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**Examining community pharmacists' role
in relation to the use of topical
corticosteroids**

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Summary

The safety and efficacy of topical corticosteroids (TCs) for the treatment of atopic eczema (AE), or atopic dermatitis, are well established provided that these products are used appropriately. However, many patients have fear and experience anxiety about the safety of TC. Community pharmacists are ideally placed to provide TC education before treatment begins. However, little is known about whether pharmacists' patient counselling behaviour is influenced by their own knowledge and attitude towards information provision. The aim of this project is to design, validate and conduct a questionnaire informed by interviews to examine community pharmacists' knowledge, attitude towards information provision, and self-reported patient counselling behaviour in relation to TCs and adjunct therapy for the treatment of AE.

A sequential mixed-methods approach was used where firstly in-depth face-to-face semi-structured interviews were conducted with five community pharmacists working in Berkshire who responded to a letter of invitation. Four pre-formulated vignettes were designed and validated for use before the interviews. Each vignette focussed on a different scenario likely to be encountered in practice relating to skin conditions requiring TC. The participants were invited to comment on these cases in detail and their responses were analysed anonymously using thematic analysis. Five themes emerged; non-pharmacological therapy, indication for use of TC, safety/effectiveness of TC, application /instructions of TC and TC formulations.

A questionnaire was devised by forming three sections that would explore knowledge, attitudes, and self-reported counselling behaviours. The National Institute for Health and Care Excellent (NICE) guideline and the British National Formulary were used to devise 19 factual question topics on the correct treatment of AE covering the five themes derived from the interviews. Each of the 19 question topics were further developed into interrelating knowledge, attitude and behaviour questions. This was so that for example a question on the importance of frequent application of an emollient tested pharmacists' knowledge about the importance of applying emollients frequently, their attitude towards providing patients with this information, and then self-reported frequency of providing patient counselling on this topic. Questions, which covered the five themes identified in interviews, were presented in no particular order (arranged randomly) the knowledge, attitude and behaviour sections. A total of 105 (36%) community pharmacists working within one pharmacy chain completed a corresponding online survey anonymously.

The data revealed that over 94% of pharmacists had a correct understanding on the use of emollient for AE. However, their understanding of the basic concept of the safety and use of TCs in AE was less complete; over 60% did not know how many TC potency categories exist and nearly half of the pharmacists believed that the potency can be calculated from the product packaging. Despite this, the majority of the pharmacists believed it is important that patients /carers have good understanding on all five themes in relation to the use of TC in AE, and more than 75% responded positively to nearly all of the attitude statements. Two tailed Spearman's correlation testing indicated a positive relationship between attitude towards information provision and self-reported counselling behaviour with all five research themes, and four of themes demonstrated statistically significant relationships ($p < 0.05$).

The findings suggest that there is a direct positive correlation between pharmacists' attitudes towards patient counselling and their self-reported behaviour. It follows that improving attitudes then would impact on the counselling provided by pharmacists in relation to the treatment of AE. However, it is still vital that pharmacists increase their knowledge and eliminate misconceptions in this area to avoid misinforming patients/carers, which could ultimately lead to TC phobia and non-compliance.

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1 Introduction

Atopic eczema (AE), synonymous with atopic dermatitis, is one of the most common dermatological conditions and is in the top 50 most common prevalent diseases worldwide [1]. Management of AE takes place predominantly in primary care and topical corticosteroids (TCs) are widely prescribed to provide symptomatic relief. The safety and efficacy of TCs are well established provided that these products are used according to guidelines. However, in reality, some patients, and perhaps even some prescribers and other healthcare professionals, still feel apprehensive about the safety of TC even when used appropriately [2]. This situation remains despite considerable efforts over many years by clinicians and researchers to highlight the therapeutic value of TCs when used correctly [3, 4].

Fear and anxiety about applying TC is perhaps understandable if one considers the following factors. Prescribing in dermatology can be seen as inaccurate because often neither the patient nor the prescriber is certain about how much topical treatment to apply [5]. As a result of these uncertainties, patients may rely heavily on the directions of their prescribers and the product literature in an effort to use TCs correctly. The problem is compounded by the fact that most dispensed TC products carry labels that read ‘use as directed’ and ‘apply thinly’ as a norm. This in itself presents problems, as such instructions are subjective and ambiguous but, in the meantime, carry the connotation of being hazardous if not adhered to [6, 7].

A number of studies have clearly showed that patients are not sufficiently advised by their healthcare professionals on TCs and their use [8-12]. Current evidence also indicates that the lack of patient education on TC use has had a negative impact on the treatment they receive [12, 13]. Unjustified fears of TC interfere with patients’ adherence to treatment and potentially affect the treatment outcome. Such fears can potentially be overcome with effective patient education on TCs, especially if it is targeted at changing core beliefs about TCs [12, 14]. This is a role best carried out by healthcare professionals, including community pharmacists.

As often the last health professional to see the patient in the prescribing chain, community pharmacists are well placed to ensure that patients have been adequately educated on their TC treatment before treatment begins [15]. This role is doubly important considering that education about TC treatment is thought to be lacking from prescribers and manufacturers [10, 16]. Even if the message regarding the correct application of topical treatments has been given by doctors and nurses, the pharmacist has an important role in reinforcing this message and ensuring that patients remember and understand what they have been told [17]. It is also important to consider that some TCs are available without prescription to self-medicating patients who may not have been seen by a prescriber at all. In such cases, the community pharmacist may be the only healthcare professional to have the opportunity to offer any patient counselling on TC use.

Indeed, intervention by pharmacists has been shown to effectively improve medication adherence [15, 18-20]. This justifies a more active role for community pharmacists to engage with patients who use TCs, especially considering that adherence has been traditionally low in dermatology [21]. Together, these studies highlight the counselling role pharmacists can play to improve patient care in the use of TCs for the treatment of AE. Recently, a number of studies have been conducted relating to the role, personal views and diagnostic ability of community pharmacist in dermatological conditions [17, 22, 23] and their level of confidence in relation to TCs [24]. However, little is known as to how community pharmacist’s own knowledge and attitude towards information provision correlated with their patient counselling behaviour which could impact on patients’ or carers’ views of TC. To gain such information, we designed, validated and conducted a questionnaire that was informed by interviews, to examine community pharmacists’ knowledge, attitude towards information provision and self-reported patient counselling behaviour in relation to TCs and adjunct therapy for the treatment of AE.

2 Method

The study employed a sequential mixed-methods approach where the results of in-depth face-to-face semi-structured interviews were used to guide the design of the questionnaire. The questionnaire was validated and piloted before it was sent to community pharmacists for completion and return. The study was approved by the University of Reading Research Ethics Committee (study number 15/12).

2.1 Semi-structured interviews

Stratified random sampling was used in this study to invite a cohort of pharmacists to interview. Initially, a list of pharmacies within Berkshire was obtained from publicly-available databases (NHS database of pharmacies) and arranged according to business type and location (Figure 1). Pharmacies from one large multiple-chain were prevented from participating by that organisation's procedures but other large multiples were included. A total of 74 participant invitation letters were posted out, with 15 going to each business type / location combination (but all for rural due to restricted number), chosen at random using random stratified sampling (see Figure 1). This is because we were hoping to recruit around 6 participants in total (i.e. 1 from each business type / location combination), letters of invitation were sent to 15 x the number of participants needed, on the assumption that at least 1 in 15 would reply. A reminder letter was sent to pharmacies that had not responded within a month. Face-to-face, semi-structured interviews were conducted with five community pharmacists working in Berkshire who responded to the letter of invitation.

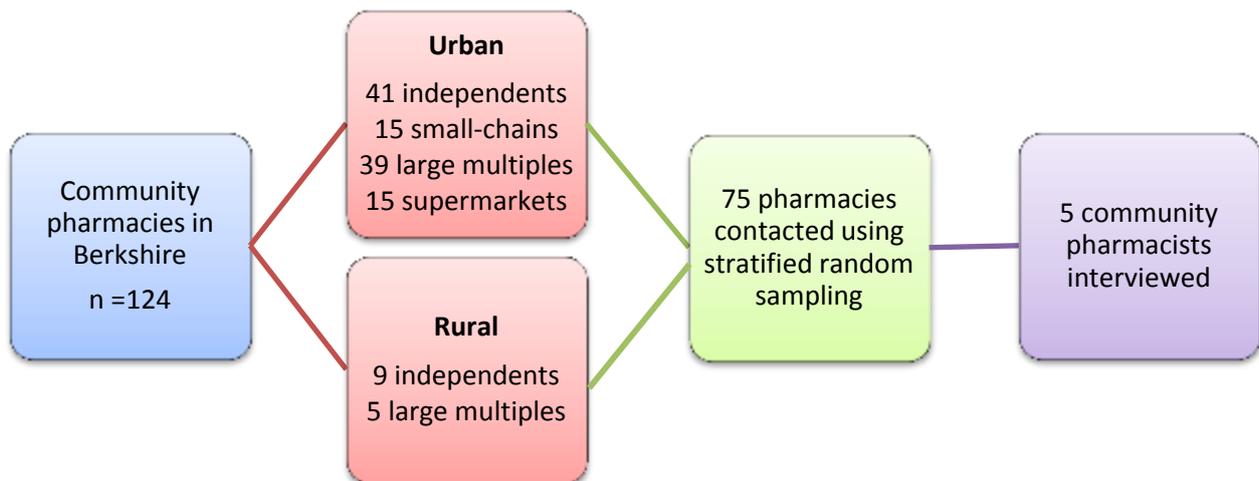


Figure 1: Stratified random sampling strategy based on community pharmacies in Berkshire. A total of 74 out of 124 community pharmacies in six different business type / location combination within Berkshire were contacted where five responded were interviewed.

Four pre-formulated vignettes were designed and validated, during a preliminary phase, with four pharmacists within the Reading School of Pharmacy, UK (RSOP). The vignettes presented initial information followed by a fixed number of questions to build a query. Each vignette focussed on a different scenario likely to be encountered in practice relating to skin conditions requiring TC: 1) TC prescription for an infant; 2) a potent TC on prescription; 3) Over-the-counter (OTC) TC request on GP's advice; 4) advice sought in relation to OTC TC (Table 1). In the questions that followed, participants were invited to comment on the cases in detail. All participants received a £20 Amazon voucher as a token payment for undertaking the interview.

All interviews were audio-recorded with consent then transcribed verbatim and analysed using thematic analysis. No names or any other identifiable details were included in the transcripts. Anonymity was maintained via allocation of a unique non-identification number assigned to each interview. The interview data were analysed for major themes that were subsequently used for informing the design of the main questionnaire.

Table 1: Summary of the four different vignettes used in the face-to-face semi-structured interviews.

Vignette	Initial case information	TC used	Patient's age	Origin of query	Main query
1	First showed a TC prescription (Rx) for a baby and was later supplemented with information about the baby's nappy rash and a mother who worries about TC use on baby.	Hydrocortisone Cream 1%	Baby <1 year	Prescription	TC use in infant
2	First outlined a mid-50s male with monthly repeats of Eumovate 0.05% presenting with a new Rx for beclomethasone dipropionate 0.025% cream and was later supplemented with information that the man worries 0.025% is weaker than 0.05% for his flare-up psoriasis patches.	Beclomethasone dipropionate cream 0.025%	Mid-50s male	Prescription	TC strength
3	First outlined a young man asking for Eumovate cream to buy OTC for his hands and was later supplemented with information that his GP had recommended him to buy the product OTC	Eumovate cream 0.05%	Young male	OTC	Advice with OTC TC
4	First outlined a woman asking for pharmacist advice about her itchy and dry hands and was later supplemented with information that she wants a 'stronger cream'.	N/A	Middle-aged female	OTC	Recommend OTC TC

2.2 Questionnaire design

The questionnaire was divided into three sections exploring knowledge, attitudes, and self-reported counselling behaviours of pharmacists in relation to use of TC and adjunct therapy in AE within a community pharmacy setting. The relevant NICE guideline [25] and the British National Formulary (BNF, version 68) [26] were used to devise 19 factual questions on the correct treatment of AE covering the five themes derived from the interviews. The five themes were: non-pharmacological therapy, indication for use of TC (TC indication), safety/effectiveness of TC (TC safety), application /instructions of TC (TC application) and TC formulations (detailed in the results section 3.1). Matching attitude and counselling behaviour questions were then devised with the help of five RSOP pharmacists who reviewed the questions and provided feedback. A web-based survey was formatted using Bristol Online Survey consisting of four sections: Section A: 19 factual (knowledge) questions with fixed-response of Yes, No or Don't know options; Section B: 19 matching attitude questions presented in a random order with five-point Likert scales from strongly agree to strongly disagree; Section C: 19 matching counselling behaviour questions enquiring about frequency of advice provided with five-point Likert scales ranging from never to always; and Section D: pharmacists' demographics relating to gender, age, work responsibility and details of any additional training on dermatology treatments. The questionnaire was formatted so that participants had to answer all questions within a section before the next section appeared and once they had submitted one section, they were unable to return to the previous section to change their answers. The online questionnaire was tested again with two pharmacists within RSOP to assess face and content validity.

The internet link to the online questionnaire, as well as a cover letter and participant information letter were emailed to all 294 community pharmacists who were working within one medium-sized chain of

community pharmacies in August 2015. A reminder email was sent to all pharmacists in September 2015 and the data collection stopped at the end of September 2015. All participants received a £10 Amazon voucher as a token payment for taking part. Data was extracted directly from Bristol Online Survey into SPSS and analysed anonymously. The questionnaire data was analysed using SPSS (IBM, SPSS, version 21). Analysis took the form of descriptive statistics in terms of number, or percentage as appropriate. Spearman rank correlation coefficient was used to evaluate an association between attitude to information provision and self-reported counselling behaviour with accepted level of statistical significance being $p < 0.05$.

3 Results

3.1 Interview findings

From 74 invitations, 5 community pharmacists were recruited to interview. They were either from rural independent, urban independent or urban large multiple pharmacies. They each had between 13-34 years of community pharmacy experience. Each face-to-face interview was conducted in the setting of the interviewees' pharmacy and lasted approximately 20 minutes. Five global themes were derived from the interviews regarding the advice-giving role of community pharmacists on symptoms and treatment of skin conditions relating to the use of TC. The identified themes and supportive quotes are presented in Table 2.

Table 2: Themes and selected supportive quotes regarding pharmacists' advice-giving on TC related skin conditions in the community setting.

Themes	Supportive quotes
Non-pharmacological therapy	<p>"I would make sure these patients have a good clean, wash, dry. Also to make sure they moisturise their skin condition properly in between and before applying the steroid cream"</p> <p>"And sometimes you hear advice about let the baby not wear a nappy for as long as possible so life style counselling you can give them, as well as to do with the actual cream itself"</p> <p>"So I would advise her to probably have the emollient cream handy in a handbag or in a pocket so she could apply it all the time, as long as she is not handling the food"</p> <p>"Also talk about if his hands are very dry, that he needs to be using some sort of emollient as well"</p> <p>"If it is stress related then there are counselling points on how to manage his stress and how to relax"</p> <p>"And after the flare up, she should be maintained with moisturiser"</p>
TC indication	<p>"We need to know what it has been used for. How long it has been used"</p> <p>"I probably need to find out the indication, which part of the body he uses it for. And just find out from the patient first. I will check why, why the doctor prescriber this for him"</p> <p>"Important to explain what the purpose of this (TC) cream is"</p>
TC safety	<p>"Advising him that after 7 days (of TC), if not better need to go back to the doctor"</p> <p>"I would explain to the mother not to worry about the hydrocortisone cream. It is very useful. Using this hydrocortisone cream won't hurt, provided that she uses it sparingly as directed by the doctor."</p> <p>"I would quite often explain about the side effects of overuse, about thinning of the skin."</p> <p>"for about a week or 10 days, he should find some relief and then stop using it"</p>
TC application	<p>"How many, how to apply it onto the sort of size area. So you need to say to the patient how it is applied."</p> <p>"Obviously, if you have many creams, you got a coal tar cream, you got an emovate cream, you got this new cream, is good to specify on the label which part, which cream is for which part of the body. And so that when the patient take the cream home, they know exactly what they should do."</p> <p>"Talk to him about how frequent to use it, and how to use it"</p> <p>"Use the finger tip method, just to explain how much cream to apply onto the area so she is using enough so that it is effective."</p> <p>"I will tell him to use it very thinly. And not putting too much"</p>

TC formulations	<p>“It is important as a pharmacist that you explain there are different groups (of TCs)”</p> <p>“I would explain to him that the beclometasone is stronger than clobetasone, but the strength of beclometasone is lower than clobetasone does not mean it is less stronger than clobetasone.”</p> <p>“Part of the counselling will be to explain about not just the percentage but steroids are graded in terms of how strong they are”</p>
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3.2 Questionnaire findings

3.2.1 Study population

Of the 294 pharmacists who were emailed the online survey link, we received 113 responses with 105 useable responses when duplicate responses were removed (due to the same participant entering the survey twice). This resulted in a 35.7% response rate. Demographic details of participants are summarised in Table 3. Of the 105 responses, nearly half (48.6%) were male, more than half (58.1%) were aged between 20-40 years and a little over half (52.3%) had worked in the community pharmacy setting for over 10 years.

Table 3: Respondent characteristics ($n = 105$)

Characteristic	<i>n</i>	%
Gender		
Male	51	48.6
Female	54	51.4
Age		
< 20	0	0
20-30	30	28.6
31-40	31	29.5
41-50	20	19.0
51-60	21	20.0
61-70	2	1.9
> 71	1	1
Pharmacy Role		
Manager	89	84.8
Employed pharmacist	16	15.2
Number of years in community pharmacy		
<5	26	24.8
5-10	24	22.9
11-15	17	16.2
16-20	15	14.3
21-25	4	3.8
25-30	8	7.6
>30	11	10.5
Employment type		
Full-time	90	85.7
Part-time	15	14.3
Locum	0	0
Additional training on dermatology treatments		
Yes	38	36.2
No	67	63.8

Only a third (36.2%) of the respondents had received some form of additional training on dermatology treatments after they had initially qualified as a pharmacist. Of those pharmacists, 28 indicated the details of training they had undertaken. Over half had (57%) used a Centre for Pharmacy Postgraduate Education

(CPPE) programme as their source of training, 14% had received training through a drug company and the others carried out continuing professional development on this topic through local branch meetings, pharmacy conferences, presentations from dermatologists, or information in pharmacy journals. Nearly two thirds (61.9%) had carried out their additional training over 7 years ago.

3.2.2 Pharmacists' knowledge, attitude and self-reported counselling behaviours

Pharmacists' knowledge on the use of TC in AE is illustrated in Table 4. Although, over 94% of pharmacists had a correct understanding on the use of emollient for AE only about 78% had correct understanding of the use/indication for use of TC in AE. In term of their understanding on the safety, effectiveness, application and the formulations of TC, about 80% of pharmacist showed a good understanding. However, over 60% did not know how many TC potency categories exist and nearly half of the pharmacists believed that the potency of a TC can be derived from examining the product packaging.

Table 4:

Statements	n (%) Correctly answered	n (%) Don't know
Non-pharmacological therapy		
Emollients are a first-line therapy for eczema/ dermatitis	102 (97.1)	0
Many emollient products are available with no one product suiting all patients	99 (94.3)	2 (1.9)
A topical steroid can be applied on the same area as other topical preparations (including an emollient) at the same time. (NB: the correct response was 'no')	79 (75.2)	1 (1)
The moisturising effect of an emollient is long-lived (NB: the correct response was 'no')	80 (76.2)	5 (4.8)
TC indication		
TCs are the first-line treatment for flare-ups of eczema/ dermatitis	82 (78.1)	2 (1.9)
TCs have anti-inflammatory and immunosuppressive effects	81 (77.1)	4 (3.8)
TCs are used to cure eczema/dermatitis (NB: the correct response was 'no')	93 (88.6)	0
TC safety		
The choice of TC potency depends on the severity and site of the condition	105 (100)	0
Absorption of TC is greatest where the skin is thick (NB: the correct response was 'no')	93 (88.6)	8 (7.6)
Side effects, such as skin thinning, are common even when TCs are used appropriately (NB: the correct response was 'no')	46 (43.8)	4 (3.8)
TCs should only be used to treat the worst affected areas in young children (NB: the correct response was 'no')	23 (21.9)	6 (5.7)
TC application		
In general, TCs should be used for 7-14 consecutive days	79 (75.2)	6 (5.7)
TCs should always be applied exactly twice a day (NB: the correct response was 'no')	85 (81)	3 (2.9)
A sufficient quantity of TC should be applied to cover all affected areas	86 (81.9)	3 (2.9)
The quantity needed for each application can be measured using the finger-tip unit	95 (90.5)	6 (5.7)
If a TC is needed long term, a regular break in treatment should be incorporated	93 (88.6)	7 (6.7)
TC formulations		
In the UK, TCs are categorised into three potency grades (NB: the correct response was 'no')	39 (37.1)	4 (3.8)
Corticosteroids, androgens and oestrogens are steroid hormones with the same mechanism of action. (NB: the correct response was 'no')	77 (73.3)	22 (21)
The potency of a TC can be worked out from the manufacturer product packaging. (NB: the correct response was 'no')	62 (59)	17 (16.2)

Pharmacists' attitudes towards provision of information about TC treatment are shown in Table 5 and their self-reported counselling behaviours are presented in Table 6. The statements listed in both tables are in the same order as the matching knowledge statements although attitudes and behaviour statements were randomly presented in the questionnaires to avoid participants linking the statements easily which might have influence their responses.

In general, the majority of the pharmacists believed it is important that patients /carers have good understanding on all five themes in relation to the use of TC in AE, in particular on the use of non-pharmacological therapy and the application of TC. However, only about half of the respondents believed it is necessary for the patients/carers to know that TC treatment should not be reserved for the worst areas in young children (i.e. can be used on all affected areas as indicated) and for the patients/carers to know that TC potency is not shown on product packaging.

Table 5: Pharmacists' attitudes towards provision of information about TC treatment in atopic eczema^a.

Attitudes (It is important that patients understand/know...)	Strongly agree/ agree n, (%)	Neutral n, (%)	Strongly disagree/ disagree n, (%)	Mean (SD)
Non-pharmacological therapy				
...emollients are beneficial in eczematous disorders	98(93.3)	7(6.7)	0	4.46±0.62
...different emollient are available to suit individual preferences and needs	101(96.2)	4(3.8)	0	4.41±0.56
...to leave a short interval between application of different topical preparations	99(94.3)	6(5.7)	0	4.42±0.6
...the moisturising effect of an emollient is short-lived	86(81.9)	8(7.6)	11(10.5)	4.09±0.96
TC indication				
...TCs should only be used to control flare-ups	93(88.6)	8(7.6)	4(3.9)	4.29±0.8
... they have been prescribed a TC because they have a chronic inflammatory skin disorder characterised by itching, dry skin and redness	80(76.2)	21(20)	4(3.9)	3.92±0.78
...TCs do not cure their skin conditions	93(88.6)	9(8.6)	3(2.9)	4.22±0.72
TC safety				
...the potency of TC used is based on the severity and site of their skin condition	87(82.9)	16(15.2)	2(2)	4.01±0.7
...the thinner the skin, the higher the chance of TC side effects	96(91.4)	8(7.6)	1(1)	4.29±0.64
...side effects are rare if TCs are used appropriately	84(80)	13(12.4)	8(7.6)	4.03±0.86
...treatment should not necessarily be reserved for the worst areas in young children	57(54.2)	25(23.8)	23(21.9)	3.45±1.1
TC application				
... the duration of TC treatment	95(90.5)	8(7.6)	2(1.9)	4.41±0.71
... the frequency of TC application	96(91.4)	7(6.7)	2(1.9)	4.43±0.7
...the quantity of the TC to apply for each application	96(91.4)	9(8.6)	0	4.43±0.65
...the finger-tip unit	92(87.6)	12(11.4)	1(1)	4.43±0.73
...TC should not be used long term without drug-free periods	92(87.6)	10(9.5)	3(2.9)	4.28±0.79
TC formulations				
...the potency of their TC preparation	79(75.2)	22(21)	4(3.9)	3.89±0.76
...TCs are not the same as steroids used in contraceptive pills or for bodybuilding	87(82.9)	18(17.1)	0	4.22±0.72
...TC potency is not shown on product packaging	59(56.1)	26(24.8)	20(19.1)	3.53±1.01

^a A five-point Likert scale was used, where 1 = strongly disagree and 5 = strongly agree.

The data presented in Table 6 show that the level of self-reported patient counselling activities in relation to TC treatment in AE was moderately high. Providing patient counselling on the inclusion of regular use of emollient in their AE treatment and informing them to apply emollients frequently were the most frequently reported counselling activities. One third of pharmacists indicated they would frequently provide (often or always) counselling about the duration, frequency and quantity of the TC to be used as well as educating patients that TC helps to reduce skin redness and itchiness. However, over 50% rarely provide counselling relating to TC formulations.

Table 6: Pharmacist self-reported counselling behaviour towards TC treatment in atopic eczema^a.

Self-reported behaviour (I advise patients/carers...)	Never/ rarely n, (%)	Sometimes n, (%)	Often/ always n, (%)	Mean (SD)
Non-pharmacological therapy				
... to also include regular emollient use in their treatment	4 (3.8)	15 (14.3)	86(81.9)	4.18±0.88
... to change to another emollient if patients have not gained relief from their current emollient	12(11.4)	26(24.8)	67(63.8)	3.74±0.99
...to leave a short interval between application of different topical preparations on the same area	18(17.2)	27(25.7)	60(57.1)	3.65±1.11
... to apply emollients frequently for continued moisturising effects	4(3.8)	8(7.6)	93(88.6)	4.39±0.82
TC indication				
...that TCs should be reserved for flare-ups	16(15.2)	34(32.4)	54(52.4)	3.51±1.09
... that TC helps to reduce skin redness and itchiness	8(7.6)	27(25.7)	70(66.7)	3.92±0.78
...TC can only provide symptomatic relief	33(31.5)	37(35.2)	35(33.4)	3.02±1.08
TC safety				
... that TC potency selected is based on the severity and site of their condition	29(27.6)	35(33.3)	41(39.1)	3.1±1.07
... to look out for further skin thinning when a TC is to be applied to skin that is thin	37(35.2)	25(23.8)	43(41)	3.02±1.23
... that side effects are uncommon when TCs are used as directed	25(23.8)	48(45.7)	32(30.5)	3.04±0.96
... that it is appropriate to treat all affected areas even for young children	43(41.0)	39(37.1)	23(21.9)	2.7±1.0
TC application				
... about the duration of TC treatment	10(9.5)	28(26.7)	67(63.8)	3.73±0.94
... about the frequency of TC use verbally	5(4.8)	24(22.9)	76(72.3)	3.98±0.88
...about the quantity of TC needed for each application	10(9.5)	29(27.6)	66(62.9)	3.7±0.92
...about the finger-tip unit	34(32.4)	33(31.4)	38(36.2)	3.11±1.19
... that drug-free periods should be incorporated in their TC treatment plan if it is for long term use	29(27.6)	39(37.1)	37(35.3)	3.11±1.14
TC formulations				
...on the potency of their TC preparations	28(26.7)	33(31.4)	44(41.9)	3.17±1.03
...that a TCs is not the same as steroids used for contraception or bodybuilding	57(54.3)	25(23.8)	23(21.9)	2.41±1.2
...on TC potency by adding potency grade on the dispensing label	59(56.2)	26(24.8)	20(19.1)	2.44±1.37

^a A five-point Likert scale was used, where 1 = never and 5 = always.

The data from all 105 responses were also analysed using two tailed Spearman's correlation to examine any association between the mean score on 'attitude' and the mean score on 'behaviour' for each set of related questions within the 5 themes. With the set of 4 questions that related to application of non-pharmacological therapy, data analysis revealed a statistically significant positive relationship between attitude about information provision and self-reported counselling behaviour ($r = 0.483, p = 0.000$). For the question set relating to TC indication, a statistically significant positive relationship between attitude and self-reported behaviour was found ($r = 0.358, p = 0.000$). The set of 4 questions that related to TC safety/effectiveness, data revealed a positive relationship between attitude and self-reported behaviour but the relationship was not statistically significant ($r = 0.165, p = 0.093$). In the question set relating to TC application, there was a statistically significant positive relationship between attitude and self-reported behaviour ($r = 0.244, p = 0.012$). For the set of 3 questions that related to TC formulations, a statistically significant positive relationship between attitude and self-reported behaviour was also found ($r = 0.265, p = 0.006$).

4 Discussion and Conclusion

4.1 Discussion

This is the first published study that has used a mixed-methods approach to explore the counselling role of community pharmacists in the UK in relation to the use of TC in AE/AD. The in-depth face-to-face interviews provided a base for the types of knowledge pharmacists deemed important and their attitudes towards using that information in TC related cases. From the interviews, five main themes were derived and used to formulate a questionnaire to measure the general knowledge, attitude and behaviour of a wider group of community pharmacists in relation to the use of TCs and adjunct treatment.

Community pharmacists had a good basic understanding of TCs. However, the results in Table 4 indicate that pharmacists' knowledge in this area is still not optimal. This could be explained by the facts that less than 40% of the pharmacists in the current study had undertaken additional/postgraduate training in dermatological treatment and the majority of those who had, had carried out the training over 7 years ago. This number is lower than another UK study carried out by Tucker [17] where 65% had undertaken training; however, CPPE training packages was reported to be the most commonly used sources with about 50% in both studies.

Community pharmacists play a vital role in educating patients in the use of TC [15]. However, it is important that pharmacists themselves have the correct understanding before they pass on advice and knowledge to the patients/carers. Research has showed that misleading information provided by pharmacists lead to major impact on the perceptions of TCs in the general public [27]. Charman et al [12] found 73% of patients/carers worried about using TCs on their /their child's skin and 30% were unable to correctly classified the most commonly used TC. This is not surprising from looking at our data, with over 60% of pharmacists have incorrect knowledge on the number of potency categories in existence and 75% believed that it is not important for the patients to know the potency of their TC. Also over 75% thought TCs should only be used to treat the worst affected areas in young children and only 44% understood that side effects are uncommon when TCs are used appropriately and. Interestingly, a similar result (44%) was reported in a study carried out in Australia reporting baseline pharmacist knowledge which was significantly increased post-education to 89% [28].

Although the BNF, a drug formulary that all UK pharmacists refer to, has clearly indicated that 'treatment should not necessarily be reserved to treat only the worst areas', only 23% of the respondents in this study had the correct knowledge on this, which could explain why only 22% reported they would provide such

advice routinely. Yet more than half (54%) actually believed that it is important for the patients/carers to know this same information. This suggests that increasing pharmacist knowledge or empowering them in other ways could potentially increase the provision of counselling in this area. This is also true in term of pharmacists' knowledge about TC potency; 63% did not know the potency grading, but 75% believed it is still important for the patient to know and despite this 73% would routinely provide advice on TC potency. This raises the question that if the pharmacists themselves do not have the correct knowledge, they could misinform patients and lead to TC phobia. Our study has highlighted the need for evidence-based health literacy education for pharmacists in order to avoid patient misunderstanding of TCs. A study in Australia on TC phobia also highlighted this issue [27].

Under the UK General Pharmaceutical Council standards of conduct, ethics and performance, all pharmacists have the duty to make patients the first concern by ensuring they know how to use their medicines and be prepared to challenge the judgement of other professionals' when such decisions could affect the safety or care of others [29]. However, our study indicates that while community pharmacists believe they have a role in providing advice on TC use as well as non-drug management of AE, they expressed that medication counselling is difficult due to patients often unable to speak to a pharmacist - *“So it is up to us (the pharmacists) to pass on the message. But it depends if they get to speak to the pharmacist or not.”* Some felt a dilemma when selling OTC TC products especially when another healthcare professional suggests that the patient should buy a product not licensed for the particular indication. For example: *“GPs telling people to buy topical steroid that I am not supposed to sell them for. Or nurses as well telling them to go to the pharmacy to buy it to put on your face. Or my child is 7 and the doctor told me to come and buy this. Cause they could make it very difficult for us”*.

Our data also found pharmacists' attitudes toward the importance of patient education on the safety and use of TCs in AE very encouraging as 15 of the 19 statements demonstrated a mean attitude score of 4 or above (with 5 being the maximum) and more than 75% responded positively to nearly all of the attitude statements in Table 5. For the self-reported patient counselling behaviour, the level of counselling activities are also in a positive fashion with a mean score between 3 and 4 for nearly all of the behaviour statements in Table 6.

Results from correlation analysis indicate that all of the five domains identified had a positive relationship between attitudes towards information provision and self-reported counselling behaviour with four domains showing a statistically significant correlation. For the use and application of non-pharmacological therapy, nearly all pharmacists believed that patients should understand the importance of emollient application in order to improve AE and they self-reported high frequency of counselling activities in this area. This is also very well reflected from the interviews where the importance of emollient and other non-pharmacological interventions were mentioned from all interviewees (Table 2). When it comes to indication/the use of TC, the majority of the pharmacists perceive that this is important for the patients to know, which is reflected with the similar number of pharmacist reporting they would (sometimes/often/always) counsel the patients with such information. When it comes to TC application, about 90% of pharmacists believed that this is important and they reported they do regularly provide such counselling.

It is interesting that pharmacist would frequently counsel the patient on the quantity of TC to be applied but a third do not use the finger-tips unit as a guide. This finding is also in-line with the interview findings, where only one out of the five interviews used the finger-tip unit in their counselling, whereas other pharmacists tend to provide ambiguous/ confusing advice on the amount to be used (Table 2). For TC formulations, less pharmacists believed this area is important for the patients to know and this was reflected in the section on self-reported counselling behaviours. In terms of TC safety/ effectiveness, although nearly all the pharmacists had a positive attitude but they did not routinely provide counselling in this area. This could be due to lack of opportunity to discuss this area in a consultation. Due to time constraints,

pharmacists may prefer to counsel patients/carers on application of TC and use of emollient than specifically on TC safety. Points regarding time and counselling opportunity also came out from the interview, for example “*by giving an MUR have more time. Usually be able to find out how they use their cream*”. Our study suggests that if time is not the limiting factor, i.e. pharmacist time to be freed up for counselling, then improving pharmacists' attitudes towards information provision could potentially improve counselling behaviour on the use of TC in the treatment of AE as there is a positive association between the two concepts.

4.2 Strengths and limitations

The strengths of this study are that we have used the mixed-method approach in which the second phase of the study was partly developed from the first. The qualitative study helped us to generate themes to be tested in the questionnaire, but vice versa, findings from the questionnaires could also be explained through insights obtained from the interviews. Also, the study obtained responses anonymously with a wide range of ages, years in practice and of equal gender completing and returning the questionnaire. We acknowledge that this study does have some limitations. The fact that we only used one medium-sized pharmacy chain for the distribution of the questionnaire and given the relatively small number of participants restricts the generalisability of these findings to the wider community pharmacy population. Also, we cannot be sure that participants did not take time out to research on the answers on the knowledge section and cannot prevent the inherent biases in self-reporting of behaviours in questionnaires (rather than actually measuring behaviours).

4.3 Conclusion

It is apparent that UK community pharmacists do have some knowledge gaps in terms of the use and safety of TC in AE. Although pharmacists have the right attitudes in what patients/carers should know regarding the use of TC, it is vital that pharmacists increase their knowledge and eliminate misconceptions in this area to avoid misinforming patients/carers, which could ultimately lead to TC phobia and non-compliance. Since pharmacist attitudes about information provision showed significant correlations with counselling behaviours, efforts to improve counselling behaviours could focus on perceived attitudes towards provision of patient education.

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