PREPARING NURSES TO PRESCRIBE MEDICINES FOR PATIENTS WITH DIABETES: FINDINGS FROM A NATIONAL QUESTIONNAIRE SURVEY

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ABSTRACT

Background

An area of care in which nurses, caring for people with diabetes are involved, is the management of medications. Although appropriately qualified nurses in the United Kingdom have virtually the same prescribing rights as doctors, there is little or no evidence examining the prescription of medicines by nurses for these patients.

Aim

To examine Nurse Independent/Nurse Supplementary Prescribing for people with diabetes and the extent to which these nurses feel prepared for this role.

Methods

The Nursing and Midwifery Council database was used to select a random sample of 1992 registered Nurse Independent/Nurse Supplementary Prescribers. Of these, 1400 questionnaires were returned. Medicines for people with diabetes were prescribed by 439 respondents. This paper reports on the findings of these 439 nurses.

Results

Four hundred and nine (95.1%) participants used independent prescribing and 214 (49.8%) used supplementary prescribing. The majority of respondents were highly experienced and worked in primary care. Some nurses (7.6%) reported that the prescribing programme did not meet their need. The needs of those nurses who had undertaken specialist training in diabetes were met to a statistically significantly greater extent than those without this training. Nurse prescribing is viewed positively by nurses prescribing for people with diabetes.

Conclusion

Although nurse prescribing has effectively increased patient choice with regards to accessing medicines for diabetes, approximately 50% of the nurses in this study reported that the prescribing programme did not meet their needs for this role. The needs of nurses with specialist training in diabetes were met to a greater extent than those without this training. Twenty percent of the nurses in this study did not have this training. The educational preparation for nurses adopting the role of prescriber for people with diabetes requires further exploration.

Key Words: Questionnaire survey, nurse prescribing, diabetes, Nurse Independent Prescribing, Nurse Supplementary Prescribing.

SUMMARY

What is already known about this topic

- The management of medications is an area of care in which nurses, caring for people with diabetes, are involved.
- Nurses do prescribe medicines for people with diabetes.
- Some nurses feel ill prepared to prescribe medicines for some conditions with regards to pharmacology, physical assessment and diagnosis.

What this paper adds

- Approximately a third of Nurse Independent/Nurse Supplementary Prescribers prescribe medicines for people with diabetes.
- Over 90% of these nurses use Nurse Independent Prescribing and nearly 50% use Nurse Supplementary Prescribing.
- The Nurse Independent/Nurse Supplementary Prescribing programme does not meet the needs of all nurses who prescribe medicines for people with diabetes

INTRODUCTION

Diabetes Mellitus (DM) is one of the most common chronic diseases in both western and developing countries. It is estimated that 194 million people worldwide or 5.1% of the population currently suffer from this condition (Audit Commission 2000). Five million pounds a day is spent by the National Health Service (NHS) on treatment for diabetes and much of this could be reduced with good healthcare and good self-management (Department of Health (DoH) 2003a).

It is evident that nurses working in a variety of roles, with varying levels of expertise, are involved in the treatment management of people with diabetes (Carey & Courtenay 2007). Furthermore, the National Service Framework (NSF) for Diabetes emphasises the role of the nurse in service delivery for people with diabetes and prescribing is highlighted as a means of optimising this role (DoH 2003a).

In the United Kingdom (UK), appropriately qualified community nurses are able to assess, diagnose and prescribe independently from a limited list of medicines included in the Nurse Prescribers' Formulary (NPF) for Community Practitioners. Nurse Independent Prescribers (NIPs) (previously known as independent extended prescribers) are similarly able to assess, diagnose and prescribe any licensed medicine (and some controlled drugs (CDs)) independently (DoH 2005). By contrast, Nurse Supplementary Prescribing (DoH 2003b) takes place after an assessment and diagnosis of a patient's condition has been made by a doctor, and a Clinical Management Plan (CMP) has been drawn up for the patient. The CMP includes a list of medicines from which the supplementary prescriber is able to prescribe (DoH 2003b). Supplementary prescribers are able to prescribe any medicine (including

unlicensed medicines and CDs), and this mode of prescribing is best suited to patients with long-term chronic conditions.

Training for Nurse Independent and Nurse Supplementary Prescribing is combined i.e. nurses successfully completing the prescribing programme are awarded the dual qualification of NIP/Nurse Supplementary Prescriber (NSP). This qualification is recorded on the Nursing and Midwifery Council (NMC) register (the NMC is the UK's regulatory body for the Nursing, Midwifery and Health Visiting professions). Any registered nurse with a minimum of 3 years experience as a qualified nurse, the ability to study at degree level, and working in a role in which prescribing would be required, is eligible to undertake prescribing training. The programme, validated by the NMC, is offered in approximately 60 higher education institutions throughout the United Kingdom (UK) and provides students with generic knowledge and skills that underpin the principles of prescribing. Topics covered include consultation skills and decision making, the legal and ethical aspects of prescribing, and applied pharmacology (NMC 2006). It is the responsibility of the nurse prescriber to remain up-to-date with the knowledge and skills necessary to be able to prescribe competently and safely (NMC 2006). There are now over 10,000 nurses across the UK able to prescribe both as NIPs and NSPs (NMC 2007)

Prescriptive authority for nurses has moved forward significantly in other countries. However, this authority has come about for a number of different reasons (David & Brown 1995, Cornwall & Chiverton 1997, DoH 1999). In Sweden nurse prescribing was introduced to provide access to health professionals in remote areas, and reduce doctors workload (David and Brown 1995). As of 1994, all district nurses in Sweden

have been able to prescribe from a list of over 200 medicines for over 60 conditions (Buchan & Calman 2004). Similarly, in rural areas of Australia, where nurses are working autonomously, they have the right to administer and supply certain medicines without consulting a doctor. In some parts of Australia, Nurse Practitioners are able to prescribe from very limited formularies (McCann & Baker 2002). By contrast, prescribing in New Zealand and the United States of America (USA) is part of advanced nursing practice. Nurses in New Zealand working in the areas of aged care and child/family care are those currently only able to prescribe from a schedule of approved medicines (Manchester 2000). In the USA, prescribing has developed alongside the role of the Advanced Practice Registered Nurse (APRN). APRN's are the only nurses able to prescribe in the USA. However, unlike the UK, policy and practices differ across each State. Very little research has attempted to evaluate nurse prescribing in these countries, although it is evident that APRNs who prescribe medicines improve patient outcomes and reduced healthcare costs (Brooten *et al.* 2002).

Given that nurses in the UK now have virtually the same prescribing rights as doctors, it is important to evaluate the early experiences of the process. There is very little or no evidence on the prescription of medicines by nurses for people with diabetes and whether nurses feel prepared for this role.

BACKGROUND

Three studies (Winocour *et al.* 2002, Peters *et al.* 2001, Craddock & Avery 1998) provide evidence that one of the areas of care in which nurses, caring for people with diabetes are involved, is the management of medications. Winocour *et al.* (2002)

surveyed 456 consultant physicians providing diabetes services across 238 acute NHS trusts and units. Information collected from 75% of the sample indicated that Diabetes Specialist Nurses (DSNs) were involved in the management of medications.

Specifically looking at the role DSNs play with regards to the practice of prescribing and adjusting insulin dose, Craddock and Avery (1998) distributed surveys in 1993 & 1996 to 50 DSNs, in the South West Thames Region. Of the 71 questionnaires distributed across the two surveys, over 70% of the nurses responded. Nurses completing the questionnaires in 1996 reported that they were less likely to consult doctors when changing the dose of insulin or changing the insulin regime. However, they were more likely to have agreed with the doctor the extent to which insulin dose could be altered. Additionally, participants in 1996 were more likely to adjust insulin dose over the telephone, dispense insulin from an agreed stock, use pre-signed prescriptions or supply patients with prescriptions with medical countersignatures.

Also examining the areas of care in which DSNs are involved, Peters *et al.* (2001) used a two-round Delphi technique to assess the opinions of a random stratified sample of 160 practice nurses (with a substantial role in the management of diabetes), and a random one-third sample of DSN (255 from 765 names). The resultant sample of participants in the first round comprised of 97 practice nurses and 69 DSN's (with a second round response rate of 90 and 59 respectively). It was evident from the findings that the DSNs' strongly supported the prescription of medicines by nurses and were of the belief, that the opportunity to prescribe would have significant implications with regards to the contribution they would be able to make to the care of patients in the community with Type 2 diabetes.

Although not specifically focusing on diabetes, Courtenay *et al.* (2006a) undertook a national survey to provide a national perspective of independent extended/supplementary nurse prescribing practice. Respondents in this survey (n=868) were asked to identify the conditions for which they prescribed most frequently using supplementary prescribing. Diabetes was one of the most common conditions cited.

Although nurses' evaluations of nurse prescribing have generally been positive, there have been some concerns about nurses' pharmacological knowledge base, physical assessment and diagnostic skills. Lewis-Evans and Jester (2004) used in-depth, minimally structured interviews, in an attempt to gain an understanding and insight into the experiences of district nurse (DN) and health visitor (HV) prescribers. Commenting on the prescribing programme, pharmacology and information about treatments prescribed, was one area in which respondents reported that the prescribing programme did not adequately meet their needs.

These findings are supported by Latter *et al.* (2005). Pharmacology, and training in physical assessment and diagnosis, were areas in which the 246 independent extended nurse prescribers surveyed by these researchers reported the prescribing programme to be weak. However, by contrast, 638 independent extended/supplementary prescribers surveyed by Courtenay *et al.* (2006b), and commenting specifically on the prescription of medicines for skin conditions, reported that they were generally positive about their clinical knowledge, knowledge of pharmacology, assessment and diagnostic skills, and treatments options.

It is evident from the literature that nurses are involved in the prescription of medicines for people with diabetes. Although not specifically focusing on diabetes, there is some evidence that pharmacology, physical assessment and diagnosis are areas in which some nurses feel ill-prepared for the role of prescriber. However, this evidence has been derived from the prescription of medicines by HVs and DNs and early independent extended nurse prescribers. There is no research available that has looked at Nurse Independent/Nurse Supplementary Prescribing for people with diabetes or, how prepared nurses feel for this role. This is important given that evidence to date (Courtenay *et al.* 2006a) has shown that diabetes is one of the most common conditions for which supplementary prescribing is used by nurses.

THE STUDY

Aim

To examine Nurse Independent/Nurse Supplementary Prescribing for people with diabetes and the extent to which these nurses feel prepared for this role.

Design

A survey design was used, with a postal questionnaire. The data were collected between October and December 2006.

Participants

The participants were 439 nurses located throughout England. All nurses were qualified NIPs/NSPs and registered on the NMC data base. All reported that they prescribed medicines for people with diabetes.

Reliability and Validity

A questionnaire booklet was developed for the purpose of the study. Its content was developed from previous work involving independent extended and supplementary nurse prescribers (Latter *et al.* 2005, Courtenay *et al.* 2006a) and a search of the literature of nurse-led care in diabetes (Carey & Courtenay 2007). In order to pilot the questionnaire 20 qualified NIPs/NSPs who prescribed for diabetic patients were asked to complete it. After doing so, they were asked to comment on its ease of completion, and if they experienced any difficulties understanding what was required of them at any point throughout the questionnaire. It was evident from the completed questionnaires that both the format and content of the questions were appropriate. Only minor refinements and amendments were made. For example, where respondents were asked to comment on the length of time they had been qualified as a prescriber, response boxes were made clearer. Following data entry of the completed questionnaires by a researcher, ten percent of these questionnaires were then reviewed by one of the authors (NC). There was agreement between the data that had been entered by the researcher and NC.

Questionnaire

Simple instructions with regards to how to complete the questions were provided on the first page of the booklet. The first section of the questionnaire collected some general demographic information. This included job title, participants Grade/Band (i.e. level of clinical expertise and the Band/Grade in which an individual is placed and for which they are paid. Band 5/Grade E lower band, Band 9/Grade I higher band), whether they worked full time or part time, if they worked in primary and/or secondary care, their age, and highest academic qualification. The sample were then

asked to identify the length of time they had been qualified as a NIP/NSP, how much experience they had acquired in their main area of practice before undertaking the prescribing programme, and whether they had undertaken any specialist training in diabetes prior to undertaking the prescribing programme i.e. diploma, first degree, or master's level module in diabetes, accredited study days or, any other training. Respondents were then asked to indicate the methods they had used to deliver medicines to patients since they had qualified as a prescriber, and the extent to which the prescribing programme and the 12 days learning in practice with a designated medical practitioner had met their needs with regards to the principles necessary for prescribing for people with diabetes. This was assessed by six point Likert scales with response options ranging from (1) 'did not meet my needs' to (6) 'completely met my needs'.

A further question asked respondents whether they spent some of the 12 days learning in practice with another qualified NIP/NSP. The final four questions asked participants whether they believed that the NIP/NSP qualification had improved the quality of care they were able to offer patients, if they thought it enabled diabetic patients to access their medicines faster, if it ensured better use of their skills, and improved job satisfaction. These were each assessed using six point Likert scales ranging from 'strongly disagree' (1) to 'strongly agree' (6).

Data collection

One thousand nine hundred and ninety two nurses were selected at random from all (n=7968) nurses registered on the NMC database of NIPs/NSPs i.e. 25% of all

NIPs/NSPs across the UK. Based on the findings and response rates of previous national surveys undertaken by researcher (Courtenay et al. 2007, Latter et al 2005), it was estimated that a 70% response rate would be achieved of whom 30% of respondents would prescribe medicines for people with diabetes. This would yield a sample of approx 400 nurses. This large sample was required to ensure that each one of the broad range of settings in which nurses prescribe medicines for people with diabetes was represented.

Participants were sent a letter outlining the purpose of the study, an information sheet, and a copy of the questionnaire. The information sheet outlined the study aims, and what participants would be required to do. It also informed participants that the study was completely voluntary (and emphasised that individuals could withdraw at any point if they wished to do so), that responses were strictly confidential, that information collected from the questionnaire would be made anonymous, and that no identifying information would emanate from the research. After one follow up reminder questionnaire, 1400 (70%) questionnaires were returned, of which 1377 were completed. Twenty three were not completed as participants were no longer working in practice or were working abroad. Of the 1377 completed questionnaires, 439 participants prescribed for diabetic patients. This paper reports on the findings of these nurses.

Ethical approval

A full research proposal was submitted to the Berkshire Research Ethics Committee and the University of Reading Ethics Committee. The study met the research governance criteria of these committees and approval was therefore granted.

Questionnaires were sent to the home address of participants. Return of a completed questionnaire was taken as consent to participate.

Data analysis

SPSS and Microsoft Excel were used for data entry and analysis. Chi Square tests were used when testing for association. The value of the prescribing programme in meeting nurses' needs in prescribing for diabetes and the 12 days medical practice support received during the prescribing were determined by requesting respondents to score, on a 1-6 Likert scale. The results were further examined by dividing the 1-6 scale into two groups, i.e. those scoring values 1-3 (reflecting a negative view) and those scoring values 4-6 (reflecting a positive view).

Further analysis explored whether respondents' views on prescribing for people with diabetes was influenced by their job title, age, academic qualifications, area of work, their experience in their main area of practice before undertaking the prescribing programme and having specialist training in diabetes. For this purpose, the three scores (each on a 1-6 scale ranging from strongly disagree to strongly agree), corresponding to three relevant questions in the survey questionnaire (the quality of care they were able to offer patients, if they thought it enabled diabetic patients to access their medicines faster, if it ensured better use of their skills), were averaged to provide an overall "success" measure. A general linear modelling procedure was used to explore which if any of the factors i.e. specialist knowledge, age, job title, work place, grade/band, full or part time, time qualified as a prescriber and years of experience in area of practice before undertaking prescribing programme; contributed

significantly to explaining the variation in the overall “success” measure. The model was then checked using residual analysis.

RESULTS

Demographic details

The demographic data of the sample including job title, grade/band, part/full time work, area of work, age, academic qualification, time since qualified as NIP/NSP and years of experience in area of practice before undertaking the prescribing course are presented in Table 1.

Specialist qualification

Two hundred and twenty four (55%) had undertaken diploma, degree and or masters modules in diabetes. One hundred and eighty nine (46%) had attended accredited study days. Ninety four (23%) had undergone informal training. This included visits to a specialist nurse or doctor working in a diabetes department, in-house training, and training provided by drug companies. Eighty two (20%) had not undertaken any specialist training in diabetes.

Methods used to deliver medicines

Four hundred and nine (93.1%) participants reported that they used independent prescribing and 214 (49.8%) used supplementary prescribing. Two hundred and twenty (51.2%) respondents used Patient Group Directions (PGDs) (i.e. a direction to a nurse to supply and/or administer a medicine to a group of patients) and 43 (10.0%) used Patient Specific Directions (PSDs) (i.e. a direction from a registered prescriber to a nurse to administer a medicine to a named patient).

To what extent did the prescribing programme meet your needs with regards to the principles necessary for prescribing in diabetes?

Figure 1 shows (by percentages responding) the extent to which the prescribing programme met the respondents' needs with regards to the principles necessary for prescribing for people with diabetes. Levels of satisfaction and dissatisfaction appear to be balanced with about half being biased in the direction of "did not meet needs" and half in the direction of "met needs completely".

INSERT FIGURE 1 HERE

One hundred and seventy eight participants (54%) of those who had had specialist training felt their needs with regard to principles necessary for prescribing for people with diabetes had been met compared with just seventeen (21%) amongst those who had not had specialist training. Using the Chi square test the difference in these percentages was statistically significant ($p < 0.001$) (see Table 2). However, there was insufficient evidence of a difference in percentages reporting their needs were met across different levels of academic qualifications ($p = 0.339$) (see Table 3).

INSERT TABLE 2 & 3 HERE

How useful was the 12 days medical practice support that you received during the prescribing programme in meeting your needs to prescribe for patients with diabetes?

Figure 2 shows (by percentage responding) the extent to which the 12 days medical practice support received during the prescribing programme was useful in meeting needs to prescribe for patients with diabetes. Levels of satisfaction and dissatisfaction

were balanced with about half being biased in the direction of ‘useful’ and ‘not at all useful’.

INSERT FIGURE 2 HERE

The results of the chi squared test indicated strong evidence ($p=0.<0.001$) that one hundred and seventy seven respondents (54%) with specialist training in diabetes felt that the 12 days medical practice support they received was useful compared to twenty five(31%) without specialist training (see Table 4). There was no evidence of a difference with regards to respondents’ academic qualifications ($p=0.121$) (See Table 5).

INSERT Table 4 & 5 HERE

Did you spend some of these 12 days with another qualified NIP/NSP?

About 30% of respondents reported that they had spent some of the above 12 days with another qualified NIP/NSP. About 17% had spent more than 3 days with a NIP/NSP, while about 35% had spent less than 2 days with a NIP/NSP. The average number of days spent with another NIP/NSP was about 2.5 days (standard error = 0.195).

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Views on prescribing for people with diabetes

Seventy five percent of respondents (316) selected the two highest rating i.e. indicating that patient access to medicines was faster. Seven percent (31) selected the two lowest. The mean was 5.0 (std. error 0.065). With respect to quality of care offered to diabetic patients, 66% (281) of respondents selected the two highest ratings indicating that this had improved. Eight percent (33) selected the two lowest. The mean was 4.8 (std. error 0.067).

Eighty one per cent (342) of respondents selected the two highest ratings with regards to use of skills and job satisfaction i.e. they agreed that this had improved through prescribing. Five percent (22) selected the two lowest. The mean was 5.2 (std. error 0.057).

Success of the prescribing programme

Using a general linear model, it was evident that participants with specialist qualifications in diabetes had a significantly higher score (5.1 on average), on the success of the prescribing programme compared to an average score of 4.5 for those without specialist qualifications ($p=0.001$).

DISCUSSION

A potential limitation of our study is that we did not ask respondents which methods they had used to deliver medicines to patients within the last 6 months i.e. they were asked to report on the methods used since qualifying. The majority of respondents had been qualified in excess of 2 years and methods used within the last 6 months may have differed from those used upon initial qualification. For example, the experience of the prescriber may have influenced methods used. This additional data would have provided a fuller picture of current practice.

The majority of nurses in our sample held an academic qualification at degree level or higher, had a wealth of clinical experience, work full-time, were based in primary care and worked in general practice. Nearly 50% of respondents had used supplementary prescribing for patients with diabetes and nearly all participants reported that they had prescribed independently for these patients.

These findings are consistent with the findings from national surveys reported by Latter *et al.* (2005) and Courtenay *et al.* (2006a). Over 80% of both the 246 independent extended prescribers in Latter *et al.*'s survey, and the 868 independent extended/supplementary prescribers, surveyed by Courtenay *et al.*, reported that they held a degree or masters level qualification, and worked in primary care. As in our study, the majority of participants in Courtenay *et al.*'s study also had far beyond the 3years post registration experience required in order to access the prescribing course (NMC 2006) i.e. these researchers reported that 88% of their sample had more than 10 years experience as a qualified nurse.

The number of nurses in our study using independent prescribing is also consistent with those reported by Courtenay *et al.* (2006b). Ninety five percent of the 638 nurses these researchers surveyed used independent prescribing for skin conditions. However, only 37% used supplementary prescribing i.e. 13% less than that reported by participants in our study. The fact that our findings show that quite a high percentage of nurses are using supplementary prescribing, despite the fact that nurses are now able to independently prescribe practically any licensed medicine, demonstrates that there is still a need for Nurse Supplementary Prescribing in the care of people with diabetes. This could be because some nurses, when caring for complex patients with diabetes (such as those with micro and macro vascular complications), prefer to do so in partnership with a doctor. This requires further exploration

Levels of satisfaction and dissatisfaction with the prescribing programme and the 12 days medical practice support were balanced with about 50% biased in the direction

of ‘did not meet needs’ and half in the direction of ‘completely met my needs. This is in contrast to the findings reported by Latter *et al.* (2005) and Courtenay *et al.* (2006b). Over half the respondents in these studies reported that the taught element of the prescribing programme met their needs to some extent, and they were either satisfied or very satisfied with the support received during the 12 days in practice. This finding requires further exploration. Thirty percent of our sample reported that they received additional support during the 12 days in practice from other NIPs/NSPs. This is in line with policy literature. Although a medical practitioner is responsible for the education and assessment of students on the prescribing programme, a buddy system is recommended whereby it is expected that students on the course will utilise support from other healthcare professionals during the 12 days in practice (DoH 2002).

Only 20% of our sample reported that they had not undertaken any specialist training in diabetes (i.e. a diploma, degree, or master’s level module in diabetes or, accredited study days). Our results showed that nurses with this training found that the prescribing programme and the 12 days learning in practice met their needs to a significantly greater extent than those without. These findings are in line with those reported by Courtenay *et al.* (2006b). These researchers reported that participants in their study, who had undertaken specialist training in dermatology prior to the prescribing programme, indicated that both the taught element of the course and the 12 days learning in practice met their needs to prescribe for these conditions to a significantly greater extent than those who had not undertaken this training.

The prescribing programme teaches nurses the principles underpinning prescribing practice. It is not designed to provide nurses with specialist knowledge and skills (NMC 2006). The need for nurses to acquire specialist knowledge prior to undertaking the programme is reinforced by our findings.

It is evident from our findings that participants view prescribing positively i.e. they agree that it enables faster access to medicines, better use of nurses' skills, improves job satisfaction, and improves the quality of care for patients with diabetes. These findings are in line with Latter *et al.* 2005. Over 90% of the 246 participants sampled by these researchers strongly agreed or agreed that prescribing had also achieved each of these components. This is in line with Government prescribing policy, the aims of which are to make it easier for patients to get their medicines, increase choice with regards to access, and make better use of nursing skills (DoH 2005).

CONCLUSION

Although nurse prescribing has effectively increased patient choice with regards to accessing medicines for diabetes, approximately 50% of the nurses in this study reported that the prescribing programme did not meet their needs for this role. The needs of nurses with specialist training in diabetes were met to a greater extent than those without this training. Twenty percent of the nurses in this study did not have this training. The educational preparation for nurses adopting the role of prescriber for people with diabetes requires further exploration. Although the role nurses play in the prescription of medicines differs worldwide, our study may be of interest, and have implications, for those responsible for the education and preparation of nurses working in the area of diabetes.

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REFERENCES

- Audit Commission (2000) *Testing Times: A review of diabetes services in England and Wales*, London, Audit Commission.
- Brooten, D., Naylor, M. D., York, R., Brown, L. P., Munro, B. H., Hollingsworth, A. O., Cohen, S., Finkler, S., Deatrick, J., Youngblunt, J. M. (2002) Lessons Learned from testing the Quality Cost Model of Advanced Practice (APN) Transitional Care, *Journal of Nursing Scholarship*, 34, (4), 369-375.
- Buchan, J., Calman, L. (2004) *Implementing Nurse Prescribing*, International Council of Nurses, Geneva
- Carey, N., Courtenay, M. (2007) A Review of the Activity and Effects of Nurse-led Care in Diabetes, *Journal of Clinical Nursing*, accepted for publication.
- Cornwall, C., Chiverton, P. (1997) The Psychiatric advanced practice nurse with prescriptive authority: Role development, practice issues and outcome measurements, *Archives of Psychiatric Nursing*, 11, (2), 340-341.
- Courtenay, M., Carey, N., Burke, J. (2006a) Independent Extended and Supplementary Nurse Prescribing Practice in the UK: A National Questionnaire Survey, *International Journal of Nursing Studies*, available online June 5.
- Courtenay, M., Carey, N., Burke, J. (2006b) Preparing Nurses to prescribe medicines for patients with dermatological conditions, *Journal of Advanced Nursing*, 55, (6), 698-707.
- Craddock, S., Avery, L. (1998) Nurse prescribing in diabetes, *Professional Nurse*, 13, (5), 315-319.
- David, A., Brown, E. (1995) How Swedish nurses are tackling nurse prescribing, *Nursing Times*, 91, (50), 23-24.
- DoH (1999) *Making a Difference. Strengthening the Nursing, Midwifery and Health Visiting Contribution to Healthcare*, Department of Health, London.
- DoH (2002) *Extending Independent Nurse Prescribing within the NHS in England: A guide for Implementation*, Department of Health, London.
- DoH (2003a) *National Service Framework Diabetes*, Department of Health, London.
- DoH (2003b) *Supplementary Prescribing for Nurses and Pharmacists within the NHS in England*, Department of Health, London.
- DoH (2005) *Written Ministerial Statement on the expansion of independent nurse prescribing and introduction of pharmacists independent prescribing*, DoH, London.
- Latter, S., Maben, J., Myall, M., Courtenay, M., Young, A., Dunn, N. (2005) *An evaluation of extended formulary independent nurse prescribing. Final Report*, Policy Research Programme Department of Health & University of Southampton
- Lewis-Evans, A., Jester, R. (2004) Nurse Prescribers' experience of prescribing, *Journal of Clinical Nursing*, 13, 796-805.
- Manchester, A (2002). When will New Zealand nurses begin prescribing? KaiTiaki: New Zealand Nursing Journal, November, 15.
- McCann, T & Baker, H (2002). Community mental health nurses and authority to prescribe medications: the way forward. *Journal of Psychiatric and Mental Health Nursing* 9, 175-182.
- NMC (2001) *Nurse Prescribing-ENB Policy*, www.nmc.org-uk, (June 2005)
- NMC (2006) *Standards of Proficiency for nurse and midwife prescribers*, London, NMC

- NMC (2007) *Number of Independent Extended Nurse Prescribers*, Personal Communication with NMC February 2007.
- Peters, J., Hutchinson, A., Mackinnon, M., McIntosh, A., Cooke, J., Jones, R. (2001) What role do nurses play in Type 2 diabetes care in the community, *Journal of Advanced Nursing*, 34, (2), 179-188.
- Winocour, P. H., Ford, M., Ainsworth, A. (2002) Association of British Clinical Diabetologists (ABCD): survey of specialist diabetes care services in the UK, 2000.2. Workforce issues, roles and responsibilities of diabetes nurse specialists, *Diabetic Medicine*, 19, (Suppl 4), 27-31.

Tables and Figures

Table 1: Demographic characteristics

	<i>n=number of responses</i>	<i>% of total sample</i>
Job Title		
General practice (practice nurses and nurse practitioners)	275	62.8
Specialist nurses (clinical nurse specialists, specialist nurse practitioners, nurse clinicians, children's nurses and midwives)	77	17.6
Community Nurses (community/modern matron, HV, DN, community children's nurse specialist, community psychiatric nurses and learning disabilities)	63	14.4
Senior Nurses (nurse consultants, senior nurses, charge nurses, sisters, manager)	23	5.3
Grade/Band		
Grade E or Band 5	2	0.5
Grade F/G or Band 6	115	26.7
Grade H or Band 7	195	44.4
Grade I or Band 8/9 or Nurse Partner	104	23.7
Part time/full time		
<20 hrs per week	39	6.9
21-30 per week	142	32.6
Full time i.e. >30 hrs per week	264	60
Primary/and or Secondary Care		
Primary care	369	84.2
Secondary Care	43	9.8
Primary and Secondary Care	26	5.9
Age		
<35 years	28	6.4
36-45 years	171	39
46-55 years	191	43.6
55-65 years	48	11
Academic Qualification		
Certificate level	16	3.6
Diploma level	66	15
Degree level	247	56.3
Master level	110	25.1
Time since Qualified as NIP/NSP		
< 6 months	13	3
6-12 months	56	12.9
1-2 years	146	34.2
> 2 years	213	49.9
Experience in area of practice before NIP/NSP		
< 1 year	10	2.4
1-2 years	28	6.6
2-5 years	69	16.2
> 5 years	318	74.8
<i>Percents do not add to 100% in each category as some participants did not complete every question</i>		

Figure 1. Extent to which the prescribing programme met needs with regards to the principles necessary for prescribing in diabetes

Table 2 The effect of specialist training in diabetes on the extent to which the principles of diabetes prescribing were met

	Specialist training in diabetes				Total n=409
	No		Yes		
	n	%	n	%	
Needs not met	65	30.4	149	69.7	214
Met needs completely	17	8.7	178	91.3	195

Table 3 The effect of academic qualification on the extent to which the principles of diabetes prescribing were met

		Highest academic qualification			Total
		Certificate/ Diploma	Degree	Masters/Phd	
Needs not met	Count	40	127	47	214
	%	51.3%	55.2%	46.5%	52.3%
Met needs completely	Count	38	103	54	195
	%	48.7%	44.8%	53.5%	47.7%
Total	Count	78	230	101	409

	%	100.0%	100.0%	100.0%	100.0%
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Table 4. Value of medical practice support in meeting diabetes prescribing needs across whether or not respondent had had specialist training in diabetes

Value of medical practice support		Specialist training in diabetes		Total
		No	Yes	
Not useful	Count	57	149	206
	%	69.5%	45.7%	50.5%
Useful	Count	25	177	202
	%	30.5%	54.3%	49.5%
Total	Count	82	326	408
	%	100.0%	100.0%	100.0%

Table 5. Value of medical practice support in meeting diabetes prescribing needs across academic qualifications

Value of medical practice support		Highest academic qualification			Total
		Certificate/ Diploma	Degree	Masters/Phd	
Not useful	Count	37	126	43	206
	%	47.4%	54.8%	43.0%	50.5%

Useful	Count	41	104	57	202
	%	52.6%	45.2%	57.0%	49.5%
Total	Count	78	230	100	408
	%	100.0%	100.0%	100.0%	100.0%