

# UTILIZATION AND EXPENDITURE ON MEDICAL SERVICES IN A LOCAL COMMUNITY

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## SYNOPSIS

A study on the utilization and expenditure on medical services in a low socio-economic area within Toa Payoh was done in May 1983 based on household survey methods, using questionnaires applied to a randomised population sample.

The estimated number of visits in one year per person to the general practitioner (GP) was 3.8 visits and to the government outpatient services (OPS) was 1.7 visits. Females visited the GP and OPS about 1½ times more often than the males. The hospital admission rates for males and females were 5.1% and 10.9% per year respectively.

Almost three-quarters of the respondents had no medical coverage whilst 15.1% and 13.2% of the respondents were covered by medical benefits provided by the company and the government respectively.

The mean monthly household expenditure on medical services was \$18.30 and this was about 1.95% of the mean household income.

## INTRODUCTION

Reliable information on medical services utilization in Singapore is available only for government outpatient facilities and hospitals, and this is obtained from statistics of clinic attendances and inpatient discharges or other ad-hoc studies. Little is known of the private sector, however, including the coverage of medical benefits extended to the population and the expenses incurred directly by households. Of late there has been an increasing interest in the economic costs of health services. Local studies on some aspects of utilization, including self-medication and traditional medicine, have been attempted in the past (1,2,3) but none has focused on medical coverage and expenditure.

A preliminary study on the utilization and expenditure on medical services in a local community within Toa Payoh was carried out in May 1983, as part of a larger community health survey conducted by the Department of Social Medicine and Public Health, National University of Singapore. This study, based on household survey methods, using questionnaires applied to a randomised population sample, took into account the common patterns of medical care consumption. Since outpatient medical care in Singapore is principally provided by either the private general practitioner or the government primary health care services, a comparison of their differential utilization can be made from such a population-based study. Similarly, the demand for hospitalization and medical expenditures can be ascertained from the consumers themselves, instead of from the supply side. It would also be possible to determine the nature of medical benefits and other forms of coverage extended to individuals or their families.

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## METHOD

The survey area covered 21 blocks of Housing and Development Board (HDB) flats consisting of 4,815 housing units. 100 housing units were selected by stratified random sampling which yielded 384 eligible persons for the survey proper. A team of 20 third-year medical students interviewed the residents in their homes. There were 88 respondent households and of these, 47, 11 and 30 were of the 1-room, 2-room and 3-room HDB flat-types respectively. Altogether 331 persons responded, contributing to a response rate of 86.2%.

Respondents were asked to recall the number of visits they made to the general practitioners (GP) and/or to the government outpatient services (OPS) during the past one month prior to the survey. Government outpatient services (OPS) were defined to include the Primary Health Care Services which encompass the Outpatient, Maternal and Child Health and School Health Services provided at various polyclinics, outpatient dispensaries and maternal and child health clinics. Data was also collected on their hospitalization, if any, during the past one year as well as their personal expenditure on medical services. Only expenditure for medical outpatient care and hospitalization were considered in this category and excluded were expenditures for traditional medical care and drugs, and other indirect costs related to illness and treatment.

## RESULTS

There were 157 males and 174 females (Table 1) and about half (or 48.6%) of them were staying in 1-room flats. Those staying in 2-room and 3-room flats constituted 13.3% and

38.1% respectively. The ethnic group distribution was 71.6% Chinese, 15.4% Malay, 11.2% Indians and 1.8% others.

## UTILIZATION OF OUTPATIENT CARE

Tables 2 & 3 show the results of the estimated number of visits in one year per person to the GP and OPS.

The estimated number of visits in one year per person to the GP was 3.8 visits and to the OPS was 1.7 visits. This means that there were about twice as many patients seen by the general practitioners as compared to those seen in the OPS.

Females visit the GP about 1.7 times more often than the males. The females were again found to visit the OPS more often than the males by 1.6 times.

When analysed by housing types, there was no definite trend in the choice of GP or OPS by flat-type among the residents. However, the females in the 3-room flats visited the GP and OPS more often than those staying in the 1 and 2-room flats. When the estimated number of visits per person per year was plotted against age by 10-year intervals, we noted the following features (Figure 1):

- (1) For visits to GP, there were 3 peaks — at ages 5-9 years, ages 20-30 years and ages above 50 years. Whilst childhood infection and increased morbidity in chronic degenerative disease may account for the peaks at 5-9 years and over 50 years respectively, the peak at 20-30 years may be contributed by a substantial number of employees who required medical certification for their absence from work.
- (2) The visits to the OPS showed a similar trend as that of the GP except for the absence of a peak at the ages 20-30 years.

Table 1  
Profile of the 331 Respondents

	Male No.	Female No.	Male + Female No. (%)
Age (Years)			
0-14	37	37	74 (22.4)
15-39	75	84	159 (48.0)
40-59	33	41	74 (22.4)
> 60	12	12	24 ( 7.2)
Ethnic Group			
Chinese	116	122	237 (71.6)
Malay	24	26	51 (15.4)
Indian	17	20	37 (11.2)
Others	0	6	6 ( 1.8)
Housing			
1-room flat	78	83	161 (48.6)
2-room flat	19	25	44 (13.3)
3-room flat	60	66	126 (38.1)
Total	157	174	331 (100.0)

Table 2

**Estimated Number of Visits per Year to the  
GP and OPS by Broad Age-Groups, Male & Female**

Age (years)	No. of Persons	No. of visits in 1 month		Estimated No. of visits per person per year		
		GP	OPS	GP	OPS	Both
<b>MALE</b>						
0-14	37	4	5	1.3	1.6	2.9
15-39	75	19	7	3.0	1.1	4.2
40-59	33	6	2	2.2	0.7	2.9
> 60	12	8	3	8.0	3.0	11.0
All ages	157	37	17	2.8	1.3	4.3
<b>FEMALE</b>						
0-14	37	17	6	5.5	2.0	7.5
15-39	84	29	8	4.1	1.1	5.3
40-59	41	17	14	5.0	4.1	9.1
> 60	12	5	3	5.0	3.0	8.0
All ages	174	68	31	4.7	2.1	6.8
Male + Female All ages	331	105	48	3.8	1.7	5.6

Table 3

**Estimated number of visits to the GP and OPS  
By Housing-Type, Male and Female**

Housing-Type	No. of Persons	No. of Visits in 1 month		Estimated no. of Visits per person per year		
		GP	OPS	GP	OPS	Both
<b>Male</b>						
1-room type	78	21	10	3.2	1.5	4.8
2-room type	19	2	3	1.2	1.9	3.2
3-room type	57	14	4	3.0	0.8	3.8
<b>Female</b>						
1-room type	83	26	9	3.8	1.3	5.1
2-room type	25	8	5	3.8	2.4	6.2
3-room type	66	34	17	6.2	3.1	9.3

Figure 1

Estimated Number of Visits to GP and OPS Per Person Per Year by Age

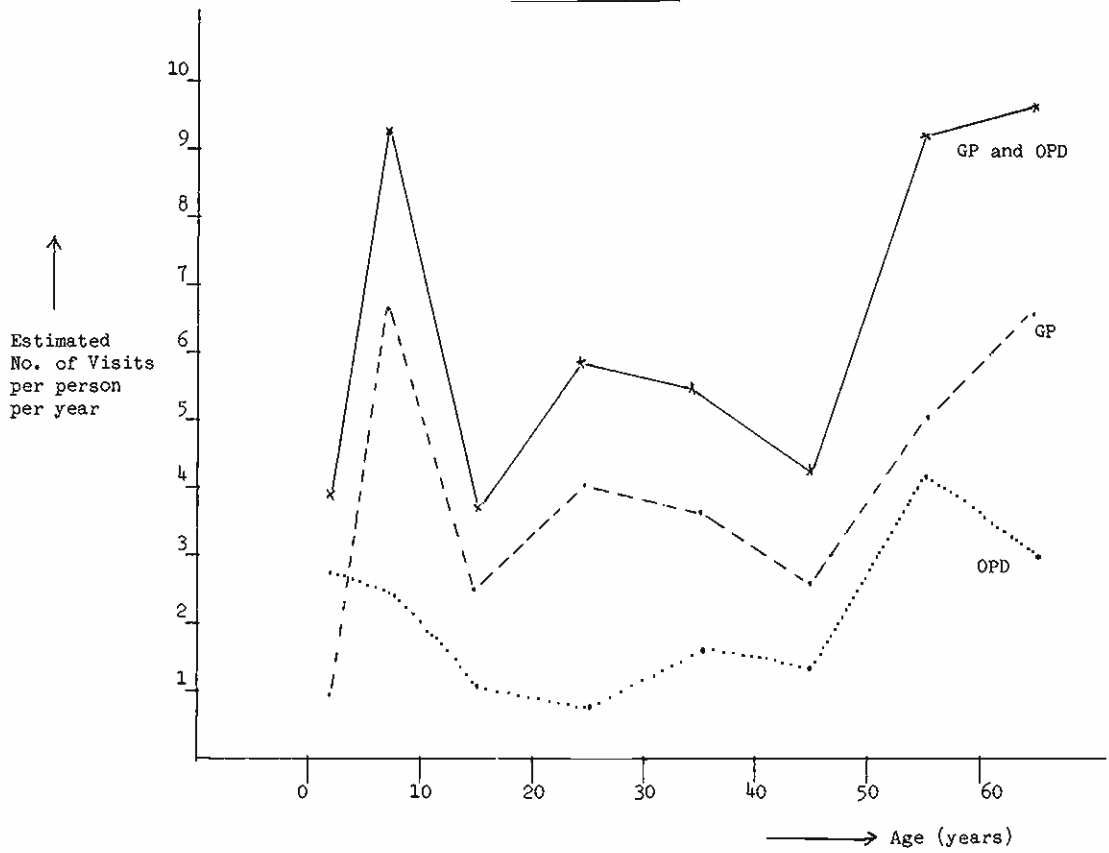


Figure 2

Distribution of Medical Benefit Coverage by Age Groups, Male & Female

% With Medical Benefits

Male = 34.4%  
 Female = 23.0%  
 Male + Female = 28.3%

KEY:

- Persons with Government medical benefits
- Persons with Company medical benefits
- No medical benefit coverage

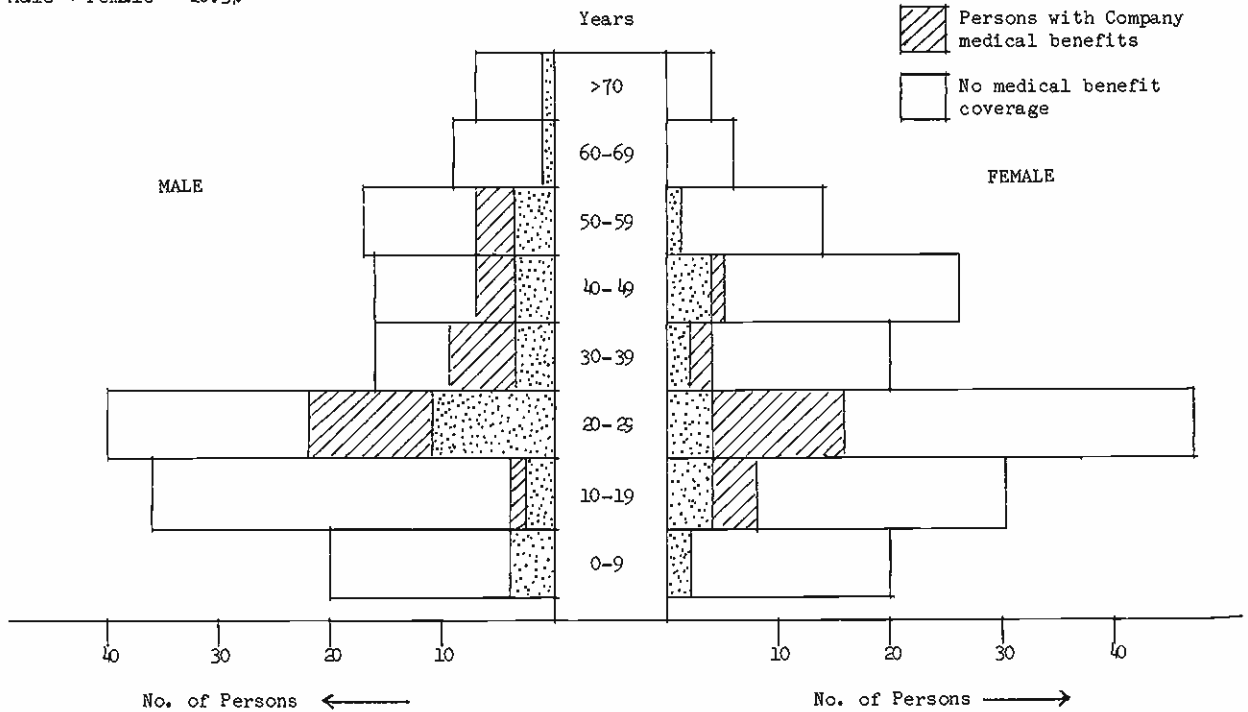


Table 5

Percentage of Persons Utilizing GP and OPS in the past one month  
by Employment Status, Male and Female Aged 15-59 years

Employment Status	% of Persons utilizing services in the past month	
	GP	OPS
Economically Active		
Male (n = 84)	20	6
Female (n = 50)	25	6
M + F (n = 134)	22	6
Economically Inactive		
Male (n = 24)	17	9
Female (n = 75)	12	15
M + F (n = 99)	13	13
Overall (n = 233)	18	9

Table 6

Hospital Admissions: Mean Length of Stay  
and Cost of Hospitalization by Specialty

Specialty	No. of Persons		Mean length of stay (days)	Cost of Hospitalization(\$)*	
	Male	Female		Mean	Range
Paediatric	1	—	45	300	—
Medical	5	3	7.5	138	14-180
Surgical	2	7	5.8	406	45-800
Obstetrical	—	5	6.0	206	130-500
Gynaecological	—	4	3.5	56	40-105
Overall	8	19	7.7	184	14-500

\*Excluding 4 persons who had medical benefit coverage for hospitalization

## MULTIPLE VISITS WITHIN A MONTH

The extent of multiple visits in a month to the GP or OPS can be gathered from calculating the mean number of visits per person who utilized the GP or OPS in that month. Overall, the mean number of visits per person per month to the GP (1.6 visits) was higher compared to the mean number of visits per person per month to the OPS (1.3 visits).

For females, the mean of 1.9 visits per person to the GP was higher than the mean of 1.3 visits per person for the males. The older age-groups (those aged 40 years and above) also had a higher mean number of visits to the GP compared to the younger age-groups.

In contrast, the mean number of visits per person to the OPS was quite similar for males (1.4 visits) and females (1.3 visits). There was no definite trend for multiple visits to the OPS with respect to age.

## EMPLOYMENT STATUS AND CHOICE OF GP OR OPS

In an attempt to see the association between employment status and choice of GP and OPS services, the 233 persons (108 men and 125 women) in the working age-group of 15-59 years were subdivided into 2 categories: (a) economically active (b) economically inactive.

From Table 5, we noted that,

- (1) Economically active men and women utilised GP services about 3 to 4 times more than the OPS, whereas overall, only about twice as many people were seen by the GP in relation to the OPS.
- (2) A higher percentage of the economically inactive utilised the OPS (13%) compared to the economically active (6%) in the past one month.

## HOSPITAL ADMISSIONS

8 males and 19 females were hospitalized during the past one year and thus the hospital admission rates were 5.1% per year for males and 10.9% per year for females. The distribution of admissions by specialty was: 9 for surgical, 8 for medical, 5 for obstetrical, 4 for gynaecological and 1 for paediatric (Table 6). The mean length of stay was 7.7 days and the mean cost of hospitalization was \$184. When admissions for deliveries were excluded to obtain the distribution of admissions by broad age-groups (Table 7), it was noted that those aged 40-59 years had twice the rate as compared to that for all ages. For those aged above 60 years the rate was 3 times the rate for all ages.

## MEDICAL COVERAGE

50 (15.1%) of the respondents were covered by medical benefits provided by the company. In the vast majority of cases, company medical benefits were extended only to the employees themselves and this was clearly shown in Figure 2 from its distribution mainly among the working age-group of 20-59 years.

44 (13.2%) of the respondents were covered by medical benefits provided by the government. As government medical benefits also included the employees' immediate family members and pensioners, the distribution of coverage showed a spread from 0 to over 70 years old.

Males had a higher proportion (34.4%) of medical coverage compared to females (23.0%).

237 persons representing (71.6%) or almost three-quarters of the respondents had no medical coverage.

Table 4

Extent of Multiple Visits to GP and OPS  
within one month by Sex and Broad Age-Group

	No. of Persons who utilised these services		Mean No. of Visits per person	
	GP	OPS	GP	OPS
<b>Sex</b>				
Male (n = 157)	28	12	1.3	1.4
Female (n = 174)	36	24	1.9	1.3
<b>Age (years)</b>				
0-9 (n = 42)	10	7	1.3	1.3
10-19 (n = 67)	9	5	1.5	1.2
20-29 (n = 88)	18	6	1.7	1.0
30-39 (n = 36)	8	3	1.4	1.7
40-49 (n = 43)	5	4	2.0	1.3
>50 (n = 55)	14	11	1.9	1.6
All ages	64	36	1.6	1.3

Table 7

**Rate of Hospitalisation (Excluding Deliveries)  
For Past One Year By Broad Age-Groups**

Age (Years)	Persons Admitted to Hospital No.	%	Rate of Admission per 100 persons per year
0-14	1	4.5	1.4
15-39	6	27.3	3.8
40-59	10	45.5	13.5
> 60	5	22.7	20.8
All ages	22	100.0	6.7

**EXPENDITURE ON MEDICAL SERVICES**

Overall, the mean monthly household expenditure on medical services for the 88 households was \$18.30. This represented 1.95% of their mean monthly household income.

There were 11 households (with a total of 32 persons) which had medical benefits that covered the whole household. The combined expenditure of these 11 households on medical services was \$50 on outpatient care during the last one month and \$300 on hospitalization during the last one year. The expenditure was incurred because a few of the residents chose to utilize the medical facilities of their own preference and not those which were covered by their medical benefits. Their mean monthly household expenditure on medical services was only \$6.80 which represented 0.72% of their mean monthly household income.

Of the remaining 77 households (with a total of 299 persons) without full medical coverage, the estimated expenditure on medical services is shown in Table 8. It is noted that:—

- (1) the mean household expenditure on outpatient care (GP and OPS) for the past one month was \$15.60.
- (2) the mean household expenditure on hospitalization for the past one year was \$60.30.
- (3) the mean monthly household expenditure on medical services was estimated to be \$21 and this represented about 2.2% of the mean monthly household income.

The households from 3-room flats spent a higher amount on both outpatient care as well as on hospitalisation compared to those in the 1-room and 2-room flat types. We also noted 2 households which might have difficulties in meeting medical expenditure. Household A consisted of an elderly man aged 81 years living alone. He received \$150 monthly from his children and paid \$100 for his 17 days of hospital stay for a heart disease. Household B consisted of a 57 year-old widow and her 27 year old son. The only income was the son's monthly salary of \$500 but they paid \$400 last year for her 21 days of hospital stay for an operation.

Table 8

**Expenditure on Medical Service of 77 Households  
Without Full Medical Coverage**

	HDB Flat Type			
	1-room	2-room	3-room	All Types
No. of Households	40	10	27	77
Mean Household Size	3.6	4.2	4.3	3.8
Mean Monthly Household Income (\$)	734	676	1,506	939
a. Mean Outpatient Care Expend. in One month (\$)	10.7	9.2	25.3	15.6
b. Mean Hospitalization Expenditure in one year (\$)	41.0	18.5	104.3	60.3
c. Mean Medical Services Expenditure in one month (i) Amount - a + b/12 (\$)	14.2	10.7	34.0	20.7
(ii) As % of Monthly Household Income	1.9%	1.6%	2.3%	2.2%

## DISCUSSION

Measurements of expenditures are fraught with difficulties since definitions and accounting may vary considerably. For the purpose of this study, only direct out-of-pocket medical expenditures have been computed. We have not included other health-related expenditures for traditional medical care and drugs, self-medication, nursing, dental and eye care, medical appliances and accessories, health food and other health-promoting practices. Also excluded are indirect costs such as loss of income due to illness, cost of transportation and other incidentals related to obtaining care, and other intangible social costs including pain, suffering and inconveniences experienced by the patient and family.

This study has borne out some interesting findings in the patterns of utilization and expenditure on medical services in Singapore, despite its limitations. The frequency of utilization was established for outpatient visits and hospitalization although their determinants could not be established precisely. The employment status of the individual appears to play a major role in determining utilization rates. Our findings show an almost 3-4 times higher utilization by the economically active for visits to the private GP as compared to the government outpatient services, whereas overall, only about twice as many patients are seen by the GP in relation to OPS. This seems to indicate that for various reasons, possibly in meeting statutory requirements such as medical certification, restrictions of company medical schemes with fixed panel of physicians, and other factors such as convenience and accessibility, the services of the private GP are preferred. It would be more meaningful to explore in future studies, the exact nature of utilization for such non-medical reasons in addition to those based on medical need and definite illness.

The study has also confirmed that hospitalization rates for the elderly do rise considerably with age. This has significant implications for the elderly who would have to cope with increasing medical expenditure. This is especially acute since most of the aged would be unemployed and hence do not have medical coverage provided by the company, except those receiving benefits from the government services pension scheme. A large proportion or almost three-quarters of the population do not have any form of medical coverage and therefore will have to rely on personal incomes or savings to pay for medical expenses.

According to preliminary data from the 1982/83 Household Expenditure Survey for Singapore (4), average monthly, household expenditure on medical expenses was \$25.11, which constituted 2.09% of total monthly household expenditure. Our findings of approximately \$18.30 being the mean monthly household expenditure on medical services and representing 1.95% of the mean household income, were quite consistent with the national averages. Although these figures appear low on the average, they must be interpreted with caution. For the minority afflicted with long-term chronic or debilitating conditions, medical costs would be substantial. This is especially true for the elderly and unemployed without medical coverage.

Major medical utilization and expenditure studies have been conducted in recent years. The International Collaborative Study on Health Care (5), directed by Kohn and White and supported by the WHO is an important one. The study concerns the utilization of various types of health services covering 12 centres in a number of countries in Europe, North and South America. It is a population-based study of a representative sample in each area. Our findings of an estimated 4.3 and 6.8 physician-visits per person per year for males and females respectively, are comparable to their findings. The estimated average physician visits per person per year for the 12 centres are 5.3 for males and 6.4 for females.

In the U.S., continuing nation-wide household surveys on morbidity and the utilization of health services have been in progress since 1955 (6). The bulletins published from these surveys show among other things, the expenditures and type of medical benefits covered for the family and the individual. Studies on the utilization of medical services from the consumer end can provide policy-makers with a basis for planning and allocation of resources in the provision of health care services for both the public and private sectors (7). We recommend that further in-depth nation-wide studies of utilization and expenditure on medical services be done in Singapore and such trends to be monitored regularly. This is necessary in the light of current efforts in national health planning and concern over the financing of increasing public services.

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