



FACTORS AFFECTING PATIENTS IN LEAVING EMERGENCY DEPARTMENT WITHOUT BEING SEEN IN KING SAUD MEDICAL CITY, RIYADH, SAUDI ARABIA

Maitha Almousa^{1*}, Hanin AlSuwailem², Sarah M. Alzuhairi², Rasha A. Dakhakhni², Omar A. Otham³, Khaled A Alattar⁴

1. *SBEM, Associate consultant. Head of triage unit at King Saud Medical city, Riyadh, Saudi Arabia*
2. *MD, Dar AlUloom University, Riyadh, Saudi Arabia.*
3. *MD, EM Consultant & Disaster Medicine and Emergency Medical Services Consultant, Adult Emergency Department, King Saud Medical City, Riyadh, Saudi Arabia.*
4. *MSc General Surgery, Clinical sciences department, Faculty of medicine, Dar Al Uloom University, Riyadh, Saudi Arabia.*

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ABSTRACT.

Emergency Department (ED) is considered as one of the most important clinical departments in a hospital and the 1st line between the patients and the entire hospital departments. In fact, this department is usually overcrowded, which might lead to a crisis such as leaving the patients in ED before checking or seeing doctors. Patients who leave emergency departments (EDs) without being seen are common in many hospitals. These patients may represent a safety concern. Those patients who leave without being seen (LWBS) for avoiding staying a long time and other reasons have been shown to have deterioration of their medical condition necessitating admission, urgent surge and various medical errors occur, which may have a connection with several factors that are related to staff and clarity of information. These factors participate to give a perfect outcome including patients' satisfaction result in reducing the incidence of patients leaving without being seen (LWBS). Using the Canadian Triage and Acuity Scale (CTAS) in the majority of ED in public hospitals of Saudi Arabia, the number of patients LWBS is considered as one of the keep performance indicators (KPI) of the emergency departments. This study provides a list of possible factors that result in increasing this number and the solutions for limiting these serious complications are very important. Also, it could show several reasons that can affect the KPI of the ED. Moreover, a literature review has been performed to identify the factors that affect patients leaving without being seen. Few studies have been conducted in Saudi Arabia related to factors affecting patient LWBS by a physician. However, none of them was in KSMC.

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Introduction

Emergency Department (ED) is one of the most critical departments in the hospital and the 1st line between the patients and the entire hospital departments. Worldwide, overcrowding in the emergency department has become a crisis [1-3], and crowdedness in the emergency department leads to increasing the waiting time of the patient, which results in patients leaving the Emergency Department (ED) early without being assessed by health care provider [1], which may lead to repeating the ED or primary care visits [4, 5]. Furthermore, this problem will eventually cause various medical errors which are associated with some factors that are related to staff and clarity of information [6]. These factors participate to provide an excellent safety attitude background and positive attitude with the patients. In addition, they can increase the patient's satisfaction, which leads to decrease the incidence of patients leaving without being seen (LWBS).

Nowadays, the majority of ED in the public hospitals of Saudi Arabia use the CTAS to triage the patients depending on the chief complaints, vital signs, and associated factors [7]. During triage in the ED, patients are assigned and evaluated by a specialist or nurse who registers them on a level based on the CTAS, which varies from level 1 to 5 "Level 1: Resuscitation, Level 2: Emergent, Level 3: Urgent, Level 4: Less urgent and Level 5: Non-urgent" [8]. Following, the patients are seen by a

Corresponding Author: Maitha Almousa; SBEM, Associate consultant. Head of triage unit at King Saud Medical city, Riyadh, Saudi Arabia.

doctor based on their triaged category on the CTAS. Sometimes, the patients are re-triaged based on their priority, which interferes with prolonged waiting time in ED. As a result, many patients decide to leave the ED without being seen by a physician. Therefore, the number of patients LWBS is considered as one of the Keep performance indicator (KPI) of the emergency departments, so we are interested in listing the possible factors that result in increasing this number and provide solutions to reduce the serious complications that might occur. The patients' factors, who leave the ED without being seen, have been reviewed separately due to the differences in the health care providers and hospitals. In this study, we will look for these factors that might affect the KPI of the emergency departments. A review of the existing literature has been performed to identify the factors affecting patient leaving without been seen. The literature search has been conducted via electronic databases including Pub Med, Medline. In addition, several keywords have been used such as "left without been seen", "ED crowded", "long waiting time at ED" & "leaving the ED without seen by a physician" and articles that have been written in only in English. The abstracts of those articles have been assessed to determine their relevance to our topic and objectives. However, no study has been conducted in Saudi Arabia related to factors affecting patient LWBS by a physician. In 2011, there were two studies in Swedish that revealed the effectiveness of the waiting time (WT), length of stay, and the staff team works on leaving patients without seeing [8]. Introducing a fast track for patients should result in fewer patients leaving without being seen, shorter stay length, and shortening waiting time. Also, a team triage and a physician should be able to reduce patients' number of leaving ED without being seen. [1, 8] There was another study set in an ED of a Swedish university hospital in 2013; a multi-professional team was responsible for the whole care process for patients [4]. The study was a longitudinal non-randomized intervention study design, for 1.5 years. 1,838 patient visits were examined. The result has shown that teamwork, i.e. working in multi-professional teams, plays a role in improving the quality of emergency care in terms of a small but significant reduction in waiting times. [4] In December 2013, a retrospective database analysis was conducted in an urban teaching hospital in Switzerland, in which identified characters of 2,413 patients who left without being seen [9]. In fact, most of the LWBS patients were male, single, unemployed, and dependent on welfare. Moreover, patients were also more likely to present with less acute emergency triage levels. As complaints, alcohol, and/or other substance abuse, neurological or dermatological problems were over-represented in this population. Additionally, patients admitted at weekends also were at higher risk of prematurely leaving the ED. [9] A prospective cohort National Study in Saudi Arabia was published in August 2016 at King Abdulaziz Medical City, Riyadh, in which 390 adult patients were studied and indicated that waiting time, male gender, and perceived improvement in health status were demonstrated to be independent factors predicting overall satisfaction issues in patients leaving ED without being seen. [7] The last study was in Saudi Arabia in 2018, aimed to study safety attitudes of nurses and doctors employed in EDs of 2 hospitals, and there were significant patient safety and health issues in hospitals, which led to significant financial costs, irreversible disabilities, prolonged hospitalizations, and patient deaths. Therefore, those factors might affect patients leaving the hospitals. [10] The data for this study was collected from adults that were up to 18 years and above with trauma and non-trauma patients, who were triage according to CTAS in the emergency department at King Saud Medical City in Riyadh, Saudi Arabia 11/08/2019 to 11/12/2019. The chosen variables were age, gender, co-morbidities, vital signs, the category of CTAS, time of triage, eligibility, chief complaints, and time of calling patients who were LWBS. The expected benefits to patients were a reduction in the incidence of patients LWBS by physicians and an improvement of ED KPI. No Potential adverse effects were suspected in our study. This study aimed to assess the possible factors in the patients LWBS by physicians in the ED of King Saud Medical City (KSMC), to estimate the number of patients who left the ED for the last 6 months in KSMC, and to find a possible solution to reduce numbers of patients leave without been seen by physician and healthcare providers.

Methods:

Study Design

A cross-sectional study design was conducted in Riyadh, Saudi Arabia, including adult patients aged 18 and above who came to ED and triaged according to CTAS and left without being seen by a physician in emergency department of King Saud Medical City, Riyadh, Saudi Arabia. The data were collected during the period from August 2019 to December 2019.

During this time period, data collection was performed by co-authors, a waiver of consent were applied, as there was no risk for the patients and contact number was taken to contact the patients via a program from the Ministry of Health that helped us with data gathering and phone number of patients and reason of leaving the hospital without being treated, after that, with the help of the patients' relation department of the KSMC we could get the file number of those patients to complete filling up the data collecting form. Data, related to the variables of age, gender, co-morbidities, were collected from the KSMC system called HIS and then entered into a purpose-built (Stata/Excel) spreadsheet.

Since this study was performed retrospectively, extensive patient information was obtained. Data collected included: age, gender, co-morbidities, vital sign, the category of CTAS, time of triage, eligibility, chief complaint, and time of calling patient LWBS, was collected from the KSMC Emergency Medical Record and entered. The study protocol was reviewed by the King Saud medical city Institutional Review Board.

Data Analysis

Data collection started on the 1st of April 2019 till the end of July 2019. from patients who are LWBS at KSMC emergency department by using a specialized form, which was saved at the emergency department office. The co-authors had the

responsibility to contact the patients LWBS to complete the form by asking specific questions. This study included all adult patients aged 18 and above triaged according to CTAS in the Emergency Department at King Saud Medical City and we excluded pregnant patients younger than 18 years.

SPSS statistical software version 23.0 was used for data entry, data management, and analysis. Age was divided for analysis into less than or greater than 18 years and the eligibility was dichotomized into eligible vs non-eligible. The time of presentation was divided into three time periods consistent with physician shifts (7AM – 3PM, 3PM – 11pM, 11pM – 7AM). LWBS, as the dependent variable, was used to conduct an initial univariate comparison. In the univariate analysis, categorical variables were analyzed using logistic regression and are presented with odds ratios with 95% confidence intervals. T-test was used to analyze time from arrival to triage as the sole continuous variable. A p-value of < 0.05 was considered statistically significant. Logistic regression analysis was also used in a multivariate model to determine the odds ratio for each covariate with LWBS as the dependent variable. All available covariates were entered into the multivariate logistic regression model. The overall p-value of the model was <0.001 with a likelihood chi-square statistic as 7.111. Odds ratios with 95% confidence intervals are presented for categorical variables along with the p-value.

Results:

During the study period, 8548 patients were admitted and registered in our administrative database, among the adult patient aged 18 and above, we identified 312 patients (3.65%) who left without being seen (LWBS). LWBS patients were more likely to be male (203 patients (65.1%) and 109 female patients (34.9%)). 267 (85.6%) patients were Saudi and had access to a primary care physician (PCP). 45 (14.4%) patients did not have any medical insurance (non-Saudi). The most common complaint was pain. A description of all patients during the study period and those who left without being seen (LWBS) in Figure 1.

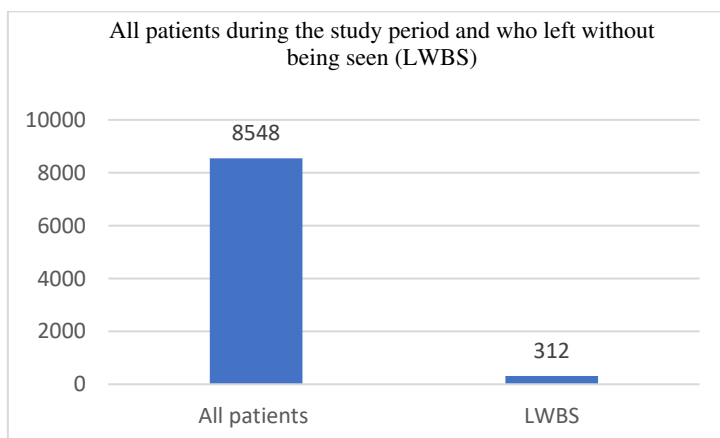


Figure 1. Description of all patients during the study period and who left without being seen (LWBS)

312 patients (3.65%) were among the LWBS proportion. Following, the patients were seen by a doctor based on their triaged category on the CTAS. In our study 4 (1.3%) patients in level 2 (Emergent), 275 (89.1%) patients in Level 3 (Urgent) considered the majority of all (LWBS) and 30 (9.6%) patients in Level 4 (Less urgent) classification. Figure 2 shows the distribution of LWBS according to the CTAS.

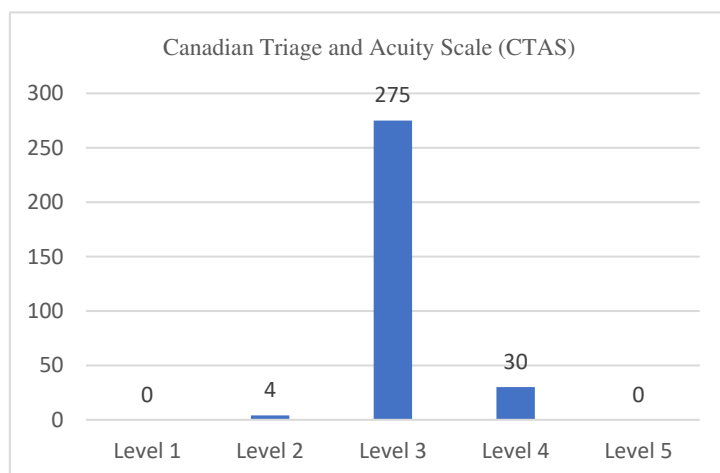


Figure 2. Distribution of LWBS according to the CTAS.

In this analysis those who were 18 years old or older, were presented during 24 hours, as following the nurse shift for 6 hours, the time in triage started from Morning 6-12, Afternoon 12.00-18.00, Evening 18.00-00.00, and Midnight 00.00-6.00. In this analysis, we compared five causes in each shift.

Comparison of LWBS reasons in each shift was as follows: staff attitude in the morning in 11 (17.2%) patients, in the afternoon in 18 (28.1%) patients, in the evening in 22 (34.4%) and in the midnight in 13(20.3%). LWBS due to the illness was not severe in the morning 3 (9.1%) patients, in the afternoon 11 (33.3%) patients, in the evening 13 (39.4%) and Midnight 6 (18.2%). LWBS due to costs if non-Saudi in the morning 2 (11.1%) patients, in the afternoon 6 (33.3%) patients, in the evening 7 (38.9%) and Midnight 3 (16.7%). LWBS due to boarding number was too far in the morning 24 (15.3%) patients, in the afternoon 47 (20%) patients, in the evening 61 (38.9%) and Midnight 25 (15.9%). And LWBS due to issues in the waiting area in the morning 11 (27.5%) patients, in the afternoon 8 (20%) patients, in the evening 13 (32.5%) and Midnight 8 (20%).

In total LWBS according the shift was, in the Morning (6-12) 51 (16.3%) patients, Afternoon (12.00-18.00) 90 (28.8%) patients, Evening (18.00-00.00) 116 (37.2%) patients and Midnight (00.00-6.00) 55 (17.6%) patients.

In total for LWBS according to the reason, due to staff attitude 64 (20.5%) patients, due to Your Illness was not severe 33 (10.57%) patients, due to costs if Non-Saudi 18 (5.76%) patients, boarding number was too far 157 (50.3%) patients and due to issues in the waiting area 40 (12.8%) patients. Figure 3 shows the distribution of LWBS according to the shift and Figure 4 shows the distribution of LWBS according to the reason.

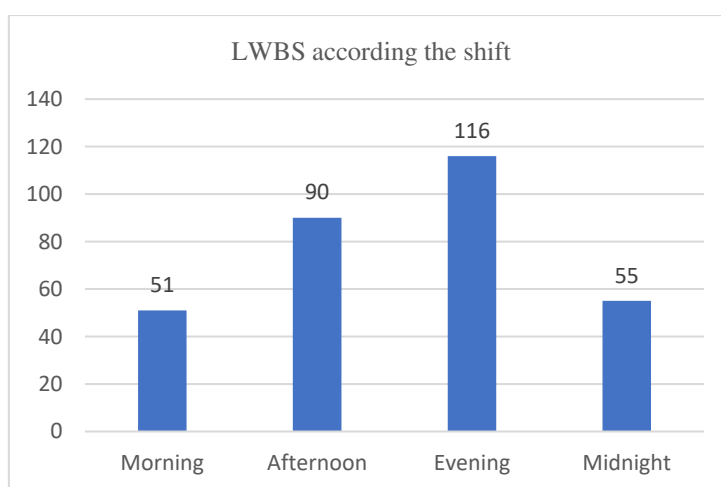


Figure 3: Distribution of LWBS according to the shift

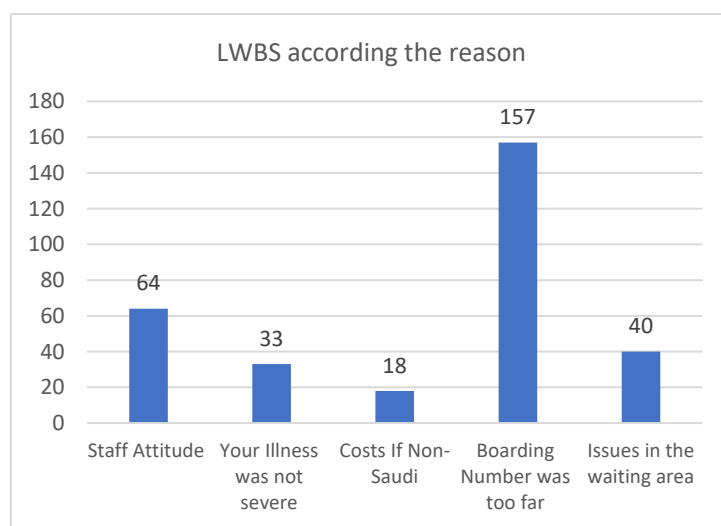


Figure 4: Distribution of LWBS according to the reason

Discussion:

In the current study, among the patients who came to ED, we identified (3.65%) who left without being seen (LWBS). This data supports previous studies completed in a range of countries and different cohorts. For example, the proportion of patients LWBS after presenting for emergency care significantly varies over time and among hospitals. A national study of patients LWBS in the US reported an LWBS proportion of 1.7% [11], however, proportions reported at individual

institutions within the US ranged from 0.84% to 15% [12, 13]. In numerous studies, the lowest LWBS proportion was reported as 0.1% in Taiwan [14] while in Australia it was 1.7-8.6%, proportions in the UK from 3.26% to 7.2%, and proportions in Canada from 1.4% to 4.5% [12, 13].

In our study majority of the patients LWBS were due to Boarding Number 157 (50.3%), followed by issues in the waiting area (40, 12.8%), less for Staff Attitude 64 (20.5%) and that the illness was not severe 33 (10.57%). Gilligan *et al.* stated that the patients' willingness to revisit the ED reduces with increasing waiting time [15] Also, waiting time and the quality of time spent waiting also determine patient satisfaction [16]. In our cohort study, >70% of patients wanted a better estimate of their waiting time, while about half of them didn't understand why they were waiting. Interventional research has reported that the introduction of pamphlets [17] or videos [18], and explaining the ED working and the reasons for waiting have a helpful effect on patient satisfaction. Some EDs have also started posting expected waiting times at their triage desk on their website. Improved communication, can increase satisfaction and help increase the tolerance of long waiting hours in ED [19, 20]. A number of patients left without being seen could be a quality control indicator, whomever many factors stand behind patients left without being seen such as hospital system, overcrowding, disasters, and patients' factor. The fact of patients who leaves the emergency department is considered a widespread phenomenon, as many of them will seek medical services in other centers or re-visit the same center at another time. [1] Although being as not seeing or treating by a physician is not rare, it initiates patients leave the emergency department for many causes.

In our study, regarding the classification of patients who (LWBS) according to the Canadian Triage and Acuity Scale (CTAS), 275 (89.1%) patients were in Level 3 (Urgent), which were considered the majority of all (LWBS). A valid and reasonable cause for leaving ED without being seen is that patients are re-triaging themselves as "not-too-sick", where the patients initially categorized in the triage area [1]. In addition, patients are categorized depending on their severity of complaints, some of them who have uncomplicated complain or minor injuries we see them in the Fast tract if they develop any serious complain, they must be shifted to the acute care to receive proper care. Categorizing the patients may reduce the flow of patients and the total number of patient stays in the ED [8]. In the United States, a study has shown ED overcrowding is thought to be a national crisis [4]. Moreover, Emergency department congestion also squeezes the patient safety and patient time for proper treatment, as it might lead to frustration among ED employees. [4] Studies show that some patients who leave without being seen (LWBS) have been shown to have deterioration of their medical condition necessitating admission and even urgent surgery [7]. Moreover, some studies show the benefit of referring patients with the uncomplicated disease and minor injuries to the primary care facilities to decrease the flow of patients and the time of staying in ED [8].

Conclusion:

In our study, among patients who came to ED, (3.65%) left without being seen (LWBS). A majority of them were due to Boarding Number 157 (50.3%), followed by issues in the waiting area (40, 12.8%), less for Staff Attitude 64 (20.5%) and that the illness was not severe 33 (10.57%).

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