General practitioners' knowledge about use of topical corticosteroids in paediatric atopic dermatitis in Australia

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Background and objective

Topical corticosteroids are the standard of care in paediatric atopic dermatitis (pAD). However, messages that overstress possible side effects can have a negative impact on perceptions of safety and contribute to treatment non-adherence. The aim of this study was to assess general practitioners' (GPs') perception of the safety of topical corticosteroids in pAD treatment.

Methods

Australian GPs participating in continuing professional development programs were assessed before an education session on pAD. Responses were recorded via an electronic survey.

Results

A total of 257 GPs were surveyed. More than one-third (40.7%) of the GPs instructed parents to apply topical corticosteroids for two weeks or less. Nearly half (47.7%) instructed parents to apply topical corticosteroids sparingly or with the smallest amount possible. Furthermore, nearly one-third (30.2%) reported skin atrophy as the most common side effect of topical corticosteroids.

Discussion

Advice to patients given by Australian GPs may carry unintentional risk messages contributing to treatment non-adherence. Evidence-based information on the safety of topical corticosteroids is needed to empower GPs to improve treatment outcomes in pAD.

aediatric atopic dermatitis (pAD) is the most common paediatric dermatological condition, affecting >20% of children aged five years or younger. All cases of pAD require environmental modification, identification and avoidance of the triggers that cause flares, but in virtually all except mild cases, topical corticosteroids are an essential part of management. Poorly controlled pAD has a significantly negative impact on the quality of life of affected children, as well as their entire family.^{2,3} Frequently, unsatisfactory outcomes occur because of poor adherence with medical therapy⁴⁻⁸ and this can stem from multiple sources.9 In particular, 'corticosteroid phobia' has been identified as a major cause of non-adherence and treatment failure. 10-13 Despite the burden of pAD to patients and families, anxiety regarding the use of topical corticosteroids poses a dilemma for parents, where unnecessary fear of using a safe and effective treatment paralyses their ability to help their child. 4,7,8,14,15 This phenomenon is also seen by paediatricians when managing asthma with inhaled corticosteroids. 10-12,15

Topical corticosteroids are the standard of care in the treatment of pAD. When used appropriately they have very few side effects. 16 However, there is a common belief among Australian parents that topical corticosteroids can be dangerous, and they prefer 'safe', 'natural' therapy. 15 Parents believe irreversible skin thinning (atrophy) to be the most common perceived risk. This is also a common belief among Australian pharmacists.¹⁷ However, dermatologists as a group do not see skin atrophy as a common complication, 18 and there is a lack of evidence from current clinical research for such complications when topical corticosteroids are used appropriately. 19 The subject of general practitioners' (GPs') attitudes to the safety of topical corticosteroids has not been specifically examined.

Parents' attitudes can result in abandonment of evidence-based medical therapy, with potentially detrimental outcomes.²⁰ Furthermore, inadequately applied topical corticosteroids results in poor outcomes, such as rapid rebound flare of pAD from prematurely ceased treatment. This creates the impression of treatment failure. The objective of this study was to assess Australian GPs' beliefs and sources of information on topical corticosteroid safety.

Methods

A survey was administered to Australian GPs participating in continuing professional development (CPD) programs. Participants were invited to complete a survey, which assessed sources of education and knowledge of topical corticosteroids in the treatment of pAD. Three separate CPD events were used: a web-based education module and two separate face-toface CPD conferences. Each program was approved by The Royal Australian College of General Practitioners (RACGP) or Australian College of Rural

Table 1. Demograph	nic data
Topics	Respondents, n (%)
Total	257
Age (years)	
<30	11 (4.3)
30–39	57 (22.1)
40–49	60 (23.3)
50–59	78 (30.2)
>60	51 (19.8)
Missing	0
Years of practice	
<5	16 (6.2)
5–9	38 (14.7)
10–14	32 (12.4)
15–19	40 (15.5)
≥20	131 (50.8)
Missing	0
Average number of	
patients who are	
prescribed topical	
corticosteroids daily	00 (00 7)
<1 1–5	69 (26.7)
1–5 6–10	171 (66.3)
6-10 11-15	9 (3.5) 3 (1.2)
>15	5 (1.9)
> 15 Missina	0
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and Remote Medicine (ACRRM) for CPD accreditation.

An evidence-based education session was conducted by a dermatologist on the management of pAD. Surveys were completed prior to participating in CPD education events. Responses were recorded using a web-based module with inbuilt data collection and an online survey tool (SurveyMonkey) for face-to-face conference attendees. Questions were developed with the assistance of a psychologist (author AB) and piloted with GPs prior to the events.

The Northern Sydney Local Health District Human Research and Ethics Committee indicated that no formal ethics approval was required because of voluntary attendance by participants at a conference session where their attendance formed part of personal professional development. Participants gave implied consent by their voluntary participation in the questions.

Chi-squared test was used to analyse question responses using SPSS 20.0 (SPSS Inc, Chicago, IL).

Results

A total of 257 GPs were surveyed. Of these, 109 (42.4%) completed the survey prior to the web-based module and 148 (57.6%) participated in two separate face-to-face CPD events. Of those who participated in the face-to-face events. 108 (42.0%) were located in Brisbane and 40 (15.6%) in Perth.

Demographic data

There was an even spread of GPs across all age groups, with the exception of those aged <30 years of age (Table 1). This broadly compares with national averages for the age of practising GPs in Australia (<35 years: 13.4%; 35-44 years: 24.9%; 45-54 years: 24.9%; 55-64 years: 23.1%; 65-74 years: 11.2%; ≥75 years: 2.5%).21 Of those surveyed, 16.2% had been practising for <10 years and 58.1% >20 years.

Source of education

Table 2 shows the sources of education about topical corticosteroids. More than

Table 2. Education of general practitioners about topical	corticosteroids
	Respondents, n (%)
Primary source of information about prescription:	
General practice journals	106 (41.1)
Dermatology journals	14 (5.4)
Internet-based sources	39 (15.1)
Pharmaceutical representatives	20 (7.8)
Clinical meetings	78 (30.2)
Missing	0
Primary source of education at university received from:	
lecturer who was a pharmacist	19 (7.4)
lecturer who was a dermatologist	162 (62.8)
lecturer who was a non-dermatologist specialist	22 (8.5)
lecturer who was a general practitioner	20 (7.8)
• other source	34 (13.2)
Missing	0
Primary source of education during general practice training:	
lecturer who was a pharmacist	4 (1.6)
lecturer who was a dermatologist	99 (38.4)
lecturer who was a non-dermatologist specialist	18 (7.0)
lecturer who was a general practitioner	81 (31.4)
• other source	55 (21.3)
Missing	0

one-third of participants (38.5%) indicated that their primary source of continuing information about topical corticosteroids was from general practice journals, 34.5% from clinical meetings/ conferences, 12.8% from the internet and 4.0% from dermatology journals. The majority (57.4%) received undergraduate education about topical corticosteroids from a dermatologist. However, during postgraduate general practice training, nearly as many received their education on topical corticosteroids from a GP (31.4%) as from a dermatologist (38.2%).

Topical corticosteroid advice

Responses to questions about prescribing and advice given to parents are shown in Table 3. The majority of responders indicated that they vary the strength of topical corticosteroids on the basis of disease severity (69.0%) and site (63.2%). Twice as many GPs indicated that the maximum strength of topical corticosteroids they would prescribe was potent (36.8%), compared with those who would prescribe moderate potency (15.1%) or weak potency (16.9%). Furthermore, only 3.9% indicated they avoid topical corticosteroids.

Less than half (46.9%) of the GPs indicated they would recommend applying a topical corticosteroid until active disease clears and, 40.7% responded that they instructed parents to apply topical corticosteroids for only two weeks or less. There was a trend across the group based on age and years of experience. GPs younger than 39 years of age were more likely to instruct application for two weeks or less, whereas GPs aged 50 years or older were more likely to instruct application until pAD was cleared. Similarly, GPs with more than 20 years' experience were more likely to instruct application of topical corticosteroids until pAD cleared.

When directing the amount of topical corticosteroids to be applied, nearly equal numbers of GPs reported instructing parents to apply 'sparingly' (37.6%) or the smallest amount possible (10.1%)

as compared with those who instructed an amount based on fingertip guidelines (39.1%) or 'generously' (7.4%). Only a minority (5.4%) instructed parents to apply as they felt appropriate. There was no discernible trend across age or years of practice.

Knowledge

More than half (58.1%) of GPs believe that when topical corticosteroids are used appropriately, side effects are unlikely to occur, yet nearly one-third (30.2%) indicated that skin atrophy was the most common side effect from regular use (Table 3). Across all ages and years of practice, if a GP indicated they instruct

parents to apply topical corticosteroids sparingly or thinly, they were statistically more likely to select skin atrophy as the most common side effect (P = 0.002).

Treatment adherence

Of those surveyed, the majority either strongly disagreed (17.1%) or disagreed (48.8%) that topical corticosteroid adherence was an insignificant problem because parents/patients use their medications. Furthermore, the majority either strongly disagreed (14.3%) or disagreed (50%) that poor treatment adherence was impossible to prevent. However, the majority either strongly agreed (8.9%) or agreed (57.4%) that

	n (%)
When I prescribe topical corticosteroids the maximum strength I use is:	
I avoid topical corticosteroids	10 (3.9)
• Weak	42 (16.9)
Moderate	39 (15.1)
Potent	95 (36.8)
Based on severity	178 (69.0)
Based on site	163 (63.2)
When I prescribe I recommend they be used for:	
Maximum of 3 days	5 (1.9)
Maximum of 1 week	28 (10.9)
Maximum of 2 weeks	72 (27.9)
Maximum of 1 month	31 (12.0)
• Until the eczema is clear [†]	121 (46.9)
Missing	0
When I prescribe topical corticosteroids I instruct the patient/parent to apply:	
Only the smallest amount possible	26 (10.1)
Sparingly	97 (37.6)
As the patient/parent feels appropriate	14 (5.4)
Generously [†]	19 (7.4)
Based on fingertip unit guidelines [†]	101 (39.1)
Missing	0
The most common side effect from regular use of topical corticosteroids is:	
Stinging/itching	13 (5.0)
Hypo or hyper-pigmentation of the skin (discolouration)	14 (5.4)
Thinning of the skin (Skin atrophy)	78 (30.2)
Growth retardation	1 (0.4)
None of the above when used appropriately [†]	150 (58.1)
• Missing	1

poor treatment adherence was the major reason patients with pAD fail to get better. Interestingly, there were essentially equal numbers of respondents who indicated they disagreed (33.7%), were neutral (34.1%), or agreed (23.3%) that treatment adherence issues were a more significant problem with oral agents than topical agents (Table 4).

Discussion

Paediatric atopic dermatitis is a common condition. If managed appropriately, mild-to-moderate cases respond readily to treatment. This involves using topical corticosteroids of adequate potency matched to the severity of pAD, in amounts that cover all involved areas daily until the skin is a normal colour and texture, and without a specified time limit. Despite this, children with pAD and their families continue to experience disruption to health and sleep because of parental reluctance to undertake safe and effective therapy. Children who could be effectively treated in general practice find their way to a dermatologist, with resultant cost to themselves and the community. This survey did not explore the information source(s) that may contribute to poor treatment adherence, but it was clear that the majority of GPs are aware of this problem.

The role of dermatologists in this multidisciplinary team is to increase confidence in treatment and educate parents on the best use of topical corticosteroids. This can involve de-briefing anxious and disbelieving parents regarding previous treatment advice.

One of the most significant contributing factors affecting treatment adherence in pAD is corticosteroid phobia, which is expressed by 40-73% of dermatology patients and parents. 10,22-24 Previous research shows some parents state one source of treatment information leading to this fear comes from their GP.15 This study sought to explore this further.

A 2006 Australian study found that moderate-to-severe pAD caused maternal stress equivalent to that associated

with the care of children with severe developmental and physical problems such as Rett syndrome.²⁵ More recently, an Australian focus group study showed parental concerns about the safety of topical corticosteroids come from many sources, not only pharmacists, family, complementary and alternative medicine (CAM) practitioners and online information, but also their GPs. 15 Interestingly, this study showed a possible link between a fear of using topical corticosteroids and a preference for CAM. Parents, who often have a poor understanding of, and guilt-driven emotional resistance to, the genetic basis of pAD, frequently pursue 'cures' that CAM purports to provide. Furthermore, this research revealed that parents sometimes experienced difficulty in convincing their GPs to refer their child to a dermatologist.

GPs are aware that poor adherence is a cause of treatment failure. However, when GPs instruct parents on short time limits and minimal volume application of topical corticosteroids in this chronic skin disease, or warn about skin atrophy, they may unintentionally convey a risk message about side effects that confirms parents' misunderstanding of the nature and treatment of chronic skin disease.26

Our group has shown that the word 'sparingly', routinely printed on topical corticosteroid labels by pharmacists even when not written on prescriptions, has a negative impact on patients' perceptions of topical corticosteroid safety.²⁶ In this study, the concept of sparing application was also embraced by a substantial number of GPs. Negative risk messages have a greater impact and are more powerfully recalled than positive ones, and a warning that is casually mentioned by a GP may have a profound effect on a parent, particularly when this is reinforced by misinformation found on the internet.26

In the crowded undergraduate curriculum of medical schools, dermatology education tends to be kept to a minimum. In general practice, at least 10% of daily consultations relate to the skin. GPs receive further

training at the postgraduate level, but less than half of this is delivered by dermatologists, who have hands-on experience and confidence in using topical corticosteroids. It is interesting that younger GPs in our cohort are more cautious than older ones. This may

Table 4. General practitioners'
non-compliance responses

	n (%)
An insignificant problem as	
patients with eczema use	
their medication:	
 Strongly disagree 	44 (17.1)
Disagree	126 (48.8)
 Neutral 	41 (15.9)
• Agree	40 (15.5)
 Strongly agree 	6 (2.3)
Missing	0
Impossible to prevent:	
 Strongly disagree 	37 (14.3)
 Disagree 	129 (50.0)
 Neutral 	56 (21.7)
 Agree 	32 (12.4)
 Strongly agree 	3 (1.2)
 Missing 	0
A major reason patients	
with atopic dermatitis fail to	
get better:	
 Strongly disagree 	8 (3.1)
 Disagree 	35 (13.6)
 Neutral 	43 (16.7)
• Agree	148 (57.4)
 Strongly agree 	23 (8.9)
Missing	0
A more significant problem	
with oral agents:	
 Strongly disagree 	13 (5.0)
 Disagree 	87 (33.7)
 Neutral 	88 (34.1)
• Agree	60 (23.3)
 Strongly agree 	9 (3.5)
Missing	0
A poor excuse for	
ineffective drug treatment:	
Strongly disagree	13 (5.0)
 Disagree 	68 (26.4)
 Neutral 	78 (30.2)
• Agree	81 (31.4)
 Strongly agree 	17 (6.6)
 Missing 	0

reflect changes in medical teaching and lack of personal experience.

Research from our group shows that misinformation offered by pharmacists in Australia has a major impact on perceptions of topical corticosteroid safety and also reveals that pharmacists are the most influential group contributing to topical corticosteroid phobia. 15 This study presents further investigations indicating that GPs can have a similar, if somewhat less negative, attitude to the use of topical corticosteroids. Ultimately, this suggests that it is important that both groups require an evidence-based update on this subject to ensure the best outcomes for patients. With a view to clarify the safety and efficacy of topical corticosteroids, a consensus statement by Fellows of the Australasian College of Dermatologists regarding the side effects of topical corticosteroids has recently been published.16

Evidence shows appropriate use of topical corticosteroids in treatment of pAD does not result in skin atrophy. 19 In terms of treatment duration, it is important that GPs recognise that inflammatory skin diseases, which are usually chronic, require ongoing topical corticosteroid treatment that cannot be time-limited. Currently, pharmacists and GPs appear to be unwittingly contributing to topical corticosteroid phobia, which in turn results in treatment failure. In terms of health economics, increased confidence at the GP level in the appropriate use of topical corticosteroids would relieve the burden on dermatology services and empower GPs to successfully manage pAD.

There are potential limitations to this study, given this is a sample of GPs who were participating in CPD activities. This may mean that the participant GPs were attempting to upskill in an area in which they felt deficient, which might mean the results overstate the issue at hand. Conversely, the results may understate the issue at hand with GPs who do not actively participate in regular CPD activities in the area of dermatology. Another limitation is the practical nature of survey-based

research, which limits a broader diversity of potential answers. A further potential limitation is that while this study explored the management of pAD, it is possible that a child's age (in addition to the site and severity of the atopic dermatitis) may also affect the maximum strength of a topical corticosteroid that a GP will prescribe.

Implications for general practice

There may be education gaps in Australian GPs' knowledge of the use and safety profile of topical corticosteroids in pAD. This may contribute to exaggerated risk messaging that reinforces misinformation parents/patients currently receive about use and safety of topical corticosteroids from numerous sources. In turn, this can directly affect treatment adherence, which is the key to good outcomes. Targeted education, especially in general practice journals and CPD conferences, is needed to enable successful management of pAD in general practice.

For further reading about the clinical management of pAD, please refer to an article by Page, Weston and Loh, published in Australian Family Physician.27

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