Descriptive analysis of total medical admissions and common medical disorders in 1987 Kuantan General Hospital, using computerized in-patients' discharge record

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Summary

Using computerized in-patients' discharge records, a descriptive analysis was carried out of all medical admission in 1987 in a general hospital. The survey found that there were a total of 4053 admissions in 1987. A wide range of medical disorders were seen reflecting the lack of subspecialization. Cardiovascular disorders topped accounting for 25.6% of all admissions, followed by gastrointestinal and hepatobiliary disorders 12.8% and respiratory disorders 10.7%. The commonest specific medical disorders seen were hypertension 13.8%, diabetes mellitus 10.2%, ischaemic heart disease 7% and asthma 4.5%. The age, sex, ethnic and geographical distributions of the common medical disorders seen appear to conform to two broad pattern; hypertension, diabetes, ischaemic heart disease and cerebrovascular disease affected the older patients, had even ethic distribution and predominantly urban. Malaria, non-specific fever, viral hepatitis and acute gastroenteritis affected the younger patients, predominantly rural and Malay. Information from such surveys may be useful for planning and organization of medical services.

Keywords: Hospital admission, Hypertension, Diabetes Mellitus, ischaemic heart disease, asthma, epidemiology.

Introduction

Mortality data for the whole country[1] and for a particular hospital[2] are easily available. Morbidity data however is less easily obtainable, even though it is a better indication of the load of sickness and disability in a community[3] as well as the load on the health service. Moreover, if the data were to be collected over several years, the changing trend of morbidity over time can be observed.

Kuantan General Hospital is probably among the first in the country where patients' discharge records are computerised. The 1987 in-patients database file was recently completed. We present here a descriptive analysis of the total medical admissions in 1987.

Methods

The computer used was the PROMAG microcomputer with 640 K random access memory and the MS-DOS (microsoft-disc operating system) operating system. It has an integral hard disc with storage capacity of 20 megabytes. The visual display unit and keyboard is separate. The application program used was dBase III plus (Ashton-tate, USA).

Whenever a patient was discharged, the staff nurse in charged filled information concerning the patient in a discharge record form. The information included were record number, patient's name, age, sex, ethnic origin, address, date admit, date discharge, length of stay, discharge status (death, discharged home, transfer to another hospital, at own risk discharge) and diagnosis. The diagnosis was based on that written in the case note on the day of discharge which was arrived at only after consultation with the specialist in charge.

Information in the discharge record form was then entered into the inpatient's database file in the computer by a clerk. Each new record was added to the end of the database file and was automatically given a computer number.

Using the search facility of the computer, the following information were retrieved from the database:-

- Total medical admissions.
- Total repeat admissions.
- Age, sex and ethic distributions of patients.
- Distribution of disorders by broad diagnostic group and more specific medical disorder/problem within the broad group.
- Age, sex and ethic distribution of any particular disorder.

Date on geographical distribution of patients however cannot be directly obtained. A random sample of records with patient's address on it can be easily retrieved from the database. The list of addresses was then mapped out and sorted out between those from urban or rural area.

Results

A total of 4053 medical patients were seen in 1987. Of these, 325 were repeat admissions.

Table I gives the age distribution of total medical patients and population of Pahang. There were 2321 (57.3%) male patients and 1732 female (42.7%), 43.6% of total medical patients came from Kuantan (Urban), another 20.8% of the patients originated form Urban area outside Kuantan. Only 35.6% of the patients were from rural area.

Table II gives the distribution of disorders seen among all the medical patients (excluding repeat admission), categorised by broad disgnostic grouping as well as more specific disease entity in that category. Table III gives the ranking (in decreasing order) of the ten most common medical disorders seen. They accounted for 57% of all admissions. Hypertension topped with 13.8%, followed by diabetes mellitus 10.2%. Table IV, V, VI and VII given the age, sex ethnic and urban-rural distributions respectively of the ten common disorders seen.

Table I
Age distribution of medical patients and population of Pahang

Age (Year)	Medical Admissions No. (%)	Pahang Population (5) Age 15 – 65
15 – 19	349 (9.4%)	(21.3%)
20 – 29	877 (23.4%)	(30.9%)
30 – 39	683 (18.2%)	(21.4%)
40 – 44	317 (8.6%)	(8.4%)
45 – 54	554 (14.8%)	(9.4%)
55 – 64	415 (11.2%)	(5.9%)
65	533 (14.3%)	(5.3%)
Total	3,728 (100%)	(100%)

Discussion

The true incidence, prevalence and other basic epidemiological data of many common medical disorders in this country is yet to be determined. This is largely because community morbidity survey is not only tedious and expensive to carry out, it also has its methodological problems[4]. It is usually carried out by lay persons, using simple investigative aids at most, it is therefore also less accurate and for many disorders requiring more complex investigation for diagnosis, simply not possible. In contrast, hospital based study has many advantages. Patient's records are easily accessible and diagnosis is likely to be more accurate. However, hospital based study has serious methodological problems. It is no less tedious ploughing through thousands of records, though this is made easy with computerized hospital records. It also cannot measure the true prevalence of disorders, however, admission rate is a useful indicator of the prevalence of serious (at last requiring admission) medical disorders in the community. Thus, this survey confirms physician's impression that Hypertension, diabetes, ischaemic heart disease and asthma are common medical problems encountered in practice, the bread and butter of general medical work. These 4 disorders accounted for just over 1/3 of all admissions. On the other hand, it is somewhat surprising that acute gastroenteritis, dyspepsia/ epigastric pain, viral hepatitis, non-specific fever and Malaria could figure inside the top ten common medical disorders requiring admission. This may perhaps call into question existing admission policy particularly with regards to acute gastroenteritis and epigastric pain and its contribution to ward congestion. This survey also shows the wide range of disorders and problems encountered in general medical practice. This is a reflection of the lack of subspecialization in peripheral general hospitals in this country.

The ten most common disorders accounted for 57% of all admission and looking at their age, sex, ethnic and Urban-Rural distributions, there appears to be two broad patterns of illness. On the one hand, there are hypertension and diabetes, and their chronic degenerative sequelae, ischaemic heart disease and cerebrovascular disease. These affected the older age group, predominantly urban and has rather even ethnic distribution. On the other hand, there are Malaria, non-specific fever, viral hepatitis and acute gastroenteritis, which are all infective illnesses. These affected the younger aged group, predominantly rural and Malay. These 2 patterns are consistent with the known aetiologic or

Table II
Distribution by broad diagnostic grouping and more specific medical disorder/problem

Diagnostic Group	No.	(%)	Medical Disorder / Problem	No.	(%)
Cardiovascular disorders	957	(25.6)	Hypertension	515	(13.8)
			HD[a] – AMIa 125 – Other – Presentation 137	262	(7.0)
			Congestive condiac-failure	43	(1.1)
			CRHD	53	(1.4)
			Congenital heart disease	17	(0.4)
			Non-specific chest pain	35	(0.9)
			Arrhymias	17	(0.4)
			Others	15	(0.4)
Gastrointstinal and Hepatobiliary disorders	479	(12.8)	Acute gastroenteritis	150	(4.0)
			Epigastric pain / dyspepsia	141	(3.7)
			Viral hepatitis	137	(3.7)
			Chronic liver disases	31	(0.8)
			Others	20	(0.5)
Respiratory disorders (Excluding active TB)	399	(10.7)	Asthma	170	(4.5)
			COAD	79	(2.1)
			TBa sequelae	47	(1.2)
			Pneumonia	42	(1.1)
			Lung carcinoma	21	(0.5)
			Others	40	(1.0)
Endocrine disorders	396	(10.6)	Diabetes mellitus	379	(10.2)
			Others	17	(0.4)
Febrile illness	339	(9.1)	Malaria	104	(2.8)
			Scrub Typhus	42	(1.1)
			Typhoid	54	(1.4)
			Non-specific fever / viral fever	134	(3.6)
			Leptospirosis	5	(0.1)
Neurological disorders	304	(8.1)	Cerebrovascular disease	147	(3.9)
			Fits	42	(1.1)
			Faint / dizziness	46	(1.2)
			Others	69	(1.8)
Psychiatric disorders	293	(7.8)	Schizophrenia	152	(4.0)
			Hysteria	18	(0.4)
			Drug Addict	36	(0.9)
			Others	87	(2.3)
Renal disorders	255	(6..8)	Nephritis – AGNa 15 – Nephrotic 39 – Others 18	72	(1.9)
			SLE nephritis	18	(0.4)
			Urinary tract infection	91	(2.4)
			Chronic renal failure	42	(1.1)
			Acute renal failure	15	(0.4)
			Others	17	(0.4)
Environmental njury	123	(3.3)	Snake bite	67	(1.8)
(1.5)				Other bites 56	
Haematological disorders	71	(1.9)	Thalasaemias	18	(0.4)
			Anemia for investigation	32	(0.8)
			Others	21	(0.5)
Poisoning	67	(1.8)		67	(1.8)
Musculoskeletal disorders	45	(1.2)		45	(1.2)
Total	3,728	(100)		3,728	(100)
Repeat Admissions	325				
Total	4,053				

a : abbreviation
IHD : Ischaemic heart disease
AMI : Acute myocardial infarction
CRHD : Chronic rheumatic heart disease
COAD : Chronic obstructive airway disease
TB : Tuberculosis
AGN : Acute glomerulonephritis
SLE : Systemic lupus erythematoses

Table III
Ranking by specific medical disorder (excluding psychiatry)

1.	Hypertension	13.8%
2.	Diabetes Mellitus	10.2%
3.	Ischaemic heart disease	7.0%
4.	Asthma	4.5%
5.	Acute Gastroenteritis	4.0%
6.	Cerebrovascular disease	3.9%
7.	Epigastric pain / dyspepsia	3.7%
8.	Viral hepatitis	3.7%
9.	Non-specific fever / viral fever	3.6%
10.	Malaria	2.8%
	TOTAL	57.2%

Table IV
Mean age and age range of the most common medical disorders

Disorder	Mean Age	Age Range
Hypertension	52	17 – 91
Diabetes	51	17 – 86
Ischaemic Heart Disease	58	29 – 89
Cerebrovascular Disease	61	29 – 86
Malaria	28	13 – 73
Non specific fever	26	13 – 67
Viral hepatitis	25	13 – 69
Acute gastroenteritis	36	13 – 82
Dyspepsia / Epigastric pain	3	14 – 91
Asthma	41	13 – 83

Table V
Sex distribution of common medical disorder

Disorder	Male		Female	
	No.	(%)	No.	(%)
Hypertension	268	(52)	247	(48)
Diabetes	144	(38)	235	(62)
Ischaemic Heart Disease	157	(60)	105	(40)
Cerebrovascular Disease	70	(47)	77	(52)
Malaria	87	(84)	17	(16)
Non specific fever	83	(62)	51	(38)
Viral Hepatitis	107	(78)	30	(22)
Acute gastroenteritis	69	(46)	81	(54)
Asthma	105	(62)	65	(38)
Dyspepsia/epigastric pain	63	(45)	78	(55)
Total	**1,153**	**(54%)**	**986**	**(46%)**

Table VI
Ethnic distribution of common medical disorder

Disorder	Ethnic					
	Malay		Chinese		Indian	
	No	(%)	No	(%)	No	(%)
Hypertension	314	(61)	139	(27)	62	(12)
Diabetes Mellitus	197	(52)	95	(25)	87	(23)
Ischaemic heart disease	139	(51)	63	(23)	60	(22)
Cerebrovascular disease	74	(52)	55	(39)	18	(13)
Malaria	73	(70)	23	(22)	4	(4)
Fever	96	(72)	24	(18)	9	(7)
Viral hepatitis	107	(78)	19	(14)	8	(6)
Acute gastroenteritis	104	(70)	25	(17)	20	(13)
Asthma	112	(66)	22	(13)	36	(21)
Epigastric pain	92	(65)	17	(12)	32	(23)
Total	**1,308**	**(61)**	**482**	**(22)**	**336**	**(16)**

Table VII
Urban-rural distribution of common medical disorder

Disorder	Geography			
	Urban		Rural	
	No.	(%)	No.	(%)
Hypertension	360	(70)	155	(30)
Diabetes mellitus	265	(70)	114	(30)
Ischaemic heart disease	221	(84)	41	(16)
Cerebrovascular disease	103	(70)	44	(30)
Malaria	19	(18)	85	(82)
Fever	63	(47)	71	(53)
Viral hepatitis	58	(42)	79	(58)
Acute gastroenteritis	31	(21)	119	(79)
Asthma	121	(71)	49	(29)
Epigastric pain	88	(62)	53	(38)
Total	**1,329**	**(63)**	**810**	**(37)**

associated factors of these disorders. Hypertension and diabetes, and therefore their degenerative sequelae have been variously attributed to combination of diet, smoking, exercise habits, obesity, stress and urbanization[6, 7, 8]. On the other hand, it is reasonable to assume infection is related to socioeconomic disadvantage and being rural is associated with lower income[9], poorer access to good water supply, agricultural occupation[10], all of which in turn have been shown to correlate with higher morbidity rate[11].

The age distribution of medical patients is disconcerting. One would expect the elderly to be disproportionately represented, and indeed they are in this survey. However, the young and able (age 15-44) accounted for 55.6% of total admission. The disorders with low average age were Malaria, non-specific fever, viral hepatitis, acute gastroenteritis and epigastric pain.

The geographic distribution of patients shows that inspite of the hospital location in Kuantan, most medical patients (56.4%) actually some from outside Kuantan. This raise the question of how the continuing medical need of so many patients who lived far away from the hospital could be efficiently organized once they are discharged.

In conclusion, this survey of medical admission has given us a clearer picture of who our patients were where they came from and the range of common disorders they suffered from. this is useful for the planning and organisation of medical services.

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