

Evaluation of Dermatologists' Opinions in the Face of Increasing Scabies Cases: A Survey Study

Artan Uyuz Olguları Karşısında Dermatologların Görüşlerinin Değerlendirilmesi: Bir Anket Çalışması

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ABSTRACT

Objective: Scabies is a common and highly contagious parasitic skin disease that continues to pose a significant public health burden worldwide and in Türkiye. This study aimed to evaluate the approaches, experiences, and challenges of dermatologists in Türkiye regarding the diagnosis and treatment of scabies.

Methods: A cross-sectional survey was conducted among 107 dermatologists. Data were collected anonymously via an online questionnaire.

Results: Sulfur-based magistral formulations were the preferred treatments among adults, pregnant women, and children over two years of age, whereas permethrin remained the first-line choice for children under two years of age. Although permethrin has traditionally been considered the gold standard, 47.7% of dermatologists reported inadequate treatment responses, while 41.1% found it effective. Conversely, 74.8% of respondents reported successful outcomes with sulfur therapy. Nearly 60% of dermatologists reported using oral ivermectin as a second-line therapy, while 20% prescribed it as a first-line therapy in appropriate cases. Approximately 70% of participants reported frustration in managing scabies cases. Most emphasised the need to reduce hospital burden, extend consultation times, and involve family physicians in screening and follow-up.

Conclusion: Scabies remains a growing healthcare problem in Türkiye. Strengthening primary care involvement, improving patient education, and reconsidering treatment strategies are essential for effective disease control.

Keywords: *Sarcoptes scabiei*, dermatologists, treatment outcome, drug resistance, ivermectin

ÖZ

Amaç: Skabies, dünya genelinde ve Türkiye'de önemli bir halk sağlığı yükü oluşturmaya devam eden yaygın ve oldukça bulaşıcı bir paraziter deri hastalığıdır. Bu çalışma, Türkiye'deki dermatologların skabies tanı ve tedavisine ilişkin yaklaşımlarını, deneyimlerini ve karşılaştıkları zorlukları değerlendirmeyi amaçlamaktadır.

Yöntemler: Yüz yedi dermatolog arasında kesitsel bir anket çalışması gerçekleştirilmiştir. Veriler anonim olarak çevrim içi bir anket aracılığıyla toplanmıştır.

Bulgular: Erişkinler, hamileler ve iki yaş üzerindeki çocuklarda en sık tercih edilen tedavi sülfür bazlı majistral preparatlar olmuştur. İki yaş altındaki çocuklarda ise ilk basamak tedavi olarak permethrin tercih edilmiştir. Permethrin geleneksel olarak altın standart kabul edilmesine rağmen, dermatologların %47,7'si yetersiz tedavi yanıtı bildirmiş, yalnızca %41,1'i etkili bulmuştur. Buna karşılık, katılımcıların %74,8'i sülfür tedavisinde başarılı sonuçlar elde ettiklerini ifade etmiştir. Dermatologların yaklaşık %60'ı oral ivermektini ikinci basamak tedavi olarak, %20'si ise uygun olgularda ilk basamak olarak reçete ettiklerini belirtmiştir. Katılımcıların yaklaşık %70'i skabies olgularının yönetiminde hayal kırıklığı yaşadığını bildirmiştir. Çoğu hekim, hastane yükünün azaltılması, muayene sürelerinin uzatılması ve aile hekimlerinin tarama ve takip sürecine dahil edilmesi gerektiğini vurgulamıştır.

Sonuç: Skabies, Türkiye'de büyüyen bir sağlık sorunu olmaya devam etmektedir. Birinci basamağın sürece daha etkin katılımının sağlanması, hasta eğitiminin geliştirilmesi ve tedavi stratejilerinin yeniden gözden geçirilmesi, hastalığın etkin kontrolü için gereklidir.

Anahtar Kelimeler: *Sarcoptes scabiei*, dermatolog, tedavi sonuçları, ilaç direnci, ivermektin



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INTRODUCTION

Scabies is a pruritic and highly contagious cutaneous infestation caused by *Sarcoptes scabiei* (1). It is recognised as a significant global public health concern, affecting approximately 200 million individuals at any given time and an estimated 400 million people annually. Although more prevalent in developing countries, an increasing incidence has been reported in high-income regions in recent years (2). In 2017, the World Health Organisation officially classified scabies as a neglected tropical disease (3).

Current clinical guidelines recommend several treatments for scabies, including topical permethrin, benzyl benzoate, sulfur, malathion, crotamiton, synergised pyrethrins, and both topical and oral ivermectin (4-6). Although topical permethrin remains recommended as the first-line therapy in the European guidelines, multiple reports from different European countries have documented growing resistance to permethrin (7-9).

Although the introduction of oral ivermectin therapy in Türkiye in recent years has contributed to progress in the management of scabies, dermatologists continue to employ a variety of treatment approaches. While 5% topical permethrin remains widely regarded by most physicians as an effective and safe first-line therapy, some dermatologists consider it ineffective and therefore do not prescribe it. In this study, we investigated dermatologists' general approaches, experiences, and challenges in diagnosing and treating scabies across different regions of Türkiye.

METHODS

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional research committee and with the 1964 Helsinki Declaration and its later amendments, or with comparable ethical standards. Ethical approval for this study was obtained from the Clinical Research Ethics Committee of Atatürk University Faculty of Medicine (file number: B.30.2.ATA.0.01.00/336, decision no: 117, date: 31.03.2022).

A cross-sectional study was conducted using an online survey. Between June 15 and July 15, 2024, participants were invited to complete a questionnaire developed by the researchers on Google Forms. A study announcement poster was prepared and disseminated through the researchers' social media accounts. Before completing the survey, all participants were informed about the content of the questionnaire. No personal data were collected, and responses were recorded anonymously. Participation in the study was entirely voluntary, and participants retained the option to withdraw their consent at any point until the completion of the survey.

Participants were included if they met the following inclusion criteria: (a) completion of all survey questions; and (b) employment as a dermatologist in either a public or private hospital in Türkiye. A total of 107 participants who fulfilled these criteria were enrolled in the study.

Statistical Analysis

Statistical analyses were performed using SPSS version 28.0 (IBM Corp., Armonk, NY, USA). Descriptive statistics included mean, standard deviation, median, minimum, maximum, frequency, and percentage values. The distribution of variables was assessed using the Kolmogorov-Smirnov and Shapiro-Wilk tests. For quantitative independent variables not normally distributed, the Mann-Whitney U test was applied. For qualitative independent variables, the chi-square test was used; when the assumptions of the chi-square test were not met, Fisher's exact test was applied.

RESULTS

The participants' ages ranged from 25 to 80 years (median: 35). The majority were women, with 85 women (79.4%) and 22 men (20.6%) (Table 1). The mean age of dermatologists working in private institutions was significantly higher than that of those working in public institutions ($p < 0.05$). The gender distribution did not differ significantly between employees of public and private institutions ($p > 0.05$).

Table 1. Demographic data and treatment choices for scabies

		Min-max	Median	Mean $\pm$ SD, n (%)	
Age		25.0-80.0	35.0	38.9 $\pm$ 10.1	
Sex	Male			22	20.6%
	Female			85	79.4%
In which region do you work?		Mediterranean Region		3	2.8%
		Eastern Anatolia Region		16	15.0%
		Aegean Region		18	16.8%
		Southeastern Anatolia Region		5	4.7%
		Central Anatolia Region		23	21.5%
		Black Sea Region		10	9.3%
		Marmara Region		32	29.9%
What type of hospital are you currently working in?		Training and Research Hospital		36	33.6%
		State Hospital		27	25.2%
		Private Hospital		21	19.6%
		University Hospital		17	15.9%
		Private Practice		4	3.7%
		City Hospital		1	0.9%
		Private Medical Center		1	0.9%

Table 1. Continued			
	Min-max	Median	Mean $\pm$ SD, n (%)
Average number of scabies patients seen per day	0.0-50.0	5.0	8.0 $\pm$ 8.5
First-line treatment preferences in scabies patients			n %
Sulfur-based magistral preparations			65 60.7%
Permethrin-containing creams or lotions			50 46.7%
Oral ivermectin			37 34.6%
Sulfur-tar combination (Wilkinson's ointment)			30 28.0%
Balsam of Peru mixtures			18 16.8%
Treatment preferences in pregnant scabies patients			
Sulfur-based magistral preparations			59 55.1%
Permethrin-containing creams or lotions			56 52.3%
Balsam of Peru mixtures			20 18.7%
Sulfur-tar combination (Wilkinson's ointment)			5 4.7%
Preferred treatment for scabies in infants (0-2 years)			
Permethrin-containing creams or lotions			46 43.0%
Sulfur-based magistral preparations			39 36.4%
Balsam of Peru mixtures			35 32.7%
Sulfur-tar combination (Wilkinson's ointment)			27 25.2%
Xabion lotion			3 2.8%
Preferred treatment for scabies in children (>2 years)			
Sulfur-based magistral preparations			67 62.6%
Permethrin-containing creams or lotions			56 52.3%
Balsam of Peru mixtures			20 18.7%
Sulfur-tar combination (Wilkinson's ointment)			17 15.9%
Oral ivermectin			14 13.1%
Note: Participants were allowed to select multiple options SD: Standard deviation			

In the treatment of scabies, magistral sulfur preparations were the preferred agents for adults, pregnant women, and children over 2 years of age (60.7%, 55.1%, and 62.6%, respectively). For children aged 0-2 years, permethrin was the most preferred treatment (43%) (Table 1). Overall, magistral sulfur preparations were also the preferred first-line treatment for scabies patients (Figure 1). Eighty-nine point seven percent of participants attributed the lack of treatment response to patients' improper application of therapy and to asymptomatic family members' non-compliance with treatment recommendations. Additionally, 52.3% of participants attributed incomplete treatment to the irritant effects of topical agents, which led to treatment discontinuation. Furthermore, 47.7% of dermatologists reported that permethrin was ineffective in achieving an adequate therapeutic response. Approximately 47% of respondents associated treatment failure with misdiagnosis in primary care and insufficient patient education due to limited consultation time (Table 2).

Sixty per cent of participants reported switching to oral ivermectin for patients who were unresponsive to other therapies. Seventy per cent indicated that they examined scabies for diagnosis and management within 2-7 minutes (Table 3).

Around 70% reported difficulties convincing asymptomatic family members to undergo treatment, expressed uncertainty about whether non-attending family members had completed

therapy since they could not prescribe for them, and emphasised that explaining the correct use of topical therapies was highly time-consuming. Approximately 70% of participants reported feeling frustrated with the management of scabies. In addition, 90% stated that scabies treatment burden in hospitals should be reduced and that family physicians should be better informed and involved in patient screening and family follow-up (Table 4).

The average number of daily scabies patients seen was significantly lower among dermatologists working in private institutions than among those in public institutions ($p < 0.05$) (Table 5, Figure 2). The use of systemic ivermectin as a first-line treatment in appropriate patients, particularly those unresponsive to other therapies, was significantly more frequent in the private institution group than in the public institution group ($p < 0.05$). Conversely, the proportion of dermatologists reporting difficulty advising patients on environmental decontamination after treatment was significantly lower in private than in public institutions ($p < 0.05$). No significant difference was observed between employees of public and private institutions in the proportion of participants reporting frustration with the diagnosis, treatment, and follow-up of scabies ($p > 0.05$).

Table 2. Opinions on treatment response/non-response

Incorrect application of treatment by patients	96	89.7%
Non-compliance of asymptomatic family members with recommended treatment	96	89.7%
I consider sulfur-based magistral preparations to be effective	80	74.8%
Continued contact with carrier but untreated individuals	78	72.9%
I consider oral ivermectin to be effective	68	63.6%
Treatment discontinuation due to irritant properties of therapeutic agents	56	52.3%
I consider sulfur-tar combination therapy to be effective	54	50.5%
I consider permethrin therapy to be ineffective	51	47.7%
Misdiagnosis in primary care	51	47.7%
Inadequate patient counseling and treatment information	51	47.7%
Insufficient patient understanding due to limited consultation time	50	46.7%
Drug resistance	47	43.9%
I consider permethrin therapy to be effective	44	41.1%
I consider balsam of Peru mixtures to be effective	44	41.1%
Failure to adequately clean environment and clothing	40	37.4%
I consider oral ivermectin to be ineffective	5	4.7%
I consider balsam of Peru mixtures to be ineffective	4	3.7%
I observed that oral ivermectin alone is insufficient	2	1.9%
I consider sulfur-tar combination therapy to be ineffective	2	1.9%
It is not appropriate to state that a specific therapy is definitively effective or ineffective; response varies between patients	1	0.9%
Responds to combination of permethrin and sulfur therapy	1	0.9%
Oral ivermectin is effective only when combined with topical therapy	1	0.9%
I consider that maintenance therapy is essential on days 7 and 10 following oral ivermectin	1	0.9%
In resistant cases, i use oral ivermectin in combination with sulfur-based magistral preparations	1	0.9%
I consider sulfur-based magistral preparations to be ineffective	1	0.9%
I consider re-infection to be the most important problem	1	0.9%
Patients concealing their disease	1	0.9%
Due to improper instructions, many patients apply the medication daily only to itching areas	1	0.9%
Patients are not informed that treatment must be repeated after one week	1	0.9%
Patients not believing they have scabies and refusing treatment	1	0.9%
There may be parasite-related factors	1	0.9%
Frequent use of scabies medications in primary care due to misdiagnosis	1	0.9%

Table 3. Opinions on the use of systemic ivermectin in scabies treatment

		n	%
Opinions on the use of systemic ivermectin in scabies treatment	I prefer it in patients unresponsive to other therapies	63	58.9
	It is my first choice in eligible patients	23	21.5
	I achieve satisfactory outcomes with current topical therapies	19	17.8
	There is an absolute need for it	2	1.9
Time spent for patient counseling (diagnosis and treatment)	2-4 minutes	33	30.8
	5-7 minutes	42	39.3
	8-10 minutes	17	15.9
	≥10 minutes	15	14.0

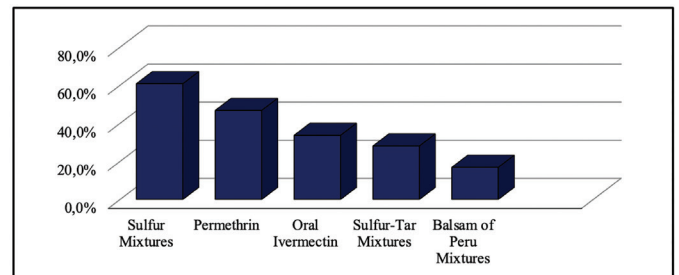
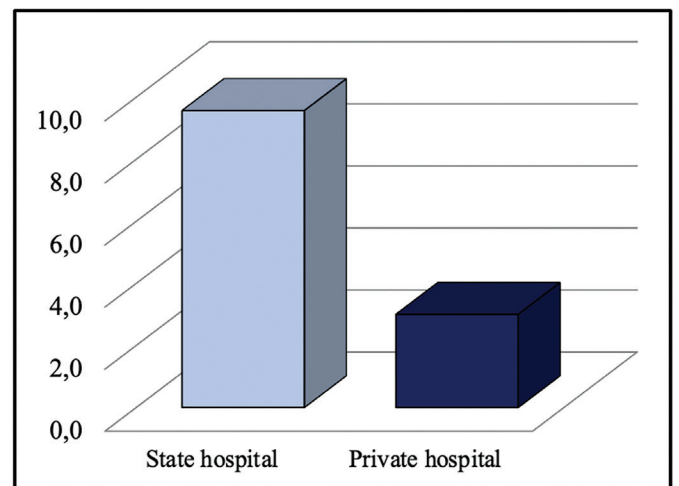
**Figure 1.** The most commonly preferred first-line treatment agents in patients with scabies**Figure 2.** Daily average scabies cases

Table 4. Challenges faced regarding scabies

		n	%
I struggle with making the diagnosis	Disagree	92	86.0
	Uncertain	15	14.0
I struggle to convince patients to accept the diagnosis and treatment	Disagree	44	41.1
	Uncertain	25	23.4
	Agree	30	28.0
	Strongly agree	8	7.5
I struggle to convince non-itching family members to receive treatment	Disagree	14	13.1
	Uncertain	15	14.0
	Agree	48	44.9
	Strongly agree	30	28.0
I am uncertain about the adequacy of treatment in family members who do not present for examination since i cannot prescribe for them	Disagree	18	16.8
	Uncertain	13	12.1
	Agree	39	36.4
	Strongly agree	37	34.6
I struggle to instruct patients about post-treatment environmental hygiene	Disagree	43	40.2
	Uncertain	30	28.0
	Agree	23	21.5
	Strongly agree	11	10.3
Explaining how to apply topical therapy is highly time-consuming	Disagree	15	14.0
	Uncertain	13	12.1
	Agree	39	36.4
	Strongly agree	40	37.4
Difficult application, unpleasant odor, and irritant effects of topical medications extend the duration of treatment	Disagree	7	6.5
	Uncertain	21	19.6
	Agree	44	41.1
	Strongly agree	35	32.7
I have difficulty treating individuals living in communal settings such as military barracks, boarding schools, dormitories, or nursing homes	Disagree	2	1.9
	Uncertain	17	15.9
	Agree	31	29.0
	Strongly agree	57	53.3
I feel fatigued regarding the diagnosis, treatment, and follow-up of scabies	Disagree	19	17.8
	Uncertain	16	15.0
	Agree	34	31.8
	Strongly agree	38	35.5
I believe that scabies has become a major public health problem today, and that reducing the burden on hospitals, informing family physicians, and implementing household screening are essential for outbreak control	Disagree	4	3.7
	Uncertain	10	9.3
	Agree	28	26.2
	Strongly agree	65	60.7
I believe that systemic therapies, which are easier to explain and administer than topical treatments, are necessary and should be prescribed as the first choice for all eligible patients	Disagree	24	22.4
	Uncertain	38	35.5
	Agree	28	26.2
	Strongly agree	17	15.9

DISCUSSION

Scabies is a highly prevalent parasitic infestation in low- and middle-income tropical countries, affecting individuals of all ages, races, genders, and socioeconomic groups. Conditions such as war, natural disasters, famine, overcrowding, malnutrition, migration, homelessness, and poor hygiene contribute to scabies outbreaks. Among refugee populations, scabies has been reported as the third most common infectious disease (10). In Türkiye, the rising prevalence of scabies is well documented. A retrospective cross-sectional study conducted between 2017 and 2019 demonstrated a gradual increase in prevalence from 3.2% to 6.2% (11). In a multicenter study conducted at 12 tertiary dermatology clinics across different geographic regions of the country, 17,803 patients (14,574 adults and 3,229 children) were diagnosed with scabies between 2014 and 2019. Notably, the number of cases increased nearly seven-fold between 2017 and 2018, and approximately thirty-fold between 2017 and 2019 (12). This surge in scabies incidence in Türkiye is thought to be associated not only with irregular migration movements over the past decade but also with additional factors such as the coronavirus disease 2019 pandemic and major earthquakes that have affected millions of people (10-13).

The increase in scabies prevalence has also brought specific challenges in its diagnosis and management. In clinical practice, scabies is most often diagnosed based on characteristic features such as pruritus, distribution of lesions, the presence of burrows, and family history. At the same time, parasitological examination is rarely required (10). Eighty-six percent of participants reported no difficulty establishing a diagnosis of scabies. However, 58.9% reported challenges convincing patients to accept the diagnosis and treatment. Although scabies can generally be diagnosed easily, patient acceptance of the diagnosis may be challenging because the diagnosis can evoke feelings of dirtiness, shame, and social stigma. Moreover, 78% of respondents reported difficulty persuading asymptomatic family members to undergo treatment, while 76% expressed doubts about the adequacy of therapy for family members who did not attend a clinical evaluation. These factors may contribute to treatment failure and ongoing transmission, thereby preventing effective outbreak control.

Permethrin (5% cream or lotion) has been considered the gold standard treatment for scabies; however, recent studies and case reports have demonstrated high levels of resistance of *Sarcoptes scabiei* to this agent (7-9,14-16). Some studies, however, suggest that this resistance may be overestimated and that treatment failure could instead be attributed to application errors (17). In our study, physicians most frequently preferred sulfur as the first-line therapy for scabies (60.7%), while permethrin was selected less frequently (46.7%). Among pregnant women and children older than 2 years of age, sulfur was also the most common first-line treatment, while permethrin remained the preferred treatment in children under 2 years of age. 74.8% of participants reported successful outcomes with sulfur therapy, whereas only 41.1% reported that permethrin was effective. Notably, 47.7% of physicians stated that they did not observe a satisfactory response to permethrin. Despite permethrin's designation as the gold standard, prescriptions in our study indicated a shift toward sulfur treatment, which may reflect an observational signal of increasing resistance to permethrin in our country. However, this is a questionnaire-based study relying on physicians' opinions, and

Table 5. Comparison between ministry (public) and private hospitals

		Ministry Hospital (n=81)		Private Hospital (n=26)		P	
		Mean $\pm$ SD, n (%)	Median	Mean $\pm$ SD, n (%)	Median		
Age		37.1 $\pm$ 10.2	33.0	44.3 $\pm$ 7.7	43.5	0.000	^m
Sex	Male	19	23.5%	3	11.5%	0.191	^{x2}
	Female	62	76.5%	23	88.5%		
Average number of scabies patients seen per day		9.6 $\pm$ 9.2	5.0	3.0 $\pm$ 2.1	2.0	0.000	^m

^m: Mann-Whitney U test, ^{x2}: Chi-square test

no direct measurement of resistance was performed. Therefore, this result should not be interpreted as confirmed resistance but rather as an observational finding that may indicate resistance. Similarly, a report from Türkiye described cases of recurrence following permethrin therapy that were successfully treated with oral ivermectin (15). A nother study from Türkiye demonstrated that 10% sulfur ointment was significantly more effective than 5% permethrin cream for the treatment of scabies (14). Nevertheless, in our study, 96% of participants attributed treatment failure to patients' incorrect application of therapy and to the refusal of asymptomatic family members to undergo treatment.

Improvements in healthcare services and increased accessibility to care have led to a significant rise in demand for medical care in Türkiye in recent years (18). This has led to an increased outpatient workload and limited the consultation time available per patient. In our study, 85% of physicians working in public hospitals reported allocating 2-7 minutes per patient, whereas 77% of those working in private institutions reported spending 10 minutes or more. Furthermore, the average daily number of scabies patients seen was nearly 10 in public hospitals compared with approximately 3 in private institutions. Eighty per cent of physicians reported that explaining the proper use of topical therapy was highly time-consuming. Nearly half of the participants believed that insufficient patient education and understanding, primarily due to limited consultation time, contributed to treatment failure. These findings suggest that the time allocated to patients is markedly insufficient to provide adequate counselling regarding topical and other treatment modalities.

The main limitations to the use of medical therapies were identified as treatment discontinuation due to irritation and unpleasant odour (10,17). A total of 79% of participants reported that the complexity of use, odour, and irritation, all associated with topical agents, prolonged the treatment process. Scabies poses a particularly high risk for outbreaks in institutional settings such as military barracks, boarding schools, dormitories, and nursing homes (19). Approximately 90% of participants reported difficulties treating individuals residing in communal environments.

In a study assessing the level of knowledge regarding the diagnosis and treatment of scabies in primary healthcare, it was reported that although physicians had sufficient knowledge about scabies, they experienced difficulties in its management (20). In our study, 47.7% of participants indicated that misdiagnosis and mistreatment occurred at the primary care level. Furthermore, 93% of respondents stated that scabies has become a significant public health problem, emphasising the need to reduce the burden on hospitals and to inform family physicians about the

disease, thereby enabling them to perform household screening. In addition, 72% of physicians reported feelings of frustration due to the difficulties associated with the diagnosis, treatment, and follow-up of scabies.

Oral ivermectin is generally considered in cases where topical therapy fails. In Türkiye, oral ivermectin has been approved since 2022 for the treatment of scabies in patients unresponsive to topical agents (10). In our study, 60% of participants reported using oral ivermectin as a second-line treatment for nonresponse to topical therapy. In comparison, 20% indicated that they prescribed it as a first-line agent. Given the challenges associated with topical treatments, many participants expressed a preference for oral therapy as a first-line option due to its ease of administration and of explanation to patients.

Study Limitations

This study has certain limitations. As the data were obtained through a self-reported online survey, responses may be subject to recall and response biases, and the recruitment of 107 dermatologists via social media may not fully capture the diversity of the broader dermatology community. The findings primarily reflect physicians' experiences rather than objectively measured clinical outcomes. Moreover, the study was conducted over a short time frame and included only hospital-based dermatologists, which may limit the generalisability of the results to other institutions and populations.

CONCLUSION

Our findings indicate that dermatologists experience significant challenges in the management of scabies. The majority of participants reported no response to permethrin and expressed a stronger preference for sulfur-based formulations. Limited consultation times restricted physicians' ability to provide patients with detailed instructions and complicated treatment for family members, often leading to incomplete therapy and continued transmission. These issues, combined with high patient burden, contributed to feelings of fatigue and frustration among physicians. Therefore, extending consultation times, improving the training of family physicians in the diagnosis and management of scabies, and implementing systematic household screening should be emphasised as key strategies to achieve more effective disease control.

*Ethics

Ethics Committee Approval: The study protocol was approved by the Clinical Research Ethics Committee of Atatürk University Faculty of Medicine (file number: B.30.2.ATA.0.01.00/336, decision no: 117, date: 31.03.2022).

Informed Consent: Informed consent was obtained from all participants involved in the study. Participation in this study was completely voluntary and anonymous.

Footnotes

*Authorship Contributions

Concept: N.M., E.U., Design: N.M., E.U., Z.U., E.K., Data Collection or Processing: N.M., E.U., Analysis or Interpretation: N.M., E.U., E.K., Literature Search: N.M., E.U., E.K., Writing: N.M., E.U., Z.U., E.K.

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