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Utilisation patterns of primary health care services in Hong Kong: does having a family doctor make any difference?

Key Messages

1. The population adjusted monthly primary care consultation rate was 0.70 (95% confidence interval, 0.65-0.75), equivalent to 8.4 consultations at a cost of HK$2553 per person per year.
2. About 63% of the population reported having a regular primary care doctor with one third having a regular family doctor.
3. One third of the respondents had used the medical service in a month, and one third of all primary care consultations were provided by family doctors and Chinese medicine practitioners respectively.
4. Primary care consultations were effective in enabling better illness coping and improving health.
5. Compared to persons without a regular family doctor, those with such a doctor were 50% less likely to use accident and emergency and in-patient services, but they were more likely to report non-drug management and greater enablement after consultation.

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Introduction

Primary care should be a gate-keeper for secondary health services to prevent illness, improve health, enable coping with illness, and satisfy needs. The family doctor model has been proposed by the government as a solution for the rising demand for quality primary health care services for the ageing population in Hong Kong. This study aimed to explore the utilisation rates and patterns of various primary health care services, and the process and outcomes of primary care consultations in Hong Kong, and whether having a family doctor makes any difference.

The objectives were to determine the rates and patterns of utilisation of different primary health care services, the process (including non-drug managements) and patient self-reported outcomes (enablement, change in health, and satisfaction) following primary care consultations, and any difference in the care for people with and without a regular family doctor.

Methods

This study was conducted from June 2007 to November 2008. It was approved by the Institutional Review Board of the University of Hong Kong/Hospital Authority Hong Kong West Cluster.

A cross-sectional general population random telephone survey was carried out in two phases, first from September to October 2007, and second from March to April 2008 to cover the Summer and Winter seasons, respectively. A structured questionnaire was administered on the presence and type of regular primary care doctor, illness episodes, and medical service utilisations, process and outcome of consultations, health status, and sociodemographics. Longitudinal studies on 319 subjects with a diary on all illness episodes and consultations for 12 weeks were carried out to cross-validate the cross-sectional results.

A total of 5174 eligible households were contacted, and 3148 (61%) subjects (1616 and 1532 in the first and second phases, respectively) completed the cross-sectional survey. Of these, 708 agreed to the longitudinal study and 327 returned the diaries (self-completion), and 319 subjects had complete cross-sectional and longitudinal data for the final analysis.

Subjects were classified by whether they had (1) a regular family doctor (RFD), defined as a doctor whom one would consult for all types of health problems; (2) a regular primary care doctor, defined as a doctor whom one would first consult when one needed to, who was not a family doctor (RnFD); or (3) no regular primary care doctor (NRD). Monthly medical service utilisation rate was calculated by the number of consultations over a period of 4 weeks. Patient self-reported outcomes of the consultation was measured by the Patient Enablement Instrument (PEI) score,[1] perceived improvement in health and satisfaction. The rates of non-drug managements such as explanation of illness and advice on self-care were measured.

The mean monthly illness and consultation rates were calculated and weighted on the 2007 Hong Kong general population age-sex distribution to estimate the population-based illness and consultation rates. Multivariate regressions were used to identify factors associated with different primary care doctor choices, and to test the effects of having a RFD on the various outcomes, with adjustment of confounding factors including sociodemographics, health status, lifestyle and chronic morbidity. Utilisation rates were compared across three groups by a Poisson regression model with seasonality entered as a covariate. Regression analysis was carried out on the longitudinal data to determine whether any adjustment factor for the estimation of the illness and service utilisation rates was needed and to cross-validate the results of the cross-sectional data.

All estimates were accompanied with a 95% confidence interval (CI) and a P value of <0.05 was considered statistically significant.

Results

Choice of primary health care doctors

A total of 1969 (63%) subjects said that they had a regular primary care doctor, whereas 1157 (37%) did not. Among those with regular doctors, 1150 said their regular doctors were family doctors. Multivariate logistic regressions found that younger age, currently married, white-collar work, higher household monthly income, having a

chronic disease, need of long-term medication and regular exercise were independent factors associated with having a regular primary care doctor. There was little difference in characteristics between the RFD and RnFD groups, except that the former were more likely to have regular exercise and better general health.

The RFD group was less likely to smoke (18%) or drink (37%), but more likely to have regular exercise (68%) than the RnFD and NRD groups. Overall, 44% of the subjects said they would consult their primary care doctors for preventive care, with a higher proportion (53%) in the RFD group than the others (42% and 37%, respectively). Over 80% of the RFD and RnFD groups who were aged ≥30 years had their blood pressure checked in the last year, which was higher than the 70% in the NRD group. About 74 to 77% of ever-married women in the regular primary care doctor groups had cervical smears within the last 3 years, but only 61% of the NRD did so. About 47% of the people would consult their primary care doctors for their chronic disease follow-up, with a higher proportion in the RFD (50%) than RnFD (46%) and NRD (45%) groups.

Illness and primary health services utilisation rates and patterns

The illness and health service utilisation rates and patterns during the last 4 weeks and last episode of illness are shown in Table 1. The Hong Kong general population weighted monthly illness rate was 0.57 (95% CI, 0.51-0.64), and the

Table 1. Illness and service utilisation rates in patient groups having a regular family doctor (RFD), regular non-family doctor (RnRD), or no regular doctor (NRD)

Parameter	Total* (n=3148)	RFD (n=1150)	RnFD (n=746)	NRD (n=1157)
During last 4 weeks (mean±SD [prevalence])				
Monthly illness rate[†‡§]	0.57±1.81 (35)	0.51±0.83 (37)	0.68±1.83 (40)	0.57±2.43 (30)
Days of sick leave per month[†‡]	0.23±1.20 (11)	0.3±1.31 (14)	0.29±1.29 (13)	0.14±1.05 (7)
Monthly consultation rate[†‡]	0.71±1.53 (34)	0.85±1.73 (39)	0.85±1.60 (38)	0.49±1.26 (25)
Western medicine family doctors[†‡§]	0.21±0.75 (13)	0.5±1.10 (30)	0.06±0.41 (4)	0.03±0.26 (2)
Western medicine but not family doctors[†‡§]	0.22±0.65 (14)	0.11±0.40 (9)	0.44±0.98 (26)	0.17±0.56 (12)
Chinese medicine practitioner[†‡§]	0.24±1.03 (10)	0.24±1.04 (10)	0.32±1.12 (13)	0.19±0.97 (8)
Government or Hospital Authority accident & emergency departments[‡§]	0.06±0.45 (4)	0.05±0.56 (2)	0.08±0.47 (5)	0.05±0.29 (4)
Hospital admission rate	0.01±0.14 (1)	0.01±0.14 (1)	0.02±0.15 (1)	0.01±0.13 (1)
Self-medication (%)	30	28	32	32
Other medical treatments (%)	4	4	4	4
During last episode of illness				
Median (range) weeks of last episode of illness	5 (0.5-1144)	4 (0.5-364)	4 (0.5-520)	7 (0.5-1144)
Had used any medical service[†‡§] (%)	72	80	75	61
Consulted family doctor[†‡§] (%)	30	67	11	7
Consulted regular primary care doctor who is not a family doctor[‡§] (%)	28	17	55	19
Consulted other doctors[†‡] (%)	20	14	13	29
Consulted Chinese medicine practitioner (%)	12	13	13	11
Consulted accident & emergency department[†§] (%)	7	4	8	10
Admitted to the hospital[†§] (%)	3	2	4	4
Self-medication[†‡§] (%)	32	28	33	37
Any other treatment[†‡] (%)	4	2	3	5
Consulted more than one doctor[†‡] (%)	14	16	15	12
Median (range) number of doctors used by people who had consulted	2 (1-7)	2 (1-7)	2 (1-6)	2 (1-7)

* The sum of three groups did not add up to the total, as some respondents were not sure if they had regular or family doctors. Minor discrepancies between the reported totals and the sum of specific consultations were due to recall variations

† Significant difference between RFD and NRD by univariate Poisson/logistic regression

‡ Significant difference between RnFD and NRD by univariate Poisson/logistic regression

§ Significant difference between RFD and RnFD by univariate Poisson/logistic regression

consultation rate was 0.70 (95% CI, 0.65-0.75). About 14% of subjects (20% of those who had consulted) had doctor-shopped with no difference between the three groups. The overall consultation rate reported in the cross-sectional survey was higher than that found in the longitudinal study, mainly due to a seasonality effect. Thus, no adjustment to the utilisation rate was indicated.

Process and outcomes of the consultation

Based on the recall of the last consultation, 60% had consulted private western medicine doctors, 16% had consulted public general outpatient clinics, 8% had consulted Chinese medicine practitioners, and 7% had consulted public specialist clinics. The NRD group was the most likely to have consulted public primary (25%) or specialist (10%) services, whereas the RFD group was the least likely (7% and 4%, respectively) to have done so. About 81% of the RFD group consulted their usual primary care doctor, whereas only 69% of the RnFD did so. There were wide variations in consultation costs ranging from HK$0 to HK$40 000. The mean and median costs for a private consultation were HK$304 and HK$180, respectively. There was no significant difference in cost between the three groups. At their last consultation, about 92% of subjects received a prescription for a median of 3 medications. The prescription rate was higher in the two regular doctor groups than the NRD group. The rates of non-drug management ranged from 4% (referrals) to 72% (explanation of the diagnosis). The RFD group was significantly more likely than others to have received an explanation on the nature (70%) and course (49%) of the illness, reassurance of concerns (41%), and advice on self-care (66%).

Patient-reported outcomes of the last consultation showed a significantly higher mean PEI score in the RFD group (3.33) than the others, but there was no difference between the RnFD (2.63) and NRD (2.58) groups. Overall, 49% felt that their health had improved after the consultation; the proportion was higher in the RFD (54%) than the RnFD (50%) or NRD (45%) groups. About 94% were satisfied to a certain extent with the consultation, and 60% would recommend the doctor to their family and friends. The RFD group (76%) was more likely to recommend their doctors to others, whereas only 44% of the NRD group would do so.

Effects of primary care doctor choice on utilisation, process and outcomes of care

The differences between different primary care doctor choice groups were compared pair-wise by multivariate regressions on the cross-sectional data, adjusted for all confounding factors. Analyses on the longitudinal data showed similar trends of differences between the groups. Poisson regressions showed that the monthly illness rate in the RFD group was 16% and 21% less than those of the RnFD and NRD groups, respectively. The RFD and RnFD groups had 54 to 65% more consultations than the NRD group, but there was no difference between the RFD and RnFD groups. Seasonality had the most significant effect on illness and service utilisation rates, with lower rates in summer than winter.

Table 2 shows the effect of doctor choice groups on the patterns of service utilisation during the last episode of illness and preventive care. The odds of accident and emergency department visits or hospital admissions were about 50% less in the RFD group than in the RnFD and NRD groups.

Table 3 shows the effect of primary care doctor choice groups on the process and patient-reported outcomes of the last consultation. The odds of all non-drug managements, except for investigations and referrals, were 50% to 100% higher in the RFD group than in the NRD group, and were 25% to 40% higher in the RFD group than in the RnFD group. The odds of most non-drug managements were 25% to 40% higher in the RnFD than NRD groups, except for those entailing disease screening. Having a RFD was associated with higher PEI score, when compared with either the NRD or RnFD groups, but there was no difference between the RnFD and NRD groups.

Discussion

In this study, we defined a family doctor as one who would be consulted for all types of health problems. About 37% of subjects reported having a regular family doctor; the proportion was much higher than the 11% found in an earlier study, probably because the latter used a narrower definition based on a postgraduate qualification.[2] Our study showed that the public was able to differentiate family doctors from other primary care doctors based on their function. People with chronic diseases and requiring chronic medications were less likely to have a family doctor, although they were the group theoretically most in need. Most chronic diseases are managed by public health services because of costs, which is often traded off with continuity and comprehensiveness of care. Thus, the health care and funding system needs to change to enable more people with chronic diseases to be cared by family doctors.

The illness prevalence of 35% was lower than the symptom prevalence of 57% found in the Household Thematic Survey,[3] because our survey asked about illness and some symptoms might not be regarded as illnesses by some people. On the other hand, the primary care service utilisation prevalence (34%) was similar to the 37% of primary care consultations found in the Household survey.[3] A monthly primary care consultation of 0.7 (95% CI, 0.65-0.75) is equivalent to 8.4 (95% CI, 7.5-9) consultations per year, which is consistent with the nine consultations per year reported in 1998 by the Harvard Team Survey in Hong Kong.[4]

An important function of primary care is to gate-keep accident and emergency and hospital care. Over 80% of the

Table 2. Effects of primary care doctor choice on use of medical services and preventive care

Parameter	Odds ratio (95% CI) by logistic regression		
	RFD vs NRD*	RnFD vs NRD*	RFD vs RnFD*
Use of medical services during the last episode of illness			
Any doctor consultation	2.486 (2.053-3.010)[†]	1.853 (1.509-2.275)[†]	1.342 (1.074-1.676)[†]
Accident & emergency department consultation	0.479 (0.330-0.695)[†]	0.768 (0.536-1.098)	0.624 (0.411-0.949)[†]
Hospital admission	0.458 (0.267-0.788)[†]	0.891 (0.540-1.470)	0.514 (0.284-0.932)[†]
Preventive care			
Cervical smear test (ever-married women)	1.731 (1.245-2.408)[†]	1.463 (1.015-2.109)[†]	1.183 (0.806-1.736)
Blood pressure check within 1 year (age ≥30 years)	2.640 (2.013-3.461)[†]	1.818 (1.359-2.433)[†]	1.452 (1.058-1.991)[†]
Regular exercise	1.400 (1.166-1.682)[†]	1.083 (0.886-1.325)	1.292 (1.054-1.584)[†]

* Reference category for doctor choice groups; RFD denotes regular family doctor, RnRD regular non-family doctor, and NRD no regular doctor
† P<0.05 (forward LR: entry 0.05), adjustment of confounding factors including sociodemographics, health status, chronic morbidity, and lifestyle. Odds ratio of <1 and >1 represent less and more likely than the reference category, respectively

Table 3. Effects of primary care doctor choice on process and outcome of consultation

Parameter	RFD vs NRD*	RnFD vs NRD*	RFD vs RnFD*
Process of consultation	Odds ratio (95% CI) by logistic regression		
Drug prescription	1.836 (1.331-2.531)[†]	2.375 (1.602-3.521)[†]	0.773 (0.508-1.177)
Investigation	0.675 (0.502-0.907)[†]	0.894 (0.655-1.219)	0.755 (0.543-1.050)
Referral	0.739 (0.463-1.179)	0.829 (0.505-1.362)	0.892 (0.521-1.527)
Non-drug management			
Diagnosis explained	2.075 (1.707-2.522)[†]	1.484 (1.207-1.824)[†]	1.398 (1.119-1.748)[†]
Nature of the illness explained	1.758 (1.473-2.099)[†]	1.415 (1.165-1.719)[†]	1.242 (1.017-1.518)[†]
Course of illness explained	1.693 (1.427-2.010)[†]	1.251 (1.031-1.518)[†]	1.353 (1.119-1.637)[†]
Concerns reassured	1.964 (1.638-2.355)[†]	1.456 (1.186-1.787)[†]	1.349 (1.109-1.641)[†]
Advice on self-care	1.671 (1.405-1.988)[†]	1.319 (1.089-1.598)[†]	1.267 (1.041-1.541)[†]
Physical treatment	1.486 (1.001-2.204)[†]	1.097 (0.693-1.736)	1.355 (0.879-2.090)
Preventive care			
Screening for disease	1.487 (1.165-1.898)[†]	1.178 (0.889-1.560)	1.263 (0.965-1.653)
Lifestyle advice	1.654 (1.389-1.969)[†]	1.390 (1.145-1.688)[†]	1.190 (0.983-1.439)
Outcomes of consultation	Coefficient (95% CI) by general linear model		
Patient enablement instrument score[‡]	0.733 (0.472-0.994)[†]	0.104 (–0.191-0.398)	0.629 (0.336-0.923)[†]
	Odds ratio (95% CI) by logistic regression		
Health improved	1.392 (1.177-1.646)[†]	1.216 (1.007-1.468)[†]	1.145 (0.948-1.382)
Overall satisfied	2.000 (1.376-2.907)[†]	1.549 (1.054-2.278)[†]	1.291 (0.833-1.999)
Would recommend doctor	3.857 (3.193-4.660)[†]	2.054 (1.684-2.505)[†]	1.878 (1.523-2.316)[†]

* Reference category for doctor choice groups; RFD denotes regular family doctor, RnRD regular non-family doctor, and NRD no regular doctor
† P<0.05 in regression analysis, adjustment of confounding factors including sociodemographics, health status, chronic morbidity, lifestyle. Odds ratio of <1 and >1 represent less and more likely than the reference category
‡ Score calculated as mean of answered items times 6, excluding cases that answered N/A or missing in >3 items

RFD group consulted their regular doctors during the last episode of illness and 65% of the RnFD group did so. There was better continuity of care with the family doctors. People with RFDs were about 50% less likely than others to have visited the accident and emergency department or have been hospitalised during their last illness, whereas those in the RnFD and NRD groups had the same rates. These indicate low accessibility of community-based services for the NRD group members, who then rely more on the accident and emergency departments as a source for primary care.

Having a regular primary doctor was associated with an increased likelihood of disease screening. About half of the population said that they would consult primary care doctors for chronic disease follow-up and preventive care, but only 12% and 4% of their last consultations were for such purposes, respectively. The fee for service system in Hong Kong may be a barrier to proper provision of preventive and chronic disease care in primary care; individuals are less motivated to consult if they have no symptoms and most private insurances do not cover preventive care. A qualitative study found that, apart from cost, a lack of supportive services was also a major barrier to the use of private family doctors for the care of chronic disease.[5]

The RFD group reported higher rates of explanation of the nature and course of their illnesses, reassurance for concerns, and advice on self-care, which was also consistent with the patient-centred approach that distinguishes the family doctor from other primary care doctors. Patient enablement is an indicator of patient-centred care, the mean PEI score of the RFD group was of a comparable standard to that found from general practice consultations in the United Kingdom where primary care is much better developed,[1] but those of the other groups were significantly lower.

Limitations
A loose definition of the family doctor was used in this study and the classification into the RFD, RnFD, and NRD groups was based on subjective self-reporting. This might have

affected the differences between groups, but this bias would be more likely to underestimate rather than overestimate differences. The results of our analyses were mainly based on data from a cross-sectional study, which was subject to recall bias and the uncertainty of a causal or effect relationship. This study only compared doctor-led models of primary health care currently available in Hong Kong, therefore the results cannot be generalised to alternative models such as nurse-led primary care. The evaluation of non-physician–led primary care models should be an area for future research.

Conclusions

The concept of primary care and the family doctor are being recognised by the public. The population adjusted monthly primary care consultation rate was 0.70 (95% CI, 0.65-0.75), which is equivalent to 8.4 consultations and an average cost of $2553 (mean cost of $304 per consultation) per person per year. About 63% of the population reported having a regular primary care doctor and one third had RFD. One third of the population reported an illness and one third had used medical service in the last month. Most felt more enabled to cope with their illnesses and about half of them felt their health conditions had improved after primary care consultation.

In Hong Kong's existing health care system, persons with RFD reported better health, lower utilisation of accident and emergency departments and hospital services, more preventive care, more non-drug managements, and better outcome following consultations than those with RnFD or NRD. In turn, those with RnFD were more likely than those with NRD to have had disease screening, non-drug managements, and improvement in health after a consultation. However, there was no difference between the groups with respect to their utilisation of accident and emergency departments, other hospital services, or enablement to cope with illnesses.

These findings supported the development of a family doctor–led primary health care delivery system in Hong Kong. How to help one third of population find a regular primary care doctor and enable more primary care doctors become family doctors is a challenge. Having RFD may not reduce the demand and cost of primary care services, but it could save on expensive accident and emergency department visits and other hospital services. There is room for expanding the role of primary care in chronic disease management and preventive care.

Acknowledgements

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