SelfCare
Advancing the study & understanding of self-care

ARTICLE

SelfCare 2024;14(1):1-8

PHARMACIST-LED EDUCATIONAL INTERVENTION FOR THE PARENTS OF CHILDREN WITH ATOPIC ECZEMA: A PRELIMINARY STUDY

ROD TUCKER
Rotherham Doncaster & South Humber NHS Trust

Key words: Atopic eczema, practice-based pharmacists, educational intervention, children

ABSTRACT

BACKGROUND: Lack of patient education is a potential cause of therapeutic failure in atopic eczema. This could be addressed through the delivery of educational support to the parents of children with eczema by practice-based pharmacists.

OBJECTIVES: The present study examined whether an educational intervention by practice-based pharmacists improved both parental knowledge of atopic eczema management and disease-related outcomes.

METHODS: Parents of children with eczema received a single consultation and one follow-up appointment approximately four weeks later, with a practice-based pharmacist. Disease severity was assessed using the Patient-Oriented Eczema Measure (POEM) and parental knowledge with the modified Person-Centred Dermatology Self-Care Index (PEDESI). The primary outcome was the change from baseline in the POEM score and the secondary outcome the corresponding change in PEDESI scores.

RESULTS: A total of 52 children with a mean age of 39.8 months (46.3% girls) were recruited. All 52 provided baseline, and 27 provided follow-up POEM scores. Baseline and follow-up PEDESI scores were available for 35 and 24 parents respectively. The mean POEM score was 11.37 (95% CI 8.71 – 14.02) at baseline and 9.92 (95% CI 7.10 - 12.76) at follow-up, representing a non-significant reduction ($p = 0.092$). The mean baseline PEDESI score was 17.31 (95% CI 15.29 - 19.33) and significantly increased to 26.48 (95% CI 24.92 – 28.03) at follow-up ($p < 0.001$).

CONCLUSION: Despite a non-significant decrease in POEM score, parental knowledge of eczema management improved significantly, warranting further studies with a large patient/parent cohort to better understand the value of educational support delivered by practice-based pharmacists.

INTRODUCTION

Atopic eczema (AE) is a chronic, inflammatory, relapsing-remitting skin conditions that affects approximately 20% of children, with half developing symptoms within the first year of life and 95% experiencing onset before five years of age[1]. The cornerstone of AE management is the regular use of emollients, with topical corticosteroids (steroids) reserved for the treatment of a disease flare[2]. Nevertheless, research suggests that a major cause of therapeutic failure is not the actual treatments themselves, but poor adherence, arising from a number of factors including a lack of understanding of how products should be used together with the observation that topical application is too time-consuming[3]. Additional barriers to effective management identified in the qualitative literature include parental frustration with both medical care and prescribed treatments. For instance, there is a perception among parents or carers, that their child's disease is not taken seriously and that they felt 'fobbed off'[4]. Other studies highlight a sense of exasperation among parents, in that they received insufficient information to help manage their child's condition more effectively[5,6]. The provision of educational advice and support directed at the parents or carers of children with AE is viewed as positively influencing the strategy of long-term use of emollients in the management of the disease, despite the 'trial and error' approach adopted by healthcare professionals to identify suitable formulations[7]. Moreover, a systematic review of randomised controlled trials involving educational interventions to parents, reported statistically significant reductions in disease severity[8], highlighting the value of such educational support. While such support can be delivered by different healthcare professionals, there is limited information on the impact of pharmacists as a source of educational advice. In one study, published only as an abstract, Tinker *et al*[9] described how pharmacists were able to identify over 1,500 issues in 225 patients with AE, the majority of which were verbal in nature. In a pilot study of an educational intervention by community pharmacists stressing the importance of emollient use in AE, Carr *et al*[10] reported a small, but statistically significant reduction in itch and irritability but no change in either sleep disturbance, or the visual appearance of the skin. More recently, Cheong *et al*[11] demonstrated how pharmacist-led eczema counselling had a positive impact on caregiver's knowledge about the condition. However, a systematic review examining the practices and perceptions of community pharmacists in the management of atopic dermatitis (eczema) identified a gap between patient's need in practice and the level of dermatological advice provided by community pharmacists[12].

In the UK, NHS England supports the further development of pharmacists working within general practice[13] to help improve patient care. As the purported experts in medicines, these practice-based pharmacists have a potentially valuable role in helping to support the parents and carers of children with AE improve disease outcomes through improved use of medicines, yet to date, such a role has not been explored.

The aim of the current study was therefore to determine the impact of an educational intervention

delivered by practice-based pharmacists to the parents/carers of children with AE, on disease severity and parental knowledge of disease management.

MATERIALS AND METHOD

The study employed a matched paired design to compare differences in eczema disease severity following an educational intervention conducted in a general practice setting with a clinical pharmacist. Since half of children who develop eczema experience the onset of symptoms within the first year of life and by the age of five years, 95% will be symptomatic[1], inclusion was restricted to children aged between six months and six years. Additionally, all children were required to have had a diagnosis of atopic eczema made by a GP or an appropriately qualified health care professional recorded in their medical notes and were currently prescribed (i.e., prescriptions issued with the previous 6 months), one or more of the following:

- Any emollient products e.g., creams, ointments, bathing products, etc.
- Topical steroids
- Topical immunomodulators

Due to a lack of funding, parents/carers of children without adequate spoken and written English, as determined by the pharmacist, were excluded. Since children who were under the care of a dermatologist or other dermatology specialist, or in receipt of either oral treatment or phototherapy available through specialists, were more likely to have received educational advice, this group was also excluded. Those attending a nurse-led eczema clinic were excluded for the same reason.

Eczema disease severity was assessed by the parent/carer at baseline using the Patient-Oriented Eczema Measure (POEM)[14], which is a validated patient tool for measuring atopic eczema disease severity, ranging of 0 to 30, with higher scores indicative of more severe disease. For example, a POEM score of between 8 and 16 indicates moderate disease severity.

Parental knowledge and understanding of atopic eczema was evaluated using the Person-Centred Dermatology Self-Care Index (PEDESI)[15], a valid and reliable clinically practical tool for assessing the educational and support needs of patients with long-term skin conditions. As with POEM, the PEDESI score ranges from 0 to 30, with for example, a score of between 11 and 20, indicating that some education and support are required to develop, knowledge, ability and confidence. In addition to POEM and PEDESI, parents/carers were asked to complete two questionnaires, one detailing the areas of the body affected by their child's atopic eczema and another asking about any changes to management following the pharmacist consultation.

Recruitment of participants was undertaken on-line and through contact with the parent/carer of the child. The parent/carers received a letter of invitation and consent form, together with an electronic copy of both the POEM and PEDESI forms.

Pharmacist consultations

Parents/carers had two consultations with the practice-based pharmacist: an initial consultation and one follow-up appointment approximately four weeks later. The initial consultation allowed the pharmacist to discuss with the parent/carer, their child's POEM score and used the PEDESI tool as a consultation guide. PEDESI comprises a series of ten questions assessing parents/carers understanding of atopic eczema, triggers, use of treatments and scores each of these items separately from 0 (no understanding) to 3 (full understanding). The scores for each question are summed to provide an overall score that reflects parental/carers' level of understanding of eczema and its management, with higher scores reflecting a greater level of knowledge and understanding. Using the answers given the pharmacist is then able to individualise the educational advice provided to parents/carers.

The second appointment provides an opportunity for the pharmacists to re-assess the POEM and PEDESI scores and offer any additional information or advice as needed.

All the participating pharmacists attended an online training session providing a refresher on atopic eczema and its management, together with an explanation on completion of the study paperwork and any relevant advice to share with parents/carers to help facilitate effective self-care of their child's atopic eczema.

NHS and HRA approvals for the study were provided by Cambridge and Hertfordshire Research Ethics Committee (20/EE/0132).

Statistical analysis

The minimal clinically significant difference (MCSD) for the POEM score has been estimated as 3.0[16]. A power calculation was performed with G-Power 3.1, based on a two-tailed test, with the power set at 95% and designed to detect an MCSD of 3. This required a total sample size of 54 participants and allowing for a 10% drop-out rate, the required sample size was set at 60. Analysis was performed using SPSS (version 28, SPSS Inc., Cary) with differences between baseline and follow-up POEM and PEDESI scores assessed using paired t-tests with statistical significance set at $p < 0.05$.

The primary outcome was the change from baseline in the POEM score after 4 weeks. The main secondary outcome was the change in PEDESI scores. Areas of skin affected by eczema and changes to management following the pharmacist consultation were analysed descriptively.

RESULTS

Patient characteristics

A total of 8 GP practices recruited a total of 52 children (46.3% female) with a mean age of 39.84 (95% CI 34.03 – 45.65) months. In total, baseline POEM scores were available for all 52 children but only 27 follow-up scores were provided. Overall, 61.8% of parents/carers reported that their

child's eczema had begun between the ages of 0 to 6 months and for 27.3%, this occurred between the ages of 7 months and 1 year. The remainder experienced eczema onset after 1 year of age. The most commonly affected areas of skin were the knees and face (45.5% in both cases), followed by the back (41.8%) as shown in Table 1.

Currently used treatments included emollients alone (49.1%), followed by emollients with a topical steroid (34.5%) although a small proportion (5.5%) reported that they predominately used emollients and occasionally, topical steroids.

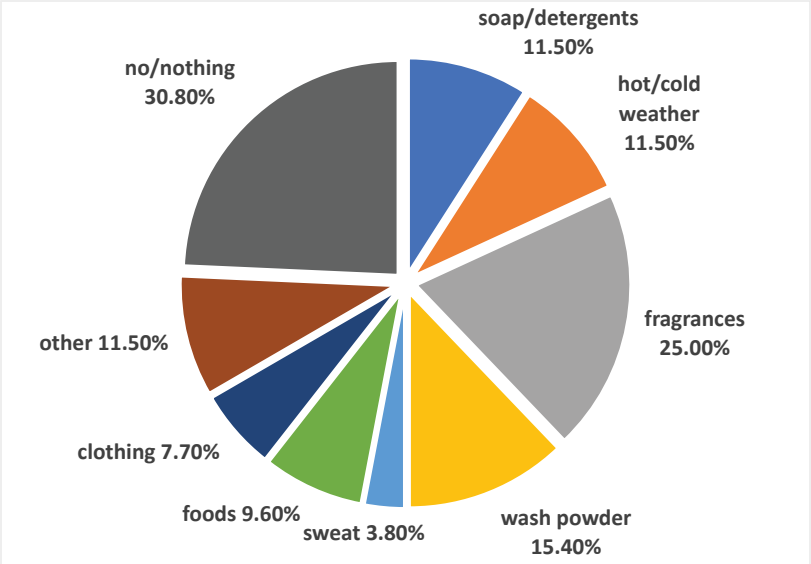
Table 1 Areas of skin affected by atopic eczema

Areas affected by eczema	% of cases*
knees	45.5%
other	25.5%
back	41.8%
legs	27.3%
face	45.5%
arms	23.6%
head	32.7%
trunk/chest	21.8%
hands	23.6%
Elbow creases	7.3%

*Note that figures are greater than 100% because respondents could give more than one response

Parent/carer reported factors that worsened their child's eczema are shown in Figure 1.

Figure 1: Parent reported factors worsening eczema



Note figures exceed 100% as parents could give more than one answer

Primary outcome

The mean number of days between the initial and follow-up consultations was 28.9 (95% CI 25.4 – 32.5). The mean baseline POEM score was 11.37 (95% CI 8.71 – 14.02), whereas the mean follow-up POEM score 9.92 (95% CI 7.09 – 12.76). This mean difference of 1.44 (95% CI -0.26 to 3.14) was not statistically significant ($p = 0.093$) and was below the MCSD of 3. There were no significant gender differences for both the baseline and follow-up POEM scores.

Secondary outcome

A baseline PEDESI score was available for 35 of the children with a mean value of 17.31 (95% CI 15.29 – 19.33). Follow-up data were available for 24 children for whom the mean score was 26.48 (95% CI 24.92 – 28.03), which according to the scores, suggests patients require limited education and support. The mean difference in scores was 10.12 which was statistically significant ($p < 0.001$) with 25.7% of parents/carers scoring 30 (i.e., complete and full ability for all questions) at the follow-up. As with POEM scores, there were no significant gender differences in baseline and follow-up PEDESI scores.

Following the pharmacist intervention, 25 parents/carers completed the follow-up questionnaire, of whom 16 reported greater use of emollients. This suggests that the educational intervention improved parent's knowledge and encouraged a positive change in behaviour, which would be beneficial to disease management if continued in the future.

DISCUSSION

The present study examined the impact of an individually tailored, educational intervention, delivered by clinical practice-based pharmacists to the parents of young children with eczema, on disease severity. A secondary aim was to determine whether the educational intervention led to improvements in knowledge and understanding of disease management among parents.

The results showed that while disease severity, based on the POEM score did reduce following the educational intervention, this change did not reach the minimally clinically significant difference of 3 points for this scale and was not statistically significant. In contrast, there was a significant increase in parental knowledge and understanding of the management of their child's eczema, based on the change in PEDESI score, indicating effective knowledge transference and possibly implying that the training sessions improved patient/carer's understanding of atopic eczema and its management.

Since the current study appears to be unique, it has not been possible to make any comparisons with existing data. To date, two studies in community pharmacy[9,10] have suggested that pharmacist input improves the care of those with skin problems. Furthermore, there appears to be one study that adopted a similar methodology to the current investigation but which focused on psoriasis management[17]. Despite this, several studies suggest that pharmacist's knowledge of dermatology is inadequate but can be improved through training[18,19].

An important limitation of the current study is the high drop-out rate by patients leading to the lack of a complete follow-up dataset, which means that the findings need to treated with some degree of caution. Nonetheless, the study does show that it is possible for practice-based pharmacists to provide educational advice and support to the parents/carers of children with atopic eczema.

CONCLUSION

In the present study, educational advice and support to the parents/carers of children with atopic eczema, failed to deliver a clinically meaningful improvement in disease severity. However, there was effective knowledge transfer as shown by a significant increase in PEDESI scores at the follow-up appointment. Further studies using a larger patient cohort and longer follow-up, are required to better understand whether such educational interventions by practice-based pharmacists enable better disease management and reduce the need for primary care consultations.

Acknowledgement: The study was funded by an unrestricted educational grant provided by Fontus Health

Correspondence to: Rod Tucker, BPharm, PhD, Rotherham Doncaster & South Humber NHS Trust, Woodfield House, Tickhill Road Site, Weston Road, Balby, Doncaster, DN4 8QN. email: rodtucker.tucker@gmail.com

REFERENCES

1. Thomsen S. Epidemiology and natural history of atopic diseases. Eur Clin Respir J. 2015;2. doi: 10.3402/ecrj.v2.24642
2. NICE. Atopic eczema in under 12s: diagnosis and management 2007 [Available from: https://www.nice.org.uk/guidance/cg57 Accessed October 2023]
3. Beattie PE L-JM. A comparative study of impairment of quality of life in children with skin disease and children with other chronic childhood diseases. Br J Dermatol. 2006;155(1):145 - 51.
4. Santer M, Burgess H., Yardley L et al. Experiences of carers managing childhood eczema and their views on its treatment: a qualitative study. Br J Gen Pract. 2012;62(597):e261-67.
5. Gore C JR, Caress AL et al. The information needs and preferred roles in treatment decision-making of parents caring for infants with atopic dermatitis: a qualitative study. Allergy. 2005;60(7):938 - 43.
6. Noerreslet M JG, Traulsen JM. Involuntary autonomy: patients' perceptions of physicians, conventional medicines and risks in the management of atopic dermatitis. Soc Sci Med. 2009;69(9):1409 - 15.
7. Santer M, Muller I, Yardley L, Lewis-Jones S, Ersser S, Little P. Parents' and carers' views about emollients for childhood eczema: qualitative interview study. BMJ Open. 2016;6(8). 10.1136/bmjopen-2016-011887
8. Ersser SJ CF, Latter S et al. . Psychological and educational interventions for atopic eczema in children. Cochrane Database Syst Rev. 2014. doi: 10.1002/14651858.CD004054.pub3.
9. Tinkler C HD, Holden M et al. . Investigating the contribution of community pharmacists in meeting the needs of patients with atopic eczema, in collaboration with GPs. Int J Pharm Pract. 2005;13.

10. Carr A, Patel R, Jones M et al. . A pilot study of a community pharmacist intervention to promote the effective use of emollients in childhood. Pharm J. 2007;278:319 - 22.

11. Cheong JYV, Hie SL, Koh EW, de Souza NNA, Koh MJ. Impact of pharmacists' counseling on caregiver's knowledge in the management of pediatric atopic dermatitis. Pediatr Dermatol. 2019;36(1):105-9. 10.1111/pde.13708

12. Cayci AB, Rathbone AP, Lindsey L. Practices and Perceptions of Community Pharmacists in the Management of Atopic Dermatitis: A Systematic Review and Thematic Synthesis. Healthcare (Basel). 2023;11(15). 10.3390/healthcare11152159

13. NHS England. Clinical pharmacists 2015 [Available from: https://www.england.nhs.uk/gp/expanding-our-workforce/cp-gp/ Accessed October 2023]

14. Charman CR VA, Williams HC. The Patient-Oriented Eczema Measure. Arch Dermatol. 2004;140:1513 - 9.

15. Cowdell F ES, Gradwell C et al. The Person-Centered Dermatology Self-Care Index: a tool to measure education and support needs of patients with long-term skin conditions. Arch Dermatol. 2012;148(11):1251 - 55.

16. Gaunt D, Metcalfe C, Ridd M. The Patient-Oriented Eczema Measure in young children: responsiveness and minimal clinically important difference. Allergy. 2016;71(11):1620 -25.

17. Tucker R, Stewart,D. The role of community pharmacists in supporting self-management in patients with psoriasis. In J Pharm Pract. 2017;2:140 - 6.

18. Smith S, Lee A, Blaszczynski A et al. Pharmacists' knowledge about use of topical corticosteroids in atopic dermatitis: Pre and post continuing professional development education. Australas J Dermatol. 2016;57(3):199 - 204.

19. Tucker R. Community pharmacy training in dermatology and patient views on pharmacy management of skin conditions: a pilot study. SelfCare. 2020;11(1):9 - 24.