

# Relationship between the working styles of general practitioners and the health status of their patients

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**SUMMARY.** *The aim of this study was to relate the working style of general practitioners to the health status of a sample of their patients. From a large regional sick fund forming part of the national health insurance system in the Netherlands a stratified sample was taken of general practitioners with at least 1000 patients on their list, taking into account the degree of urbanization of the area in which they practised and their annual referral rates to specialists. These 75 general practitioners were observed for two days in their surgeries by trained doctors and rated according to criteria defined beforehand. Taking into account these ratings and the annual figures from the sick fund for prescribing selected drugs and referrals to specialists, the general practitioners were classified into styles of practice — integrated, interventionist or minimal diagnostic. Twenty randomly selected women, aged 50–65 years, from each general practitioner's list, were interviewed and examined by independent doctors. The patients of general practitioners with the integrated practice style appeared to feel more healthy and to have more realistic expectations about the possibilities of professional help for common ailments. They tended to visit their doctor less frequently and to have fewer symptoms.*

*The results showed an association between the quality of general practitioners and patients' health, and it may therefore be concluded that good general practitioners can further the health and well being of their patients.*

*Keywords: patterns of work; health status; illness behaviour; peer review; quality in general practice.*

## Introduction

**M**OST general practitioners hope and many believe that their patients will benefit if they are good doctors. However, there is a remarkable lack of scientific support for this assumption. A recent search of outcome research in general practice in the National Library of Medicine's database, Medline, failed to produce evidence that patients' sense of well being, or their general health status, has been studied in relation to the quality

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of their doctors. In a literature review summarizing the quality of care of family physicians by outcome and process measures, Bouwman concluded that this research is still in its infancy.<sup>1</sup> It is well known, however, that there is a wide variation between general practitioners in what they do, and do not do, in terms of physical and laboratory examinations, prescribing and referral.<sup>2-5</sup>

Members of staff at the Nijmegen University department of general practice in the Netherlands have carried out extensive investigations into the quality of medical care supplied by general practitioners.<sup>6,7</sup> General practitioners have been observed in their surgeries, and what they did, or did not do has been measured using standards decided on beforehand. Using these results and the doctors' individual prescribing and referral rates from the annual sick fund figures, three different practice styles have been distinguished:<sup>8</sup>

- *Integrated style.* This is characterized by maximum scores on patient- and goal-oriented approaches.<sup>8</sup> General practitioners perform many necessary but few superfluous diagnostic activities, and they keep to a minimum the number of referrals and prescriptions for non-specific medicines, that is, analgesic, antibiotic, antitussive, antirheumatic and sedative drugs, corticosteroids and tranquillizers.

- *Interventionist style.* This is characterized by intermediate scores on patient- and goal-oriented approaches. General practitioners perform many necessary but also many superfluous diagnostic activities, they prescribe a great deal of non-specific medication and they refer frequently.

- *Minimal diagnostic style.* This is characterized by low scores on patient- and goal-oriented approaches. General practitioners perform few diagnostic activities but frequently refer and prescribe non-specific medication.

The aim of this large field study in another region was to relate the working style of general practitioners to the health status of a sample of their patients.

## Method

### General practitioners

In the Netherlands most general practitioners are single-handed or work in small partnerships. As this study was designed to investigate the influence of individual general practitioners on their patients, those working in group practices without a personal list of patients were excluded. The sample of general practitioners was taken from all general practitioners whose patients were registered with a large regional sick fund in the eastern part of the Netherlands. This sick fund forms part of the national health insurance system in the Netherlands. Between November 1986 and February 1987 a stratified sample was taken of general practitioners with stable practice populations of at least 1000 patients, taking into account the degree of urbanization of the area in which they practised and their annual referral rates to specialists. General practitioners who had not been in the same practice for at least five consecutive years were excluded. This sample of 106 general practitioners is representative of all general practitioners in the Netherlands in terms of the practitioners' age and the number of patients on their personal lists.

The general practitioners were informed of the study and asked to participate. Of the 106 general practitioners 75 agreed to do so (70.8%). They were observed in their surgeries by specially trained general practitioner-observers on two consecutive days. Details of all physical examinations, laboratory tests and prescribed medicines were recorded. The methods used to assess the general practitioners have been described in detail elsewhere.<sup>9-11</sup> Observation for two days proved to be sufficient and to have little influence on the usual behaviour of the general practitioners.<sup>12</sup> All consultations were audiotaped and 15 consultations were selected for each participating general practitioner. These consultations concerned cases for which protocols had been constructed beforehand by a panel of 25 experienced general practitioners, who were members of the staff of the Nijmegen University department of general practice.<sup>6,7</sup> At least 10 of these cases had to refer to new episodes of illness. The consultations were rated anonymously by 10 general practitioners who had received two days of training involving videos and practice ratings. This resulted in scores for necessary and unnecessary diagnostic and therapeutic activities and laboratory tests, and also for psychosocial interviewing skills. The concordance between the scores from different raters for medical activities was 84.0% and for interviewing skills 80.4%.

Using sick fund figures for 1981-86 the annual prescription rate for selected drugs with a wide range of indications and/or disputable application (for example, analgesic, sedative and antibiotic drugs and tranquillizers) and the annual referral rates to medical specialists were determined for the observed general practitioners. Both were adjusted for the age and sex distribution of the practitioner's practice population.

Making use of all these ratings, the three practice styles constructed in the preceding study of 57 general practitioners in another region<sup>8</sup> were found again. For each general practitioner the degree to which his or her actual behaviour agreed with each of the practice styles discerned, was calculated and employed in the data analysis.

### Patients

A random sample of 20 women patients on the register of the sick fund was taken from the list of each participating general practitioner. The women had to be 50-65 years of age and to have been on the list of that particular general practitioner for at least five consecutive years. This category of women was chosen because they usually have frequent contact with their general practitioner and sufficient experience as patients, often also as mothers of patients.

These patients were asked by letter to participate in the study. If they refused another woman, chosen at random from the same practice, was asked to take part. Owing to organizational problems the planned 1500 women were not recruited. Of the 2433 women asked 1443 participated in the study (59.3%). However, there were no significant differences between the prescription and referral rates of the general practitioners of respondents and non-respondents, nor could significant correlations be demonstrated between the practice style of the general practitioners or the patient characteristics of respondents and non-respondents.

The 1443 women were visited in their homes by doctors trained as interviewers. In order to measure the women's subjective sense of health and well being a questionnaire developed by the Central Bureau of Statistics of the Netherlands<sup>13</sup> and a short version of a general health questionnaire (VOEG), a standardized questionnaire often used in the Netherlands,<sup>14</sup> were used. The former also asked how many visits had been made to a general practitioner in the last three months. The women were asked whether their uterus had been removed and if so whether this

had been carried out for an oncologic or other reason, and whether they were referred to the gynaecologist for this operation by their present or former general practitioner. The women were asked these questions because it is known that removal of the uterus is often carried out without sufficient medical reason and that the frequency of this operation varies widely between practice populations.<sup>15,16</sup>

In order to measure the objective physical health of the women they were screened for 15 common disorders or risk factors appropriate to their age category, using instruments recommended in the Rand health insurance study<sup>17</sup> and a questionnaire similar to that used by Rose.<sup>18</sup> A blood sample was taken and sent to a central laboratory to determine levels of sugar, cholesterol and haemoglobin; kidney and liver function tests were also carried out.

The expectations of these women with respect to the relief that can be brought about by doctors and by self care in common ailments were also determined using the validated Nijmegen list of expectations.<sup>19</sup>

### Statistics

In the analysis the patient data were aggregated at the general practitioner level, that is mean patient scores per general practitioner were calculated. For each general practitioner three scores were determined indicating the concurrence with the three practice styles. Pearson correlation coefficients were calculated between mean patient scores and practice style of general practitioner. Owing to a skewed distribution, the Spearman correlation coefficient was calculated between percentage of patients with abnormal findings and practice style of their doctor.

### Results

The relationship between the general practitioners' practice style and the characteristics of their patients is shown in Table 1. Patients whose general practitioners practised with an integrated

**Table 1.** Pearson correlation coefficients between mean patient scores and practice style of general practitioners ( $n = 75$ ).

Patient characteristic	Pearson correlation coefficient for practice style:		
	Integrated	Interventionist	Minimal diagnostic
Feeling healthy (CBS questionnaire)	0.24*	-0.34**	-0.16
Number of symptoms (VOEG questionnaire)	-0.38**	0.35**	0.28*
Expectations of self care versus professional care for common ailments	0.30**	-0.25*	-0.28*
Number of visits to GP	-0.41**	0.35**	0.32**
% of women with uterus removed for non-oncological reason:			
Referred by their present GP	-0.36**	0.22*	0.33**
Referred by a former GP	-0.09	0.10	-0.01

$n$  = number of general practitioners. CBS = Central Bureau of Statistics.  
\*  $P < 0.05$ . \*\*  $P < 0.01$ .

style felt more healthy and those whose doctors had an interventionist style less healthy. The patients of general practitioners with an integrated working style also had fewer symptoms while the remaining patients had more. The expectations of the efficacy of self care versus professional medical care of patients of general practitioners with an integrated practice style were more realistic while those of patients whose general practitioners had an interventionist or minimal diagnostic practice style were less realistic. In accordance with this the patients of general practitioners with an integrated practice style visited their doctor less frequently while the remaining patients visited their doctor more frequently. Removal of the uterus for non-oncological reasons had been performed less among women whose general practitioner had an integrated practice style and more often in the remaining women when they had been referred for this by their present doctor — this relationship did not exist when they had been referred by a former general practitioner.

The Spearman correlation coefficients between the percentage of patients with abnormal findings and the practice style of their general practitioner are shown in Table 2. Heart failure and chronic bronchitis were found significantly less often in

**Table 2.** Spearman correlation coefficients<sup>a</sup> between percentage of patients with abnormal findings and practice style of general practitioner ( $n = 75$ ).

Abnormal findings	% of patients ( $n = 1443$ )	Spearman correlation coefficient for practice style:		
		Integrated	Interventionist	Minimal diagnostic
Hypertension	7.7	0.01	-0.08	-0.05
Hyperglycaemia	2.5	-0.19	0.32**	0.19
Gastric disorder	5.3	-0.21	0.21	0.17
Chronic bronchitis	8.5	-0.25*	0.35**	0.16
Arthropathy	23.9	-0.05	-0.02	0.04
Varicose veins	7.9	0.16	-0.16	-0.02
Angina pectoris	2.1	-0.05	0.08	0.04
Heart failure	7.4	-0.28*	0.19	0.23*
Obesity	21.7	0.04	0.05	-0.06
Visual disturbances	58.6	0.07	-0.06	0.00
Hearing disturbances	25.1	-0.06	0.09	0.06
Hypercholesterolaemia	11.3	-0.05	0.08	0.02
Disturbed liver function	3.6	-0.09	0.00	0.15
Disturbed kidney function	3.2	-0.03	-0.11	0.07
Anaemia	0.9	0.02	-0.06	0.01

<sup>a</sup> The Spearman correlation coefficient was calculated instead of the Pearson correlation coefficient because most of the findings demonstrated a skewed distribution.  $n =$  number of general practitioners/patients. \*  $P < 0.05$ . \*\*  $P < 0.01$ .

patients whose general practitioner had an integrated working style. Hyperglycaemia and chronic bronchitis were found significantly more often in patients whose general practitioner had an interventionist style and heart failure in those whose general practitioner had a minimal diagnostic style. No other significant correlations were found but it is striking that for patients whose general practitioner had an integrated practice style the relationship with most of the abnormal findings is a negative one.

The above analyses were repeated for the groups of doctors practising in rural and urban areas. Similar results were obtained for the two groups.

## Discussion

The results of this extensive investigation of almost 1500 women and their 75 general practitioners point to a better subjective

sense of health — and to a lesser extent better objective health — among patients of good family doctors. The general practitioners have been observed carefully in their daily work by trained doctors and the data regarding their prescription of medicines and referrals to specialists have been scrutinized. Those with the integrated practice style, that is performing most necessary and least superfluous diagnostic activities, with a goal-directed and patient-oriented approach and keeping referrals to specialists and prescribing of non-specific medicines to a minimum, were regarded to be the best doctors. Their patients also had the most realistic expectations about the possibilities of self care versus professional medical care for common ailments and visited the doctor less frequently. They were also less likely to have had their uterus removed.

This last characteristic could be regarded as a spurious finding because these women were less often referred to specialists in general, a low referral rate being one of the characteristics of the integrated practice style. However, this finding does illustrate the consequences of the working style of general practitioners. In the Netherlands general practitioners are paid for their sick fund patients on the basis of a capitation fee while specialists are paid on the basis of a fee for service. This combination of remuneration systems can stimulate the general practitioner to refer to a specialist and the specialist to operate on a patient. In the Netherlands the relative number of general practitioners is lower and the number of specialists much higher than in the United Kingdom.

In this study only women aged 50–65 years were investigated. Thus, strictly speaking, these findings are only applicable to women in this age group. There is little reason, however, to assume that a relationship between the health of patients and the practice style of their general practitioner will be limited to this age and sex category.

Owing to the cross-sectional design of this study conclusions about a causal relationship between the qualities of general practitioners and the health of their patients cannot be drawn. It is conceivable that a more healthy practice population will cause the general practitioner to develop an integrated working style, but this appears improbable. It is also possible that the most healthy women choose the best doctors. However, this is unlikely as in this study the same relationship was found to exist in rural districts, where the choice of general practitioner is often limited or non-existent, and urban areas. The likelihood of better informed, healthier patients seeking out a 'good' general practitioner is also small as no relationship was established between working style of present doctor and removal of the uterus on referral by the former general practitioner. As patients usually spend many years on the personal list of a general practitioner in the Netherlands<sup>20</sup> it seems most probable that family doctors educate their patients during the many consultations they have with them over this period.

The results of this study corroborate the view that family doctors can play an important role in the 'prevention of somatic fixation'<sup>7</sup> by preventing unnecessary medicalization, iatrogenic harm, and under- and over-treatment, striving to achieve adequate diagnosis and therapy.

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