

Consultation rates and incidence of intercurrent morbidity among patients with chronic disease in general practice

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SUMMARY

Background. Information on frequency of consultation and presented morbidity among patients with chronic disease is relevant to the management of these patients in view of the increasing prevalence of chronic diseases.

Aim. This study set out to examine consultation rates and incidence of intercurrent morbidity in general practice in cohorts of patients with five common chronic diseases: hypertension, chronic ischaemic heart disease, diabetes mellitus, chronic respiratory disease and osteoarthritis.

Method. In seven practices with 15 general practitioners the records of all patients were screened for inclusion in the study. The data used for analysis were from 962 patients, whose diagnoses were made in agreement with diagnostic criteria, who were not under specialist care, and who were followed up for 21 months. A distinction was made between patients with one, or two or more of the five chronic diseases studied. For the single disease subgroups of patients with hypertension or diabetes two reference groups of people without a chronic disease, standardized for age and sex, were identified from the population in the same practices.

Results. Consultation rates were higher for patients with comorbidity than for patients with a single disease. Intercurrent diseases were presented more frequently to the general practitioner by patients with comorbidity than by patients with a single disease. Most intercurrent morbidity consisted of acute common diseases such as myalgia, upper respiratory tract infection and urinary tract infection. Patients with only hypertension or only diabetes had higher consultation rates than the corresponding reference group but did not have higher total incidence rates of intercurrent morbidity.

Conclusion. Patients with chronic disease consult their general practitioner frequently, and patients with more than one chronic disease consult even more frequently. The general practitioner has to deal with chronic disease and intercurrent acute disease in a single patient.

Keywords: chronic disease; morbidity; consultation rates; associated conditions.

Introduction

IN THE Netherlands chronic diseases are primarily managed by general practitioners. This care includes the diagnostic and therapeutic activities in the initial phase as well as the long term management of the disease.¹ It is expected that general practitioners will have to care for more patients with chronic disease in the near future owing to an increase in the number of elderly people² and to political measures emphasizing primary care. Insight into the workload generated by the care of patients with chronic diseases is relevant for the management of chronic diseases in general and for the organization of general practice in the future.

This study analysed consultation rates and intercurrent morbidity presented to the general practitioner by cohorts of patients with five common chronic diseases. In a previous study it was found that 7.6–40.3% of patients had combinations of two or more of the five chronic diseases (referred to as 'comorbidity').³ Therefore, the influence of comorbidity on consultation rates and intercurrent morbidity (incident diseases presented to the general practitioner) justifies special attention. This study attempted to determine the difference in consultation rates between patients with a single chronic disease and patients with comorbidity, and the incidence and nature of intercurrent morbidity in these patient groups.

Intercurrent morbidity among patients with chronic diseases may be influenced by the phenomenon described by Berkson,⁴ indicating a higher chance of diagnosing diseases in patients who are already receiving care than in patients who do not consult their general practitioner. For this reason reference groups without a chronic disease were included in the analysis.

Method

Study cohorts

The selection of practices and patients has previously been described in detail.⁵ In summary, seven practices (15 general practitioners) were selected following their participation in the Dutch national survey of general practice.⁶ The total practice population consisted of 23 534 people at the start of the study (1 January 1988).

The general practitioners identified all patients in their practices known to have at least one of the following diseases: hypertension, chronic ischaemic heart disease, diabetes mellitus, chronic respiratory disease (asthma, chronic bronchitis, emphysema) and osteoarthritis of knee and/or hip. A total of 1989 patients were identified. Background data were collected for each patient on the diagnostic procedures performed in dia-

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gnosing the chronic disease, the date of the diagnosis and the physician responsible for the follow-up care. Five cohorts were defined on the basis of the following criteria: diagnosis made before 1 January 1988, diagnosis in agreement with the diagnostic inclusion criteria of *ICHPPC-2-defined*¹ and patient not receiving follow-up care for the chronic disease from a specialist at the start of the study. This final requirement ensured that all morbidity during the study period was presented to the general practitioner, because in the Netherlands medical specialists can only be consulted after referral by a general practitioner. Patients who left the practice during the 21-month study period were excluded.

Application of these criteria left a total of 962 patients who were included in the analysis. The characteristics of these patients are shown in Table 1. Each cohort was divided into single disease and comorbidity subgroups.

Reference groups

Two separate reference groups of people without a chronic disease were constructed from the population of the same practices for the single disease subgroups of the cohort with hypertension and that with diabetes using data from the Dutch national survey of general practice. Hypertension and diabetes were chosen because in the Netherlands these patients are usually included in a surveillance scheme, thus allowing the usual number of surveillance visits per year to be subtracted from the total number of consultations in order to obtain consultation rates that can be compared with those of the reference groups.

People with any of the five chronic diseases under study were excluded, as well as those with any other non-vertebral osteoarthritis, stroke, peripheral vascular disease, rheumatoid arthritis, any malignant neoplasm, and dementia. The reference groups were standardized for age and sex relative to the relevant single disease subgroups. The reference group for the hypertension subgroup consisted of 14 623 people, the diabetes reference group of 15 847 people.

Data collection

During the 21-month study period all consultations with the 962 patients in the five disease cohorts were registered by the general practitioners on special research forms. For each consultation the general practitioner recorded one or more diagnosis at the highest diagnostic level appropriate.⁸ These diagnoses were coded by trained clerks according to the *International classification of primary care (ICPC)*.⁹ In cases of more than one consultation for the same diagnosis, the consultations were clustered by the clerks into episodes of disease ('a problem of illness in a patient, over the entire period of time from its onset to its resolution'⁷). The diagnosis for the episode was characterized by the diagnosis of

the last registered consultation during the episode, as is usual in general practice morbidity studies.^{10,11} Whether the episode was 'new' (never presented before) or 'old' (already existing at the start of the study period) was indicated on the research form at the first consultation for each episode. For this study only episodes of disease that had started during the study period were included.

Data on the consultations and intercurrent morbidity of the reference groups were obtained from the Dutch national survey of general practice. The data for the reference groups were collected during the three months preceding the data collection for the study cohorts (October–December 1987). Determination of the number of consultations and construction of episodes of disease were carried out as described for the study cohorts.

Measures

The numbers of consultations and of episodes of disease were rescaled to rates per annum. The consultation rate was taken as the total number of consultations (face-to-face contact with the general practitioner at the practice or at home) per year, irrespective of the presented morbidity. Consultation rates are presented as means.

Intercurrent morbidity reflects episodes of new diseases presented to the general practitioner. The total incidence rate of intercurrent morbidity was taken as the total number of episodes per 1000 patients per year. Intercurrent morbidity was also studied at the level of *ICPC* chapter headings and at the level of diagnoses.

Reliability and validity of study cohort data

In one practice, with two general practitioners, the registration was interrupted for three months owing to reorganization of the practice. Correction for this interruption was made in the calculation of the consultation rates and the incidence rates for each cohort.

The accuracy of the number of consultations recorded by general practitioners was checked for a 2% sample of the patients by comparison with the practice patient records. Of all the consultations covered by the charts 70% appeared to be present in the study database. The consultations which were not reported were mainly for repeat prescriptions and those during evenings and weekends. No correction was made for this underreporting.

In order to determine the agreement between the 15 general practitioners in the diagnostic labelling of diseases, each general practitioner was asked to make diagnoses for each of 30 written case histories. The mean inter-observer agreement was 90%.

Analysis

Univariate description analysis was carried out to calculate consultation rates and total incidence rates for the different subgroups and the reference groups. Confidence intervals of the means are presented at the 95% level. Data analysis was performed with *SPSS-X/SPSS-PC*.

Results

Consultation rates

The consultation rates were higher in all the comorbidity subgroups than in the corresponding single disease subgroups (Table 2). The largest differences were found for patients with chronic respiratory disease and those with osteoarthritis, where the consultation rates in the comorbidity subgroups were 51% and 52% higher, respectively, than in the single disease subgroups. However, the comorbidity subgroups in these cohorts were both small (27 and 25 patients, respectively). The confidence intervals were large for all estimated means for both the single disease and

Table 1. Background characteristics of the five patient cohorts.

Chronic disease	Number of patients ^a	% of males	Mean age (range) in years	% with single disease
Hypertension	549	34.8	60 (22–92)	86.3
Chronic ischaemic heart disease	183	61.7	67 (34–87)	73.8
Diabetes mellitus	119	42.0	65 (29–88)	68.9
Chronic respiratory disease	252	59.9	45 (3–86)	88.9
Osteoarthritis	80	32.5	69 (39–87)	68.8

^aSum is greater than total of 962 owing to comorbidity among some patients.

Table 2. Mean consultation rates in the five disease cohorts and two reference groups.

	Mean consultation rate (95% CI)		
	Single disease group	Reference group	Comorbidity group
Hypertension	4.7 (4.4 to 5.0)	3.0 (2.9 to 3.1)	5.4 (4.3 to 6.6)
Chronic ischaemic heart disease	5.5 (4.7 to 6.2)	–	6.0 (4.8 to 7.3)
Diabetes mellitus	5.7 (4.9 to 6.4)	2.8 (2.7 to 2.9)	6.5 (4.7 to 8.4)
Chronic respiratory disease	4.9 (4.3 to 5.5)	–	7.4 (5.0 to 9.8)
Osteoarthritis	4.2 (3.2 to 5.2)	–	6.4 (4.9 to 8.0)

CI = confidence interval.

comorbidity subgroups, indicating high individual variation in consultation rates.

Patients in the reference groups without a chronic disease had lower mean consultation rates than the respective single disease subgroups (Table 2).

Intercurrent morbidity

In all five cohorts patients with comorbidity had higher total incidence rates of intercurrent morbidity than the corresponding patients with a single disease (Table 3). This difference varied from 8% for diabetic patients to 74% for patients with osteoarthritis. The total incidence rate for the hypertension reference group was 42% higher than for the corresponding single disease group. However, the difference in rates between the single-disease diabetic patients and their reference group was only 4%.

Analysis of the incidence rates of intercurrent morbidity at the level of *ICPC* chapter headings among the five disease cohorts showed the highest rates in the chapters K (circulatory), L (musculoskeletal), R (respiratory) and U (urology). No important differences in this pattern were found between the subgroups within each of the five cohorts. In the two reference groups the highest rates were found for the chapters D (digestive), L (musculoskeletal), R (respiratory) and S (skin).

At the level of diagnoses the five diseases with the highest incidence rates were determined for each single disease subgroup. Only eight acute diseases were found in the top five for all five cohorts: myalgia, upper respiratory tract infection, acute bronchitis, urinary tract infection, influenza, ear wax, pneumonia

Table 3. Total incidence rates of intercurrent morbidity in the five disease cohorts and two reference groups.

	Total no. of episodes per 1000 patients per year		
	Single disease group	Reference group	Comorbidity group
Hypertension	1247	1776	1645
Chronic ischaemic heart disease	1794	–	2021
Diabetes mellitus	1618	1683	1755
Chronic respiratory disease	1784	–	2489
Osteoarthritis	1504	–	2619

and sinusitis. Comparison between the single disease and comorbidity subgroups showed a trend of higher incidence rates for these acute diseases in the comorbidity subgroups of patients with hypertension, diabetes and chronic ischaemic heart disease. The reference groups had lower incidence rates of these acute diseases than the corresponding single disease subgroups.

Discussion

The mean annual consultation rate for all patients in general practice in the Netherlands is 3.2.¹² The mean consultation rate for patients with a single chronic disease in this study varied from 4.2 to 5.7; for patients with more than one of these diseases it varied from 5.4 to 7.4. Having more than one of the studied chronic diseases results in more consultations per year than having only one. The consultation rates do not increase linearly with the number of chronic diseases. The consultation rates in the two reference groups were lower than the corresponding single disease subgroups with hypertension and diabetes. Assuming that patients with hypertension and diabetes visit their general practitioner two to four times a year for regular control of their chronic disease, the number of consultations for other reasons appears to be lower than for patients without a chronic disease. This finding confirms previous results for patients with hypertension.¹³ Patients with only hypertension or only diabetes probably present their other problems during their control visits whenever possible. The results presented here only indicate trends in consultation rates, since the confidence intervals of the means show considerable overlap between subgroups.

A morbidity study of the entire population of four general practices in the Netherlands found a total incidence rate of 1681 episodes of disease per 1000 patient years.¹⁰ The figures for intercurrent morbidity for the single disease subgroups and the reference groups in this study are of a similar magnitude. The total incidence rates were lower in the single disease subgroups than in the comorbidity subgroups. In patients with diabetes this difference was small but it was substantial in the cohorts of patients with chronic respiratory disease and with osteoarthritis.

The results presented here confirm an earlier finding that patients with chronic diseases also present 'common diseases' to the general practitioner.¹⁴ It could be argued that patients with chronic diseases would save their problems until the next control visit. This would lead to increased morbidity without increased consultation rates in patients with chronic diseases compared with those without chronic diseases, according to the phenomenon described by Berkson.⁴ However, patients with only hypertension or only diabetes consulted their general practitioner more frequently than the reference groups without these diseases, and did not present more intercurrent morbidity. On the contrary, patients without a chronic disease had higher rates of total intercurrent morbidity.

The incompleteness of the study database, representing only 70% of the consultations listed on the patient charts, could not be resolved satisfactorily. The fact that the participating general practitioners had to complete research forms for consultations of only some of their patients made it difficult for them to do so in all cases. This incompleteness results in an underestimation of the consultation rates, but correction by simply adding 30% in all groups would ignore possible differences between subgroups with regards to the completeness of their data. Therefore, the observed figures have been presented without correction. This seems to be warranted for two reasons. First, many of the missing consultations were for repeat prescriptions. Secondly, intercurrent morbidity was analysed at the level of episodes of disease, which decreased the importance of a missed consultation.

In interpreting the results it should be remembered that there is an overlap in the comorbidity subgroups from the different

cohorts: patients with more than one chronic disease are present in more than one comorbidity subgroup. Comorbidity is defined here as a combination of two or more of five chronic diseases. The proportion of all chronic diseases in a general practice population represented by the five studied diseases depends on the definition of chronicity used. If the summated prevalence of the diseases used for exclusion in the construction of the reference groups is taken as 100%, the five chronic diseases studied represent about 70% of this. Including other chronic diseases, like gastrointestinal and mental health problems, to form additional study cohorts would change the results obtained.

Patients with chronic diseases have high consultation rates which are even higher when these patients have more than one chronic disease. However, patients with only hypertension or only diabetes do not have high total incidence rates of intercurrent morbidity, suggesting that Berkson's phenomenon⁴ plays only a minor role in the results for these patients. Patients with chronic diseases also present common diseases to the general practitioner. This emphasizes the important role of general practitioners in the management of all diseases in a single patient.

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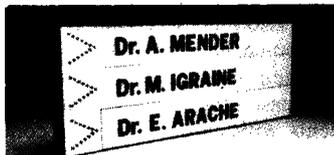
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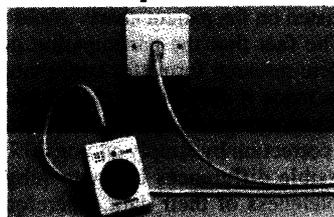
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