

Management of moderate-to-severe atopic dermatitis in adults: A cross-sectional survey of dermatologists within the Asia-Pacific region

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Supplementary Materials

Table S1. Demographic characteristics of physicians

	N=271	
	n	Value
Number of dermatologists, n (%)		
Hong Kong	20	7.4
India	50	18.5
Japan	30	11.1
Mainland of China	50	18.5
Singapore	30	11.1
South Korea	31	11.4
Taiwan	30	11.1
Thailand	30	11.1
Years of experience (post-specialty training), n (%)		
2-5 years	40	15.0
5-10 years	71	26.0
More than 10 years	160	59.0
Number of moderate-to-severe AD patients treated monthly		
Median (IQR)	271	30.0 (50.0)
Place of practice ^a		
University hospital/ academic institute	89	32.8
Public/ government hospital excluding university hospital	73	26.9
Private clinic	71	26.2
Private hospital	41	15.2

Abbreviations: AD, atopic dermatitis; IQR, interquartile range.

^a As multiple options can be selected, the sum of frequencies across all categories exceeds 100%.

Table S2. Main reason in choice of add-on treatment for patients not responding to maximized topical treatment ^a

	Phototherapy (N=71)	Systemic anti-inflammatory medication (N=135)	Biologics (N=45)	Small molecules (N=8)
	n (%)	n (%)	n (%)	n (%)
Patient preference	3 (4.2)	0 (0.0)	2 (4.4)	0 (0.0)
Lower cost than other therapies	14 (19.7)	53 (39.3)	1 (2.2)	0 (0.0)
Higher efficacy than other therapies	5 (7.0)	46 (34.1)	18 (40.0)	2 (25.0)
Fewer side effects	44 (62.0)	10 (7.4)	21 (46.7)	3 (37.5)
As per national / international guidelines	5 (7.0)	11 (8.1)	3 (6.7)	2 (25.0)
Others	-	2 (1.5)	-	1 (12.5)
Missing	-	13 (9.6)	-	-

^a This item was answered exclusively by respondents who ranked the corresponding treatment as their most preferred add-on treatment.

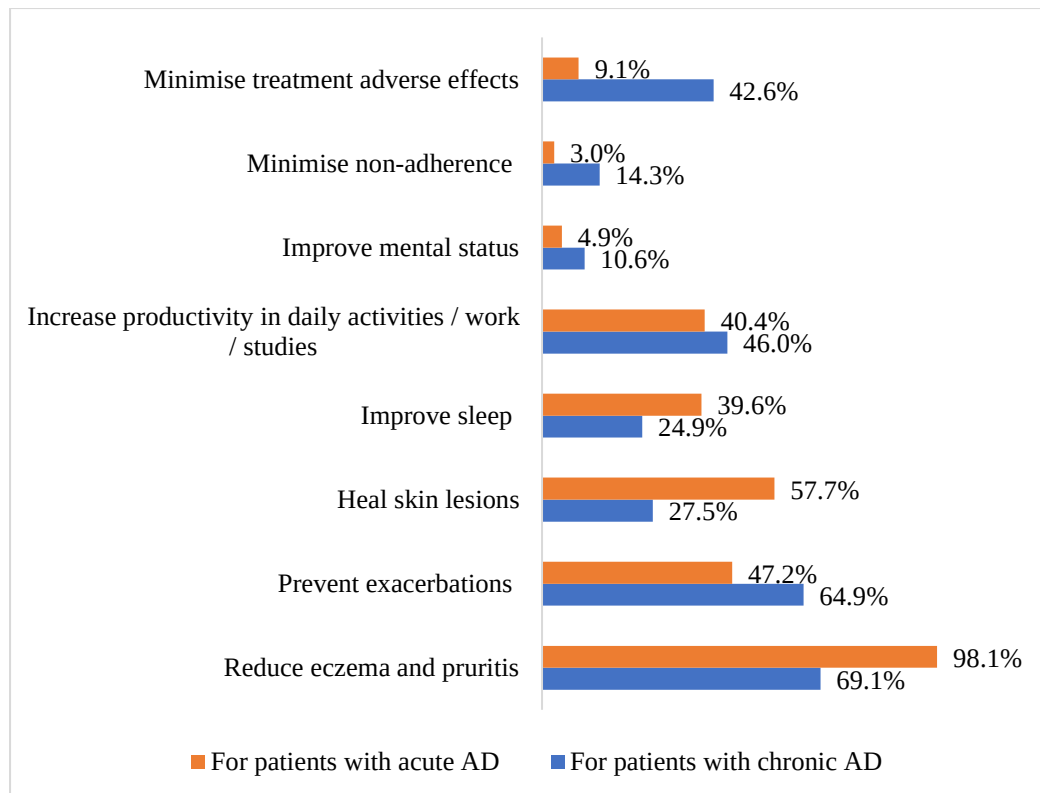


Figure S1. Treatment goals for acute vs. chronic atopic dermatitis.

Study Questionnaire

Thank you for agreeing to take part in our research. This questionnaire is designed to help us gain a better understanding of the treatment patterns of moderate-to-severe atopic dermatitis (AD).

There are a total of three main sections in this questionnaire, as well as some questions on your background/practice.

Section I: Diagnosis of moderate-to-severe AD

Section II: Overall management of moderate-to-severe AD

Section III: Treatment for moderate-to-severe AD

Please read the instructions carefully and answer the questions based on your current clinical practice.

Section 1: Diagnosis

1. Which of the following criteria do you usually use for the clinical diagnosis of AD? Please choose one option. [\[SINGLE CHOICE\]](#)

The Hanifin and Rajka criteria	a
The UK Working Party diagnostic schemes	b
American Academy of Dermatology (AAD) criteria	c
Local guidelines	d
I do not use any of the above. My diagnosis is based on clinical impression.	e
Other (please specify):_____ [OE TEXT]	f

2. How often do you perform the following test when diagnosing AD?

☐ I never perform any clinical (laboratory) test [\[Gray out the following table and move to the next question\]](#)

	Statement	Not at all	<25% of the time	25-49% of the time	50-74% of the time	≥75% of the time	All the time
		a	b	c	d	e	f
i	Skin biopsies						
ii	Serum IgE						
iii	Skin prick test						
iv	Potassium hydroxide (KOH) preparation						
v	Patch testing						
vi	Genetic testing						
vii	Differential blood count						
viii	Other (please specify):_____ [OE TEXT]						

3. Which method do you most often use to assess the severity of AD? You may select up to 3 methods that are most often used. [\[MULTIPLE CHOICE, ALLOW A MAXIMUM OF 3 CHOICES\]](#)

Clinical impression	a
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Subjective symptoms only (including pruritus, sleep loss)	b
SCORing atopic dermatitis (SCORAD)	c
Eczema Area and Severity Index (EASI)	d
Investigator's Global Assessment (IGA)	e
Six Area Six Sign Atopic Dermatitis (SASSAD)	f
Patient-Oriented Eczema Measure (POEM)	g
Three Item Severity Scale (TISS)	h
Body surface area	i
Laboratory test (e.g., IgE, LDH, TARC)	j
Other (please specify):_____ [OE TEXT]	k

4. How would you define “a flare”? You may select up to 3 options. [\[MULTIPLE CHOICE, ALLOW A MAXIMUM OF 3 CHOICES\]](#)

Self-defined by patient	a
An episode requiring escalation of treatment or seeking additional medical advice	b
Return of symptoms that includes a red, itchy skin rash.	c
The need to use topical steroids or further anti-inflammatory medications	d
An increment of IGA score of at least 2 points	e
Reached an IGA score of 4 or higher	f
Other (please specify):_____ [OE TEXT]	g

5. How do you differentiate mild AD from moderate-to-severe AD? You may select up to 3 options. [\[MULTIPLE CHOICE, ALLOW A MAXIMUM OF 3 CHOICES\]](#)

I do not have a clear definition to differentiate between mild and moderate-to-severe AD [Gray out the following table and move on to the next question]	a
Based on clinical impression (e.g., number of relapses, number of complications)	b
The need for higher potency topical steroids	c
The need for systemic anti-inflammatory therapy	d
Based on severity scores using scoring tools (e.g., EASI, IGA)	e
Based on the level of impact on patient's everyday activities and psychosocial well-being, sleep condition etc	f
Based on body surface area involved with severe inflammation	g
Other (please specify):_____ [OE TEXT]	h

6. How do you differentiate moderate AD from severe AD? You may select up to 3 options. [\[MULTIPLE CHOICE, ALLOW A MAXIMUM OF 3 CHOICES\]](#)

I do not have a clear definition to differentiate between moderate and severe AD [Gray out the following table and move on to the next question]	a
Based on clinical impression (e.g., number of relapses, number of complications)	b
The need for higher potency topical steroids	c
The need for systemic anti-inflammatory therapy	d

Based on severity scores using scoring tools (e.g., EASI, IGA)	e
Based on the level of impact on patient's everyday activities and psychosocial wellbeing, sleep condition	f
Based on body surface area involved with severe inflammation	g
Other (please specify):_____ [OE TEXT]	h

Section 2: Overall Management

For the rest of the questionnaire, we define “moderate-to-severe AD” as one that is not adequately controlled by standard and optimised topical treatment (including emollients, topical steroids and topical calcineurin inhibitors), apart from occasional short-term flares caused by skin infection for example.

Please answer the following questions on management approaches and choose the option(s) that most reflects your actual clinical practice.

7. Do you differentiate between acute and chronic phases of AD in your clinical practice? We define acute AD as the active phase (also known as flare-up) when a patient has red, itchy or intensely itchy skin. Chronic AD refers to the non-acute phase between flare-ups, characterized by lichenification, papules and excoriations.

Yes [Proceed to Questions 8 and 9]	a
No [Proceed to Question 10]	b

8. Which is your main treatment goal for patients with acute AD?

Please select the top 3 most important goals. [\[MULTIPLE CHOICE, ALLOW A MAXIMUM OF 3 CHOICES\]](#)

Reduce eczema and pruritis	a
Prevent exacerbations	b
Heal skin lesions	c
Improve sleep	d
Increase productivity in daily activities / work / studies	e
Improve mental status	f
Minimise non-adherence	g
Minimise treatment adverse effects	h

9. Which is your main treatment goal for patients with chronic AD?

Please select the top 3 most important goals. [\[MULTIPLE CHOICE, ALLOW A MAXIMUM OF 3 CHOICES\]](#)

Reduce eczema and pruritis	a
Prevent exacerbations	b
Heal skin lesions	c
Improve sleep	d
Increase productivity in daily activities / work / studies	e

Improve mental status	f
Minimise non-adherence	g
Minimise treatment adverse effects	h

10. What is your treatment goal for patients with moderate-to-severe AD? Please select the top 3 most important goals. [\[MULTIPLE CHOICE, ALLOW A MAXIMUM OF 3 CHOICES\]](#)

Reduce eczema and pruritis	a
Prevent exacerbations	b
Heal skin lesions	c
Improve sleep	d
Increase productivity in daily activities / work / studies	e
Improve mental status	f
Minimise non-adherence	g
Minimise treatment adverse effects	h

11. How do you assess response to treatment in clinical practice? Please choose your main method. [\[SINGLE CHOICE\]](#)

Clinical assessment or observation, including the pattern and distribution of skin lesions	a
Patient self-report	b
Scoring tools (e.g., EASI, IGA)	c
Other (please specify): _____ [OE TEXT]	d

12. What is your main definition of treatment failure? [\[SINGLE CHOICE\]](#)

Unacceptable adverse events	a
No improvement in clinical efficacy after continuous treatment for 1 month	b
No improvement in clinical efficacy after continuous treatment for 3 months	c
No improvement in clinical efficacy after continuous treatment for 6 months	d
Patient preference of new treatment	e
Patient non-adherence	f
Other (please specify): _____ [OE TEXT]	g

13. With respect to the communication with your patient, how much do you agree or disagree with each of the following statements?

	Statements	Strongly agree	Agree	Disagree	Strongly disagree
		a	b	c	d
i	I communicate to my patients about AD management.				

ii	I talk to my patients about their AD treatment goals.				
iii	I explain to my patients what causes their condition.				
iv	I explain to my patients how to take or use the medications.				
v	I explain to my patients the benefits of the medications.				
vi	I explain to my patients the side effects of the medications.				
vii	I give my patients the opportunity to discuss the problems they face with their condition.				
viii	I share with my patients how to manage their condition more effectively.				
ix	I share with my patients how AD affects the risk and severity of COVID-19 infection.				
x	I share with my patients how the treatment affects the risk and severity of COVID-19 infection.				

Section 3: Treatment of moderate-to-severe AD

Once again, we define “moderate-to-severe AD” as one that is not adequately controlled by standard and optimised topical treatment (including emollients, topical steroids and topical calcineurin inhibitors), apart from occasional short-term flares caused by skin infection for example. Please answer the following questions on management approaches and choose the option(s) that most reflects your actual clinical practice.

14. What is your commonly used topical anti-inflammatory treatment for treating acute flares of non-sensitive areas? Please select the top 3 choices and rank them on a rating scale 1-3, with **1** being your most commonly used medication. [\[MULTIPLE CHOICE, RANK 3 CHOICES\]](#)

TCS with super high potency	a
TCS with high potency	b
TCS with medium potency	c
TCS with low potency	d
Pimecrolimus	e
Tacrolimus	f
Crisaborole	g
Other, please specify	h

15. What is your commonly used anti-inflammatory topical treatment for treating acute flares of sensitive areas, such as face, anogenital areas? Please select the top 3 choices and rank them on a rating scale 1-3, with **1** being your most commonly used medication. [\[MULTIPLE CHOICE, RANK 3 CHOICES\]](#)

TCS with super high potency	a
TCS with high potency	b
TCS with medium potency	c
TCS with low potency	d
Pimecrolimus	e
Tacrolimus	f
Crisaborole	g
Other, please specify	h

16. What is your commonly used topical anti-inflammatory treatment for treating chronic AD of non-sensitive areas? Please select the top 3 choices and rank them on a rating scale 1-3, with 1 being your most commonly used medication. [MULTIPLE CHOICE, RANK 3 CHOICES]

TCS with super high potency	a
TCS with high potency	b
TCS with medium potency	c
TCS with low potency	d
Pimecrolimus	e
Tacrolimus	f
Crisaborole	g
Other, please specify	h

17. What is your commonly used anti-inflammatory topical treatment for treating chronic AD of sensitive areas, such as face, anogenital areas? Please select the top 3 choices and rank them on a rating scale 1-3, with 1 being your most commonly used medication. [MULTIPLE CHOICE, RANK 3 CHOICES]

TCS with super high potency	a
TCS with high potency	b
TCS with medium potency	c
TCS with low potency	d
Pimecrolimus	e
Tacrolimus	f
Crisaborole	g
Others	h

18. What is your commonly used topical anti-inflammatory treatment for proactive/maintenance therapy? Please select the top 3 choices and rank them on a rating scale 1-3, with 1 being your most commonly used medication. [MULTIPLE CHOICE, RANK 3 CHOICES]

☐ I do not provide proactive treatment [Gray out the following table and proceed to next question]

TCS with super high potency	a
TCS with high potency	b
TCS with medium potency	c

TCS with low potency	d
Pimecrolimus	e
Tacrolimus	f
Crisaborole	g
Others	h

19. Which treatment will you add on for a patient who did not respond to 3 months of maximized topical treatment? Please select the top 3 options and rank them on a rating scale 1-3, with **1** being your most used.
[MULTIPLE CHOICE, RANK 3 CHOICES]

☐ I will continue with the same treatment after 3 months [Gray out the following table and proceed to next question]

Phototherapy [Proceed to Qn 20.a if selected as rank number 1]	a
Systemic anti-inflammatory medication [Proceed to Qn 20.b if selected as rank number 1]	b
Biologics (e.g., Dupilumab) [Proceed to Qn 20.c if selected as rank number 1]	b
Small molecules (e.g., JAK inhibitors) [Proceed to Qn 20.d if selected as rank number 1]	c
Other, please specify: _____	d

20.

- a. What is the main reason for you to choose phototherapy as add-on in Question 19? [If phototherapy (option a) is selected as rank number 1, SINGLE CHOICE]

Patient preference	a
Phototherapy has lower cost than other therapies	b
Phototherapy has better efficacy than other therapies	c
Phototherapy is better tolerated than other therapies in terms of side effects	d
As per national / international guidelines	e
Other, please specify	f

- b. What is the main reason for you to choose systemic anti-inflammatory medication as add-on in Question 19?

[If systemic anti-inflammatory medication (option b) is selected as rank number 1, SINGLE CHOICE]

Patient preference	a
Systemic anti-inflammatory medication has lower cost than other therapies	b
Systemic anti-inflammatory medication has better efficacy than other therapies	c
Systemic anti-inflammatory medication is better tolerated than other therapies in terms of side effects	d
As per national / international guidelines	e
Other, please specify	f

- c. What is the main reason for you to choose biologics (e.g., Dupilumab) as add-on in Question 19?

[If biologics (option c) is selected as rank number 1, SINGLE CHOICE]

Patient preference	a
Biologics has lower cost than other therapies	b
Biologics has better efficacy than other therapies	c
Biologics is better tolerated than other therapies in terms of side effects	d
As per national / international guidelines	e
Other, please specify	f

- d. What is the main reason for you to choose small molecules (e.g., JAK inhibitors) as add-on in Question 19?

[If small molecules (option d) is selected as rank number 1, SINGLE CHOICE]

Patient preference	a
Small molecules have lower cost than other therapies	b
Small molecules have better efficacy than other therapies	c
Small molecules are better tolerated than other therapies in terms of side effects	d
As per national / international guidelines	e
Other, please specify	f

21. What is your commonly used treatment option when administering phototherapy? Please select the top 3 commonly used options and rank them on a rating scale 1-3, with 1 being your most commonly used therapy. [MULTIPLE CHOICE, RANK 3 CHOICES]

Broad-band UVB	a
Narrow-band UVB	b
Psoralen photochemotherapy (PUVA)	c
UVA (Tl09)	d
UA1	e
Other, please specify	f

22. What is your **preferred** systemic anti-inflammatory treatment for moderate-to-severe AD? Please select the top 3 options and rank them on a rating scale 1-3, with 1 being your most preferred medication.

[MULTIPLE CHOICE, RANK 3 CHOICES]

The list may contain non-marketed products. Please kindly ignore such products when answering this question.

Cyclosporin	a
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Azathioprine	b
Mycophenolate mofetil	c
Methotrexate	d
Oral steroids	e
Dupilumab	f
Omalizumab	g
Rituximab	h
Abrocitinib	i
Apremilast	j
Baricitinib	k
Upadacitinib	l

23. What is your **commonly used** systemic anti-inflammatory treatment for moderate-to-severe AD? Please select the top 3 options and rank them on a rating scale 1-3, with **1** being your most commonly used medication. [\[MULTIPLE CHOICE, RANK 3 CHOICES\]](#)
The list may contain non-marketed products. Please kindly ignore such products when answering this question.

Cyclosporin	a
Azathioprine	b
Mycophenolate mofetil	c
Methotrexate	d
Oral steroids	e
Dupilumab	f
Omalizumab	g
Rituximab	h
Abrocitinib	i
Apremilast	j
Baricitinib	k
Upadacitinib	l

24. What would you anticipate as being the (i) AVERAGE and (ii) MAXIMUM duration of treatment on **Cyclosporin** for moderate-to-severe AD? [\[SINGLE CHOICE\]](#)

☐ I do not prescribe this treatment [Gray out the following table and move on to the next question]

	a	b	c	d	e	f
	<1 month	1-2 months	3-6 months	7-12 months	13-24 months	>24 months
(i) Average duration						
(ii) Maximum duration						

25. What would you anticipate as being the (i) AVERAGE and (ii) MAXIMUM duration of treatment on **Azathioprine** for moderate-to-severe AD? [SINGLE CHOICE]

☐ I do not prescribe this treatment [Gray out the following table and move on to the next question]

	a	b	c	d	e	f
	<1 month	1-2 months	3-6 months	7-12 months	13-24 months	>24 months
(i) Average duration						
(ii) Maximum duration						

26. What would you anticipate as being the (i) AVERAGE and (ii) MAXIMUM duration of treatment on **Mycophenolate mofetil** for moderate-to-severe AD? [SINGLE CHOICE]

☐ I do not prescribe this treatment [Gray out the following table and move on to the next question]

	a	b	c	d	e	f
	<1 month	1-2 months	3-6 months	7-12 months	13-24 months	>24 months
(i) Average duration						
(ii) Maximum duration						

27. What would you anticipate as being the (i) AVERAGE and (ii) MAXIMUM duration of treatment on **Oral steroids** for moderate-to-severe AD? [SINGLE CHOICE]

☐ I do not prescribe this treatment [Gray out the following table and move on to the next question]

	a	b	c	d	e	f
	<1 month	1-2 months	3-6 months	7-12 months	13-24 months	>24 months
(i) Average duration						
(ii) Maximum duration						

28. What would you anticipate as being the (i) AVERAGE and (ii) MAXIMUM duration of treatment on **Methotrexate** for moderate-to-severe AD? [SINGLE CHOICE]

☐ I do not prescribe this treatment [Gray out the following table and move on to the next question]

	a	b	c	d	e	f
	<1 month	1-2 months	3-6 months	7-12 months	13-24 months	>24 months
(i) Average duration						
(ii) Maximum duration						

29. Which of the following statements best describes your management of a patient who did not respond to 3 months of maximized systemic treatment? Please select the top 3 options and rank them on a rating scale 1-3, with **1** being your most used. [MULTIPLE CHOICES, RANK 3 CHOICES]

☐ I will continue with the same treatment after 3 months [Gray out the following table and move on to the next question]

I will add on another topical medication	a
I will add on phototherapy	b
I will switch to phototherapy	c
I will add on another systemic medication	d
I will switch to another systemic medication	e
Other, please specify: _____	f

30. What are potential barriers to the comprehensive management (refers to the whole process from diagnosis to the adequate control of the disease) of AD? Please select the top 3 reasons. [MULTIPLE CHOICE, RANK 3 CHOICES]

Patient's lack of education	a
Patient's steroid phobia	b
Patient's preference of other unproven complementary and alternative medicine	c
A lack of proper national guidelines for AD management	d
Patient non-adherence	e
Lack of effective treatment options	f
Lack of affordable treatment options	g
Other, please specify: _____	h

31. What are your concerns when treating patients with moderate-to-severe AD during COVID-19? Please select your top 3 concerns. [MULTIPLE CHOICE, ALLOW 3 CHOICES]

☐ I have no concerns [Gray out the following options and move on to the next question]

Impact of AD on the risk of developing COVID-19 infection	a
Impact of AD on the severity of COVID-19 infection	b
Impact of AD treatment on the risk of developing COVID-19 infection	c
Impact of AD treatment on the severity of COVID-19 infection	d
Impact of AD treatment on the efficacy of COVID-19 vaccine	e
Impact of COVID-19 infection on AD treatment	f

Impact of telehealth visits on the control of AD symptoms	g
Other, please specify: _____	h

32. Which strategies did you adopt to optimize AD treatment regimen during the past years of COVID-19?

Please select the top 3 strategies. [\[MULTIPLE CHOICE, ALLOW 3 CHOICES\]](#)

☐ There is no change in my treatment approach [\[Gray out the following table and move to the next question\]](#)

Reduce or discontinue the use of immunosuppressants or steroids	a
Increase the use of biologics (e.g., Dupilumab)	b
Reduce or discontinue the use biologics (e.g., Dupilumab)	c
Increase the use of small molecules (e.g., JAK inhibitors)	d
Reduce or discontinue the use of small molecules (e.g., JAK inhibitors)	e
Reduce or discontinue the use of office-based phototherapy	f
Other, please specify	g

33. Which clinical guidelines do you follow for the management of atopic dermatitis? [\[MULTIPLE CHOICE\]](#)

☐ I do not follow any clinical guidelines [\[Gray out the following table and end the survey\]](#)

Local guidelines	a
European Academy of Allergy and Clinical Immunology (EAACI)	b
European Academy of Dermatology and Venereology (EADV)	c
American Academy of Allergy, Asthma and Immunology (AAAAI)	d
American Academy of Dermatology (AAD)	e
Other, please specify	f