**Original Article**

# The Waiting Time at Emergency Departments at Khartoum State-2005

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**Abstract**
***Background:*** *Emergency medical services are supposed to provide fast appropriate responses to life-threatening situations. Prolong waiting time poses an increase risk to patents. This study aims to measure the waiting time in the Emergency Departments in the 3 main hospitals in Khartoum.*
***Methods****: This descriptive cross- sectional study was conducted at the three main hospitals in Khartoum State during October 2005. Patients were classified according to urgency into two categories HOT and COLD. Time spent before being seen by a doctor, consultation time, waiting time for laboratory results, mean waiting time at the pharmacy and opinion about waiting time at the hospital service were examined as potential predictors of waiting time.*
***Results****: The results showed that 77% of the cases attending emergency departments were not at all emergency cases and can be easily managed at Primary Health Care level. The mean waiting time was 14.46 minutes. The mean consultation time per patient (both HOT and COLD) was 7.1 minutes. The longest waiting time spent was in the laboratory.*
***Conclusion****: This study concluded that overburdening the system unnecessarily by cold cases, probably delays the management of serious cases and increases the time spent in the different departments.*
***Key words:*** *waiting time, emergency department, patient satisfaction*

### 1.1 Introduction

Emergency medical services poses one of the main problems of the health care system. They need to provide fast appropriate responses to life-threatening situations, with resources appropriately distributed. Prolonged waiting time for patients in the emergency department is associated with reduced patient satisfaction, and an increased risk of leaving without being seen. This in turn, is associated with high rates of poorer health outcomes [(1)]. Short waiting time on the other hand, is considered as one of the criteria for high quality health services [(2)].

Waiting time is defined in many different ways eg. "time that the patient spend since his registration up to the time of the start of consultation[(2, 3)]" or "the time that the client spends from arrival at the hospital until completing service or prescription". Waiting time is also defined as "the total visit duration-from his registration to discharge/transfer or admission". This time is expressed in minutes[(4)]. The waiting time of the client to be seen by an emergency department officer varies from one area to another[(2)], depending on the number and/or severity of other patients in the department at any given time. This waiting time is based upon the doctor's assessment.

Waiting time in a hospital emergency department is a valuable indicator to be considered. The emergency department is often the first and most critical point of contact with the health system[(1)]. Decreasing the waiting time in Sudan has been identified as a high priority area by the Ministry of Health[(2,7.8)]. As a result, several initiatives have been introduced in an attempt to solve this problem[(9,10,11)].

Many hospital emergency departments seek to improve customer services, by decreasing waiting time, using such measures as registering people just out side, streamlining systems that transfer specimens to the laboratory, and developing alternative systems for improving patient flow and processing laboratory tests[(12)]. It is clearly important to reduce waiting time,

yet it is highly unlikely that the current initiatives will abolish long waiting time completely. It is also important that waiting time be equitable for individuals. Patient's waiting time should be related only to clinical need. It may act as a barrier to access to health care, and equity. Of course, access to health care is an important goal and indicator for the National Health System (NHS)[13]. The international standard waiting time in the developing countries is 30 minutes or less[2].

Within Khartoum State there are 18 hospitals managed and monitored by the Federal Ministry of Health, 10 of these hospitals have an emergency services around the clock. Reducing waiting time is critical where many patients need a swift and urgent response. The Emergency Departments (EDs) represent the first point of contact of the patient with the hospital system. Recently these were equipped with more advanced and sophisticated medical equipment and better qualified and trained skilled personnel[2]. The length of time that the patient encounters in emergency department is affected by a number of factors including the time of presentation, number of patients, numbers and ratios of doctors and nurses to patients, type of treatment, type of investigations etc. However, the most common reason for such delays is simply the delay in laboratory and radiology units. The other factor is that the personnel are not adequate in either numbers or training [14].

This work attempts to study the waiting time of patients attending Emergency Department in the three main hospitals in Khartoum State.

**Methodology**

*Study Design:* This is a descriptive cross-sectional hospital-based study carried out in the Emergency Departments of the main Federal Hospitals at Khartoum State.

*Study Area:* Khartoum State is located in central Sudan and occupies 28,000 square kilometers. The total number of population is estimated to be 5,232,348 (1993 census).

*Study populations:* All patients attending to EDs at Khartoum Teaching Hospital (KTH), Khartoum North Teaching Hospital (KNTH) and Omdurrman Teaching Hospital (OTH) during the period 25$^{th}$ to 31$^{st}$ of October 2005 were included with exclusion of patients presented to paediatrics, traumatology and obstetrics and gynaecology department.

*Data collection and analysis*: Data was collected by medical doctors and other trained social workers. A pre-tested questionnaire was used for data collection. Patients were interviewed by the data collectors who at the same time observed what is going on.

Data was analyzed using SPSS. Tables, graphs and test of significance were used where appropriate.

**Results**

A total of 1310 patients were interviewed, of them 294 (23%) were classified as hot cases and 986 (77%) as cold cases. Hot cases represent 16.7% (81), 33.7% (122) and 20.9% (91) out of 483,362 and 435 patients seen at KTH, KNTH and OTH emergency departments respectively. The mean waiting time (MWT) for hot cases was reported to be 10.55, 7.46 and 10.30 minutes at KTH, KNTH and OTH EDs respectively (overage of 9.44 minutes).

For cold cases the MWT range between 10.1 to 19.31 minutes with an average of 14.8 minutes. The pre-service waiting time for hot cases recorded as 1.96, 0.57 and 0.0 minutes in KTH, KNTH and OTH respectively with an average of 0.81 minutes. Consultation time was 8.10 and 6.82 minutes in average for hot and cold cases respectively. Laboratories waiting time was reported as 25.74 minutes for hot cases and of 35.68 minutes for cold cases (Table 1). Overall, hot cases average waiting

time was 9.19 compared to 14.81 minutes for cold cases. Patient interview revealed that they stay long waiting time for laboratory results (55%) to be ready (table 2)

**Table 1: Waiting time for different services in minutes**

| Hospitals | Hot | | | | | | Cold | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | N | MWT | PWT | CWT | LWT | PhWT | N | MWT | PWT | CWT | LWT | PhWT |
| KTH | 81 | 10.55 | 1.96 | 9.21 | 28.64 | - | 402 | 19.31 | 12.4 | 8.66 | 51.42 | - |
| KNTH | 122 | 7.46 | 0.57 | 8.21 | 18.95 | - | 240 | 10.01 | 11.89 | 5.8 | 18.23 | - |
| OTH | 91 | 10.30 | 0.0 | 6.98 | 32.29 | - | 344 | 12.90 | 12.23 | 4.89 | 29.46 | - |
| Average | 249 | 9.20 | 0.81 | 8.10 | 25.74 | 2.12 | 986 | 14.81 | 12.23 | 6.8 | 35.68 | 5.5 |

**Table 2: Patient's opinion about waiting time**

| Patient opinion about waiting time | Clinic % | Laboratory % | Pharmacy % |
|---|---|---|---|
| Short | 62% | 6% | 16% |
| Reasonable | 24% | 39% | 74% |
| Long | 14% | 55% | 10% |
| Total | 100% | 100% | 100% |

**Discussion**

This is a descriptive cross-sectional study conducted in Khartoum State to determine the waiting time of patients attending the three main Emergency Departments. For practical reasons patients were classified as hot or cold cases; based on the urgency and severity of their condition, and their provisional diagnosis. As reflected by the study, more cold cases than hot were seen. This is similar with that found in Khartoum State in 1999, (75 % cold and 25% hot)[(2)]. However, a study done in Toronto in Canada, 2003[(15)], found that, only 54% were cold and 46% were hot. In Ontario in 2003-2004[(16)], 57% of cases were cold while 43% were hot cases. Our service showed a significantly larger proportion of cold cases barraging the Emergency Departments, than in Canada. This big number of cold cases in Emergency Departments will undoubtedly cause overcrowding at Emergency Departments. These may be easily seen at the Primary Health Care level. High risk cases can then be referred to the hospitals. Good utilization of Primary Health Care services will allow for optimal care for hot cases; in Emergency Departments. This will result in a shorter waiting time, good outcome and better quality of health services.

With regard to categorization of cases into hot and cold [(1,2)] KNTH has the highest proportion of real emergency cases compared to OTH and KTH. However, KTH has the highest proportion of cold cases. Although the total number of patients attending emergency departments are generally higher in KTH (37.8%), but hot cases are higher in KNTH, this is due to the fact that KNTH Emergency Department was established first, with good sorting out or triage system and good referral system at Primary Health Care level, and due to service delivery system at KNTH. The overall mean waiting time for patients attending these three Emergency Departments, was 14.46 minutes. In hot cases, it was shorter (9.2 minutes). One explanation is that hot cases have a relatively short waiting time because they are directly referred to receive first aid treatment. This may indicate the efficiency of the sorting out process in EDs.

With regards to the waiting time for hot and cold cases, the average waiting time for hot cases was 9.2 and 14.81 minutes for cold cases. It was lower in KNTH than the others. This also might indicate a better quality assurance in KNTH or better trained personnel for sorting out and handling of patients.

Also in cold cases seen, KNTH has the shortest waiting time (10.01 minutes), OTH significantly longer 12.90 minutes and KTH almost double the time (19.31 minutes). One explanation may be that KTH handles rather complicated cases and the number of cold cases is larger.

Overall, pre-service waiting time was 9.61 minutes but it is short in hot cases (only 0.81 minutes) in almost all hospitals. Understandably, it is longer for cold cases 12.23. Again it was significantly shorter in KNTH (11.89 minutes) but it was 12.28 minutes in OTH and 12.40 in KTH. This delay may be due to difficult sorting out, larger number of patients or fewer numbers of doctors assigned for cold cases. Regrettably it could also be due to delay in settling financial matters by patients before being seen. In general, KNTH has the shortest waiting time indicating experience in delivering emergency services. In Australia, in 2003-04, patients were categorizes into 4 sectors. Category 1 seen immediately. Category 2 seen within 10 minutes, Category 3 seen within 30 minutes and Category 4 seen within 1 hour [17].

The mean consultation time for patients in Emergency Department was 7.10 minutes. It looks longer in hot cases (8.10 minutes, versus 6.80 minutes for cold cases). However, there are significant differences between the three hospitals. OTH had shortest consultation time (5.32 minutes). One possible explanation is that in OTH most of the cases were simple and can be easily diagnosed. Consultation time was longer for hot cases. This compares favorably with consultation times in Scotland where it was approximately seven minutes. The Royal College of General Practitioners recommended a minimum of 10 minutes[18]. From my own personal observations, I found that the rather long consultation time for cold cases in KTH is due to the more systematic handling, examination and treating of each patient judiciously. Moreover, KTH handles rather complicated cases that require greatest medical attention compared to the other two hospitals.

It is concluded that, overburdening the system unnecessarily by cold cases probably delays the sorting out of cases and increases the time spent in different departments.

There is a need to direct cold cases to primary health care units. This could be done through extensive awareness programme and through revival of the referral system.

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