

**Assessing healthcare professional's knowledge and understanding of pruritus management in atopic eczema**

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**Abstract**

**Background**

Pruritus is the cardinal symptom of atopic eczema yet little is currently known about healthcare professional's knowledge and understanding of the causes and more importantly, management of this bothersome symptom.

### **Aim**

The present study sought to gain a better understanding of pruritus knowledge among primary care practitioners including general practitioners (GPs), nurses and pharmacists.

### **Methods**

An anonymous self-completion questionnaire containing 11 items, with scores ranging from 0 to 14, was created by the author using Survey Monkey® Inc. and disseminated nationally to primary care sites via research and development departments. The survey was initially piloted with one GP, a practice-based nurse and pharmacist, which revealed no problems. Participant data were analysed descriptively, and mean scores were reported with 95% confidence intervals.

### **Results**

A total of 383 completed questionnaires were available for analysis. The majority of respondents were GPs (80.2%), followed by nurses (13.3%) and practice-based clinical pharmacists (3.4%). The remaining participants (3.1%) included paramedics, physician associates, and pharmacy technicians. Overall, respondents had been qualified for a mean of 16.6 years (95% CI 15.5 – 17.7) ranging from 6 months to 41 years. The overall mean score was 5.97 (95% CI 5.70 – 6.24), and adjustment for potential covariates had no significant effect on each group's mean score,  $F(3, 218) = 1.39, p = 0.245$ .

### **Conclusion**

Overall knowledge of pruritus was low across the different healthcare professions. Better training in the management of pruritus associated with atopic eczema is needed to ensure the best possible outcomes for patients with the condition.

Keywords: Pruritus, primary care practitioners, atopic eczema, knowledge, survey

Word Count: 1886

### **Summary**

Pruritus is the most troublesome symptom of atopic eczema, and adequate understanding of its cause and management ensures that patients receive appropriate treatment to relieve this symptom. However, little is known about healthcare experience professionals' understanding and knowledge of the factors accountable for pruritus and, more importantly, how they would manage the symptoms. The present study sought to assess healthcare professional's knowledge of the management of pruritus in patients with atopic eczema. An anonymous self-completion questionnaire containing 14 items was created with a possible maximum score of 12. All healthcare professional groups scored no more than 50%, and these scores did not change after

adjustment for potential confounders. The study highlights the need for further training on pruritis management among primary healthcare professionals.

## **Introduction**

Pruritus is defined as '*an unpleasant sensation that provokes the desire to scratch.*'<sup>1</sup> It is a common dermatological manifestation and a symptom in atopic eczema (AE), psoriasis, symptoms in atopic eczema (AE), psoriasis, and scabies. a survey of 304 patients with AE found that 91% reported experiencing pruritus at least once daily.<sup>2</sup> While the precise cause of pruritus remains uncertain, it will likely involve several endogenous mediators. In patients with AE, a known pruritogen is histamine, which interacts with two cutaneous receptors: H<sub>1</sub> and H<sub>2</sub>. Activation of the H<sub>1</sub> receptor is thought to contribute towards the development of pruritus, whereas H<sub>2</sub> plays a role in the skin's barrier function.<sup>3</sup> While the role of histamine in the generation of pruritus in AE is unknown, the mediator has some role, as witnessed in dietary studies. For example, when patients received a histamine-rich diet, there was a worsening of AE symptoms.<sup>4</sup> In contrast, the adoption of a histamine-free diet improved disease severity.<sup>5</sup> Despite these findings, oral antihistamines are recognized as having a limited role in the management of the pruritis associated with atopic eczema.<sup>6</sup> Nevertheless, when used topically, anti-histaminic drugs, such as doxepin, provide symptomatic relief.<sup>7,8</sup> Furthermore, the combination of topical doxepin and hydrocortisone provides a synergistic effect, reducing mean pruritus scores within 24 hours.<sup>9</sup>

To date, little is known about primary care practitioner's understanding of pruritus management in atopic eczema. Gathering such information enables the identification of knowledge gaps and allows for the tailoring of future educational initiatives to improve the primary care management of patients with atopic eczema-related pruritus.

The present study therefore sought to gain better understand primary care practitioner's knowledge of the management of the pruritis associated with atopic eczema.

## **Methods**

A self-completion questionnaire was developed by the author with input from colleagues at Rotherham Doncaster and South Humber NHS trust and made available using the on-line platform, Survey Monkey® Inc (box). A total of 11 questions were used although one question required four correct answers, hence scores ranged from 0 to a maximum of 14. The questionnaire was initially piloted with one health professional from each of the main groups (i.e., GP, nurse, pharmacist) which revealed no problems. The study received only Health Research Authority approval (21/HRA/2975) rather than ethical approval, which is not required for such work.

A purposive sampling approach was adopted to reach a large and diverse sample of healthcare professionals. This was achieved through dissemination of the questionnaire together with a letter of invite, an online consent form and a participant information sheet, to all 15 national Clinical Research Networks in England which enabled their delivery teams to distribute the survey link to individual primary care sites.

## **Data analysis**

All of the data from Survey Monkey® Inc. were exported to an MS Excel spreadsheet and then imported to and analysed with SPSS [Version 28.0.].

Participant data were analysed descriptively, and mean scores were reported with 95% confidence intervals. The total mean scores for the different healthcare professional groups were adjusted for potential covariates, including experience, completion of post-graduate training in dermatology, and gender.

## **Results**

### **Participant demographics**

A total of 383 completed questionnaires were available for analysis. Determining the overall response rate was impossible since the total number of links distributed was not available from all research networks. The sample had slightly more female (59.8%) than male respondents and the majority of respondents were GPs (80.2%), followed by nurses (13.3%) and practice-based clinical pharmacists (3.4%). The remaining participants (3.1%) included paramedics, physician associates, and pharmacy technicians. Overall, respondents had been qualified for a mean of 16.6 years (95% CI 15.5 – 17.7) ranging from 6 months to 41 years. Additionally, only a third of respondents (33.2%) stated that they had undertaken further post-graduate training in dermatology, with the most common type of training being an educational event (63.4%) or an online training module (30.4%). A small number of respondents (4.4%) had undertaken a diploma in dermatology.

### **Overall scores**

Across the entire cohort, the mean score was 5.97 (95% CI 5.70 – 6.24), ranging from 0 to 12. The mean scores were adjusted for experience (based on reported years of being qualified), gender, and further post-graduate training in dermatology. Preliminary checks revealed no evidence of a significant correlation between the three covariates (all Pearson correlation values were non-significant). Similarly, there was no evidence of a significant interaction between healthcare role and years qualified (interaction  $p = 0.605$ ), gender (interaction  $p = 0.838$ ), and post-graduate training in dermatology (interaction  $p = 0.077$ ).

The adjusted mean scores for the three main healthcare professionals are shown in Table 1 and in figure 1. A one-way between-groups analysis of variance showed no significant difference between healthcare professional group mean scores,  $F(11, 371) = 1.19$ ,  $p = 0.29$ . Similarly, adjustment for each covariate had no significant effect on mean scores for each of the healthcare professional groups,  $F(3, 218) = 1.39$ ,  $p = 0.245$ .

The proportion of respondents from each healthcare group who correctly answered each question is shown in Table 2.

### **Eczema and pruritus**

Pruritus is the cardinal symptom of atopic eczema and hence the absence of this symptom would make a diagnosis of AE unlikely. However as shown in table 2 (question 3), only 37.1%

of GPs and a similar proportion of nurses, were able to recognise this important fact. Fortunately, as seen for question 4 in table 2, the majority of respondents were able to correctly identify possible triggers for the disease.

Question 5 asked respondents to estimate the extent to which pruritus is experienced on a daily basis by those with AE. The question was based on US data from the National Eczema Association,<sup>10</sup> the purpose was to assess whether healthcare professionals, had a sense of the extent to which pruritus affected those with AE. As can be seen from Table 2 (question 5), respondents significantly underestimated the extent to which daily pruritus was experienced, with less than a third (27.3%) of GPs and only 13.7% of nurses, correctly identifying that more than 71% of patients experienced pruritus on a daily basis. Similarly, just over a third (34.7%) of respondents were able to identify the proportion of patients experiencing sleep-related disturbances from AE (question 6).

Although the majority (91.1%) of respondents identified that histamine has been detected in eczematous skin (question 8), for question 9, less than half (42.5%) were aware that doxepin was an anti-histaminic agent, with 31.9% believing that pimecrolimus exerted an anti-histaminic action. Furthermore, in question 10, only a third (32.5%) of GPs and even less nurses (17.6%) and pharmacists (15.3%), were able to identify that diphenhydramine (despite being an antihistamine) was unable to reduce pruritus in atopic eczema. Finally, less than a quarter (19%) of all respondents were aware that topical doxepin has been shown to reduce pruritus in 75% of patients in as little as 15 minutes.

### **Topical steroid potency**

Question 7 assessed respondents' knowledge of topical steroid potencies. In total, 94.3% of all respondents were able to correctly recognise that hydrocortisone 1% was a mild potency topical steroid. In contrast, only 42.8% were aware that despite having a higher concentration, hydrocortisone 2.5% still also categorised a mild potency topical steroid. In fact, just over half (51.1%) of GPs and nurses (50.9%), incorrectly categorised hydrocortisone 2.5% as a moderate potency steroid, whereas only around a quarter (23%) of pharmacists mis-categorised the drug as moderately potent.

The same question also included two other topical steroids: betamethasone 0.025% and hydrocortisone butyrate 0.1%. Overall, 62.9% of all respondents correctly identified that betamethasone was a moderate potency steroid but only 36.3% accurately identify that hydrocortisone butyrate was potent topical steroids. More than two-thirds of GPs (68.4%) and pharmacists (69.2%) and a third (33.3%) of nurses correctly classified betamethasone 0.025% was a moderate potency topical steroid.

## **Discussion**

### **Key findings**

There are several significant findings from this study. First, overall knowledge of pruritus and its management among healthcare professionals was generally low, with only just over a third (35%) being able to identify that the cardinal diagnostic symptom of atopic eczema was

pruritus. Second, knowledge of topical steroid potencies was inadequate, with less than half (42%) being able to correctly identify that hydrocortisone 2.5% was a mild potent steroid. Finally, there was a general lack of awareness that topical doxepin has a fast onset of action against pruritus.

The responses to questions 5 and 6 also revealed a low proportion of respondents able to answer both questions correctly. While respondents were unlikely to be familiar with the precise estimates, this lack of awareness may reflect how in practice, healthcare professionals fail to appreciate the impact of pruritus and ultimately its management fully. Equally concerning were the findings from question 7 related to an understanding of topical steroid potencies, which potentially raises safety concerns over the prescribing of these agents in practice. While there appears to be limited information available on healthcare professional's understanding of topical steroid use, where such evidence does exist, it highlights gaps in their knowledge. For example, one study of community pharmacists concluded that pharmacists have some knowledge gaps on the use and safety of these drugs in patients with atopic eczema.<sup>11</sup> However, healthcare professional knowledge gaps may impact patient understanding and potentially contribute to steroid phobia. One focus group study for instance, found that among 16 parents of children with a skin problem that required the use of topical steroids, 44% stated that pharmacists had advised them that topical steroids were dangerous.<sup>12</sup> In addition, other work serves only to confirm how the risk of steroid phobia may be related to pharmacists' lack of knowledge on these.<sup>13</sup> Nevertheless, inadequate topical steroid knowledge has also been observed among medical practitioners. In a study of 420 primary care physicians, the mean knowledge score on topical steroids was 17.1 out of a possible 30.<sup>14</sup> Moreover, a further research supports this view, in which only 24.5% of medical practitioners were aware of the potencies of topical steroids.<sup>15</sup>

There is an urgent need to improve the knowledge of primary care practitioners on the most effective treatments to manage pruritus. Perhaps the lack of awareness of other effective, topical anti-pruritic agents such as doxepin has arisen due to the reported adverse effects of the drug and how the product is not widely licensed. For example, in the European consensus guidelines for treating atopic eczema in adults and children,<sup>16</sup> the authors mention that while topical doxepin is effective, it is not licensed in Europe due to the increased risk of contact allergy, significantly when treatment exceeds eight days. Moreover, the exclusion of the drug from national atopic eczema treatment guidelines means that patients are unlikely to be prescribed the drug, especially with acknowledged adverse effects such as drowsiness<sup>7</sup> and allergic contact dermatitis<sup>17</sup>.

## **Conclusion**

The current study has highlighted limited knowledge among primary care health professionals on managing pruritus in patients with atopic eczema. Furthermore, this lack of knowledge may impact on the provision of adequate treatments to control this symptom and its associated negative impact on quality of life. Although longer-term use of topical anti-pruritic agents such as doxepin may give rise to unwanted side effects, short-term bursts are likely to provide fast-

acting and effective relief of this most troublesome symptom and improve patient's quality of life.

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**Table 1 Adjusted total mean scores for healthcare profession groups**

Healthcare role	Adjusted mean score*	95% CI interval
GP	6.08	5.69 – 6.48
Pharmacist	5.74	4.09 – 7.39
nurse	5.03	4.02 – 6.03
other	6.67	4.83 – 8.52

\*Adjusted for gender, years qualified and undertaking post-graduate dermatology training

**Table 2 Proportion of respondents for each healthcare group providing the correct answer (excluding question 7)**

Question	Proportion (%) of respondents answering correctly		
	GPs	Nurses	Pharmacists
1	77.0	65.0	54.0
2	17.2	9.8	23.0
3	37.1	27.4	38.4
4	94.1	96.0	84.6
5	27.3	13.7	38.4
6	33.8	33.3	61.5
8	90.5	96.0	92.3
9	43.9	33.3	53.8
10	32.5	17.6	15.3
11	16.9	21.5	23.0

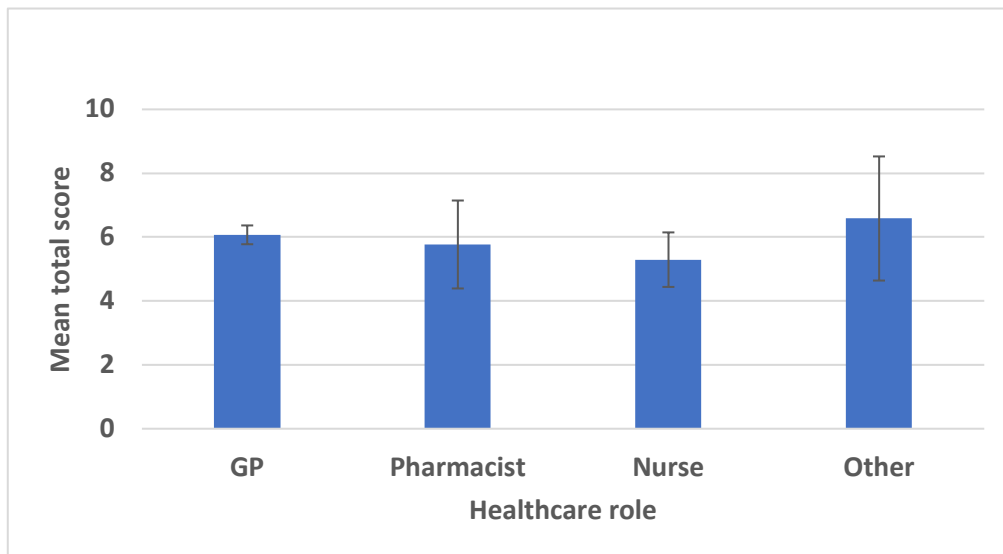


Figure 1

Adjusted mean scores for healthcare professionals (n = 383)

Questions asked

Answers

Q1 b, Q2 a, Q3 c, Q4 d, Q5 d, Q6 b, Q7 mild, mild, potent, potent, Q8 true, Q9 c, Q10 b

Q1 Answer B – see [clinical knowledge summaries](#)

Q2 Answer a – see [clinical knowledge summaries](#)

Q3 Answer c - see [clinical knowledge summaries](#)

Q4 Answer: D see [patient UK](#)

Q5 Answer d - based on statistics from the [National eczema association](#)

Q6 Answer b see [National eczema association](#)

Q7 mild, mild, moderate, potent

Q8 True – [see reference](#)

Q9 Answer B see [reference](#)

Q10 Answer – C see guidelines on the management of [atopic eczema](#)

Q11 Answer B see [Cochrane summary](#)

1. Which of the following is the best description of atopic eczema (AE)?
  - a) A chronic, inflammatory skin condition
  - b) A chronic, itchy, inflammatory skin condition affecting people of all ages but most frequently children
  - c) A chronic skin condition that causes widespread and persistent thick, dry, "fish-scale" skin
  - d) A chronic skin condition that causes red, flaky, crusty patches of skin covered with silvery scales
  
2. What proportion of the adult population in the UK suffers with AE?
  - a) 0 – 10%
  - b) 10 – 20%
  - c) 20 – 50%
  - d) >50%
  
3. A diagnosis of AE is unlikely when which of the following symptoms are absent?
  - a) Skin dryness
  - b) Inflammation
  - c) Pruritus
  - d) Lack of sleep
  
4. Which of the following are known triggers for AE?
  - a) Wool clothing
  - b) Sweating
  - c) Extremes of temperature
  - d) All of the above
  
5. What proportion of patients with AE have reported experiencing pruritus on a daily basis?
  - a) 10%- 20%
  - b) 20 – 40%
  - c) 40 – 70%
  - d) >70%
  
6. What proportion of adults with AE have reported experiencing sleep-related issues?
  - a) <15%
  - b) 15 – 30%
  - c) 30 – 45%
  - d) > 45%
  
7. Topical steroids used in AE are classified in terms of their potency as either mild, moderate, potent or very potent. Match the following steroids to their potency.
 

a) Hydrocortisone 1%	mild	moderate	potent	very potent
b) Hydrocortisone 2.5%	mild	moderate	potent	very potent
c) Betamethasone 0.025%	Mild	Moderate	Potent	very potent
d) Hydrocortisone butyrate 0.1%	mild	moderate	potent	very potent
  
8. Increased levels of histamine have been found in eczematous skin lesions
 

	True	False
9. Which of the following topical therapies contains an antihistaminic agent?		
a) Hydrocortisone		
b) Doxepin		
c) Oat-based emollients		
d) Pimecrolimus		
  
10. Which one of the following *topical* therapies has **not** been shown to reduce the frequency of pruritus in patients with AE?
  - a) Emollients
  - b) Calcineurin inhibitors
  - c) Diphenhydramine
  - d) Doxepin
  
11. Which of the topical anti-pruritic treatments has been shown to reduce pruritus in 75% of patients within 15 minutes of application?
  - a) Diphenhydramine
  - b) Doxepin
  - c) Pimecrolimus
  - d) Hydrocortisone 1 %