

Research paper

The value of nurse practitioners in Dutch general practices

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ABSTRACT

Background Healthcare systems are faced with a changing and increasing demand for care. Against the background of the need to increase service capacity and to improve access to primary care, a project was initiated to introduce the nurse practitioner (NP) role into Dutch general practices.

Objective To explore the value of the NP by describing NP roles and their concordance with the initial concepts of the NP training programme.

Methods An observational longitudinal design, using mixed methods, was conducted between March 2004 and June 2008. A convenience sample of seven NPs

and seven teaching general practitioners (GPs), together constituting seven experimental groups, was used. Project documentation and data from consultations between NPs and GPs were collected. Twenty-nine interviews were performed, focusing on NP roles, competencies of NPs and collaboration between professionals.

Results As was anticipated, all NPs have patients with common complaints as their main focus, as well as managing the quality of care projects. Differences between NPs are reported in the percentages of time spent in performing home visits, caring

for older people, patient related activities and non-patient related activities.

Conclusion NPs contribute to the accessibility and availability of primary care as well as to collaboration in and quality of primary care. The roles they adopt are influenced by practice needs and financial incentives. It is not clear to what degree NPs have to

perform activities to improve quality of care and further research is necessary to define NP core competencies.

Keywords: collaboration, general practice, nurse practitioner, quality of care, substitution

How this fits in with quality in primary care

What do we know?

- Nurses and doctors have transferable skills which make it possible for one to substitute for the other within the areas of overlap.
- Recently, strong interest has been shown in the concept of NPs providing primary care, particularly in the management of patients with minor health problems.
- The majority of GPs recognise that NPs can undertake a wide range of clinical activities and are aware of their role in improving the quality and scope of practice.

What does this paper add?

- Dutch NPs mainly focused on treating patients with common complaints and managing quality of care projects.
- NPs contributed to the accessibility and availability of primary care as well as collaborating in quality improvement.
- The roles NPs adopted and the time spent undertaking different activities such as home visits, care for older people, patient related activities, and non-patient related activities were influenced by specific practice needs and financial incentives.

Introduction

Healthcare systems are faced with changing and increasing demands for care. To guarantee the availability and accessibility of primary care for the near future, an adequate mix of healthcare personnel is one of the prior conditions. This requires reflection on the current roles and responsibilities of health personnel.^{1,2} Nurses and doctors have exchangeable skills which make it possible for one to substitute for the other within the area of overlap.³

In British and Dutch general practice, practice nurses are common and make a significant contribution to care for the chronically ill.^{4,5} The term nurse practitioner (NP) is generally used to identify registered nurses with additional education and training (e.g. a Master's in Advanced Nursing Practice), who work within an expanded scope of practice that includes diagnosing, prescribing and treating medical conditions within specific settings.⁴

The majority of GPs recognise that NPs can undertake a wide range of clinical activities and are aware of their potential to improve the quality and scope of

practice.^{3,6} Notwithstanding this, wide divergence in level of autonomy and variations in activities exist in NP roles.^{7,8}

Against the background of the need to increase service capacity and to improve access to primary care, a project was initiated to introduce the NP into Dutch general practices. The aim of this study is to explore the value of the NP by describing the NP roles and their concordance with the initial concepts of the NP training programme.

Methods

Study design

This study was part of an extensive evaluation study, which has been described in more detail elsewhere.⁹ An observational, longitudinal design was conducted between March 2004 and June 2008. We used a selection of quantitative and qualitative research methods.^{10,11}

Participants

A convenience sample of seven NPs and seven teaching general practitioners (GPs), together constituting seven experimental groups, was used. NPs were trained and employed in ten participating practices: three single-handed practices, two two-doctor practices, four group practices and one healthcare centre. Table 1

describes the number and type of practices which together formed an experimental group. The teaching GPs had on average 16 years of work experience ($SD=10.1$). Participating NPs had on average 12 years ($SD=7.6$) work experience as a (practice) nurse in general practice ($n=3$), in hospital ($n=3$) or in an asylum seekers' centre ($n=1$). Before they started to work as NPs, the nurses followed a Higher Professional

Table 1 Characteristics of experimental groups

Experimental group EG1	Group practice
Type of practice	Medium (list size 3000–8000 patients)
Size (2006)	5 GPs, 3 practice nurses, 3 NPs
Staff (2006) interviewees	2005: 0; 2006: NP (NP1); 2008: NP (NP1, NP2); GP (GP1)
Interviewees' job satisfaction	2005: – ; 2006: NP1 low; 2008: NP1 low, NP2 low; GP1 high
Experimental group EG2	Group practice
Type of practice	Medium (list size 3000–8000 patients)
Size (2006)	4 GPs, 2 practice nurses, 1 NP
Staff (2006) interviewees	2005: GP(GP2); 2006: GP (GP2); 2008: GP (GP2)
Interviewees' job satisfaction	2005: GP2 high; 2006: GP2 low; 2008: GP2 high
Experimental group EG3	Two two-person practices
Type of practice	Both small (list size <3000 patients)
Size (2006)	2x2 GPs, 1 practice nurse, 1 NP
Staff (2006) interviewees	2005: 0; 2006: NP (NP3), GP (GP3); 2008: 0
Interviewees' job satisfaction	2005: – ; 2006: NP3 high, GP3 high; 2008: –
Experimental group EG4	Healthcare centre
Type of practice	Medium (list size 3000–8000 patients)
Size (2006)	3 GPs, 2 practice nurses, 1 NP
Staff (2006) interviewees	2005: NP (NP4); 2006: NP (NP4); 2008: NP (NP4), GP (GP4)
Interviewees' job satisfaction	2005: NP4 moderate; 2006: NP4 high; 2008: NP4 high, GP4 moderate
Experimental group EG5	Group practice
Type of practice	Medium (list size 3000–8000 patients)
Size (2006)	5 GPs, 1 NP
Staff (2006) interviewees	2005: NP (NP5) GP (GP5); 2006: GP (GP5); 2008: NP (NP5)
Interviewees' job satisfaction	2005: NP5 high, GP5 low; 2006: GP5 low; 2008: NP5 high
Experimental group EG6	Three solo practices
Type of practice	All small (list size <3000 patients)
Size (2006)	3 GPs, 1 practice nurse, 1 NP
Staff (2006) interviewees	2005: NP (NP6); 2006: NP (NP6), GP (GP6); 2008: 0
Interviewees' job satisfaction	2005: NP6 low; 2006: NP6 low, GP6 high; 2008: –
Experimental group EG 7	Group practice
Type of practice	Large (list size >11 500 patients)
Size (2006)	5 GPs, 2 practice nurses, 1 NP
Staff (2006) interviewees	2005: NP (NP7), GP (GP7); 2006: NP (NP7); 2008: NP (NP7), GP (GP7)
Interviewees' job satisfaction	2005: NP7 high, GP7 low; 2006: NP7 moderate; 2008: NP7 moderate, GP7 low

An experimental group (EG) is a practice or a collaborative group of practices which educates and employs a NP. Four interviews with professionals who had not employed an NP in practice were excluded: in 2005, two GPs (job satisfaction moderate and high) and one NP (job satisfaction low) and in 2006, one GP (job satisfaction moderate)

Education Master's degree in Advanced Nursing Practice (MANP). This training programme ran from March 2004 until February 2006. At the time of data

collection all NPs worked part time (0.6 full time equivalent – FTE). More details of the job description and the training programme are described in Figure 1.

NP in the project: nurse practitioner in Dutch general practices

Target population: patients with common complaints

A specified set of common complaints for which patients seek medical attention was compiled. These common complaints will often lead to minor health problems. Patients may have respiratory and throat complaints, ear and nose complaints, musculoskeletal complaints and injuries, skin injuries, urinary complaints, gynaecological complaints and geriatric problems.

Patient related activities

Based on triage by the practice assistant, patients with common complaints are referred to the NP. The NP works independently during consultations and home visits. Their activities are according to practice guidelines devised by the Dutch College of General Practitioners: assessing symptoms, physical examinations where appropriate, diagnosing and making decisions for further treatment, prescriptions, referrals to primary or secondary services and clinical investigations. The NP has no full authority to prescribe medications, the GP is always available for consultation and to assign prescriptions. The NP has access to the electronic medical records and reported consultations.

Non-patient related activities

NPs perform both activities to improve collaboration between healthcare professionals within general practice and external partners and activities related to education and quality care projects.

Training

A specific two-year practice oriented training programme was developed, which consisted of the Higher Professional Education Master's degree in Advanced Nursing Practice (MANP), including general courses and medical courses on managing a specified set of common complaints. General courses were on the training of basic medical skills, role development, collaboration, context of care and research.

Areas and competencies formulated in the training programme

Patient care

- 1 Analyses and interprets patients' (and relatives') histories, including presenting symptoms, physical findings and diagnostic information, to develop appropriate diagnoses (in a multidisciplinary way)
- 2 Diagnoses and manages conditions, prioritises health problems and intervenes appropriately, including initiation of effective emergency measures
- 3 Formulates an action plan based on scientific rationale, evidence based standards of care and practice guidelines, and provides guidance and counselling regarding management of the health/illness condition

Collaboration

- 4 Coordinates the patient's treatment, if necessary, initiates appropriate and timely consultation and/or referral when the problem exceeds the NP's scope of practice and/or expertise
- 5 Initiates a professional collaboration with patients and other healthcare professionals

Quality care

- 6 Improves the quality of care by means of research and implementing evidence based practice
- 7 Educates and coaches other professionals to improve their skills

Figure 1 The nurse practitioner job description

Data collection

Data from the project documentation were collected in order to explore the initial concepts used for the development of the training programme. Data from consultations and home visits by NPs and GPs, and patients' ages, complaints and diagnoses were gathered, using the International Classification of Primary Care (ICPC).¹² ICPC codes lower than 70 were labelled as symptoms and complaints and ICPC codes higher than 70 as diagnoses and diseases. These data were gathered retrospectively in five one-month measurements between March 2004 (T0) and October 2007 (T5). In each practice information was given about the relevance of systematically keeping records and registering data. Software was developed to extract data from computer systems. Extracted data were used during meetings at each general practice to provide feedback and to test the reliability of the documentation.

We conducted qualitative structured interviews at three periods: during June 2005, November 2006 and June 2008. The structure of the interviews was focused on NP roles, competencies and collaboration.¹³ The output of the interviews is a taxonomy.¹⁴

For each of these interviews, NPs and teaching GPs were selected by their mean rates on a developed job satisfaction questionnaire;^{15,16} two with the highest rates, one with a rate nearest to the mean and two with the lowest rates to ensure diversity among the informants. So during the study period from 2005 to 2008, the plan was to interview 15 NPs and 15 GPs. Items in the questionnaire ($n=15$) referred to patient care, organisational characteristics, work characteristics and collaboration, measured by a Likert scale (score 1= very unsatisfied; score 5= very satisfied). The interviews were performed with open-ended questions and conducted by three investigators (AD, HV and CS), using the same instructions and debriefings. Informants were encouraged to speak freely and to raise issues of importance to them. Each interview lasted between 45 and 60 minutes.

Analysis

The documentation of the initial concepts was explored by the authors and shared with the initiator (TT) of the training programme, in order to validate the concepts. SPSS 15.0 was used to analyse quantitative data. Analyses were undertaken comparing the consultation rates of the NP group and the GP group, based on 1.0 FTE. Descriptive statistics (percentage, mean and standard deviation) were calculated. Consultation units were calculated, based on the assumption that 'in-house' NP consultations take 12 minutes,⁹ and that one home visit is comparable in duration to three consultations (20 minutes per home visit and 16 minutes travel time). Interviews were tape recorded,

transcribed verbatim and checked for accuracy. Two authors (AD, HV) read the transcript and coded the answers by using a taxonomy wherein competencies were grouped: patient related care, collaboration and quality of care. The extent of agreement and variation between the three sets of coding was discussed. The authors reviewed and agreed the final broad coding taxonomy to be applied.

Results

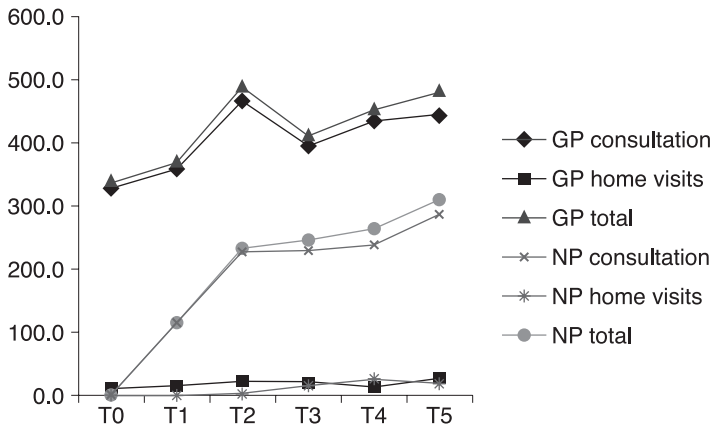
Initial concepts

In the development of the training programme three basic concepts were formulated. First, the NPs should assess, diagnose and treat a specified set of common complaints. Therefore, they needed to possess medical knowledge and use practice guidelines on minor health problems derived from the Dutch College of General Practitioners. We expected NP consultations would be longer than GP consultations because they had less medical knowledge and needed time to learn to assess and diagnose. No assumptions were made on how NPs assessed symptoms and complaints (ICPC code <70) or diagnoses and diseases (ICPC code >70). NPs should diagnose at the level of no doubt. Secondly, the NPs should act as professional communicators with patients and other professionals and reflect on their own and others' functioning. NPs have, from their nursing discipline, a complementary expertise in health education and in assessing the impact of the complaints on patients' daily activities. As the NPs were also trained in the care of common complaints in older people, medical and nursing competencies should also integrate in this specific care. Finally, NPs should be able to manage projects to improve the quality of care. Therefore, they should develop skills related to education and research.

Consultations and home visits

Figure 2 shows the NP consultation rates in comparison with GP consultation rates (per 1.0 FTE) per month. During the training programme (T0–T2), the NPs' productivity increased from none to 225 consultations per month. In the period after graduation (T2–T5), consultation rates increased from 115 to 285 consultations per month and the number of home visits increased from 1 to 26 per month. The GP consultation rates rose from 325 (T0) to 445 (T5) per month and home visits from 15 (T0) to 33 (T5) per month.

Characteristics of the practices and interviewed professionals, including their individual coding, are



(T0: March 2004; T1: March 2005; T2: March 2006; T3: October 2006; T4: March 2007; T5: October 2007)

Figure 2 NPs' and GPs' consultations and home visits per month between March 2004 (T0) and October 2007 (T5), based on a calculation of 1.0 FTE

described in Table 1. When looking at individual practice, in 2007 NP4 had the most consultations ($n=338$) and no home visits per month, NP1 the most home visits ($n=76$) per month, NP6 the fewest home visits ($n=2$) and relatively fewer consultations per month ($n=283$). NP2 was excluded from the analysis, since data from October 2007 were not available. On average NPs had 324.31 (SD=38.64) consultation units per month in 2007. The NPs in EG1 treated relatively more elderly people (12%) than the GPs. In EG5 and EG7 the NPs saw fewer older people than the GPs (-17.6% and -13.6% respectively). In 2007 the NPs assessed on average 2.29% fewer ICPC codes >70 than GPs (mean=59.33%, SD=7.5% and mean=61.61%, SD=11.27 respectively).

We conducted 29 interviews; one GP (whose job satisfaction was low) refused to participate in the interview in 2008 because of the high workload at that moment. We excluded four interviews with NPs from the analyses since the NPs were no longer employed in 2008.

Patient care

During the first two months of the training programme all NPs joined the GPs during consultations. As soon as NPs finished a specific medical module successfully, they independently treated patients with the corresponding complaint. Two NPs felt they used a different mode from that of GPs for consultations. The combination of working and learning was experienced as difficult for NPs ($n=4$), with the main reason mentioned being the combination of general courses and medical courses. As one NP (NP4 2005) said:

'The general part of the training programme is very theoretical and time consuming, but I prefer to do the medical courses; this knowledge I can practically use during my consultations.'

NPs ($n=4$) mentioned being very satisfied with the supervision of the GPs.

Three GPs observed that NPs used a different mode during consultations, focusing on education and stimulating patients' self-management activities. The NPs' assessment was too elaborate for them to be able to finish the diagnostic process, but they regarded this as a part of the learning process. The booking interval for a NP consultation was 15 minutes (compared with 10 minutes for GP consultations). GPs regarded the medical knowledge of NPs to be less profound than that of GPs.

In 2006 NPs ($n=5$) stated that they would like to increase the set of common complaints to include complaints of hands, wrists and elbows, and to care for patients with chronic diseases. GPs ($n=4$) and NPs ($n=5$) felt that the NPs carry out their consultations in a responsible and careful way and that they can comprehend the uncertain areas in diagnostic procedures.

In 2008 NPs treated on average 20 patients per day. Three NPs also performed small surgical interventions. The average proportion of patient related activities versus non-patient related activities was 75% vs 25%. The minimum percentage of patient related activities was 60% (NP2). In this case, the NP spent much of her time on a quality care project related to care for older people. The maximum percentage of patient related activities was 90% (NP7), with the GP (GP7) mentioned as the main reason for the high productivity in this general practice. All GPs were very satisfied with the NPs as a new professional in general practice. From a medical point of view and in relation to common complaints, GPs have not noticed any differences in the way the NPs act during surgery hours. One NP (NP4, GP4) would reduce her booking interval to 10 minutes in the future, so she would have more time for other patient related activities. All other

NPs remained at 15 minutes. One GP (GP7 2008) stated:

‘It is crucial that the NP has enough time to explore profound problems, this is quality of care.’

From 2006 NPs had a role in care for older people but there are differences between NPs. One GP preferred to treat older patients himself (GP5 2006) and one GP found that national grants are insufficient for coordinating care for older people when more than 20 GPs have to collaborate with each other (GP7 2008) (Box 1).

Collaboration

In 2005 NPs ($n=4$) and GPs ($n=3$) reported that they were satisfied with the collaboration with patients and collaboration with all professionals working in general practice. No gaps in activities or job descriptions were reported. NPs ($n=4$) stated to pay much greater attention to their collaboration with the practice assistants, and the triage process. If problems with triage occurred, NPs reported that they discussed these with the practice assistants. Further, they mentioned stimulating GPs to adjust their modes and to use protocols.

In 2006, GPs ($n=5$) reported that NPs’ communication skills are good. As their role in the team is new,

they succeed in make their role transparent and colleagues also accept the new role. Three NPs are also involved in patient care for older people in nursing homes, in collaboration with GPs. They hold patient consultations and evaluate patient care with staff members. One NP (NP4 2008) mentioned that the group of NPs in primary care is still very small. Public relations and communication about the new role both inside and outside the practice remain very important (Box 2).

Quality of care

NPs ($n=5$) in 2005 participated in quality improvement projects. All GPs recognised that with the introduction of the NP quality improvement has been realised by the development of standards and protocols. NPs also have a role in the education of practice assistants and in projects to improve quality of care. In 2008, five NPs and four GPs experienced the role of the NP in quality care projects: the development and implementation of protocols based on evidence, the accreditation of Dutch national guidelines and the introduction of care pathways for older people. In Box 3 examples of these activities are described.

Box 1 Patient care

NP5 ‘05: ‘Before I started the NP training programme, I was a nurse in home care. For me it is difficult to do an assessment within 15 minutes. In home care I spent more time with the patient and the context of the patient, how he lives and who the relatives are, is more clear.’

NP6 ‘05: ‘Patients told me a NP consultation differs from a GP consultation. They were not unsatisfied about their GP, but I have more time, explore problems in a different way, which is influenced by my nursing background of course. I think I am more interested in exploring the problems very carefully, looking for themes behind the problems they came for, which might affect the complaints.’

NP4 ‘05: ‘When GPs have the opinion that NPs only treat common complaints, I think the NP will not be implemented in primary care. I am a nurse and I focus also on self-management of patients. They will have to get used to it, this is the new role.’

NP4 ‘06: ‘Since a few months I have, in collaboration with a GP, also done consultations of older people with common complaints in nursing homes. I use my ‘new medical’ knowledge and my nursing background. It is very interesting to combine these two into a new perspective. Further I coordinate and evaluate the patient care with the staff members of the nursing homes.’

GP5 ‘05: ‘I doubt about her empathic approach. Sometimes I think she goes too far in exploring the patient’s experiences, so that she will lose her professional distance.’

GP2 ‘06: ‘Sometimes I have patients, who come for their physical complaints, but I presume that these complaints are caused by some psychological factors. I ask the NP to explore the patient’s complaints extensively. My experience is that her information is very useful in the diagnostic procedure.’

GP3 ‘06: ‘We share home visits of patients with complex care (palliative care). It is comfortable and professional, when I do not have to do this all by myself. I feel that I have a new partner in these situations.’

GP1 ‘08: ‘When a GP and NP collaborate pair-wise, cure and care become more close. This is especially important in care for older people. Care for patients will be more adjusted on patient’s needs and it affects the collaboration positively.’

Box 2 Collaboration

NP5 '05: 'The practice assistants conducted triage, they booked patients with common complaints for a NP consultation. They have notes of the common complaints I can treat. Sometimes I change the rank, because otherwise I will treat only patients with ears, noses or throat complaints. In the beginning there were some problems and they planned patients with common complaints, which I could not treat. So we have discussed this. For practice assistants it is sometimes difficult to do a triage or to introduce the NP to patients as a new type of professional who can also treat common complaints.'

NP7 '05: 'I have worked with assistants to see what their activities are, so now I can understand their questions better. And they have taught me also some activities such as a cervical smear or to test urine sediments.'

NP4 '06: 'My role is very clear. Some activities which I have learned in the training programme are performed by practice assistants. There are no indications to take over these activities. In these cases we'll make our consents.'

GP2 '06: 'The NP indicates the gaps in care delivered by me and my colleagues. She also notices differences in treatment and discusses what is evidence based practice or best practice. The way she discusses this is very professional and we also accept that she is doing this. She stimulates us to reflect on our patient care and discusses uniformity between GPs.'

GP7 '08: 'From the beginning she was very clear about her role to all professionals, especially to the practice assistants in a friendly manner: "Sometimes I will ask you something to do and I will give you feedback or we will look how we get things solved". She took care of stability in this team. I can imagine that another personality would not succeed in this.'

GP2 '08: 'The GPs in this village had some problems in the collaboration with the nursing home, which affected the care for older people. Our NP took a leading role to improve this collaboration. She explored the problems by means of questionnaires for the staff members of the nursing home, the GPs and the practice assistants in all general practices. Then she developed protocols to structure the collaboration between the general practices and the nursing home. The result is that the NP treats all older people with minor complaints who live in the nursing home, she coordinates the care and consults the patient's GP if necessary. She is now the mediator between the nursing home and the 11 GPs and evaluates the patient care frequently. Patients and the staff members of the nursing homes are all very satisfied. We, GPs, have now less interruptions and the collaboration between GPs and the staff members of the nursing home has been strongly improved. The NP works now for 18 hours per week for all the GPs and six hours per week in my practice.'

Discussion

This study lends clarity to the role of NPs in general practice. NPs' main focus of work is on the treatment of patients with common complaints. In this way the added value of NPs is that they contribute to the accessibility and availability of primary care, but also to the improvement of quality of care in general practice. The learning curve of NPs treating patients with common complaints is suggested by the increase of productivity rates towards the end of the study. The increase after graduation is partly influenced by incentives to make the NP economically viable and partly attributed to changes in the Dutch health insurance system. Differences between productivity rates of NPs and GPs can arguably be explained by differences in booking intervals.

Differences between NPs are reported in the percentages of home visits, the care for older people and the percentages of patient related activities versus

non-patient related activities for different practices. These results are attributed to the preference of GPs to perform certain consultations themselves, the funding which supports coordinated care for older people from health insurance allowances and the specific needs of practices to perform non-patient related activities. Consequently, the way NPs perform their roles is a result of their collaboration with other professionals in general practice as well as of financial incentives. Another study found similar results related to the variation in clinical freedom and autonomy of NPs' work at practice level.¹⁷

From a medical point of view, GPs have not noticed any difference between the way NPs act during the treatment of patients with common complaints compared with themselves, which is also reported in earlier publications.^{5,9,18} As NPs mainly treat patients with common complaints this might also lead to GPs having more time for patients with chronic diseases or multi-morbidity.

Box 3 Quality of care

GP7 '05: 'Thinking about quality gives an impulse in our practice. It is a typical phenomenon when educating a professional. Educating a NP is a stimulus for practice assistants, practice nurses and GPs. We discuss a lot what is best practice and which protocols we need.'

NP6 '06: 'I work very systematically. My impression is that GPs like to innovate, but they do this often without a well-considered plan. I think that a NP could have an important role in such innovative or implementation projects, because we have learned how to structure these kinds of processes and how to implement evidence based practice.'

NP4 '06: 'Practice assistants ask patients about their complaints. Based on this data they decide if they can give the patient some instructions, or the patient should have a consultation with a GP or NP. Frequently I organise a triage training for practice assistants. The purpose is to improve their communication with patients. In this training I educate them about a specific complaint, how to explore patients' complaints and what advice or instructions they can give to patients. Practice assistants appreciate my training.'

By giving this training I realised practice assistants are doing things because they were told to do them. But the reason is not clear to them. I use some simple anatomy and pathology and explain the effects of an intervention (evidence based); the accent lies on the reasons behind the patient's instructions. Then they will be able to motivate to improve the patients' self-management.'

NP7 '06: 'We have noticed that a number of patients came back with otitis externa, after they had an ear irrigation, provided by the practice assistants. As part of my Master's thesis I investigated ear irrigation to reduce the risk of complication. First I conducted a literature review on the complications (probably) caused by ear irrigation. Based on the results I conducted a checklist to detect the risk factors in our practice. As a result we had to improve three elements: the assessment of patients/the contra-indications of ear irrigation; adapting our intervention by using a wad of cotton wool to dry the ear canal and we had to improve the patient's instructions, whether patients had to come back for a follow-up consultation. The next phase of the Master's thesis was to develop a new evidence based protocol for ear irrigation, and I organised training for practice assistants about the anatomy and physiology of the ear and ear irrigation. After three months we evaluated the new protocol with the general practitioners and the practice assistants and we conducted the observation study for a second time six months after the implementation of the protocol, to measure the effect of our interventions.'

NP2 '08: 'I also give education in the training programme for NPs. I would like to do more activities in quality care projects, such as implementation of evidence based practice and research, but I have not the time to do this.'

NP1 '08: 'Our practice is involved in several quality care projects (NP care for homeless persons, NP care related to mental health care, emergency care, etc.). I perform activities related to these projects during leisure time.'

GP4 '08: 'Our NP gave us a scientific article about the use of a type of contraceptive medication and the risk of thrombosis. The NP suggested that we could inform patients who take this medication and give advice for an alternative. So we accomplished that. She also developed the protocol for endocarditis prophylaxis.'

NPs are hybrid professionals, synthesising nursing and medical skills.¹⁸ The Master's training programme is a major precondition for the success of the autonomous role of the NP. In the curriculum NPs experienced a tension between medical and general courses. For NPs the patient population is new, which makes medical courses crucial to their effective performance in practice. Otherwise general courses related to role development, collaboration and research are crucial in order to enable them to perform activities in the improvement of (evidence based) patient care.^{13,19,20} Characteristics attributed to Master's graduates, which are also concordant with this study, can be categorised

under cognitive and practice related competencies, research orientation and personal dynamism.²¹ Collaborative models for education are recommended in order to develop the potential value of NPs.⁷

Several studies postulate the importance of non-patient related activities, to challenge traditional values and transform clinical practice in an ever-changing healthcare system,⁸ but these activities are often not reimbursed. Researchers, professionals and healthcare insurers should debate the importance of these activities and quantify them to indicate potential cost savings. Additional robust research is needed to operationalise the core competencies of NPs in general practice.

Strengths and limitations

One of the most important advantages in using multiple methods is that this can lead to theoretical and substantive insights into the multidimensional nature of healthcare systems.¹⁴ This study had some limitations. Descriptive studies do not report the full range of responses. Issues have to be identified and considered for a certain level of evidence.²² Further, not all the data for consultation rates of the NP in EG2 were available to the researchers, since she worked for a group of GPs who did not participate in the project. Bias might have occurred because the evaluation setting was not anonymous. Further, the interviewers had different professional backgrounds. By using the same instructions and debriefings, the authors assumed that the variation in interviewing styles was limited. In our analyses we have not used data from four interviews with professionals because in these practices the NPs finished their job before 2007, whereas it was our intention to focus on general practices with four years of experience of NPs.

Conclusion

Nurse practitioners are functioning with a primary focus on the treatment of patients with common complaints. In doing so, they contribute value by increasing the accessibility and availability of primary care and also contribute to improvements in quality of care. Differences in roles are mostly influenced by specific needs in practices and by financial incentives. Additional research is needed to validate the results and to operationalise the core competencies of NPs in general practice.

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CONFLICTS OF INTEREST

None.

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