

AN EXPLORATORY STUDY OF COMMUNITY PHARMACIST DIAGNOSIS AND MANAGEMENT OF DERMATITIS AND ACNE

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ABSTRACT

BACKGROUND: Dermatitis and acne account for a large number of general practitioner appointments yet are amenable to treatment with products available to purchase from community pharmacies.

OBJECTIVES:

1. The clinical appropriateness of community pharmacy interventions for these conditions
2. Patient reported measures of the effectiveness of the pharmacist's management of their condition.

METHODS: Nine community pharmacies opportunistically recruited patients presenting with suspected cases of both conditions, taking digital images and audio-recording the consultation. These files were uploaded to a secure site and independently reviewed by three dermatology specialists.

Following their consultation, patients received a questionnaire to assess their views on the effectiveness of the treatment provided and their level of satisfaction with pharmacy management.

RESULTS: Forty patients (36 dermatitis and 4 acne) were recruited.

Of 113 assessments (7 not rated due to missing data) reviewed, specialists agreed with pharmacist's diagnosis in 33.6% of cases, disagreed in 38.9% but were unable to determine the diagnosis in 27% of cases. Treatment was deemed appropriate in 42% of cases, inappropriate in 27% and indeterminate in 31% of cases.

Twenty-three patients (58%) returned a questionnaire and 12 of these (54.5%, 1 missing) stated that their condition had cleared completely following pharmacist advised treatment. Almost all (91.3%) were very satisfied or satisfied with the advice and/or treatment provided.

CONCLUSION: Specialists judged the clinical appropriateness of pharmacist diagnosis and management as suboptimal yet patients were more positive. This study indicates a possible need for greater assessment-related training in dermatology for study pharmacists and further work to determine the generalisability of findings.

INTRODUCTION

Self-care is defined by the World Health Organisation as ‘what people do for themselves to establish and maintain health, prevent and deal with illness’¹. Self-care signifies the importance of patient ‘autonomy’ and ‘independence’, in which people make their own decisions about care and initiate actions by themselves². Recent concepts of self-care also encompass shared models of care³, highlighting the interplay between patient autonomy and support from healthcare professionals where necessary². Self-care is a feature of the patient-centred United Kingdom (UK) National Health Service (NHS), with the position of community pharmacy articulated in government policy⁴. This position is reinforced by evidence of community pharmacy support enhancing patient access and reducing NHS direct and indirect costs⁵.

Studies suggest that dermatological conditions such as dermatitis and acne account for 6.8 and 2.4 million general practitioner (GP) appointments every year in the UK^{6,7}, yet both are amenable, to some extent, to supported self-care with treatments purchased through community pharmacies. Moreover, some evidence suggests that community pharmacists perceive that patients frequently seek their advice on conditions such as eczema and dermatitis⁸. Patients with skin problems visit pharmacies for advice on their problem for several reasons including the potential for triage to GP care, the perceived minor nature of the problem and locality or familiarity with the pharmacy⁹.

Despite the potential role of community pharmacists in the management of skin problems, there is a dearth of studies on the diagnosis, management and outcomes associated with pharmacy supported self-care of those with dermatological conditions. One study reported on the use of digital photography of skin conditions encountered by community pharmacists with feedback from a dermatologist on the accuracy of the diagnosis, yielding moderate agreement between the pharmacists and the dermatologist (Kappa = 0.58)¹⁰. However, limitations of that study included the use of a single assessor and absence of data on the content of the pharmacist-patient consultation.

The use of community pharmacists as an alternative to the GP for the management of dermatitis and acne raises two important issues. Firstly, it is unknown whether pharmacists are able to undertake an appropriate assessment and offer suitable advice and/or treatment to patients who presented with suspected cases of either condition. Secondly, there is a need to determine whether or not pharmacy-based management of these conditions leads to a satisfactory resolution of a patient’s symptoms and thereby avoids the need for further medical input. Such issues are relevant in the context of both the potential transfer of consultations from GPs and to the suitability of pharmacy supported self-care for people with both conditions.

The aims of the present exploratory study were therefore to assess the clinical appropriateness of pharmacist assessment and management of dermatitis and acne as well as obtaining patients’ self-reported perceptions on the effectiveness of and satisfaction with the pharmacy intervention.

MATERIALS AND METHODS

Study design and setting

This was a mixed method, exploratory study undertaken in nine community pharmacies in the South West and South of England between July 2015 and April 2016.

Patients

Eligible patients were those presenting at one of the participating pharmacies with symptoms suggestive to the pharmacist of mild to moderate acne and mild to moderate dermatitis, including atopic, seborrheic and both irritant and allergic contact dermatitis.

Pharmacists

Prior to the study, all pharmacists undertook training in 'research ready' good clinical practice and were supplied with a pack that contained a digital camera (Sony DSCW430 20.1 megapixel 8 x optical zoom with 4Gb SDHC memory care); a digital audio voice recorder (aLLreLi CP0034 8Gb); a full (8 page) study guide which provided step-by-step instructions on how to use both devices and an aperture card to hold over the skin area to protect the participant's identity. Both the camera and audio device were pre-set to optimise and regulate recording in the consultation environment.

Consultation

The pharmacists explained the nature of the study and gained signed informed consent prior to their consultation which took place in a private room within the pharmacy. The pharmacist audio-recorded the consultation and took digital, representative photographs of the presenting skin problem. After completion of the consultation, pharmacists uploaded the audio-recordings and digital images to a secure Cloud location.

Independent assessors

The anonymised pharmacy case identified audio and image files were shared by the research team with three pre-assigned dermatology specialists (two consultants and a GP with a special interest in dermatology) who each and independently completed an online form sharing their views on the assessment, diagnosis, treatment and advice provided. The assessments were recorded on a standardised, pre-defined binary option (yes/no) template which assessed whether pharmacists had addressed specific areas during the consultation e.g. duration of symptoms, sites affected, medication use etc. The template also allowed space for free text for specialists to highlight the strengths and weaknesses of the consultation. Finally, the specialists were asked to record if they thought that the pharmacists identified correctly the skin condition and whether they felt the treatment provided was adequate (responses yes, no or unable to determine from the available information).

Patient follow-up

All participants (parents for those < 16 years) were sent a questionnaire, via post or email, either approximately ten days (dermatitis) or six weeks (acne) after their pharmacy consultation. This follow-up questionnaire comprised closed (e.g. Likert-type scales) and open questions on self-

reported clinical effectiveness, (e.g. resolution of symptoms, any need for re-consultation or further intervention), acceptability and satisfaction with their care. The questionnaire was reviewed for face and content validity by relevant healthcare professionals and expert patients recruited from professional networks.

Outcome measures

The following outcome measures were reported:

1. The clinical appropriateness of the pharmacist diagnosis and management of both conditions, defined as yes/no/unable to determine, as judged by the assessors.
2. Patient self-reported effectiveness of the treatment, defined as completely cleared (yes/no) and if not completely resolved, determined using a 5-point Likert scale (much better to much worse)
3. Patient self-reported levels of satisfaction with pharmacy-based management.

Statistical analysis

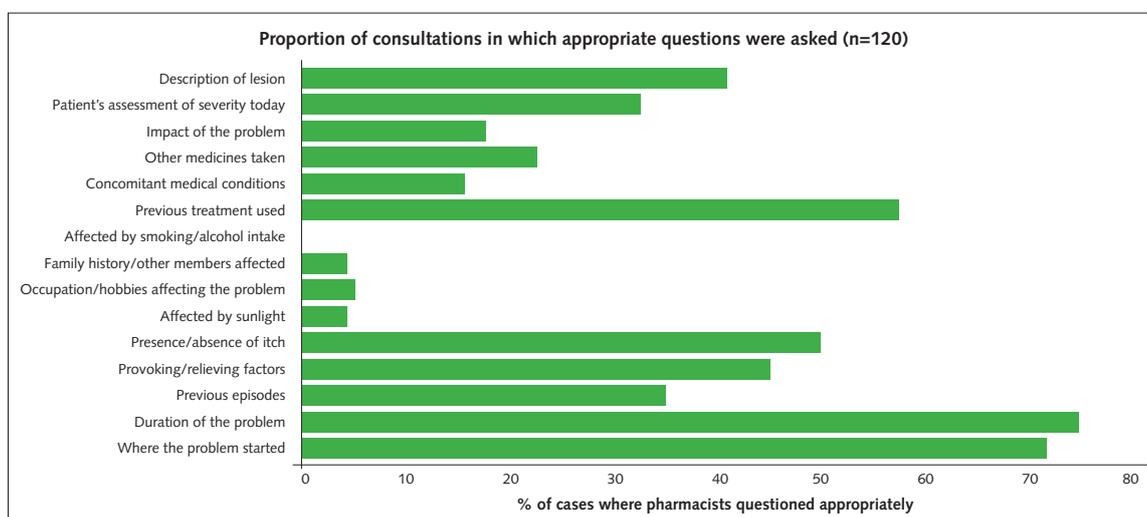
Data were analysed descriptively, with the level of agreement between assessors measured by pairwise comparison of Kappa values. Kappa below 0.4 were regarded as poor agreement, ≥ 0.4 as moderate agreement and values ≥ 0.6 as good agreement¹¹. Statistical analyses was performed using SPSS (IBM Corp Released 2012. IBM SPSS for Mac, Version 23.0. Armonk, NY: IBM Corp). Content analysis was used to analyse free text comments.

Results

Forty participants (36 dermatitis, 4 acne; 7 were < 16 years of age) were recruited by nine pharmacies over a nine-month period July 2015 to April 2016. All sites recruited between one and nine participants, with a further 12 potential participants refusing to take part.

The three assessors each provided feedback on all 40 patients giving a total of 120 assessments. Figure 1 provides an overview of the assessors' feedback on pharmacist questioning of participants; pharmacists asked largely appropriate questions in relation to duration of the problem and where it started, while the effects of smoking/alcohol and family history were seldom addressed.

Figure 1: Proportion of all consultations assessors judged that the pharmacists asked appropriate questions



Three key themes emerged from content analysis of the assessors' comments in relation to pharmacists' assessment which were: inadequate history taking, inadequate diagnostic questioning and positive diagnostic questioning. Illustrative quotes for each of these themes are shown in Table 1.

Table 1

Theme	Illustrative comments
Inadequate history taking	<ul style="list-style-type: none"> • Specific questions in the history that would have helped the diagnosis not secured • Very brief history taken, no enquiry that might have indicated underlying cause of the itching. • A more detailed history would have been helpful and may have supported making the diagnosis.
Inadequate diagnostic questioning	<ul style="list-style-type: none"> • No diagnosis made before telling patient to use exactly what she has just used and it didn't work! Then touched on the correct diagnosis - fungal element - it came out in the history- not realised by pharmacist • This is varicose eczema and the patient gives a good history himself, the diagnosis was not recognised [by the pharmacist] and the varicose veins were not considered an issue - which they are • Specific questions not asked which would have helped with the diagnosis, would have been useful to consider whether there were other sites affected
Positive diagnostic questioning	<ul style="list-style-type: none"> • Asked a lot of good questions, let the patient speak which was good. Got the diagnosis right but got the treatment wrong! • Good history. I would have like to know if he was taking other medications and had other health problems. Correct diagnosis and correct treatment. I liked the way he checked the patient's understanding and also used fingertip units to explain to the patient how to use topical steroids • Good history and correct diagnosis. Good explanation of how to use the creams, I liked the increased use of emollients - she clearly had not been using enough and I liked the repeating of the management advice to check she had got all the information.

Assessment of pharmacist's diagnosis and treatment supplied

Of the 113 cases rated by the assessors (seven were not rated due to missing data), they agreed with the pharmacist's diagnosis in just over one third (34%, 38/113) of cases, while they disagreed with the diagnosis in 39% (44/113). They were unable to determine from listening to the audio and viewing the images whether or not the pharmacists made the correct diagnosis in over one quarter (27%) of cases. When asked to state whether or not they were able to recognise the skin condition based on the available information, this was only possible in 60% (67/113) of cases due a combination of poor quality images and audio recording.

With respect to the treatment supplied, the assessors agreed that the treatment was appropriate in 42% (47/113) of cases, but inappropriate in 27% (30/113) of cases. A judgement could not be determined in 31% (35/113) of cases.

The level of agreement between the three assessors was determined using pairwise Kappa values and the results in relation to pharmacist’s diagnosis and treatment are shown in Table 2.

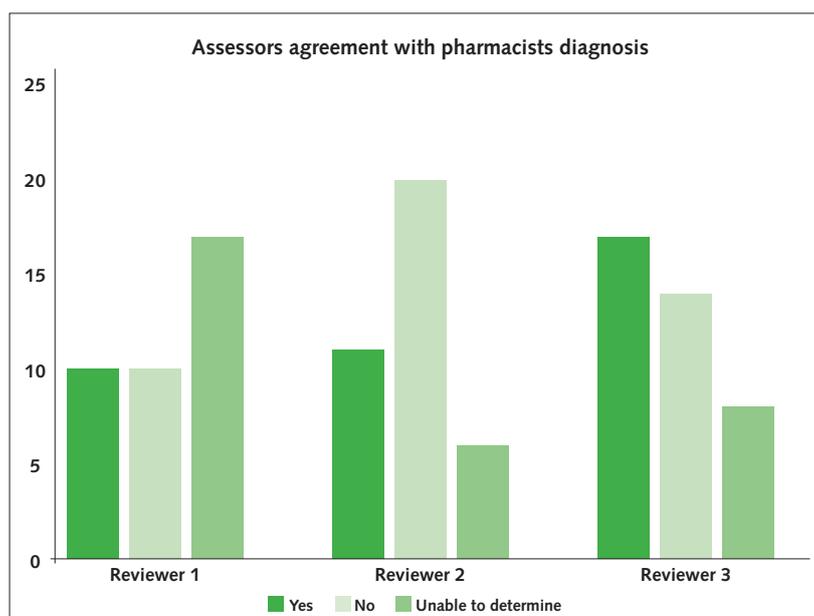
Table 2

Diagnosis		
Assessors	Kappa values	P value
Assessor 1 vs 2	0.304	0.040*
Assessor 1 vs 3	0.235	0.029*
Assessor 2 vs 3	0.225	0.055
Treatment		
Assessor 1 vs 2	0.254	0.020*
Assessor 1 vs 3	0.026	0.792
Assessor 2 vs 3	0.115	0.307

*significant values

These data suggest a poor degree of agreement and inspection of the data for the pharmacist’s diagnosis as shown in Figure 2, illustrates this level of disagreement.

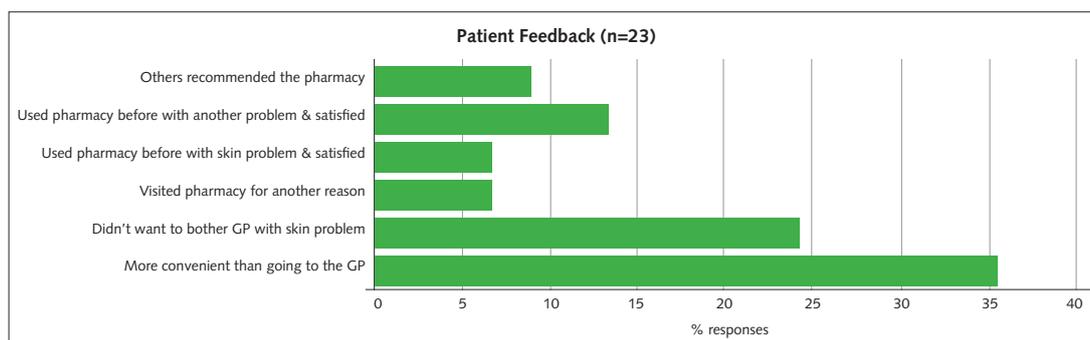
Figure 2: Assessors’ responses to appropriateness of pharmacist diagnosis for the management of dermatitis and acne



Patient follow-up questionnaire

Twenty-three patients (57.5%) returned a completed questionnaire. In relation to their skin condition, fourteen patients (60.9%) had endured their problem for more than two weeks before seeking advice at a pharmacy, seven (30.4%) had the problem for between one and two weeks while two patients (8.7%) had their problem for less than a week before seeking advice.

The reasons for participants’ choice of pharmacy for advice are shown in Figure 3 which suggests both convenience and not wanting to bother the GP over a skin problem were the most frequently cited reasons.

Figure 3: Patient reported reasons for visiting a pharmacy for advice on their skin problem

After seeking advice at the pharmacy, a high majority of the patients (81.8%, 18/22; one missing) received advice and a topical product. However, two patients provided with a topical product were also advised to see their GP, and a further two patients were referred directly to their GP.

Just over half (54.5%, 12/22; one missing) stated that their acne or dermatitis had cleared up completely following the use of the treatment they received at the pharmacy; two reported that their condition was much better and nine moderately better. Only six patients (26.1%) had to subsequently visit a GP about their skin problem.

When asked, 52.2% (12/23) of participants stated that they were 'very satisfied' with the advice and treatment they received at the pharmacy, 39.1% (9/23) were 'satisfied', but 8.7% (2/23) reported that they were 'very dissatisfied'.

In terms of future intentions, 78.3% (18/23) of patients said they were 'very likely' to visit a community pharmacy if they developed a skin problem, with 17.4% (4/23) stating 'likely' and one unsure.

Finally, the majority of respondents, 78.3% (18/23) were 'very likely' to suggest that a friend or colleague sought advice on a skin problem from a pharmacy.

DISCUSSION

Key findings

According to the independent assessors, community pharmacists identified correctly a patients' skin problem in just over a third of cases and provided appropriate treatment in less than half of all cases examined. In contrast and though limited by the small responding sample size, the results from the patient questionnaire found that 54.5% of participants felt that their skin problem had completely cleared up with the treatment provided at the pharmacy. Though none of the patients with acne reported that their condition had completely cleared, all reported that it was moderately better. Furthermore, levels of patient satisfaction were high, with over 90% reporting that they were either 'satisfied' or 'very satisfied' with the advice and treatment they received. This high level of satisfaction may indicate that patients experiencing a resolution of their problem attributed this to the advice and/or treatment offered at the pharmacy. It was also encouraging to note that, based on their pharmacy encounter, almost all patients reported being 'very likely' or 'likely' to visit a community pharmacy for advice on a skin condition in the future and to recommend that friends

or colleagues with a skin problem seek advice from a pharmacist. These findings are in agreement with the data obtained from patients in an Australian pharmacy-based study reported by Plunkett *et al*¹², showing a mean satisfaction score of 6.25 on a seven-point scale after treatment for their skin condition in a community pharmacy.

Though these patient data are subjective and potentially subject to recall and acquiescence bias, they indicate that patient perception of successful assessment, diagnosis and management was more favourable than implied from the assessors' rating. There could be a number of reasons for this difference. It is highly likely that the assessors' views of appropriateness will be different to the views of patients. Furthermore, patients' skin conditions may well have resolved without appropriate treatment even in circumstances where the diagnosis was not exact and as noted earlier, the assessors were unable to rate the suitability of treatment in over a quarter of cases. Additionally, and equally important, was the observation that only six patients people needed to seek the advice of a GP because their skin condition failed to resolve with treatment from the pharmacy. It may be that patient perspectives are not a valid measure of appropriateness.

Strengths and limitations

This study has important strengths and some recognised limitations. A major strength has been the unique use of a combination of digital photography and audio recording which permitted capture of both the content of the consultation and an image of the skin problem. Additionally, the use of a three-person panel of independent specialists and a follow-up patient questionnaire has allowed an examination of the clinical appropriateness of pharmacist management complemented by the patient perspective. Together, these attributes have provided valuable insight into the management of these conditions by community pharmacists. There are, however, several weaknesses, and the findings should be interpreted with caution. This was an exploratory study hence the number of pharmacists and patients was low (especially those with acne), and skin conditions examined were limited to dermatitis and acne. Furthermore, this exploratory study did not intend to generate findings which could be generalised to the wider population. The lack of agreement or consistency between assessors and the patient questionnaire response rate of just over 50% has implications for response bias and generalising the follow-up findings to all study patients. Finally, the follow-up data was from the patient perspective only, without independent verification.

Implications for practice

UK government health policy has for many years, advocated an important role for community pharmacists in providing access to NHS treatment, professional advice and onward referral where appropriate, through the provision of minor ailment schemes¹³. Indeed, research suggests that as many as 20% of GP consultations are for minor ailments⁷, and for many patients this is both inconvenient and an inefficient use of their time, especially given that some evidence points towards a preference for self-care among those with minor illness¹⁴. Moreover, a recent systematic review of pharmacy-based minor ailment schemes, found that the proportion of patients reporting complete resolution of symptoms after a minor ailment consultation ranged from 68 to 94%⁵. A further study that focused on four minor ailments managed by pharmacies, general practitioners and emergency departments found a similar degree of symptom resolution across all four settings

but that pharmacy consultations were associated with the lowest costs¹⁵. Fundamental to these studies is an implicit assumption, that pharmacists possess the necessary skills and knowledge to undertake an appropriate assessment of patients who present with minor ailments. However, studies specifically exploring the questioning and assessment of patients by pharmacists have revealed considerable variation¹⁶⁻¹⁸. The current study provides further evidence of pharmacists' suboptimal assessment of patients. Nonetheless, an important caveat in the present study was the inability of assessors to determine the appropriateness of pharmacists' assessment in around a quarter of cases, which may simply reflect pharmacists' failure to articulate a diagnosis during the consultation rather than suboptimal appraisal of the presenting problem.

There is clearly a need for further studies using larger pharmacist and patient cohorts or perhaps using GPs as a comparator group, to explore the generalizability of these findings to the wider pharmacist and patient population. It would also seem prudent to explore the impact of additional dermatology related education for pharmacists especially in relation to patient assessment as other work suggests that pharmacists' diagnostic ability with respect to skin problems is inferior to GPs¹⁹.

CONCLUSION

This study has identified that, according to expert assessors, the study pharmacists' assessment, diagnosis and management of dermatitis and acne were deemed appropriate in only about a third of cases. The lack of appropriate questioning prior to diagnosis was viewed by the assessors as a key weakness. Patient feedback was much more positive, revealing a high level of satisfaction with community pharmacist management. There appears to be a need for further dermatological education and training for the study pharmacists and future studies should focus on a determination of the generalizability of these findings.

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Ethical approval: the study protocol was approved by NHS NRES Committee East Midlands – Leicester.

Conflict of interest: none.

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