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Factors Associated with Delayed Patient Care in the Emergency Department of the Sylvanus Olympio University Hospital Center in Lomé

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Abstract

Objectives: The overall objective of this study was to determine the factors explaining the delayed care of patients admitted to the emergency department of the Sylvanus Olympio University Hospital Center (CHU SO) in Lomé. **Materials and Methods:** This was a descriptive cross-sectional study conducted using questionnaires administered to patients and healthcare professionals in the emergency department of the Sylvanus Olympio University Hospital Center (CHU SO). The survey took place between February 1 and June 1, 2023. **Results:** Our study included 505 patients, 59.46% of whom had been referred. In 70.5% of cases, patients were admitted to the emergency department by taxi, and in 8.3% by ambulance or fire department. Eighty-nine point three percent of patients were immediately made available to a bed, according to the patient's report. After being made available, 43.4% of the patients surveyed waited between 10 and 30 minutes before their first contact with a physician. Factors contributing to delayed patient care included insufficient emergency physicians, unavailability of medications in the hospital pharmacy, lack of space, staff workload, unavailable emergency medical equipment, lack of financial resources, and inefficient patient care processes. **Conclusion:** The results of our work clearly show a delay in patient care. One solution that can improve this care is to increase the number of healthcare staff and ensure the availability of emergency medications in the department. It would be necessary to strengthen the department's capacity to care for patients in order to guarantee effective and efficient management of medical emergencies in our country.

Keywords

Care, Delay, Medical Emergency, Togo

1. Introduction

Quality emergency care is a major challenge for any healthcare system. This quality of emergency care is defined as the delivery of diagnostic and therapeutic procedures to each patient within a short timeframe, ensuring the best possible outcome [1]. Quality emergency care therefore incorporates the concept of the time between patient arrival and treatment, while respecting quality requirements and best practices [2]. In emergency situations, treatment must be rapid and/or immediate. Indeed, the time elapsed between patient admission and treatment of their condition, as well as the quality of this treatment, are factors that influence the prognosis. All these requirements make emergency departments (EDs) an important component of the healthcare system, as they represent the patient's first point of contact with the curative care system.

It is at this level that the quality of services must be commensurate with the emergency department's patient volume. Several constraints impact the quality of these services in emergency departments, primarily related to structural, human, material, pharmaceutical, financial, and organizational limitations [3] [4]. Waiting times were less than 30 minutes for 90% of patients and more than one hour for only 3% of patients in a study in Tunisia [5]. In Mali, a study evaluating emergency care wait times conducted in the surgical emergency department (SUC) of the Gabriel Touré University Hospital concluded that the average time between admission and diagnosis for cervical trauma was 43.5 minutes. Multiple fractures had a shorter diagnostic time but longer wait times for hospital bed setup and availability, averaging 597 minutes [6].

In Togo, the Sylvanus Olympio University Hospital (CHU-SO) is the primary referral center for ultimate care. Through its Emergency Medical Unit (UM), it receives patients in critical condition. This service receives both transfers from urban and rural health facilities and direct admissions. However, the care provided appears to be unsatisfactory and often delayed.

To our knowledge, few studies have been conducted to describe the factors explaining these delays. Therefore, we initiated this study to determine the factors associated with the delay in patient care at the CHU-SO Emergency Medical Department.

The specific objectives were to:

- describe the characteristics of patients consulting at the CHU-SO Emergency Department;
- describe the patient care process for patients admitted to the CHU-SO Emergency Medical Department. Estimate the waiting time before patients are seen
- Describe the factors associated with delays in patient care at the emergency department of the University Hospital of Socio-Operational Medicine (CHU SO)

2. Study Framework and Methodology

2.1. Study Framework

The study was conducted in the Emergency Department (ED) of the Sylvanus

Olympio University Hospital (CHU-SO), one of the national referral centers in the Togolese healthcare system. The CHU-SO is the national referral center of last resort and has a theoretical capacity of 1264 beds. It is a public institution with legal personality and financial autonomy. It is under the administrative supervision of the Ministry of Health and Public Hygiene. The Emergency Department (ED) is part of the Internal Medicine and Emergency Medicine Department. It is located at the main entrance of the CHU-SO, opposite the administrative building. The emergency ward has 35 beds and the short-stay ward has 12 beds, a nurses' station, a doctors' office, four stretchers, and six wheelchairs. The medical staff consists of 05 doctors, 08 nurses, 11 nurses and stretcher bearers. A medical team provides coverage from 7:00 a.m. to 5:00 p.m. A second team provides coverage from 5:00 p.m. until 7:00 a.m. the following day. Each team consists of an emergency physician, a resident physician, a registered nurse, and two nursing assistants. This group may be supplemented in varying numbers by medical students, nursing students, and midwifery students.

2.2. Study Methodology

This was a descriptive cross-sectional study conducted from February 1 to June 1, 2023. The study population consisted of patients admitted to the Emergency Department for any medical condition, their companions, the nursing staff of the department, and the administrative staff of the Sylvanus OLYMPIO University Hospital (CHU-SO).

The following were included in our study:

- All conscious patients admitted to the Emergency Department during our study period, or their companions, who agreed to participate in the study.
- All nursing staff working in the department during our study period who agreed to participate in the study.
- Administrative staff, including the management of the Sylvanus OLYMPIO University Hospital (CHU-SO).

The following were not included in our study:

- Patients who died upon admission.
- Patients seen as outpatients.
- All staff members absent during our study period due to leave, administrative leave, or illness. Any staff member and patient who has not given their consent to participate in the study.

Pre-established questionnaires were used for data collection. These questionnaires were sent to department staff (physicians, nurses, orderlies, stretcher-bearers) and to patients or their companions. The questionnaire for department staff included the following information:

- Sociodemographic data;
- Waiting time before being seen;
- Patient care process for patients admitted to the Emergency Department;
- Factors that delay the care of patients admitted to the Emergency Department.

The questionnaire for patients interviewed included the following information:

- Sociodemographic characteristics, clinical and paraclinical data;
- Waiting time before treatment (first medical or paramedical procedures);
- Factors influencing delayed treatment.

Questionnaires for healthcare professionals were completed by staff in the department. For patients, data were collected on individual questionnaires, completed by us for each patient included in the study. A preliminary survey was conducted over six days, from February 1 to February 6, 2023, to verify the feasibility of the protocol.

Data entry was performed using the following software: Word 2013, Excel 2013, and Epi Info 7. Data processing and analysis were performed using SPSS version 22.0.

A statistical analysis with logistic regression was carried out in order to look for a correlation between the waiting time before the first contact with the different types of healthcare staff and the factors influencing care.

The dependent variable was Waiting Time, with the Immediate category (coded 0) used as the reference and compared to the other categories (coded 1) each time. The independent variables were the factors influencing patient care.

Multivariate analysis was used to select sufficiently associated variables ($p < 0.2$). These variables were included in the initial model. A backward stepwise procedure was used to select the final model. This involved including all the chosen variables in the initial model and then progressively removing the least significant variables. At each step, it was verified that there was no major confounding between the removed variable and those remaining in the model, based on changes in their odds ratios (OR) (tolerated variation: 20%) or even radical changes in their significance levels.

Multivariate analysis allowed for the estimation of the adjusted odds ratio (ORa) and its 95% confidence interval for each retained variable.

2.3. Operational Definitions

- Arrival time: This corresponded to the time the patient was reported to the emergency department staff, either by themselves or by their companion.
- Start of care: This corresponded to the patient's contact with the medical or paramedical staff of the emergency department.
- Waiting time: This was defined as the period between the patient's arrival and the start of care.
- Cost of initial care: This was the amount of money spent up to the administration of initial care.
- Level of life-threatening emergencies: This is the categorization of medical or safety emergencies based on their severity or the need for immediate intervention. Data collection was carried out after obtaining the oral consent of staff and patients. Data collection was anonymous to allow respondents to express themselves freely.

3. Results

3.1. Overall Result

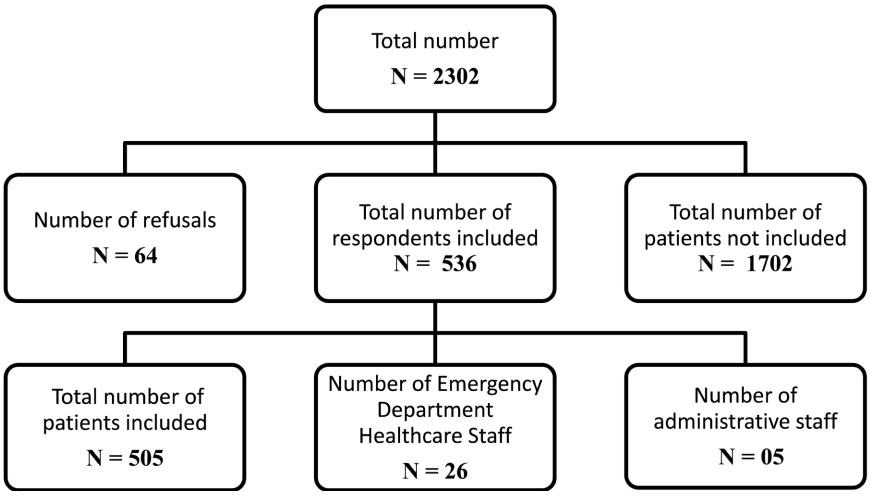

Figure 1. The survey of healthcare workers.

3.2. Sociodemographic Characteristics of Respondents

Among the healthcare workers surveyed, 14 (53.8%) were men. The mean age was 30.7 years with a standard deviation of 10.6, and the median was 26 years (interquartile range [24 - 33]), with a range of 21 to 59 years. Seventeen (17), or 65.4%, of the healthcare workers surveyed were physicians or residents. Of the 26 healthcare workers surveyed, only 2 (2 physicians), or 7.7%, had received training in emergency management (Figure 1).

3.3. Sociodemographic Characteristics of Patients

The mean age of patients was 52.8 years (standard deviation 17.8) and the median age was 54 years (interquartile range [40 - 66]), with a range from 16 to 98 years.

Of the patients, 267 (52.9%) were women. The sex ratio was 0.89.

3.4. Circumstances of Admission

Three hundred and fifty-six (356) patients (70.5%) arrived at the hospital by taxi. Among the patients transported by ambulance or fire department (N = 42), 21.4% received care during transport.

Two hundred and seventy-seven (277) patients (54.9%) were referred, while 228 were direct patients.

The distribution of the surveyed patients according to their admission times is illustrated in Figure 2 below.

Patient flow was highest between 7:00 and 11:00 and between 15:00 and 20:00; patient flow was lowest between 1:00 and 5:00.

The distribution of patients according to the reason for consultation is shown in Table 1.

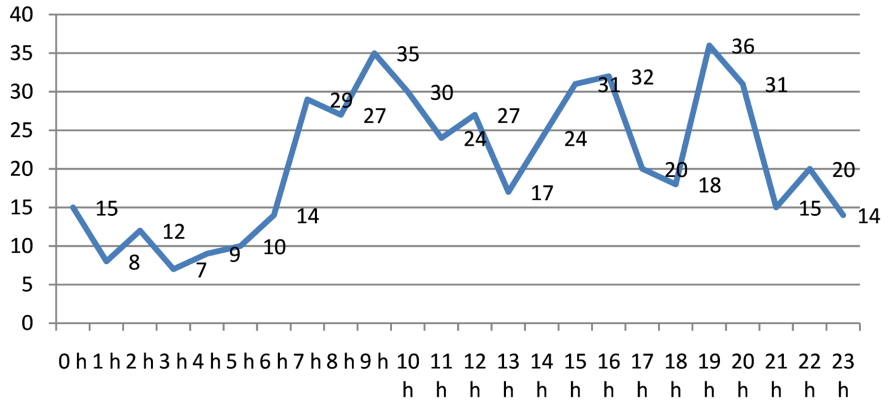

Figure 2. Distribution of surveyed patients according to their admission time.

Table 1. Distribution of patients according to reasons for consultation.

	Number	Percentage
Stroke	77	15,2
Hypertensive emergency	55	10,9
General malaise	54	10,7
Dyspnea	50	9,9
Generalized edema of the lower limbs	41	8,1
Abdominal pain	29	5,7
Crise convulsive seizure	26	5,1
Diabetic decompensation	24	4,8
Cough	15	3
Headache	13	2,6
Gastrointestinal bleeding	13	2,6
Hyperthermia	11	2,2
Asthma attack	11	2,2
Vomiting	10	2
Dysuria	9	1,8
Neoplasia	8	1,6
Hip pain	8	1,6
Chest pain	7	1,4
Epistaxis	5	1
Hematuria	4	0,8
Stroke	77	15,2
Sickle cell crises	4	0,8
Hypoglycemia	3	0,6
Snake bite	2	0,4
Lumboradiculalgia	2	0,4
Attempted suicide	1	0,2

3.5. Patient Care Process in the Emergency Department

Patient XY: Patient whose identity is unknown

Waiting time before care is received, according to patients (Figure 3).

After admission, 219 (43.4%) of the patients surveyed had immediately contacted the nurse (Table 2).

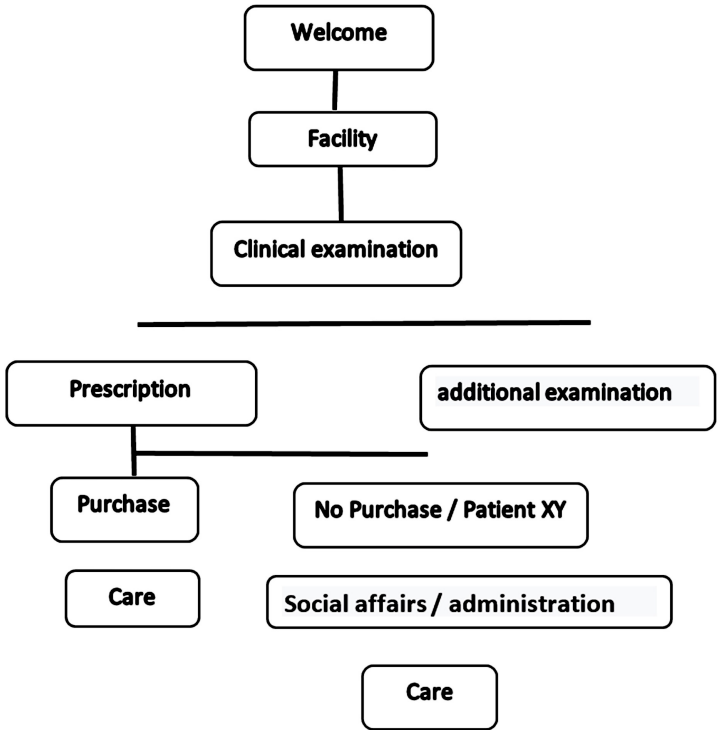

Figure 3. Patient care process.

Table 2. Distribution of surveyed patients according to their waiting times before first contact with the nurse.

	Number	Percentage
Immediate	219	43,4
Less than or equal to 10 minutes	191	37,8
10 - 30 minutes	52	10,3
30 minutes or more	43	8,5
Total	505	100

After installation, 219 (43.4%) of the patients surveyed waited between 10 and 30 minutes before their first contact with the doctor (Table 3).

Table 3. Distribution of surveyed patients according to their waiting times before their first contact with the doctor.

	Number	Percentage
Immediate	64	12,7

Continued

Less than or equal to 10 minutes	98	19,4
10 - 30 minutes	219	43,4
30 minutes or more	124	24,5
Total	505	100

After consulting with a doctor, 364 patients surveyed (72.1%) waited more than an hour before receiving care (Table 4).

Table 4. Distribution of patients according to waiting time after contact with a doctor before receiving care.

	Number	Percentage
Immediate	7	1,4
Less than or equal to 10 minutes	25	4,9
10 - 30 minutes	109	21,6
30 minutes or more	364	72,1
Total	505	100

3.6. Factors Influencing Delayed Care according to Patients

Hospital pharmacy overcrowding (79%), staff workload overload (78.8%), and insufficient nursing staff (69.3%) were the factors that delayed care according to patients (Table 5).

Table 5. Distribution of factors influencing delayed care according to patients.

	Number	Percentage
Overcrowding at the hospital pharmacy	399	79
Staff overwork	398	78,8
Insufficient nursing staff	350	69,3
Lack of space	321	63,6
Overcrowding at the hospital cashier's office	251	49,7
Lack of financial resources	238	47,1
Inefficient patient care process	230	45,5
Additional tests not available at the hospital	153	30,3
Absent accompanying persons	27	5,3

Two hundred and eighty-one (291) patients, or 57.6%, reported spending more than 30 minutes in the hospital pharmacy before purchasing their medication (Table 6).

Table 6. Distribution of patients according to time spent in the hospital pharmacy.

	Number	Percentage
Less than or equal to 10 minutes	35	6,9

Continued

10 - 30 minutes	179	35,5
30 minutes or more	291	57,6
Total	505	100

The average expenditure up to the initial patient care was 31,321 FCFA, with a median of 20,000 FCFA (interquartile range = 14,000 - 40,000 FCFA), ranging from 8000 to 200,000 FCFA. Two hundred and fifty (250) patients, or 49.5%, found the expenses up to the initial care to be high.

3.7. Correlation Study

According to the nurses, the most significant reasons associated with delays in care were: Staff workload overload and lack of financial resources (Table 7).

Table 7. Distribution of patients according to time spent in the hospital pharmacy.

	Initial model				Final mode			
	80% CI				95% CI			
	OR	Inf.	Sup.	P1	ORa	Inf.	Sup.	P2
≤10 min/Immediate								
Hospital pharmacy overcrowding	0,90	0,62	1,32	0,73				
Staff workload overload	1,34	0,87	2,08	0,39				
Insufficient nursing staff	0,47	0,32	0,68	0,01	1,72	1,10	2,68	0,02
Lack of space	0,72	0,53	0,97	0,16	0,70	0,45	1,07	0,10
Lack of financial resources	0,51	0,38	0,68	0,003	2,03	1,34	3,07	0,00
Inefficient care process	1,03	0,77	1,38	0,91				
Absent companions	0,50	0,22	1,11	0,26				
10 - 30 min/Immediate								
Hospital pharmacy overcrowding	0,47	0,29	0,76	0,05	0,48	0,23	0,97	0,04
Staff workload overload	1,52	0,71	3,27	0,48				
Insufficient nursing staff	0,99	0,53	1,84	0,98				
Lack of space	2,00	1,26	3,18	0,06	2,14	1,09	4,19	0,03
Lack of financial resources	0,77	0,52	1,13	0,38				
Inefficient care process	1,25	0,85	1,84	0,45				
Accompagnants absents Absent companions	3,06	1,61	5,84	0,03	2,82	1,09	7,31	0,03
≥30 min/Immediate								
Overcrowding at the hospital pharmacy	1,16	0,59	2,25	0,78				
Staff overwork	1,58	0,65	3,87	0,51				
Insufficient nursing staff	0,92	0,48	1,77	0,87				

Continued

Lack of available beds	3,52	1,82	6,81	0,02	3,02	1,19	7,63	0,02
Lack of financial resources	0,48	0,30	0,77	0,05	0,56	0,28	1,11	0,10
Inefficient patient care process	1,94	1,19	3,18	0,08	2,15	1,05	4,39	0,04
Absent caregivers	0,79	0,27	2,33	0,78				

The doctor's delay in providing medical care was significantly associated with Staff workload overload (Table 8).

Table 8. Waiting time before first contact with a doctor and factors influencing medical care.

	Initial model				Final mode			
	80% CI				95% CI			
	OR	Inf.	Sup.	P1	ORa	Inf.	Sup.	P2
10 - 30 min/Immediate								
Hospital pharmacy overcrowding	0,72	0,40	1,30	0,47				
Staff workload overload	5,27	2,76	10,07	0,00	4,66	1,85	11,75	0,001
Insufficient nursing staff	0,37	0,20	0,70	0,05	0,43	0,17	1,08	0,07
Lack of space	0,87	0,56	1,35	0,68				
Lack of financial resources	0,79	0,51	1,20	0,47				
Inefficient care process	1,17	0,75	1,83	0,64				
Absent accompanying persons	0,96	0,33	2,82	0,97				
30 min/Immediate								
Hospital pharmacy overcrowding	0,75	0,39	1,43	0,56				
Staff overwork	9,63	4,36	21,23	0,00	5,37	2,71	10,66	0,00
Insufficient nursing staff	0,54	0,25	1,19	0,32				
Lack of available beds	1,62	1,04	2,52	0,17	1,58	0,83	2,98	0,16
Lack of financial resources	0,89	0,58	1,38	0,74				
Inefficient patient care process	1,41	0,89	2,23	0,33				
Absent caregivers	1,59	0,56	4,50	0,57				

4. Discussion

4.1. Difficulties and Limitations of the Study

Our study was conducted using a face-to-face data collection method. This method presents numerous difficulties, such as:

- Multiple trips by the interviewer to the survey sites;
- The costs incurred by these trips;
- The unavailability of patients, accompanying persons, or healthcare staff.

The main limitation of our study was that many of the accompanying persons who had brought the patients were absent or replaced by others at the time of data

collection, which prevented us from gathering information related to the patient's arrival at the emergency department. Regarding biases, these were information biases or biases related to socially acceptable responses, stemming from the face-to-face data collection method. Indeed, our patients might feel judged in their answers and consequently decide not to speak freely. We therefore conducted the interviews while assuring them of data confidentiality, thus facilitating their openness.

4.2. Nature of Emergencies and Pathologies Encountered

Stroke (15.2%), hypertensive emergencies (10.9%), altered general condition (10.7%), dyspnea (9.9%), and generalized edema of the lower limbs (8.1%) were the most frequent pathologies leading to emergency department admissions. They accounted for 54% of consultations. This result is similar to that of Mindzie M. [6] in Mali, who found stroke to be the most common reason for admission (17.7%). These reasons for admission mostly represent serious complications of hypertension and diabetes. This suggests poor adherence to treatment and inadequate follow-up. Stroke is a public health concern in sub-Saharan Africa. Its prevention requires screening and appropriate treatment of known etiological factors (hypertension, diabetes).

4.3. Patient Care Process

In our study, according to healthcare professionals, patients were greeted by orderlies in 57.7% of cases. Their admission was handled by orderlies in 53.8% of cases. Patient reception and admission appear to be primarily the responsibility of orderlies, but these orderlies were not trained to triage patients. Some patients with moderate emergencies may be prioritized over patients with life-threatening or potentially life-threatening emergencies. The implementation of a formal and validated triage system, ensured by clinical staff, in this case nurses, becomes imperative.

In the majority of cases, nurses (84.7%) administered care. However, caregivers sometimes find themselves providing care to patients. This may be due to the nurses' excessive workload.

All healthcare professionals stated that the Consultation-Prescription-Medication Purchase-Treatment process was the only one used in the emergency department. This process has shortcomings in life-threatening emergencies. Since immediate care is required, those accompanying patients must first obtain medication from the hospital pharmacy before care can be administered. Establishing an in-hospital pharmacy within the emergency department or implementing a first-aid kit system could help address this issue.

4.4. Factors Influencing Delayed Patient Care

Our study allowed us to identify the factors contributing to delays in patient care. These factors were found among both healthcare professionals and patients. They included: insufficient qualified staff, excessive workload, very limited space and a

lack of beds, medication unavailable in the department and at the hospital pharmacy, an overly complicated care process, the patient's lack of financial resources, unavailable emergency medical equipment, the absence of pre-hospital care, and the lack of health insurance.

Reorganizations are needed from a structural standpoint, along with adequate equipment, to ensure the provision of life-threatening emergencies. Our results confirm those of N'goh, Habiba, and Hanhart [6]-[8] in his study, where he found that the factors contributing to delays were: the absence of accompanying persons, the unavailability of medications in the hospital pharmacy, the fact that additional examinations (CT scans, blood tests, ultrasounds) were not always available at the hospital, the unavailability of beds in the ward, and the lack of financial resources to cover prescriptions and requested additional examinations.

The staff shortage could be explained by insufficient recruitment. Despite its status as an autonomous institution, the CHU-SO must meet certain criteria and obtain authorization from the Ministry of Health before hiring staff. The majority of the staff recruited by the hospital come from the national recruitment exam and are insignificant compared to the actual needs. Existing staff, particularly nurses, are redirecting themselves towards professional master's degree courses or travel abroad, creating a void that is not systematically filled.

The shortage of emergency physicians could be explained by the lack of post-graduate training in emergency management in our country.

In 57.6% of cases, patients or their companions reported spending more than 30 minutes at the hospital pharmacy before purchasing medication.

This delay could be explained, on the one hand, by insufficient staffing at the CHU SO pharmacy, and on the other hand, by the fact that patients and their companions from across the hospital flock to this pharmacy, creating a massive influx and thus delaying the purchase of products. The unavailability of certain medications at the hospital pharmacy forces patients to leave the hospital to obtain them, further delaying patient care. Establishing a pharmacy within the emergency department could address this problem.

5. Conclusion

This study was conducted to determine the factors influencing the time to patient care in the emergency department of the Sylvanus OLYMPIO University Hospital (CHU SO). The results of our work demonstrate the prevalence of delayed care. Several factors were identified: high patient volume and unavailability of medications in the hospital pharmacy, insufficient staffing, a lack of beds, unavailable emergency medical equipment, an inefficient care process, staff workload overload, the unavailability of certain additional tests at the hospital, and the patient's lack of financial resources. These delays in care could lead to a worsening of patients' conditions, thus increasing morbidity and mortality. It is now necessary to address these factors to improve patient care. One solution would be the reorganization of the emergency department, on the one hand, and the proper organization of pa-

tient transfers to downstream departments, on the other. It would be necessary to strengthen the department's capacity to care for patients in order to guarantee effective and efficient management of medical emergencies at the CHU SO.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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