Original Article

Examining trainee awareness of dermatoses and dermatological assessments during acute admissions (A quality improvement project)

P Patel & N King

Abstract

Studies demonstrate 67% of elderly patients can have dermatoses, which could result in functional and psychological consequences[1-2]. Elderly presentations are further complicated by comorbidities and polypharmacy. This combined with limited dermatology training at undergraduate and postgraduate levels creates diagnostic challenges[3-4]. This project investigated dermatology assessments by trainees using the Trust's acute medical admissions proforma. 100 proforma were reviewed for skin assessments alongside nursing skin care bundles. Subsequently, a skin survey was conducted amongst trainees evaluating knowledge and confidence when diagnosing and managing common dermatoses. Successively, a dermatology teaching series was delivered. Post-intervention the above were reassessed, demonstrating improvements in most areas. The dermatology teaching series will continue alongside a Trust hospital guideline to sustain improvements in dermatological care on admission.

Keywords

AMU, admissions, dermatology, dermatoses, elderly

Key points

- Dermatoses are common in the elderly due to extrinsic and intrinsic changes in the patients' skin during the aging process
- As the population ages, clinicians will have to be more aware of dermatoses presenting acutely as primary dermatoses or secondary to underlying systemic disorders
- Increased training and teaching can demonstrate improvements in trainee knowledge and confidence when diagnosing and managing dermatoses but this needs to be sustained via a regular teaching programme

Introduction

The skin undergoes structural and physiological changes during ageing, mediated by patient extrinsic and intrinsic factors.[1] These changes result in reduced function and barrier properties of the skin, making it vulnerable to dermatoses with advancing age. With a growing number of elderly patients, dermatoses are likely to be more frequently encountered in acute admissions. Some studies show approximately 67% of elderly patients will report dermatological symptoms on questioning.[1-2] However, these symptoms are often poorly acknowledged and managed by clinicians.[3-4] This is, in part, due to lack of awareness and knowledge, related to limited dermatology teaching during undergraduate and postgraduate training.[3-4] However, these symptoms should not be ignored as they can have devastating consequences on quality-of-life, sleep and function. In some cases, symptoms can be so severe they result in depression and even reported suicides[1-2]. Further diagnostic challenges occur when elderly patients present with multiple comorbidities and polypharmacy as this can cause or create confounders in dermatology presentations. Furthermore, although many geriatricians take part in unselected take, acute clinicians will increasingly need to adapt their approach to diagnosing and managing common dermatoses, as they are likely to become more prevalent in acute patients as the population ages.

Anecdotally, we had observed that many of the medical admission proforma used in our Trust were not being completed fully. In particular, the dermatology history section of the systems review and skin map diagrams. We suspected, as a result, dermatoses may not be adequately recognised or managed. However, at the time of writing there was no UK guideline on identification and management of common dermatoses. Therefore, for this quality improvement project European and Australian guidelines were drawn upon to identify any standards and areas for improvement.

Methods

This project was conducted in 3 stages. Firstly, 100 Acute Medical Unit admission proforma, completed by trainees (ranging from Foundation doctor to higher

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Table 1. A comparison of documented assessments of dermatoses made by trainees' pre and post teaching from the history section of the acute admissions proforma (including symptoms, presenting complaint and past medical history)

Assessment of Dermatoses made by trainees in the history section of the acute medical proforma	Documented Symptoms of Dermatoses (Percentages)		Documentation of current or PMH of dermatoses (Percentages)	
	First Set of Trainees	Second Set of Trainees	First Set of Trainees	Second Set of Trainees
Not documented	95	79	80	50
Documented	5	21	20	50

speciality trainee), for any patient over 75, admitted in the first 2 weeks of April 2016 were selected from the online admissions system. These notes were then sourced on the Acute Medical Unit and care of the elderly wards and the admission proforma were reviewed for documentation of dermatological symptoms or dermatoses. The areas assessed in the proforma included: the history sections (presenting complaint and past medical history), systems review and the skin map diagram in the examination section. Medication histories were also inspected for any potential dermatology related systemic or topical agents **[Appendix 1]**. The Nursing skin care bundles were also assessed for any dermatological documentation, as these are mandatorily completed daily. Following assessment of documentation of the admission proformas, a survey was conducted to assess trainee knowledge and confidence in diagnosing and managing common skin conditions. The survey included a 10 picture skin quiz and questions examining trainee confidence when assessing and managing dermatoses measured via Likert scales **[Appendix 2]**. The surveys were initially emailed then distributed at teaching events and on the wards.

After reviewing the initial data a dermatology teaching series was provided as an intervention to trainees ranging from Foundation to Speciality trainee level. These sessions were held over 4 months on common dermatological topics, including: dermatology nomenclature, eczema and psoriasis. These sessions were selected after informal advice from the dermatology department that these are essential topics for trainees and because they fulfil aspects of the Core Medical Training (CMT) and General internal Medicine (GIM) Curricula.[5-6] Presentations on power-point were delivered as small group teachings, with all Foundation and CMTs receiving all 3 topics during the 4 month intervention period. However, the speciality trainees only received the dermatology nomenclature session due to timetabling difficulties. For all 3 sessions' there were picture quizzes and questions related to history, examination and management for each topic, delivered at the end of the teaching session to consolidate knowledge.

As change-over for trainees occurred the teaching series was delivered to both the initial trainees surveyed and the new trainees arriving in August, thus both groups benefited from the intervention. The admission proformas, skin surveys and picture quiz from the initial session were reassessed post-intervention in Mid-November.

This dermatology teaching series, as a resource, is now held by the Core Medical Trainee in Dermatology to incorporate into each year's teaching programme from Foundation to Speciality trainee level.

Statistical Analysis

The AMU proforma documentation involved categorical data hence fishers exact test with two-tailed analysis was utilised to generate p-values. Given the Junior Doctor Skin surveys were completed anonymously, pairing was not possible. Therefore, the raw data was analysed using Man Whitney U test to account for unpaired and non-parametric data. Online statistical packages: 'graphpad' and 'social science statistics' were used and statistical significance was taken at $p<0.05$.

Results

100 admission proforma of patients over 75 were assessed pre and post-intervention. The patients' age range was 76-99 years in both data sets and the proportion of males to females were 32:68 and 38:62 in the first and second set respectively. Data from the history taking sections in the clerking proforma showed improved documentation in all domains. The documentation of dermatological symptoms increased from 5% to 21% (p-value 0.0012) and the documentation of current or past dermatoses increased from 20% to 50% (p-value <0.0001) post intervention **[Table 1].**

In the medication histories, antihistamines were documented in 2% of patients in the first set of admission proformas compared with 6% in the second set. However, no clear indication for their use was documented for any of these patients. Topical agents were documented in 17% and 14% of patients respectively. However, many of these topical agents

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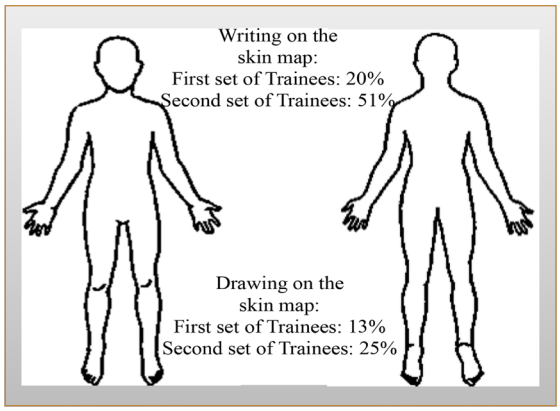

Figure 1. Copy of the skin map diagram taken from the acute admission proforma with comparison of examination assessments made by trainees' pre and post intervention.

were identified from the nursing skin care bundles but were absent in the medical admissions proforma. Subsequently, it was noted that many of these topical agents were incorrectly prescribed or omitted by the doctor on the drug chart; although the creams were still being administered by the nurses in clinical practice.

Documentation of dermatological examination on the admission skin map diagram improved post-intervention. With free comments on the skin map increasing from 20% to 51% (p-value <0.0001) and drawing on the skin map improving from 13% to 25% (p-value 0.046) **[Figure 1].**

The skin survey assessed 50 trainees in the first data set and 56 in the second set, ranging from Foundation to Speciality trainees working in medical specialties. The trainees were sent an online version of the survey but as uptake was low (2%) after two rounds of emails, they were requested to complete paper surveys anonymously on medical wards and at timetabled teaching sessions. The majority of trainees were Foundation doctors and Core Medical Trainees, and to a lesser extent higher speciality trainees and trust grade doctors completing the surveys **[Table2]**. The average percentages of doctors surveyed who had received dermatology training as an undergraduate was 87%, with 20% receiving postgraduate training.

Regarding trainee knowledge on the skin quiz: the average number of correct responses from the initial trainees was 4.3/10 compared with 5.8/10 after intervention (p-value <0.00016). The corresponding medians were 4 (range 0-8) and 5 (range 3-10) respectively **[Table3].** There was improvement in trainee confidence for diagnosing dermatoses in elderly patients (Likert scales 3-5) from 24% to 50% post-intervention (p-value 0.0021). There was also some improvement in confidence regarding pharmacological management of dermatoses (i.e. topical and systemic therapies) from 44% to 75% (p-value 0.0182). However, for non-pharmacological or lifestyle modification advice, the confidence levels were static at 34% to 32% (p-value 0.6171) **[Table4]**.

Discussion

Dermatology teaching is often limited during both undergraduate and postgraduate training.[4] The average time for dermatology teaching in medical school consists of 1-2 weeks within a 5 year medical programme.[4] Additionally, postgraduate dermatology training is only featured in CMT and GIM curriculums, not Foundation programmes, and is largely focussed around PACES training, for which trainees may not receive external assistance.[4-6] This may create difficulties in recognising and managing common dermatoses during acute admissions; something suggested by our trainee survey. In turn, this may result in suboptimal management of patients' dermatoses. It could be suggested that if dermatological symptoms and conditions were recognised at initial presentation, as part of good holistic patient assessments, some of the complications from dermatoses such as functional impairment and psychiatric comorbidities might be avoidable. Doctors working in Acute Medicine need a good understanding of dermatoses to recognise those presenting with primary dermatoses as well as those that suggest underlying systemic disorders. Importantly, some of these systemic disorders can be sinister, for example: malignancies, paraneoplastic disease, chronic renal or hepatic failure or

Table 2. Table depicting the distribution of training grades taking the Skin Survey, ranging from foundation to speciality trainees (trainees were asked to complete the surveys at teaching events and on the medical wards)

Grade of trainee taking the Skin Survey	First set of Trainees (pre-intervention)	Second set of Trainees (post-intervention)
Foundation year (FY1 and FY2)	25 (50%)	30 (54%)
CMT (CMT1 and CMT2)	16 (32%)	16 (29%)
Speciality trainees (Grades from ST3 to ST7)	6 (12%)	5 (8.5%)
Trust Grade Doctors	3 (6%)	5 (8.5%)
Total	**50**	**56**

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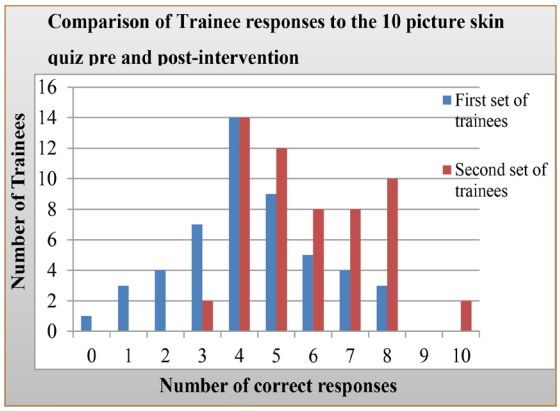

Table 3. Graph depicting trainee responses to the 10 picture skin quiz pre and post-intervention

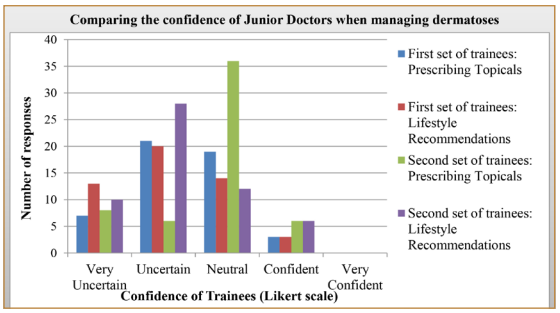

Table 4. Graph depicting trainee confidence regarding management of common dermatoses for both pharmacological and non-pharmacological methods pre and post-intervention

neurological conditions such as multiple sclerosis and thalamic/parietal strokes can all present with dermatological symptoms.[1-3]

Medics need to thoroughly review medication histories and adherence to both oral and topical agents. Our data suggests that this is not being done, as illustrated by lack of documentation of topical agents. As a result, patients' skin conditions could deteriorate during admission through failure to prescribe their usual topical medication. Anecdotally, trainees often commented they routinely reviewed the skin on admission but if no positive findings were established this was not documented. However, when reviewing the admission proforma if no documentation is seen it is difficult to establish if the dermatoses were truly reviewed or whether this was simply not performed. We would recommend even if negative findings are established, this should be documented as a baseline; given the dermatology section of the AMU proforma accounts for 1/12th of the whole booklet it would take less than a few minutes to complete fully, particularly with negative findings. Our data also suggests that antihistamine treatments, which have recognised side effects in the elderly, may have been prescribed for skin conditions although we could not prove this. This requires opportunistic review and discontinuation if no clear indication is found for their use, with active switching to topicals preferentially as they are more beneficial with a lower side effect profile.[4,7]

Other studies have shown as many as 67% of elderly patients can have dermatological symptoms when specifically questioned.[1-2] Our data showed an increased recognition of dermatological symptoms from 20% to 50% following our intervention. Given the improvement in documentation rates of dermatological symptoms pre and post teaching, it could be suggested that prior to intervention, dermatoses may have been missed or inadequately enquired about by trainees. This suggests a need to improve training in dermatology for trainees to enable easy recognition of disease and appropriate management. However, we acknowledge that with change-over of trainees during the project, some may have potentially received greater benefit from teaching given they were present throughout the project timeline and may have had better recollection the picture quiz despite a 4 month gap between reassessment. This could be a potential source of bias to the results but given only 6 remaining trainees were surveyed after changeover it is unlikely the bias would be great.

Overall, the intervention led to improvements in documentation of dermatoses, trainee knowledge and confidence. Whilst we acknowledge this does not evidence any change in the management of the patients, we would theorise that such improvements could lead to better patient management. A future extension of the project could be to try to identify specific interventions made following identification and documentation of dermatoses.

There are still areas for improvement. Many trainees (61% in pre-intervention and 46% post-intervention) felt they needed more guidance regarding dermatological management on both pharmacological and non-pharmacological options. To facilitate this, the dermatology teaching series will continue every few months with the lectures being integrated into the currently established teaching programmes for trainees from Foundation to speciality training level, but with an increased focus on management and lifestyle modifications. This series will be maintained and delivered by the CMT in dermatology. In the future this could potentially be delivered by the dermatology department's more senior clinicians which will help improve the quality of teaching.

Conclusions

Acute presentations of dermatoses in elderly populations are fraught with challenges and are likely to intensify given the increasing admissions of older people. In this project there was improvement in all domains after delivery of the teaching series, aside

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from dermatological management which was static. This knowledge and confidence may be disseminated to more trainees by imbedding the teaching series into all the current trainee teaching programmes. Additionally, other health care professionals working with older people e.g. physician's associates or allied health care professionals may benefit from the series and this could be offered in the future. To improve this project further we would recommend involvement of a senior dermatologist to facilitate and assist with delivery of the lecture series and to condense these lectures into management summaries on the hospital intranet; which could be utilised as a reference point for other acute clinicians to help improve the standard of dermatological care on acute admissions.

Conflicts of interest

None.

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Appendices

1. QIP proforma used to assess admission assessments by trainees
2. Junior doctor skin survey (answers)

Awareness of skin disorders and pruritus by junior doctors QIP

Pruritus in the elderly – a guide to assessment and management
Volume 43, No.10, October 2014 Pages 710-713

Appendix 1

Assigned code number:

Date:

Gender: ☐ Male
☐ Female

Age of patient:

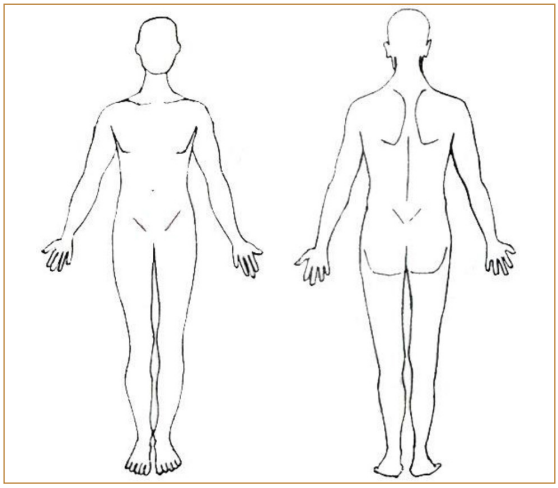
Residence: ☐ Own home
☐ Residential home
☐ Nursing home

Description of the skin and sites affected (written on proforma– if none written state none documented):

MSK

Pressure areas

Skin



Nursing skin bundle and pressure areas chart: Description of the skin and sites affected including pressure areas – if none written state none documented:

a. Skin:

b. Pressure areas:

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Any documented complaints of pruritus/itching on this admission

Any Current skin disease documented e.g. xerosis, chronic venous eczema, atopic eczema etc.

Past medical history:

a. History of arterial or venous disease or leg ulcers ☐ Yes ☐ No
b. Diabetes ☐ Yes ☐ No
c. Vascular history ☐ Yes ☐ No

Medication history and allergies:

On antihistamines ☐ Yes ☐ No

Antihistamine name	Dose regime e.g. one tablet BD	Duration of use (months/ years)	Other

Are they on any creams? ☐ Yes ☐ No

If yes, which creams?

Cream name	Dose regime	Duration of use (months/years)	Other

Any other treatment used? E.g. compression bandaging, humidifiers, modified bathing techniques, changing the environment, reduced use of heaters/diuretics/ drying agents etc.

Bloods on admission (if not done, state not done)

Hb		Creatinine		Phosphate	
WCC		Urea (baseline)		Calcium	
PLT		Creatinine (baseline)		TSH	
Neutrophils		ALP		Ferritin	
Na		ALT		Fe	
K		Bilirubin		Zinc	
Urea		CRP		Magnesium	

Any other comments:

Appendix 2

Junior doctor survey

1. Have you had any formal training in assessing skin conditions:
   a. As an Undergraduate
   b. Post qualification

2. Do you routinely review skin as part of a medical clerking/ward review?
   a. Yes
   b. No

3. Do you document skin status in the medical admission/notes (excluding hydration status i.e. not "legs soft non tender/ no oedema")
   a. Yes
   b. No

Picture quiz

1. What is the diagnosis?


1


2


3


4a


4b


5

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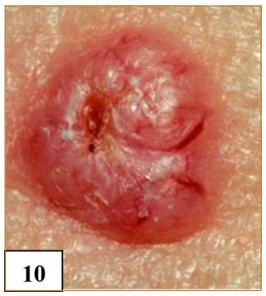
6


7


8


9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1. How confident are you in assessing skin conditions in
   a. Under 75s
      - ☐ Very uncertain
      - ☐ Uncertain
      - ☐ Neutral
      - ☐ Confident
      - ☐ Very confident

   b. Over 75s
      - ☐ Very uncertain
      - ☐ Uncertain
      - ☐ Neutral
      - ☐ Confident
      - ☐ Very confident

3. How confident are you in diagnosing skin conditions in the elderly
   - ☐ Very uncertain
   - ☐ Uncertain
   - ☐ Neutral
   - ☐ Confident
   - ☐ Very confident

4. How confident are you in in prescribing common treatments for skin conditions (e.g. creams, steroid and emollients)
   - ☐ Very uncertain
   - ☐ Uncertain
   - ☐ Neutral
   - ☐ Confident
   - ☐ Very confident

5. How confident are you in recommending alternative management for common skin conditions e.g. when to use compression bandages, changing bath products, decreased heating, use of humidifiers
   - ☐ Very uncertain
   - ☐ Uncertain
   - ☐ Neutral
   - ☐ Confident
   - ☐ Very confident

Answers: 1) Venous Eczema, 2) Erythema Multiforme, 3) Asteatotic Eczema, 4a) Venous Ulcer, 4b) Arterial Ulcer, 5) Keratitic/Cutaneous horn, 6) Seborrheic Keratosis, 7) Cellulitis, 8) Melanoma, 9) Squamous Cell Carcinoma, 10) Basal Cell Carcinoma

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