

Extent and Appropriateness of Emergency Department Services Usage by Foreign Workers in Singapore

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Abstract

The objective of this study was to determine the extent and appropriateness of emergency department services usage by foreign workers. A prospective questionnaire survey of foreign workers who attended the Emergency Department (ED) of Tan Tock Seng Hospital was conducted from 30 December 1996 to 29 January 1997. A foreign worker was defined as a non-citizen, non-permanent resident working in Singapore, excluding students and tourists. Demographic and clinical data were collected. During the study period, 7409 patients above the age of 15 attended the ED of which 1174 (15.8%) were foreign workers. Forty-seven per cent of these foreign workers could not speak English, of whom 48.2% did not come with any English-speaking companion. Most of their ED visits were on weekdays and during office hours. Of the foreign workers, 43.1% were classified as non-emergency by ED doctors compared to 6.7% of other ED patients ($P < 0.01$). Trauma-related complaints accounted for 43.4% while febrile and minor infectious illnesses accounted for 26.7% of foreign workers' complaints. Admissions from ED in to the hospital were 17.1% for foreign workers and 28.3% ($P < 0.01$) for other patients. Language barrier and lack of information on types of health care services available could have led to the high proportion of inappropriate use of ED services by foreign workers. Most of their complaints were minor injuries and illnesses which could be managed by non-ED health care providers. Care provided across a language barrier raises ethical and medico-legal questions. A multi-agency approach involving the Manpower and Health Ministries, employer and foreign worker representatives is needed to eliminate language barrier and help these workers to use health care services appropriately.

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Introduction

Singapore employs more than 350,000 foreign workers currently. With this influx of foreign workers into our city-state which has limited land and resources, it is not surprising that public services like the health service feel the impact of their presence. After applying to work in Singapore, foreigners undergo medical screening and examination upon arrival in Singapore. Only when they are deemed to be healthy will they be granted permits to work, usually on 2- or 3-year contracts. As such it seems logical to assume that most of the health care needs of these workers should be sufficiently met by primary health care providers e.g. government outpatient clinics, general practitioners and company nurses or doctors. It would also be logical to assume that their need for emergency services should arise only when they meet with accidents, sustain work-related injury or when the occasional medical emergencies occur.

In the paper by Torrens and Yedvab,¹ they described the Emergency Department (ED) as fulfilling 3 roles. Firstly, the ED is a trauma treatment centre for the community, providing acute emergency care for problems related to trauma, accidents, and other serious, unpredicted events. The second role of the ED is that of serving as substitute for the private physician and for outpatient department during out-of-office hours when these services are not available or not appropriate to the particular patient's problem. In the context of foreign workers, their use of the ED in these 2 roles is acceptable and expected. The third role of the ED is "serving as the 'family physician' for the poor, particularly the minority poor group. In this role, the emergency room is seen as the place to go for all health problems, whether they are urgent or not; it is also seen as the logical entry point to the entire medical care system".¹ Whether foreign workers form a "minority poor group" in Singapore is debat-

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able but it is the use of the ED as the place to go for all health problems that warrants closer examination.

In recent years, we had the impression that there was an increasing number of foreign workers attending the ED of Tan Tock Seng Hospital. Looking at the types of problems presented to our ED, we felt that some of these foreign workers would be better served by non-ED service providers e.g. primary health care providers. To compound the problem, many of the foreign workers do not share a common language with staff of our ED. This difficulty in communication resulted in frustration in patients and ED staff. We therefore conducted a prospective survey to determine the extent of use of ED services by foreign workers and to determine the appropriateness of their usage.

Materials and Method

A prospective questionnaire survey was conducted from 30 December 1996 to 29 January 1997 in the Emergency Department of Tan Tock Seng Hospital which had an annual attendance of over 100,000. The survey form used a closed-ended question format. The survey form was explained to all ED doctors and nurses and instructions were given on how to complete the form. English was the usual language used by ED staff to obtain history, conduct physical examination and give treatment instructions to the foreign workers. When the worker could not communicate in English, ED staff would try one of the other languages used in Singapore, seek help from the companions of the worker or from other ED staff. When these measures fail, ED staff would try to contact the worker's supervisor or employer to arrange for an interpreter. Only when all these measures failed would ED nurses indicate language difficulty on the survey form. On each shift in the ED, there was staff from the major ethnic groups in Singapore and therefore local patients did not encounter language difficulty.

A foreign worker was defined as a non-Singapore citizen, non-permanent resident working in Singapore. Foreigners studying in Singapore and tourists were excluded. All consecutive foreign workers who registered for ED consultation during our survey period were enrolled for the study. At the ED registration desk, patients who were non-citizen and non-permanent resident would be assigned a registration number by the hospital computer system. This number differed from the National Registration Identity Card number for citizen and permanent resident and served to alert the triage nurses and doctors that the patient might be a foreign worker.

After registration, the patients proceeded to the triage desk. Triage categorization by the staff nurse was based on brief history and assessment of blood pressure, pulse rate, respiratory rate and temperature. The first part of the form was filled in by the nurse after a foreign worker

was identified and triaged. Information collected included demographic data, whether the worker was referred to the ED by another doctor and language difficulty encountered by the nurse.

After consultation, the ED doctor filled in the second part of the survey form. Data were collected on patient's complaint, ED management and disposal. The doctors in our ED use the Singapore Ministry of Health's guidelines* to classify the patients into emergency or non-emergency cases, in which an emergency is defined as "generally an injury or condition of acute or sudden onset. This particularly refers to bleeding, severe or increasing pain or a change in the vital signs of life like the level of consciousness or signs of difficulty in breathing. A condition that a patient is suffering for a long time or is currently on treatment may suddenly take a turn for the worse; this is also an emergency." Conditions not meeting the above criteria would be classified as non-emergencies. This classification was done at the end of the consultation taking history, physical examination, radiological and laboratory results into consideration.

Comparable characteristics of local patients were later extracted from the hospital computer database with help from the Office of Quality Management, Tan Tock Seng Hospital. The collected data were analysed using χ^2 for comparisons of proportions and unpaired t-tests for comparisons of means. A P value of less than 0.05 was considered significant.

Results

During the survey, the ED saw 1174 foreign workers which made up 15.8% of the total attendance of 7409 patients above 15 years old. An overwhelming majority of these workers were men (89.4%) compared to local patients of whom 59.1% were men ($P < 0.01$). The mean age was 29.1 [95% confidence interval (CI) 28.7-29.5] years for foreign workers compared to a mean age of 47.1 (95% CI 46.6-47.6) years for other ED patients ($P < 0.01$). These characteristics are summarised in Table I.

Workers from India formed the largest group in our survey (33.6%) followed by those from Bangladesh (29.4%), Malaysia (15.6%), China (8.1%), Thailand (6.9%) and Others (6.4%). More than two-thirds (67.5%) of these workers were employed as unskilled labourers e.g. construction site workers, 6.1% as production or factory workers, 5.7% as technicians and 3.7% as domestic maids.

Foreign workers averaged 37.9 visits to the ED per day during the study while the average number of local patients was 201.1 per day. Table II shows the number of visits by foreign workers and local patients over weekdays, Saturdays, Sundays and public holidays. Further analysis showed 39 foreign worker visits per day on weekdays, 37.8 visits per day on Saturdays and 33 visits per day on Sundays and public holidays (Table II). This trend was in contrast to local patients in which the

TABLE I: CHARACTERISTICS OF FOREIGN WORKER AND LOCAL PATIENTS

	Foreign worker patients	Local patients	P value
Total no. of ED visits	1174	6235	
No. of men (%)	1049 (89.4%, 95% CI 88-91%)	3682 (59.1%, 95% CI 58-60%)	<0.01 $\chi^2=393$
Mean age (years)	29.1, 95% CI 28.7-29.5	47.1, 95% CI 46.6-47.6	<0.01 $t=29.5$
No. of emergency cases (%)	668 (56.9%, 95% CI 54.1-59.7%)	5819 (93.3%, 95% CI 92.7-93.9%)	<0.01 $\chi^2=1227.5$
No. of trauma-related complaints (%)	509 (43.4%, 95% CI 40.5-46.2%)	1848 (29.6%, 95% CI 28.5-30.8%)	<0.01 $\chi^2=85.7$
No. of admissions (%)	201 (17.1%, 95% CI 15-19.3%)	1764 (28.3%, 95% CI 26.9-29.1%)	<0.01 $\chi^2=63.3$

ED: emergency department

CI: confidence intervals

TABLE II: PATTERN OF EMERGENCY DEPARTMENT ATTENDANCE BY FOREIGN WORKER AND LOCAL PATIENTS

	Foreign worker patients (n = 1174)	Local patients (n = 6235)	P value
Mean no. of visits per day	37.9	201.1	not applicable
No. of visits over 22 weekdays (Mean no. of visits per weekday)	857 (39)	4411 (200.5)	0.1, not significant $\chi^2=4.5$
No. of visits over 4 Saturdays (Mean no. of visits per Saturday)	151 (37.8)	787 (196.8)	
No. of visits over 5 Sundays and public holidays (Mean no. of visits per Sunday and public holiday)	166 (33)	1037 (207.4)	
No. of visits from 0000 to 0759 hours (%)	60 (5.1)	1156 (18.5)	<0.01 $\chi^2=152.8$
No. of visits from 0800 to 1759 hours (%)	806 (68.7)	3314 (53.2)	
No. of visits from 1800 to 2359 hours (%)	308 (26.2)	1765 (28.3)	

lowest was 196.8 visits per day on Saturdays, followed by 200.5 visits per day on weekdays and highest at 207.4 visits per day on Sundays and public holidays. Chi-square analysis for trend, however, failed to show a significant difference between these 2 groups. More than two-thirds (68.7%) of the visits by foreign workers were within the period from 0800 hours to 1759 hours, 26.2% from 1800 hours to 2359 hours and 5.1% from 0000 hours to 0759 hours. This pattern of foreign worker attendance was closely related to their work week and work hours. For the other ED patients, 53.2% of attendance were within the hours of 0800 hours to 1759 hours, 28.3% from 1800 hours to 2359 hours and 18.5% from 0000 hours to 0759 hours. For the period between 0000 hours and 0759 hours, 56.7% of foreign worker patients were emergency cases compared to 92% of local patients ($P < 0.01$).

About one fifth (19.9%) of the workers were referred to the ED by primary care doctors, 22.2% were told to visit the ED on the advice of friends or colleagues and 19.4% were brought to the ED by work supervisors or employers. A further 13.5% of foreign workers could not understand this question and the data could not be gathered.

Trauma-related complaints constituted 43.4% among foreign workers in contrast to 29.6% among local

patients ($P < 0.01$). Most of the trauma sustained by foreign workers was work-related (79.4%) followed by 8.1% of assault-related trauma. Febrile illnesses and minor infections e.g. gastroenteritis formed another 26.7% of complaints among foreign workers, of which 4.1% was related to chickenpox.

The percentage of non-emergency visits among foreign workers was 43.1% in contrast to 6.7% among local ED patients ($P < 0.01$). The total number of non-emergency attendance was 922 (12.4%) out of 7409 visits. Though foreign workers formed only 15.8% of the 7409 visits, they contributed to 54.9% (95% CI 51.7-58.1%) of all non-emergency visits. Seven (0.6%) foreign workers absconded or discharged themselves against medical advice. None of the foreign workers were unconscious and hence all were able to participate in our survey. None of the foreign workers died in the ED during our survey. After their ED consultation, 48.1% of foreign workers were discharged without follow up and 25.6% were referred to specialist outpatient clinic. Among the foreignworkers, 17.1% were admitted for inpatient treatment in contrast to local patients among whom 28.3% were admitted ($P < 0.01$).

For 47.9% of these workers, ED nursing staff experienced difficulty when trying to communicate with them.

Workers from Bangladesh, India and Thailand formed **91.5% (95% CI 88.8-93.6%)** of those who could not communicate in English, Mandarin, Malay or Tamil. Of the workers from India, 58.4% did not speak Tamil and could not communicate with ED staff. Among all 562 workers in whom language difficulty was encountered, 48.2% came alone or did not have a companion who could speak any of the major languages used in Singapore.

Discussion

Emergency departments in Singapore's government and restructured hospitals provide care that is heavily subsidised by the government and ultimately, by the tax payers' money. As emergency medicine advances, the cost of such care increases and appropriate use of the ED services is important to keep health care costs manageable. Appropriate use of ED services has been the target of public education for some time, including 2 campaigns in the 1980s and 1990s, with much of the effort aimed at Singaporeans and those who understood the main languages used in Singapore. In recent years, the ED of Tan Tock Seng Hospital has been reaping the fruits of this public education in which our annual non-emergency attendance rate is below or around 10%.³

Our study revealed 2 worrying findings: firstly, more than 40% of the foreign workers surveyed visited the ED for non-emergencies, contributing to 54.9% of the overall non-emergency attendance; secondly, for almost half of these workers, ED staff encountered language difficulty in communicating with them. To explain the unacceptably high non-emergency attendance among foreign workers, we used Davidson's⁴ framework in which he proposed 2 reasons why people chose an ED for medical treatment:

- 1) patients feel that the ED "is the appropriate site for an emergency or urgent condition", and
- 2) "other sources of care cannot be used, either because they do not exist in the particular locale or because, although they do exist, they are inaccessible to the patient at the time treatment is needed".

When we conducted our survey, we made the assumption that foreign workers understood what constituted an emergency and appreciated the difference between an ED and other health care facilities. We missed the opportunity to test this assumption in the foreign workers. Coming from developing countries where illiteracy rates are high and health services are less developed, it is possible that some of these foreign workers do not share our understanding of emergency and do not know that the ED is different from other health care facilities. Because most of these workers are basically healthy, it is conceivable that they had minimal

contact with the health service of their home countries prior to arriving in Singapore. At the same time, emergency medicine and emergency services may be almost non-existent in the native areas of their home countries, making them strangers to our system of care.

Numerous studies have shown that patients' perception of urgency and doctors' assessment differed significantly, with patients overestimating the urgency of their conditions.⁵⁻⁷ The Singapore Ministry of Health guidelines on classification of emergency afforded an objective and standardised tool for assessment by ED doctors. The high proportion of non-emergency attendance among foreign workers implies that they tend to overestimate the urgency of their conditions when afflicted with minor illness or injury. One explanation for this pattern of behaviour is that without a clean bill of health, their work permit and ability to continue working in Singapore may be in jeopardy.

The second reason given by Davidson deals with availability and accessibility of health care services other than ED services. Availability is not an issue given the full range of primary, secondary and tertiary health care found in Singapore. For the foreign workers, accessibility is an issue arising from the following factors: 1) financial barrier and 2) language and information barrier.

Health care services rendered by most private clinics and hospitals are on a "cash on delivery" basis, i.e. the patient is expected to pay upon completion of the consultation. This constitutes a form of financial barrier for foreign workers. The exceptions are the EDs and specialist clinics of government and restructured hospitals where deferment of payment is acceptable. Foreign workers may not be aware that at general practice clinics and government outpatient service the fee is generally lower, or they are unable or unwilling to pay cash. At the EDs however, the bill is handed to the worker, giving him the choice to pay immediately, pay at a later date or pass the bill to his employer to settle the payment.

Almost half of the foreign workers spoke no or little English or the other languages commonly used in Singapore. Numerous studies have shown that when the language spoken by a group of patients is different from that used by health care providers, these patients face access barrier to health care because of language and communication barrier.⁸⁻¹² This access barrier to health care can be felt in 4 ways by the foreign workers:

- 1) they have difficulty obtaining information about the various types of health care services available,
- 2) they face difficulty trying to find their way around where street signs and mass media are in languages alien to them,
- 3) language barrier prevents foreign workers from communicating effectively with health care staff^{10,13,14}, and

- 4) health care staff in turn cannot communicate effectively with these workers.^{15,16}

These barriers resulted in foreign workers relying on colleagues, work supervisors or strangers who could communicate with them to obtain information on health care services. If these sources of information were not reliable, the end result could be inappropriate ED visits. From 0000 hours to 0759 hours, the greater part of which the MRT and public buses are not in operation, foreign workers attendance is 5.1% compared to 18.5% for other patients. The pattern of foreign workers attendance shows that they are coming to the ED for non-emergencies during hours when primary health care facilities are open. Language barrier also leads to sub-optimal care in the following ways:

- i) without adequate history, doctors may resort to performing more diagnostic tests than necessary,
- ii) omission of important aspects of patients' history might lead to misdiagnosis or mismanagement, and
- iii) patients have difficulty understanding and participating in the care process which in turn leads to poor compliance and inappropriate follow up."

Trying to provide care across language barrier without interpretation service compromises the quality of care delivered and results in staff frustration¹⁸ and patient dissatisfaction.^{8,19} When ED staff cannot communicate with the foreign workers, treatment decisions are made without their participation, inevitably denying them the right to share in the decision making process. In the unfortunate event of misdiagnosis or mismanagement, accuracy and completeness of history and appropriateness of care and instructions across the language barrier un-bridged by interpretation will place ED staff and the health system at a disadvantage from the medico-legal standpoint.^{16,20,21}

Foreign workers are basically healthy and relatively young which should enable policy makers to focus health education effort better. Looking at the types of injuries and minor illnesses presented to our ED, health education directed at employers and foreign workers need to include the following:

- 1) injury prevention at workplace,
- 2) personal and food hygiene, and
- 3) information about the types of health services available.

The point of entry into Singapore would be a strategic time to educate the foreign workers, sharing the information with them in their mother tongue.

Interpretation service needs to be in place in the EDs, hospitals and in a few strategically located primary health care clinics so as to help the foreign workers. However it is well known that even when the need for interpretation is well established, many health care fa-

cilities have been slow to deal with the problem in a formal operational setting.^{14,21} In the USA, the government recognises the need to reimburse health related interpretation services²² and in Washington state, there is an explicit billing code for interpretation services.²³ In Singapore, we can look at the Gurkhas and their interpreters and work towards providing interpretation services for the bigger groups of foreign workers handicapped by language barrier.

Besides the limitations already mentioned, one other limitation was that we did not survey the factors leading to non-emergency attendance by local patients. We were therefore unable to compare this aspect between the 2 groups of patients. Another limitation was that our study was not conducted in the mother tongue of most of our study subjects. Had interpretation services been available, it was likely that the data from some of the variables would have been more complete. The nature of the survey was such that ED staff were not blinded as to whether the patient was a foreign worker. However, we did not think this would cause bias in classifying more foreign workers as non-emergencies because the Ministry of Health guidelines provided an objective framework for ED doctors. When the ED staff were briefed about the survey, we emphasised that management decisions should be based on clinical indications and not be influenced by the survey. The data for each part of the survey form were collected by a single observer i.e. the nurse or doctor assessing and treating the patients. As such, inter-observer agreement for classification of emergency, non-emergency and decision for admission were not determined. Logistically speaking it would have been very difficult to have 2 independent observers for every patient given the nature of ED work and the large number of patients. This is another limitation of our study.

Conclusion

If we accept the tenets that 1) foreign workers deserve appropriate health care during their stay in Singapore and 2) use of emergency department services to treat non-emergency conditions is not cost effective, then a multi-agency approach is needed to solve the problem of inappropriate use of ED services by foreign workers. Ministries of Manpower and Health, employers and foreign worker representatives must come together to find ways to minimise the language barrier and help workers make appropriate use of our health care services.

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