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Reframing professional boundaries in healthcare

Niezen, M.G.H.; Mathijssen, J.J.P.

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Review

Reframing professional boundaries in healthcare: A systematic review of facilitators and barriers to task reallocation from the domain of medicine to the nursing domain



Maartje G.H. Niezen*, Jolanda J.P. Mathijssen

Tilburg University, Department Tranzo, Netherlands

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ABSTRACT

Aim: To explore the main facilitators and barriers to task reallocation.

Background: One of the innovative approaches to dealing with the anticipated shortage of physicians is to reallocate tasks from the professional domain of medicine to the nursing domain. Various (cost-)effectiveness studies demonstrate that nurse practitioners can deliver as high quality care as physicians and can achieve as good outcomes. However, these studies do not examine what factors may facilitate or hinder such task reallocation.

Method: A systematic literature review of PubMed and Web of Knowledge supplemented with a snowball research method. The principles of thematic analysis were followed.

Results: The 13 identified relevant papers address a broad spectrum of task reallocation (delegation, substitution and complementary care). Thematic analysis revealed four categories of facilitators and barriers: (1) knowledge and capabilities, (2) professional boundaries, (3) organisational environment, and (4) institutional environment.

Conclusion: Introducing nurse practitioners in healthcare requires organisational redesign and the reframing of professional boundaries. Especially the facilitators and barriers in the analytical themes of ‘professional boundaries’ and ‘organisational environment’ should be considered when reallocating tasks. If not, these factors might hamper the cost-effectiveness of task reallocation in practice.

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1. Introduction

Various healthcare settings (e.g. within primary care, child healthcare and hospitals) are facing shortages of medical staff and specifically physicians. Simultaneously,

there is an increased demand for healthcare in general and for more specific and more intensive patient treatments [1–3], while the explosive growth of healthcare expenditure continues to dominate many policy agendas [4]. One of the innovative approaches to dealing with the anticipated shortage of physicians and/or attempting to control healthcare expenditure is to introduce new nursing roles, such as the nurse practitioner (NP) [5]. NPs are registered nurses specially educated to take on tasks previously performed by professionals of the medical domain. This implies that tasks are shifted from the traditional professional domain of medicine (cure) to the domain of nursing (care).

* Corresponding author. Current address: Tilburg University, Department TILT, Tilburg Institute for Technology, Law & Society, Netherlands. Tel.: +31 13 466 2407.

E-mail addresses: m.g.h.niezen@tilburguniversity.edu (M.G.H. Niezen), j.j.p.mathijssen@tilburguniversity.edu (J.J.P. Mathijssen).

Several studies have demonstrated that appropriately trained nurses can deliver as high quality care as physicians and achieve equally good outcomes in terms of patient health, care processes, use of resources and economic variables [6–10]. Reviews by Horrocks et al. and Laurant et al. on NPs in primary care settings yield numerous indications that NPs can deliver equivalent quality of care as physicians, hand in hand with patient satisfaction, although the cost-effectiveness of NP delivered care remains somewhat unclear [7,9]. Similarly, Bissinger et al. and Sakr et al. show that NPs can provide safe and high quality care in neonatology and emergency care settings, respectively [6,8].

Nevertheless, debates on workforce changes demonstrate that introducing new roles in healthcare practices is not a straightforward process [6,11,12]. For one, workforce changes often put pressure on workforce boundaries. Traditional workforce boundaries become dynamic due to the identification of new work areas or by adopting new roles normally fulfilled by other professionals [6]. In response, however, established professionals may seek to protect and maintain boundaries or to expand their areas of control via institutional work (e.g. the creation of rules that facilitate, supplement and support institutions) [11]. Consequently, the newly introduced roles, against the background of (anticipated) physician shortages and/or the reduction of healthcare costs, generate fundamental questions concerning professionalism and the provision of public services such as healthcare. In other words, the changing position of professionals not only raises power and privilege issues at the individual level of professionals, but also involves context and social transformations at the professional, organisational and institutional levels [13].

Introducing new nursing roles in healthcare practices thus often implies redesigning the organisation and raises discussions on workforce change and professionalism. This applies especially when these roles operate in between, and in the overlap of, the traditional professional domains of medicine and nursing. This paper focuses on the introduction of new nursing roles that cause or warrant interdisciplinary workforce change. The disciplinary boundaries of nursing are expanded by taking on work that is traditionally performed by other disciplines, particularly physicians [6]. Before redesigning health organisations to enable the introduction of NPs, it is important to understand what facilitators and barriers may be expected in task reallocation. If these factors are not taken into account they might hamper the (cost-)effective execution of task reallocation in actual practice [14].

This review explores what facilitators and barriers have been found in earlier evaluations and studies of task reallocation from the professional domain of medicine to the domain of nursing. The questions addressed in this review are: (a) What forms of task reallocation can be observed in healthcare? (b) What barriers and facilitators are perceived when task reallocation occurs – specifically in relation to the ability of NPs to perform their role? and (c) How are the different types of task reallocation and perceived facilitators/barriers related?

The multi-layered concept of professionalism by Brandsen et al. is used to explore task reallocation from one professional to another professional domain [13]. The

professional is first deconstructed in terms of essential components: (a) relying on specific knowledge and expertise; (b) belonging to a closed community of people with similar knowledge and expertise characterised by shared norms and values, institutions for socialisation and regulation; (c) this closed nature of the community is considered legitimate by society at large; and (d) discretionary or professional autonomy are allowed at both an individual and community level. Task reallocation and the specially trained NPs challenge the boundaries of the specific knowledge and expertise these closed communities rely on. According to Brandsen et al., professionalism should therefore be considered multi-layered, with the professional challenged at different levels of analysis: (1) at the individual level, (2) within his/her professional community, (3) within his/her organisational community and (4) at the level of the general public or society [13].

Using the multi-layered concept of professionalism enabled the emergence of a networked model. This networked model describes the internal and external structures positioning the NP in relation to the facilitators and barriers in task reallocation. This model might contribute to the organisational redesign processes and successful adoption by stakeholders (e.g. hospital managers, NPs) to meet future requirements of access to and quality of care [15].

The next section describes our research methods. The Results section presents the different categories of facilitators and barriers in task reallocation, followed by a Discussion of how the networked model, positioning the NP in relation to the facilitators and barriers in task reallocation at different analytical levels, answers our research questions, and of the restrictions of the presented review.

2. Materials and methods

2.1. Design

We conducted a systematic literature review to identify facilitators and barriers to reallocating tasks from the traditional domains of medicine to nursing. This “vertical substitution involves the delegation or adoption of tasks across disciplinary boundaries where the levels of training or expertise (and generally power and autonomy) are not equivalent between workers” [5, p. 909].

Inclusion criteria for literature consisted of: population, intervention/topic of interest, study design and outcomes. We included articles that discuss the role of specially trained nurses adopting new tasks that previously belonged to the medicine domain. These nurses are referred to as either nurse practitioner (NP), advanced practice nurse (APN), nurse specialist (NS), or general nurses specially trained for a new task. APN is an umbrella term containing both the NP and NS, although they have varying levels of authority. APN can be defined in different ways, yet most studies seem to use the definition used by the International Council of Nurses or a definition with similar content.

A Nurse Practitioner/Advanced Practice Nurse is a registered nurse who has acquired the expert knowledge base, complex decision-making skills and

clinical competencies for expanded practice, the characteristics of which are shaped by the context and/or country in which s/he is credentialed to practice. A master's degree is recommended for entry level (see: <http://www.icn-apnetwork.org>, accessed December 2012, emphasis added).

From here on, this paper only uses the term NP for clarity reasons.

Included are papers on the topic of 'task reallocation from medicine to nursing'. **Task reallocation** concerns a broad spectrum of shifting tasks and responsibilities from medicine to nursing, ranging from minimal delegation to complete substitution and also the introduction of complementary care. With delegation the care provision shifts from a higher grade (physician) to a lower grade person (NP), yet medical responsibility remains with the higher grade professional [1,16]. Substitution entails that one type of professional is exchanged for another. These substitutes manage a wide variety of patient problems, without reference to a physician [9,16]. The NP as a complementary role, i.e. supplementation, means that an NP extends the care of the physician by providing a new care service [9].

The studies eligible for the review are not limited to RCTs and quasi-experimental research, but can report on either qualitative, quantitative or both types of evidence and are published in peer-reviewed journals. Moreover, the scope of the literature review is not limited to one particular type of healthcare setting or country. The outcomes of interest are facilitators and barriers in task reallocation. The papers must therefore discuss at least one facilitator or barrier. A **facilitator** is defined as any factor that stimulates or expands task reallocation from the medical to the nursing domain. A **barrier** is defined as any factor that limits or restricts task reallocation from the medical to the nursing domain.

2.2. Search methods

We searched English-language articles only that were published between 1950 and February 2012, using the PubMed and Web of Knowledge databases.

We conducted two searches: (1) using MeSH terms only, and (2) using relevant key words, since the MeSH terms likely do not incorporate all relevant papers. Using the search strategy as shown in [Box 1](#), we identified 519 papers. The exclusion of 'jurisprudence' was not part of the original search strategy, but the result of our progressive understanding. After identifying duplicate papers via EndNote X3, 358 papers were included for further review.

2.3. Search outcome

[Box 2](#) is a flowchart of the selection process. The selection of papers was validated by using two independent reviewers (MN & JM). Differences were discussed until consensus was reached. In the first selection phase, titles of all 358 papers were screened based on the inclusion criteria: (1) focus on task reallocation from medicine to nursing, (2) new nursing roles were the subject of the study and (3) facilitators and barriers to task substitution were

considered. First, a 10% sample of the papers (36) was reviewed and compared by both reviewers (94% agreement between the two reviewers). Based on this comparison, MN individually conducted further reviews. Any article that fulfilled two of the inclusion criteria, or that the reviewer was uncertain about, proceeded to the next selection phase. The second selection phase comprised independent judgement of the abstracts, and if not available the full text paper was scanned by both reviewers. The third review round involved a critical reading of each study's full paper to see whether inclusion criteria truly were met (MN). Any uncertainties in the selection of the articles were resolved by consulting the second reviewer (JM). Based on this assessment, four more papers were excluded. Two papers were excluded based on content and two papers because they were literature reviews. The snowball method resulted in the addition of three papers. The previously excluded literature reviews [17,18] were scanned for additional original studies relevant for this review [19–21]. The final selection therefore involved 13 papers.

2.4. Quality appraisal

The quality of the qualitative/behavioural studies was assessed through a combination of appraisal tools derived from Harden [31] and Dixon-Woods et al. [32]. The one outcomes-based trial in the final selection was assessed using the CASP assessment tool for RCTs (<http://www.sph.nhs.uk/sph-files/casp-appraisal-tools/>) (see [Tables 1 and 2](#)). All studies were independently assessed by MN & JM, overall agreement of 73%, remaining uncertainties or disagreements were resolved through discussion.

The quality appraisal was used to assign weight to each of the studies; either being of good quality (A) or being of lesser quality (B). The papers denoted as lesser quality had at least two negative assessments [19,23,25,26,33]. Taking into account the limited number of available studies and the possibility of robust findings in the less valued papers, none of the papers were excluded based on the quality assessment. However, in the identification and interpretation of relevant themes we checked whether the themes were not based on findings only presented in one of the less valued papers, but were confirmed by at least one other study.

2.5. Data abstraction and synthesis

In order to synthesise both qualitative and quantitative evidence we made use of thematic analysis [34]. The following information was abstracted from each article: the type of task reallocation, description of facilitator and/or barrier, and study characteristics (e.g. type of evidence, health setting and sample size). We used an inductive approach to identify all recurrent facilitators and barriers by reading and open coding all the text labelled as 'results' or 'findings' in the included studies, allowing for the determination of key concepts, themes and patterns. The quantitative evidence in the outcomes-based trial was converted into a description of the key findings, making use of the discussion of the outcomes [33]. These

Box 1: Search strategy

MeSH term search

- Nurse clinicians OR nurse practitioners OR advanced practice nursing
- Capacity building OR personnel delegation OR delegation, professional
- jurisprudence

Search: a AND b NOT c

Key words search

- Nurse practitioners OR nurse specialists OR specialist nurses OR advanced practice nurses OR nurse clinicians OR practice nurses
- Delegation OR substitution OR diversification OR task allocation OR skill mix OR interprofessional workforce OR service transfer OR interdisciplinary healthcare teams
- Boundaries OR barriers OR facilitators OR organisational change
- Jurisprudence

Search: a AND b AND c NOT d

	PubMed	WOK
Mesh Terms	101	195
Key words	62	161

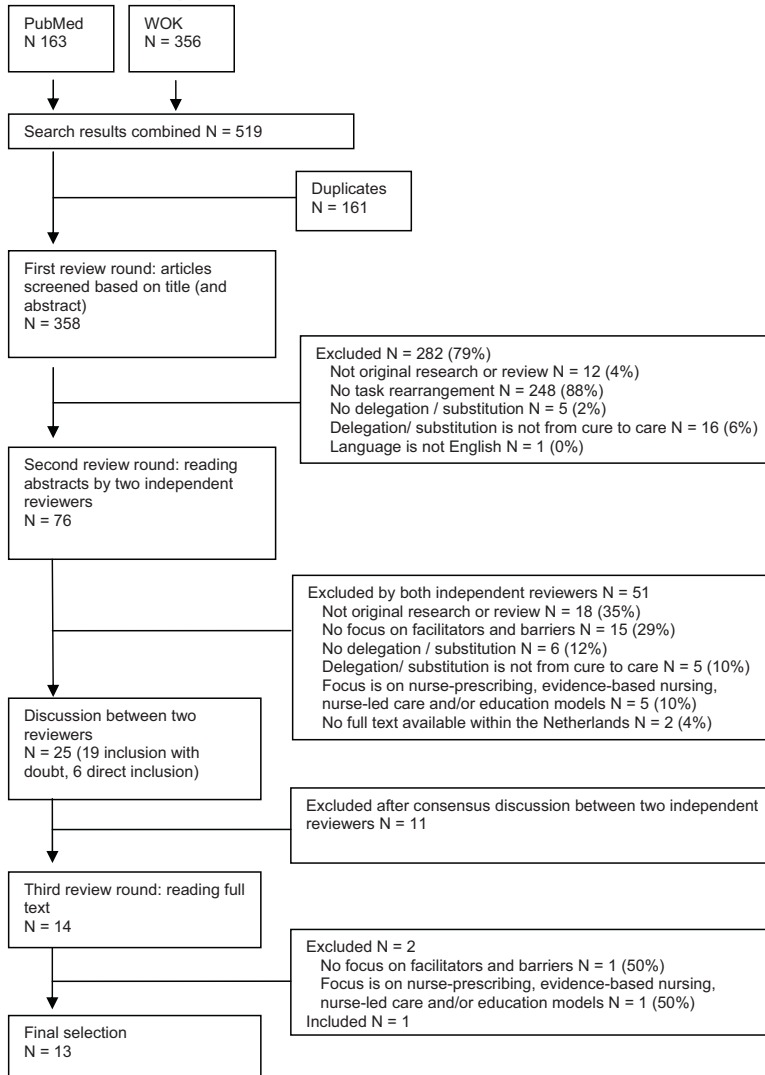
Box 2: Selection process

Table 1
Quality of non-experimental and qualitative research.^a

Study	Theoretical frame-work/literature review described?	Aims, objectives, research questions clearly described?	Context clearly described?	Sample and recruitment described?	Sample appropriate to research question?	Method of data collection and analysis clearly described?	Method of data collection and analysis appropriate to research question?	Attempts made to establish reliability or validity of data analysis?	Are data, interpretations and conclusions clearly integrated?	Pilot work conducted and described?	Participation respondents (process/consent)?	Useful contribution?
Bonnel et al., 2000 [19], B	Y	Y	Y	Y	Y	Y	Y	N	Y	N.A.	N	Y
Brodsky and Van Dijk, 2008 [22], A	Y	Y	Y	Y	Y	Y	Y	?	Y	Y	N.A.	Y
Fletcher et al. 2007 [22], B	Y	Y	Y	N	Y	Y	N	N	N	N.A.	N.A.	N
Kaasalainen et al. 2010 [24], A	N	Y	Y	Y	Y	Y	Y	Y	Y	?	Y	Y
Lindblad et al. 2010 [25], B	N	Y	Y	Y	Y	Y	Y	?	Y	?	N	Y
Middleton et al. 2011 [26], B	N	N	Y	Y	Y	Y	Y	N.A.	Y	N.A.	N.A.	Y
Offredy et al., 2007 [20], A	Y	Y	Y	Y	Y	Y	Y	Y	Y	N.A.	Y	Y
Pearson, 2009 [21], A	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	N.A.	Y
Tye and Ross, 2000 [27], A	Y	Y	Y	Y	Y	Y	Y	Y	Y	N.A.	Y	Y
Van Offenbeek et al. 2009 [28], A	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y
Wilson et al. 2002 [29], A	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y
Zwijenberg and Bours, 2012 [1], A	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N.A.	Y

A, good quality.

B, lesser quality.

Y, yes.

N, no.

?, Can't tell.

N.A., not applicable.

^a The assessment of the quality of the non-experimental and qualitative research is based on the combination of two existing appraisal tools derived from Harden [31] and Dixon-Woods et al. [32].

Table 2
Quality of RCT.

Study	Did the study ask a clearly focused question?	Was this an RCT, and was it appropriately so?	Were participants appropriately allocated to intervention and control groups?	Were participants, staff and study personnel 'blind' to participants' study group?	Were all of the participants who entered the trial accounted for at its conclusion?	Were the participants in all groups followed up and was data collected in the same way?	Did the study have enough participants to minimise the play of chance?	How are the results presented and what is the main result?	How precise are these results?	Were all important outcomes considered so the results can be applied?
Pioto et al., 2001 [33], B	Y	Y	Y	N	Y	Y	N	Y	Y	Y

A, good quality.

B, lesser quality.

Y, yes.

N, no.

?, Can't tell.

N.A., not applicable.

descriptions were open coded. Subsequently, the results of the open coding of the primary studies were organised to form descriptive themes. The descriptive themes were revised and merged by discussing the themes, sub-themes and the relations between the (sub)themes. New codes were created to capture the meaning of groups of initial codes (see [Appendix A](#) for the Coding tree). The coding and construction of thematic themes was peer reviewed by three independent reviewers (RZ, JH and EG). Last, we generated analytical themes by subsuming the descriptive themes identified in the primary studies into a higher-order theoretical structure. The goal of the analytical themes was to obtain answers to our review questions, specifically what facilitators and barriers to task reallocation can be identified, and how do they relate? We made use of the inductive analysis of study findings in combination with a deductive approach, that is, the theoretical structure offered by Brandsen et al. on the multi-layered nature of professionalism [13].

3. Results

3.1. Study characteristics

The thirteen studies included in the review were published between 2000 and 2011. Study characteristics are depicted in [Table 3](#).

3.2. Barriers and facilitators

Our analysis led to four analytical themes of facilitators or barriers: (1) knowledge and capabilities, (2) professional boundaries, (3) organisational environment, and (4) institutional environment. In [Table 4](#) we structured the information about the articles reviewed. The 'plus' and 'minus' symbols added to the table contents refer to how the identified factors were categorised in these articles. However, factors considered 'plus' sometimes can, for example at other points in time, be 'minus' as well and vice versa. Each identified analytical theme comprises a set of factors influencing the NP role at a different level of analysis ([Fig. 1](#)). These different levels of analysis provide insight into the type of changes in attitudes towards task reallocation that can be identified in each layer, either proactively by individual NPs or through governing mechanisms (e.g. law).

3.2.1. Knowledge and capabilities

Four studies described facilitators and barriers related to NPs' knowledge and capabilities. The NPs' knowledge and capabilities theme is divided in two subcategories: (1) self-knowledge, and (2) interpersonal skills. NPs' self-knowledge, specifically NPs' insight into their own limitations and confidence in their capabilities is considered important since it may encourage NPs to make decisions. Lack thereof likely causes NPs to refer patients to physicians, which hampers the task reallocation process [1,20,23,27]. NPs' effective interpersonal skills are seen as a strength in NP consultations and have contributed to the

Table 3
Study characteristics.

Author(s)	Study	Type of evidence	Country	Health setting	Type of nurse	Sample
Bonnel et al., 2000 [19]	Descriptive study of NPs' challenges and strategies in initiating an effective role in a nursing facility.	Qualitative research analysing written journals of 5 NPs and 2 group discussions.	U.S.A.	Long-term care; geriatrics	NP	5 NPs
Brodsky and Van Dijk, 2008 [22]	Evaluate attitudes of nurses and physicians to the introduction of new nursing roles and to expanding the scope of nursing practice.	Quantitative: questionnaires distributed according to a convenience sample method.	Israel	3 hospitals and 15 community clinics	ANP	325 nurses/physicians
Fletcher et al., 2007 [23]	Descriptive study on NPs' and MDs' perceptions of the role of NPs, the degree of collegiality between professions, and NPs' feelings of acceptance.	Qualitative and quantitative: a descriptive study including both closed and open-ended questions, and Likert-type questions.	U.S.A.	Primary care in 7 Veterans Health Administration facilities	NP	153 physicians and NPs, with 109 responses to 4 open-ended survey questions
Kaasalainen et al., 2010 [24]	Descriptive study on the perceptions of long-term care team members and nurse managers about barriers and facilitators to optimal use of NPs to manage residents' pain.	Qualitative: an exploratory descriptive design making use of focus groups and individual interviews.	Canada	2 long-term care settings	NP	5 focus groups with nurses (N= between 6 and 10/focus group), and 14 individual interviews with other health care team members and nurse managers.
Lindblad et al., 2010 [25]	Descriptive study on the experiences of APNs and their supervising GPs regarding the new role and scope of practice of APNs.	Qualitative: four individual interviews with NPs followed by one focus group with supervising GPs.	Sweden	General practice	APN	9 (APNs/physicians)
Middleton et al., 2011 [26]	Study to profile NPs and their practice in Australia in 2009 and to descriptively compare these to the data from 2007.	Quantitative: Self-administered questionnaire	Australia	All settings where NPs are allowed to practice in Australia	NP	293 NPs
Offredy et al., 2007 [20]	Explorative study of two primary care trusts (UK) on nurse prescribers' pharmacological knowledge and decision-making and factors enabling practitioners' willingness to be nurse prescribers.	Qualitative: Interviews and case scenarios, making use of purposive sampling.	United Kingdom	Primary care trusts	Qualified nurse prescribers	25 qualified nurse prescribers (7 in training)
Pearson, 2009 [21]	Study providing an overview of nurse practitioner legislation and reimbursement issues.	Quantitative: Compilations of the numbers of accumulated occurrences in the National Practitioner Data Bank (NPDB) and the Healthcare Integrity and Protection Data Bank (HIPDB) for nurse practitioners (NPs), doctors of osteopathy (DOs) and medical doctors (MDs).	U.S.A	All settings where NPs are allowed to practice in the U.S.A.	NP	147,295 NPs 56,754 doctors of osteopathy 961,473 medical doctors
Pioro et al., 2001 [33]	Explorative study on the applicability and limitations of NP-based care in academic teaching hospitals.	Quantitative: outcomes-based trial of an inpatient NP service for general medical patients.	U.S.A	Hospital care, heterogeneous patient population	NP	381 patients (193 NP-based care/188 house staff care)
Tye and Ross, 2000 [26]	Case study of the NP role in an Accident & Emergency department.	Qualitative: Case study with nine face-to-face semi-structured interviews	United Kingdom	Accident & Emergency Care	NP	9 key stakeholders (e.g. NPs, A&E consultants and Director of Nursing Service)
Van Offenbeek et al., 2009 [28]	Comparative study to explore which (combination of) theory/theories best explains redesign in care organisations	Qualitative: Case studies of four subunits that introduced NPs, using interviews and observations.	Netherlands	Pre- and post-operative care; extramural rheumatology care; post-operative neurosurgical care; minor traumatology at emergency care	NP	64 (NPs, medical specialists, nurse managers, nurses, interns, etc.)
Wilson et al., 2002 [29]	Explorative study on the views of GPs on barriers in developing an advanced nursing role in GP.	Qualitative; a focus group study of GPs in four general practices	United Kingdom	General practice	NP	25 GPs
Zwijenberg and Bours, 2012 [1]	Study exploring the role of NPs and PAs, the extent of substitution and the barriers and facilitators experienced by NPs and PAs as a consequence of substitution in public hospitals.	Qualitative and quantitative: Interviews and questionnaires.	Netherlands	Hospital care	NP and PA	43 NPs/13 PAs

Table 4
Facilitators and barriers.

Author(s)	+ = reported facilitator, – = reported barrier, +/-, reported barrier and facilitator			
	Individual characteristics	Professional boundaries	Organisational environment	Institutional environment
Bonnel et al., 2000 [19]	NPs proactive communication approaches and efficient information management were identified as a basis for good practice (+). Level of knowledge/skill likely impacts transition to NP role (+/–).	Blurring boundaries between each professional's roles. The type of physician delegation of tasks can be a barrier in a nursing facility (–). A close collaboration between doctor and NP can positively affect the NP's role (+). Also, the role negotiation, about tasks to be performed is important (+). Educate staff about NP role (+).	Familiarity with the environment is an early need to make sense of the regulatory environment, understand the role and functions of various members of the interdisciplinary team, and figure out how to get the work done (+). Formal procedures to credential or grant privileges to NP or physicians implemented differently in the different settings (–). Setting up a physical environment (a corner, closet) facilitates the initiation of nursing facility practices (+). Lack of good resources, people, computers, references hampers NPs first year settling (–).	Learning and understanding the spectrum of responsibilities under federal regulations complicated practice (–). Regulatory and financial issues are barriers (–). Examples reported are reimbursement issues and Medicare and Medicaid that only allow for partial substitution for some physician services.
Brodsky and Van Dijk, 2008 [22]		Feelings towards expanding NPs' scope of practice were affected by the amount of medical responsibility delegated to the NPs (+/–). The perceived added value of NPs was influenced by the education of physicians (country) (+/–) and the amount of experience (seniority) of the physicians (+/–). More seniority had a negative influence. In Israel educated physicians were more supportive than overseas educated colleagues to NPs.	The type of health setting appeared to influence physicians' attitudes towards NPs. Community clinics tended to be less supportive to NPs than hospitals (+/–). The type of care, especially the complexity of care, influences the attitude towards NPs. The less complex the care, the more positive the attitude (+/–).	
Fletcher, Baker et al., 2007 [23]	NPs insight in their own limitations is an important factor in the acceptance of NPs as providers of primary care (+/–).	The possible roles of the NP include various levels of medical responsibility and independence. The amount of (in)dependence is related to the type of collaboration between the NP and physician (+/–). There is a tension between practicing without adequate supervision and not being able to practice independently within scope of training and experience (+/–).	The complexity of care provided is an important factor in the acceptance of NPs as providers of primary care (+/–).	
Kaasalainen et al., 2010 [24]		Role NP is nurse with added skills that can be used as a conduit between nursing staff and physicians (+). The extent of the NP/physician collaboration is influenced by the level of trust between the two of them (+/–). The amount of trust, in fact, is mentioned as the key aspect in influencing the perceptions of the different health professionals. The scope of practice regarding e.g. (restrictions in) prescribing affects the different perceptions (–). The NP is positioned on the continuum between nurses with extended level of competency and a mini-doctor, or even as a complete new vocation. Depending on what type of definition is given for the NP and what amount of teamwork is common, the experience with the NP changes (+/–). The scope of practice depends on the authority to prescribe and order treatments. A lack of expanded rights negatively influences the NPs experiences in Sweden. Having authority is fundamental for independent work (–). Mutual confidence and trust between NP and GP is necessary. Confidence can be gained through supervision (+/–).	Employment arrangements can limit or enhance the full integration of NP into the team. An important factor is the (lack of) clarity of the NP role (–). The availability of the NP, onsite (+) or offsite position (–), affects the perception of healthcare team members and nurse managers regarding the NP role in pain management in long term care.	Legislative boundaries are environmental factors influencing the perceptions on the NP role (–).
Lindblad et al., 2010 [25]			The familiarity with NPs skills (NP as a matured/gradually developed new function) versus NP as a newly introduced function influences the experience of the first advanced practice nurses in Swedish health care (+/–). The (lack of) clear conception of NPs role changes the GP's role to consultant of the NP (–). Also, the (lack of) demarcation of the NP allows for (no) full time NP's (–). The study argues for a clear definition of roles, rights and responsibilities needed (+).	A functional pressure is the clinical career opportunity for nurses and coping with GP shortages, due to the new role of NPs (+). For the NP, it provides greater responsibility, the opportunity to develop personal competencies, yet also mounts pressure on the healthcare system (+/–).

Table 4 (Continued)

Author(s)	Facilitators and barriers			
	+ = reported facilitator, – = reported barrier, +/-, reported barrier and facilitator			
	Individual characteristics	Professional boundaries	Organisational environment	Institutional environment
Middleton et al., 2011 [26]		Barriers of authority are related to the lack of admission privileges (–), no prescription authority (–) and no authority to issue workers compensation certificates or sick certificates (–). It is the accessibility and uniformity of qualification and authorisation of the NP workforce that is an important limiting or facilitating factor regarding the status of the NP (–).	Often reported barriers in the institutional setting are related to the lack of organisational support. NPs are often (still) waiting for approval for clinical protocols (–). The inter-professional collegiality often is low, NPs report they experience a lack of support from within the nursing profession (–).	Reported financial barriers are the non-availability of Medicare provider numbers for NPs (–) as well as the lack of authorisation to prescribe medications through the Pharmaceutical Benefits Scheme (–). These financial barriers are closely related to legislative boundaries. Another reported barrier is the professional indemnity of NPs. There are no limits set by professional indemnity insurance (–).
Offredy et al., 2007 [20]	Lack of appropriate pharmacological knowledge and confidence inhibits nurses' ability to make prescribing decisions (–).	Support by GP's can positively affect the nurse prescribers' role (+).		
Pearson, 2009 [21]		Professional tensions reported are credentialing NPs only in case of physician shortage (–). NPs should be held accountable for their contributions to primary care (+). The tension between responsibility and independence becomes visible in the collaboration requirements for prescriptive authority (–). However, there is no rationale for supervision of NPs by physicians based on the described malpractice and malfeasance ratios and figures (–).		Payment policies, in which NPs are reimbursed only a proportion of physicians' reimbursement for the same work, enclose the way primary care services are valued in general (–). Equitable credentialing and reimbursement for NP primary care providers will remain elusive as long as laws do not enforce such credentialing (–).
Piolo et al., 2001 [33]		Ultimate responsibility for patient care rested with patients' attending doctors, and not the NPs (–). The type of task rearrangement influenced the outcomes of the inpatient NP service trial (–). Also, the requests for cross-overs reflected concerns on NPs capabilities and value for patient care (–). Doctors should be educated on the value of NPs for general medical patients in hospitals (+).	The type of care delivered, especially the complexity of provided care, affected the cross-over of patients from the NP ward to the house staff ward. Moreover the availability of nursing based protocols was less critical than the availability of house staff for the successful implementation of NP-based care in the hospital. The availability and flexibility of NPs on the ward are factors influencing the outcome of an inpatient NP service for general medical patients.	
Tye and Ross, 2000 [27]	The varying levels of confidence by the NPs affect the NPs' role in practice. Also, effective interpersonal skills vary between the individual NPs (+/–).	The position of the NP varies from complementary to medicine (more holistic than medicine) – to – replacement of medicine (doctor substitute). Depending on the position of the NP on this scale, the role boundaries become more blurred (+/–). Especially regarding the professional de-skilling of physicians and the medicalisation of the NP, physicians hold some reservations (–). Medical opinion was conservative to expansion of NPs role—there were especially concerns regarding training requirements. The (absence of) educational standardisation affects the management of uncertainty regarding NPs' role (–).	The (lack of) clear definition of NPs role, for example through local protocolization facilitates or hinders the NPs' role (–). In addition, general and technical support affects the implementation of the NPs role in the health setting. For example, the (amount of) isolation from the nursing team—e.g. uniform/shifts/etc.—can facilitate/hinder the NPs role (–). The operational configuration of the NP role—staffing shortages forces ENPs to relinquish duties. Inconsistency of service provision created confusion amongst medical staff (–).	Functional pressures such as providing career opportunities and enhancing professional status of nursing have facilitated the NP's role (+). Legislative boundaries create legal double standards, e.g. the professional indemnity of NPs (–).

Table 4 (Continued)

Author(s)	Facilitators and barriers			
	Individual characteristics	Professional boundaries	Organisational environment	Institutional environment
Van Offenbeek et al., 2009 [28]		<p>The potential overlap in tasks adds to blurring professional boundaries as well as the discussion of the ownership of medical responsibility and need for supervision (–). The flexibility of role division can be limited by professional demarcations and identifications (–).</p> <p>Yet, doctors do perceive NPs to be more aware of their own limitations than junior doctors (+).</p>	<p>The type of care and cure (routine versus non-routine) provide opportunities for formalisation and therefore delegation/substitution (+/–).</p> <p>Task environmental influences affect work structure (re)design (+/–).</p> <p>The availability of the NP in the health setting relates to the amount of continuity in care provided (+).</p>	<p>Functional pressures for NP suggest a changed workload for physicians (+). In practice the amount of decreased workload varies (–).</p>
Wilson et al., 2002 [29]		<p>The perceived threats to the doctor's role; job and financial security affect professional boundaries (–). The perceived threats relate to association of the NP with de-skilling. And, the amount of loss of status and self-esteem (–).</p> <p>The amount of personal experience develops the confidence in NP's role in practice (+). Yet, there are GPs concerns regarding the overconfidence of NPs and (limited) insight in their own competencies (–). Also, the scope of practice is determined by the availability of authorisation to prescribe (–). NPs (do not) have the necessary training, skills and intellect to adequately assess patient and diagnose disease (–).</p> <p>There is a (lack of) confidence in the ability of nurses to take on the NP role. The adequacy of NP training is doubted (–).</p>		<p>The role of patients/patient satisfaction can hinder or facilitate the NP role. For example, patients do (not) want to see NPs. Moreover, patients' feelings towards legitimising their illness by seeing a doctor play a role (–).</p> <p>Financial boundaries are for example the (financial) means for adequate training and the financial structure of UK general practice (–).</p> <p>Lastly, legislative issues can play a role. There is a (lack of) clarity with regard to the legal responsibilities of the GPs, should a NP make a mistake resulting in harm to the patient (–).</p>
Zwijenberg and Bours, 2012 [1]	<p>NPs own success, personality, own initiative and years of work experience facilitate task reallocation (+).</p>	<p>Extent of substitution/type of delegation depends on NPs responsibility (+/–).</p> <p>NPs authority to prescribe medication and order tests and treatments is often restricted (–).</p> <p>The collaboration between NP and doctor is visible in the motivation of specialists to provide guidance during NPs' training (+).</p>	<p>Facilities-related problems refer to not having one's own office or treatment space and own computer, as well as the acceptance of office hours by patients (–). Moreover NPs experience that often a protocol, policy plan, or verbal arrangement embedding the NPs role is not available. These plans (should) contain a clear vision of job responsibilities beforehand. (–)</p> <p>The inter-professional collegiality is also an important factor in supporting the NPs role: support, effort and trust from management as well as other healthcare professionals and enthusiasm from people involved (+).</p> <p>Lastly, an institutional setting provides support to the NP when there is freedom to develop the NP's role, training opportunities are provided as well as challenge and opportunities for personal development (+).</p>	<p>A legal framework giving NPs authority to prescribe medication and order tests and treatments is lacking (–).</p> <p>Moreover financial problems relate to the uncertainty about the budget to fund the NP's employment (–).</p>

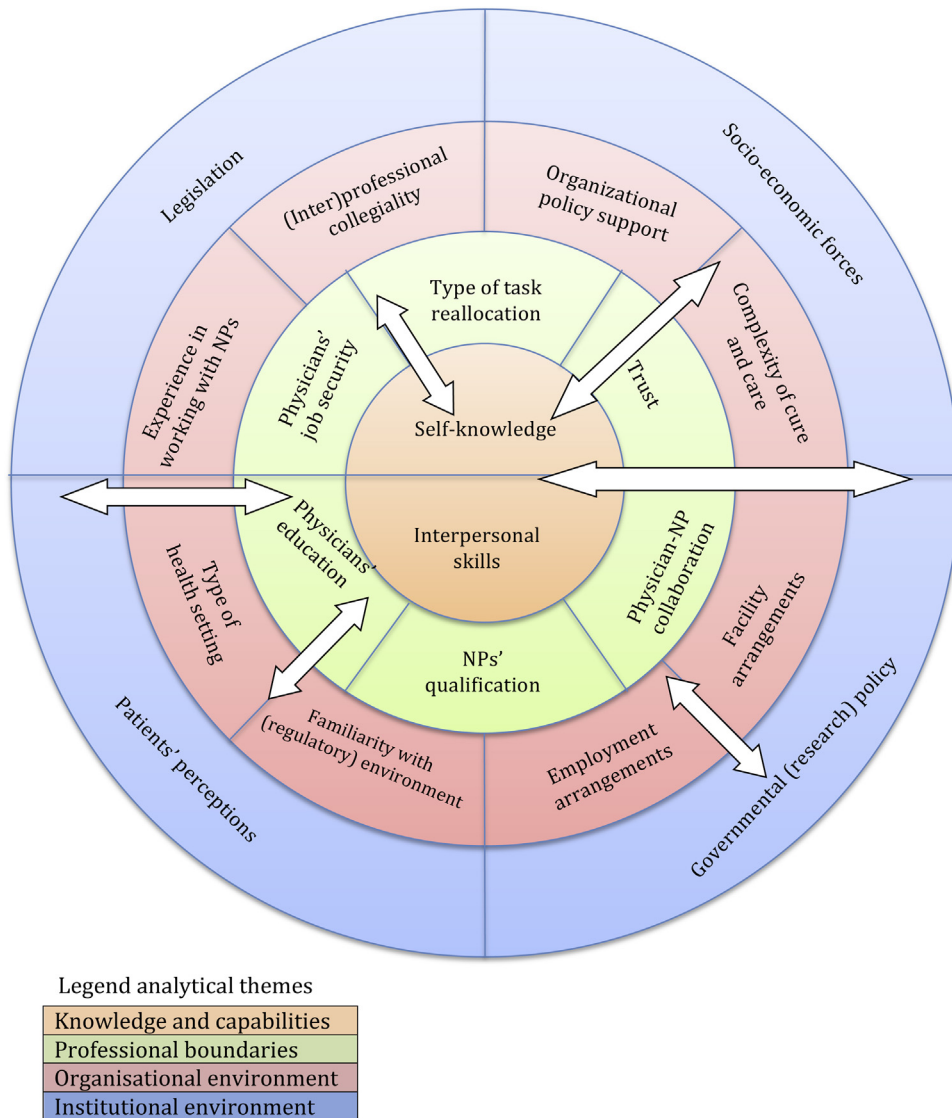


Fig. 1. A networked model of the identified facilitators and barriers to task reallocation.

quality of care and specifically to patient satisfaction, and therefore may stimulate task rearrangement [27].

3.2.2. Professional boundaries

The consequences of the introduction of the NP are, amongst others, shifting professional boundaries between the domains of medicine and nursing. All studies report on these shifting boundaries as an important barrier and potential facilitator in task reallocation. We identified six subcategories: (1) type of task reallocation, (2) trust, (3) Physician-NP collaboration, (4) NPs' qualification, (5) physicians' education, and (6) physicians' job security.

All studies described task delegation, although the studies often referred to cases in which both delegation and partial substitution occurred. The position of the NP within these different types of task reallocation ranged from super-nurse to mini-doctor, or was depicted as an entirely

new vocation [23–25,27]. The super-nurse is a nurse with a higher level of competency, whereas the mini-doctor is a nurse performing tasks formerly located in, subsequently replacing, the medical domain. For example, Tye and Ross describe how NPs put more emphasis on their holistic rather than medical approach to underline their complementary role (supplementation) to physicians [27]. Their emphasis on not replacing or substituting for physicians increased their acceptance by other professionals, as professional boundaries were not crossed. In contrast, Lindblad et al. describe how the structural reallocation of physician tasks to NPs, like prescribing medications, did not materialise. This type of task reallocation, that is substitution, explicitly involved crossing the traditional boundaries between medicine and nursing, creating boundary tensions [25]. The type of task reallocation thus interacts with the positions NPs fulfil, since the extent of delegation or

substitution is linked to the ownership of medical responsibility, NPs' level of (in)dependence, the required supervision, and the (restrictions in) authorisation [1,22–29]. For example, the ownership of medical responsibility affects the authority of NPs to perform their tasks. As reported in the survey by Zwijnenberg and Bours “70.8% ($n = 17$) of the NPs indicated that tasks were reallocated on a permanent basis (substitution). In addition, 87% of the NPs ($n = 20$) reported that tasks were reallocated, but that they were not predominantly responsible for these tasks (delegation), 56.5% ($n = 13$) reported a combination of structural reallocation and delegation of tasks” [1, p. 6]. Van Offenbeek, Sorge and Knip confirm that ultimate responsibility often remains with the (attending) physician. Subsequently, supervision did not decrease despite increased experience and even caused NPs to leave a healthcare setting on account of insufficient professional growth potential [28]. Physicians especially have reservations towards the medicalisation of NPs and often still hold or claim ultimate responsibility for patient care [1,28,33]. In other words, the organised opposition to NPs' independence is high when task allocation entails giving up tasks previously ‘owned’ by the domain of medicine and part of medical responsibility. Consequently, the level of independence experienced by NPs was often low and delegation of tasks limited.

The level of trust in NPs' ability to provide good patient care, the collaboration between physicians and NPs, and the qualification of NPs are three factors affecting the professional boundaries between medicine and nursing. Two studies report how trust is related to the amount of supervision, NPs' perceived competencies and the type of collaboration between the NP and physician [20,21]. Five studies demonstrate how the collaboration between physician and NP not only can build trust by gaining experience with a NP in practice, but can facilitate independent practice by NPs and can positively affect the NPs' role as well [1,19,23,24,29]. Also the debate on NPs' qualification affects task reallocation, often discussed in relation to the standardisation, quality and adequacy of their education. It is the accessibility and uniformity of qualification and authorisation of the NP workforce that form an important factor regarding the NP's status [21,26–29]. Wilson, Pearson and Hassey describe “a belief that nurse training at present was generally inadequate for an advanced role.” [29, p. 643]. Subsequently, they state, these feelings “may impede the development of advanced nursing roles in general practice” [29, p. 644]. However, a survey by Middleton et al. shows that a more clearly defined pathway to becoming an NP in Australia has stimulated the sustainability of the NP workforce in terms of accessibility and uniformity of qualification and authorisation [26]. Nevertheless, it is the perceived absence of educational standardisation that negatively affects task reallocation [26,27].

Physicians' education and job security are described as both barriers and potential facilitators [19,22,27,29,33]. Physicians' education can either be a barrier or a facilitator in the acceptance of NPs [22,33], since the perceived added value of NPs is influenced by the physicians' education. The more traditional the education, the more hierarchical and defined the work structure is organised and the more the nurses' autonomy level is restricted. The NPs'

(perceived) threat to physicians' job and financial security was described as a barrier to developing the NP role since it resulted in less delegation and more resistance to expanding the NPs' scope of practice [29]. There are reports of some ambivalence on the part of professional regulatory bodies regarding NP development. On the one hand the potential of NP roles is acknowledged, on the other hand medical staff have reservations about where future boundaries should be drawn, as transferring medical knowledge involves giving up an exclusive claim to this knowledge [27].

3.2.3. Organisational environment

Eleven studies reported on the impact of the organisational environment on task reallocation [1,19,21–28,33]. The organisational environment imposes a set of factors, located outside the professional communities of physicians and NPs, which influences the successful implementation of NPs in a healthcare setting. In total, we defined eight subcategories: (1) organisational policy support, (2) complexity of cure and care provided, (3) facility arrangements, (4) employment arrangements, (5) institution's familiarity with the (regulatory) environment (6) type of health setting, (7) experience in working with NPs, and (8) (inter)professional collegiality.

The first factor, organisational policy support, was addressed in eight studies, and encompasses a demarcation of the NP's role, that professional tensions are addressed, that protocols or formal procedures are available and that unwarranted restrictions, such as limited prescription authority, are removed [1,19,23–27,33]. A lack of demarcation – a clear definition of roles, rights and responsibilities – can make it difficult for NPs to practice to their potential. Furthermore, the availability of (clinical) protocols and formal procedures can facilitate the task reallocation from physicians to NPs [1,19,23,26].

Four studies indicate that the complexity of the cure and care provided is an important factor in the acceptance of NPs as cure providers. The less complex the cure component (medicine), the more positive the attitude towards NPs fulfilling these tasks [22,23,28,33]. Van Offenbeek et al. reflect on the routine versus non-routine nature of both cure and care-oriented tasks [28]. NPs contribute most in task environments where patients require non-routine care and routine care. It is assumed that less complex, more routine, cure-oriented tasks offer scope for formalisation and therefore task reallocation to the nursing domain [28].

Both facility and employment arrangements influence the ability of NPs to perform their role. The lack of proper facility arrangements, such as not having one's own office/treatment space and computer, was experienced as a barrier to task reallocation [1,19,27]. Like facility arrangements, employment arrangements can limit or enhance the full integration of NPs into a team or clinical practice [24,27,28,33]. The availability of the NP on the work floor affects healthcare team members' and (nurse) managers' perception regarding the NP role. NPs rotating on different sites, and therefore seen as working in a consultative or ‘offsite’ position, were considered to contribute less to provided care and subsequently were less valued [24]. In comparison, Bonnel et al. show how setting

up a physical environment was one of the strategies used by NPs to initiate nursing facility practices [19].

Other factors within the organisational environment that can facilitate/hinder task substitution are: the health setting's familiarity with (governmental) regulations and rules [21], the type of health setting [28], the amount of (previous) experience with NPs [25], and (inter)professional collegiality [1,26]. Institutions need to know how (the interaction between) regulations and rules can either facilitate or hinder the roles and functions of NPs [21]. The type of health setting focuses on the difference between, for example, a community clinic and a hospital; the former being less supportive of expanding the scope of nursing practice roles to the domain of medicine than the latter, as it has different expectations and often less experience with NPs [28]. (Inter)professional collegiality refers to the perceived support from within the nursing professions [26], the support, effort and trust from management and the enthusiasm from other people involved [1].

3.2.4. Institutional environment

The institutional environment comprises a set of factors that has the strongest external influence on task reallocation from the domain of medicine to the nursing domain. Institutional environment entails the influences of legal, political and societal institutions in shaping the healthcare system. These external factors can have a strong impact since they involve: (1) legislation, (2) socio-economic forces, (3) governmental (research) policy, and (4) patients' perceptions.

Legislation is referred to as a barrier by six studies [1,21,24,26,27,29]. State laws define the NPs' roles, articulate supervisory requirements and govern practice and prescriptive authorities [21]. However, such legal frameworks are often lacking or inadequate [1]. The legislative boundaries are intertwined with the issue of professional indemnity. There is a lack of clarity with regard to the legal responsibilities of physicians, should an NP make a mistake that results in harm to the patient [26,29]. Mistakes made by NPs are judged more severely than mistakes made by physicians, since the NPs are a new profession with no prior test case. This increases the pressure on NPs to be careful and to avoid mistakes, which might hinder task reallocation [27].

The socio-economic forces shaping NP care are reported in seven studies [1,21,25–29]. Innovation, in the form of task reallocation, is seen as an important stimulating factor for NP-delivered healthcare [25,27,28]. For example, the rising demand for healthcare, requiring more and specialised nurses, enhances the professional status of nursing and has facilitated the NP's role. Also, coping with physician shortages and the promise of a changed workload for physicians increases the need for NPs, thereby stimulating task reallocation. Four studies report how financial barriers, such as uncertainty about funding NPs' employment [1,29], the financial resources for adequate training [29], or reimbursement issues [21,26], can negatively affect interdisciplinary task reallocation.

Other and more obstructive factors described are: governmental (research) policy, and patients' perceptions on NP care. Two studies point to the lack of policy regarding

the funding for the NP workforce expansion and for the continued professional education of NPs as a barrier [20,21]. Patients' perceptions on NP care relate to the need of legitimising one's disease. The wish to be seen by a doctor since this legitimises a patient's illness is a societal countermovement that should not be ignored [29].

4. Discussion

Our analysis of the literature sought to determine the barriers and facilitators encountered when reallocating tasks from the domain of cure to the domain of care by implementing a new professional role in practice. The implementation of the NP served to tackle issues such as expected shortages in workforce and value for money. Research confirmed that the quality of care provided by NPs offers at least equivalent health outcomes to care provided by physicians [6–10]. However, the effectiveness of NP delivered care is greatly affected by its implementation, the required organisational redesign, and the reframing of professionalism. Transferring tasks from the medical to the nursing domain also creates uncertainty, for instance because traditional professional identities are broken down. This uncertainty or other barriers might in fact hinder effective task reallocation. Therefore, we aimed to understand the different facilitators and barriers at play by categorising those reported in earlier studies. Importantly, one should bear in mind that although an identified factor may be viewed as a facilitator in the articles (see also Table 4), they might be perceived as barriers in other contexts, and vice versa.

4.1. Different types of task reallocation and their facilitators and barriers

First, we wanted to learn more about what forms of task reallocation can be observed in different health settings. The types of task reallocation identified are delegation, substitution, and supplementation. The most common form of task reallocation is task delegation, often in combination with partial substitution. Delegation instead of complete substitution is more likely to occur, as with delegation the medical responsibility remains in the medical domain. However, it is likely that NPs' legal and regulatory independence will grow in due time and that substitution and supplementation will increase. This applies especially since legal frameworks regarding prescription authority, responsibility and indemnity are still in their infancy. The increased governmental concern for physician shortages and efficient healthcare delivery will stimulate further regulatory support for substitution [e.g. 25,27,28]. The modernisation processes in, for example, the UK (NHS), the Netherlands (youth healthcare/GP care) and the USA (response to decreased accessibility to care) will further stimulate and modify the position of professionals in healthcare [16,35–37].

Second, we explored the perceived barriers and facilitators when task reallocation occurred, resulting in a framework consisting of four categories that range from internal to external factors: (1) knowledge and capabilities, (2) professional boundaries, (3) organisational

environment and (4) institutional environment. Our framework includes the perspective “that the construction and maintenance of boundaries is crucial to professional development, and demands constant ‘boundary work’ to preserve or expand them” [5, p. 903]. The NPs’ knowledge and capabilities are the most internal factors influencing the ability of the NP to perform his/her role in practice. The professional boundaries closely reflect the daily practice of NPs, yet are less internal in nature. Based on the type of task reallocation and the NP’s role, professional boundaries become blurred to lesser or greater extent. With delegation physicians maintain medical responsibility, whereas substitution requires the transfer of responsibility to NPs and entails shrinking the physicians’ professional domain. NPs are part of this renegotiation of professional boundaries. However, in practice, the reallocation of tasks often entails a combination of substitution, complementary care and delegation, making these negotiations even more complex. The organisational environment imposes a set of external factors on the professional domains which influences the successful implementation of NPs in the healthcare setting, for example through facility arrangements or health setting characteristics. This organisational environment is more difficult for NPs to influence, yet has a strong influence on NPs’ ability to perform their tasks. For example, while the type of complexity of cure and care provided is unlikely to change to fit the NPs’ work profile, facility arrangements can be adjusted. Finally, the institutional environment represents the most external factors. They often cannot be targeted or changed locally, but need to be addressed through professional organisations.

Last, we focussed on how the different forms of task reallocation and perceived facilitators and barriers were related. A key finding, interwoven in the four categories, was the interaction between the type of task reallocation and the NPs’ position, since the extent of delegation or substitution is linked to the ownership of medical responsibility, NPs’ level of independence, the required supervision, and the (restrictions in) level of authority. Delegation of tasks is more likely to take place since medical responsibility remains in the medical domain, with NPs positioned as super-nurses without ultimate medical responsibility, but with additional and specialised nursing competencies. However, full substitution in the sense that medical responsibility is entirely transferred to the nursing domain, is more difficult. Complete substitution is not only hindered by professional boundaries, in the sense that physicians are reluctant to grant NPs their acquired authority in practice, but also by the organisational (e.g. availability of protocols) and institutional environment (e.g. legislation and financial support). Another external factor is the complexity of the cure and care-oriented tasks provided in the health setting. The complexity of cure and care greatly determines what tasks are reallocated to NPs and whether delegation or substitution occurs. Especially Van Offenbeek et al. show how the complexity of the cure and the possibility to formalise cure in protocols or to select specific patient groups affects the type and amount of tasks allocated and entrusted to the NPs [28]. The possibility to standardise cure-oriented tasks then legitimises the delegation or substitution of tasks. The legal framework also influences the

type of task reallocation that can take place. As long as prescription authority, responsibility and indemnity regulations are not fully established and/or not translated into local protocols and regulations, NPs face (in)dependence and responsibility issues when substituting for physicians. The type of task reallocation thus greatly determines what facilitators and barriers are experienced, while vice versa, the existing facilitators and barriers may determine what type of task reallocation can occur.

4.2. Interactions between different professional layers and innovation

Although the networked model (Fig. 1) depicts the analytical themes separately, the arrows indicate the importance of the interactions between the different professional layers. For instance, the organisational environment affects the professional autonomy of physicians and NPs (at the level of professional boundaries) since it develops its own set of controls and hierarchies. In other words, the driving and restraining forces of workforce change are located especially at the intersection of these different analytical levels. For example, even if NPs are accepted as complementary care professionals, the lack of a clear definition of the role was identified as a major problem [27]. Similarly, physicians might be willing to allocate tasks to NPs, yet legal problems such as the lack of authority to prescribe medication can still complicate the actual allocation of these tasks [1].

A comparison between the well-known model for innovations in health service organisations by Greenhalgh et al. [14] and our networked model might provide more insight in the interrelationship between the different analytical themes and the introduction of new nursing roles in healthcare. Especially since our networked model does not explicitly demonstrate the different stages of diffusion, dissemination and implementation [14]. Greenhalgh et al. conducted a meta-narrative review of Rogers’ overview of the diffusion of innovation [38] and other key research studies on innovations in service delivery and organisation [see 39]. They examine the following determinants: (a) the innovation, (b) adoption by individuals, (c) assimilation of the innovation by the system, (d) diffusion and dissemination, (e) system antecedents for innovation, (f) system readiness for innovation, (g) the outer context, (h) implementation and routinisation and (i) linkage among the different components (a–h). As they are closely linked to the different layers of professionalism, in each analytical theme we may expect to find several of these determinants.

First, the NP’s knowledge and expertise represents the NP’s role design (the content) more than the process of NP implementation. In line with Greenhalgh et al., our model argues for individual antecedents for innovation (b). NPs do not have a passive role in ‘the innovation’, rather they are (the stimulus or forcing factor in) the innovation (a). Subsequently, in expanding their professional skills NPs need to demonstrate their relative advantage in practice. For example, interpersonal skills are needed to ensure that other professions affected by the NPs’ introduction recognise how their own values and perceived needs are compatible with the NPs’ values and needs. As a consequence,

if NPs lack such interpersonal skills or lack confidence in their ability to perform their role as NP, the antecedents (a, b) of the innovation are not strongly represented and a successful adoption is less likely.

Second, the analytical theme of professional boundaries reflects the facilitators and barriers to task reallocation within the professional community. These are, for example, influences that help spread NPs care such as the professional networks in which the NPs need to operate (d). Since NPs and physicians often tend to have different types of networks, the collaboration between the two professions is essential for the diffusion of NP care. However, our model focuses more on the driving and restraining factors in the required reframing of professionalism to support the introduction of a new nursing profession, whereas Greenhalgh et al. focus on how existing professional boundaries can be addressed [14]. Subsequently, we highlight the tensions for change as described in the system readiness for innovation (f).

The third analytical theme, organisational environment, encompasses many elements of Greenhalgh's model [14]. With respect to the assimilation (c), the focus is on the environment in which changes are required. Similarly, we have identified several aspects such as organisational policy support, facility and employment arrangements, required to even facilitate NP care. Especially organisational policy support is called for if NP care requires active dissemination (d). However, the main overlap between the two models can be found in the determinants of organisational innovativeness (e), for example the determinants of complexity and type of health setting. The system readiness for innovation (f) is reflected in the organisational policy support factor.

Fourth, as described in our review, the institutional environment mainly coincides with the outer context (g), specifically the political directives. A policy push is required to boost the chances of success of workforce change. Research policies, however, are depicted by Greenhalgh et al. as an element of an organisation's system readiness for innovation [14]. They focus on innovations in service delivery and organisation fitting within current laws and regulations. However, the introduction of a new profession does not necessarily fit current laws and regulations. Formulating research policy, in this case, should be perceived as a needed stimulus or incentive by government and not by the organisational community solely.

Both models thus have apparent similarities and therefore we can argue that the networked model can provide insight in the innovation process of introducing new nursing roles in healthcare. Nevertheless, our networked model offers a different, approach to the introduction of NPs in healthcare, compared to Greenhalgh et al.'s somewhat linear model for innovations in health service organisations. The networked model emphasizes the dynamic interplay between the different facilitators and barriers to task reallocation that affect the positioning of (the profession of) NPs in healthcare. The introduction of a new profession not only addresses changes in service delivery and organisation, but implies a reframing of professionalism in multiple layers of the healthcare system. The networked model demonstrates how different determinants

play a role in each layer of professionalism which should be taken into account prior to and during the implementation of NPs in healthcare. In other words, each layer of professionalism has its own set of rules, values and social context influencing the introduction of the NP in healthcare. We believe that a successful introduction of effective NP care must start by addressing these factors in each layer and seeking the interaction between these different layers. Understanding how the different factors in these different layers can facilitate or hinder the introduction of NPs will provide policy and practice with hands-on information as to what determinants to address to promote the adoption of NP care. This especially concerns the facilitators and barriers of the 'professional boundaries' and 'organisational environment' categories reported in (almost) all studies. Negotiating the NPs' position in the overlap between the cure and care domain in relation to responsibility should be an important spearhead in the organisational redesign. Clearly demarcating the NPs' position within the organisational environment through protocols, but also in facility arrangements such as technological support, can further facilitate the implementation of NP delivered care in practice. The networked model, we believe, is better suited to research and/or stimulate the introduction of new nursing roles and subsequent task reallocation in healthcare, than Greenhalgh et al.'s model for innovations in health service organisations.

An implication of this approach could be that the paradox of the need for NP care due to (expected) physician shortages and the perceived threat of NPs expanding their professional domain at the expense of the medicine domain can be discussed more openly at the different professional layers. For one, a better description of the NP role in the organisational environment can be followed by a description of opportunities for physicians as a result of this task reallocation. However, the absence of the former, as often described in our reviewed studies, so far prohibits the latter.

Moreover, the insights of the networked model approach might be generalised and used in other similar situations of task reallocations between other healthcare professions. For example, task reallocation has not only taken place between physicians and NPs, but also between physicians and physician assistants (hospitals), between physicians and practice nurses (primary care) and also between NPs and general nurses (youth healthcare/hospital). Our networked model has integrated and abstracted findings from the context of task reallocation from the medical to the nursing domain in such way that the results might be transferable to other situations if deemed comparable.

4.3. Methodological strengths and weaknesses

Importantly, we understand there might be serious concerns with generalising the results of various qualitative research studies (i.e. studies that rely on qualitative data collection and analysis). "Qualitative research, it is often proposed, is not generalisable and is specific to a particular context, time and group of participants" [40, p. 46]. Although the de-contextualisation of findings is a serious

concern we do not contest, we also believe that our findings are not only based on the interpretation of the empirical findings in the 13 studies we reviewed, but are backed up by the literature on professionalism and innovation in public services. Bringing this information together would moreover enable its wider use in policy and practice [40].

A methodological issue for a follow-up review would be to refine the search. For one, the search for relevant literature can be extended to, for example, elaborative citation tracking and book chapters. The papers found via the current search method (database search combined with snowball method) at least demonstrates that comparatively little rigorous research has been published on the topic of facilitators and barriers in task reallocation and the introduction of new nursing roles thus far. However, the reviewed studies are all fairly recent (published between 2000 and 2011), indicating a growing interest for this type of research.

The limited number of relevant studies also calls for some caution in the interpretation of the studies' findings and the synthesis of these findings. For one, the papers' quality assessment showed differences in quality. However, whether quality appraisal of qualitative research (as depicted in Table 1) should be undertaken for purposes of a systematic review is a matter of some debate [30]. One could argue that weak qualitative papers or papers that do not meet quality standards should be excluded. Another approach would be to grade or weigh the different papers, so that only the soundly based findings (e.g. confirmed in stronger studies) are included. The diversity of qualitative study designs and approaches makes it difficult to apply generally valid quality criteria a priori. We chose to assess the quality of the qualitative/behavioural studies with a combination of appraisal tools derived from Harden and Dixon-Woods et al. [31,32]. Importantly, the papers we regard as being of 'lesser quality' do not play a dominant role in the results. Second, the studies incorporate different care-settings, different types of physicians and different types of nursing in the papers. Therefore, generalising our findings on task reallocation from cure to care is not unproblematic. However, as our focus lies on the common facilitators and barriers in implementing a new nursing role, we believe these different settings and roles to be of subordinate significance in the process of task substitution from cure to care in general. Limiting the focus to one type of healthcare setting or country was deemed unnecessary and undesirable, as this study aims to find general driving and restraining forces in task reallocation. Also, we acknowledge that the findings presented in this review, such as certain professional boundaries, are

historical by nature, involving a traditional organisation of healthcare. It might therefore be expected that the situations will change as experience accumulates. Nonetheless, similar facilitators or barriers will continue to exist and should be reckoned with when implementing new health professional roles.

5. Conclusions

Introducing NPs in different care settings is one of the innovative ways in which the different healthcare systems around the world have addressed the growing demand for healthcare and, specifically, the anticipated shortage of physicians in future. Existing evidence demonstrates that substitution or delegation from cure to care is effective, yet there is little research available on the implementation of NP-delivered care in practice so far. Even less is known about the different factors that either facilitate or hinder the effective deployment of NPs and reallocation of tasks from the cure to care domain. The identification of facilitators and barriers in our task reallocation framework potentially contributes to a better management of the introduction of NPs in various health settings, and might even contribute to the (cost)effectiveness and quality of care provided. However, our framework also acknowledges that innovation, in this case the introduction of NPs in healthcare, is not a linear process. One should expect that the implementation of new professional roles or the extending of existing roles requires changing the system at various levels, ranging from the individual level and the professional communities to the organisational environment and its outer context, the institutional environment. In other words, the introduction of NPs in healthcare not only requires organisational redesign, but also the reframing of professionalism and professional boundaries at the multiple layers of the healthcare system.

Conflict of interest

No conflict of interest has been declared by the authors.

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Appendix A. Coding tree

Analytical theme	Descriptive theme	Open coding	
Knowledge and capabilities	Self-knowledge	Insight in one's own limitations Confidence in one's capabilities NP's years of experience	
	Interpersonal skills	NP's (inter)personal skills	
Professional boundaries	Type of task reallocation	NP as a super-nurse NP as a mini-doctor NP providing complementary care Authority Medicalization of the NP Ownership of medical responsibility	
	Trust	(amount of) supervision Perceived competencies of NPs by physicians NPs' perceived level of skills, intellect and competencies by physicians	
	Physician-NP collaboration	NP's (in)dependence (Un)equal relation NP – physician Physician supervision	
	NPs' qualification	Standardization, quality and adequacy of NPs' education Accessibility of education Uniformity of qualification	
	Physicians' education	Traditional education / strong hierarchic thinking Country specific	
	Physicians' job security	Professional de-skilling of physicians Physicians' feeling of financial security	
	Organisational environment	Organisational policy support	Demarcation of NPs role Availability of protocols / formal procedures Addressing professional tensions (no) managerial restrictions to NPs execution of profession (un)equal payment physicians and NPs
		Complexity of cure and care provided	Complexity of tasks performed by NP Formalization opportunities of to-be-delegated tasks NP performs (non) routine cure NP performs (non) routine care Possibility for patient selection
		Facility arrangements	Computer / IT support Own 'office/treatment' space Supporting staff
		Employment arrangements	NP's flexibility in working hours

Institutional environment		Availability NP on/off site
		NP does (not) function as NP only
	Institution's familiarity with (regulatory) environment	Understanding of regulatory environment
	Type of health setting	Academic / public hospital
		Community clinic
	Experience in working with NPs	Number of years NPs are present at health setting
	(inter)professional collegiality	Isolation from nursing team
		Support within nursing profession
		Support from management
	Legislation	Articulation of supervisory requirements
		NPs (not) authorized to prescribe medicines
		NPs (not) authorized to order treatments
		Professional indemnity
Socio-economic forces	Rising demand for healthcare	
	Clinical career opportunities for nurses	
	Promise of changed workload for physicians	
	Reimbursement issues with respect to NP-delivered healthcare	
	Funding NPs' employment	
	Funding NPs' training	
	Pressure from professional associations	
Governmental (research) policy	Coping with physician shortages – funding NP expansion / education	
	Clinical and cost-effectiveness of NP-delivered care	
	Research policies to stimulate NP care (not) available	
Patients' perceptions	Patient satisfaction with NP-delivered healthcare	
	Patients perceptions on legitimizing illness	

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