

The place of home visiting in family practice: a multicentre comparison between rural and urban physicians*

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SUMMARY

Background. *There is a worldwide trend towards a reduction in the number of house calls made by family physicians. House calls are still the essence of good family practice.*

Aim. *To investigate the reasons why patients asked for home visits, the therapeutic procedures used, the equipment needed, and the diagnostic conclusions, in urban and rural settings.*

Method. *The details of 10 consecutive home visits were recorded by each of 91 family doctors serving 125 000 patients in urban and rural regions of Israel. Seven hundred and ninety-nine usable records were analysed.*

Results. *No overall difference was found in home visiting rates between rural and urban physicians, but rural physicians made more out-of-hours visits than urban physicians ($P = 0.016$). Sixty-seven per cent of the visits were to the elderly; in urban practices, 53% visits were made to house-bound patients and 41% in rural practices ($P = 0.008$). The most common reason for requesting a home visit was for undefined general symptoms, but the doctor was usually able to arrive at a more specific diagnosis after the visit. Medication was administered directly in 41% of rural visits and in 24% of urban visits ($P < 0.001$). The commonest drugs used were antipyretics. Prescription pads were needed in 73% of urban visits and 48% of rural visits ($P < 0.001$). A stethoscope was needed in 83%, sphygmomanometer in 67%, electrocardiograph in 13%, and a blood glucose meter in 9% of home visits.*

Conclusions. *Home visiting in rural practices involves more active intervention on the part of the doctor, whereas, in urban practices, visits to chronically house-bound patients predominate. During the home visit, the patient's complaint is translated by the doctor into an organ-specific or a system-specific diagnosis, and in many cases support is provided for the caregiver. The equipment the doctor carries to home visits may not be the equipment most needed.*

Keywords: *primary care; practice organization; home visit.*

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Introduction

HOUSE calls, also known as home visiting, are an important part of general practice. In some countries home visits are more common than in others, varying from 15 per practitioner per year in the United States of America to 15 per day in Belgium and Russia.^{1,2} Even in North America, where there is relatively little of this activity, family physicians, as opposed to other types of primary care physicians, see home visiting as important.^{3,4}

There is a worldwide trend towards a decline in the number of house calls made by primary care physicians.⁵ In the past decade, house calls have been provided predominantly to those who are very sick and near the end of life.⁴ We believe that house calls are the essence of good family practice and should not disappear in the face of the growth in other home health care services.

The aim of this study was to investigate the process of home visiting — who asks for them, what is the diagnostic process involved, what sorts of outcome occur — and is examined in relation to the differences between urban and rural practice. In the light of recent changes in home visiting patterns in many parts of the world, this information is needed for doctors to plan rationally and to organize their practices appropriately, both in terms of the organization of time and of the equipment they need to have available.

Method

Ninety-one physicians, members of the Israel Network for Research in Family Medicine and practising in a variety of urban and rural settings, volunteered to complete a questionnaire before and after up to 10 consecutive home visits over a period of one month. Each participant also provided his/her personal and professional details and demographic characteristics for the patient population, including number of registered patients, percentage of elderly patients, and frequency of home visits.

The majority of urban doctors in Israel do not provide 24-hour care, in which case out-of-hours care is provided by a separate organization. Saturday is the day of rest, and the weekend break lasts from Friday midday to Sunday morning. The direct cost to patients for a home visit is low (average US\$7) relative to the cost of regular transport to the clinic, thus encouraging them to use this service. The doctors are compensated financially for home visits at a rate that makes it worth their while to go out on visits but not so profitable as to actively encourage them to seek more work of this kind. However, they are encouraged to initiate regular home visits to house-bound patients and they are paid extra for this.

Before each home visit, the following information was recorded by the doctor: day of the week, time of day, age and sex of the patient, known diagnoses, if the patient is house-bound or mobile, who initiated the visit (doctor, patient, relative, or other), and the reason given for requesting the visit. After the visit the following details were added: diagnosis, justification for home visit (in the subjective eyes of the visiting physician), procedures performed, diagnostic and therapeutic equipment needed, and medication required.

For the statistical analysis, descriptive statistics were used to

characterize the physician and participant patient population and to assess the process of home visits. Chi-squared tests were used to compare proportions, and the Student *t*-test was used to test differences between means. The Mann-Whitney U test was used to test differences between rank sums of variables when the distribution was not normal.

The SAS Catmod procedure was used to adjust for covariate effects that were suspected to influence home visit outcomes in rural and urban settings, such as age, sex, whether the patient was house-bound, and out-of-hours calls. Analyses of weighted least squares estimates or maximal likelihood estimates were used as necessary. Owing to incomplete data on some questionnaire forms, there is some loss of data in the sub-analyses.

Results

Ninety-one family physicians, serving about 125 000 patients, participated in this study and reported on 799 consecutive home visits. The average home visiting rate during the week preceding the survey month was reported as 4.5 ± 3.5 (standard deviation [SD]) (range = 0–17) visits per working week. There were no significant differences between rural and urban family physicians with regard to age, sex, experience, and size and age of patient population, nor was there a significant difference in their home visiting rates (Table 1). Five hundred and seventy-six (72.5%) visits were in the urban setting and 219 (27.5%) were in rural settlements (Table 2).

Timing

The visits were performed on all days of the week, with fewest on Saturdays (21; 2.6%). The vast majority of visits were during office hours, while only 14 (1.75%) were between 22:00 to 07:00. Overall, rural physicians made out-of-hours visits (Sunday to Thursday, 20:00 to 08:00; Friday, 14:00 to Sunday,

08:00) more frequently (15.1% versus 9.1%; $P = 0.016$) than urban physicians.

Requests

The patients themselves requested the home visit in 25.5% of the cases, but in most cases (57.4%) the request was made by partner, spouse, or others (nurse, social worker, or neighbour). In 17.1% of the cases it was the doctor who decided to make the home visit on his/her own initiative.

Patients

Twenty-six (3.25%) visits were for the paediatric population (aged 0 to 14 years), while 533 (67.4%) were for the elderly (65-years-old and above). The median age of the patients was 73 years, and 485 (60.7%) were females. Three hundred and eighty-one (47.7%) of the visits were to chronically house-bound patients, whose median age was 77 years. In the urban setting there were significantly more visits to chronically house-bound patients than in the rural setting.

Diagnoses

The patients' most common complaints fell into the ICPC's 'general' category (27.5%), including fever, general weakness, and indoor accidents and falls. Other common complaints included respiratory problems (25.4%), cardiovascular problems (10.9%), and musculoskeletal problems (11.6%).

The most common final diagnoses, as made by the physicians, were classified as respiratory (34.5%): mainly respiratory infections and exacerbations of chronic obstructive pulmonary disease or asthma. This was followed by circulatory problems (14%): mainly heart failure and stable ischaemic heart disease, and, less commonly, angina pectoris; and musculoskeletal problems (10.4%). Of the diagnoses, 5.1% were of psychological origin, mainly anxiety and depressive disorders. The proportion that

Table 1. Participant physicians' characteristics.

	Total	Urban	Rural
Number of physicians ^a	91	66	25
Sex			
Male	56	41	15
Female	29	21	8
Physician age (years, mean \pm SD ^b)	43.2 \pm 8.4	42.3 \pm 6.1	43.3 \pm 5.6
Seniority (years, mean \pm SD)	14.4 \pm 6.7	14.2 \pm 7.1	14.9 \pm 5.8
Registered population (mean \pm SD)	1448 \pm 337	1460 \pm 269	1414 \pm 524
Percentage of patients aged over 65 years			
Up to 10%	16%	15%	21%
Above 10%	84%	85%	79%
Weekly home visits rate (mean \pm SD)	4.5 \pm 3.5	4.2 \pm 2.9	5.2 \pm 4.6

^aSix physicians returned anonymous questionnaires; ^bSD = standard deviation.

Table 2. Home visits — patients' characteristics.

	Total	Urban	Rural	P-value ^a
Number of visits	799	576 (100%)	219 (100%)	
Percentage of male patients	37.6	35	43.8	0.025
Age (mean \pm SD)	67.4 \pm 20.6	68.5 \pm 19.9	64.7 \pm 22.3	0.02
Out-of-hours calls	10.8%	9.1%	15.1%	0.016
Visits to house-bound patients	47.7%	52.8%	41.4%	0.008
Visits initiated by the physician	17.1%	17.8%	16.9%	NS

^aP-value for difference between urban and rural home visits. NS = not significant.

remained classified as 'general complaints' fell to 11%.

Outcomes

In 58% of the visits, medications were prescribed, and in 28.4% medication was administered directly by the physician. The other outcomes of the visits are listed in Table 3. In 18% of visits, no action was undertaken at all, other than examination and counselling. The physician deemed the visit justified in 65% of the cases, equivocal in 15.8%, and unjustified in 19.2%. In rural home visits there was less medication prescribed overall, but drugs were administered directly by the doctor more often than in urban visits.

Equipment and medication

Table 4 lists the equipment the doctors deemed necessary. Rural physicians required more drugs and dressings but less administrative equipment in their home visiting bag. Medications that were deemed to be necessary in the visits are listed in Table 5.

Discussion

Home visits are a universal feature of family practice, sometimes performed often and sometimes rarely. Although the current study reports 4.5 visits per practitioner per week on average, it represents 91 doctors with a wide range of visiting frequencies.

The participating physicians worked in urban and rural areas; the proportion of elderly patients and the frequency of home visiting were comparable in the urban and in the rural practices. The group of physicians who volunteered to participate in this study may not be representative of all general practitioners (GPs) in Israel because they were recruited through a GP research network. For this reason, the focus of our study is on urban-rural differences rather than on the overall picture of home visiting.

Almost all the visits were in the context of salaried practice, and the situation in other countries and in other payment systems may be different. Aylin *et al*⁶ report that 10% of contacts with British GPs took place in patients' homes, at an average annual rate of 299 per 1000 patient years. In Israel, the overall consulting rate with GPs is higher than in Britain — eight per patient per year⁷ — and we may calculate from our observations that 2% of these consultations are in the patients' home, representing an average home visiting rate of approximately 150 per 1000 patient years.

The range of visiting frequency per practitioner in Britain may be calculated as between two and 20 per week,⁶ which is not dissimilar from our observations. A much lower frequency was reported in a nationwide study from the United States.⁴

The commonest diagnostic groups of respiratory, circulatory, musculoskeletal, and mental problems have been reported in other studies and were as we found in this study.^{4,6} Unlike the British study we did not use the patient population as the denom-

Table 3. Home visits — outcomes.

	Total	Urban	Rural	P-value ^a
Number of visits	799	576 (100%)	219 (100%)	
Medication prescription	463	62.5%	45.7%	<0.001
Medication administered	227	24%	40.6%	<0.001
By mouth	177	18.4%	32.4%	<0.001
By injection	64	6.6%	11.9%	0.035
Sent to emergency room	132	16.2%	16.9%	NS
By regular ambulance	23	2.6%	3.7%	NS
By intensive care ambulance	12	0.9%	3.2%	NS
Examination only	145	17.4%	20.1%	NS

^aP-value for difference between urban and rural home visits, adjusted to: age, sex, out-of-hours calls, and visits to house-bound patients. NS = not significant.

Table 4. Equipment deemed necessary in 799 home visits.

	Total	Urban	Rural	P-value ^a
Number of visits	799	576 (100%)	219 (100%)	
Diagnostic equipment				
Stethoscope	661	83.5%	81.7%	NS
Sphygmomanometer	548	71.3%	62.1%	NS
Otoscope/torch	313	40.0%	37.5%	NS
ECG	101	14.1%	9.2%	NS
Urine analysis sticks	98	11.6%	14.2%	NS
Glucose meter	73	9.6%	8.2%	NS
Therapeutic equipment				
Drugs	244	23.5%	39.3%	<0.005
Dressings	51	4%	12.3%	<0.001
Administrative equipment				
Medical chart	608	79%	68.5%	0.04
Prescription pad	529	73.2%	47.9%	<0.001
Referral letter	355	48%	35.6%	0.01
Laboratory form	204	28.7%	17.8%	0.02

^aP-value for difference between urban and rural home visits, adjusted to: age, sex, out-of-hours calls, and visits to house-bound patients. NS = not significant.

Table 5. Medication deemed necessary in 799 home visits (%).

	Total	Urban	Rural
Number of visits	799	576 (100)	219 (100)
Antipyretics	85 (10.6)	51 (8.9)	34 (15.5)
Analgesics	45 (5.6)	32 (5.6)	13 (5.9)
Antibiotics	41 (5.1)	29 (5.0)	12 (5.5)
Diuretics (furosamide)	30 (3.8)	24 (4.2)	6 (2.7)
Resuscitative drugs	21 (2.6)	8 (1.4)	13 (5.9)
Bronchodilators	18 (2.3)	11 (1.9)	7 (3.2)
Steroids	12 (1.5)	4 (0.7)	8 (3.6)
Anti-ischaemic (sublingual isosorbide dinitrate)	10 (1.2)	5 (0.8)	5 (2.3)
Oncology – supportive drugs	8 (1)	0 (0)	8 (3.6)
Others	58 (7.2)	40 (6.7)	18 (8.2)

inator but rather the individual doctor since we are interested primarily in the organizational aspects of this activity.

It is important to note some of the special features of the Israeli primary care system in order to interpret the findings of this study appropriately. The issue of the direct cost to the patient may be relevant; one British GP offered to send a taxi to bring the patient to the surgery at the doctor's expense.⁸ The rarity of visits performed at night and over the weekend is related to the operation of separate out-of-hours services in the community, and, at any rate, emergency night visits may be significantly different in content from daytime visits. Conversely, the high frequency of doctor-initiated visits is to be taken in the context of the financial incentives provided for this kind of work.⁹ Taking these considerations into account, there are some universal patterns found in the mixture of reasons and diagnoses that are almost similar throughout the Western world.

Doctor-initiated visits are of interest in themselves. They are a special case of the more general class of visits to the elderly and the house-bound. Almost half of all visits were to house-bound patients and two-thirds were to elderly patients. This reflects the extra workload that this population places on primary medical services. As hospital care and other residential care becomes increasingly expensive, the pressure to provide high-quality and easily accessible care at home may be anticipated to become progressively stronger.

The range of procedures reported in our series reflects something of the atmosphere of these visits — 8% of patients were given injections and 22% were given oral medication at the time of the visit, and 17% sent to the hospital. Equally revealing are the 18% of visits where no procedures at all were performed, nor was any prescription or referral given, but the whole content of the visit was the therapeutic consultation — in this respect there was no difference between urban and rural practice. Home visits are known to offer support to the caregiver as well as to the patient,¹⁰ and almost half of the visits in our series were ordered by the partner, child, or parent of the patient.

Home visits, like any medical consultation, may redefine the problem from the patient's initial supposition to the doctor's final diagnosis. Thus, whereas 27.5% of complaints were classified as 'general' at the time the visit was requested, only 11% remained in this category after the visit. The type of process involved included shifts of diagnostic groups such as 'psychological' from 2% before the visit to 5% after.

Despite the similarity of the urban and rural practices we studied in physician demographics and in the proportions of elderly patients, there was nonetheless a difference in the patterns of home visiting. The higher rate of rural out-of-hours visiting is derived from the 24-hour responsibility the rural physician has for the patients' care. The lower rate of rural visits to house-

bound patients may reflect the higher availability of other sources of care, such as the village nurse. The rural physicians tended to complete treatment themselves rather than refer patients to hospital, and this is reflected in the higher use of dressings and of drugs administered directly at the time of the home visit, either by mouth or by injection. Consequently, rural physicians had less need of prescription pads, laboratory forms, and referral letters. That this difference is a matter of style rather than reflecting a difference in the severity of the cases, may be determined from the similarity of the rates of true emergency referral to hospital by ambulance requested by the urban and the rural physicians. The contribution of simple counselling was dominant and similar in both settings.

Urban-rural differences have been noted in a multinational study that focused on home visiting for respiratory tract infections,¹¹ which suggested that the prime contribution to the gradual drop in the frequency of home visiting is the willingness of parents to bring sick children to the clinic rather than request a visit.

This study follows our earlier study¹² that focused on the equipment the doctor needs to take to a home visit. Our observations are clear: stethoscope, sphygmomanometer, and otoscope are the only standard equipment that was used in both urban and rural practice, together with the patient's medical chart¹³ and basic stationery. However, it should be noted how frequently the electrocardiograph, urinalysis sticks, and the glucometer were also needed. This implies that, when specific problems are anticipated at the time of going out on a particular home visit, the relevant equipment should be easily accessible and taken in addition to the basic set. This could be organized, for example, as a paediatric kit, a respiratory kit, a cardiac kit, and a resuscitation kit,¹⁴ each with both the extra equipment and the specific drugs that might be needed in these contexts.

The study of quantitative differences between urban and rural home visiting can only give a limited impression as to the actual processes involved in these two different environments. The quality of the relationship between GPs and their patients is of the utmost importance and may well show consistent differences between rural and urban practices. Similarly, ancillary health care workers, who also do domiciliary visits, must also be taken into account when judging the issue of home visits by GPs. These are aspects that are difficult to quantify, but are nonetheless central to the decision when to go on a home visit and whom to visit.

In conclusion, despite the decline in home visiting rates, this is still an essential part of a family physician's workload, and recognition of the components and characteristics of home visiting is important both from the aspect of the comprehensive care of the patient and the family, and for the appropriate organization of time and equipment.

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