                             | 0.03% (1/3054)   | 0.03% (9/30100)    | 0.93   |
|               | Systemic sclerosis                          | 0.03% (1/3054)   | 0.04% (14/30100)   | 0.73   |
| Miscellaneous |                                            | 6.35% (194/3054) | 7.97% (2398/30100) |        |
| Total         |                                            | 3054          | 30100           |         |

**DISCUSSION**

The occurrence of a pandemic like COVID-19 which disrupted the entire routine work and brought the whole human race to a halt, is a once in a century event. It provided us with an unprecedented opportunity to study the attitude and aptitude of patients towards general health and skin care.

The lockdown saw a 10-fold decrease in the patient flow to the out-patient department of dermatology in our hospital. This was expected in view of a stringent lockdown imposed by the government as well as awareness among people regarding importance of avoiding non-emergent activities. The significant proportionate decrease in number of children less than 10 years and elderly patients of more than 60 years was a positive marker that people understood the increased risk of COVID in extremes of age.

The proportion of male patients was more as compared to females and this was contrary to the usual trend seen in our OPDs. This pointed to the fact that females were more likely to adhere to the recommendations regarding lockdown as compared to males. Another trend reversal was seen with patients from urban background forming major chunk of our consultations contrary to pre-lockdown era. This was expected as our hospital is located within the municipal premises of Srinagar city and owing to curbs on inter-district movement, the number of patients reporting from rural areas decreased drastically.

Disorders like acne, male pattern hair loss, female pattern hair loss, verrucae, seborrheic dermatitis, ephemids, melasma and post-inflammatory hyperpigmentation which do not cause significant morbidity but are more of a cosmetic concern showed a significant decrease in proportional representation among OPD patients. This was expected keeping in view concerns of acquiring COVID during hospital visits among common people. Allergic contact dermatitis was also seen significantly less commonly and this was concurrent with the fact that people were off work resulting in less exposure to involved allergen. Occupational exposure is the main source of exposure to allergens like thiuram, epoxy resin, para-phenylene diamine, formaldehyde, etc.

Other disorders which contribute to significant morbidity in terms of symptoms like pruritus, pain, etc showed a trend similar to pre-lockdown era with no significant difference in proportionate representation.

The proportionate representation of disorders like urticaria, herpes zoster, scabies, generalized pruritus and prurigo increased significantly during the lockdown period. Although the absolute number of cases for these disorders was lower during the lockdown period, however, the proportionate increase in the number of cases cannot be ignored. The role of stress in disorders like urticaria, herpes zoster, generalized pruritus and prurigo has been studied extensively in literature. The stress, fear and apprehensions regarding COVID-19 could have brewed an exacerbation or increased incidence of these disorders during the lockdown. Similarly, overcrowding and lack of access to hygiene facilities like clean water and a decreased socio-economic status due to inability to work among daily wagers, could have contributed to the increased proportion of cases of scabies encountered.

Also, the significant morbidity caused by these disorders was also highlighted as the discomfort caused by these made the patient seek immediate attention despite the looming threat of acquiring a deadly disease like COVID.

The study provides an insight not just into the profile of dermatological patients during a worldwide pandemic but also the attitude of patients towards a life threatening disease versus cutaneous conditions. It also provided us an opportunity to study the impact of cutaneous disorders on life of a patient and impact of stress on cutaneous disorders.
CONCLUSION

In conclusion, the proportionate representation of disorders like urticaria, herpes zoster, scabies, generalized pruritus and prurigo increased significantly during the lockdown period. The proportionate increase in the number of cases points towards the role of stress in disorders like urticaria, herpes zoster, generalized pruritus and prurigo. The stress, fear and apprehensions regarding COVID-19 could have resulted in exacerbation of these disorders during the lockdown. Similarly, overcrowding and lack of access to hygienic facilities and a decreased socio-economic status due to inability to work contributed to the increased proportion of cases of scabies encountered. The significant morbidity caused by these disorders made these patients seek medical attention despite the risk of acquiring a deadly disease like COVID.

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