EVALUATION OF WAITING TIME AMONG PATIENTS UNDERGOING CONVENTIONAL RADIOGRAPHIC EXAMINATIONS IN THE RADIOLOGY DEPARTMENT, AMINU KANO TEACHING HOSPITAL, KANO

[1]Abdu Hamisu Danbatta, [2]Haruna Idris, [3]Mohammed Sidi
[1]Radiology Department, Bayero University Kano
[2]Yusuf Dan Tsoho Memorial Hospital Tudun Wada, Kaduna
[3]Radiography Department, Bayero University Kano
Corresponding Author: MuhammadSidi82@gmail.com, +23803964238

Abstract

Background: Patient waiting time is the time from when the patient enters the waiting room or area to the time the patient left or leaves the Radiology Department.

Objectives: To determine the waiting time for patients undergoing conventional x-ray examinations in the Radiology Department, Aminu Kano Teaching Hospital (AKTH), Kano.

Materials and Methods: The study design is prospective, cross-sectional descriptive study conducted at the Radiology Department, Aminu Kano Teaching Hospital from March 2015 to Dec 2015. Non probability; convenience technique was employed in the study, a total of 220 patients was studied. Two hundred and twenty (220) structured questionnaires were self-administered; the questionnaire was validated by experienced senior colleagues. Ethical clearance was obtained from the research and ethics committee of the hospital, and Informed consent was obtained from all the selected subjects. The timing was done using a calibrated stop-watch and the obtained data were analyzed using SPSS version 16.0.

Results: Twenty three (23%) percent of the patients studied arrived the department before 8:00a.m on the date of the appointment, 72% came between 8 am − 11:59 am, while the remaining 5% came from 12 pm and above. The average time spent during the radiography of the paranasal sinuses, abdomen, chest, skull, spines and post nasal space were 188.80 minutes, 177.85 minutes, 162.68 minutes, 158.57, 157.13 minutes and141.50 minutes respectively.

Conclusion: The mean patient waiting time for conventional radiographic examinations in Radiology Department Aminu Kano Teaching Hospital was found to be 2 hrs 37 minutes

Keywords: Patient waiting time, conventional radiographic examination, Aminu Kano Teaching Hospital.

Introduction

Waiting time refers to the time a patient waits in the clinic before being seen by one of the clinic medical staff [1]."it can also be defined as the time the patient arrives in the department, registers, taken into the diagnostic room, till the patient was asked to go". [2]. Literatures shows strong inverse relationship between patient waiting time and patient satisfaction [3]. But patient satisfaction can be improved when health workers meet their expectations and decrease the total time spent in attending to a patient [4]. The patient experience of waiting can influence his/her perception of service quality [5]

Waiting time is an important aspect of practice that patients will use to judge health personnel, even more than their knowledge and skills [6]. A large proportion of studies focused on waiting time in the waiting room. However the amount of time patient spends in the diagnostic room is also important [3]. One of the advantages of waiting time is that,

the shorter the time of the examination spent by the patient the more it attracts new patient especially in a competitive health care environment [7]. The benefits to patients of short waiting times are, reduced pain for quick relief of symptoms, less disruption to normal life through prompt attention, less anxiety through quicker diagnosis and convenient appointments.

Patient waiting time is one of the factors that can affect the utilization of health care service and long waiting time spent with the patient, act as barrier to actually obtaining service [7]. The patient spends a large amount of time waiting for service to be delivered by physicians and other allied health professional; therefore, keeping patient waiting unnecessarily can be a cause of stress for both the patient and staff [6]. However, technological innovations in the diagnostic sector had made services more efficient, but at the same time, more expensive, thus increasing costs. The length of time spent waiting in the department generates a large number of complaints by patient and therefore, it is an area which needs to be improved [1].

Therefore, policy makers must face a complex situation resulting from longer waiting times, the increasing demand of diagnostic services from patients and increasing costs [1]. Furthermore, reducing waiting times can lead to improved financial performance of the practice [8]. A completely satisfied patient believes that the organization has potential in understanding patient need and demands related to the health care" [7]. The duration of waiting time varies from country to country, and even within the country, it varies from center to center, it also varies from patient to patient, some use technological advancements such as voice recognition, software and the wide-scale implementation of picture archiving and communication systems [9]. Long waiting

times have been reported in both developed and developing countries.

In the USA, an average waiting time of about 60 minutes was found in Atlanta, and an average of 188 min in Michigan [5]. In Nigeria, an average waiting time of about 173 min was found in Benin, while in University College Hospital, Ibadan, a mean waiting time of 73 min was observed for patients that went through radiographic examinations [6]. Another study conducted by [10] on special procedures in the Radiology Department, University of Maiduguri Teaching Hospital reported a waiting time of 2-4 hrs.

Radiology department of AKTH, under study, provides several radiological services like, conventional and special radiological examination, computed tomographic, mammographic and sonographic examinations. Since conventional radiography has the majority of the patients. There is a paucity of data on patient waiting time in the Radiology Department, Aminu Kano Teaching Hospital. The findings in the current study will be used as baseline for making recommendations to the relevant authority; it could also serve as a guide to the staff of the department. The study aims at evaluating the patients waiting time for those undergoing conventional radiography examination in the Radiology Department, Aminu Kano Teaching Hospital, Kano.

Materials and Methods

The study design was cross-sectional descriptive study conducted in the Radiology Department, of the Aminu Kano Teaching Hospital from March 2015 to Dec 2017. Non probability; convenience method was employed in the study and a total of 220 subjects was studied. Two hundred and twenty structured questionnaires were self-administered; the questionnaire was validated by experienced senior colleagues. Using pilot study the reliability of the questionnaire was tested, and the Cronbach

alpha reliability coefficient was found to be 0.87. The questionnaire consists of two sections; section A consists of socio-demographic information of the respondents, while section consist of questions concerning the waiting time of the respondents. Ethical clearance was obtained from the research and ethics committee of the Aminu Kano Teaching Hospital, and Informed consent was obtained from all the selected subjects. The researchers did the timing using a calibrated stop-watch. The mean, standard deviation and range of the data was obtained using descriptive statistic. The obtained data were analyzed using SPSS version 16.0.

Results

One hundred and twenty five (56.8%) of the patients were males while 95 (43.2%) were females. Thirty eight (17.3%) of the participants were less than 10years of age, 18 (8.2%) was between 10-20years, 48 (21.8%) 21-30years, 53 (24.1%) 31-40years, 24 (10.9%) 41-50years, 29 (13.2%) 51-60years and 10 (4.5%) were above 60 years of age. One hundred and ninety eight (90%) of the patients were residing within the Kano metropolis while 22 (10%) were residing outside Kano metropolis.

Table 1: Educational status of the respondents

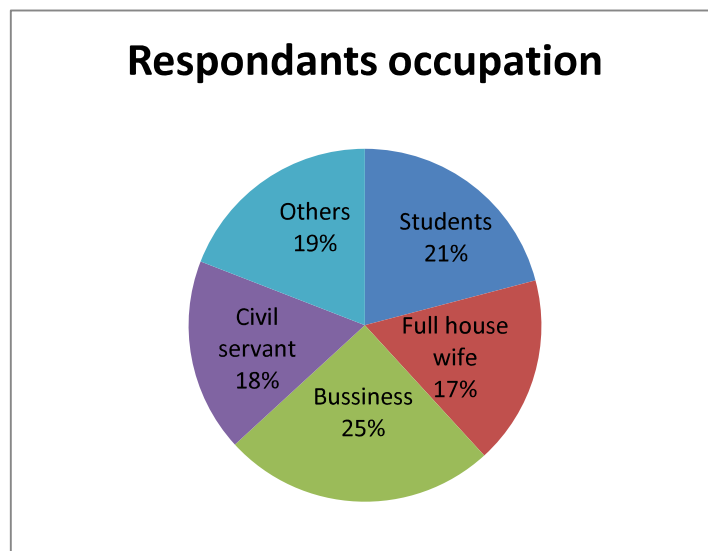| Educational status	Frequency	Percentage
Tertiary	93	42.3
Secondary	37	16.8
Primary	34	15.5
Adult education	4	1.8
Quranic education	14	6.4
None	38	17.3
Total	220	100

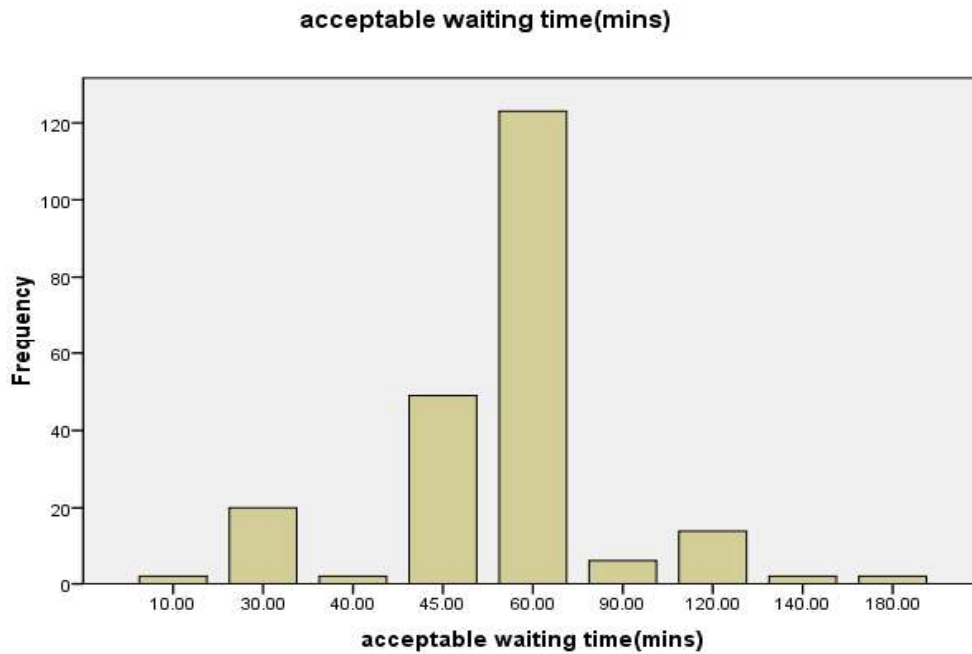**Figure 1: Occupation of the respondents**
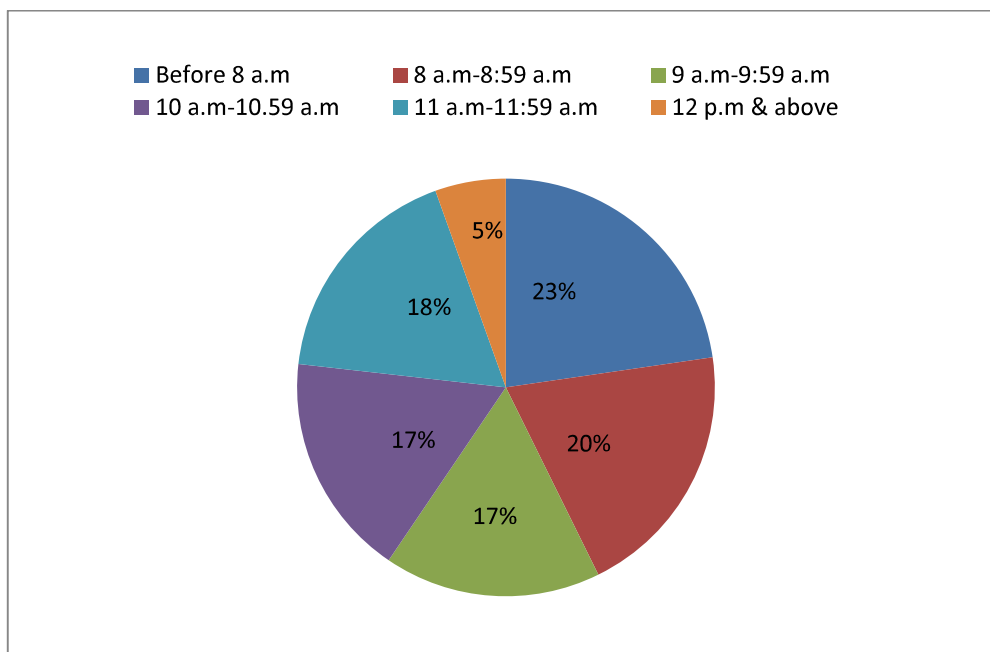
Figure2: Acceptable time of the respondents

Figure 3: Arrival time of the participants

Table 2: Requested examinations

Type of Examination examination	number of examination	Time spent during examination (mins)			
		minimum deviation	maximum	mean	standard
Chest	106	20	390	162.68	84.83
Skull	14	30	255	158.57	81.65
Postnasal space	8	120	160	141.50	18.10
Abdomen	26	60	302	177.85	76.67
Spine	30	38	340	157.13	95.58
Paranasal sinuses	10	80	267	188.80	75.76
Extremities	26	30	240	118.00	69.01

Table 3: Steps each patient went through to access radio-graphic examination

Steps of patient waiting time (minutes)	minimum	maximum	mean	standard deviation
Payment time	11	80	48.90	48.67
Before the procedure time	5	290	95.23	50.87
During the procedure	2	20	8.12	3.88
Film processing time	2	30	4.65	3.17
Total waiting time	10	420	156.9	106.59

Discussion

Sixty percent of the patients arrived at the hospital on their appointed day before 8:00 a.m to 9:59 a.m, while the remaining 40% arrived at various time intervals ranges from 10:00a.m to 12:00p.m and above as shown in figure 1. This means that the majority of patients arrived the department early in the morning, therefore they were not supposed to be kept waiting more than necessary.

The current study found that extremities had the minimum mean waiting time of 1hr.58mins and paranasal sinuses (PNS) had the maximum mean waiting time of 3hrs.9mins. The possible reason of shorter waiting time of extremities examination reported in the current might be the two projections are usually performed on the same cassettes and associated with low repeat rate. The long waiting time of PNS

examination reported in the current study might be the three projections are usually performed on different cassettes and associated with the moderate repeat rate. The findings of the current study were contrary to the findings of the study conducted by [3] in Enugu, Nigeria, which showed that chest had the minimum mean waiting time of 2hrs.29mins while extremities had the maximum mean waiting time of 3hrs.39min. The reason of the variation with the current study could be due to the fact that only one examination room was dedicated for all conventional radiography examination while, in the previous study; there was dedicated room for chest X-ray only and the other room was dedicated for other conventional radiography examinations. The findings of the present study show that patients spend most of their time in the waiting area before

the procedure commences, mean waiting time of 1hr.35mins, after they have paid and registered their examination. The findings of the current study were similar to the findings of the study conducted by [3] in Enugu, Nigeria, reported mean waiting time of 1hr.14mins. The findings of the current study were also in agreement with the findings of the study conducted by [10] that reported a patient waiting time of 2 hrs - 4 hrs for special procedures. The mean patient waiting time of 2 hrs 37 mins reported in the current study was longer than the time majority of the respondents considered as acceptable waiting time as shown in figure 2.

The crowded of patient queued at the payment point from different examination unit, e.g. ultrasound, special procedure, conventional and computed radiography, and also late powering of the standby generator used in the department. Heavy work load also is also a factor contributing to longer patient waiting time.. Longest waiting time can be from the patient; in case of patients having dual radiological examinations; such as, ultrasound and chest x-ray. The patients can come early for submission of his request card for radiography examination, but the patient went for the ultrasound. When radiography work has started, the patient name has been called but not answered, because the patient was not in the waiting room. The radiographer puts the patient's request form to be at the last, this is the major reason that made patients to spend longer waiting time. Positioning error, wrong marker placement, exposure factors error and film processing problem are factors that contribute to long waiting time. More so, rejected film by the radiologist during reporting due to lack of diagnostic value is also a factor. This can be improved by the use of computed radiography (CR) or direct digital radiography (DDR) because they have high latitude and make work faster It was observed that this waiting time can be reduced drastically to one day if the generator is powered on around 8:00AM, as it is the major factor that contribute to excessive patient waiting time. If this is done, before 11:30AM almost all the patients that came early would have gotten their investigation done. Thereby, enabling the reporting radiologist to starts reporting the radiographs and the clerks were typing the result instantly. Taking together of all these, the result can be ready within the day or the next day of the investigation/examination. Picture archiving and communication system (PACS) can also contribute to the reduction of patient waiting time, as the reporting radiologist can report the radiograph within the time of the examination or within some hours the result will be ready..

Conclusion

The mean patient waiting time for conventional radiographic examinations in Radiology Department Aminu Kano Teaching Hospital was found to be 2 hrs 37 minutes. Conventional x-ray of the paranasal sinuses had the longest waiting time. Majority of patients spent long waiting time before their radiographic examinations, due lack of starting radiographic work on time due to not powering ON the standby generator plant that supply the radiological equipment. There is a need for the management to device a means of minimizing patient waiting time.

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