

A Study on the Magnitude and the Effectiveness of the Observation Ward of Hospital Universiti Sains Malaysia

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Abstract

Background: The observation ward (OW) allows patients to be reassessed and monitored before deciding either to admit or to discharge them. This is a six-month descriptive cross-sectional study conducted in the observation ward of the Emergency Department (ED) of Hospital Universiti Sains Malaysia, Kelantan. The objective of this study was to examine the demographic characteristics and clinical profiles of adult observed patients and to determine the effectiveness of OW management.

Methods: Patients were selected randomly by convenience sampling. One hundred and twenty-four patients were included in the study. The mean age was 40.3 ± 18.5 years (95% CI: 37.2 to 43.8).

Results: Among the common clinical problems were abdominal discomfort (23%), diarrhoea and vomiting (13%) and fever (13%). Reasons for OW admission included diagnostic uncertainty (63%) and short course of treatment (33%). The mean length of stay was 4.1 ± 1.8 hours (95% CI=3.8 to 4.4 hours). Most of the patients (85%) were discharged.

Conclusions: The OW of HUSM is effective in managing adult patients as determined by the hospitalisation rate and the length of stay.

Keywords: observation ward, adult patients, length of admission and discharge, medical sciences

Introduction

The concept of observation medicine has attracted significant attention in the published literature since the Nuffield Provincial Hospital Trust Review of Short Stay Units published their report in 1960. They made a remarkable statement by saying "short stay observation beds were essential for good casualty departments" (1).

In 1988, the American College of Emergency Physicians (ACEP) published the first article on Observation Ward Medicine, entitled "Guidelines on Management of Observation Units" (2). A year later, the British Association of Accident and Emergency Medicine (BAEM) published their guidelines on management of observation wards (3). BAEM emphasised the importance of the observation ward (OW) for patient management and recommended one short stay bed for every 5,000 attendances (4). The advantages of OWs include providing continuous patient management and better definition of patient diagnoses, reducing hospital costs and preventing inappropriate patient disposition (2,5,6).

The study was conducted to examine the demographic characteristics and clinical profiles of adult observed patients and to determine the effectiveness of OW management. We hypothesise that the management of adult patients in OWs of HUSM is efficient and effective.

From the available data, the magnitude of observed adult cases, the strengths and the weaknesses of the OW of HUSM can be determined and thus contribute to the improvement of total patient care. As there was no descriptive analysis for OWs in Malaysian hospitals, the results of this study can serve to establish a database for information on patients that really need OW admission. This knowledge will hopefully reduce the morbidity and mortality rate and ultimately improve patient quality of life.

Materials and Methods

Kelantan is located at the northern part of the east coast of Peninsular Malaysia. Kota Bharu is the capital city of Kelantan with a population of 398 835. There are two major hospitals in

Kota Bharu. Hospital Universiti Sains Malaysia (HUSM) is a teaching hospital under the Ministry of Higher Education, whereas Hospital Raja Perempuan Zainab II is a public hospital under the Ministry of Health. HUSM is also recognised as the regional tertiary referral centre for the east coast region of Peninsular Malaysia. The OW of Emergency Department (ED) of HUSM was started in 2000 with a lot of deficiencies, mainly due to lack of manpower. At present, it provides services for patients who require less than 24 hours of inpatient care. It has eight beds with portable monitors and resuscitation equipment. It was placed under the supervision of emergency physicians.

This is a descriptive cross-sectional study. It was conducted in the observation ward of the Emergency Department, HUSM Kubang Kerian, Kelantan. All of the data were collected from the admission book of the OW from January until June 2004. Patient data or variables, including name, registration number, age, sex, address, diagnosis upon admission, time of admission and discharge, reason of admission, and final disposition (admitted as an inpatient or discharged), were recorded into the designated data collection sheet. Patients were divided into two groups: paediatric (0 to 12 years old) and adult (more than 12 years old), as these are the age categories being used in Malaysia. Transit cases such as pneumonia, heart failure, and unstable angina were excluded.

Data were analysed using the Statistical Package for Social Sciences statistical software (SPSS) 11.0 for Windows. Numerical data were expressed as the mean, median, mode, and standard deviation. Categorical data were expressed as frequency and relative frequency. A 95% confidence interval (CI) was used for

continuous variables, and the chi-square test or one-way ANOVA test was used for univariate analysis of dependent categorical data. Statistical tests were two-sided, and significance was accepted at $P < 0.05$.

Results

A total of 124 adult patients entered the study, mainly Malays (95.2%) and females (73%). The mean age of the patients was 40.3 ± 18.5 years old (Table 1).

In this study, there were three main clinical problems: abdominal discomfort, vomiting and diarrhoea, and fever. The percentages of patients who had abdominal discomfort, vomiting and diarrhoea, and fever were 23.4%, 12.9% and 12.9%, respectively (Table 2).

Sixty-three percent of the study population were admitted and observed for diagnostic evaluation, and another 33% were admitted for a short course of treatment (Table 3). Most of the patients with the above clinical problems were hospitalised after a few hours of observation. The percentages of patients admitted with abdominal discomfort, vomiting and diarrhoea, and fever were 90%, 75%, and 75%, respectively.

In this study, the mean length of stay was 4.12 ± 1.78 hours; (95% CI=3.8–4.4). Mild head injury patients were observed for quite a long period of time. Their mean length of stay was 9.67 ± 1.0 hours. The other two clinical problems that resulted in long stays were chest pain and headache syndrome. The length of stays of these patients was 5.5 ± 0.4 and 5.4 ± 1.9 hours, respectively (Table 4). There was no association between types of clinical problems and length of stay (one-way ANOVA, $P < 0.05$). About 85% of

Table 1: Clinical characteristics and outcomes of adult patients in the observation ward

Clinical Characteristics and Outcomes	
Mean age (years)	40.3 ± 18.5 (95% CI: 37.2–43.8)
Sex	
Male	51 (41.1%)
Female	73 (58.9%)
Race	
Malay	95.2%
Others	4.8%
Outcome	
Discharged	105 (84.7%)
Admitted	19 (15.3%)

Table 2: List of clinical problems and their frequencies

Clinical problem	n (%)
Abdominal discomfort/pain	29 (23.4)
Non-specific chest pain	5 (4)
Renal colic	5 (4)
Fever	16 (12.9)
Asthma/hyperventilation	5 (4)
Headache syndrome	4 (3.2)
Dizziness/vertigo	3 (2.4)
Pain management post injury	2 (1.6)
Mild head injury	3 (2.4)
Hypertension	2 (1.6)
Allergy	2 (1.6)
Upper respiratory tract infection (URTI)	9 (7.3)
Musculoskeletal pain (backache/contusion)	4 (3.2)
Vomiting and diarrhoea	16 (12.9)
Others	19 (15.3)

Table 3: Indications and frequencies of OW admissions according to clinical problems

Clinical problem	Diagnosis n (%)	Treatment n (%)	Other* n (%)	Total n (%)
Abdominal discomfort/pain	28 (22.6)	1 (0.8)	-	29 (23.4)
Non-specific chest pain	5 (4.0)	-	-	5 (4.0)
Renal colic	5 (4.0)	-	-	5 (4.0)
Fever	13 (10.5)	-	3 (2.4)	16 (12.9)
Asthma/ hyperventilation	-	5 (4.0)	-	5 (4.0)
Headache syndrome	4 (3.2)	-	-	4 (2.4)
Dizziness/vertigo	-	3 (2.4)	-	3 (2.4)
Pain management post injury	-	2 (1.6)	-	2 (1.6)
Mild head injury	-	3 (2.4)	-	3 (2.4)
Hypertension	-	2 (1.6)	-	2 (1.6)
Allergy	-	2 (1.6)	-	2 (1.6)
URTI	9 (7.3)	-	-	9 (7.3)
Musculoskeletal pain	1 (0.8)	3 (2.4)	-	4 (3.2)
Vomiting and diarrhoea	-	16 (12.9)	-	16 (12.9)
Upper gastrointestinal bleed	1(0.8)	-	-	1 (0.8)
Others	13 (10.5)	4 (3.2)	1 (0.8)	18 (14.5)
Total (%)	79 (63.7)	41 (33.1)	4 (3.2)	124 (100)

* Awaiting review of laboratory results or psychosocial needs

Table 4: Clinical problems and length of stay

Clinical problem	Mean \pm SD (hour)	95% CI
Abdominal discomfort/pain	4.6 \pm 1.5	4.0 – 5.1
Non-specific chest pain	5.4 \pm 0.4	4.8 – 6.0
Renal colic	3.6 \pm 0.9	2.6 – 4.7
Fever	3.5 \pm 1.1	2.9 – 4.0
Asthma/ hyperventilation	4.9 \pm 2.4	1.9 – 7.8
Headache syndrome	5.4 \pm 1.9	2.4 – 8.3
Dizziness/vertigo	3.1 \pm 1.6	- 1.1 – 7.2
Pain management post injury	4.0 \pm 2.1	3.8 -5.9
Mild head injury	9.7 \pm 1.0	7.1 – 12.2
Hypertension	3.5 \pm 0.7	- 2.8 – 9.8
Allergy	4.3 \pm 1.8	- 11.6 – 20.1
URTI	3.4 \pm 1.0	2.6 – 4.1
Musculoskeletal pain	4.9 \pm 2.1	1.5 – 8.2
Vomiting and diarrhoea	4.0 \pm 1.9	3.0 – 5.0
Upper gastrointestinal bleed ^a	4.0	n/a
Others	2.9 \pm 1.2	2.3 – 3.5

^a Data from one case

the study patients were discharged home with advice and medications (Table 1). However, there was no association between the clinical problems and the outcomes (admission and discharge) (Chi-square test, $P = 0.9$).

Discussion

Emergency Medicine (EM) practices in HUSM evolved dramatically after the introduction of the postgraduate program of EM in 1998. A concept of “our patient” was introduced in the daily practice. Patients were managed according to the current standard of practice with a definite criterion for discharge or admission. As a result, patients needed to be observed for longer times until the team was satisfied with the management.

In our observation ward, the majority of patients were adult Malays. This is consistent with the Kelantan population composition in which Malays were the majority (7). Two-thirds of the adult study population were female. Their mean age was 40.3 \pm 18.5 years (95% CI=37.2–43.8). The narrow confidence interval indicates that the sample size was adequate for inferential statistical evaluation, and this result was clinically significant. The demography of patients seen in the ED or OW varies according to the society and location of the hospital.

In this study, the main clinical problem requiring OW admission was abdominal pain or discomfort (23%), due to diagnostic uncertainty. This finding is quite similar to a Singaporean study (8). However, the admission rate of abdominal pain was higher (45.1%). Abdominal pain was one of the diagnostic challenges to the emergency physicians (EP) as aetiology varies widely among populations, and patients frequently present with ‘non-classical’ signs and symptoms, which challenges the doctor’s ability to arrive at a definitive diagnosis (9). The diagnosis and decision for ward admission or discharge can be safely made after a few hours of observation. Minor therapy such as pain management, correction of dehydration with intravenous infusions or anti-emetic for vomiting may also be prescribed during this period while waiting for investigation results. Perhaps patients’ satisfaction towards ED management is improved. Most of them were admitted into the common ward. Their mean length of stay in our OW was 4.6 \pm 1.5 hours (95% CI = 4.1–5.0 hours). In contrast, about 80% of these patients were observed for six hours or less at Singapore General Hospital (8).

The second clinical problem was vomiting and diarrhoea (13%). Inability to take fluids orally and electrolyte imbalance were the main reasons for admission. Patients were discharged

once hydration improved and they were able to tolerate fluids orally. Most of them (75%) needed admission for further management. Their mean length of stay was 4.0 ± 1.9 hours (95% CI = 3.0–5.0 hours). In Singapore (8), cardiac-related chest pain contributed to about 19% of admitted cases and was the second common clinical problem after abdominal pain. The mean length of stay of these patients was 4.8 ± 8.6 hours. We do not have adequate facilities and trained staff to monitor this group of patients. In this study, another 13% of admitted cases consisted of patients with fever, and they usually stay for about three hours. In Singapore (8), the third cause of admission was fever (9.3%), and patients usually stayed for about two hours.

Four mild head injury patients (3%) were observed for at least nine hours (95% CI = 7.1–12.2 hours). This percentage of admitted cases was almost similar with the Singaporean study (2.4%), but the length of stay of those patients was about five to six hours (8). By principle, we were not supposed to admit mild head injury patients in the OW. Reasons included lack of staff and inadequate monitoring system in the OW. However, sometimes the beds in the ward were fully occupied; therefore, the OW was the next option. Few papers in the literature have commented on the appropriateness and the safety of the OW in managing head injury patients (10).

Most of the admitted patients could be discharged. Only 15.3% of them required hospitalisation. This finding was not much different from the Singaporean study (19%) and the Indian study (21%) (8). Indications for ward admission are according to the recent available criteria and physician suggestions. Our references are from a book written by Leonard R. Fank entitled *Admission and Discharge Decisions in Emergency Medicine* (11). In the future, these criteria should be validated in the context of the Malaysia perspective.

The standard length of stay depends on the purpose or the function of the OW (i.e., assessment unit or observation ward). Cooke et al. defined an assessment unit as an area where emergency patients are assessed and initial management is undertaken by inpatient hospital teams. Patients are only in this area while early assessments are being made, for example, up to 12 hours, and then they are moved to another ward. Cooke et al. defined the observation ward as an area where patients can be observed or have early investigation/management within the A&E department. Patients are admitted to this area with an expectation of discharge within 24 hours (12). Bentman et al. used a mean length of stay

cut-off point of less than 18 hours to determine the efficacy in their study (13–16). Lack of staff, especially during the night shift, is a major deficiency in our ED. The on-call physicians have to make a decision on a patient's disposition before the night shift. The OW should be managed or staffed by senior personnel or EPs (17,18).

In this study, the mean length of stay for adult patients was 4.12 ± 1.78 hours (95% CI = 3.8–4.4 hours). As a comparison, the mean length of stay stated in the Singaporean and Indian studies were 5.6 and 7.7 hours, respectively. By looking at the present data, probably a mean length of stay less than four hours seems to be efficacious, though further justification needs to be made in terms of number of staffs and the adequacy of OW medical facilities. We need further prospective studies to determine the effectiveness and efficiency of the OW.

In the Malaysian context, the OW was managed either by the emergency department specialist or inpatient specialist team. This practice may influence the orientation of OW existence and is the subject of a conflict of interest. EP have a greater role in developing this unique ward in their departments. However, a few factors need to be emphasised to ensure the OWs run effectively and efficiently. Vital components that need to be improved include clear definition or criteria of OW admission and discharge, ability to maintain the flow of patients through the ward, access to regular senior consultations, good diagnostic facilities and access to external agencies for discharge planning.

The OW at HUSM offers a few advantages. It improves patient care flow, avoids unnecessary admission and improves satisfaction. It allows the health care provider to re-evaluate a patient's diagnosis and treatment. Consultants are more content in conducting bedside teaching in OWs. Postgraduate students also have an opportunity to review the patients frequently and help in data collection for the dissertation topics.

Conclusion

The OW of HUSM is effective in managing adult patients as determined by hospitalisation rate and the length of stay. A protocol prior to admission to the OW at HUSM should be done for common diagnoses to improve the general performance of OWs. There is a lot of room for improvement to develop an ideal OW, either for HUSM in particular or the Malaysian Public Hospital in general. Further evaluation or study on administration and clinical work within this ward needs to be conducted and analysed to achieve a similar standard throughout the country.

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Author's contributions

All authors have contributed equally to the conception and design of the study, and drafting the article.

Collection and assembly of data: AYMN, NHNAR, NM, NANAR, KAB

Data analysis and interpretation: RA, AYMN

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