Title: The prescribing practices of nurses who care for patients with skin conditions: a questionnaire survey

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ABSTRACT

Aim

To explore the practice of nurses who prescribe medication for patients with skin conditions.

Background

Nurses have lead roles dermatology services. In the United Kingdom nurses in primary care frequently prescribe medicines for skin conditions, but there are concerns about role preparation and access to continuing professional development. The prescribing practices of nurse independent supplementary prescribers who care for patients with skin conditions are under researched.

Design: Cross-sectional survey

Methods: An online questionnaire was used to survey 186 nurses who prescribed for skin conditions May-July 2010. Data were analysed using descriptive statistics and non-parametric tests.

Results

The majority worked in primary care (78%), and general practice (111, 59.7%). Twenty (10.8%) had specialist-modules (at diploma, degree or masters level), 104 (55.9%) dermatology training (e.g. study days), 44 (23.7%) no training, and a further 18 (9.6%) did not respond. Oral-antibiotics, topical anti-fungal and anti-bacterial were frequently prescribed. Nurses with specialist-dermatology training used their qualification in a greater number of ways, prescribed the broadest range of products, and prescribed more items per week. Over 70% reporting on continuing professional development had been able to access it.

Conclusion

Large numbers of nurses in primary care prescribe medicines for skin conditions and are involved in medicines management activities. Lack of specialist dermatology training is a concern and associated with lower prescribing-related activities. Access to dermatology training and continuing professional development is required to support nurse development in this area of practice and maximise benefits.

Relevance to clinical practice

Nurse prescribers' involvement in medicines management activities has important implications in terms of improving access to services, efficiency and cost savings. In order to maximise their contribution, improved provision of specialist dermatology training is required. This will be of interest to education providers and service planners in the United Kingdom, and countries around the world.

Key-words skin, nurse prescribing, medicines-management-activities, survey

Introduction

Over a quarter of the population has a skin problem (e.g. eczema, leg ulcers and skin cancer) that can benefit from medical care at any one time (Schofield *et al.* 2009). Every year around 12.9 million people in the United Kingdom (UK) consult a doctor regarding a skin related condition, 6% of whom are later seen within the specialist dermatology service (DH 2007, Schofield *et al.* 2009). While it is recognised that large numbers of people manage their own condition, the demand for skin related appointments in the UK is high (All Party Parliamentary Group on Skin 2004, British Association of Dermatologists & Royal College of Physicians 2008), each general practitioner (GP) having on average 12 skin related consultations per week (DH 2007, Schofield *et al.* 2009).

The provision of health services which are both flexible and accessible to patients is a key government priority in the UK (DH 1999b, 2000, 2007). However, the demand for skin related appointments means that doctors are increasingly unable to meet the service demands (All Party Parliamentary Group on Skin 2004, British Association of Dermatologists & Royal College of Physicians 2008). It is recognized that nurses have lead roles to play in the delivery of dermatology services (Cox & Walton 1998, DH 2007, McEvoy 2004) and that nurse-led care enhances the care that patients with dermatology conditions receive (Moore *et al.* 2009, Schuttelaar *et al.* 2009, van Os-Medendorp *et al.* 2007). Dermatology conditions are amongst the most frequently presented problems in immediate-access settings (such as walk-in centres and out-of hours) (Kinnersley *et al.* 2000, Salisbury & Munro 2002). These services, designed to improve access to frontline healthcare, are predominantly provided by nurses. In order that the skills of these healthcare professionals are optimised, and patients are able to access medicines faster, many of these nurses in the UK are qualified to prescribe.

Nurse prescribing has been introduced in a number of countries (e.g. the United States, Australia, Ireland, and Botswana), as a means to improve efficiency and access to treatment (Ball 2009, Kroezen *et al.* 2011, Miles *et al.* 2006). There is however, considerable variation between the policies and practice of each country. For example, in the United States where advanced practice registered nurses (APRN) are able to prescribe, prescriptive authority across the 50 states varies with regards to requirements, standards and practices (Buchan & Calman 2004).

In the UK, following a series of legislative changes between 1992 and 2006, nurses have virtually the same prescribing rights as doctors (DH 2002, 2006). Community practitioners (CP), of which there are approximately 32,000, were the first group to be provided with the capacity to prescribe from a restricted formulary (mainly over the counter products/medicines and wound dressings) listed in the Nurse Prescribers Formulary for Community Practitioners (Nursing and Midwifery Council (NMC) 2011). Independent prescribing rights were extended in 2001 to include other groups of registered nurses (DH 2002). Nurse Independent Prescribing (NIP) and Nurse Supplementary Prescribing (NSP) are two additional forms of prescribing. Through NIP, nurses may assess, diagnose and prescribe independently any licensed or unlicensed medicine with the exception of some controlled drugs for the treatment of addiction (DH 2006, Home Office 2012, Medicines and Healthcare products Regulatory Agency (MHRA) 2009). By contrast, NSP is a form of dependent prescribing where the initial diagnosis is made by a doctor and a Clinical Management Plan (CMP) detailing the medicines that can be prescribed, must be agreed between the NSP, doctor and patient (DH 2003).

Importantly, prior to legislative change in 2006 nurses using NIP could only prescribe a limited range of products from the Nurse Prescribers Extended Formulary. This formulary included a list of nearly 250 Prescription Only Medicines (POM), General Sales List (GSL) items and Pharmacy (P) medicines for a range of over 100 medical conditions, a significant category of which was skin conditions. There are now over 23,000 nurses (qualified as independent and supplementary prescribers (NISPs)) (NMC 2011) with the most extended prescribing rights in the world.

It is recognised that approximately a third of NISPs, the majority of whom are based in primary care and work in general practice, contribute to the provision of services for patients with skin conditions (Courtenay & Gordon 2009, Latter *et al.* 2010) and that prescribing enhances the care they provide (Carey *et al.* 2010, Courtenay *et al.* 2009a, Courtenay *et al.* 2011b). Improved access to medicines, better use of health professionals' skills, and increased flexible working are all benefits associated with dermatology nurse prescribing (Carey *et al.* 2010, Courtenay *et al.* 2009a, Courtenay *et al.* 2011b). Patients additionally report that they like the continuity of care, comprehensive information and holistic care that they receive from nurse prescribers for their skin conditions (Courtenay *et al.* 2011). However, since legislative changes in 2006 (DH 2006), there is no research available that has explored the profile and prescribing practices of these nurses. This is important given that this legislation enabled nurses to independently prescribe any medicine for any skin condition within their area of competence.

Background

Findings from two recent UK surveys designed to explore the therapy areas in which nurses prescribe and the settings in which they work, identified that the majority of nurses who

prescribe for dermatology patients are based in primary care and are employed in general practice (Courtenay & Gordon 2009, Latter *et al.* 2010). While there is some evidence from the United States that APRNs practicing in dermatology frequently prescribe (Goolsby 2005), international evidence regarding the profile and prescribing practices of nurses who care for patients with skin conditions is lacking (Ball 2009, Kroezen *et al.* 2011).

Only one study, conducted in 2005 (Courtenay *et al.* 2006), has specifically reported on the prescribing practices of nurses who care for dermatology patients. In this study, Courtenay *et al.* (2006) found 75% of the 868 independent extended and supplementary prescribers surveyed prescribed for dermatology patients, 90% worked in primary care and 58% were based in general practice. Examination of the dermatology prescribing practices of these nurses indicated that over a third prescribed 1-5 items a week, and products most frequently prescribed were for the management of fungal infections, atopic dermatitis and impetigo (Courtenay *et al.* 2007a). Although nearly all respondents used their prescribing qualification (95% as an NIP and 37% as a NSP), nurses with specialist dermatology training (i.e. a diploma, degree, or masters level module in dermatology, or dermatology study days) prescribed more frequently, and for a broader range of skin conditions. Constraints caused by local arrangements (e.g. waiting for prescription pads and a lack of prescribing budget), a lack of understanding and support, difficulties implementing the CMP and a lack of access to continuing professional development (CPD) were reported to be factors that restricted nurses' prescribing practice (Carey & Courtenay 2007, Courtenay *et al.* 2007a).

Although nurses in general are positive about the adoption of the role as prescriber (Latter *et al.* 2010) there are ongoing concerns surrounding preparation (Bradley *et al.* 2006, Latter *et al.* 2005, Otway 2001, Rana *et al.* 2009, Sodha *et al.* 2002), support for the role (Humphries

& Green 2000, Stenner & Courtenay 2008), and access to CPD (Courtenay & Gordon 2009, Humphries & Green 2000, Luker & McHugh 2002).

Despite these concerns, recent evidence suggests that undertaking the prescribing qualification has a wider impact on nurse's practice than purely the issuing of prescriptions. Although not specifically looking at dermatology services, nurses who have adopted the prescribing role in other areas of practice report that their involvement in medicines management activities, such as amending prescribed medication (i.e. alter, stop or correct dosage), medication review, and remote prescribing (via telephone, fax, or email) (Carey *et al.* 2009, Courtenay *et al.* 2009b, Stenner & Courtenay 2008), has increased. For example, specialist pain nurses (n=26) interviewed by Stenner and Courtenay (2008) believed that clinically inappropriate prescribing in the area of pain management was avoided or corrected by specialist nurses adopting the prescribing role. Similarly, children's nurses (n=7) interviewed by Carey *et al.* (2009) reported that having the capacity to prescribe allowed them to avert and / or correct medication errors. However, the extent to which nurses who prescribe for dermatology conditions are involved in these medicines management activities has not yet been explored.

Evidence examining how legislative changes since 2006 (enabling nurses to prescribe any medicine for any dermatology condition) have impacted on prescribing practices, role preparation and CPD needs is lacking. This is important as this information will help us understand how NISP is used in service delivery and the support required for this role.

The study

Aim

To explore the practice of nurses who prescribe medication for patients with skin conditions.

Design

A cross-sectional survey was adopted, using an on-line questionnaire. This paper reports on questionnaire data that formed part of larger survey designed to evaluate NISP in the UK, the results of which are reported elsewhere (Courtenay *et al.* 2010). Data were collected between May-July 2010.

Participants

The participants were a convenience sample of 186 nurses located throughout the UK. All were qualified as either NISPs or CPs and registered on the Association for Nurse Prescribing (ANP) membership database. All prescribed medicines for dermatological conditions. Membership of the ANP, an independent organization that provides support and education for nurses in their role as a prescriber, is optional and thus provided a convenient point of access to NPs in the UK.

Questionnaire

The questionnaire was disseminated using Survey Monkey© an internet-based survey tool. The questionnaire comprised of four sections and used both closed and open-ended questions. Simple instructions on how to complete it were provided. The first section of the questionnaire collected general demographic information including job title, geographical area, care setting, type of services provided, the number of nurse prescribers (NP) in the

team, and future plans for NPs in their area of practice. The second section asked respondents about their prescribing practice including type of prescribing qualification, years qualified as a prescriber, level of experience, and method of prescribing.

At the end of the second section, participants who prescribed medicines for dermatology conditions were invited to complete a number of further questions regarding their specialist training in dermatology, the number of items prescribed for dermatology conditions per week, the ways in which they used their prescribing qualification, which conditions/medicines they prescribed, the source(s) of evidence used to inform their prescribing decisions, whether they had access to CPD, if they had undertaken CPD, their three most urgent CPD needs and preferred method of learning. Tick, and / or free-text, boxes were provided for responses.

Data collection

All NPs registered on the ANP membership database (n=859) with a valid email address, were sent an email invitation, by the ANP administrator, to participate in the on-line survey. This large sample was required to ensure that each one of the broad range of settings in which nurses prescribe medicines for patients was represented. Based on the findings and response rates of previous national surveys undertaken by the researchers (Courtenay *et al.* 2006, Courtenay & Gordon 2009), it was estimated that a 65% response rate would be achieved, of whom 40% of respondents would prescribe medicines for patients with dermatology conditions.

The invitation email outlined the purpose of the study and what would be required of them. Assurance was given that respondents would remain anonymous and that participation was entirely voluntary. Those who wished to participate were asked to use an electronic link

within the email to access the on-line survey. After three email reminders, 439 (51.1%) valid responses were received, of which 186 (42.2%) reported they prescribed for dermatological conditions.

Ethical approval

University ethical approval for the study was obtained.

Data Analysis

Microsoft Excel and SPSS version 17 were used for data entry and analysis. Some respondents did not complete every item on the questionnaire. Initial exploration showed that respondents were inconsistent in the extent to which they completed the questionnaire. Due to the sample size it was not feasible to remove responses from participants who did not complete every item. Consequently there is some fluctuation in the number of respondents reported in the different aspects of the survey and in the data presented in the supporting tables. The number of respondent's providing data for different aspects of the questionnaire is presented within each section of the results, and described under the relevant tables.

Descriptive statistics were used to describe the demographic nature of the sample. Non-parametric tests were used pragmatically to explore the differences between variables e.g. job title, care setting, specialist dermatology module, dermatology training and education, number of items prescribed per week, number of dermatology products prescribed, and methods of using the prescribing qualification. These procedures, and variables were based on previous surveys that have explored the prescribing practices of NISPs (Courtenay *et al.* 2006, Courtenay & Gordon 2009). Where two groups are compared for an ordinal response (e.g. number of items prescribed per week, number of dermatology products prescribed, and

methods of using the prescribing qualification) Mann-Whitney U test is used. Where three or more groups are compared for an ordinal response, (e.g. dermatology training, job title, care setting and number of ways the prescribing qualification is used) the Kruskal Wallis test is used (Field 2005, Pallant 2005). In order to counteract the problem of multiple comparisons, and increased risk of Type 1 error, a Bonferroni correction of the alpha level was applied. Five multiple tests were performed, and the level of significance was adjusted from $p=0.05$ to $p=0.01$ (Field 2005). Content analysis, the systematic process of organizing free text comments into emerging themes with the goal of quantitatively measuring variables (Parahoo 2006), was used to analyse free text comments which were independently reviewed by a second researcher.

Reliability and validity

Where possible, the content and format of the questions were similar to those used in previous surveys of NP in the UK in order to increase reliability and enable comparison with earlier work (Carey *et al.* 2007, Courtenay & Carey 2006, Courtenay *et al.* 2007a). Piloting the questionnaire prior to dissemination on six nurses who prescribed for dermatological conditions was used to achieve face validity of the questionnaire (Parahoo 2006). They were asked to comment on the classification of dermatology products prescribed, and methods of using the prescribing qualification for patients with dermatology conditions. Each nurse was asked to comment on the appropriateness on the content, ease of completion, and any difficulties experienced completing it. Based on these comments minor refinements were made to the wording of a couple questions.

Results

Demographic details

The majority of respondents were based in primary care (145, 78.0%) and worked as GP nurses (111, 59.7%) (see table 1). Twenty (10.8%) had undertaken a specialist dermatology module (at diploma, degree or masters level). However, most (104, 55.9%) had only undertaken study days (including those supported by the pharmaceutical industry), 44 (23.7%) had not undertaken any specialist dermatology training and a further 18 (9.6%) did not respond to this question.

Service provision

Participants were from all regions of England, Scotland and Wales, with 23.1% (n=43) based in South-East England (see table 1). While the majority provided a GP service (117, 62.9%), nurses also reported they were involved in a range of other services including the community (27, 14.5%), out of hours (25, 13.4%), hospital out-patient (23, 12.4%), walk-in-centre (22, 11.8%), hospital in-patient (15, 8.1%), community clinic (12, 6.5%), education/ research (10, 5.4%) and other services (i.e. independent sector, prison, armed forces) (8, 4.3%).

The majority (108, 58%) of respondents reported that there was more than one NP in their team (mean=2.85) (see table 1). Seventy one (38.2%) reported one nurse prescriber in their team, and 9 (4.8%) more than ten. Plans to increase the number of NPs were reported by 71 (38.2%) participants, and 35 (18.8%) reported that a team member was currently undertaking prescribing training.

Prescribing Practice

One hundred and eighty-three (98.4%) participants reported they prescribed independently, and two used supplementary prescribing (1.1%) (see table 1). Of the 151 participants who reported on the number of items they independently prescribed for dermatological conditions in a week the majority (n=83, 54.9%) prescribed 1-5 items. Using the Kruskal Wallis Test it was evident that compared to other groups of nurses GP nurses prescribed the greatest number of items per week ($p=0.003$), with 30% prescribing more than 6 items a week (see table 2). Further analysis using the Mann-Whitney U test found nurses who had undertaken training (accredited study days or otherwise) also prescribed significantly more items per week than those who had not ($p<0.001$) (see table 3).

Participants used a number of sources of evidence to inform their practice including the British National Formulary (n=145, 78.0%), National Institute of Clinical Excellence (NICE) guidelines (n=126, 67.7%), local guidelines (n=111, 59.7%), clinical knowledge summaries (n=97, 52.2%), journals and bulletins (n=88, 47.3%), and other national guidance (n=51, 27.4%).

Dermatology products which nurses independently prescribe

The range of dermatology products participants prescribed is shown in figure 1. Using Kruskal Wallis it was evident that GP nurses prescribed a significantly wider range of products than nurses with other job titles ($p<0.001$) (see table 4). Similarly, nurses who worked in primary care prescribed for a significantly broader range of products than those in other care settings ($p=0.003$). Further analysis (using Mann-Whitney U identified that nurses with specialist training (accredited study days or otherwise) prescribed a wider range of products than those without ($p=0.015$). The range of products prescribed was 0-19, mean=9.12, SD=4.36 and median =9.

Methods of using the prescribing qualification

One hundred and fifty six (83.8%) participants reported on the methods of using the prescribing qualification. Participants reported that they used the prescribing qualification in a variety of ways (see figure 2). Of these respondents 129 (82.7%) reported that they issued FP10 prescriptions directly to patients (FP10 prescription forms are purchased by each Trust for prescribing medication that is to be dispensed by community pharmacies in the UK), 119 (76.3%) amended prescribed medication (i.e. alter, stop or correct dosage) and 105 (67.3%) were involved in medication review. One hundred and forty two (91.0%) reported that they recommended patients buy medicine(s) over the counter whereas only 17 (10.8%) issued private prescriptions. The range of methods by which the prescribing qualification was used=0-8, mean=3.47, SD=2.05, mode=5.

Analysis using the Mann-Whitney U test identified that nurses with specialist training ($p=0.002$), or a dermatology module ($p=0.007$) used their prescribing qualification in a significantly greater number of ways than those without. Analysis using the Kruskal Wallis test also identified that GP nurses and those who worked in primary care used their prescribing qualification in a greater number of ways than other types of nurses and those in other care settings, but this was not to a level of statistical significance ($p>0.05$ (see table 5)).

Continuing professional development

One hundred and thirty three (71.5%) reported on aspects of the questionnaire exploring access and availability of CPD. Of these respondents ninety six (72.2 %) indicated they had access to, and had undertaken CPD to support them in their prescribing practice for dermatology patients and 37 (27.8%) indicated they had not. Forty one (30.8%) reported difficulties fulfilling their dermatological CPD needs. Difficulties identified from free text

comments included a lack of appropriate CPD (n=19) and issues over access, availability and time to undertake CPD (n=16). The areas for which respondents (n=102) had the most urgent CPD needs were the assessment and diagnosis of skin conditions (64%, n=65), psoriasis (42%, n=43) and acne (32%, n=33).

Participants (186) were also asked to indicate their preferred method of accessing CPD: 94 (50.5%) reported e-learning while action learning sets (i.e. facilitated small groups that meet regularly to provide support and act on work issues) (10, 7.5%) were the least preferred method. Ninety (48.4%) indicated a preference for journals, and 88 (47.3%) formal study days. Prescribing forums, individual study and non-accredited lunch-time or evening sessions were each reported to be the preferred method of accessing CPD by 52 (28%) participants. Smaller numbers preferred work-based learning (50, 26.9%), non-medical prescribing conferences (43, 23.1%), and clinical speciality conferences (17, 9.1%).

Discussion

Limitations

We acknowledge that NPs who become members of the ANP are likely to be actively prescribing and keen to access support and education; therefore, their views may not be reflective of all nurse prescribers. The limitations of using face validity is also acknowledged, and the need for further surveys in this area of practice to include more robust measures of reliability and validity. Limitations of the data set resulted in the pragmatic use of non-parametric tests to explore the differences between demographic variables, and increased risk of type 1 error. Although a Bonferroni correction of the alpha level was applied, a further study, sufficiently powered to test the hypothesis should be carried out to confirm the findings. Despite this, and the relatively small sample size in proportion to the number of

qualified nurse prescribers, the demographic nature of the sample is similar to previous surveys which have explored nurse prescribing in the UK (Courtenay *et al.* 2007a, Courtenay & Gordon 2009, Latter *et al.* 2010). It therefore provides an important update of how NISP is currently being used to provide services to patients with dermatological conditions.

Discussion of results

This is the first study, since 2006 and 2009 legislative changes (DH 2006, MHRA 2009) to explore the practice of NISPs who prescribe medicines for patients with dermatological conditions. Our study provides empirical evidence that UK nurses based in primary care, and working in a variety of practice settings, use the NISP qualification to provide care to patients with a broad range of skin conditions.

In-line with previous surveys of nurse prescribing (Courtenay *et al.* 2007a, Courtenay & Gordon 2009, Latter *et al.* 2010), the majority of nurses in our sample were based in primary care, worked in general practice and had more than 5 years experience as a prescriber. Additionally, the findings provide some evidence that although NPs are working across all parts of the UK, the majority prescribing for skin conditions appear to be based in South-East England.

The large percentage of nurses who reported that they provide services in primary care i.e. general practice, community and immediate-access settings (such as walk-in centres and out-of hours) highlights the important contribution that nurse prescribing can make across a range of practice settings in which dermatology patients are treated. This is in line with the anticipated benefits of recent UK government policy (DH 2000, 2006, 2007), a key component of which has been to provide convenient and flexible access to healthcare (DH

1999a, 2000) and to deliver services closer to patients homes (DH 2007). It is also consistent with the development of nurse prescribing policy in a number of other countries, particularly those with lower-incomes such as Botswana and South Africa, which has evolved as part of the strategy designed to provide equitable access to safe and affordable medicine to people around the world (Bhanbhro *et al.* 2011, Miles *et al.* 2006).

Regardless of nurse's role, products frequently prescribed by participants in this survey were for the treatment of bacterial and fungal skin infections (i.e. oral antibiotics, topical anti-fungal and topical anti-bacterial). Whilst we acknowledge that these type of infections may sometimes require long term and / or systemic treatment, our results are in-line with recent evidence from the US that topical anti-infective products and topical hydrocortisone are the most commonly used over the counter products for dermatology conditions (Nolan *et al.* 2012). In addition to being managed by GPs (Royal College of General Practitioners Birmingham Research Unit 2006), skin infections of all types (i.e. bacterial, fungal and viral), the majority of which require only a one-off episode of care, were those most frequently reported to be managed by dermatology nurse prescribers (Courtenay *et al.* 2007a), and observed in video-consultations of their practice (Courteany *et al.* 2009). Our findings therefore present further evidence to suggest that independent prescribing is predominantly used to provide treatments to this group of patients.

Our results indicate a decline in the use of NSP since 2005. This is in line with findings from a national evaluation of nurse and pharmacist independent prescribing, only 17.6% of NISPs surveyed in 2008 used supplementary prescribing in their practice (Latter *et al.* 2010). Supplementary prescribing was primarily intended for use in managing chronic and long-term conditions including chronic skin disease (DH 2003). Using NSP, medicines can only be

prescribed once an initial diagnosis has been made by a doctor and a CMP detailing the medicines has agreed between the NSP, doctor and patient. However, nearly 80% of respondents provided services in primary care i.e. general practice, community and immediate-access settings (such as walk-in centres and out-of hours). It is reasonable to speculate that NSP is not appropriate for the management of skin conditions which predominantly require only one-off treatments accessed via these services for which nurses can now independently prescribe. Previous research has indicated that NSP remains useful where nurses lack confidence, or where this is the only mode of prescribing supported by an organization (Courtenay *et al.* 2011a).

In line with previous findings (Carey *et al.* 2007, Courtenay *et al.* 2007a), GP nurses prescribed the highest number of items (the majority prescribing 1-5 items in a typical week) and the widest range of products. Interestingly, GP nurses in Courtenay *et al.*s ' (2007a) work reported a slightly higher prescribing rate i.e. between 6-10 dermatological products each week. This possibly reflects that some patients now access medicines for their dermatology conditions through immediate access settings (such as walk-in centres) as opposed to their GP. However, in order to fully understand this finding, further investigation is required.

Respondents used the prescribing qualification in a variety of ways. While the majority reported they issued prescriptions directly to the patient, over three quarters of the sample reported that they used their qualification to amend prescriptions and were involved in medication review. At the time of study there were some qualitative reports (Carey *et al.* 2009, Stenner & Courtenay 2008) that NPs were taking a more active role in other medicine management activities as opposed to prescribing. However, recent survey findings from 883 non-medical prescribers across a large geographical area (Courtenay *et al.* 2012), provides

detailed evidence that NPs are engaged in a range of activities that can also impact on the service efficiency, quality of care and patient outcomes. Nevertheless, this is the first study to confirm the breadth of these activities and extent to which NPs undertake them for patients with dermatology conditions. It is however; acknowledged that further more detailed exploration of the situations where nurses alter, stop or correct dosage for patients with dermatology conditions is also required. The diverse range of medicines management activities in which NPs are involved needs to be recognised by those responsible in service planning. Not only do NPs provide an opportunity to overcome some of the demands on appointments for doctors (All Party Parliamentary Group on Skin 2004, British Association of Dermatologists & Royal College of Physicians 2008), and improve quality of care (NPSA 2007), they also have important implications for potential cost savings. Given the large number of people who seek medical care for skin related conditions (Schofield *et al.* 2009) and the lack of international evidence regarding dermatology nurse prescribing (Ball 2009, Kroezen *et al.* 2011), our findings suggest investigation of the profile and prescribing practices of nurses who care for this group of patients in other countries is urgently required.

Nearly a quarter of participants in our sample indicated that they had never undertaken any specialist dermatology training. This supports previous concerns about the inadequate levels of training and knowledge that nurses have in the management of skin problems (All Party Parliamentary Group on Skin 2004, Courtenay *et al.* 2007a, Ersser *et al.* 2005, Ogden *et al.* 2006, Schofield *et al.* 2009). Nurses in our study with specialist dermatology training prescribed more frequently and used their prescribing qualification in a greater number of ways, therefore emphasising the importance of dermatology training with regards to maximising nurse's contribution to general dermatology services. By implication, the skin care services offered by nurse prescribers could be extended if it was ensured that those

nurses who accessed prescribing training and treated dermatology patients had specialist training. Our findings reinforce NMC guidance (NMC 2006) which stipulates that nurses need to acquire specialist knowledge prior to undertaking the prescribing programme. The need to ensure that NPs have specialist knowledge is also reinforced by recent evidence from dermatology patient interviews (Courtenay *et al.* 2011b). Although patients had few concerns about nurse prescribing, adequate training and specialist knowledge were seen as essential by nurses adopting this role (Courtenay *et al.* 2011b). Given that there is increasing international recognition of the importance that nursing can make to the provision of dermatology services worldwide (Ersser *et al.* 2011), our findings highlight the ongoing need for agreed levels of training in this area of practice (All Party Parliamentary Group on Skin 2004, Schofield *et al.* 2009).

Over 70% of the participants in our study reported they had accessed CPD to support their current prescribing role. This is higher than the 60% reported previously (Courtenay *et al.* 2007b). Although this suggests that there has been some improvement with regards to accessing dermatology CPD, CPD needs were reported for conditions which participants less frequently prescribed (including psoriasis, and acne). While this may therefore reflect that non-specialist nurses see patients with chronic skin conditions, it is possible that it also reflects that nurses recognise they need to undertake CPD in order to prescribe for these conditions. Although participants reported a number of ways they would like to access CPD, e-learning, as previously reported (Courtenay & Gordon 2009), was their preferred method of learning.

Conclusion

In the UK large numbers of nurses in primary care prescribe medicines for skin conditions. These nurses also use their prescribing qualification to support their involvement in other medicines management activities. This has important implications for improving access to services, increased efficiency and cost savings and will be of interest to those involved in service planning in the UK and other countries around the world. However, lack of specialist dermatology training is a concern. A lack of specialist training is associated with lower rates of prescribing and a reduction in the number of ways in which nurses use the prescribing qualification. Access to dermatology training and continuing professional development is required to support nurse development in this area of practice and to maximise benefits.

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Table 1: Demographic Details

	<i>n=number of responses</i>		% of total sample
Job Title			
General practice nurses (practice nurses and nurse practitioners)	111	59.7	
Specialist & senior clinical nurses (clinical nurse specialists, nurse consultant, specialist nurse practitioners, modern matron, mental health nurse)	56	30.1	
Community Nurses (community matron, health visitor, district nurse, school nurse)	11	5.9	
Higher education & managers	5	2.7	
Geographical location			
Scotland	18	9.7	
Wales	6	3.2	
Northern England	6	3.2	
Yorkshire & Humber	10	5.4	
North West England	18	9.7	
Eastern England	17	9.1	
London	23	12.4	
South West England	21	11.3	
South East England	43	23.1	
East Midlands	8	4.3	
West Midlands	16	8.6	
Care setting			
Primary care	145	78.0	
Secondary Care	23	12.4	
Primary and Secondary Care	9	4.8	
Mental Health	4	2.2	
Other settings (higher education, intermediate care)	5	2.7	
Prescribing qualification			
Nurse Independent Supplementary Prescriber(NISP)	183	98.4	
Community Practitioner Prescriber (CP)	3	1.6	
Years qualified as a prescriber			
< 1 year	11	5.9	
1-3 years	36	19.4	
3-5 years	62	33.3	
> 5 years	76	40.9	
Experience in area of practice before becoming prescriber			
< 1 year	5	2.7	
1-2 years	10	5.4	
2-5 years	36	19.4	
> 5 years	132	71.0	
Dermatology training and education (<i>more than one response could be given</i>)			
Diploma, Degree, Masters level modules in dermatology	20	10.8	
Accredited study days (e.g. university or RCN) & or other training (drug company study days, conferences)	104	55.9	
No specialist training	44	23.7	
Number of nurse prescribers (NP) in team (mean=2.85, median =2.0, mode =1)	Yes	No	Don't know
Do you think there is a need for more NPs in your team?	134(72.0%)	44(23.7%)	7 (3.8%)
Are there plans to increase the number of NPs in your team?	71 (38.2%)	101 (54.3%)	12(6.5%)
Are any members of your team currently on the NP course?	35 (18.8%)	146(78.5%)	2 (1.1%)
<i>Percents do not add to 100% in each category as some participants did not complete every question</i>			

Table 2: The number of items prescribed in a typical week for dermatological conditions by nurse prescribers by job title

Job Title	Number of items prescribed						Total
	0	1-5	6-10	11-20	21-40	>40	
General practice nurses	1	37	24	0	6	4	72
Specialist and senior nurses	2	36	8	0	0	2	48
Community Nurses	1	7	1	0	0	0	9
Higher education & managers	0	2	0	0	0	0	2
Total	4	82	33	0	6	6	131
Kruskal Wallis p<0.001							

This table represents the 131 respondents who reported both their job title and number of items prescribed

Table 3 Items prescribed by nurse prescribers with training and specialist dermatology module

<i>Items prescribed per week</i>	0	1-5	6-10	11-20	>20	Median <i>(Inter-quartile range)</i>
With training (Without training (accredited study days or other training (drug company study days, conferences)) N=104	1 (1.0%)	48 (46.2%)	30 (28.8%)	15 (14.4%)	10 (9.6%)	6-10 (1-5 to 6-10)
Without training Without training (accredited study days or other training (drug company study days, conferences)) N=42	2 (4.8%)	32 (76.2%)	4 (9.5%)	3 (7.1%)	1 (2.4%)	1-5 (1-5 to 1-5)
Comparison: Training (accredited study days or otherwise)						Mann-Whitney U test: P<0.001
With specialist dermatology module N=18	0 (0.0%)	6 (33.3%)	5 (27.8%)	5 (27.8%)	2 (11.1%)	6-10 (1-5 to 11-20)
Without specialist dermatology module N=128	3 (2.3%)	74 (57.8%)	29 (22.7%)	13 (10.2%)	9 (7.0%)	1-5 (1-5 to 6-10)
Comparison: Specialist dermatology module						Mann-Whitney U test: P=0.18

This table represents the 146 respondents who reported both the number of items prescribed per week and dermatology training and education

Table 4: The effect of training, job title and care setting on the number of dermatology products prescribed at least monthly

	0	1-5	6-10	11-15	16-22	Median (Inter-quartile range)	P value
General practice nurses (n=88)	1 (1.1%)	9 (10.2%)	31 (35.2%)	39 (44.3%)	8 (9.1%)	10.5 (8-14)	
Specialist & senior clinical nurses (n=45)	4 (8.9%)	13 (28.9%)	20 (44.4%)	7 (15.6%)	1 (2.2%)	2.0 (1-3.5)	
Community (n=9)	0 (0.0%)	5 (55.6%)	4 (44.4%)	0 (0.0%)	0 (0.0%)	3.0 (1-5.75)	
Higher Education /managerial (n=2)	0 (0.0%)	1 (50%)	1 (50%)	0 (0.0)	0 (0.0%)	1.0 (0-1.5)	
Comparison: Job title (n=144)	5 (3.5%)	28 (19.4%)	56 (38.9%)	46 (31.9%)	9 (6.3%)		**P<0.001
Primary care (n=123)	2 (1.6%)	22 (17.9%)	46 (37.4%)	45 (36.6%)	8 (6.5%)	8.0 (2-12)	
Other care settings (n=23)	3 (13.0%)	6 (26.1%)	11 (47.8%)	2 (8.7%)	1 (4.3%)	1.1 (0.25-8)	
Comparison: Care setting (n=146)	5 (3.4%)	28 (19.2%)	57 (39.0%)	47 (32.2%)	9 (6.2%)		*P=0.003
With training <i>Without training</i> (<i>accredited study days or other training</i> (<i>drug company study days,</i> <i>conferences</i>)) (n=102)	2 (2.0%)	18 (17.6%)	36 (35.3%)	38 (37.3%)	8 (7.8%)	10 (6 to 13)	
Without training (<i>accredited study days</i> <i>or other training (drug company study</i> <i>days, conferences</i>)) (n=39)	2 (5.1%)	8 (20.5%)	21 (53.8%)	8 (20.5%)	0 (0.0%)	9 (5 to 10)	
Comparison: Training (accredited study days or otherwise) (n=141)							*P=0.015

(* =Mann- Whitney U Test, ** = Kruskal Wallis Test)

This table represents respondents who reported the number of dermatology products prescribed per month and provided information about their job title (n=144), care setting (n=146), and dermatology training (n=141)

Table 5: The effect of training, specialist dermatology module, job title and care setting on the number of ways the prescribing qualification is used

(* = Mann-Whitney U Test, ** = Kruskal Wallis Test)

	0	1-2	3-5	6-8	Median (Inter-quartile range)	P value
With training (accredited study days or other training (drug company study days, conferences)) (n=104)	8 (7.7%)	19 (18.3%)	56 (53.8%)	21 (20.2%)	4 (2 to 5)	
Without training (accredited study days or other training (drug company study days, conferences)) (n=47)	4 (8.5%)	19 (40.4%)	19 (40.4%)	5 (10.7%)	3 (1 to 4)	
Comparison: Training (accredited study days or otherwise) (n=151)						*P=0.002
With specialist dermatology module (n=19)	0 (0.0%)	2 (10.5%)	10 (52.7%)	7 (36.9%)	5 (3 to 6)	
Without specialist dermatology module (n=132)	12 (9.1%)	36 (27.3%)	65 (49.3%)	19 (14.4%)	3 (2 to 5)	
Comparison: Specialist dermatology module (n=151)						*P=0.007
General practice nurses (n=93)	7 (7.5%)	22 (23.7%)	44 (47.3%)	20 (21.6%)	4 (2 to 5)	
Specialist & senior clinical nurses (n=44)	5 (10.2)	13 (26.5%)	25 (51.0%)	6 (12.2%)	3 (2 to 5)	
Community (n=9)	2 (22.2%)	1 (11.1%)	6 (66.6%)	0 (0.0%)	3 (0.5 to 3.5)	
Higher Education /managerial (n=3)	1 (33.3%)	1 (33.3%)	1 (33.3%)	0 (0.0%)	1 (0 to 5)	
Comparison: Job title (n=149)						**P=0.105
Primary care (n=131)	13 (9.9%)	28 (21.4%)	69 (52.6%)	21 (16.1%)	4 (2 to 5)	
Other care settings (n=25)	2 (8.0%)	10 (40.0%)	8 (32.0%)	5 (20.0%)	3 (1 to 5)	
Comparison: Care setting (n=156)						*P=0.401

This table represents respondents who reported the number of ways the prescribing qualification is used and information about dermatology training / specialist dermatology module (n=151), job title (n=149), and care setting (n=156)

Figure 1

(General nurses = practice nurses & nurse practitioners; senior clinical nurses= clinical nurse specialists, nurses consultants, modern matrons, mental health nurse; Community = community matron, health visitor, district nurses, school nurse; HE/managers= Higher education and managers)

Figure2

GP = General Practitioner, FP10 = a prescription form purchased by a trust for prescribing medication that is to be dispensed by community pharmacies in the UK

Contributions**Study Design NC MC KS****Data collection & Analysis NC****Manuscript Preparation NC MC KS**