

# The Scabies Epidemic During the Covid-19 Pandemic

## Covid-19 Pandemisi Sırasında Skabiyez Salgını

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### ABSTRACT

**Objective:** The objectives of this study are to assess the coronavirus disease (Covid) pre-pandemic and pandemic period table of 2019 with relation to the change in the frequency of ascariasis and to contribute to the epidemiological data in our nation.

**Methods:** Data for this study were obtained from the Adana Provincial Directorate of Health, Department of Public Health Services between January 2017 and May 2022. Percentages of the number of cases were compared with the total numbers for the pre- and pandemic periods and for each specified period. Results were analyzed statistically.

**Results:** When the number of scabies cases by year was analyzed, it was determined that the highest incidence rate was 37.8% in 2021 and the lowest incidence rate was 3.7% in 2017. During the pandemic period, it was determined that the rate of scabies in men was higher than that in women. Likewise, it was determined that the rate of scabies in women was higher than that in men before the pandemic. During the pandemic period, the rate of scabies in those aged 0, 1-4, 5-9, 10-14, and 65 years and over was higher than that before the pandemic.

**Conclusion:** According to our findings, the prevalence of scabies has increased throughout the Covid-2019 pandemic.

**Keywords:** Covid-19, scabies, epidemiology, neglected tropical diseases, pandemic

### ÖZ

**Amaç:** Skabiyez sıklığındaki değişimle ilgili olarak koronavirus hastalığı-19 (Covid-19) pandemi öncesi ve pandemi dönemi tablonun değerlendirilmesi ve ülkemizdeki epidemiyolojik verilerin katkı sağlaması amaçlanmıştır.

**Yöntemler:** Bu çalışmaya ait veriler Ocak 2017 ile Mayıs 2022 tarihleri arada Adana İl Sağlık Müdürlüğü, Halk Sağlığı Hizmetleri Başkanlığı'ndan ulaşılmıştır. Olgu sayısı yüzdeleri, pandemi öncesi dönem ile pandemi dönemi ve belirtilen her bir dönem için toplam sayılarla karşılaştırılmıştır. Sonuçlar istatistiksel olarak analiz edilmiştir.

**Bulgular:** Yıllara göre uyuz olgu sayıları incelendiğinde en yüksek görülme oranı %37,8 ile 2021 yılında, en düşük görülme oranı ise %3,7 ile 2017 yılında olduğu belirlenmiştir. Pandemi döneminde erkeklerin uyuz olma oranı kadınlara göre daha yüksek olduğu belirlenmiştir. Aynı şekilde, pandemi öncesinde kadınların uyuz olma oranı, erkeklere göre daha yüksek olduğu belirlenmiştir. Pandemi döneminde 0, 1-4, 5-9, 10-14, 65 yaş ve üzerinde olanların uyuz olma oranı, pandemi öncesine göre daha yüksek olduğu belirlenmiştir.

**Sonuç:** Skabiyez prevalans, COVID-19 pandemisi süresince artış göstermiştir.

**Anahtar Kelimeler:** Covid-19, skabiyez, epidemiyoloji, imal edilen tropikal hastalıklar, pandemi

### INTRODUCTION

Scabies was categorized as one of the neglected tropical diseases (NTDs) by the World Health Organization (WHO) in 2017 (1,2). The WHO aims to control scabies in 25 countries in 2023, 50 countries in 2025, and 194 countries in 2030 (3). According to the report of the WHO, there are 200 million cases of scabies worldwide each year, with the prevalence

ranging from 0.2% to 71% (4). The parasite, the nesting *Sarcoptes scabiei var. hominis*, is to blame for this highly contagious parasitic skin disease (1). The disease usually manifests as typical scabies, with pruritic erythematous papules with excoriations as lesions. They are generally symmetrical and involve interdigital webs, flexural aspect of wrists, axillae, peri-umbilical area, elbows, buttocks, feet, genital area in men, and peri-areolar area in females.



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In newborns, the elderly, and immunocompromised people, the entire body, including the face and scalp, can be affected (5,6). Infections caused by *Staphylococcus aureus* and *Streptococcus pyogenes* bacteria that can develop in skin lesions induced by intense itching can lead to complications, such as acute post-streptococcal glomerulonephritis, acute renal failure, and acute rheumatic fever, which may result in mortality in the future (1). Scabies is typically spread through direct and sustained skin-to-skin contact for at least ten minutes, which is why it frequently affects members of the same family, people who live together, and people who are sexual partners. Even in high-income countries, scabies rarely requires mandatory reporting and is stigmatizing, particularly in certain groups of people (7). In Turkey, reporting of scabies is not compulsory.

The WHO began to take effective steps in the fight against scabies. However, the coronavirus disease 2019 (COVID-19) pandemic, which started in China in late 2019 and has been observed in Turkey since March 11, 2020, has drawn all the attention. This situation has caused disruptions in the fight against scabies and other health problems. The prevalence of scabies has increased globally and in our country since the outbreak of COVID-19 (8). Two paradigms, namely pre-COVID-19 and post-COVID-19 have now come into existence.

As a result, we wanted to present the most recent data on the prevalence of scabies. All previous studies, however, were conducted in smaller, more localized areas such as schools or villages with a single hospital. This retrospective study, which is based on official data, is the first, large-scale national investigation of the influence of the COVID-19 pandemic on the incidence of scabies in Adana/Türkiye, with conclusions based on report data obtained from Adana public health directorates (for the years between January 2017 and May 2022). This is, to the best of our knowledge, the only contemporary epidemiologic study on this issue in Adana/Türkiye.

We aimed to determine the demographic characteristics of the increasing number of scabies cases during the COVID-19 pandemic in our region and evaluate the pre-pandemic picture of the change in the incidence of scabies cases to create a scientific resource for future measures. Furthermore, the purpose of this article was to raise global awareness about scabies and promote discussion and change at the national and global levels toward the control of this preventable disease.

## METHODS

A descriptive research design was used in this study, which was conducted in Adana province, located in the southern part

of Türkiye. The research data were obtained from the Adana Provincial Health Directorate, Public Health Services Presidency. The distribution of scabies cases reported to the Public Health Directorate between January 2017 and May 2022 by using the Basic Health Statistics Module from health institutions in Adana province and surrounding districts according to age, gender, and years was evaluated retrospectively. The incidence of scabies, the distribution of the frequency of scabies by age and gender, and whether there was a relationship between the frequency of scabies and age and sex were investigated. Also, how these changed due to the COVID-19 pandemic was assessed. All repeated applications within ten days of the previous application were considered insignificant and were removed from the records before statistical analysis.

## Ethical Approvals

This study was approved by the Non-Interventional Clinical Research Ethics Committee of Çukurova University Faculty of Medicine (date: 08.04.2022 and decision no: 121/30). It was conducted according to the principles of the "Declaration of Helsinki" and the newest edition of the "Good Clinical Practice Guidelines."

## Statistical Analysis

Statistical analyses were performed on the Statistical Package for Social Sciences (SPSS) for Windows, version 24 (IBM Corp., Armonk, NY, USA). Frequency tables and descriptive statistics were used to interpret the findings.

Non-parametric methods were employed for measurement values that were not suitable for normal distribution. In accordance with non-parametric methods, "Kruskal-Wallis H" test ( $\chi^2$ -table value) was used to compare the measurement values of three or more independent groups.

"Pearson- $\chi^2$ " cross tabulations were used to examine the relationship between two qualitative variables.

## RESULTS

The number of scabies cases showed a statistically significant difference by year ( $\chi^2=64.58$ ;  $p=0.000$ ). A statistically significant difference was found between the number of cases in 2017 and 2019, 2020, and 2022 as a result of Bonferroni corrected paired comparisons made to establish which group the significant difference originated from. The number of instances in these years was much greater than those in 2017 (Table 1).

**Table 1.** Comparison of the number of scabies cases by years

Years	Number of scabies cases		Statistical analysis probability
	X ± SD	Median [min-max]	
2017 <sup>(1)</sup>	204.93±140.68	140.0 (52.0-540.0)	$\chi^2=64.581$ <b>p=0.000</b> <b>(1-3, 4, 6)</b> <b>(2-3, 4, 6)</b> <b>(5-1, 2, 3, 4, 6)</b>
2018 <sup>(2)</sup>	233.06±156.52	152.5 (55.0-510.0)	
2019 <sup>(3)</sup>	734.94±523.95	453.0 (144.0-1726.0)	
2020 <sup>(4)</sup>	1176.56±765.99	824.0 (319.0-2702.0)	
2021 <sup>(5)</sup>	2118.94±1086.27	1720.5 (883.0-5015.0)	
2022 <sup>(6)</sup>	1128.62±616.35	847.5 (419.0-2561.0)	

\*\*\*"Kruskal-Wallis H" test ( $\chi^2$ -table value) statistics were used for the comparison of measurement values of three or more independent groups in non-normally distributed data.

SD: Standard deviation, Min: Minimum, Max: Maximum

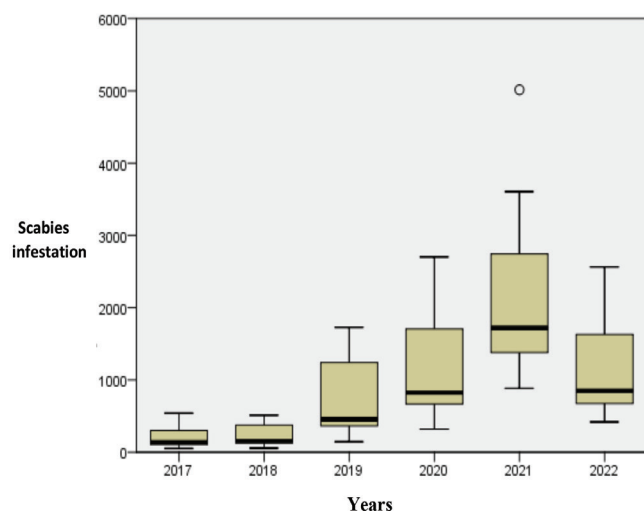
When the number of scabies cases by year was analyzed, it was determined that the highest incidence was in 2021 (37.8%) and the lowest incidence was in 2017 (3.7%). The incidence of scabies cases was 4.2% in 2018, 13.1% in 2019, 21.0% in 2020, and 20.2% in the first five months of 2022 (Table 2) (Figure 1).

A statistically significant relationship was found between gender and age groups in terms of the number of scabies cases ( $\chi^2=950.528$ ;  $p=0.000$ ). It was determined that those with scabies in the 0, 1-4, 5-9, 10-14, and 15-24 age groups were predominantly male, while those with scabies in the 25-44, 45-64,

and  $\geq 65$  age groups were predominantly female (Table 3).

A statistically significant relationship was found between the pandemic period and age classes in terms of the number of scabies cases ( $\chi^2=501.572$ ;  $p=0.000$ ). During the pandemic period, the rate of scabies in individuals aged 0, 1-4, 5-9, 10-14, and  $\geq 65$  years was higher than before the pandemic. Similarly, it was determined that the rate of scabies in the 15-24, 25-44 and 45-64 age groups before the pandemic was higher compared to the pandemic period (Table 4).

A statistically significant relationship was found between the pandemic period and gender in terms of the number of scabies cases ( $\chi^2=4.952$ ;  $p=0.026$ ). It was determined that 9,569 people (51.0%) who had scabies before the pandemic were female, while 35,340 people (49.9%) who had scabies during the pandemic period were male. During the pandemic period, the rate of scabies in men was higher than in women. Similarly, before the pandemic, the rate of scabies in women was higher than in men (Table 5).



**Figure 1.** Distribution of scabies infestation by years

**Table 2.** Distribution of the total number of scabies cases by years

Years	Scabies cases	
	n	%
2017	3,279	3.7
2018	3,729	4.2
2019	11,759	13.1
2020	18,825	21.0
2021	33,903	37.8
2022	18,058	20.2

**Table 3.** Examination of the relationship between the number of cases in terms of gender and age classes

Gender Age classes	Male (n=44,538)		Female (n=45,015)		Statistical analysis probability
	n	%	n	%	
0	2,273	5.1	1,926	4.3	$\chi^2=950.528$ $p=0.000$
1-4	4,448	10.0	3,509	7.8	
5-9	4,368	9.8	3,566	7.9	
10-14	3,911	8.8	3,284	7.3	
15-24	9,468	21.3	7,880	17.5	
25-44	10,113	22.6	13,054	29.0	
45-64	6,756	15.2	8,147	18.1	
$\geq 65$	3,201	7.2	3,649	8.1	

\*"Pearson- $\chi^2$ " cross tabulations were used to examine the relationship between two qualitative variables.

**Table 4.** Examination of the relationship between the number of cases in terms of age classes in the pre-pandemic and pandemic period

Years	Pre-pandemic (n=18,767)		Pandemic period (n=70,786)		Statistical analysis* probability
	n	%	n	%	
0	591	3.1	3,608	5.1	$\chi^2=501.572$ $p=0.000$
1-4	1,468	7.8	6,489	9.2	
5-9	1,333	7.1	6,601	9.3	
10-14	1,409	7.5	5,786	8.2	
15-24	4,422	23.6	12,926	18.3	
25-44	4,977	26.5	18,190	25.7	
45-64	3,308	17.6	11,595	16.4	
$\geq 65$	1,259	6.7	5,591	7.9	

\*Pearson- $\chi^2$  cross-tabulations were used to examine the relationship between two qualitative variables.

**Table 5.** Examination of the relationship between the number of cases in terms of gender in the pre-pandemic and pandemic period

Gender	Pre-pandemic (n=18,767)		Pandemic period (n=70,786)		Statistical analysis* probability
	n	%	n	%	
Male	9,198	49.0	35,340	49.9	$\chi^2=4.952$ <b>p=0.026</b>
Female	9,569	51.0	35,446	50.1	

\*Pearson- $\chi^2$  cross-tabulations were used to examine the relationship between two qualitative variables.

## DISCUSSION

This is the first research to examine the scabies outbreak in Adana, Türkiye, during the COVID-19 pandemic. There have been few publications published on this topic, most of which are case reports and descriptions and management of the epidemic (7). We present an innovative approach that makes use of national data sources to collect health-related information from various perspectives. This integrated information allows for a more comprehensive view of the epidemiologic situation of scabies in Adana, contributing to more efficient resource allocation, and it may be useful for other regions with similar circumstances (7).

Scabies remains a global health issue because people of all ages, races, genders, and socioeconomic backgrounds are susceptible to the disease, which causes severe itching and disrupts daily life (9). As we found in our study, there was a general increase in frequency recorded in recent years (9-11). In light of the findings, it is critical to understand the epidemiology of the disease and take the necessary measures.

Different nations have noted rising patterns. Scabies outbreaks were reported in tertiary centers in İstanbul, Türkiye in 2018 and 2019 (12), linked to an increase in scabies infestations (10). Greece also observed a rise in scabies infestation between 2016 and 2020 (13). English scholars observed a cyclical increase in scabies infestation every 20 years when analyzing epidemiological patterns for scabies incidences (14). According to the figures in the literature, there was a significant increase in scabies in Turkey before the pandemic, and this occurrence was termed a scabies epidemic (15). Research done during the Turkish epidemic indicated once more that there was an increase in scabies cases (15,16). The rise in cases was attributed to the “stay-at-home” policy imposed during the COVID-19 pandemic (15). Investigators found an increase in scabies infestation during the COVID-19 lockdown, and similar claims were corroborated in Turkey, Spain, and some Italian counties and cities (17-19). Close human contact under lockdown conditions and limited access to healthcare were likely to blame for this developing tendency. Also, given that there was a reported increase in the frequency of various STDs during that time, it is possible that increased sexual activity contributed to scabies transmission during the COVID-19 pandemic (16,2). Similar to the results of other studies, our results showed that the number of scabies cases increased every year compared to previous years and that there was a serious explosion in the number of cases starting from 2019 with the COVID-19 pandemic and it peaked in 2021. The average increase in cases was 1038% between 2017 and 2021.

The disease is typically equally prevalent across the board for both sexes and individuals of all ages (2). Yet, data by age suggests that children and young people are more frequently affected by scabies (10,14,20). Gender differences have also been described with a higher prevalence among women in some parts of the world (21,22) and among men in others (2). In our study, when

we evaluated the incidence of scabies according to gender in age groups, it was determined that those with scabies in the 0, 1-4, 5-9, 10-14 and 15-24 age groups were predominantly male, while those in the 25-44, 45-64,  $\geq 65$  age groups were predominantly female.

Several studies have shown conflicting results regarding the gender distribution of patients with scabies. Some studies indicated male dominance, while female dominance was noted in some others, including Türkiye (10,11,23). These conflicting results may be due to population and geographical differences in the related studies (9).

During the COVID-19 pandemic, numerous intriguing observations were made regarding data on the occurrence of scabies. During the lockdown conditions, one Italian clinic recorded a notable rise in the percentage of patients who tested positive for scabies, particularly among those under 18 and over 65 (March 2020-March 2021) (24). In a study conducted by Redondo-Bravo et al. (7) in Spain, the  $\geq 65$  age group was the most represented one in the distribution of scabies by age group. The cause was likely to be attributable to immunosenescence, which makes aging a risk factor for crusted scabies and increases the likelihood of hospitalization for treatment. Nonetheless, young adults (15-24) and children (0-14) were reported to be the most impacted. Due to an effective immune response, these age groups often have a lower chance of developing severe scabies forms, and as a result, they are less frequently admitted to hospitals (7). The most affected populations globally, according to other studies, are children, teenagers, and the elderly. However, age gaps are smaller in Western countries than in low-income countries (25). It should be emphasized that owing to a lack of reports based on particular national data, and mostly local reports, it is sometimes impossible to collect correct statistics because scabies reporting is not mandatory in Turkey (2). In this study, when we examined the distribution of scabies cases by age group, we found that the disease was mostly seen in the 0-14 and  $\geq 65$  age groups during the pandemic period (January 2020-May 2022).

## Study Limitations

The primary weakness of our study was that it was retrospective. Socioeconomic status, health behaviors, environmental factors, and treatments were not evaluated (9). Our results cannot be generalized to Turkey due to the methodology, but they are important in that they are inspirational. However, growing global population movements, particularly illegal or irregular immigration from poverty-stricken areas with endemic infectious diseases such as scabies result in significant public health concerns and create significant challenges to the healthcare systems in the immigrant-hosting countries that had not been inflicted with those endemic infections. Our region receives considerable migration. This may have also been effective in the increase in the number of cases; however, we evaluated the issue in terms of the pandemic. Perhaps, in a separate study, the relationship

between migration to the region and the increase in scabies can be evaluated.

## CONCLUSION

Scabies, an important parasitic infectious skin disease, has recently been recognized as an NTD by the WHO and is now included in the WHO NTD roadmap for 2021-2030. Yet, attempts to eradicate this disease require us to view it more broadly as a population-level health concern worthy of attention in a variety of situations across the world. Furthermore, while formulating strategies for avoiding and managing the spread of scabies, every country should strive for reliable national statistics and effective disease reporting. Undoubtedly, more epidemiological studies are needed to evaluate the incidence of scabies before and after COVID-19 to have a better understanding of this parasitosis and its therapy under specific settings such as the pandemic that the entire globe has recently been experiencing.

### \* Ethics

**Informed Consent:** This study was approved by the Non-Interventional Clinical Research Ethics Committee of Çukurova University Faculty of Medicine (date: 08.04.2022 decision no: 121/30). It was accomplished according to the principles of the "Declaration of Helsinki" and the newest edition of the "Good Clinical Practice Guidelines"

**Peer-review:** Internally and externally peer reviewed.

### \* Authorship Contributions

Concept: P.E., A.T.A., Design: P.E., A.T.A., Data Collection or Processing: P.E., A.T.A., Analysis or Interpretation: P.E., A.T.A., Literature Search: P.E., Writing: P.E., A.T.A.

**Conflict of Interest:** No conflict of interest was declared by the authors.

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## REFERENCES

- Amal A, El-Moamly. Scabies as part of the World Health Organization's neglected tropical diseases 2021-2030 roadmap: what we know and what we need to do for global control. *Tropical Medicine and Health* 2021; 49: 64.
- Delaš Aždajić M, Bešlić I, Gašić A, Ferara N, Pedić L, Lugović-Mihić L. Increase in Scabies Incidence at the Beginning of the 21st Century: What do reports from Europe and the World show? *Life* 2022; 12: 1598.
- WHO. Ending the neglect to attain the sustainable development goals: a road map for neglected tropical diseases 2021-2030. Geneva: World Health Organization. (cited on December 20, 2022). Available from: <https://www.who.int/publications/i/item/9789240010352>
- WHO. Scabies. (cited on December 20, 2022). Available from: <https://www.who.int/news-room/fact-sheets/detail/scabies>.
- Khalil S, Abbas O, Kibbi AG, Kurban M. Scabies in the age of increasing drug resistance. *PLoS Negl Trop Dis* 2017; 11: e0005920.
- Lugović-Mihić L, Delaš Aždajić M, Kurečić Filipović S, Bukvić I, Prkačin I, Štimac Grbić D, et al. An increasing scabies incidence in Croatia: a call for coordinated action among dermatologists, physicians and epidemiologists. *Zdr Varst* 2020; 59: 264-72.
- Redondo-Bravo L, Fernandez-Martinez B, Go´mez-Barroso D, Gherasim A, Garcı´a-Go´mez M, Benito A, et al. Scabies in Spain? A comprehensive epidemiological picture. *PLoS ONE* 2021; 16: e0258780.
- Çaytemel C, Erdem O, Agırgöl S, Türkoglu Z. Dermatology outpatient clinic outcomes after COVID-19 outbreak: What is new normal? *Dermatologic Therapy* 2021; 34: e14950.
- Turan Ç, Metin N, Utlu Z. Epidemiological evaluation of scabies cases encountered in the last three years as a tertiary health center. *Turkiye Parazit Derg* 2020; 44: 77-82.
- Çetinkaya Ü, Şahin S, Ulutabanca RÖ. The epidemiology of scabies and pediculosis in Kayseri. *Turkiye Parazit Derg* 2018; 42: 134-7.
- Aktaş H, Cebecik A. Changes in incidence and age distribution of scabies: A retrospective cohort study in a tertiary hospital. *Arch Clin Exp Med* 2019; 4: 21-4.
- Baykal C, Atci T, Kutlay A, Baykut B, Türkoğlu Z. Scabies outbreak in Turkey in 2018-2019. *J. Eur. Acad. Dermatol. Venereol* 2021; 35: e384-e385.
- Louka C, Logothetis E, Engelman D, Samiotaki-Logotheti E, Pournaras S, Stienstra Y. Scabies epidemiology in health care centers for refugees and asylum seekers in Greece. *PLoS Negl Trop Dis* 2022; 16: e0010153.
- Downs, AM, Harvey I, Kennedy CT. The epidemiology of head lice and scabies in the UK. *Epidemiol. Infect* 1999; 122: 471-7.
- Ural ZK, Çatak B, Ağaoglu E. Prevalence of scabies in the Covid19 pandemic period and determination of Risk factors for scabies: a hospitalbased crosssectional study in northeast Turkey. *Acta Parasitologica* 2022; 67: 802-8.
- Kutlu Ö. The explosion in scabies cases during COVID-19 pandemic. *Dermatologic Therapy* 2020; 33: e13662.
- Akaslan TÇ, Mert Ö, Küçük SÖ. Scabies increase during the COVID-19 pandemic: should we change our treatment strategy during the pandemic? *Annals of Parasitology* 2022; 68: 35-8.
- Martínez-Pallás I, Aldea-Manrique B, Ramírez-Lluch M, Manuel Vinuesa-Hernando J, Ara-Martín M. Scabies outbreak during home confinement due to the SARS-CoV-2 pandemic. *J. Eur. Acad. Dermatol. Venereol* 2020; 34: e781-3.
- Isoletta E, Vassallo C, Brazzelli V, Giorgini C, Tomasini CF, Sabena A, et al. Emergency accesses in dermatology department during the COVID-19 pandemic in a referral third level center in the north of Italy. *Dermatol Ther* 2020; 33: e14027.
- Reichert F, Schulz M, Mertens E, Lachmann R, Aebischer A. Reemergence of scabies driven by adolescents and young adults, Germany, 2009-2018. *Emerg Infect Dis* 2021; 27: 1693-6.
- Lassa S, Campbell MJ, Bennett CE. Epidemiology of scabies prevalence in the U.K. from general practice records. *Br J Dermatol* 2011; 164: 1329-34.
- Mulligan KM, Cullison CR, Zheng DX, Tripathi R, Beveridge MG, Ray AJ, et al. Sociodemographic factors associated with scabies in the inpatient setting. *Am J Infect Control* 2021; 49: 1558-60.
- Sara J, Haji Y, Gebretsadik A. Scabies outbreak investigation and risk factors in east Badewacho district, Southern Ethiopia: unmatched case control study. *Dermatol Res Pract* 2018; 2018: 7276938.
- De Lucia M, Potestio L, Costanzo L, Fabbrocini G, Gallo L. Scabies outbreak during COVID-19: An Italian experience. *Int J Dermatol* 2021; 60: 1307-8.
- Karimkhani C, Colombara DV, Drucker AM, Norton SA, Hay R, Engelman D, et al. The global burden of scabies: a cross-sectional analysis from the Global Burden of Disease Study 2015. *Lancet Infect Dis* 2017; 17: 1247-1254.