

# The Canadian pediatrician: A dilemma in child health

Chandrakant P. Shah, M.B., M.R.C.P. (GLAS.), F.R.C.P.[C], Vancouver, B.C.

Today there is a national commitment with very broad support that views the best of health and excellence in health care as an emerging right to which all individuals can aspire.<sup>1</sup> In keeping with this concept, the Canadian government has recently introduced a comprehensive medicare program. With the increased participation of government in health care and with the rising cost of health services, it has become essential for health professionals to keep in mind the common goal of restraining the rate of increase in health service costs while maintaining and improving the quality of care.<sup>2</sup>

The increasing trend towards specialization among the medical profession and the existence of fragmented health care provide evidence to support the need for primary, continuing and comprehensive care for all members of the family.<sup>3</sup> There is a great deal of debate about the ideal persons to provide such care. They may include general practitioners, teams of specialists, nurses, and allied health professionals. However, the seeming disparity between the medical training of health personnel and what is required in actual practice may not ensure the effective utilization of resources. Related to this topic is the apparent shortage of medical manpower which has gained much attention in recent years.<sup>2, 4</sup> Pediatricians constitute only one component of total health care. Although in the United States pediatricians function mainly as primary care physicians and in Great Britain as consultants, in Canada their position seems to lie somewhere between the American and British models. This paper reports demographic data concerning Canadian pediatricians and describes certain characteristics of their practices in order to supply knowledge of this field hitherto incomplete.<sup>5, 6</sup>

## Methodology

### Sources of data

1. A list of pediatricians was obtained from the College of Physicians and Surgeons in each province as of 1968.

2. The childhood population as of 1966 for different towns, cities, metropolitan areas or provinces was obtained from the Dominion Bureau of Statistics.

3. Certain demographic information and details of the type of practice, viz. primary care, referral or mixed practice, were obtained by a first questionnaire survey in 1968-69 from all the pediatricians across Canada. This questionnaire was part of another survey. The detailed methodology of the latter has been described.<sup>6</sup>

4. From the above survey, a 25% sample of respondent pediatricians, who were engaged in primary care, referral or mixed practice, was drawn by means of random numbers. They were requested to complete a second questionnaire for each patient they had seen over a typical 24-hour period. They were asked to record the age and the sex of the child; the place of visit; the type of visit, viz. initial or follow-up; the reason for the visit, viz. primary care, consultation, continuing care for a complicated problem

referred by a family physician; if a consultation, then the reason for the consultation; the diagnosis of the patient's condition; and the disposal pattern of the patient. Diagnoses were coded by I.C.D.A. classification.<sup>7</sup> Depending on the province, questionnaires were sent either in French or in English. To obtain a proper response, non-respondents received three such questionnaires. This part of the survey was conducted during the period 1969-70.

## Definitions

The number of children per pediatrician is the ratio of the total number of childhood population 0-14 years in a community (whether it be town, city or metropolitan area) obtained through the D.B.S., divided by the number of pediatricians engaged in the practice of child health in that community.

## Results

### Location of pediatricians and childhood population in Canada

The distribution of pediatricians is shown in Fig. 1. Most of the pediatricians are located in the southern part of the country, the greatest concentration being around the southeastern region. The density of the childhood population in communities with a local pediatrician is seen in Fig. 2. Eighty-six per cent of the children in Prince Edward Island, compared to 32% of the children in Ontario, are living in a community without a local pediatrician. The number of children per pediatrician in the immediate community is seen in Fig. 3. In this regard, British Columbia seems to be in a favourable position compared to other provinces.

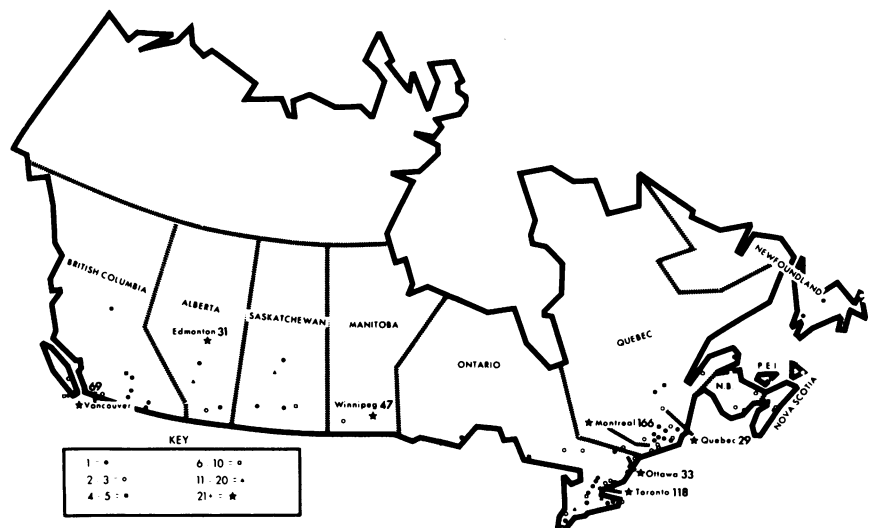


FIG. 1—Distribution of pediatricians in Canada (1968). Data obtained from Provincial Registration.

From CHANDRAKANT P. SHAH, M.B., M.R.C.P. (GLAS.), F.R.C.P.[C], Department of Pediatrics, University of British Columbia, Medical Director, Children's Aid Society of Vancouver, Vancouver, B.C. Reprint requests to: Dr. C. P. Shah, Children's Aid Society of Vancouver, 305—1541 West Broadway, Vancouver 9, B.C.

### Response rate

The response rate to the first questionnaire is shown in Table I. The overall response rate was 73%.

### Characteristics of pediatricians and their practices

Certain characteristics of the pediatricians and their practices are set forth in Table II. About 50% of the pediatricians were in the age group 41 to 60 years, approximately 81% were trained principally in North America, nearly 45% had been in practice for less than 10 years, and less than 23% were engaged in referral practice only.

The response rate to the second questionnaire is given in Table III. The overall response rate was about 61%.

### Patient population served by pediatricians

Certain characteristics of the patients

and patient visits are shown in Table IV. Fifty-six per cent of the patients were under the age of 5 years. Pediatrics

**Table I**  
Response rate to first questionnaire

Province	Pediatricians		
	Sur-veyed	Respon-ded	%
British Columbia	90	73	81.1
Alberta	50	39	78.0
Saskatchewan	23	18	78.3
Manitoba	49	42	85.7
Ontario	283	198	70.0
Quebec	249	168	67.5
Nova Scotia	19	17	89.5
New Brunswick	10	8	80.0
Prince Edward Island	2	2	100.0
Newfoundland	15	13	87.0
Total	790	578	73.2

**Table II**  
Characteristics of pediatricians and their practices

	No.	%
Total	578	100.0
1. Age (years)		
30 or under	9	1.6
31-40	209	36.2
41-50	209	36.2
51-60	78	13.5
Over 60	48	8.3
No information	25	4.3
2. Sex		
Male	501	86.7
Female	69	11.9
No information	8	1.4
3. Distribution by country of postgraduation		
Canada and/or U.S.A.	470	81.3
United Kingdom	26	4.5
Canada and/or U.S.A. and United Kingdom	59	10.2
Other	6	1.0
No information	17	2.9
4. No. of years in practice		
1-10	257	44.5
11-20	198	34.3
21-30	52	9.0
Over 30	34	5.9
No information	37	6.4
5. Type of practice		
Mainly referral	132	22.8*
Mainly primary care	163	28.2
Mixed	241	41.7
Other	22	3.8
No information	20	3.5
6. Nature of work		
Full-time practice	353	61.1
Part-time practice	65	11.2
Full-time with university	97	16.8
Full-time with other agency	41	7.1
No information	22	3.8
7. Area of practice		
Mainly higher socio-economic area	46	8.0
Mainly middle socio-economic area	273	47.2
Mainly lower socio-economic area	39	6.7
Mixed socioeconomic area	192	33.2
No information	28	4.8

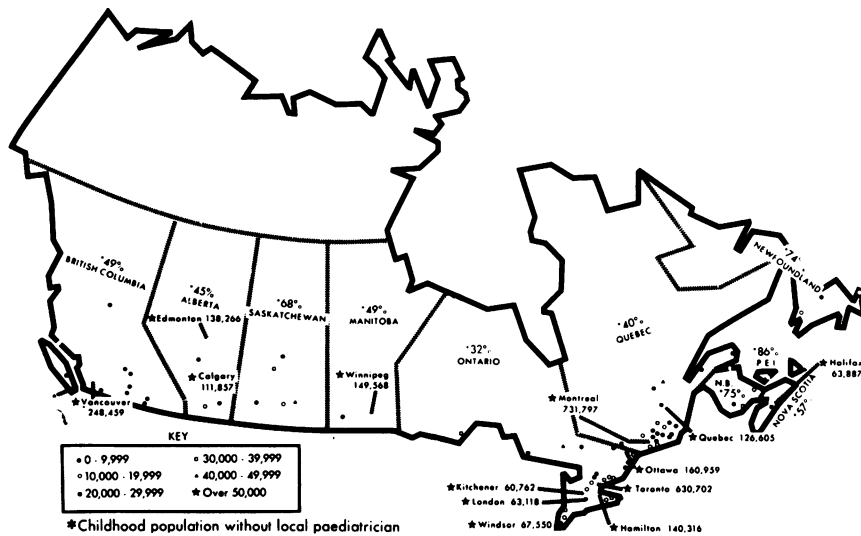


FIG. 2—Density of childhood population in community with pediatrician. Data based on census of 1966 (Dominion Bureau of Statistics).

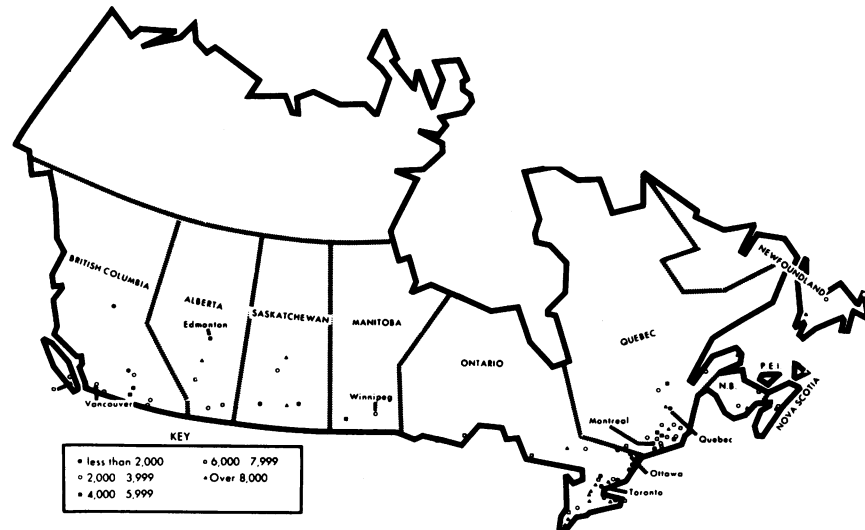


FIG. 3—Number of children per pediatrician in immediate community. Data based on census of 1966 (D.B.S.).

\*62% of these are employed by university or other agencies.

**Table III**  
Response rate for second questionnaire

Type of practice	Original respondents		Sample size		Respondents		Response rate (%)
	No.	%	No.	%	No.	%	
Primary	163	28.2	44	31.4	28	32.6	63.6
Referral	132	22.8	29	20.7	16	18.6	55.2
Mixed	241	41.7	67	47.9	42	48.8	62.7
Other*	22	3.8	0	0.0	0	0.0	—
No information	20	3.5	0	0.0	0	0.0	—
Total	578	100.0	140	100.0	86	100.0	61.4

\*Not involved in patient care.

**Table IV**  
Certain characteristics of patients and patient visits

	Referral		Primary		Mixed		Total	
	No.	%	No.	%	No.	%	No.	%
1. Total patients	168	100.0	747	100.0	1268	100.0	2183	100.0
2. Age group (years)								
0-4	96	57.1	367	51.8	741	58.4	1224	56.1
5-9	34	20.2	190	25.4	317	25.0	541	24.8
10-14	20	11.9	111	14.9	139	11.0	270	12.4
15 or older	13	7.7	33	4.4	46	3.6	92	4.2
No information	5	3.0	26	3.5	25	2.0	56	2.6
3. Sex								
Male	97	57.7	417	55.8	670	52.8	1184	54.2
Female	71	42.3	319	42.7	563	44.4	953	43.7
No information	0	0.0	11	1.5	35	2.8	46	2.1
4. Place of visit								
Office	69	41.1	544	72.8	813	64.0	1426	65.3
Emergency	4	2.4	10	1.3	45	3.6	59	2.7
Hospital	94	56.0	133	17.8	359	28.3	586	26.8
Home	0	0.0	45	6.0	16	1.3	61	2.8
No information	1	0.6	15	2.0	35	2.8	51	2.3
5. Type of visit								
Initial	37	22.0	247	33.1	509	40.1	793	36.3
Follow-up	106	63.1	419	56.1	682	53.8	1207	55.3
No information	25	14.9	81	10.8	77	6.1	183	8.4
6. Reason for visit								
Primary care	15	8.9	545	73.0	787	62.1	1347	61.7
Consultation	67	39.9	46	6.2	151	11.9	264	12.1
Continuing care for complicated problem; referred by G.P.	70	41.7	30	4.0	135	10.6	235	10.8
No information	16	9.5	126	16.9	195	15.4	337	15.4
7. Reason for consultation								
Diagnostic problem	22	32.8	14	30.4	62	41.1	98	37.1
Management problem	19	28.4	8	17.4	41	27.2	68	25.8
Both	25	37.3	13	28.3	29	19.2	67	25.4
No information	1	1.5	11	23.9	19	12.6	31	11.7
Total consultations	67	100.0	46	100.0	151	100.0	264	100.0
8. Average No. of patients seen daily								
	10.5		26.7		30.2		25.4	

tricians giving primary care and in mixed practice saw over two-thirds of their patients in the office, compared to only 41% of the patients seen in referral practice. Nearly 41% of the patients in referral practices were seen for continuing care for complicated problems, as opposed to only 10% of the patients in mixed practices.

The diagnostic profile of the patients is seen in Table V. Diseases of the respiratory tract, of the gastrointestinal system, infectious disease and newborn and well-child care constituted the main reasons for patient visits to pediatricians practising primary care or engaged in mixed practice. The pediatricians in referral practice were generally consulted for children with cardiac, hematological, respiratory, newborn and neurological problems.

The recommendation pattern of patients seen by the pediatricians is shown in Table VI. Almost two-thirds of all the patients needed medical treatment, while about one-fifth of the patients in all groups needed only counselling. Approximately 25% of the patients seen by pediatricians engaged in primary care required either immunization or desensitization.

### Discussion

In recent years there has been a greater tendency for the population to migrate to urban areas, a trend which seems to be even more marked among the professionals. It is projected that, by 1980, 80% of the Canadian population will be living in metropolitan areas.<sup>8</sup> On examining the proportion of pediatricians to childhood population, it becomes evident that there is a rather striking maldistribution of pediatricians. This supports the findings of Banister.<sup>5</sup> Will this maldistribution be adjusted as time goes on?

It is interesting to find that about 70% of all pediatricians are engaged, to some extent, in the delivery of primary care. Recent reports on the cost of the delivery of health services state that it costs \$71,000 to train a general practitioner, as opposed to \$125,000 to train a specialist.<sup>2</sup> If this is so, then several pertinent questions come to mind. Are we utilizing our health manpower effectively, efficiently and economically? Is the primary care provided by pediatricians superior to that provided by general practitioners? If pediatricians and other specialists are engaged in primary care, then why is this so? There seems to be a great need for research

in the delivery of health care, the quality of health care and the financing of care. Will our professionals meet such a challenge?

Of the pediatricians engaged in consulting practice, about two-thirds were affiliated with a university, leaving only a small segment of practising pediatricians primarily doing referral work at the community level. Most of the pediatricians associated with a university were also subspecialists. With this in mind, on reviewing the patient's place of visit, it was found that about three-quarters of the patients were seen in the office, the majority for primary care. The diagnostic profile of the patients also revealed that they were seen mainly for respiratory, gastrointestinal and skin disease, well child care, newborn care and annual physical examinations. Most patients were managed at the office level. In view of the above, several questions about pediatric training could be raised. If the majority of pediatricians are going to be engaged in the delivery of primary care to children, should we modify our training program? Should we have two years of training for pediatricians who are going to be engaged only in the delivery of primary care, rather than the present four-year training program?

The majority of the present training programs are hospital-based without much emphasis on ambulatory medicine. In a recent survey by Shah et al<sup>6</sup> covering pediatric training across Canada, pediatricians pointed out the deficiencies of a purely hospital-based curriculum. They not only endorsed more trainee involvement in ambulatory medicine, but also emphasized the greater utilization of the community's medical, social and educational resources in pediatric training. With the revival of family medicine and the emergence of new health personnel such as nurse practitioners and physicians' assistants, it may be pointless to use today's methods as a model for tomorrow's practices. Careful planning is a prerequisite for future comprehensive child health care. Now is the time for physicians to seize the initiative!

### Summary

This study was undertaken to report demographic data concerning pediatricians and to describe certain characteristics of their practices. There appeared to be a maldistribution of pediatricians throughout the country.

Seventy per cent of Canadian pediatricians were engaged, to some extent, in primary care. There is wide divergence between pediatric training and actual practice.

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**Table V Diagnostic profile\* of patients seen by pediatricians**

	Referral		Primary		Mixed		Total	
	No.	%	No.	%	No.	%	No.	%
Respiratory disease	21	12.5	146	19.5	243	19.2	410	18.8
Gastroenterology	7	4.2	58	7.8	84	6.6	149	6.8
Ear, nose and throat	6	3.6	41	5.5	87	6.9	134	6.1
Newborn	22	13.1	22	3.0	87	6.9	131	6.0
Infectious diseases	4	2.4	40	5.4	53	4.2	97	4.4
Neurology	15	8.9	19	2.5	58	4.6	92	4.2
Genitourinary	2	1.2	25	3.4	60	4.7	87	4.0
Dermatology	2	1.2	24	3.2	53	4.2	79	3.6
Accidents	2	1.2	24	3.2	45	3.6	71	3.3
Allergy	6	3.6	26	3.5	35	2.8	67	3.1
Endocrinology, nutrition and metabolism	9	5.4	18	2.4	38	3.0	65	3.0
Cardiology	24	14.3	11	1.5	20	1.6	55	2.5
Hematology	14	8.3	15	2.0	21	1.7	50	2.3
Well child care	2	1.2	89	11.9	98	7.7	189	8.7
Annual examination	0	0.0	47	6.3	89	7.0	136	6.2
Other	32	19.0	142	19.0	197	15.5	371	17.0
Total	168	100.0	747	100.0	1268	100.0	2183	100.0

\*I.C.D.A. classification

**Table VI Recommendation patterns of patients seen by pediatricians**

	Primary		Referral		Mixed		Total	
	No.	%	No.	%	No.	%	No.	%
Total patients	747	100.0	168	100.0	1268	100.0	2183	100.0
Counselling only	154	20.6	39	23.2	241	19.0	434	19.9
Medical treatment	478	64.0	134	79.8	936	73.8	1548	70.9
Immunization	124	16.6	0	0.0	157	12.4	281	12.9
Desensitization	61	8.2	3	1.8	58	4.6	122	5.6
Referred to:								
Medical sub-specialist	35	4.7	19	11.3	51	4.0	105	4.8
Surgeon	26	3.5	12	7.1	48	3.8	86	3.9
Paramedical professional	11	1.5	8	4.8	10	0.8	29	1.3
Reason for referral:								
Diagnostic problem	9	13.9	5	13.5	24	22.2	38	18.1
Management problem	19	29.2	4	10.8	38	35.2	61	29.0
Both	15	23.1	6	16.2	14	13.0	35	16.7
Other	0	0.0	0	0.0	1	0.9	1	0.5
No information	22	33.9	22	59.5	31	28.7	75	35.7
Total children referred	65	100.0	37	22.0	108	100.0	210	100.0

would be assigned a score of six. If other factors such as elevated blood sugar levels raised his total score even higher, then a major review of his whole program would be required.

DR. IRVIN: I see that the simple presence of urinary ketones in a maturity-onset (*Type A*) diabetic receives a score of seven.

DR. MAILLOUX: One does not expect the maturity-onset diabetic to show ketones unless there is some major problem. However, in diabetics belonging to Class B, where one could accept some spill of ketones, we have decided that if more than 10% of urine tests show ketones you would be well advised to review the patient's whole program. In regard to the patient's weight, we apply the same standards to both classes. If the patient is within 10% of his ideal weight he is assigned a score of zero. When the patient is outside of that range (most often above the ideal weight) but is moving toward his ideal at a reasonable rate of 1 to 2 lbs. a week he receives a low score of one. If the rate is either too slow or too fast we assign a higher score of three. The purpose of this is to keep before the physician and the patient the need to achieve an approximately ideal weight.

DR. SPAULDING: Let's accept the chart as it is. For the purpose of further discussion, who should be filling out the chart?

DR. FLETT: Our own feeling was that this scoring system would be used by the team and that most often the nurse on that team would be measuring the actual parameters and scoring the patient.

DR. MACLACHLAN: I believe that the most important member of the team is, in fact, the patient. Why couldn't the patient do his own scoring?

DR. SPAULDING: Yes, I would see this as an excellent way of implicating the patient in his own program. It becomes another tool in education, and it allows the patient to assume more responsibility for his care. I can foresee the patient keeping his own record of urine testing, receiving the results of his blood sugar tests from the laboratory, weighing himself, doing his own scoring, filling in all particulars on a computer card and sending it to his monitoring centre. He would then receive a reply as to whether he

needs to be seen by his health care team or whether other adjustments are required.

DR. MCFARLANE: That's medicine of the future today! While there are some patients who would be unable to comply with such a program, many would probably welcome that kind of involvement in their own management.

DR. SPAULDING: I feel that by formalizing the recording of information, shifting some of the responsibility to the patient by requiring a report and then rewarding him with feedback we can greatly improve the overall management. I feel that this type of definition of control parameters is an excellent idea and would encourage you to incorporate it in your management of diabetics, keeping in mind that it will require revision as experience is accumulated.

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