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Letter to Editor

Teledermatology trends during two waves of the COVID-19 pandemic – Experience from western Rajasthan

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Dear Editor,

India was hit by two major waves of COVID-19, between March 2020 and September 2020 (the "first wave") and February 2021 and June 2021 (the "second wave"). As ambulatory clinics were forced to suspend or restrict in-person visits due to the COVID-19 outbreak, teledermatology has offered essential dermatological therapy.[1,2] In fact, the government of India dedicated many nationally funded programs for telemedicine to ensure smooth delivery of health services amidst the pandemic.[3]

The need for this study arose from the significant shift toward teledermatology during the COVID-19 pandemic, especially during periods when in-person clinical visits were restricted. This shift was not just a temporary adjustment but possibly a long-term change in how dermatological care is delivered. The rationale behind conducting this study was to understand the shift in healthcare delivery during the pandemic, evaluate patient demographics and access, and analyze the clinical outcomes.

This study aimed to assess the variations in the pattern of teledermatology consultations during the two waves. From May through August 2020 (the peak of the first wave) and March 2021 to June 2021 (the peak of the second wave), we gathered all adult teledermatology visits that our department attended. This covers the duration during which all the in-person non-urgent visits to the dermatology outpatient department were prohibited and a staggered reinstatement of the dermatology outpatient department. Based on the primary diagnosis, teledermatology visits for each month were totalled and categorized for both waves.

The demographic characteristics of patients differed during the two waves of the pandemic [Table 1]. While younger patients (18–35 years) from the urban region (75.2%) were the most common groups to opt for teledermatology visits during the first wave, in the second wave, there was a higher proportion of elderly patients (46–75 years) from the rural region (68.3%). There were 818 teledermatology visits during the first wave and 1704 visits during the second wave [Table 1].

Several trends in the usage of teledermatology occurred for specific types of diagnosis [Table 2]. During both waves, teledermatology visits for cutaneous cancer patients were frequently observed in a somewhat similar proportion.

The rise in cases of eczema, lichen planus, urticaria, and herpes zoster during the COVID-19 pandemic may be attributed to the immune-driven nature of these diseases, influenced by both COVID-19 infection and vaccination. COVID-19 and its vaccines can affect immunity, potentially triggering or exacerbating these conditions. These immunological impacts, coupled with the stress and environmental changes during the pandemic, likely contributed to the increased incidence of these dermatological conditions. For instance, Zou and Daveluy have shown new-onset cutaneous lichen planus following COVID-19 and vaccination.[4] Similarly, Ne *et al.* have reported a flareup in disease-driven changes in patients with atopic dermatitis during the pandemic.[5] Furthermore, the increase in drug reactions observed during the study period can be technically attributed to polypharmacy and the augmented use of alternative medicines in response to COVID-19.

While the proportion of cases with non-specific skin rash was negligible (2.3%) during the first wave, these cases were seen in a sizeable proportion during the second wave (18.4%). This could be attributed to several factors. With increased use of disinfectants and personal protective equipment, there were more instances of contact dermatitis. Furthermore, environmental factors specific to Rajasthan, such as its arid climate, could heighten the risk of eczema, insect bite reactions, and even miliaria rubra, all of which can manifest as non-specific rashes. Another minor factor contributing to this shift was the observation of COVID-19 vaccine-induced non-specific maculopapular rash.

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Table 1: Clinicodemographic data of cases during the first and second wave of COVID-19.

Category	First wave		Second wave		*P*-value
Mean age (in years)	29.6±15.3		58.4±16.2		-
Age distribution	**Number of patients**	**%**	**Number of patients**	**%**	
18–25 years	289	35.3	101	5.9	<0.0001
26–35 years	326	39.9	188	11.0	
36–45 years	103	12.6	251	14.7	
46–55 years	58	7.1	441	25.9	
56–65 years	23	2.8	527	30.9	
66–75 years	19	2.3	196	11.5	

Table 2: Pattern of dermatoses encountered in teledermatology clinics during the two waves of COVID-19 pandemic.

Category	First wave		Second wave		*P*-value
Clinical diagnosis	**Number of patients**	**%**	**Number of patients**	**%**	
A. Common dermatoses	301	36.8	681	40.0	<0.0001
Endogenous and Exogenous Eczema	75		221		
Dermatophytosis	54		119		
Urticaria	73		118		
Psoriasis	32		75		
Lichen Planus	14		48		
Herpes zoster	10		40		
Drug reaction (Fixed drug eruption, Steven Johnson Syndrome, and DRESS)	15		19		
Rosacea	4		11		
Immunobullous disorders (pemphigus and pemphigoid)	11		15		
Miscellaneous causes (melasma, postinflammatory hyperpigmentation, systemic lupus erythematosus, discoid lupus, and alopecia)	13		15		
B. Non-specific maculopapular rashes[#]	19	2.3	313	18.4	
C. Skin malignancies	91	11.1	151	8.9	
Basal cell carcinoma	79		108		
Premalignant diseases	10		37		
Squamous cell carcinoma	2		5		
Melanoma	0		1		
Infections	268	32.8	440	25.8	
Scabies Impetigo Acne Others	139	17.0	119	7.0	
Total	818	100.0	1704	100.0	

[#]Unspecified and other rashes: Skin rashes of unknown etiology or without specific symptoms, that did not fit the specific diagnostic categories of common dermatoses, DRESS: Drug Reaction with Eosinophilia and Systemic Symptoms

Even while telemedicine use has dropped with hospitals reopening for walk-in patients, it still makes up a sizeable share of all consultations.[6,7] There is a clear shift in the consumer base utilizing teledermatology, which reached a more significant proportion of the masses.[8]

Factors contributing to demographic changes during the second wave:

The second wave almost doubled the incidence of consultation, indicating that the Indian population has accepted teledermatology with open arms. Dermatology is ideally suited for this type

of healthcare system because it is a visually-reliant specialty. Teledermatology appears to hold the key to solving several problems relating to detecting, monitoring, and treating skin diseases for a broader population, obliviating the need for physical consultation.

During the first wave, younger urban populations predominantly used teledermatology, likely due to their familiarity with technology. As the pandemic progressed, targeted educational campaigns and improvements in telemedicine infrastructure broadened its appeal, enabling increased use among older and rural populations by the second wave. The initial hesitancy among older individuals diminished as the necessity for remote health care grew, making teledermatology more accessible to those less comfortable with technology. Changes in referral patterns, influenced by restricted access to physical healthcare facilities, also likely contributed to the expanded use of teledermatology services.

Before the COVID-19 pandemic, India had limited formal regulations guiding telemedicine practices. This lack of standardized guidelines meant that the adoption and implementation of telemedicine varied widely. However, during the pandemic, the necessity for remote health care led to rapid regulatory changes. In March 2020, the Ministry of Health and Family Welfare issued the first comprehensive guidelines for telemedicine, formalizing practices to ensure the consistent and safe delivery of healthcare services through digital platforms. This marked a significant shift, setting a structured framework for telemedicine that continues to evolve post-pandemic.[3]

This study's limitations include the inability to perform direct physical examinations and laboratory tests in teledermatology, which could potentially affect the accuracy of diagnoses. However, the insights from this study can guide policy and planning and enhance healthcare reach in the post-pandemic era.

Ethical approval

The Institutional Review Board has waived the Ethical approval for this study.

Declaration of patient consent

Patient's consent was not required as there are no patients in this study.

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Conflicts of interest

There are no conflicts of interest.

Use of artificial intelligence (AI)-assisted technology for manuscript preparation

The authors confirm that there was no use of artificial intelligence (AI)-assisted technology for assisting in the writing or editing of the manuscript and no images were manipulated using AI.

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