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One-day general practice morbidity survey in Sri Lanka

Nandani de Silva and Kumara Mendis

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Background. National morbidity surveys provide valuable data for monitoring the health needs of populations, health policy planning and design of medical curricula. In order to meet a long-standing need for such information in Sri Lanka, a nationwide general practice morbidity survey was conducted for the first time in 1996.

Objectives. We aimed to identify people's needs by determining the reasons for encounter or the demand for care with GPs/family physicians, to illustrate the pattern of morbidity in general practice and to determine the average daily workload of GPs in Sri Lanka.

Method. A random sample of 75 GPs were requested to complete a Practitioner Profile Questionnaire (PPQ) and to record on an encounter form (EF) the reason/s for encounter (RFE) and problems managed during all consultations on 4 July. Central coding of the RFEs and problems defined was done using the International Classification of Primary Care (ICPC).

Results. Forty GPs (53.3%) completed the PPQ, while the EF received a response from 34 (43.3%). The GP profile showed a male to female ratio of 7:1, none below 35 years and none qualified after 1984. The average daily workload was 74. It was estimated that GPs handle at least 26.5% of the primary care morbidity. Children accounted for 32% of consultations. There was a significantly higher proportion of children ($P < 0.0001$) and of the elderly ($P < 0.05$) in the consulting population compared with the general population. In 2068 encounters, 3448 RFEs and 2087 problems had been recorded. Respiratory and General chapters included 55% of the RFEs. By ICPC rubrics, 27 of the top thirty RFEs were for common symptoms. In addition to acute illnesses, asthma, hypertension and diabetes as well as preventive care activities were within the top 12 problems managed.

Conclusions. The fact that many common illnesses, chronic diseases and preventive treatments are dealt with in general practice shows the necessity to include family medicine in the undergraduate curriculum of all medical schools. Undergraduate and postgraduate training in family medicine should concentrate more on child care and care of the elderly. Suitable incentives may be necessary to motivate younger doctors to become GPs to meet the medical care needs of the community.

Keywords. Classification, general practice/family practice, health care, medical education, morbidity.

Introduction

The working paper by WHO and WONCA in 1994, "Making medical practice and education more relevant to people's needs: the contribution of the family doctor", made recommendations on the changes necessary in medical practice and education to meet people's needs.[1] In order to implement these changes, accurate data on primary care and general practice morbidity should be available to the health policy planners in each country.

The National Ambulatory Medical Care Survey conducted annually in the USA reports the most common reasons for office visits to physicians.[2] National morbidity surveys have been carried out at regular intervals in the UK, Australia, Singapore and Hong Kong[3–8] while in The Netherlands and France[9,10] such

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Department of Community and Family Medicine, Faculty of Medicine, University of Kelaniya, Sri Lanka. Correspondence to Dr Nandani de Silva at 117/33 Peiris Terrace, Kalubowila, Dehiwela, Sri Lanka.

data are collected through computerized information systems. The information thus obtained has provided valuable data for monitoring the health needs of populations, health care planning and design of medical curricula.[2–10]

In Sri Lanka, owing to the scarcity of such information, a long-standing need exists for research on which policy decisions could be made to meet the medical care needs of society. Sri Lanka is an island situated 35 kilometres off the southern coast of India and has a land area of 65 454 square kilometres. In 1995, the estimated mid-year population was 18.1 million and the doctor to patient ratio approximately 1:4450.[11]

Primary medical care is available free of charge throughout patient departments of state hospitals, while family physicians in the private sector practice on a fee-for-service basis. The exact number of private sector family physicians is not known, as some government doctors also engage in private general practice outside working hours. According to a survey in 1987, the estimated number of full-time GPs was 550.[12]

Medical students in Sri Lanka undergo most of their training in tertiary care hospitals. Family medicine/general practice remains a relatively neglected area in medical education as it enjoys departmental status in only two of the six medical schools.

In Sri Lanka, statistics are available on in-patient morbidity but no system exists for routine collection of out-patient morbidity data. Of the three primary care morbidity surveys conducted in the government sector, the first was a 1-day census of out-patient morbidity as part of a Health Manpower study in 1973, and the other two were limited by region or institution.[13,14] Research on general practice morbidity has been confined to studies in solo practices reported by individual family physicians.[15–18]

In Sri Lanka, no surveys have been done on symptom occurrence in the population or the people's health needs as perceived by them. Since symptoms do not always lead to a demand for care owing to many other factors such as psychological and family factors, socio-economic factors, access to medical care, etc.,[19] perceived health needs could only be indirectly determined by carrying out surveys on the reasons why patients consult doctors.

In addition, the problems managed by family physicians would give an indication of the pattern of morbidity in general practice. The profile of GPs in Sri Lanka and an estimate of the workload of GPs would be useful for health administrators when they decide on allocation of health manpower to meet people's needs.

With the aim of collecting such information, a nationwide general practice morbidity survey was carried out for the first time in Sri Lanka, by us in 1996.

Objectives

We aimed:

(i) to identify people's needs by determining the reasons for encounter or the demand for care with GPs/family physicians;

(ii) to illustrate the pattern of morbidity in general practice; and

(iii) to determine the average daily workload of GPs in Sri Lanka.

Materials and method

The study design is descriptive and cross-sectional. Seventy-five random numbers were drawn from the members list of the College of General Practitioners of Sri Lanka, which had a total of 279 members. The GPs recorded the details of consecutive doctor–patient encounters on 4 July 1996. The International Classification of Primary Care (ICPC) was used to code the data according to reason/s for encounter and the problems defined by the GPs at each encounter.[20]

Research instruments

The encounter form (EF). This was designed to make recording as easy as possible for a busy GP and to ensure high-quality data collection. The GP was expected to record consecutive doctor–patient encounters and to indicate the total number of patients seen on that day. The GP had to enter the patient's age, sex, type of visit (clinic, home or night call) reason for encounter (RFE), status of the illness episode (initial or follow-up) and the problem definition (PD) or diagnosis.

A Practitioner Profile Questionnaire (PPQ). This was used to obtain a few basic items of information about the GPs participating in the study. Each GP was identified by a code which was known only to us. The GPs were assured of confidentiality.

The Instruction Sheet. This was sent to the GPs and gave detailed instructions on how to record the data. The instructions were based on the rules for recording of reason/s for encounter and diagnoses as specified in the ICPC.[20]

A pilot study. This was carried out to assess the validity and reliability of the research instruments, by requesting a convenience sample of 10 GPs to complete the forms for 10 consecutive patients. Prior to recording of actual patients, the GP was expected to complete the form for three written vignettes describing doctor–patient encounters. The validity and reliability of recording of data was to be assessed by the completion of the written vignettes in an identical manner by the GPs.

Main survey

The 75 GPs in the random sample were invited to participate. Those willing to take part were requested to complete the Practitioner Profile Questionnaire (PPQ) and the Encounter Form (EF) with the written vignette as in the pilot study. This was to ensure the validity and the reliability of the recording of data by the GPs. Of the 75 GPs in the random sample, 40 (53.3%) returned the PPQ and the EF. Those willing to take part were sent a research pack of encounter forms, an Instruction Sheet and a stamped addressed envelope (SAE).

The day for data collection was Thursday 4 July, which was a working day for all the GPs who had agreed to participate. If for any unavoidable reason they were unable to collect the data on the specific day, they were requested to record the data on a day as close as possible to this date, within the first week of July. The month of July was ideal as the weather was normal and there was no 'flu epidemic or any other epidemic of disease at the time.

Thirty-four out of the 40 doctors who agreed to participate returned the completed encounter forms, giving a final participation rate of 43.3%.

Data entry and analysis

Data entry and analysis of the PPQ was performed using Epi Info 6.02. The encounter data were entered by us (central coding) using the Windows database package Microsoft Access 2.0. During data entry, the entry form in access allowed free text searching of the ICPC, which was in a separate database. Central coding was done by us using the RFE mode and the Diagnostic mode of the ICPC. When any coding problems were encountered by us, the most appropriate code to use was decided after discussion. The data entry form also allowed the addition of new rubrics at the fourth digit level within the framework of the ICPC. Data analysis was performed using both Access and Epi Info.

Results

Characteristics of the GPs participating in the survey

A summary of the characteristics of the GPs participating in the survey is presented in Table 1.

Workload of a GP. The average daily workload of the GPs participating in the survey was 74. Based on the assumption that there are 550 GPs in Sri Lanka[12] and that a GP works on the average 26 days in a month, it could be estimated that the total number of general practice consultations amounts to 12.7 million per year. The total number of out-patient attendances as reported in the Annual Health Bulletin, 1994 is 35.3 million.[14] From the available data therefore, it could be estimated that GPs in Sri Lanka handle 26.5% of the total documented primary care consultations per year. However, this is likely to be an underestimate because the total number of full-time and part-time GPs in Sri Lanka in 1996 is likely to be much more.

Morbidity data recorded by the GPs. A total of 2068 encounters had been recorded by the GPs. The age distribution of patients attending on the day of data collection is shown in Table 2. Children younger than 12 years accounted for 32.1% of all general practice consultations. The proportion of children in the consulting population was higher than that in the general population (24% according to national statistics)[21] and this difference was very highly significant on statistical testing ($P < 0.0001$). The proportion of the elderly in the consulting population was also significantly higher than that in the general population ($P < 0.05$).

With regard to the sex distribution, there were 53.0% females and 45.7% males, and the sex had not been recorded in 1.3% of cases. The distribution by age and sex showed that the proportion of males and females consulting in the different age groups was similar in all age groups other than that of children under 12 years, in which more male children than female children had been taken to the doctor ($P < 0.001$) and among adults aged 20–50 years ($P < 0.01$), where the sex distribution was reversed (Figure 1).

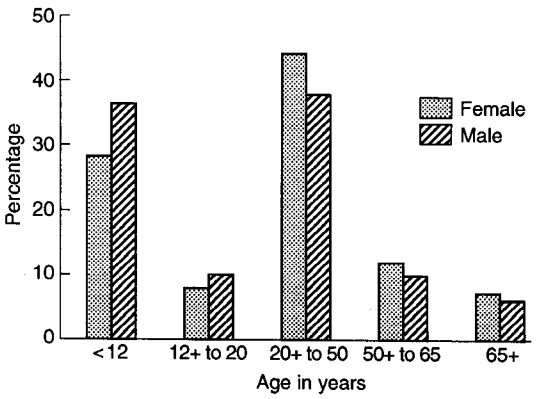

FIGURE 1 *Age–sex distribution of the patients*

Home visits were rare, as only one home visit had been done on the day of the survey. More consultations were initial visits (72.5%) than were follow-up visits (26.3%), while missing data accounted for the remainder.

In the course of 2068 consultations, 3448 RFEs had been recorded, giving a rate of 166 per 100 encounters. The number of problems managed in the course of 2068 consultations amounted to 2087. The distribution of RFEs and PD by ICPC chapter and individual rubrics are shown in Tables 3–6.

TABLE 1 *Profile of GPs (n = 40)*

Characteristic	Percentage
(1) Practice area by province	
Western	80.0
North-Western	7.5
Central	7.5
Southern	5.0
Other five	0.0
(2) Sex	
Male	87.5
Female	12.5
(3) Age	
35–54 years	55
55 or more	45
(4) Year of graduation	
1945–1954	10.0
1955–1964	17.5
1965–1974	50.0
1975–1984	22.5
(5) Postgraduate qualifications	
With	55
Without	45
(6) Number of years in practice	
<5	5.0
6–10	5.0
11–20	50.0
21–30	25.0
31–40	12.5
>45	2.5
(7) Type of practice	
Solo	70.0
Assistant +	15.0
Partner +	10.0
Group	5.0
(8) Average number of patients seen per day	
<20	2.5
20–50	52.5
>50	45.0
(9) Working hours per day	
<6	22.0
6–8	32.5
≥8	45.5

Discussion

Strengths and limitations of the study

The members list of the College of GPs does not represent all GPs in Sri Lanka but as it is the only GP database available, this list was used to obtain a random sample. A random sample helped to make the sample as representative as possible and 75 numbers were taken, as it was expected that only about 50% would respond.

The response rate in this survey was good, as 53.3% of those who were invited agreed to participate. Of these, 85% recorded the data for the study, giving a final participation rate of 43.3%. This is a reasonably good response rate from a random sample of GPs and compares well with similar surveys carried out in other countries.[4–7]

Other than with regard to practice area, no data were available on the non-responders, so whether they differed in any other way from those who responded could not be analysed in this survey. However, it has been reported in a study by the University of Sydney in Australia that low response rates in large surveys of a random sample of GPs are viable and produce little bias.[22]

A number of factors influence the accuracy of morbidity data. Previous studies have shown that most errors occur at the point of practitioner selection of a label to describe the RFE and PD, while data entry and coding account for only 5% of data error.[4] In our study, errors at the point of recording of data by the GPs was overcome by using written vignettes as a pre-test for the GPs participating in the pilot study as well as the main survey. It was found that all the GPs who responded to the pre-test had entered the RFE and the Diagnosis (PD) for the written vignettes in an identical manner. Central coding helped to minimize errors at the point of data entry and coding of data.

GP profile. The distribution by practice area revealed that the responders were from only four of the nine provinces. Eighty per cent of the GPs were from the

TABLE 2 *Age distribution of patients (n = 2050)*

Age group		Morbidity survey %	Demographic survey %
Infants and children[a]	<12 years	32.1	24.0
Teenager	12+ to 20 years	8.8	15.2
Adult	20+ to 50 years	41.5	44.9
Middle-aged	50+ to 65 years	10.9	10.4
Old age[b]	65 years and over	6.7	5.5

The proportions of children under 12 years and the elderly in the consulting population were significantly higher than in the general population (Demographic survey 1994, Department of Census and Statistics).
[a] $P < 0.0001$.
[b] $P < 0.05$.

TABLE 3 *Reason for Encounter (RFE) by ICPC chapter (Total RFE = 3448)*

ICPC chapter	%
Respiratory	31.6
General and unspecified	23.4
Digestive	11.8
Musculoskeletal	8.0
Skin	7.1
Neurological	6.6
Female genital (including breast)	1.8
Circulatory	1.8
Pregnancy, child-bearing and family planning	1.6
Endocrine, metabolic and nutritional	1.6
Ear	1.4
Urological	1.1
Treatment, procedures and medication	0.6
Diagnostic and preventive	0.6
Psychological	0.5
Male genital	0.3
Referral and other reasons for encounter	0.1

TABLE 4 *Problem Definition (PD) by ICPC chapter (Total PD =2087)*

ICPC chapter	%
Respiratory	28.1
General and unspecified	16.5
Skin	14.5
Digestive	11.7
Musculoskeletal	6.2
Circulatory	4.5
Pregnancy, child-bearing and family planning	3.9
Endocrine, metabolic and nutritional	2.2
Ear	2.1
Blood and blood-forming organs and lymphatics	1.9
Psychological	1.9
Female genital (including breast)	1.8
Neurological	1.7
Urological	1.7
Male genital	0.6
Treatment, procedures and medication	0.3
Diagnostic and preventive	0.2
Referral and other reasons for encounter	0.1
Social	0.0

TABLE 5 *Reason for Encounter (RFE) by ICPC rubrics (Total RFE = 3448)*

ICPC rubric name	ICPC Code	%
(1) Fever	A03	16.8
(2) Cough	R05	16.7
(3) Sneezing/nasal congestion/runny nose	R07	6.2
(4) Headache	NO1	4.8
(5) Short of breath, dyspnea, breathlessness	RO2	3.3
(6) Wheezing	RO3	2.9
(7) Diarrhoea	D11	2.4
(8) Pain—generalized/unspecified	A01	1.9
(9) Vomiting (excluding pregnant W06)	D10	1.9
(10) Abdominal pain—other localized	D06	1.7
(11) Wound	S29.01[a]	1.7
(12) Redness/erythema/rash localized	S06	1.6
(13) Back symptoms/complaints	L02	1.5
(14) Pruritus, skin itching exc. Ano	SO2	1.4
(15) Abdominal pain cramps general	D01	1.4
(16) Chest pain general	A29.01[a]	1.3
(17) Sore throat	R21.01[a]	1.2
(18) Foot and toe symptoms/comp	L17	1.2
(19) Blood pressure check	K39.01[a]	1.2
(20) Leg/thigh symptoms/complaints	L14	1.2
(21) Worm treatment request	D50.01[a]	1.0
(22) Appetite loss (excluding T06)	T03	0.9
(23) Dizziness	N17.02[a]	0.8
(24) Earache/pain	H01	0.7
(25) Knee symptoms/complaints	L15	0.7
(26) Hand and finger symptoms/complaints	L12	0.6
(27) Accident/injury. nos	A80	0.6
(28) Nausea	D09	0.6
(29) Family planning—Depo provera	W14.01[a]	0.6
(30) Menstruation delayed	X07.01[a]	0.6

[a] Four digit codes refers to special 'in-house' code numbers added by us to the rubrics in the ICPC to identify common reasons for encounter in Sri Lanka.

western province in which 26% of the population live and all were from the four provinces in which 64% of the population live, according to the last decennial census in 1981.[14] Even in the random sample of 75 GPs, three provinces were not represented at all, while there were two from the eastern province and one from the northern province. The deficiency of qualified GPs in the three provinces with no representation is perhaps due to the low population density. The reason for the non-response by the three doctors from the North and East could be due to the prevailing war situation in those areas.

The male to female ratio of the GPs who responded was 7:1, while that in Aloysius' study was 9:1.[12] The age distribution of the GPs showed that there were none below 35 years and none who had qualified after 1985. Only 10% had been in practice for less than 10 years. This is in contrast to a previous study which showed that 38% had been in practice for less than 10 years.[12] This indicates either a true reduction in the number of young doctors taking to general practice in the past 10 years or an apparent reduction owing to failure of younger doctors to qualify for membership of the College since the enforcement of the 1984 rule of a postgraduate qualification being a prerequisite.

Seventy per cent were solo practices. More than 55% of the GPs had postgraduate qualifications. Whether this had anything to do with the response rate could not be ascertained, owing to the fact that the characteristics of the non-responders were not available.

Morbidity data recorded by the GPs. The age distribution showed that one-third of all general practice consultations were for children under 12 years. The higher proportions of children and the elderly in the consulting population compared to those in the general population were highly significant. Similar findings have been reported in other countries.[6,8] These findings have an important bearing on postgraduate training of GPs, which should concentrate specifically on child care, while the care of the elderly should be the next priority.

The distribution by age and sex showed that among adults, significantly more women had consulted than men. This finding, which is universal, was significant notwithstanding the fact that there are more females than males in the general population in Sri Lanka according to national statistics.[11] An interesting feature was that among children, more boys had been taken to the doctor than had girls. However, the difference in the proportion in the consulting population was not significantly different from the sex ratio in this age group in the general population.[11]

It was found that the great majority of the consultations were for initial visits (72.5%) than for follow-up visits, which indicates that the demand for care is mainly for acute illnesses. The evidence for this is also found in Table 5, which shows that most RFEs were for acute complaints. It is possible that people use the free hospital clinics for routine follow-up and preventive care and consult GPs in the private sector mainly for acute illness. Similar findings have been reported in Singapore where more 'well' visits or check-up visits were made to state-run clinics. Only one home visit had been made on the day of the survey. Compared with the survey carried out in Australia, where there were four home visits per 100 encounters, the figure for Sri Lanka is very low. A variety of reasons could account for this, which include the patients having to pay a fee for the service, the extra time taken up for home visits, transport difficulties, etc.

Reason for encounter (RFEs) by the ICPC chapter. The RFEs classified according to the ICPC chapter showed that Respiratory Diseases were the commonest reasons for encounter, as has been found in all other surveys of primary care morbidity. General and unspecified complaints came next, followed by Digestive Symptoms. Digestive complaints probably occupy the third position because of the common occurrence of gastrointestinal infections in Sri Lanka's tropical climate. Other tropical countries like Singapore and Hong Kong have shown similar results. Psychological complaints were low in the list, probably because such patients more often somatize their illness and present with generalized or non-specific complaints which therefore get classified under General and unspecified in the ICPC.

Problems managed by ICPC chapter. With regard to Problems Managed, Respiratory Diseases and General and unspecified preceded the others. The fact that pregnancy, child bearing and family planning accounted for 3.9% of all problems managed is also a significant finding. This shows that GPs manage normal pregnancy and family planning on an opportunistic basis, as there was much less demand for such care by women as shown by its low frequency (1.6%) in the list of RFEs.

Psychological problems accounted for only 1.9%, which is the same as that found in the Hong Kong survey. In the Australian Survey psychological illnesses accounted for 5.9% of problems managed. Surveys on psychiatric morbidity world-wide have shown that psychological problems, which account for about a third of all general practice consultations, are often missed by family physicians.[23] It has been shown that failure to detect psychological illnesses is due to such patients presenting to doctors with only physical symptoms.[24] Even in this survey it is likely that the family physicians had failed to detect the psychological problems underlying physical symptoms. This indicates a need for training of family physicians in the detection of such illnesses.

TABLE 6 *Problem Definition (PD) by ICPC rubrics (Total PD = 2087)*

ICPC rubric name	ICPC Code	%
(1) Viral fever	A77.01[a]	11.1
(2) URTI (head cold)	R74	7.2
(3) Bronchitis acute	R78.01[a]	6.5
(4) Asthma	R96	4.7
(5) Gastroenteritis	D73.01[a]	2.4
(6) Wheezy bronchitis	R99.01[a]	2.4
(7) Sinusitis acute	R75.01[a]	2.3
(8) Hypertension uncomplicated	K86	2.2
(9) Gastritis	D87.02[a]	2.1
(10) Worms/parasites	D22	1.7
(11) Pregnancy confirmed	W78	1.6
(12) Diabetes mellitus	T90	1.6
(13) Tonsillitis acute	R76	1.3
(14) Muscle pain/myalgia, fibrositis	L18	1.3
(15) Dermatophytosis	S74	1.2
(16) Urinary Tract infection, non ven.	U71.02[a]	1.2
(17) Ulcer chronic	S97.02[a]	1.2
(18) Laceration	S18.02[a]	1.1
(19) Cellulitis localized	S10.03[a]	1.1
(20) Otitis media/myringits acute	H71	1.1
(21) Infected wound	S11.01[a]	1.0
(22) Worm treatment request	D50.01[a]	1.0
(23) Anaemia other/unspecified	B82	1.0
(24) Bronchiolitis acute	R78.02[a]	1.0
(25) Family planning—Depo provera	W14.01[a]	0.9
(26) Eczema	S87.02[a]	0.9
(27) Wound	S29.01	0.9
(28) Malaria	A73	0.8
(29) Allergy/allergic reactions NOS	A12	0.7
(30) Osteoarthritis of knee	L90	0.6

[a] Four-digit codes refer to special 'in house' code numbers added by the researchers to rubrics in the ICPC to identify common problems in Sri Lanka.

RFEs by individual rubrics in the ICPC. These show the 30 most common symptoms in the community which lead to a demand for care and reflect the people's health needs. Most RFEs were for acute complaints, with only two accounting for routine visits such as checking of blood pressure and family planning. The commonest reason for encounter was fever, followed by the common cough and cold and headache. The top thirty reasons for encounter show that the demand for care is mostly for symptoms. This has a bearing on family medicine education and training, which should include the management of common symptoms encountered in general practice.

The problems managed by family physicians show that in addition to the acute illnesses, the three chronic diseases, asthma, hypertension and diabetes mellitus, were within the top 12. Similar findings have been reported by others. This shows that GPs care for a large number of patients with these chronic diseases in the community and that it is only the tip of the iceberg of patients with asthma, hypertension and diabetes who end up in hospital with complications of the disease. Thus the need to educate medical students in the ambulatory care of patients suffering from these chronic diseases.

Preventive care activities such as care of normal pregnancy and treatment for worm infestations were also among the top 12 problems managed by the GPs. Malaria occupied the 28th position only because the provinces covered in this survey were not malarial areas, while surveys in malarial areas have found it to be the fifth leading cause of out-patient morbidity.

Conclusions and implications of the survey

The facts emerging from this survey have important implications for future planning of health services and medical education in Sri Lanka, as it has recently been realized that the state health sector will not be able employ the large number of doctors qualifying each year. It is expected that those who do not gain employment by the state will have to set up in private general practice.

The high daily workload of GPs indicates the need for more primary care physicians. Therefore medical administrators should utilize the services of the excess doctors graduating in the near future by giving them suitable incentives to practice as GPs in the less-populated areas of the country so that the health needs of all sections of the community can be met.

Family medicine teaching should be introduced into the curriculum of all medical schools to enable future medical graduates to acquire the necessary knowledge and skills in primary medical care and to motivate them to pursue a career in general practice. The findings from this survey should also be taken into consideration when designing undergraduate and postgraduate training courses in family medicine.

Thus, it is up to health policy planners and medical educationalists to implement the remedial measures

necessary to ensure quality assurance in general practice to meet the people's needs and thereby enhance the quality of life.

Acknowledgements

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References

[1] WHO and WONCA. *Making medical practice and education more relevant to people's needs: the contribution of the family doctor*. Working paper by WHO and WONCA, 1994.

[2] Rakel RE. Family Medicine—meeting new challenges. *Australian Fam Physician*: Reason 1966; **25 Suppl 2:** S91–S96.

[3] Shah E. Changing patterns of consultation in general practice: fourth national morbidity study, 1991–1992. (Editorial.) *Br J Gen Pract* 1995; **45:** 283–285.

[4] Bridges-Webb C, Britt H, Miles DA, Neary S, Charles J, Traynor V. Morbidity and treatment in general practice in Australia 1990–1991. *Med J Austral* 1992; **157 Suppl:** S1–S64.

[5] Britt H, Miles DA, Bridges Webb C, Neary S, Charles J, Traynor V. Comparison of country and metropolitan general practice. *Med J Austral* 1993; **159 Suppl 1:** S9–S64.

[6] Emmanuel SC, Tan BY, Chan PSM. A one-day morbidity survey of outpatients. *Singapore Fam Physician* 1989; **15:** 171–197.

[7] College of Family Physicians of Singapore. The 1993 survey of primary medical care in Singapore. Personal communication.

[8] Lee A, Chan KKC, Tsan WY, Ling MP, Li L, Cheong SP. A morbidity survey in Hong Kong, 1994. *Hong Kong Practitioner* 1995; **17:** 246–255.

[9] Metsemakers JFM, Hoppener P, Knottnerus JA *et al*. Computerised health information in The Netherlands: a registration network of family practices. *Br J Gen Pract* 1992; **42:** 102–106.

[10] McCormick A. French lessons on surveillance of communicable diseases. *Br Med J* 1987; **294:** 74–75.

[11] *Annual Health Bulletin of Sri Lanka* 1995. Colombo: Medical Statistics Unit, Ministry of Health, Sri Lanka, 1–11.

[12] Aloysius DJ, Heennilame GM, Jayawardena LD, Wijegoonewardena ADPA. A survey of General Practitioners in Sri Lanka. *Sri Lankan Fam Physician* 1987; **10:** 11–21.

[13] Simeonov LA. *Better Health for Sri Lanka*. New Delhi: WHO Regional Office for South East Asia, 1975: 59.

[14] *Annual Health Bulletin Sri Lanka* 1994. Colombo: Medical Statistics Unit, Ministry of Health, Sri Lanka, 71.

[15] Ferdinand WA. An analysis of 2000 consecutive first doctor patient contacts in an urban family practice in Sri Lanka. *Sri Lankan Fam Physician* 1991; **14:** 27–30.

[16] Mendis K. Morbidity pattern in an urban family practice in Sri Lanka. *Sri Lankan Fam Physician* 1992; **15:** 5–10.

[17] Aloysius DJ. An analysis of the paediatric component of 1000 consecutive doctor patient contacts in general practice/family medicine. *Sri Lankan Fam Physician* 1979; **2:** 35–44.

[18] Aloysius DJ. The paediatric component of general practice – Its changing pattern. *Sri Lankan Fam Physician* 1992; **15:** 11–12.

[19] Campbell SM, Roland MO. Why do people consult a doctor? *Fam Pract* 1996; **13:** 75–83.

[20] Lamberts H, Wood M (eds). *International Classification of Primary Care (ICPC)*. Oxford: Oxford University Press, 1987.

[21] Department of Census and Statistics, Sri Lanka. *Demographic Survey*. (Excluding northern and eastern provinces.) Sri Lanka: Department of Census and Statistics, 1994.

[22] Sri Lankan Department of Census Statistics. *Demographic Survey 1994 (excluding northern and eastern provinces)*. Sri Lanka: Department of Census and Statistics.

[23] Childhood Immunisation and Infectious Diseases Survey. *The Immunisation status of children attending general practitioners in Australia*. Sydney: Department of Community Medicine, University of Sydney, 1988.

[24] Goldberg D, Huxley P. *Mental Illness in the Community*. London: Tavistock Publications Ltd, 1980.

[25] Goldberg DP, Bridges K. Screening for psychiatric illness in general practice. The general practitioners versus the screening questionnaire. *J R Coll Gen Pract* 1987; **43:** 15–18.