


# How does government policy influence the employment and training of nurse practitioners and physician assistants? A realist analysis using qualitative interviews

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## Abstract

**Aims:** The aim of this study was to develop insights into how and why Dutch government policies on deployment and training of nurse practitioners and physician assistants have effect and under what circumstances.

**Design:** A realist analysis using qualitative interviews.

**Methods:** Data analysis of 50 semi-structured interviews conducted in 2019 with healthcare providers, sectoral and professional associations, and training coordinators. Stratified purposive and snowball sampling were used.

**Results:** Policies stimulated employment and training of nurse practitioners and physician assistants by: (1) contributing to the familiarity of participants in the decision-making process in healthcare providers with and medical doctors' trust in these professions; (2) contributing to participants' motivation in employment and training; and (3) eliminating barriers perceived by medical doctors, managers and directors. The extent to which policies affected employment and training was largely determined by sectoral and organizational circumstances, such as healthcare demand and complexity, and decision-makers in healthcare providers (medical doctors or managers/directors).

**Conclusion:** Effectuating familiarity and trust among participants in the decision-making process is a crucial first step. Next, policymakers can motivate participants and lower their perceived barriers by extending the scope of practice, creating reimbursement opportunities and contributing to training costs. Theoretical insights into nurse practitioner and physician assistant employment and training have been refined.

**Impact:** The findings highlight how governments, health insurers, sectoral and professional associations, departments, councils, healthcare providers and professionals can facilitate and support nurse practitioner and physician assistant employment and

training by contributing to familiarity, trust and motivation, and by clearing perceived barriers.

**KEYWORDS**

delivery of health care, evaluation study, government, health workforce, nurse practitioners, physician assistants, policy

## 1 | INTRODUCTION

Governments face rising healthcare needs, costs and increasing labour market shortages (Kuo et al., 2013; Timmons et al., 2021; Valentin et al., 2021; Xue et al., 2018). Nurse practitioners and physician assistants/associates are perceived as those who could help alleviate these challenges. These healthcare professionals can take over tasks from physicians at equal or lower costs and provide care of comparable or better quality and patient satisfaction (Halter et al., 2018; Kilpatrick et al., 2015; Laurant et al., 2018; Liu et al., 2020; Tsiachristas et al., 2015; van den Brink et al., 2021). Therefore, governments facilitate the deployment of nurse practitioners and physician assistants through policy measures such as extending the scope of practice and creating reimbursement opportunities (Maier & Busse, 2017; Timmons et al., 2021; Valentin et al., 2021; Yee et al., 2013).

### 1.1 | Background

The Dutch healthcare system is based on three principles: access to care for all, solidarity through medical insurance (compulsory and available for all) and high-quality healthcare services. Private not-for-profit health insurance cooperatives play a key role in a system based on 'regulated competition' (Ministry of Health Welfare and Sport, 2016). In this system, consumers' freedom of choice encourages insurers to offer competitive health plans and active purchasing by insurers incentivizes autonomous providers to perform better in terms of costs and quality, while the state regulates health care to preserve public values (Jeurissen & Maarse, 2021).

In the Netherlands, physician assistants and nurse practitioners were introduced to the labour market in 2004 and 2000, respectively. The factors contributing to their introduction were regional shortage of medical doctors, expected cost-effectiveness, increasing demand for care and the need for a university nursing programme (Advisory Committee on Medical Manpower Planning, 2022). The Dutch government implemented a broad set of policy measures to facilitate the deployment and training of nurse practitioners and physician assistants. Policies include extending the scope of practice, creating reimbursement opportunities, funding platforms and research, providing legal acknowledgements and offering training subsidies (Table 1). Objectives for these policies are to contribute to the quality, accessibility and affordability of care, as task reallocation reduces the demand for doctors while offering career perspectives (Dankers et al., 2021; Ministry of Health Welfare and Sport, 2003).

Despite these policies, there are shortages of both professionals, mostly of nurse practitioners in (nursing) home care (long-term residential care and home health care) (Advisory Committee on Medical Manpower Planning, 2022). Research on the effects of government policies on the number of nurse practitioners and physician assistants and their intake in training programmes is scarce. Some studies suggest that extending the scope of practice led to higher deployment of nurse practitioners and physician assistants (Kuo et al., 2013; Patel et al., 2019; Spetz et al., 2017; Valentin et al., 2021; Xue et al., 2018).

In addition to policy interventions, sectoral and organizational circumstances, such as preferences of managers and medical staff shortages, also impact nurse practitioner and physician assistant deployment (Halter et al., 2017; Niezen & Mathijssen, 2014; Wallenburg et al., 2015). The circumstances and motives of care providers for (or against) the deployment vary in the healthcare sector (Dankers et al., 2021). In primary care, the willingness to employ nurse practitioners and physician assistants is highly influenced by employees' motivation to start training and general practitioners' (GP) prior experience with these professionals (van der Biezen et al., 2017). In hospital care, important supportive circumstances for physician assistant employment include the desire to improve continuity of care, shortage of residents and expectation to disburden physicians (Timmermans et al., 2016). However, in elderly care, employment decisions are a result of coincidence, (lack of) acceptance and individual providers' assumptions (Lovink et al., 2019).

Differences in circumstances and deployment motives between healthcare sectors (hospital, primary, (nursing) home care and care for the mentally disabled) most probably led to significant variations in the scale of nurse practitioner and physician assistant deployment. In the Netherlands, the scale of nurse practitioner deployment varies from 26.8 full-time equivalents of nurse practitioners (for every 100 specialized medical doctors full-time equivalents) in (nursing) home care, 15.4 in care for the disabled, 7.8 in hospital care and 2.1 in primary care in 2019. Physician assistant ratios vary between 1.0 full-time equivalent in primary care, 1.9 in (nursing) home care and 4.4 in hospital care (Dankers et al., under review). International data show large variations in the size and work settings of nurse practitioners and physician assistants (AAPA, 2019; Auerbach et al., 2020; Bureau of Labor Statistics U.S. Department of Labor, 2021; Maier & Busse, 2017). These widely differing data indicate the possibility that in addition to the national policies, sectoral and organizational circumstances influence decisions about the employment and training of nurse specialists and physician assistants in healthcare organizations.

TABLE 1 Resume of NP/PA policies in the Netherlands 2000–2019.

Training subsidies	Training is at the master's degree level and largely takes place in the healthcare organization where the trainee is employed in combination with a 1-day in-school programme per week. A subsidy scheme reimburses (1) health providers' salary costs to replace the trainee while he or she is following the course and (2) the in-school training programme. Primary care providers can apply for additional funding. Policy goals are among others better quality of care and career prospects for care professionals and to prevent staff shortages. From 2004 onwards, the number of subsidized training places has greatly increased. The average intake in the NP/PA training programmes per year is: (2015–2019): 232/170 (hospital/medical specialist care), 31/24 (primary care), 55/7 ((nursing) home care) and 3/0 (care for the disabled)
Reimbursement regulations	The opportunities for NPs and PAs to register and invoice the healthcare they provide are increasing. Since 2015, NPs and PAs in hospital and rehabilitation care can independently open and close tasks in the reimbursement system without the formally required face-to-face contact between medical doctor and patient. Since 2019, NPs and PAs may register and invoice peer consultation and co-treatment in hospital care. Furthermore, in 2019 it was announced that from 2020 NPs and PAs in (nursing) home care and care for the disabled can provide and reimburse extramural care for vulnerable groups in primary care
Funding knowledge and consultation platforms on NP/PA deployment and research	The Dutch government-funded knowledge and consultation platforms as well as (evaluation) research on task reallocation. In 2004, the Consultation Platform NP/PA, the Steering Committee Task reallocation in Primary Care and the National Center of Knowledge for Task reallocation in Primary Care were funded
Extending the scope of practice	Since 2012, NPs and PAs have been granted legal authority for certain reserved medical procedures. From 1 September 2018, the extended autonomous scope of practice of NPs and PAs has become definitive. NPs and PAs can independently indicate, execute and delegate several reserved medical procedures depending on their experience and specialism and in accordance with laws and regulations, that is surgical procedures, endoscopies, catheterizations, injections, punctures, elective cardioversion, defibrillation and prescribing drugs which are only available on prescription
Legal acknowledgement professional and educational level	From respectively 2009 and 2018, the NP and PA professions are included in the Individual Health Care Professions (IHCP) Register and Act. With this these professions obtained, among others, a protected professional title and governance by disciplinary law. Since respectively 1 January 2014 and 1 September 2016, NP and PA graduates receive a MSc degree

Abbreviations: MANP, master advanced nursing practice; MPA, master physician assistant; NP, nurse practitioner; PA, physician assistant.

Policy programmes do not work passively; instead, they work with the acquiescence of participants or actors (Killoran & Kelly, 2010; Pawson & Tilley, 2004). They provide resources, opportunities or constraints that influence actors' decision-making. Actors who influence the decision about employing and training nurse practitioners and physician assistants are medical doctors, managers, directors and college-level professionals who are interested in nurse practitioner or physician assistant training (Dankers et al., 2021). However, how and why government policies affect decision-making in the healthcare organizations about the employment and training of nurse practitioners and physician assistants, and how sectoral and organizational circumstances influence them remains unknown.

## 2 | THE STUDY

### 2.1 | Aims

We aimed to develop insights into how and why Dutch government policy interventions affect the decision-making process about nurse practitioner and physician assistant employment and training in healthcare organizations, and how sectoral and organizational circumstances are of influence. Governments, health insurers, sectoral and

professional associations, departments, councils, healthcare providers and professionals can use the findings to facilitate and support the employment and training of nurse practitioners and physician assistants.

In this study, we used the realist evaluation methodology, which considers whether interventions work, because actors respond to what is provided during the intervention. This interaction between the intervention and actors in specific contexts triggers mechanisms that lead to outcomes (Marchal et al., 2019). We provided insights into how government policies (*intervention*) contribute to nurse practitioner and physician assistant employment and training (*outcome*). The following were the research questions:

1. How do participants in the decision-making process about the employment and training of nurse practitioners and physician assistants in healthcare organizations interpret and act on government policies? (*mechanisms*)
2. Which circumstances affect participants' decision-making about nurse practitioners and physician assistant employment and training? (*context*)
3. How is the decision-making process about the employment and training of nurse practitioners and physician assistants structured in healthcare organizations, and who are the participants involved? (*actors*)

The findings will be used to refine theory of nurse practitioner and physician assistant employment and training and to identify patterns on how and why government policy interventions led to different scales of employment and training outcomes in the healthcare sector in the Netherlands.

## 2.2 | Design

We conducted a realist analysis on qualitative interview data. Data were collected by constructivist interviewing in which, unlike in theory-driven realist interviewing, researchers explore participants' views and experiences about the topic (Greenhalgh et al., 2017). Considering the impact of context on how policies affect the decision-making of healthcare providers about employment and training, we decided to use a realist approach to analyse the transcripts. This approach seeks to determine how, for whom, why and when interventions work (Pawson & Tilley, 1997; Ranmuthugala et al., 2011). In realist evaluation, so-called 'mechanisms' explain whether and how policies have effects depending on how they change the reasoning and actions of the actors about employment and training. The activation of these mechanisms operates along a continuum where intensity varies in line with an ever-evolving context (Dalkin et al., 2015).

### 2.2.1 | Data collection, setting and sample

Interview data were collected in 2019 through a somatic care research project initiated by the Dutch Advisory Committee on Medical Manpower Planning. Semi-structured interviews were conducted about the decision-making process of employment and training. The aim was to interview: (1) stakeholders of sectoral/professional associations, a knowledge centre and training programmes to obtain an outsider's perspective and define relevant subgroups and organizational settings and (2) decision-making participants in healthcare organizations from the somatic care sectors and organizational settings in which nurse practitioners and physician assistants are active. The inclusion criterion was involvement in decision-making about employment and training.

We designed an interview guide based on literature on deployment and training (Halter et al., 2017; Niezen & Mathijssen, 2014; Timmermans et al., 2016; van der Biezen et al., 2017; Wallenburg et al., 2015), overview of policies and consultation with the PA/NP committee. This committee, in the Advisory Committee on Medical Manpower Planning, consists of coordinators for training programmes, nurse practitioners, physician assistants and health insurer representatives. Next, the interview guide was piloted twice with employees of the Advisory Committee to explore the comprehensibility and length of the questionnaire, and completeness of the topics. Interviewees were recruited by email from sectoral and professional organizations in the Advisory Committee and research agency network by stratified purposive and snowball sampling

(Campbell et al., 2020; Naderifar et al., 2017). For each healthcare sector, we aimed to interview multiple types of stakeholders (medical doctors, managers and directors) from each organizational type.

All interviews were conducted face-to-face or via telephone. In round 1, we interviewed healthcare providers and stakeholders from sectoral and professional associations, universities of applied sciences and a knowledge centre. We gained insights into the extent to which the interview guide was comprehensible and complete. For round 2, we refined the interview guide by clarifying the themes on which clarifications were required. Using the adapted questionnaire (Data S1), additional interviews were conducted with healthcare providers, including all relevant organizational settings. Round 1 and round 2 interviews were conducted by programme secretaries A (EDA) and B, and researchers C and D, respectively. C and D were briefed and supervised by A. During the briefing, attention was paid to the relevance, purpose and questions of the research. In round 2, questions were provided to the interviewees in advance. Field notes were made. All interviews were audio-recorded and transcribed verbatim. Transcripts were provided with metadata and anonymized. The transcripts were not returned to the interviewees. The interviews were conducted until data saturation was reached. It was decided if new information was mentioned by interviewees and further recruitment to collect data was necessary per sector.

### 2.2.2 | Initial theory

The scope of the analysis was defined by our initial theory on the policy programme, which described 'how' policy interventions for training and employment could work, for whom, in what circumstances and in what respects (Dankers et al., 2021; Killoran & Kelly, 2010). The initial theory was described and elaborated in configurations, which indicated how and, in what circumstances policy interventions affect which participants in the decision-making process, through various mechanisms explaining different employment and training outcomes (Dankers et al., 2021; Marchal et al., 2019; Mukumbang et al., 2019).

### 2.2.3 | Data analysis

Transcribed interviews were analysed deductively using configuration elements (intervention, context, actors, mechanism and outcome) and inductively to identify novel issues. Researchers A and E analysed the transcripts by deductive coding using a framework approach and a structured matrix codebook based on the initial programme theory and DeCuir-Gunby (DeCuir-Gunby et al., 2011; Ritchie & Spencer, 2011). Relevant data that did not fit the matrix were analysed using inductive content analysis, resulting in new categories (Elo & Kyngas, 2008). Then, A and E discussed, reviewed and revisited the codes. The main themes and subthemes were described in detail, supported by the participant quotes. The resulting codebook was then used to code the interview transcripts. For the

subgroup analysis, indexed data were thematically charted by sectors. ATLAS.ti was used for the analysis. We identified the following:

1. the structure of the decision-making process in healthcare providers to hire or train nurse practitioners and physician assistants by categorizing participants according to their function and process roles (actors);
2. circumstances that affected the decision-making process, and the context in which policies contributed to the employment and training (context);
3. mechanisms to elucidate the reasoning of participants considering the policies in their context, and how they led to employment and training decisions (mechanisms).

Next, the data synthesis focused on unravelling how similar policy interventions led to different outcomes in the scale of employment and training, in different contexts (sectors). For this, we linked configuration elements to uncover causal processes and explain how context mediated the intervention outcomes (Abimbola et al., 2019; Shearn et al., 2017) using retroduction—a central inference-making method in realist research (RAMESES, 2017). Retroductive theorizing involves starting with a programme's effects and working backward to consider the conditions necessary for such effects to manifest (Jagosh, 2020; Mukumbang et al., 2021). It is a conceptualization method to identify the circumstances without which a phenomenon cannot occur (Meyer & Lunnay, 2013; Mukumbang et al., 2021). The findings were interrogated by subgroup comparison (Pawson & Tilley, 2004) at the sector level. First, each interview configuration was drafted. Configuration outcomes were then compared at the sector level. A configuration matrix was used as a heuristic tool, with sectoral outcomes as the starting point (Mukumbang et al., 2019; Pawson & Tilley, 1997). Working backward, patterns in circumstances, actors and mechanisms that most probably led to these outcomes were identified. Questions asked during retroduction were: 'What are the crucial differences between sectors in which the policy program is located that lead to various outcomes?' 'What characteristics should sectors and organizations have for relatively high employment and training?' Researcher EDA conducted the synthesis.

### 2.3 | Rigour

Various strategies were used to meet rigour criteria (Guba & Lincoln, 1989). We ensured an in-depth exploration by involving the authors in the analysis and interpretation of the findings, and finalization of the article. Interviewees did not provide feedback on the findings. Instead, the refined configurations and theoretical insights were verified by three independent expert reviewers on nurse practitioner and physician assistant deployment.

The interviews in round 1 were conducted by A (MSc, woman and first author of this article), who was familiar with qualitative research methods, interviews and interview techniques. B (MSc, man), a business economist experienced in qualitative research methods,

was present in interviews as a second interviewer. Round 2 interviewees were: C, a health scientist (PhD, man) with extensive experience in conducting qualitative research and D (MSc, woman) having extensive experience with qualitative research in various sectors, including long-term care. Interviewers A and B and interviewers C and D were colleagues at the time of the interviews. There was no relationship between the interviewees and the interviewers.

Before the interviews, interviewees were informed about the name(s) and occupation(s) of the interviewer(s) and the research aims. Interviews were conducted in a private space at the interviewee's workplace or via telephone. Most interviews (38) were conducted one-on-one. To reduce recall bias, our interview guide contained prospectively formulated questions (Spencer et al., 2017). Finally, we used both RAMESES II reporting standards for realist evaluations (Wong et al., 2016) and COREQ (Tong et al., 2007).

### 2.4 | Ethics approval and consent for participation

The need for ethics approval was waived by the Ethics Committee on Human Subject Research Radboudumc (non-Act on medical-scientific research with humans). The study was not eligible for assessment, because there were no indications that: (1) participants would experience the research as too burdensome given their condition or the nature of the research; and (2) the research would generate hitherto unknown data about the (future) health status of a participant or blood relatives (Radboud University, n.d.). Informed consent was obtained from all interviewees.

## 3 | RESULTS

In 50 interviews, 53 people were interviewed. In three interviews, the interviewees, in consultation with the researchers, invited a colleague with substantive knowledge of the subject. Forty interviewees worked in healthcare organizations. Interviewees were directors, managers, medical doctors (who specialized after initial medical training), policy/human resource/educational or research officers and advisors of healthcare organizations involved in hiring and/or training nurse practitioners and physician assistants. The interviewees worked in hospital/medical specialist care (including rehabilitation care), emergency care, primary care, care for the disabled and (nursing) home care. Twelve interviewees were (also) deployed as policy advisors, programme managers, or directors at sector/professional associations or worked at universities of applied sciences or a knowledge centre. No interviewee refused to participate or dropped out. The interviews lasted an average of 45 min with a range of 19–80 min. Employment in healthcare organizations varied from zero in three (nursing) home care, care for the disabled and emergency care organizations to approximately 200 nurse practitioners and physician assistants in an academic hospital. Organizations with no nurse practitioners and physician assistants were involved in a first decision-making process about deployment. The samples are listed in Table 2. The details are provided in Data S2.

TABLE 2 Characteristics of interviewees (n = 53).

	Function/profession interviewee <sup>a</sup>						Healthcare sector interviewee <sup>b</sup>							
	Healthcare organizations			Stakeholders			Healthcare organizations			Stakeholders				
	Mean duration interviews in minutes	CEO Management	Director	Policy HR Education Research	MD	NP	PA	Training programme Sector/professional association Knowledge centre	Hospital / medical specialist care	Primary care	Nursing (home) care	Care for the mentally disabled	Emergency care	Various <sup>c</sup>
Interview round 1	54	6	2	2	5	5	12	12	7	4	3	2	0	3
Interview round 2	39	22	7	7	7	0	0	12	12	7	6	3	3	0
Total	45	28	9	9	13	12	12	19	19	11	9	5	3	3

Note: Care for the disabled: Long-term residential care and sector organization. Emergency care: unit and ambulance.

<sup>a</sup>Numbers do not add up due to interviewees who work in multiple functions or professions.

<sup>b</sup>Hospital/medical specialist care: general, categorical or university medical hospital, Independent clinic and medical doctor association. Primary care: general practice, out-of-hours GP care, care group, sector organization, knowledge centre and medical doctor association. Nursing (home) care: long-term residential care, in-home healthcare, sector organization and medical doctor association.

<sup>c</sup>Coordinator NP or PA training programme with insight into training decision-making in several healthcare sectors.

### 3.1 | Overall findings

The interview results were grouped into the main themes of mechanisms, circumstances and participants in decision-making, which the interviewees considered to be influencing how participants interpret and act on policy interventions and the scale of deployment and training of nurse practitioners and physician assistants (outcome). Interviewees considered: (1) familiarity and trust, (2) motivation and (3) perceived barriers as mechanisms influencing the scale of employment and training. These mechanisms were activated under the following main circumstances: (1) flanking policies, (2) stakeholders, (3) labour market, (4) healthcare demand and (5) healthcare setting. The main participants in the decision-making process were classified as follows: initiators, influencers, supporters and decision-makers.

Figure 1 shows how these themes are related in a conceptual representation of refined configurations, on how and why, and in what circumstances policy interventions affect participants in the decision-making process, explaining different scales of employment and training outcomes as addressed in the interview data. Below, we answer our research questions and describe identified patterns on how and why government policy interventions led to different scales of employment and training outcomes in various healthcare sectors in the Netherlands.

Data S3 details the refined configurations and theoretical insights.

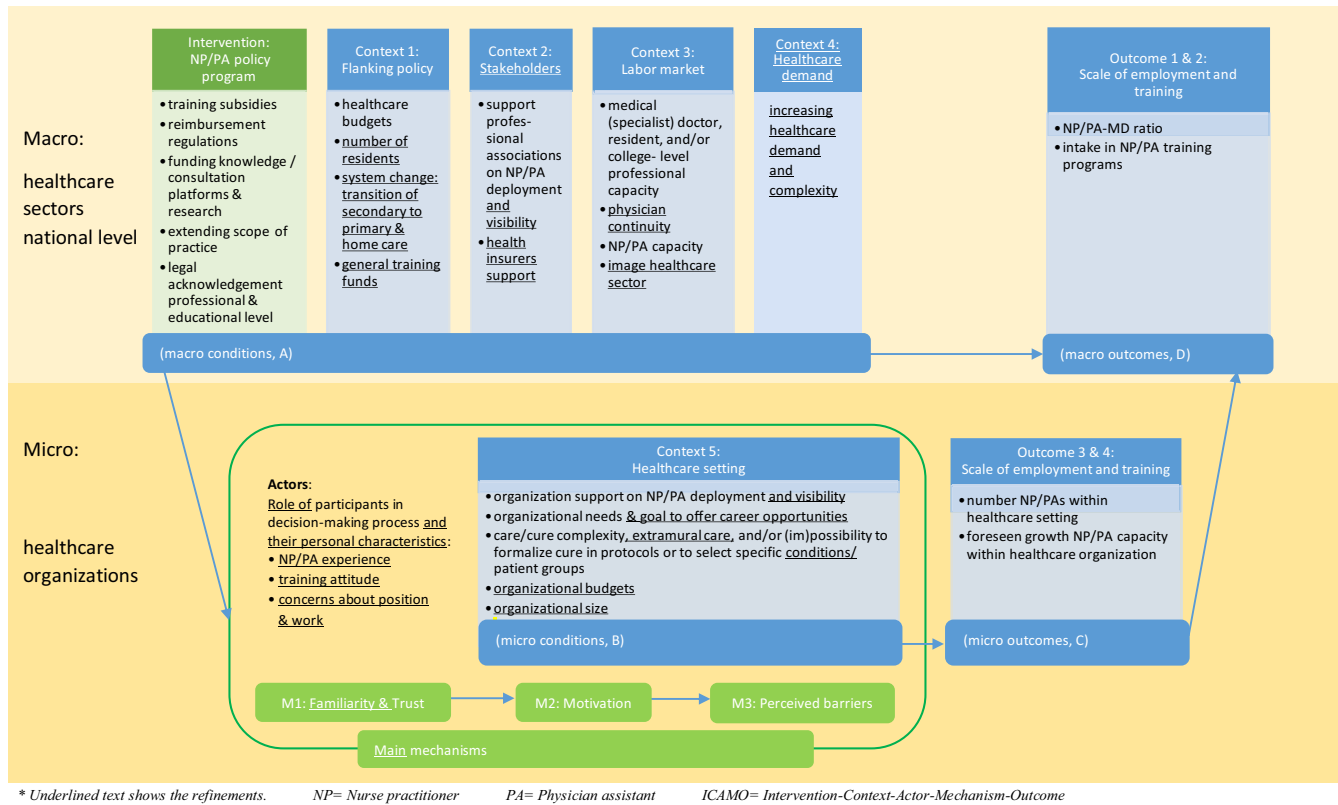
#### 3.1.1 | How participants in the decision-making process interpret and act on policies (mechanisms)

In this section, we describe the three mechanisms of how and why participants in the decision-making process interpret and act on policies, and how this affects employment and training of nurse practitioners and physician assistants.

##### 3.1.1.1 | Familiarity and trust

The extent to which participants were familiar with nurse practitioners and physician assistants influenced their decision-making in two ways. First, the level of familiarity with the professions and their training triggered participants to consider their employment and training when there was a (upcoming) vacancy. In all healthcare sectors, except for hospital care, most interviewees mentioned that participants in their organization or sector were unfamiliar with these professions, particularly with the legal scope of practice and deployment. Interviewees in hospital care and (nursing) home care mostly mentioned unfamiliarity with the difference between nurse practitioners and physician assistants: 'When do you deploy whom?'. Unfamiliarity with these matters implied that: (1) employment was not considered by medical doctors, management and directors; (2) participants were hesitant to hire and train; or (3) participants chose the profession with which they had prior experience.

'I didn't know beforehand what a physician assistant was. And if you don't know what it is, you don't think about it.' (Program manager, care for the disabled)



**FIGURE 1** Conceptual representation refined ICAMO configurations on NP/PA employment and training. Underlined text shows the refinements. NP, nurse practitioner; PA, physician assistant; ICAMO, Intervention-Context-Actor-Mechanism-Outcome.

Second, the results showed that unfamiliarity with the professions resulted in a lack of trust among medical doctors in the quality of care and created doubts about responsibility. It also raised questions about skills, intellect and competencies. This made physicians hesitant to hire or train their first nurse practitioner or physician assistant in a department or organization. Interviewees in hospital and primary care mentioned a personal relationship of a physician with a trusted college-level professional as an incentive for training.

‘Elderly care physicians in general believe that nurse practitioners cannot do several things. In the sense of: “They are not authorized, or they cannot do it like an elderly care physician.” Of course, some tasks only belong to the elderly care physicians, but other things... the question is whether these could not also be the task of a nurse practitioner. [...] So yes, there can be that feeling, that trusting piece of: “They can’t.” and “If it goes wrong, that’s our responsibility.”’ (Manager medical department, nursing home)

Primary care interviewees mentioned the National Center of Knowledge for Task Reallocation in Primary Care (intervention) as an organization that contributed to familiarity with the professions, thereby leading to deployment. In other sectors, government policies

were mentioned by a few interviewees in relation to familiarity without linking them to employment or training.

### 3.1.1.2 | Motivation

The interview results showed that once decision-making participants were familiar with the professions, the next step was to determine the extent to which deployment matched organizational needs. This activated their motivation for employment or training. We found that participants displayed an understanding of how organizational needs related to employment and training. The motivating factors were:

**3.1.1.2.1 | Continuity of care.** Maintaining or improving continuity of care was the most profound reason for employment and training. In all healthcare sectors, providers struggled to maintain care continuity because of labour market bottlenecks such as shortage and high workload of medical doctors and residents. Nurse practitioners and physician assistants were employed and trained to keep healthcare providers running by filling gaps in work schedules and taking over physician tasks. Training was also offered to scarce college-level professionals as a career opportunity to retain them in the organizations. Furthermore, nurse practitioners and physician assistants were employed and trained to substitute for physicians who were known to change jobs often, such as ward doctors,

independent GPs and elderly care physicians. Maintaining access to care was not specifically mentioned as a motivation.

3.1.1.2.2 | *Cost and efficiency.* Another motivation was the desire to improve (cost) efficiency. In particular, directors and managers noted that extending the scope of practice (intervention) influenced efficiency, thereby increasing employment, as it ensured more deployment opportunities and offered an advantage over college-level professionals.

'The positive effect of those laws and regulations is that you now notice that the nurse practitioner toolbox is expanded almost every year, so they are allowed to do more and more things in the medical field. [...] These are developments that are extremely positive for us because we can deploy and fascinate nurse practitioners in more areas and expand their range of tasks'

(Director, [nursing] home care)

Moreover, participants believed that nurse practitioners and physician assistants contribute to cost efficiency because: (1) their salaries were lower than that of physicians; (2) physician assistants could contribute to production and provide billable care; and (3) in hospital care, these professionals could generate income because they could register and invoice provided care themselves. Consistent with this, two interviewees in hospital/medical specialist care stated that the 2015 reimbursement regulations (intervention) were positive incentives and motivations to hire and train more nurse practitioners and physician assistants instead of college-level nurses.

3.1.1.2.3 | *Care organization and processes.* Nurse practitioners were employed and trained to improve care organizations and processes in hospital, primary, care and (nursing) home care. This arose from the need for healthcare providers to improve care chains and processes; create or improve the connection between care and cure, the neighbourhood, care locations and care providers (secondary, primary and home care); run projects; and coordinate care.

3.1.1.2.4 | *Quality of care.* Another important motivation was the pursuit of maintaining or improving the quality of care. Participants mentioned that nurse practitioner and physician assistant deployment ensured higher patient satisfaction; better approachability for nurses, patients and relatives; a broad view of nursing; provision of more complex care in comparison to college-level professionals; and quality in the workplace.

3.1.1.2.5 | *Offering career and development opportunities.* Healthcare providers, mostly in hospital/medical specialist care, provided training without considering organizational needs as an underlying reason. Their motives could be linked to their goal of being a good employer by offering career and developmental opportunities.

'Interviewer: "You train to bind someone to you?"

Interviewee: "Not always. [...] If we don't see a place in the future, then not". And if someone says, very personally development-driven: "I would like to do that training," well I think that is an excellent motivation [...] We say: "Fine, you are going to do that training, it is for yourself, it is your own development, you will not receive a guarantee for a position as a nurse practitioner within this company".' (Care director, ambulance care)

### 3.1.2 | Perceived barriers

If participants were familiar with the professions, and deployment was aligned with organizational needs and goals, then the presence or absence of barriers perceived by them was decisive for hiring or training. Although barriers were similar for all sectors, some barriers were more profound because of the interviewees' sector.

#### 3.1.2.1 | Training barriers

All primary care interviewees mentioned financial and organizational barriers to training. Financial barriers were: (1) subsidies not covering training costs and time (intervention); (2) shortage of subsidized training places (intervention); and (3) probability of students leaving after training, resulting in loss of investment. Overall, the effect of the training subsidy (intervention) was determined by the extent to which it lowered financial barriers. Examples of organizational barriers included lack of organizational support and facilities (guidance time and available consultation rooms).

'We just know that programs that are subsidized can really be a stimulus or catalyst. As we see it now with the subsidy for those nurse practitioners [...] That may just be the threshold to say; "We can get started." [...] Unfortunately, care is not only quality, but also money driven'. (Nursing director, hospital care)

3.1.2.1.1 | *Financial and efficiency barriers.* Financial and efficiency barriers were the most profound barriers for hospital/medical specialist care. Examples included: tight (formation) budgets, and nurse practitioners and physician assistants not doing shifts. However, some previous barriers were cleared by policies. For example, reimbursement regulations (intervention) helped the decision-making process because finance deployment became easier for hospitals. Additionally, it relieved administrative work and offered the opportunity of redesigning outpatient clinics. However, some interviewees in hospital/medical specialist care thought that adjusting reimbursement requirements had no actual effect on hiring or training. More than half of these interviewees worked in university medical centres, where all medical doctors were employed and had fewer incentives to increase volume, or in rehabilitation care, where resistance of rehabilitation doctors was



reported (see the section circumstances). In (nursing) home care, a director elaborated that an upcoming amendment of reimbursement requirements (intervention) would lift a barrier to nurse practitioner deployment in extramural care because they could financially claim service, which was previously reserved for doctors (Nederlandse ZorgAutoriteit, 2019).

'I have now entered into a conclave with the nurse practitioner association about policy rule H335, so the extramural deployment of the elderly care physician, there is also room for the nurse practitioner to be active in that. So, [...] a few weeks ago we said, "Guys we are going to position the nurse practitioner extra extramurally".' (Director, nursing home care)

A third of the interviewees in all sectors stated that extending the scope of practice (intervention) had a positive influence on hiring and training, as the legal barrier to deployment was lifted, increasing the task reallocation opportunities. Half of the respondents, the majority of whom worked in primary care, specified that by extending the scope of practice, reallocating tasks were possible without supervision barriers.

'This means that they can handle matters independently and prescribe medicines. And I think that's important because otherwise, that would be another argument for GPs not to do it, because then you are constantly responsible for what that nurse practitioner does: you must authorize every drug, you must authorize everything such a person does. That is not necessary now and that saves a lot of work'. (GP, primary care)

Finally, some interviewees cited the accession of the professions to the Individual Health Care Professions Act (intervention) as an incentive for employment and training. Most mentioned that legal acknowledgement was a deployment condition in their organization, thus lifting organizational barriers. However, a larger number of interviewees believed that accession did not influence employment or training.

**3.1.2.1.2 | Quality of care.** Some interviewees mentioned concerns of medical doctors about the quality of care as an employment barrier in primary care, (nursing) home care and care for the disabled. Physicians felt that they must ensure that a nurse practitioner or physician assistant had sufficient qualities. They experienced difficulties in defining limits on what nurse practitioners and physician assistants could do. In hospital/medical specialist care, where relatively high familiarity with the professions was reported, this barrier was not mentioned.

**3.1.2.1.3 | Medical doctors' positions and work.** Interviewees confirmed their concerns about medical doctors' positions and work as barriers to employment and training. Exceptions were ambulance

and emergency care, where very few (specialized) physicians worked. Interviewees stated that nurse practitioners and physician assistants were sometimes perceived as a threat to rehabilitation physicians' and GPs' jobs, position and work or as undermining their profession. Additionally, because they did not do shifts, hospital doctors, elderly care physicians and GPs were proportionately more burdened. Furthermore, interviewees mentioned that hospital doctors or elderly care physicians could be concerned about physician formation or budget loss when employing a nurse practitioner or a physician assistant. Some GPs worried about losing a complete overview and having only complicated cases.

**3.1.2.1.4 | No mechanism: no influence.** According to the interviewees, policies that did not activate these mechanisms had a limited influence on employment and training. This seems to be the case for the legal acknowledgement of the educational level by granting graduates an MSc degree. The reasons for the lack of influence were that nurse practitioners and physician assistants were not deployed at the MSc level, it was unknown to decision-makers, or not important to healthcare providers.

### 3.1.3 | Under what circumstances (context)

Mechanisms worked differently under various circumstances. Participants interpreted and acted differently on policies (intervention), considering the contextual varieties. The relevant circumstances could be classified into five themes: (1) flanking policies, (2) stakeholders, (3) labour market, (4) healthcare demand and (5) healthcare setting.

Interview results showed that the mechanism 'Familiarity and Trust' was activated under various organizational and sectoral circumstances, namely: being approached by applicants and potential trainees (labour market), and professional association (stakeholders) and organizational support on deployment and visibility (healthcare setting). Moreover, participants' characteristics (healthcare setting), such as their own or colleagues' experiences with the professions, were influential.

'If you talk about familiarity [with NPs and PAs] in the GP-profession, and who promotes that familiarity, then it can be doctor's assistants, practice nurses, and people who just show up, ring the doctor's doorbell, and say: "I am a physiotherapist" or "I am a nurse, and I would like a training place".' (GP, primary care)

Differences in employment and training could largely be linked to sectoral and organizational circumstances that posed an imminent threat, or opportunity to improve continuity, quality, organization and (cost) efficiency of care, which activated the mechanism of 'Motivation'. These circumstances were as follows: (1) economic austerity, resident training capacity and transition of secondary care to primary and home care (flanking policies); (2) low capacity of medical doctors, residents,

nurse practitioners, physician assistants and college-level professionals, and low physician continuity (labour market); (3) rising healthcare demand and complexity; and (4) extramural and highly complex care for college-level professionals, specific conditions/patient groups and participants' characteristics, such as training attitude (healthcare setting).

Sectoral and organization circumstances which could activate the 'Perceived barriers' mechanism were as follows: (1) economic austerity and lack of general training funds (flanking policies); (2) lack of professional association or health insurer support (stakeholders); (3) low nurse practitioner, physician assistant, or college-level professional capacity and a poor image of the healthcare sector (labour market); and (4) lack of organizational support, high cure complexity for medical doctors, non-protocolled tasks and care or cure for non-specific conditions/patient groups, tight budget and relatively small healthcare provider size (healthcare setting).

### 3.1.4 | Participants in the decision-making process (actors)

Interviewees mentioned various types of participants and their roles in the decision-making process. This process functioned as a multi-actor network in most healthcare organizations in which participants had roles that differed between healthcare sectors. As depicted in Figure 2, we identified four roles: initiators, influencers, supporters and decision-makers.

The initiative for nurse practitioner or physician assistant deployment was often taken by medical doctors and by care, medical and treatment managers, directors or college-level professionals who wanted to train and approach the aforementioned participants. Sometimes, the initiative was also taken by business, division or practice managers, or a nurse chief or nursing advisory board. Medical doctors and care, medical and treatment managers, and heads were mentioned as those having the strongest influence on the decision-making process. The other influencers mentioned were the nurse advisory board and works council. HR and educational advisors in the organization did not influence but supported the decision-making process.

'Interviewer: "Can you tell me who in your organization takes the initiative to train or hire physician assistants?" Interviewee: "Yes, that can be a manager in consultation with HR," it can come from the medical staff [...] or from a physiotherapist who says: "I would like to do the physician assistant training." [...] Interviewer: "And who ultimately decides?" Interviewee: "The management team".' (Manager, rehabilitation care)

The final decision on whether to hire or train was mostly made by care, medical and treatment managers, directors, financial/business managers and GPs in primary care. The final decision on hiring and

training the first nurse practitioner or physician assistant in the organization was more often taken by directors. In organizations where nurse practitioners or physician assistants were already employed or trained, the operational line (management) participated more often in the decision-making process or made decisions without the involvement of directors. In hospital/medical specialist care, this decision was often made by a dual management/divisional board, including a care manager, a medical doctor and/or nursing director and a financial or business manager. Although medical doctors were important influencers and initiators, they were not often referred to as the final decision-makers. When they made the final decision, it was often taken jointly with a financial, medical, treatment or care manager.

### 3.1.5 | Patterns on how and why government policies lead to various sector outcomes

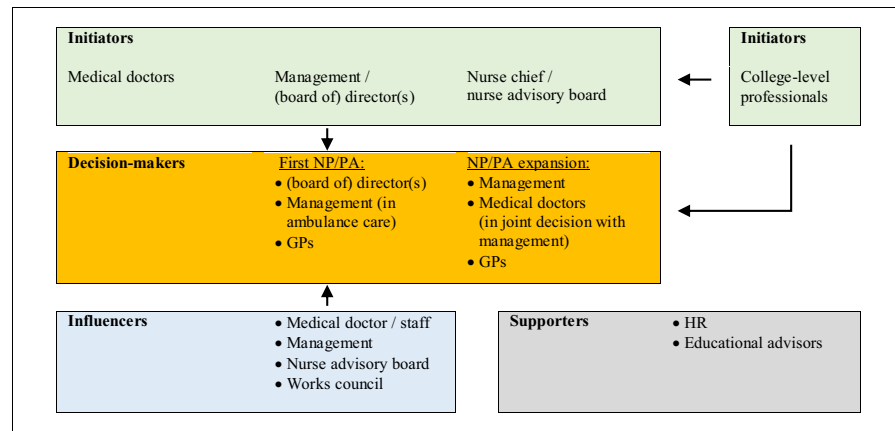
In the Netherlands, the scale of nurse practitioner and physician assistant deployment and training varied significantly between the healthcare sectors. As similar policy interventions led to various outcomes, using retroduction, we systematically identified the patterns in circumstances, participants and mechanisms that most probably led to these various outcomes.

In primary care, nurse practitioner and physician assistant deployment were relatively low, with 2.1 and 1.0 per 100 GP full-time equivalents, respectively. This coincided with low familiarity among GPs despite the contribution of the Task Reallocation Knowledge Center. This, combined with training barriers related to organizational budgets, size and (previous) lack of GP association support led to the relatively low deployment in primary care.

In (nursing) home care and care for the disabled, nurse practitioner deployment was relatively high with 26.8 and 15.4 per 100 medical doctor full-time equivalents, respectively. Policies contributed to motivation and lowered barriers, but did not contribute to the low familiarity. However, low familiarity did not affect decision-making as much as it did in primary care, because the main decision-makers were directors and managers. For these participants, 'trust' and some barriers experienced by medical doctors were not applicable. Additionally, participants experienced fewer and lower barriers, partly because of the medium-to-large organizational size. Furthermore, care could be extramural and complex for college-level professionals. This led to relatively high nurse practitioner deployment.

In hospital care, nurse practitioner and physician assistant deployment were medium and high, respectively, compared with other sectors, with 7.8 and 4.4 per 100 medical doctor full-time equivalents, respectively. National and sectoral policies contributed to participants' motivation, and cleared deployment barriers. Combined with flanking policies, rehabilitation/medical doctor and resident scarcity, medical association and organizational support, and low/less complex cure for medical doctors and protocolled cure/care, this led to a high intake in training programmes and relatively high physician assistant and medium nurse practitioner employment.

**FIGURE 2** Participants and their roles in the decision-making process.



## 4 | DISCUSSION

Our study provides (theoretical) insights into how and why government policies affect nurse practitioner and physician assistant employment and training in healthcare organizations and how circumstances are of influence. The results show how the effect of these policies is determined by the extent to which policies: (1) contribute to familiarity, medical doctors' trust and motivation; and (2) lower barriers perceived by participants in the decision-making process about deployment and training. Variations in employment and training of nurse practitioners and physician assistants between healthcare sectors are explained by different patterns in sectoral and organizational circumstances and decision-makers (medical doctors or managers/directors).

In addition to circumstances and deployment motives identified in previous studies, new circumstances have been highlighted that impact decision-making about employment and training (Halter et al., 2017; Lovink et al., 2019; Niezen & Mathijssen, 2014; Timmermans et al., 2016; van der Biezen et al., 2017; Wallenburg et al., 2015). On a macro level, interviewees mentioned: healthcare system change, general training funds, health insurer policies, continuity of care, healthcare sectors' image and healthcare demand and complexity. At the organizational level, it was clear that the visibility of nurse practitioners and physician assistants, the organizational goal to offer career opportunities and organizational budget and size were relevant. Furthermore, we learned that managers and directors are more pragmatic as decision-makers about deployment of nurse practitioners and physician assistants than medical doctors were. Specifically, directors and managers noted that extending the scope of practice influences efficiency, thereby increasing employment, as it ensures more deployment opportunities and offers an advantage over college-level professionals. Additionally, their decision-making, unlike that of medical doctors, is less influenced by their trust in the quality of care or concerns about their own position and work.

The interviews deepened our understanding of the decision-making process as it was revealed that three mechanisms must be activated sequentially to lead to hiring or training decisions. First, participants in the decision-making process must be familiar with nurse practitioners and physician assistants to consider their

deployment and, for medical doctors, to trust their quality of care. Second, deployment must match organizational needs or the goal of offering career opportunities to activate motivation. Third, only if participants are familiar with the professions and deployment is aligned with organizational needs and goals, the presence or absence of perceived barriers is decisive for the employment and training.

In the Netherlands, government measures enhanced employment and training by (1) contributing to familiarity and trust (sectoral task reallocation knowledge centre), (2) activating motivation (extending the scope of practice and reimbursement regulations) and (3) clearing perceived barriers (training subsidies, extending the scope of practice, legal acknowledgement of the professions and reimbursement regulations). Our results support previous research on the effects of extending the scope of practice, reimbursements and training subsidies (Dankers et al., [under review](#); Kuo et al., 2013; Maier et al., 2022; Patel et al., 2019; Spetz et al., 2017; Valentin et al., 2021; Xue et al., 2018). Outcomes are an annual increase in nurse practitioners' and physician assistants' full-time equivalents over 2012–2022 by 14% and 16%, respectively (Dankers et al., [under review](#)).

The results show that the effects of these policies on the employment and training are determined by sectoral and organizational circumstances. For example, in most healthcare sectors, training subsidies are effective incentives because they remove or lower financial barriers. However, in primary care, even with an additional subsidy, training is relatively low (Advisory Committee on Medical Manpower Planning, 2022), because, as shown by previous research, financial investment is still considered high for small GP practices (Kouwen et al., 2020; van der Biezen et al., 2017). This makes the decision to train nurse practitioners and physician assistants challenging. Additionally, lifting reimbursement barriers can stimulate deployment and task reallocation. However, the effect depends on whether medical doctors are willing to apply them and if there is a production incentive.

The circumstances affecting employment and training found in our study, match those of earlier studies, confirming that shortage of medical doctors and professional association support are major motivators for deployment (Dankers et al., [under review](#); Halter et al., 2017; Kuo et al., 2013; van der Biezen et al., 2017; Xue

et al., 2018). However, the effect of economic austerity, which we included in our initial theory, is paradoxical and requires in-depth analysis (Jagosh, 2020). The results show that economic austerity can: (1) be an incentive for participants to organize care as cost-efficient as possible by nurse practitioner and physician assistant deployment and (2) increase participants' worries about exceeding internal budgets when investing in a new employee or trainee.

In addition to the circumstances at the sectoral or organizational level, we also identified personal characteristics that can activate mechanisms. For example, participants' experience with the professions activates the mechanism 'Familiarity and Trust'. Nurse practitioners and physician assistants can actively influence the decision-making process by increasing sectoral or organizational visibility of their profession and training programmes. Moreover, previous research has shown that concerns about medical doctors' positions and work act as barriers (Niezen & Mathijssen, 2014; Wilson et al., 2002).

#### 4.1 | Strengths and limitations

The strength of this study lies in its innovative design. By using a realist analysis instead of a traditional thematic analysis, we were able to: (1) unravel and refine the broad spectrum of elements influencing decisions in healthcare organizations about nurse practitioner and physician assistant hiring and training; (2) provide insights into causal relationships by unveiling three underlying mechanisms of the decision-making process; and (3) evaluate an entire policy programme rather than individual policy measures, as has been done in previous research (Kuo et al., 2013; Patel et al., 2019; Spetz et al., 2017; Valentin et al., 2021; Xue et al., 2018). Furthermore, to the best of our knowledge, some policy measures have been evaluated for the first time. Additionally, we gained theoretical insights based on a relatively large sample of 53 interviewees from a broad spectrum of healthcare sectors, organizations and functions.

Although our theoretical insights are widely applicable, the relationship between policy and outcome depends on the context and decision-makers. Policies that work in the Netherlands may not work in other contexts. For example, improving accessibility of care is not a motive mentioned by interviewees, despite it being widely represented in the international literature (Burrows et al., 2020; Patel et al., 2019; Timmons et al., 2021; Yang et al., 2020). This is probably because the Netherlands is a relatively small, densely populated country where access to care is not a dominant bottleneck. However, our theoretical insights offer tools for evaluating and implementing policies in other contexts. Furthermore, some interviewees reflected on their previous experiences with the decision-making process or knowledge that they had gained through others. The recall bias may have affected their reflections. To reduce recall bias, our interview guide contained prospectively formulated questions (Spencer et al., 2017). Additionally, when conducting interviews, a realist approach was not chosen. Therefore, the interviews were not theory-driven, and interviewees were provided

with configuration elements, not the entire initial programme theory (Greenhalgh et al., 2017). To overcome this, expert reviewers verified the refined theoretical insights by critically questioning the completeness and identifying causal relationships. Further research should be conducted involving nurse practitioners and physician assistants to provide more insights into their perspectives and roles in the decision-making process.

#### 4.2 | Practical implications

As a result of this interview study, we introduced refined theoretical insights that are applicable to multiple healthcare sectors and levels (national, sectoral and organizational). Although the context and participants may vary, we expect the underlying causal mechanisms to be similar. These insights can be practically used by governments, health insurers, sectoral and professional associations, departments, councils, healthcare providers and professionals to support nurse practitioner and physician assistant employment and training. This offers an opportunity to effectively contribute to healthcare quality, cost efficiency and patient satisfaction. Based on the research results, we recommend the following: (1) focus policies on the three mechanisms and their sequence; (2) tailor policies at the sectoral level; (3) involve medical doctor associations to extend the scope of practice and reimbursement policies; and (4) urge nurse practitioners and physician assistants and their associations, departments and councils to raise sectoral and organizational visibility and communicate about motives and perceived barriers, to contribute to employment and training. Further research in other countries and among a broader group of participants involved in the decision-making process about employment and training, specifically on economic austerity, is recommended to further test the refined theory and contribute to the adequacy and trustworthiness of the explanatory insights.

### 5 | CONCLUSION

This study revealed three mechanisms that explain why and when participants in the decision-making process in healthcare providers decide to hire or train nurse practitioners and physician assistants. To support employment and training effectively, policies need to focus on these mechanisms and their sequence. Effectuating familiarity and trust among participants is a crucial first step. Policymakers can contribute to motivation and lower perceived barriers by extending the scope of practice, creating reimbursement opportunities and contributing to training costs. We recommend tailoring policies at the sectoral level and consulting medical doctor associations to prevent the creation of new barriers. In the Netherlands, most governmental measures have contributed to the deployment of nurse practitioners and physician assistants. We recommend that future policies focus on increasing familiarity in care for the disabled and primary, and (nursing) home care and on lifting perceived barriers by (1) lowering financial

training barriers in primary care, (2) providing sufficient subsidized training places and (3) further extending the scope of practice and reimbursement opportunities.

## AUTHOR CONTRIBUTIONS

J. Albertus contributed to the validation, formal analysis, writing—review and editing. R. Batenburg, P.P.T. Jeurissen and A.J.A.H. van Vught contributed to the conceptualization, methodology, validation, writing—review and editing. E.J.C.M. Dankers-de Mari contributed to the conceptualization, methodology, validation, formal analysis, investigation, resources, data curation, writing—original draft, writing—review and editing, visualization, supervision and project administration. S.G.M. van Hees and M.C.E. Thijsen contributed to the validation, writing—review and editing.

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## CONFLICT OF INTEREST STATEMENT

None.

## PEER REVIEW

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## DATA AVAILABILITY STATEMENT

Data not available/The data that has been used is confidential.

## PATIENT OR PUBLIC CONTRIBUTION

Caregivers contributed to this study as interviewees. There was no patient or public contribution.

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