

The Physician Assistant in General Practice in the Netherlands

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Purpose: In 2003, the first US-trained physician assistant (PA) was employed in the Netherlands because of difficulties in recruiting general practitioners (GP). Our study describes the use of this PA. **Methods:** We studied clinical activities of GP care for number and type of contacts, diagnoses, drug prescriptions, and new referrals, in a general practice in the Netherlands, before and after the introduction of the PA. Data were obtained from electronic medical records. **Results:** The total number of contacts per 1,000 patients increased by 17.0%. Measured per full time equivalent (FTE) of a GP, the number of GP contacts decreased slightly (2.3%). Type of contacts, diagnoses, drug prescriptions, and new referrals to primary care of the GPs changed significantly, although changes were small. The number of PA contacts per 1 FTE PA was about 60% of that of the GPs, with clinical activities overlapping substantially. Nevertheless, there were significant differences in type of contacts, diagnoses and drug prescriptions. The PA saw more women, children, and patients aged 25-44 years; performed more practice consultations, made more women's health-related diagnoses, and prescribed more drugs for dermatological and respiratory problems. **Conclusions:** Our study suggests that this PA improved access to GP care. The PA did not lead to a major decrease in the GPs' workload or major redefinition of the GP role. Overall, the range of the PA's clinical activities was comparable to that of the GPs. However, the PA seems to have treated more acute cases. Aside from these results, our study provides avenues for more research on PAs in Europe.

INTRODUCTION

The Netherlands is confronting an aging population and technological change at a time of an impending shortage and expanding workload of general practitioners (GPs). One proposed solution for filling service provision gaps is to shift care to other health care professionals. The Ministry of Health, Welfare, and Sport (VWS) in the Netherlands has addressed this task by training new health care professionals in order to increase the efficiency of GPs and other type of physicians. The introduction of the physician assistant (PA) into the health care system of the Netherlands is one result of this initiative.¹

The PA concept was firstly introduced in the late 1960s to the United States, in response to a shortage of primary care physicians in medically needy areas.² Hooker and Cawley's 2003 narrative review of studies on US-trained PAs has shown that PAs have reduced health care costs and provided physician equivalent levels of quality of care.² Their productivity levels approached and sometimes exceeded those of physicians. The level of patient acceptance of PA services was also high. In recent years, interest in the PA has expanded beyond the US to other continents, like Europe.³

The profession has caught on in the United Kingdom, for example.⁴⁻⁸

BRIEF REPORT

Feature Editor's Note:

This study provides a statistical glimpse of the effect on general practitioner practice patterns of the introduction of a PA to a small GP practice in the Netherlands. The sample size is small (N = 1) but some interesting effects are observed, especially in the types of patients seen by the GPs before and after the arrival of the PA.

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Note: The supervising GP in this study is also one of the authors.

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In the last 5 years, four PA education programs have been started,⁷ and a framework of national standards for PA education and competences has been developed.^{7,8} A growing number of UK home-grown graduates are beginning to enter the workforce and PAs have also been recruited from the US.⁷ Experience with employing US-trained PAs in UK primary⁹ and emergency care^{6,9} has been positive. According to the evaluation of Woodin et al.,⁹ 13 PAs have successfully made the transition from the US to the UK and are contributing effectively. They have expanded medical capacity in “under-doctored” areas, but have not resulted in any redefinition of professional boundaries or reprofiling of work between existing health care professionals.

In the Netherlands, a total of 5 PA educational programs have been established since 2001,^{10,11} and a growing number of graduate PAs are practicing.¹¹ In 2004, some PA students started their training in primary care.¹¹ Already in 2003, a GP from the Netherlands had introduced a US-trained PA into his general practice, following the resignation of his GP colleague and the difficulty of recruiting a GP swiftly to fill this gap.

The introduction of PAs in Europe has started but remains relatively unexplored. Only one cross-sectional study about PAs in UK primary care, with (limited) quantitative data is available.^{9,12} The purpose of our study is to describe the use of the first PA in a general practice in the Netherlands by using a quantitative design. We addressed the following questions:

- What changes occurred in contacts, morbidity, drug prescriptions, and new referrals to the GPs, following the introduction of the PA?

- What differences were seen in contacts, morbidity, drug prescriptions, and new referrals between the GPs and the PA?

METHODS

Design

We undertook an uncontrolled “before and after” study. Preceding the introduction of the PA in March 2003, we gathered data from an 8-month period (January 2002–August 2002), and we included data from an 8-month period postintroduction (January 2005–August 2005). The postintroduction period of 8 months was selected because the PA was on maternity leave after this period. In order to adjust to any seasonal influences on morbidity patterns, we compared a similar period prior to the PA’s introduction.

Study Setting

For their health care, all Netherlands register with a GP. These GPs deal with a wide range of problems, varying from common to chronic diseases, and act as gatekeepers for more specialized care.¹³ They are traditionally supported by “practice assistants” and, increasingly since the 1990s, by primary care nurses. The practice assistants serve as receptionists and secretaries and also perform some medical-technical tasks (eg, blood pressure readings and removing sutures).¹³ The primary care nurses are mainly involved in the routine management of chronic physical diseases, such as diabetes, asthma, chronic obstructive pulmonary diseases, and coronary heart diseases.¹⁴

Our study setting was one general practice, situated in an urban and partly disadvantaged area in the mid-western Netherlands. Since 1996, this general practice has been owned and supervised by one male GP. Before the introduction of the PA,

1.7 FTE GPs and 2.0 FTE practice assistants were employed; in 2005 there were 1.7 FTE GPs, 1.8 FTE practice assistants, and 0.2 FTE primary care nurse (primarily for diabetes patients). The PA was employed as a 0.6 FTE.

Intervention

The PA (female, aged 36, American nationality, Dutch heritage; speaking fluent Dutch) graduated from Yale University with a master’s degree. She worked for 2 years as a PA in the US before relocating to the Netherlands. The supervising GP and the PA developed the following mutual agreements on patient assignment, job responsibilities, and supervision of the PA.

Patient Assignment

The PA was positioned alongside the GPs. The practice assistants allocated patients mainly on the basis of GP and PA availability and patients’ preferences, without a triage or other systematic preselection of patients’ complaints. The assistants reserved 12 minutes per patient during PA office hours, compared to 10 minutes per patient during GP office hours.

Job Responsibilities and Supervision

The supervising GP and the PA agreed on a broad range of tasks, including diagnosing, prescribing drugs, and referring to disciplines in primary and secondary care. Not all tasks overlapped; for example, the PA performed check-ups, while the GPs did not. Nor did the PA participate in nonmedical activities, such as administration and the supervision of practice assistants.

Since PAs are not yet subject to any specific legislation in the Netherlands, the supervising GP and PA formulated some conditions for the PA’s scope of practice. The PA

performed all tasks under the authority and supervision of the GP and within the GPs' scope of practice. The GPs' involvement in the PA's clinical activities depended mainly on the complexity of a patient's condition and the PA's training and experience (see Box 1). Rules were based on increased risks for poor patient outcome and strengthening of a long-term continuous GP-patient relationship.

Prescribing of drugs by PAs is not yet permitted in the Netherlands. However, the supervising GP allowed the PA to decide on drug prescriptions and later checked her medical record notes, including drug prescriptions. He spent about half an hour per day on supervision.

Indicators

We used the following indicators for clinical activities: (a) contacts: number and type of contacts, (b) morbidity: number and type of diagnoses (symptoms, complaints, and diseases), coded by the GPs and the PA themselves using the International Classification of Primary Care (ICPC codes <.30 and >.69)¹⁵, (c) drug prescriptions: number and type of drug prescriptions, labeled with the classification of anatomical therapeutical chemical (ATC),¹⁶ and (d) new referrals: number and type of new referrals to primary and secondary care.

Data Collection

Our data source was the routinely recorded data from electronic medical records, provided by the Netherlands Information Network of General Practice (LINH).^{17,18} Since 2000, all health care professionals from our study setting, as members of LINH, have recorded contacts (including morbidity, drug prescriptions, and new referrals) with enlisted patients in electronic medical records. The LINH derived data

Box 1. Situations in Which GPs Were Involved

GPs were always involved in the following situations:

- Every third patient contact within the same disease episode
- Abnormal course of the disease
- Alarming signs or symptoms
- A high risk of permanent loss of health or death
- Life events
- Complicated cases
- Patients not seen by the GPs for more than a year

about characteristics of these patients and contacts retrospectively.

Data Analysis

The patient list was used to describe the characteristics of enlisted patients, calculated using the mid-time practice population (patient list in July 2002 and 2005). We included all contacts recorded by the GPs and the PA, but excluded contacts recorded by the GPs during weekends, since the PA did not perform services outside of normal office hours. One contact per patient per health care professional per day, using a preset scheme, was selected.

We calculated the total number of contacts per 1,000 patients for each study period, by dividing only visits, practice consultations, and telephone contacts recorded by the GPs and the PA — excluding requests for drug prescriptions or refills without personal GP or PA contact, and unspecified contacts (missing data) — by the mid-time practice population. In addition, we standardized the number of GP and PA contacts (visits, practice consultations, and telephone contacts) per 1 FTE of the GPs and PA separately. In the analysis concerning diagnoses, drug prescriptions, new referrals made in contacts, requests for drug prescriptions or refills without personal GP or PA contact, and unspecified contacts (missing data) were also excluded.

We assessed overall changes in the

distributions of clinical activities recorded by the GPs before and after the introduction of the PA. Next, overall differences in the distribution of activity patterns between the GPs and the PA were tested. We employed the overall Pearson chi-square test (categorical variables: clinical activities) and the Mann-Whitney U-test (nonparametric variables: age enlisted patients). Values of $p < 0.05$ were considered significant. We only discussed meaningful differences between categories of 3% or greater in overall significantly different distributions. SPSS version 14.0.1 was used for the statistical analysis.

RESULTS

Study Population

The patient list increased from 5,096 to 5,157 patients over the study periods. In July 2002, 50.4% patients were male. The median age was 34 years old. Approximately 7% were children aged 0-4 years and 6% were elderly aged over 75 years. Gender and median age did not change significantly over the study periods (July 2005, 50.1% male; 35 years old). In July 2002 most patients had public health insurance (61.4%); the others were privately insured. In July 2005, 64.8% had public health insurance ($p < 0.001$).

Number of Visits, Practice

Table 1. Contacts by GPs and PA in Each Study Period, by Age and Gender and by Type of Contact

Type of Health Care Professional	GPs		PA	GPs-GPs	GPs-PA
Number of Contacts	2002 (N = 7,837) %	2005 (N = 8,025) %	2005 (N = 1,397) %	2002-2005 <i>p</i> *	2005 <i>p</i> *
Gender (male)	40.3	41.0	31.7	0.31	< 0.001*
Age (year)				< 0.001*	< 0.001*
0-4	7.5	6.7	10.7		
5-14	6.6	6.0	11.7		
15-24	6.9	6.8	8.9		
25-44	32.4	28.9	40.1		
45-64	22.8	24.1	17.5		
65-74	11.0	13.2	4.4		
75+	12.9	14.3	6.7		
Type of contact†				< 0.001*	< 0.001*
Visit	5.2	6.2	4.4		
Practice consultation	75.3	70.2	91.2		
Telephone contact	9.5	12.2	2.5		
Request for drug prescription or refill	10.0	11.5	1.9		

†Missing data (type of contact is not specified): GPs 2002, N = 713; GPs 2005, N = 948; and PA 2005, N = 46

‡Overall Pearson chi-square test

**p* < 0.05

Consultations, and Telephone Contacts by GPs and PA

The total number of contacts per 1,000 patients increased by 17.0% over the study periods from 1,258 to 1,471. The number of GP contacts per 1 FTE GP decreased slightly by 2.3% from 3,770 to 3,684.

Compared to the GPs, the number of PA contacts per 1 FTE PA was substantially lower (-40.1%; 3684 vs. 2208).

Type of Contacts, Diagnoses, Drug Prescriptions, and New Referrals by GPs and PA

The age of patients seen and the type of contacts recorded by the GPs changed significantly over the study periods (Table 1). The GPs recorded fewer contacts with patients aged 25-44 and performed fewer practice consultations. The age and gender of patients contacted, and the type of contacts, were significantly different

between the GPs and the PA (Table 1). The GPs saw more males and more patients aged over 45 years and performed more telephone contacts and responded to more requests for drug prescriptions or refills. The PA saw more children aged 0-14 years and patients aged 25-44 years, and had more practice consultations.

Table 2 shows diagnoses presented in GP and PA contacts, clustered according to ICPC chapters. The type of diagnoses recorded by the GPs changed significantly over the study periods (Table 2), although changes were small (< 3%). The GPs and the PA shared a broad range of work across the ICPC chapters (Table 2). The type of diagnoses was significantly different between these professionals. The GPs diagnosed more circulatory and general and unspecified problems, whereas the PA saw more patients with woman's health-related diagnoses. The detailed overview of

recorded diagnoses (top 10 of ICPC codes) is displayed in Table 3.

Table 4 shows drug prescriptions made in GP and PA contacts, clustered according to ATC chapters. The type of drug prescriptions recorded by the GPs was significantly different between the study periods. Drug prescriptions classified under the nervous system decreased most, whereas those classified as dermatological increased most. The type of drug prescriptions differed significantly between the GPs and the PA. The GPs prescribed more drugs classified under the cardiovascular and nervous system, while the PA prescribed more drugs for dermatological and respiratory problems.

There was a significant change in the type of new referrals to primary care made in contacts recorded by the GPs over the study periods (Table 5). These new referrals increased for mental health care, but decreased for

Table 2. Diagnoses (ICPC chapters) by GPs and PA in Each Study Period

Type of Health Care Professional Number of Diagnoses	GPs		PA	GPs-GPs	GPs-PA
	2002 (N = 8,224) %	2005 (N = 7,879) %	2005 (N = 1,763) %	2002-2005 <i>p</i> *	2005 <i>p</i> *
ICPC chapters†				0.01*	< 0.001*
A – General and unspecified	7.2	7.9	4.4		
B – Blood/blood-forming organs/lymphatics	0.6	0.8	1.0		
D – Digestive	8.0	8.6	10.7		
F – Eye	3.1	3.2	3.8		
H – Ear	3.0	3.0	3.1		
K – Circulatory	8.1	8.0	4.4		
L – Musculoskeletal	16.7	16.8	15.0		
N – Neurological	3.3	2.7	2.4		
P – Psychological	8.5	8.5	7.5		
R – Respiratory	14.1	14.3	15.6		
S – Skin	12.5	12.9	14.6		
T – Endocrine/metabolic/nutritional	4.5	3.8	2.1		
U – Urological	2.4	2.2	1.3		
W – Pregnancy/childbearing/family planning	2.6	1.9	4.8		
X – Female genital	2.9	3.0	6.8		
Y – Male genital	1.2	1.0	0.7		
Z – Social problems	1.3	1.3	1.7		

†Missing data (without an ICPC code): GPs 2002, N = 584; GPs 2005, N = 534; and PA 2005, N = 105

*Overall Pearson chi-square test

†*p* < 0.05

Table 3. Top 10 Diagnoses (ICPC codes) by GPs and PA in Each Study Period

Type of Health Care Professional Number of Diagnoses	GPs				PA	
	2002 (N=8,224)		2005 (N=7,879)		2005 (N=1,763)	
		%		%		%
ICPC codes†						
1	K86 Uncomplicated hypertension	3.4	K86 Uncomplicated hypertension	4.4	R74 Acute upper respiratory infection	3.1
2	T90 Diabetes	2.4	R05 Cough	2.7	L03 Lower back symptoms	2.5
3	R74 Acute upper respiratory infection	2.4	T90 Diabetes	2.2	R05 Cough	2.4
4	R05 Cough	2.1	S88 Contact dermatitis/ other eczema	2.1	S88 Contact dermatitis/ other eczema	1.8
5	L03 Lower back symptoms/ complaint	2.0	A97 No disease	2.0	D12 Constipation	1.7
6	P76 Depression	1.9	R74 Acute upper respiratory infection	1.8	R97 Allergic rhinitis	1.8
7	S88 Contact dermatitis/ other eczema	1.8	S74 Dermatophytosis	1.8	S74 Dermatophytosis	1.6
8	R96 Asthma	1.7	A04 Weakness/tiredness general	1.6	D06 Abdominal pain localised others	1.5
9	A97 No disease	1.6	L03 Lower back symptoms/ complaint	1.5	P01 Feeling anxious/nervous/tense	1.5
10	L03 Lower back symptoms/ complaint	1.6	P06 Sleep disturbance	1.4	X72 Genital candidiasis female	1.5

†Missing data (without an ICPC code): GPs 2002, N = 584; GPs 2005, N = 534; and PA 2005, N = 105

Table 4. Drug Prescriptions (ATC chapters) by GPs and PA in Each Study Period

Type of Health Care Professional	GPs		PA	GPs-GPs	GPs-PAs
	2002 (N = 4,880) %	2005 (N = 3,838) %	2005 (N = 871) %	2002-2005 <i>p</i> *	2005 <i>p</i> *
ATC chapters ^{§†}				< 0.001*	< 0.001*
A – Alimentary tract/metabolism	14.1	12.1	12.0		
B – Blood/blood-forming organs	2.2	1.8	0.7		
C – Cardiovascular system	11.2	11.8	5.4		
D – Dermatologicals	11.9	15.2	20.1		
G – Genitourinary system/sex hormones	5.1	4.8	7.1		
H – Systemic hormonal preparations excl. sex hormones and insulins	1.3	1.6	1.4		
J – Anti-infectives for systemic use	9.7	9.5	8.4		
L – Antineoplastic/immunomodulating agents	0.0	0.1	-		
M – Musculoskeletal system	8.5	8.2	10.0		
N – Nervous system	16.8	13.4	8.1		
P – Antiparasitic products/insecticides/repellents	0.5	0.5	1.0		
R – Respiratory system	15.0	15.4	18.7		
S – Sensory organs	3.7	5.5	7.0		

[§]Drug prescriptions with ATC X and ATC V are not recorded by GPs and PA.

[†]Missing data (ATC Y, ATC Z, and without an ATC code): GPs 2002, N = 125; GPs 2005, N = 102; PA 2005, N = 41

*Overall Pearson chi-square test

**p* < 0.05

physiotherapy and exercise therapy. The referral pattern of the GPs to secondary care did not change significantly. Compared to the GPs, the referral pattern of the PA to primary and secondary care was not significantly different.

DISCUSSION

Our study describes the use of the first PA in a general practice in the Netherlands. The total number of contacts per 1,000 patients increased over the study periods, presumably due to the GPs' increased capacity to provide care from employing a PA.

The number of GP contacts per 1 FTE GP decreased slightly over the study periods. In addition, the type of contacts, diagnoses, drug prescriptions, and new referrals to primary care changed significantly. However, with the exception of new referrals to primary care, these changes were

small. If we interpret the standardized number (per 1 FTE GP) and type of GP contacts as a measure of objective workload, our findings suggest a limited change in GPs' objective workload.

Studying the PA's clinical activities, we found a PA productivity level (number of contacts per 1 FTE) of about 60% of that of the GPs. Possible explanations for this difference are a lower percentage of telephone contacts, a longer duration of PA practice consultations, and a less rigid PA patient schedule. During her first years in general practice, the PA regularly ran out of consultation (visit) time, partly because of her unfamiliarity with the Dutch GP treatment model. Also, repeated maternity leave in 2004 and 2005 prolonged her learning period. We expect therefore a higher productivity when she re-enters.

Although the PA undertook a wide

range of clinical activities that was similar to that of the GPs, she differed significantly from the GPs in the type of contacts, diagnoses, and drug prescriptions. The PA saw more women, children, and patients aged 25-44 years. She performed more practice consultations, made more female genital-related diagnoses and prescribed more drugs for dermatological and respiratory problems. A reason for the PA seeing more female patients is perhaps that the GPs are male and the PA is female.

Overall, both patterns of clinical activities indicate that the GPs saw more chronic and complicated cases, compared to the PA who treated more acute cases. Although no triage was used, this difference might be explained by patients' preferences and involvement of the GPs in specific situations (see Box 1).

Limitations of the Study

Table 5. New Referrals to Primary and Secondary Care by GPs and PA in Each Study Period

Type of Health Care Professional	GPs		Primary Care		
	2002 (N = 308)	2005 (N = 269)	PA (N = 97)	GPs-GPs 2002-2005	GPs-PA 2005
Number of Referrals					
	%	%	%	<i>p</i> *	<i>p</i> *
Type of referrals to primary care				0.003*	0.14
Mental health care	4.9	13.8	5.2		
Physiotherapy/exercise therapy	84.1	75.8	83.5		
Speech/language therapy	3.9	3.7	3.1		
Dietician	7.1	6.7	8.2		
Type of Health Care Professional	GPs		Secondary Care		
	2002 (N = 422)	2005 (N = 357)	PA (N = 100)	GPs-GPs 2002-2005	GPs-PA 2005
Number of Referrals					
	%	%	%	<i>p</i> *	<i>p</i> *
Type of referrals to secondary care				0.54	0.52
Internal specialties [§]	30.1	30.0	25.0		
Surgical specialties [§]	57.6	59.9	65.0		
Neurology & psychiatry	10.7	7.8	6.0		
Other specialties [§]	1.7	2.2	4.0		

[§]Internal specialties: internal medicine, pulmonary diseases, cardiology, rheumatology, gastroenterology, paediatrics, dermatology/allergology. Surgical specialties: surgery, orthopaedics, urology, plastic surgery, gynaecology/obstetrics, ophthalmology, ear nose and throat specialist (ENT). Other specialties: rehabilitative medicine, oral/dental surgery, other (radiotherapy, anaesthesiology, pain relief, genetic centre, tropical, nuclear and/or social medicine)

*Overall Pearson chi-square test

**p* < 0.05

The primary limitation is the use of a case study. Our study setting, and in particular some personal characteristics of the PA (for example, female gender) seemed to generate a specific activity pattern. This cannot be seen as representative of the PA role itself. However, we justify this method on the grounds that the GPs and the PA in our study are early adopters, and that this research will help build a foundation for broader research on PAs in Europe.

Secondly, due to our study design, we could not directly attribute observed changes in the clinical activities of the GPs to the introduction of the PA. For instance, besides the introduction of the PA, one GP left and a part-time GP and a new practice assistant and primary care nurse were introduced. However, the number of WTEs remained stable.

Thirdly, we used routinely recorded data from electronic medical records. Our data may therefore be limited, especially because of incomplete or inconsistent recording¹⁷ (eg, the type of contacts is not specified and diagnoses are subject to how ICPC codes are used by different health care professionals). However, our study setting has participated in the LINH, a network that maintains a relatively high quality database in a standardized format.^{17,18} Therefore, we suggest that this PA role was described with reliable data. For instance, almost all GP and PA contacts were specified (90.1%).

Furthermore, we compared clinical activities recorded principally in normal office hours, as we only selected contacts (visits, practice consultations, and telephone contacts) with enlisted patients from Monday

to Friday. The description of the GPs' objective workload is therefore restricted and may bias our results.

Finally, we only selected contacts recorded by the GPs and the PA. As a consequence, we could not address any consequences of the introduction of the PA in the context of an interdisciplinary team, in particular for the practice assistants and primary care nurse. Since the GPs and the PA have a medical orientation, the introduction of the PA has probably affected clinical activities of the GPs.

Other Evidence

Comparing our results with other findings is problematic. Firstly, data concerning changes in clinical activities of GPs only in the Netherlands are not available. Secondly, the majority of studies examining the impact of PAs have been conducted

in the 1970s in US primary care.² Research on the PA role in general practice is limited. Finally, data on PA performance is only presented for a finite number of indicators, often collected and analyzed in various ways.

As reviewed by Hooker & Cawley² and Record et al¹⁹ several US studies have tried to determine whether PAs substitute for physicians' clinical activities by calculating numbers of delegation and productivity. Findings on these issues are mixed and far from conclusive. In our study, we restricted productivity to the number of GP and PA contacts (visits, practice consultations, and telephone contacts) per 1 FTE of a GP and PA separately. Earlier US studies comparing PA practice visits per time unit (hour, day, week or year) to productivity levels of physicians in primary care reported a productivity range of approximately 65-110%.¹⁹⁻²² The recent UK study indicated considerable variation of productivity (average consultations per day) among four PAs (approximately 66-164%).⁹ We found a less favorable PA productivity of 59.9%. Our results on differences in the range of clinical activities (in particular, morbidity) between the GPs and the PA are more in line with studies in primary care from the US²³⁻²⁵ and the UK.⁹

Several studies have shown that PAs tended to act as provider for younger patients more often than physicians.^{9,23-25} In contrast with our findings, two studies^{23,24} concluded that PAs saw fewer female patients. In the UK study⁹ the proportion of consultations with female patients varied.

With regard to morbidity, one study²³ noted PAs were commonly utilized to handle minor trauma and perform check-ups. Overall, physicians and PAs treated the same number of patients with moderately severe problems. Another study²⁴ showed

that new patients seeking help for acute problems were more likely to be assigned to the PA. A third study²⁵ found no differences in diagnoses. However, physicians appeared to handle more complicated cases because they saw older patients who required more diagnostic tests. In the UK study⁹ PAs were undertaking a wide range of clinical work, covering a similar spread of presenting problems to their supervising GPs.

Following Laurant et al,²⁶ shifting care to other health care professionals (nurses) may include supplementation or substitution of GP care. As the PA was introduced as a result of GP recruitment difficulties, and we found that she actually undertook a wide range of clinical activities that was similar to that of the GPs, we presume that the PA was intended to substitute for a GP.

Substitution has the potential to reduce workload.²⁶ Our findings suggest, however, limited changes in GPs' objective workload or redefinition of the GP role, but an increase of GP care available to patients. As stated in the UK study,⁹ one main impact of the PAs was increasing medical workforce to deal with routine work, rather than on the type of work undertaken by the GPs. The impact varied, depending on a range of factors related to practice content (eg, duration of PA contacts and number of clinical sessions), and PAs themselves (for example, preferences, training/qualifications, responsibilities, and experiences). This observation is consistent with earlier US studies about numbers of delegation and productivity of PAs.¹⁹ In addition, Laurant et al noted that the degree of substitution or workload reduction depend highly on whether GPs give up providing services that have been delegated.^{14,27}

CONCLUSION

Our study suggests that the introduction of the PA in question improved access to GP care in a general practice in the Netherlands. The employment of this PA did not lead to a major decrease in the workload of the GPs or major redefinition of the GP role. Overall, the range of the PA's clinical activities was comparable to that of the GPs. However, the PA seems to have treated more acute cases.

A more systematic study is under way to evaluate PAs educated in general practices in the Netherlands.

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