

## A COMPARISON OF MORBIDITY PATTERNS IN PUBLIC AND PRIVATE PRIMARY CARE CLINICS IN MALAYSIA

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### ABSTRACT

**Objectives:** To compare the morbidity patterns in public and private primary care clinics; determine patients' reasons for encounter (RFE) and diagnoses using the ICPC-2, and compare ten commonest diagnoses and RFEs.

**Methods:** A cross-sectional study on randomly selected clinics was conducted nationwide. Doctors completed the Patient Encounter Record (PER) for systematically selected encounters for a week.

**Results:** Response rate was 82.0% (public clinic) and 33% (private clinic) with 4262 encounters and 7280 RFE. Overall, the three commonest disease categories encountered were respiratory (37.2%), general and unspecified (29.5%), and cardiovascular diseases (22.2%). Public and private clinics handled 27% versus 50% acute cases and 20.0% versus 3.1% chronic cases i.e. 33.7 and 5.6 chronic diseases per 100 RFE respectively.

**Conclusion:** Doctors in public clinics saw more chronic and complex diseases as well as pregnancy related complaints and follow-up cases while in private clinics more acute and minor illnesses were seen. Health services should be integrated and support given to co-manage chronic diseases in both sectors.

**Keywords:** Primary practice, morbidity pattern, delivery of health care, reasons for encounter, Malaysia.

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### INTRODUCTION

In Malaysia, primary healthcare is provided by both public and private healthcare providers. The public healthcare sector is heavily funded by the government and patients pay a nominal sum for treatment while the private healthcare services is fee for service where patients pay out-of-pocket themselves, or it is funded by their employers or by insurance companies. As payment system has been shown to influence patient mix,<sup>1</sup> patient morbidity pattern may thus differ in these two healthcare systems.

Morbidity pattern denotes healthcare utilisation and it is important for healthcare resources allocation and planning. Data for morbidity has been collected from public hospitals in Malaysia since 1960's and International Classification of Diseases (ICD-10) has been used for disease coding in public hospitals and health clinics since 1999. However, in primary care settings, disease coding using the International Classification of Primary Care (ICPC) is more appropriate as some consultations such as health screening is difficult to classify under the ICD-10. Another method of examining healthcare utilization is determining patients' reasons for encounter (RFE), which indicate patients' health needs and concerns.

In 2009, the Malaysian government announced a possibility of merging the public and private health clinics where private sectors may be reimbursed by the Health Ministry for seeing patients from public sector.<sup>2</sup> It is therefore vital to know the morbidity pattern of both public and private sectors for a comprehensive primary healthcare database as well as healthcare planning. To date, few studies examined or compared this pattern and the services rendered at public and private primary care clinics.<sup>3,4</sup>

Therefore, we aimed to determine and compare the morbidity patterns in public and private primary care clinics, determine patients' RFE and diagnoses using the International Classification of Primary Care, second edition (ICPC-2)<sup>5,6</sup> and rank and compare ten most common diagnoses and RFEs in the two settings. It is hoped that information gathered from this study will assist in the planning of financial and resource allocation for the public-private integration.

## METHODS

This paper is part of a cross-sectional study on the 'Evaluation of the Quality of Public and Private Primary Care in Malaysia' that was carried out in March and April 2008. The study sample was derived by a simple random sampling technique using SPSS version 15. The study population was all primary health care facilities in Malaysia which was stratified into public and private sector. The list of public clinics was obtained from the Malaysian Ministry of Health (Information and Documentation Unit, Distribution of Public Health Facilities), while the list of private clinics was obtained from the Malaysian Medical and Health Directory 2007. Hospital-based outpatient clinics including university hospitals, specialist clinics other than family medicine specialist clinics and clinics without resident doctors were excluded from the study frame. After exclusion, there were 4482 and 497 private and public primary care clinics respectively. The sample size estimation was calculated using Epi-Info version 6 with the assumptions of 50% prevalence rate of the variables of interest, power of 80%, and 95% confidence level. The sample size was also adjusted to accommodate for an estimated 20% non-response rate. The final study sample was 114 and 100 for private and public primary care clinic respectively.

The selected doctors were approached by telephone and the researchers met them personally to invite and explain about the study. After obtaining consent, the manual and questionnaires were given to the doctors.

In each clinic, Patient Encounter Record (PER) forms was used to collect information on patient profiles, their reasons for visits and diagnoses. The patients were selected using systematic random sampling over seven consecutive working days. As the numbers of daily encounters were high for each

doctor in a public clinic, every tenth patient encounter was selected whereas in private clinics, every fifth patient encounter was selected. For each patient encounter, the PER form was completed by the doctor who attended to the patient at the time of consultation or immediately after the consultation to avoid recall bias. The doctor was asked to document the actual reasons for visit, which might not be the chief complaint.

The operational definition of an encounter is a face-to-face interaction between a patient and a doctor in which the doctor renders professional service in response to the explicit or implicit request by the patient or his/her agent. Telephone, on-line consultations or consultations that occur outside a doctor's usual consultation or treatment room was not considered an encounter. Each patient's visit to a doctor was an encounter regardless of the number of reasons he/she might have. If the same patient made a second visit on the same day for reasons not related to the first visit, he/she was considered to have two encounters. It was considered to be one encounter if the reasons were related. Consultations that occurred on different days were considered different encounters.

The RFE and diagnoses<sup>5,6</sup> were coded by trained research assistants and checked for accuracy by the researchers. Data were analysed using SPSS version 15.0. Chi-square test was used for associations between categorical data and student-t-test for continuous data. A statistical significant level was set at  $p < 0.05$ .

Ethical approval was obtained from the Research and Medical Ethics Committee, Ministry of Health (KKM/NIHSEC/08/0804/MRG-07-LOI-HSR-04).

## RESULTS

### Health Facility Profiles

Out of the 214 clinics selected to participate, 82 out of the 100 public clinics and 38 out of the 114 private clinics responded. The response rate was 82.0% and 33.3% respectively. The reasons for non-participation were 'not interested', 'too busy', 'unhappiness with the Ministry of Health policies on private clinics', 'do not wish to participate in paperwork' and 'clinic closed down'. About 78% of the public clinics were located in rural and sub-urban areas whilst 60.5% of the private clinics were located in urban areas ( $\chi^2=18.504$ ,  $p<0.001$ ). Mainly doctors in charge of the public clinics (90.2%) or owners of the private clinics (73.7%) contributed information on their clinic facilities. The mean age of doctors at the public clinics was younger than the private clinics (34.8 years versus 48.9 years respectively;  $t=7.813$ ,  $p<0.001$ ). About 86.8% of the private clinics were solo practices.

### Patient Profiles

Malay patients were the main attendees in both sectors, followed by Indian patients in public clinics and Chinese patients in private clinics. There was a significance difference ( $p < 0.05$ ) in ethnic groups seen in these two settings. Patients attending public clinics were older and more likely to be female when compared to the private clinics (Table 1). One third of

patients seen in both sectors were new patients (Table 2). Almost all patients (98.6%) from private clinics were walk-ins and had attended the clinic before while 31.2% of the patients attending public clinics had appointments. Most patients were between 20 to 49 years of age (Table 3). There were more male patients (57.1%) for age group 0 to 19 years old in both settings, but more females (59.2%,  $p < 0.05$ ) for age group 20 to 65 years.

**Table 1: Characteristics of patients recruited at public and private clinics**

	Public clinics, n (%)	Private clinics, n (%)	Total, n (%)	Statistical test, p-value
<b>Mean age (yrs) (SD)</b>	37.3 (21.6)	31.4 (19.8)	36.0 (21.4)	$t = 7.813, < 0.001$
<b>Ethnicity</b>				$\chi^2 = 371.77, p < 0.001$
Malay	2388 (67.3)	464 (45.5)	2852 (62.4)	
Chinese	511 (14.4)	378 (37.1)	889 (19.5)	
Indian	534 (15.0)	78 (7.6)	612 (13.4)	
Others	117 (3.3)	100 (9.8)	217 (4.7)	
<b>Total</b>	3551 (100)	1020 (100)	4571 (100)	
<b>Sex</b>				$\chi^2 = 25.11, p < 0.001$
Male	1585 (43.9)	540 (52.7)	2125 (45.9)	
Female	2026 (56.1)	484 (47.3)	2510 (54.1)	
<b>Total</b>	3611 (100.0)	1024 (100.0)	4635 (100.0)	

**Table 2: Type of visit**

Type of visit	Public clinics* n=3512 n (%)	Private clinics* n=1013 n (%)	Total* n=4525 n (%)
Walk in patient with first encounter	1025 (29.2)	284 (28.0)	1309 (28.9)
Walk in patient with previous encounter	1255 (35.7)	715 (70.6)	1970 (43.5)
By appointment	1097 (31.2)	13 (1.3)	1110 (24.5)
Referred	152 (4.3)	1 (0.1)	153 (3.4)
<b>Total</b>	3529 (100.0)	1013 (100.0)	4542 (100.0)

\*A patient may be categorized in multiple types of visit

**Table 3: Patients attending public and private clinics by age**

Age group (years)	Public clinic, n (%)	Private clinic, n (%)	Total, n (%)
Less than 10	447 (12.4)	194 (18.9)	641 (13.8)
10-19	407 (11.3)	82 (8.0)	489 (10.5)
20-29	582 (16.1)	205 (20.0)	787 (17.0)
30-39	511 (14.1)	222 (21.6)	733 (15.8)
40-49	471 (13.0)	130 (12.7)	601 (12.9)
50-59	525 (14.5)	105 (10.2)	630 (13.6)
60-69	412 (11.4)	45 (4.4)	457 (9.8)
70 and above	262 (7.2)	43 (4.2)	305 (6.6)
<b>Total</b>	3617 (100.0)	1026 (100.0)	4643 (100.0)

## Morbidity Patterns

A total of 4262 encounters were recorded, 3474 (81.5%) from public clinics and 788 (18.5%) from private clinics. The total RFE was 7280, with 5865 (80.6%) from public clinics and 1415 (19.4%) from private clinics. The mean number of RFE was higher in the public than private clinics but the mean number of diagnoses per encounter was higher in the private than public clinics.

The three most common groups of RFE in public clinics were problems related to respiratory system, "general and unspecified" and cardiovascular system, while for private clinics, they were problems related to respiratory system, "general and unspecified" and digestive system (Table 4). Common RFE in public clinics were chronic diseases such as hypertension and diabetes whereas in private clinics, acute problems such as upper respiratory tract infection and fever were common complaints (Table 5). Acute problems were the main complaints for age group 0 to 49 years while chronic diseases were mainly seen in those aged more than 50 years old.

The percentage of acute cases seen in private clinics was almost double that seen in public clinics (50.0% versus 27% of total RFE respectively) whereas public clinics saw more chronic cases than private clinics (20.0% versus 3.1% of total RFE respectively). There were 33.7 chronic diseases for every 100 encounters in public clinics whilst in private clinics only 5.6 chronic diseases were seen for every 100 encounters.

For the ten most frequent diagnoses using ICPC-2, hypertension, diabetes mellitus, lipid disorder and asthma constituted 49.7 diagnoses per 100 encounters in public clinics whilst hypertension and bronchial asthma constituted 12.3 diagnoses per 100 encounters in private clinics (Table 6). Pregnancy contributed 8.8 diagnoses per 100 encounters in public clinics whereas it did not appear in the ten most frequent diagnoses in private clinics.

There were 60 complaints of backache (0.8% RFE) and 288 (4.0% RFE) of headache/vertigo/dizziness. However, there was no record of psychological problems such as anxiety or depression in public clinics.

## DISCUSSION AND CONCLUSION

This is the first study in Malaysia to concurrently compare the morbidity patterns of public and private primary care clinics nationwide. The response rate in public clinics was 82% and thus the findings would be representative of public clinics. However, the response rate from private clinics was low despite researchers personally approaching general practitioners for consent to participate in the study hence limiting the

generalisability of the findings for private clinics. Nevertheless, the findings can provide an insight of the problem.

We found doctors in public clinics saw more chronic and complex diseases as well as pregnancy related complaints while in private clinics more acute and minor illnesses were seen.<sup>7</sup> This is similar to findings in Sri Lanka.<sup>8</sup> In addition, in Malaysia, it has been shown that the incidence of acute respiratory infection in the community was 18.2% and about half of these were seen in private sectors.<sup>9</sup> It is possible that doctors in private clinics were seeing more acute illnesses because their opening hours are longer and are more accessible to the patients. In public clinics, more patients are treated for chronic diseases and one of the reasons could be the heavy subsidy by the Malaysian government for the cost of treatment. The situation is different in Singapore where the private sector treated an almost equal percentage of chronic conditions as the public sector.<sup>10</sup> An approach for Malaysian public clinics to cope with the chronic disease workload is to delegate the management of minor ailments to paramedics either at the 'Klinik Kesihatan' or via the newly introduced '1 Malaysia Clinics'. This could potentially free as much as one-fifth of the physician's time<sup>7</sup> to concentrate on improving the quality of care of patients with chronic diseases.

Problems related to the respiratory system were the most frequent RFE and this trend has remained unchanged from 1982.<sup>7</sup> However, conditions seen at a hospital-based general medical clinic in 1982 that involved the digestive system, nervous system, infections, genitourinary system, skin and musculoskeletal system were not as common in this study. Reason for this is beyond the scope of this study although improved community hygiene could be a possibility.<sup>7</sup>

Our data had shown a low rate of patient encounters for medical check-up in both public and private clinics. As the burden of chronic diseases in Malaysia are increasing, it is imperative to strengthen the preventive component of health care by patient empowerment and structured programs.<sup>11,12</sup> We have shown that patients seen were mainly in the 20 to 49 years age group and hence this is a good opportunity to implement screening and prevention strategies. Studies have shown that only half of the GP practices in Malaysia did cervical smear and breast screening although these cancers ranked sixth in the overall burden of disease.<sup>11,13</sup> It is therefore crucial to encourage screening in primary care.

The rate of visits for pregnancy related complaints to private clinics were low (5.2 per 100 encounters in private clinic versus 12.3 per 100 encounters in public clinics). This could possibly be attributed to financial reasons as the visits may not be funded by employers and insurance companies. Nevertheless, the reasons can be ascertained in future studies. Pregnancy and pregnancy related complications were the top two principal causes for government hospital admission in 2009 in

Table 4: Distribution of patient reasons for encounter, by ICD-10 chapter and most frequent individual reasons for encounter within chapter\*

	Overall			Public Clinics			Private Clinics		
	n	% age of total RFE n=7281	Rate/100 encounter n=4262	n	% age of total RFE n=5865	Rate/100 encounter n=3474	n	% age of total RFE n=1415	Rate/100 encounter n=788
<b>Respiratory</b>	<b>1584</b>	<b>21.8</b>	<b>37.2</b>	<b>1179</b>	<b>20.0</b>	<b>33.9</b>	<b>412</b>	<b>29.1</b>	<b>52.3</b>
R05 Cough	651	8.9	15.3	477	8.1	13.7	174	12.3	22.1
R07 Sneezing/Nasal congestion	327	4.5	7.7	245	4.2	7.1	82	5.8	10.4
R21 Throat symptom/ Complaint	195	2.7	4.6	111	1.9	3.2	84	5.9	10.7
R74 Upper respiratory infection, Acute	96	1.3	2.3	79	1.3	2.3	17	1.2	2.2
R80 Influenza	74	1.0	1.7	63	1.1	1.8	11	0.8	1.4
R02 Shortness of breath, Dyspnoea	70	1.0	1.6	51	0.9	1.5	19	1.3	2.4
<b>General and unspecified</b>	<b>1259</b>	<b>17.3</b>	<b>29.5</b>	<b>936</b>	<b>16.0</b>	<b>26.9</b>	<b>322</b>	<b>22.8</b>	<b>40.9</b>
A03 Fever	678	9.3	15.9	480	8.2	13.8	198	14.0	25.1
A30 Check up complete	73	1.0	1.7	60	1.0	1.7	13	0.9	1.6
A80 Trauma/Injury, NOS	71	1.0	1.7	61	1.0	1.8	10	0.7	1.3
A01 Pain, General/ Multiple sites	53	0.7	1.2	30	0.5	0.9	23	1.6	2.9
A27 Fear of other disease, NOS	51	0.7	1.2	36	0.6	1.0	15	1.1	1.9
A11 Chest pain NOS	37	0.5	0.9	30	0.5	0.9	7	0.5	0.9
A04 Weakness/tiredness general				27	0.5	0.8			
A62 General administrative procedure							8	0.6	1.0
<b>Cardiovascular</b>	<b>946</b>	<b>13.0</b>	<b>22.2</b>	<b>871</b>	<b>14.9</b>	<b>25.1</b>	<b>75</b>	<b>5.3</b>	<b>9.5</b>
K63 Encounter, follow-up cardiovascular	688	9.4	16.1	644	11.0	18.5	44	3.1	5.6
K50 Medication; renew; cardiovascular	74	1.0	1.7	70	1.2	2.0			
K25 Fear of hypertension							11	0.8	1.4
<b>Endocrine</b>	<b>719</b>	<b>9.9</b>	<b>16.9</b>	<b>683</b>	<b>11.6</b>	<b>19.7</b>	<b>36</b>	<b>2.5</b>	<b>4.6</b>
T63 Encounter, follow-up endocrine/ metabolic	543	7.5	12.7	528	9.0	15.2	15	1.1	1.9
T60 Test result, endocrine/ metabolisme	44	0.6	1.0	42	0.7	1.2			
<b>Digestive</b>	<b>535</b>	<b>7.4</b>	<b>12.6</b>	<b>373</b>	<b>6.4</b>	<b>10.7</b>	<b>162</b>	<b>11.5</b>	<b>20.6</b>
D01 Pain/Cramps, Abdominal general	95	1.3	2.2	60	1.0	1.7	35	2.5	4.4
D11 Diarrhoea	86	1.2	2.0	58	1.0	1.7	28	2.0	3.6
D02 Pain, Abdominal epigastric	70	1.0	1.6	52	0.9	1.5	18	1.3	2.3
D10 Vomiting	69	0.9	1.6	40	0.7	1.2	29	2.0	3.7
D09 Nausea							8	0.6	1.0
<b>Pregnancy</b>	<b>470</b>	<b>6.5</b>	<b>11.0</b>	<b>429</b>	<b>7.3</b>	<b>12.3</b>	<b>41</b>	<b>2.9</b>	<b>5.2</b>
W30 Check up; antenatal	313	4.3	7.3	295	5.0	8.5	18	1.3	2.3
W41 Postnatal examination	38	0.5	0.9	34	0.6	1.0			0.0
<b>Musculoskeletal</b>	<b>427</b>	<b>5.9</b>	<b>10.0</b>	<b>351</b>	<b>6.0</b>	<b>10.1</b>	<b>76</b>	<b>5.37</b>	<b>9.6</b>
L02 Back symptom/Complaint	60	0.8	1.4	47	0.8	1.4	13	0.9	1.6
L15 Knee symptom/ Complaint	58	0.8	1.4	49	0.8	1.4	9	0.6	1.1
L14 Leg/Thigh symptom/ Complaint	36	0.5	0.8	28	0.5	0.8	8	0.6	1.0
L17 Ankle symptom/ Complaint	34	0.5	0.8	30	0.5	0.9			
L01 Neck symptom/ Complaint							7	0.5	0.9
<b>Neurological</b>	<b>359</b>	<b>4.9</b>	<b>8.4</b>	<b>273</b>	<b>4.7</b>	<b>7.9</b>	<b>86</b>	<b>6.1</b>	<b>10.9</b>
N01 Headache	196	2.7	4.6	141	2.4	4.1	55	3.9	7.0
N17 Vertigo/Dizziness	92	1.3	2.2	73	1.2	2.1	19	1.3	2.4
<b>Skin</b>	<b>346</b>	<b>4.8</b>	<b>8.1</b>	<b>264</b>	<b>4.5</b>	<b>7.6</b>	<b>82</b>	<b>5.8</b>	<b>10.4</b>
S02 Pruritus	102	1.4	2.4	80	1.4	2.3	22	1.6	2.8
S06 Rash localized	56	0.8	1.3	36	0.6	1.0	20	1.4	2.5
<b>Eye</b>	<b>177</b>	<b>2.4</b>	<b>4.2</b>	<b>147</b>	<b>2.5</b>	<b>4.2</b>	<b>30</b>	<b>2.1</b>	<b>3.8</b>
F02 Red eye	39	0.5	0.9	34	0.6	1.0			
<b>Urology</b>	<b>116</b>	<b>1.6</b>	<b>2.7</b>	<b>97</b>	<b>1.7</b>	<b>2.8</b>	<b>19</b>	<b>1.3</b>	<b>2.4</b>
U01 Dysuria/Painful urination	42	0.6	1.0	34	0.6	1.0	8	0.6	1.0
U02 Urinary frequency /Urgency	33	0.5	0.8	28	0.5	0.8			
<b>Female genital system</b>	<b>113</b>	<b>1.6</b>	<b>2.7</b>	<b>87</b>	<b>1.5</b>	<b>2.5</b>	<b>26</b>	<b>1.8</b>	<b>3.3</b>
<b>Psychiatry</b>	<b>83</b>	<b>1.1</b>	<b>1.9</b>	<b>60</b>	<b>1.0</b>	<b>1.7</b>	<b>23</b>	<b>1.6</b>	<b>2.9</b>
P50 Medication; renew; psychological							10	0.7	1.3
P06 Sleep disturbance							7	0.5	0.9
<b>Ear</b>	<b>59</b>	<b>0.8</b>	<b>1.4</b>	<b>40</b>	<b>0.7</b>	<b>1.2</b>	<b>19</b>	<b>1.3</b>	<b>2.4</b>
<b>Blood</b>	<b>51</b>	<b>0.7</b>	<b>1.2</b>	<b>50</b>	<b>0.9</b>	<b>1.4</b>	<b>1</b>	<b>0.1</b>	<b>0.1</b>
<b>Social problems</b>	<b>19</b>	<b>0.3</b>	<b>0.4</b>	<b>17</b>	<b>0.3</b>	<b>0.5</b>	<b>2</b>	<b>0.1</b>	<b>0.3</b>
<b>Male genital system</b>	<b>17</b>	<b>0.2</b>	<b>0.4</b>	<b>14</b>	<b>0.2</b>	<b>0.4</b>	<b>3</b>	<b>0.1</b>	<b>0.4</b>

\*Only morbidities with a rate of  $\geq 0.5$  percentage of total RFE are included

**Table 5: Ten most frequent patient reasons for encounter (RFE) in public and private clinics**

Public				Private			
ICPC-2 code	Description	N= 5865, n (%)	Rate / 100 encounters (Total=3474)	ICPC-2 code	Description	N=1415, n (%)	Rate / 100 encounters (Total=788)
K63	Encounter, follow up cardiovascular	644 (11.0)	18.5	A03	Fever	198 (14.0)	25.1
T63	Encounter, follow up endocrine/ metabolic	528 (9.0)	15.2	R05	Cough	174 (12.3)	22.1
A03	Fever	480 (8.2)	13.8	R21	Throat symptom/ Complaint	84 (5.9)	10.7
R05	Cough	477 (8.1)	13.7	R07	Sneezing/Nasal congestion	82 (5.8)	10.4
W30	Check up; antenatal	295 (5.0)	8.5	N01	Headache	55 (3.9)	7.0
R07	Sneezing/Nasal congestion	245 (4.2)	7.1	K63	Encounter, follow up cardiovascular	44 (3.1)	5.6
N01	Headache	141 (2.4)	4.1	D01	Pain/Cramps, Abdominal general	35 (2.5)	4.4
R21	Throat symptom/ Complaint	111 (1.9)	3.2	D10	Vomiting	29 (2.0)	3.7
S02	Pruritus	80 (1.4)	2.3	D11	Diarrhoea	28 (2.0)	3.6
R74	Upper respiratory infection, Acute	79 (1.3)	2.3	A01	Pain, General/ Multiple sites	23 (1.6)	2.9

**Table 6: Ten most frequent diagnoses by ICPC-2 in public and private clinics**

Public				Private			
ICPC-2 code	Description	N=5865, n (%)	Rate / 100 encounters (Total=3474)	ICPC-2 code	Description	N=1415, n (%)	Rate / 100 encounters (Total=788)
K86	Hypertension, Uncomplicated	849 (16.4)	24.4	R74	Upper respiratory infection, Acute	271 (21.2)	34.4
R74	Upper respiratory infection, Acute	574 (11.1)	16.5	A03	Fever	62 (4.9)	7.9
T90	Diabetes, Non-insulin dependent	536 (10.4)	15.4	K86	Hypertension, Uncomplicated	62 (4.9)	7.9
T93	Lipid disorder	223 (4.3)	6.4	D73	Gastroenteritis, presumed infection	37 (2.9)	4.7
W78	Pregnancy	176 (3.4)	5.1	R96	Asthma	35 (2.7)	4.4
W84	Pregnancy high risk	129 (2.5)	3.7	R05	Cough	33 (2.6)	4.2
R96	Asthma	122 (2.4)	3.5	D87	Stomach function disorder	30 (2.3)	3.8
A03	Fever	121 (2.3)	3.5	N01	Headache	24 (1.9)	3.0
R05	Cough	76 (1.5)	2.2	N17	Vertigo/Dizziness	22 (1.7)	2.8
D87	Stomach function disorder	75 (1.5)	2.2	S88	Dermatitis, Contact/Allergic	22 (1.7)	2.8

Malaysia.<sup>14</sup> It is therefore important to update the knowledge of primary care doctors in this area to improve the maternal mortality and perinatal mortality rates.

It is intriguing that we found no record of psychological problems of anxiety or depression. Even the complaints of backache, headache, vertigo, dizziness that could raise the possibility of psychosomatic symptoms were less than 5%. This finding is similar to an earlier study.<sup>9</sup> The Third National Health and Morbidity Survey (NHMS III) in Malaysia has reported the prevalence of psychiatric morbidity among

children and adolescents was 20.3% while it was 11.2% for adults. The low prevalence of psychological or psychiatric problems in this study may be due to under-diagnosis and under-recording. Hence, there is a need to train primary care doctors to increase their awareness and knowledge on mental health.

Limitations of this study could be due to under-estimation of the morbidity data due to unidentified patient problems during consultations, recording, diagnosis and coding.<sup>15-17</sup> Although almost all diagnoses in private clinics were recorded, a quarter

of RFEs were not documented; perhaps reflecting local GPs' unfamiliarity with recording RFE. This is not unique to Malaysia as this has been noted in developed countries that adopt ICPC for routine data collection in primary care.<sup>18,19</sup> It is known that there is general agreement for RFE and diagnoses although there is better agreement for RFE.<sup>20</sup> Unlike other disease classifications, the ICPC allows the diagnoses of symptom and complaint which is more relevant in primary care settings and has high inter-observer reliability and secondary coding reliability.<sup>21-23</sup> Capturing RFE in ICPC can give rise to error<sup>8,24</sup> due to difficulty in interpretation of symptoms and may lead to coding error by research assistants for example when deciding whether the symptom of cough should be coded as upper respiratory tract infection. To reduce this error, researchers checked and verified codes entered by research assistants.

## CONCLUSION AND RECOMMENDATION

Chronic diseases are burgeoning in Malaysia and will be a major health crisis in the future if effective preventive measures are not initiated. Looking at current trends, the burden of managing chronic diseases lies mainly with the public clinics unless private clinics are provided with support and incentives to share the workload. Hence, the Malaysian government's plan to integrate public and private health services is timely and should be studied and implemented.

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