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Redirection of non-critical patients in the Emergency Department of Hospital Tuaran to the Primary Care Unit (Klinik Kesihatan)

C S Michal[1*], S Nadirah[1], P Praneetha[2], G Juhanah[1], G Mohan[3]

[1] Clinical Research Centre (CRC), Queen Elizabeth Hospital, Kotakinabalu, Sabah

[2]Department of Biomedical Science and Therapeutics, Faculty of Medicine and Health Science, Universiti Malaysia Sabah

[3]Hospital Tuaran, Sabah

[*]Corresponding author's email: michal@moh.gov.my/ michal.crcqeh@gmail.com, Tel: 012 5529069 / 088 517507, Fax: 088 252500

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ABSTRACT

The Emergency Department (ED) provides treatment for acutely ill patients in need of urgent medical attention. Despite the availability of the primary care unit '*Klinik Kesihatan'*, where non urgent patients should be treated, Malaysia's public hospitals still need to deal with overcrowding of non-urgent patients in ED. The main aim of the study was to assess the willingness of non-urgent patients to be redirected to *Klinik Kesihatan*. This was a cross-sectional study conducted at Hospital Tuaran Emergency Department, Sabah. Non-urgent patients were interviewed using a questionnaire, to find out the purpose of their visit to Emergency Department. A total of 318 non-urgent patients out of 457 patients were interviewed during the study duration. 41 respondents (12.9%) were willing to be redirected towards a *Klinik Kesihatan.* No associated factors were found when compared with the unwilling to be redirected group. Among 277 respondents who rejected redirection to *Klinik Kesihatan*, 70.4% agreed to pay a surcharge to be treated in the Emergency Department and there was no association found with the employment status (p= 0.391). Most patients were not willing to accept redirection to a *Klinik Kesihatan* and would prefer to visit the Emergency Department despite knowing that their condition or illness is one that does not require emergency treatment. Social media, advertisements and pamphlets must be made available to educate patients on the proper use of the Emergency Department.

Key words: emergency service, hospital , Malaysia

INTRODUCTION

The Emergency Department (ED) is a hospital entity that provides around the clock treatment for acutely ill patients and to others needing urgent medical attention[1]. Due to the nature of the service, ED is often overcrowded with patients. Two studies reported that 15% and 40% of ED attendances are with non-urgent illnesses[2, 3]. Although no precise definition exists, non-urgent patients are the patients that could wait until next day (> 12 hours) to receive treatment[4].

ED is commonly used as a primary care unit in many developing countries[5], including Malaysia. Despite the availability of the primary care unit '*Klinik Kesihatan'*, where non urgent patients should be treated, Malaysia's public hospitals still need to deal with overcrowding of non-urgent patients in ED.

A strategy tried in University of Malaya Hospital in Kuala Lumpur and various hospitals in Singapore and elsewhere, showed positive response in increasing the fees for non- urgent cases[6]. In a French study[6], 68.2% agreed to be redirected to primary care unit from ED and it is related to a higher economic level and employment status.

The aims of this study were to find out the willingness of non-urgent patients to be redirected to the nearest primary care unit (*Klinik Kesihatan*), to pay an extra surcharge and the factors associated with the willing and unwilling group. In addition, the medical officers were requested to give suggestion on how to reduce non urgent patient's visit to ED.

MATERIALS AND METHODS

This cross sectional study was conducted at Hospital Tuaran, a district hospital in Sabah located in the district of Tuaran. The ethical permission was taken from Medical Research and Ethic committee (MREC) {NMRR-14-1385-23255(IIR)}. The sample size required for the prevalence of 45% non-urgent cases visit in ED obtained from a French study[8] and with precision 0.05 was 381 patients (Sample size calculator for Estimation 2006 by Lin Naing). With 20% to allow refusals, our final sample size estimates 457 subjects, but only 318 patients agreed to participate in this study. The triage medical assistant/ staff nurse obtained patient's chief complaint, a brief history and checked vital signs. The medical officers performed a directed examination to determine the urgency of the patient's condition. Then, the medical officers writes the final diagnosis. The urgency of the presenting complaint was defined according to the Hospital Urgency Appropriateness Protocol (HUAP) as below [4] :

1. Criteria of severity

1.1. Patients with one of the following conditions (sudden or very recent onset):
(a) Loss of consciousness;
(b) Disorientation;
(c) Coma;
(d) Sensory loss;
(e) Sudden loss of sight or hearing.

1.2. Patients with one of the following conditions:
(a) Pulse rate alteration – <50 or >140 bpm;
(b) Arrhythmia;
(c) Blood pressure alteration;
(d) Electrolyte or blood gas alterations (not including patients with chronic alterations of these Parameters, such as: chronic kidney failure, chronic respiratory disease, etc.);
(e) Persistent fever – 5 days or more, not controlled after treatment in primary care;
(f) Active haemorrhage;
(g) Sudden loss of functional capacity of any part of the body;

2. Criteria for treatment

One of the following procedures:
(a) Intravenous drugs administration (except to maintain IV access);
(b) Oxygen administration;
(c) Setting with plaster casts – except for bandaging;
(d) Surgical intervention or procedure.

3. Criteria for diagnostic intensity

One of the following:
(a) Monitoring of vital signs every 2 hours;
(b) Radiology of any type;

(c) Laboratory tests – except blood sugar in diabetic patients seeking care for reasons other than diabetes and glycaemia tests with glucose test sticks;
(d) Electrocardiography – except in patients with chronic cardiac disease who presented for unrelated problems.

4. Other criteria

One of the following:
(a) Patient has been under observation in the ED for twelve hours or more;
(b) Patient is admitted to hospital or transferred to another hospital or dies in ED;

5. Criteria used only for patients who self-referred

One of the following:
(a) Had an accident (traffic, work-related, in public place) and needs to be examined;
(b) Symptoms suggesting vital emergency: e.g. chest pain, dyspnoea with rapid onset, acute abdominal pain;
(c) Patients with a known condition which usually leads to hospitalization;
(d) The patient's physician advised that he/she needed to go to the emergency service if symptoms appear;
(e) Patients who required quick medical attention, and the hospital was the closest centre;

Following informed consent, the non-urgent patient was requested to complete a questionnaire adapted from a French study[7]. Adult patient > 18 years old, Malaysian, non urgent patients who seeks treatment at Emergency Department Hospital Tuaran from 5pm – 8am during weekdays and anytime during the weekends were included in this study. Paediatrics patients and Patients brought to ED by the police (legal cases) were excluded.

The first part of the questionnaire covered socio demographic data (age, gender, ethnicity, marital status) and socio economic characteristics (level of education and employment status). The second part covered the patient's usual source of medical care (follower of a doctor, number of doctor consultations last year) and the third part covered the ED visit (day of visiting the ED, principal reason for visiting the ED, duration of presenting complaint, previous contact with a physician for the same reason prompting the patient to visit the ED, reference to the ED, level of urgency perceived by the patient on a scale from 0 for " no urgency" to 10 for " extremely urgent problem". The last portion was designed to assess the

willingness of patients identified as non-urgent cases to be redirected to a primary care unit (*Klinik Kesihatan*).

At the end of the ED visit, a questionnaire was completed by the ED medical officer for each patient included in the study. The variables covered investigations and treatments performed in the ED, and referral and discharge decisions made (home or hospital admission).

Data was entered and analysed using IBM SPSS Statistics 22.Ink. All the socio demographic and socio economics variables together with the patient's willingness to accept or decline to be redirected to primary care Unit (*Klinik Kesihatan*) was compared in descriptive statistics. Pearson Chi square was used to investigate the factors associated with the willingness to redirect (Table I) to *Klinik Kesihatan* and willingness to pay surcharge with the employment status.

RESULTS

Total of 12, 202 patients visited the Hospital Tuaran ED during the study period. 6, 330 (51.9%) patients were with non-urgent illnesses. Of the 457 patients that had been asked to answer the questionnaire, 318 agreed. The mean age of the patient was 39.76 (SD=15.48) and 162 (50.9%) of them were female. Bajau (39.6%) constitute majority of the ethnic, followed by Dusun (35.5%) and others (24.9%).

Of 318 patients, 41 respondents (12.9%) were willing to be redirected towards a *Klinik Kesihatan*. There were no significant factors identified between those who were willing and unwilling group (Table 1).

Table 1: Factors associated with the willingness of patient to redirect.

Variable	n	Willing to redirect n(%)	Unwilling to redirect n(%)	X^2 statistics[a] (df)	P value[a]
Educational Status				1.3(3)	0.728
Uneducated	33	6(18.2)	27(81.8)		
Primary	51	5(9.8)	46(90.2)		
Secondary	144	19(13.2)	125(86.8)		
Tertiary	90	11(12.2)	79(87.8)		

Employment Status				0.1(1)	0.738
Employed	186	23(12.4)	163(87.6)		
Unemployed	132	41(12.9)	277(87.1)		
Day of Visit				1.6(1)	0.200
Weekdays	214	24(11.2)	190(88.8)		
Weekends	104	17(16.3)	87(83.7)		
Living in Tuaran					
Passing	7	1(14.3)	6(85.7)		0.909[b]
<6 months	8	1(12.5)	7(87.5)		
<2 years	16	1(6.3)	15(93.8)		
>2 years	287	38(13.2)	249(86.8)		
Visit to primary care before coming to ED					0.970[b]
Yes	32	1(3.1)	31(96.9)		
No	286	40(14)	246(86)		
Time being ill				4.37(2)	0.113
< 1 week	69	14(20.3)	55(79.7)		
> 1week	190	20(10.5)	170(89.5)		
1 day	59	7(11.9)	52(88.1)		
Level of urgency perceived by the patients				3.50(1)	0.061
≤ 5(less urgent)	182	29(15.9)	153 (84.1)		
>5 (urgent)	136	12 (8.8)	124(91.2)		

[a] Chi-square test for independence [b] Fisher's exact test

Common reasons given by the patients for not agreeing to be redirected to *Klinik kesihatan* are, the hospital is the nearest to their place of living(36%), *Klinik kesihatan* is closed after 5pm(35%) and perceived lack of facilities in *Klinik Kesihatan*(10%).

Of 277 respondents who declined to be redirected to *Klinik Kesihatan,* 220 (79.4%) patients agreed to pay a surcharge to be treated in the ED. Reasons given by the patients for their willingness to pay a surcharge is stated in Figure 1 . Employment status between the patients who were willing and unwilling to pay surcharge was not significantly different not significant (p=0.391) (Pearson Chi square).

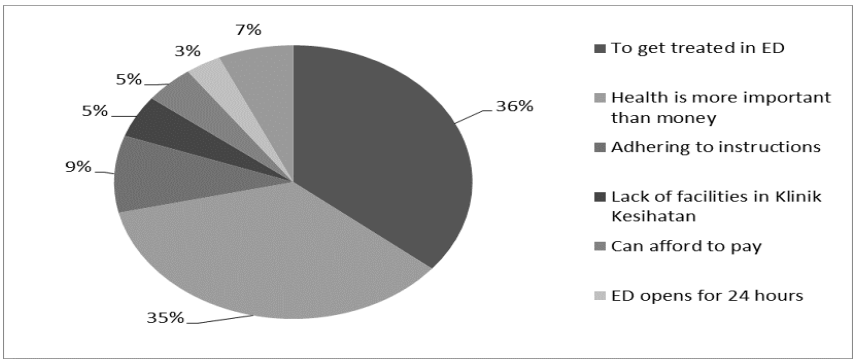

Figure 1: Reasons given by patients for agreeing to pay surcharge, n=220

During the study period, non-urgent medical illness was the main reason for those coming directly to the ED, 275 (86.5%), while 22 (6.9%) had traumatic injuries; 21 (6.6%) were healthy patients who came for a routine medical check-up. Medical diagnoses among patients with non-urgent illness that visited the Hospital Tuaran ED during the study period are as below (Table 2).

Table 2: Medical diagnoses among patients with non-urgent illnesses, n=318

Diagnosis	**n (%)**
Upper Respiratory Tract Infection(URTI)	75(23.6)
Bilateral conjunctivitis	27(8.5)
Acute Tonsillitis	24 (7.5)
Healthy	21(6.6)
Acute Dyspepsia	20(6.3)
Soft tissue injury	18(5.7)
Urinary Tract Infection(UTI)	14(4.4)
Acute Gastroenteritis without dehydration	13(4.1)
*TRO Pulmonary Tuberculosis(PTB)	10(3.1)
Allergic rhinitis	8(2.5)
Acute Gout Flare	7(2.2)
Benign Paroxysmal Positional Vertigo(BPPV)	7(2.2)
Bilateral Knee osteoarthritis	7(2.2)
TRO breast fibroadenoma / Cancer	6(1.9)

Migraine	4(1.3)
Otitis Media	4(1.3)
Abrasion Wound	3(0.9)
Costochondritis	3(0.9)
Epistaxis for investigation	3(0.9)
Newly diagnosed hypertension	3(0.9)
Oral ulcer	3(0.9)
Pharyngitis	3(0.9)
Newly diagnosed Diabetes Mellitus	3(0.9)
Varicella Zoster infection	3(0.9)
Acute Otitis Externa	2(0.6)
Cellulitis	2(0.6)
Tension headache	2(0.6)
Schizophrenia	2(0.6)
Hypothyroidism	2(0.6)
Paronychia	2(0.6)
External Haemorrhoid	2(0.6)
Impacted wax	2(0.6)
Chronic back pain	2(0.6)
Acute peripheral vertigo	1(0.3)
Constipation	1(0.3)
Eczema	1(0.3)
Infected burn wound	1(0.3)
Mumps	1(0.3)
Psoriasis	1(0.3)
Tinea capitis	1(0.3)
Sexually Transmitted Disease (STD)	1(0.3)
TRO Osteosarcoma	1(0.3)
TRO Uterine Fibroid	1(0.3)
Vaginal candidiasis	1(0.3)

* TRO = to rule out

21 healthy patients visited ED for various reasons (Table 3).Of the 21 healthy patients, only one patient agreed to be redirected to *Klinik Kesihatan*.

Table 3: Reasons given by healthy patients to attend the ED.

Reasons for healthy patient to come to ED, n= 21	**n (%)**
To continue medications(patients with chronic diseases)	4(19.0)
Medical Check up	12(57.1)
To get referral/TCA to tertiary hospital	2(9.5)
To check blood group	1(4.8)
To check UPT	1(4.8)
To get oral contraception(OCP)	1(4.8)

Most patients went to the ED voluntarily, 286 (89.9%); only 32 (10.1%) had gone to a *Klinik Kesihatan* before coming to the ED. The main reason for using the ED was because the patients were worried about their health, 149 (46.9%), feeling of pain, 62 (19.5%), to get a medical certificate, 33(10.4%), due to the lack of medical care in *Klinik Kesihatan,* 13 (4.1%), and others, 61 (20.1%).

Medical officers in Hospital Tuaran were requested to give suggestions on how to manage overcrowding by the non-urgent patients in the ED. Most of the doctors suggested to redirect the non-urgent patients to the nearest *Klinik Kesihatan*, while others suggested to bring in more doctors as locum doctors from nearby *Klinik Kesihatan* for the Green zone after 5 PM, to impose rules that enable hospitals to turn away non-urgent cases at triage, to extend working hours in *Klinik Kesihatan* and to educate the patients on the proper use of the ED.

DISCUSSION

Malaysia has one of the most affordable healthcare systems in the world but it is inappropriately used. Locally conducted studies showed that the proportion of inappropriate cases or non-urgent cases in Hospital University Kebangsaan Malaysia (HUKM) ED in 1998 was 38.3%, in ED Hospital Universiti Sains Malaysia (HUSM) was 55% in the year 2000, and in Hospital Kuala Lumpur (HKL) ED in the year 2001 was 35%[8,9].

In Hospital Tuaran, according to the hospital statistics, the number of patient visits to the ED has seen a consistent yearly increase. According to the medical officers working in Hospital Tuaran, 2 medical officers needed to be *oncall* (1 active and 1 passive) during weekdays and 3 medical officers needed during weekends (2 active and 1 passive) to manage the overcrowding of patients in the Emergency department.

Most patients went to the ED voluntarily, only one tenth of the patients had gone to a *Klinik Kesihatan* before coming to the ED. There are a number of *Klinik Kesihatan* available in and around the Tuaran district. These include *Klinik Kesihatan Tamparuli, Klinik Kesihatan Kiulu* and *Klinik Kesihatan Telipok*. All these *Klinik Kesihatan* have an *oncall* Medical Officer and an *oncall* Assistant Medical Officer available at all times. However, these facilities seem to be under-utilised as a great number of patients still tend to go to the ED for non-urgent situations. Non urgent patients' use of emergency department rather than primary care settings (*Klinik Kesihatan*) provides the opportunity to get treatment without an appointment at patient's convenient time[5].

Many patients tend to inappropriately use the ED with non-urgent complaints due to the convenience of location. According to a systematic review on the prevalence and associated factors for inappropriate use of ED, majority of the studies that investigated proximity to the ED did not show a significant association with inappropriate use[4]. However, according to some studies, the distance was one of the barriers to utilization of primary health care by individuals that visited the ED inappropriately[4].

During the study period, healthy patients have also attended to the ED for routine medical check-ups, to collect medications and to even carry out urine pregnancy test. These procedures are non-urgent and can easily be performed in *Klinik Kesihatan* and even pharmacies. Also on the list are "MC-seekers" who generally come to the ED with a mild illness.

Most patients are not willing to be redirected to *Klinik Kesihatan* from the ED, instead are willing to pay surcharge to get treated in ED if they have to. The results are in contrast with the results obtained from the French study[4]. This may be due to the location of the primary care unit. In the French study, the primary unit was set up near the hospital premises. Therefore, many patients were willing to accept reorientation to a primary care unit. Gentile et al also reported, the willingness of the patient to accept reorientation is associated with the level of urgency perceived by the patients and employment status. In contrast to our findings, no associations were found that is may be due to the limited sample size[7].

Most of the Medical Officers in Hospital Tuaran suggested to redirect the non-urgent patient from ED to *Klinik Kesihatan* to reduce the overcrowding in the ED. Some even suggested to impose the rule to turn away these patients. Privately-owned hospitals may turn away patients in a non-emergency, but public hospitals cannot refuse care. In 1986, Congress in US enacted the Emergency Medical Treatment & Labour Act (EMTALA) to ensure public access to emergency services regardless of ability to pay. Public

hospitals holds a different standard than privately owned for-profit hospitals. Public hospital is the best option for those without health insurance or the means to pay for care.

ED is often the busiest department of a hospital and patients who misuse the emergency medical services add challenge to the already hectic work life and over worked medical personnel. The overcrowding by the non-urgent patient to the ED is also a serious threat to the health care system[5]. According to the Joint Commission on Accreditation of Healthcare Organizations (JCAHO), ED overcrowding is one of the contributing factors (31%) to the 'sentinel event' cases of morbidity and mortality[10]. Some severely ill patients may be forced to wait too long for treatment, and their condition may worsen as a consequence. Patients with less severe illnesses may leave without being seen by a doctor, only to return later with a more complicated condition. Due to the attendance of non-urgent cases in the ED, the medical personnel's time and effort will be taken up in attending to these cases. According to a study done in Turkey, inappropriate use of ED by the non-urgent cases, leads to negative outcome to the quality of care and motivation of the worker[11].

Measures must be taken in addressing this issue of ED abuse by non-urgent cases. According to the US Census Bureau Statistics 2012, the visits by the non-urgent patients to ED can be diverted from the ED setting to primary care unit with appropriate alternative access and education efforts[12]. An interventional study on giving the awareness of ED use by using a programme consisting of both financial and educational components, decreased non-urgent ED utilization and increased the use of alternative treatment centres[13]. Therefore, patients should be well informed and educated on cases that require ED services. They should be educated on other options as to where they can seek treatment for non-urgent cases.

In many developed countries, advertisements and awareness messages are spread via posters or tele-media to educate patients on the urgent scenarios that will require emergency treatment at an ED. For example, the Leicester City Clinical Commissioning Group, United Kingdom and National Health System (NHS), England educate their patients on the proper use of the ED by putting up educational and awareness posters all around the United Kingdom[14]. The Queensland State Government of Australia has released an info-video called "Keep Emergencies for Emergency" to educate people on proper use of ED[15]. Another way to reduce overcrowding of ED by the non-urgent patient is by setting up a '*help-line*'. In Scotland, the health care service has the '*NHS 24 helpline'*. It is a 24 hour free helpline[16]. People can call up and explain about their symptoms. Then, the medical personnel can advise on whether their condition or illness is one that requires emergency treatment or primary care unit.

CONCLUSION

Most of the patients are not willing to be redirected but willing to pay for surcharge to get the treatment in ED. Even though Malaysian public hospital have a "do not reject patients" policy in the public hospital service, it is important to educate patients on the use of the ED for the improvement of our health services. The social media, advertisements, pamphlets could be used to educate patients on the proper use of the ED. If a "*help line"* service is made available in Malaysia, then this too can be used to educate patients on the proper use of the ED, as per- the method utilised in other developed and developing countries.

LIMITATIONS

This study was done in one district hospital in Sabah and the results may not represent the total population of the Sabah or Malaysia.

Limitations as to sample size, as only 318 patients were included in this study (lesser than the required number), should be taken into consideration in the interpretation of the results.

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CONFLICT OF INTEREST

The authors declare that they have no competing interests.

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