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Pathway to the Emergency Department in a Tertiary Hospital in Port Harcourt, Nigeria: A Prospective Study of 614 Unconscious Patients

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Abstract

Background: Patients arrive at the emergency department by a different array of means of transportation. This depends on the availability of ambulance and paramedic services. This is a challenge in Nigeria and the worst affected are the critically ill, unconscious patients and the unknown patient. The study investigated the companions, mode of arrival and where the unconscious patients are coming from unconscious patients to the Accident and emergency department (A&E) of the University of Port Harcourt Teaching Hospital (UPTH).

Method: This is a 10-months prospective study conducted at the A&E of UPTH from September 2023 to June 2024. Convenience sampling technique was used for data collection.

Results: Six hundred and fourteen unconscious patients were recruited into this study. Most of the informants were the patients' spouses 253(41.4%) and children 184(30.0%). The patient's companions included people who have close acquaintances with the patient. Most of the unconscious patients were accompanied by 1-3 persons. Only 10.6% arrived in an ambulance including those that were brought from another health facility. Most of the patients arrived from home and another health facility. Most of the patients with trauma were brought directly from the accident scene.

Conclusion: Most of the unconscious patients arrived the A&E in taxis and personal vehicles that are not designed for the transportation of the critically ill. A central ambulance system should be established in Rivers State that can transport a critically ill patient.

Keywords: Emergency Service, Ambulance, Health Facility, Emergency Department.



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Introduction

Unconsciousness occurs when there is an abnormality in the metabolism of the cortex of the cerebrum and the structure of the network of the brainstem; the normal function of the cerebral cortex is inhibited by diseases and other things that can lead to altered consciousness.¹ Management of the unconscious patient is a challenge to the emergency physician² and a burden to the emergency department.³ There are several factors why an unconscious patient is brought to the hospital late. In Nigeria, patients both conscious and unconscious arrive at the health facility using various means of transportation. This depends on the terrain, level of development in the locality and what is available. This includes the patients' private vehicle, private vehicle of the patient's companions, taxi, public transport, bicycle, motorcycle or tricycle.⁴ When unconscious patients are brought to a health facility, it is usually the Accident and Emergency Department (A&E) that will attend to them.¹ This is because they need urgent attention.

Patients are sometimes transferred from one hospital to another due to several reasons. The choice of the means of transport of the unconscious patient during inter-hospital transfer is essential. Patients that are critically ill including the unconscious are at a high risk of morbidity and poor prognosis during transfer.⁵ However, sometimes, this inter- and intra-hospital transfer is very important as there are several reasons why an inter- and intra-transfer is done. Some of the reasons are for specialist treatment, investigation and intervention. To provide support that is not available at the referring hospital.⁵ During such patient transfer, usually a health worker, paramedic, nurse or doctor accompanies the patient with a referral letter. This sometimes does not occur in societies with a shortage of health workers like in low and middle-income countries. The referral letter is a means of communication between health workers. As it is an important document that facilitates the continuity of care of the patient.^{6,7} Referral of patients is an important aspect of the health care system, especially between primary, secondary and tertiary health facilities.^{7,8}

A patient companion may be a relative or non-relative to the patient.³ These companions may be relatives of the patient or other close acquaintances. In a study conducted in Turkey, 46.3% of patients were accompanied by 1 person and 19.1% by 2 persons. 6.4% 3 persons, 1.1% 4 persons and 0.2% 5 persons.⁸ This study aims to investigate the companions and mode of arrival of patients with altered mental states to the accident and emergency department (A&E) of the

University of Port Harcourt Teaching Hospital (UPTH) including where the patient is coming from.

Method

Study Setting

UPTH is in Port Harcourt, southern Nigeria, Port Harcourt is the capital of Rivers State and is made up of several islands. UPTH is a tertiary health facility accredited for internships for new medical, dental, pharmacy, optometrists, and laboratory scientists 'graduates'. It is also affiliated with the medical, dental nursing and pharmacy school of the University of Port Harcourt for the clinical clerkship and training of its medical, dental, nursing and pharmacy students. The means of transport in Port Harcourt are bicycles, private cars, public cars and buses, tricycles colloquially called 'Keke', and taxi minibus (colloquially called 'keke bus' in Port Harcourt).

Study Design

This is a descriptive cross-sectional study conducted at the A&E of UPTH and reported using the guideline for Strengthening the Reporting of Observational Studies in Epidemiology (STROBE)

Study Population

The population of this study are patients who were unconscious at the time they were brought to the A&E of UPT irrespective of the diagnosis.

Sample Size Determination

The calculated minimum sample size in this study was 194. Using the formula:

$$N = \frac{z^2 pq}{D^2}$$

Where $z=1.96$

P =prevalence: 59% from a study conducted in Ibadan, Nigeria⁹

$q=1-p$

$d=5\%$ non-response

Data Collection

Data was collected over 10 months from September 2023 to June 2024. The World Health Organization emergency unit form was adapted for this study to the peculiarities of the study area. The information was retrieved from the patient's companions as the patient was unconscious. The study was approved by the research ethics committee of UPTH.

Data Analysis

The data was analysed and presented in descriptive statistics and reported using tables and figures.

Results

Patients were recruited into this study from September 2023 to June 2024. The number of patients recruited into this study is 614 with 331(53.9%) men and 283 (46.1%) women. The age of the unconscious patients in this study ranged from one year to 98 years. The informants/patient companions were both close acquaintances and persons unknown to the patients as shown in Tables 1, and 2.

Table 1: Informants of the Unconscious Patient

Patient Informants	N	%
Spouse	253	41.2
Children/Grandchildren	184	30.0
Siblings	57	9.3
Parent/Grandparent/Stepparent	39	6.4
Bystander	20	3.3
The driver who hit the patient	11	1.8
Classmates/Colleague	10	1.6
Nephew/Niece	7	1.1
Community Brother	5	0.8
Church Member/Pastor	4	0.7
Friend	4	0.7
In-Law	4	0.7
Neighbor	4	0.7
Military Personnel	3	0.5
Policemen	3	0.5
Landlady	1	0.2
Master	1	0.2
Military Instructor	1	0.2
Refused to say relationship with the patient	1	0.2
Total	614	100

This table reveals that 253(41.2%) of the informants were spouses of the patient, 184(30.0%) children (daughter/son) or grandchildren and 57(9.3%) siblings (brother/sister). The Community brother was a male who because close acquaintance with the patient because they met in Port Harcourt after they found out that they were from the same community. The in-laws were son and sister-in-law. Concerning the number of persons that accompanied the unconscious patient to the A&E, 1 patient was accompanied by 177(28.80%) persons, 2 patients 168(27.40%) companions, 3 patients 152(24.80%) companions, 4 patients 90(14.70%), 5 patients 16(2.60%) companions, 6 patients 8(1.30%) companions, and 7 patients 3 (0.50%) companions.

Table 2: Patient Companions

Companions	N	%
Children	326	37.8
Spouse	286	33.1
Sibling	101	11.7
In-law	24	2.8
Parents/Grandparents/Stepparent	24	2.8
Bystander	20	2.3
Church Members/Pastor	13	1.5
Driver that hit patient	12	1.4
Neighbor	11	1.3
Friend	9	1.0
Community Brother	8	0.9
Nephew/Niece	8	0.9
Policemen/Women	4	0.5
Military personnel	3	0.3
Extended Family Members	2	0.2
Landlord/Landlady	2	0.2
Classmates/Colleague	2	0.2
Aunty/Uncle	2	0.2
Cousin	2	0.2
Refuse to say the relationship with the patient	2	0.2
Military Instructor	1	0.1
Master	1	0.1
Total	863	100

In this study, 864 persons accompanied 614 unconscious patients to the A&E. Majority of the unconscious patients were accompanied by 1-3 companions. The patients accompanied by bystanders, military personnel and police were patients seen by the roadside involved in an accident. Figure 1 shows the mode of arrival to A&E.

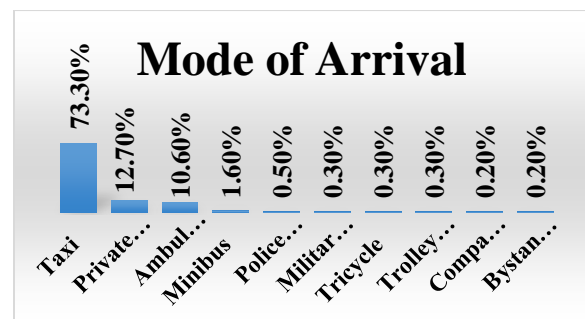


Figure 1: Mode of Arrival

Figure 1 shows that the means of transportation to the A&E 450(73.3%) arrived in a taxi while 78 (12.7%) were brought in a private vehicle owned by the patient or their companion. Only 65(10.6%) arrived in an ambulance. Two (0.3%) were brought on a trolley from a UPTH clinic and one patient was found unconscious within the hospital premises. Patients were brought in from various places as shown in Table 3.

Table 3: Where the Patient Arrived From

Where Patient Is Coming From	N	%
Another Health Facility	271	44.1
Home	246	40.1
Accident Scene	49	8.0
Herbal Home	14	2.3
The informant refused to say	9	1.5
Prayer House	9	1.5
Church	5	0.8
UPTH Clinic	2	0.3
Workplace	2	0.3
Traditional Bone Setter	2	0.3
Roadside	2	0.3
Travelling on a journey	1	0.2
UPTH Premises	1	0.2
Patent Medicine Dealer Shop	1	0.2
Referred from another Health Facility		
Type Of Health Facility	N	%
Private Hospital	209	77.1
Another Tertiary Hospital	25	9.2
Military Hospital	16	5.9
Company Hospital	4	1.5
Primary Health Centre	4	1.5
Navy Medical Centre	4	1.5
General Hospital	4	1.5
University Medical Centre	3	1.1

Air Force Reference Hospital	1	0.4
Police Medical Centre	1	0.4
Total	271	100

The majority of the patients 271 (44.1%) were brought from another health facility and 246 (40.1%) from home. Herbal homes are traditional healers who use herbs and plants in the course of their treatment. Some of them, also use spirituality and sacrifices as part of the management of their clients. Traditional bone setters are traditional herbs in the treatment of limb problems, fractures and dislocation. One patient was travelling on a journey from a neighbouring state to Port Harcourt and lapsed into unconsciousness while still in transit. One patient was taken to the shop of a patent medicine after he lapsed into unconsciousness. Patent medicine dealers are drug vendors licensed to sell drugs some over-the-counter medications but do not know the pharmacology of drugs. They have not undergone any form of medical, or pharmaceutical drugs. They have not undergone any medical or physical training. They practice their trade by undergoing apprenticeship. For patients referred from another health facility, the majority of the patients 209 (77.1%) were referred from a private hospital and 25 (9.2%) from another tertiary hospital. These tertiary hospitals are the teaching hospitals and Federal Medical Centre (FMC) within Rivers State and the surrounding states.

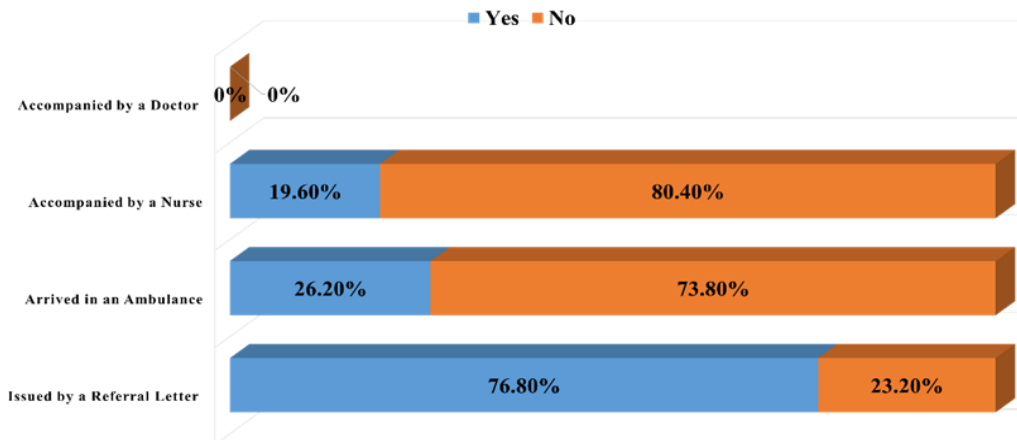


Figure 2: Patient arriving from another health facility

For patients arriving from another health facility, 208 (76.8%) were issued a referral letter, 200 of the referred (73.8%) were not transported in an ambulance, and only 53(19.6%) were accompanied by a nurse who handed over the patient to the A&E emergency physician /nurse while no doctor accompanied any of the unconscious patient referral to A&E from another health facility.

Discussion

Patients were accompanied by a variety of individuals who may or may not be close acquaintances. Therefore, it is natural that such patients are accompanied to the A&E by family members and friends as a sense of concern and responsibility that they care about the patient in times of need.¹⁰ Patient companions

sometimes play an integral role in patient management by providing social and psychological support and they feel fulfilled that provided what they can offer to their loved ones.¹¹ It is also necessary when there is no medical insurance, and patients have to pay out of pocket.

Some comatose patients due to ignorance while the patient was still conscious or ignorance of the patient's companion, lack of means of transportation and poverty may end up not being brought to the hospital.⁴ In this study, the majority of the comatose patients were brought to the hospital in taxis, and some were driven to the hospital in their private vehicles or the vehicles of their companions. Those brought from the riverine areas were transported to Port Harcourt in a taxi boat. This is a challenge and may worsen the condition of the unconscious patient because an unconscious patient should be lying down with 30° head-ups to improve venous return to the brain and prevent aspiration. Keeping an unconscious patient in the sitting position can result in the tongue falling back leading to airway obstruction as the gag reflex is lost.

At least one person whether related by blood to the patient or not accompanied the patient to the A&E. The patient companion depended on the location of the patient at the time the patient lapsed into unconsciousness. For instance, patients who lapsed into unconsciousness while at home were accompanied by family members and may be Neighbours and the landowner which is the landlord or landlady. If it occurred while at the workplace, apprentice shop, school or military training, the informants and companions will be colleagues/coworkers, master, and instructor. It is natural for friends and relatives to accompany their loved ones with health problems to a health facility, this is due to the sense of showing concern and responsibility.¹² This is also due to the communal way of living in Nigeria and the extended family system that is practiced. This is similar to a study conducted in Turkey where at least one friend or relative accompanied a patient to the hospital.¹² The number of patient companions differs, and it depends on the social circle

Implications of the findings of this study

Strengthening of inter-hospital referral in Port Harcourt and Nigeria through the provision of ambulances that can be accessible and used by private hospitals. Establishment of a central and effective ambulance service. Doctors referring patients should endeavour to write a referral letter and assign a health worker to accompany and hand over the unconscious patient to the health facility receiving the patient. The A&E should

of the patient. Sometimes even individuals who do not know the patient may accompany the patient especially when it is an accident just to help them.¹² The role of the patient companions is to provide moral support.^{10,12} In Nigeria where most of the patients pay out of pocket, the companions also provide financial support. Although when these companions are many, it leads to overcrowding in the A&E and can predispose the healthcare workers to violence. For instance, in this study, a patient was accompanied by 5, 6 and 7 companions. Nigeria is a developing country hence it is not surprising that an unconscious patient transferred from another health facility was not transported in an ambulance. Some of these health workers from the referring health facility did not issue a referral letter to the patient's companions. However, this is bad practice and does not strengthen inter-hospital transfer. Patient transfers that are done poorly can worsen the condition of the patient and increase morbidity and mortality hence it requires careful attention.¹³

Few of the patients were not issued a referral letter by the physician referring them. A majority of the patients arriving from another health facility were not transported in an ambulance. This is not surprising as Nigeria is still a developing country coupled with a poor economic situation. It is possible that the referring hospital did not even have an ambulance worsened by the poor ambulance and health emergency service in Nigeria. Most of the unconscious patients were not accompanied by a health worker to hand over the patient to the emergency physician. This is not surprising due to the shortage of health workers in Nigeria worsened in recent times by the brain drain and massive migration of Nigerian health workers to the Western world. None of the patients was accompanied by a doctor.

The companions of the patient who act as informants for unconscious patients may be inquisitive about the patient's diagnosis.¹² This can act as an ethical dilemma for the emergency physician on how much information should be divulged to the patient companions.

have a policy on the number of companions allowed for each patient to avoid divulging patient information and practicing the ethical principle of confidentiality.

Strengths and Limitations of the Study

The strength of this study is that the survey highlighted details about the unconscious patient. The limitation of this study is that since the patient is unconscious, for the adults the accompanying persons did not have much

information about the patient, especially the unknown patient.

Conclusion

The pathway of unconscious patients into a health facility is the A&E to receive immediate and emergency care. These patients are accompanied to the hospital by both close acquaintances and persons unknown to them. Unconscious patients arrive at the A&E from various places mainly from home and other health facilities. People who were referred from other health came mainly from private hospitals. Referral letters are very important during inter-hospital transfer as they act as communication between health workers and promote the continuity of care.

Declarations

Ethical Consideration: The ethical approval for this study was obtained from the research ethics committee of the University of Port Harcourt Teaching Hospital. The ethical principle of confidentiality was breached as the patient is unconscious.

Authors' Contribution: The study was conceptualized by DYB. DYB and BEI were involved in drafting the research proposal, collecting data, data analysis and writing the final article.

Conflict of interest: The authors declare no conflict of interest.

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