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ASSESSMENT OF PATIENT'S WAITING TIME IN THE RADIOLOGY DEPARTMENTS IN OWERRI, IMO STATE, NIGERIA

Ugwuanyi D. C.*, Chiegwu H. U., Eze J. C. and Okoli M. C.

Department of Medical Radiography and Radiological Sciences, Nnamdi Azikiwe University, Nnewi Campus, Anambra State, Nigeria.

***Corresponding Author: Ugwuanyi D. C.**
Department of Medical Radiography and Radiological Sciences, Nnamdi Azikiwe University, Nnewi Campus, Anambra State, Nigeria.

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ABSTRACT
Radiography has seen itself at the centre of modern medicine as a diagnostic tool in diagnosing treating and managing ailment. Unlike other arms of the hospital that are designed to carter for specific kinds of illnesses, the radiology department provides services that are utilized by almost every patient. Waiting time in radiology could be defined as the time between when a patient present at the radiology department for an investigation, and the time the investigation is done and a report written on the outcome of the investigation. The study was done to assess the factors affecting patient waiting time in radiology Department/ Centre's in Owerri, Imo state, Nigeria. The study was also a cross-sectional survey that used over 150 people (over 20 Radiographers and over 120 patients), who are present during the study. The data collection instrument was 15 items, self-completion questionnaire for the radiographers and a 14 item, self-completion questionnaire for the patient. The questionnaire included demographic characteristics of patients and radiographers and 98% of the total questionnaire was returned. Both descriptive and inferential statistical test were done. Test were 2 tailed with $p<0.05$ indicating statistics significant. The results showed that lateness, volume of patient, and level of satisfaction in the department were perceived by the patients while lack of staff, faulty equipment and restriction of radiographers to report images were perceived by the radiographers as factors significantly affecting patient waiting time. The patient waiting time in the department has been implicated to be the leading cause of patient's satisfaction in the department. From this study, it was observed that the patient was indifferent in their level of satisfaction in the department. This implied that they are either satisfied or not satisfied with the service provided in the department.

KEYWORDS: Patient's waiting time, Radiology Department, Owerri.

INTRODUCTION
Radiography has seen itself at the centre of modern medicine as a diagnostic tool in diagnosing treating and managing ailment. Since its establishment in 1845 via the discovery of x-ray, they have been sophistication in its application in terms of equipment, protection etc in the diagnostic and therapeutic services in which it is used for in most health centers. It then does not come as a surprise the number of patients that pass through the department. Unlike other arms of the hospital that are designed to carter for specific kinds of illnesses, the radiology department provides services that are utilized by almost every patient. This translates to a radiology department besieged with countless requests for various radiological examinations (Scott, 2006).Waiting time in radiology could be defined as the time between when a patient present at the radiology department for an investigation, and the time the investigation is done and a report written on the outcome of the investigation.

There has been an increase in demand for the services provided by radiology departments or centers and thus an improvement in the efficiency of the radiology workers to reduce patients waiting time is of great important (Scott, 2006).

The diversity of inputs and range of services provided makes the radiology department a very complex system to run (Cirano' kane, 1981).

The National Health Service is increasingly regarding patients as consumer of a service, and as such, aims to provide consumer satisfaction (Booth et al., 1992). Patients arriving the x-ray department are often worried and confused about the possible outcome of their condition and this may even make it difficult for them to understand instruction and may even result to apparently aggressive attitude (Chesney et al., 1982). Consequent upon this is the need for a carefully thought out and impeccably executed radiology services to the patients as any mismanagement will spawn dissatisfaction with

services rendered, incessant complaints, the appearance of gross incompetence on the part of radiology staff, and not infrequently, utter chaos. The successful application of medical knowledge depends on what patients think and feel about the medical personnel and the hospital (Cartwright, 1964).

Anecdotal evidence points to this fact and several authors have been equivocal on the negative relationship between patient waiting time and satisfaction with service delivery. Despite its impact, it is but one more aspect of the factors that militate against patient satisfaction with health care services. Time spent while waiting for investigation is one aspect of healthcare that patient value and prolonged waiting can be distressing (Anderson et al., 2007). Patients waiting time is often a source of dissatisfaction and gives negative perception of the quality of patient care rendered. The perception imparts on both the radiology department and the hospital in general (Rolando, 1993).

All these impacts on the services rendered to the patient by the department. The services rendered should be delivered by a system that are to provide care that is safe, effective, patient-centered, efficient, equitable and timely (Wood, 2006). Various factors have been implicated such as paucity of radiology staff, little available radiology equipment coping laboriously with the demands placed on them, and absence of seamless coordination between the various professionals in the department missing (Onwuzi, 2014).

When the number of patient that present daily is enormously larger without a corresponding increase in staff population and morale, waiting time is bound to be longer as the number of staff will not be able to cope with the job. This causes stress to the staff and leads to burnout (Sciacchitano et al., 2001). The length of waiting time may cause deterioration in patient's condition and in some cases; the effectiveness of the proposed treatment may be reduced.

Aim of the Study

To assess the main factors that are responsible for the duration a patient stays in the radiology department and the perception of radiographers to these factors.

Specific Objectives

- To assess the factors affecting patient waiting time in radiology departments in Imo state.
- To assess patients' and radiographer's perception of length of waiting time.
- To identify the causes of long patient waiting time in radiology centers in Imo state from patients' and radiographer's perspective.

MATERIALS AND METHODS

Research design

The study was a prospective cross-sectional survey research.

Target population

The target population for this study will include practicing radiographers and patients in Federal, State and private radiology centers in Imo state.

Sample size

A convenience sample of radiographers and patients was chosen for the study. The sample was composed of only radiographers and patients available during the period of data collection and who expressed willingness to participate in the study.

Sampling technique

Non-probability convenience sampling was adopted for the study.

Inclusion criteria for radiographers

i A radiographer practicing in major hospital and diagnostic centers located in Imo state.
ii Willingness of the Radiographer to participate in the study.

Exclusion criteria for radiographer

i Hospital personnel who are not Radiographers.
ii Student Radiographer.
iii Unwillingness to participate in the study.

Inclusion criteria for patients

i Only stable, conscious and ambulant patients were included in the study.
ii Patients that willing to participate in the study was chosen for the study.

Exclusion criteria for patients

i Trauma/patients from the accident and emergency department were not used for the study
ii Pediatric patients were excluded from the study.
iii Unconscious patients were also not included in the study.
iv Patient relatives were also not included in the study.

Data collection

A prospective respondent who had satisfied the inclusion criteria is approached for data collection. The research instrument was a structured questionnaire of the Likert format. Two questionnaires were designed to seek the view of the patient and radiographer respectively. The questionnaires designed were made up of two sections: the first section, Section A describes the demographics of the patient and radiographers respectively. The second section, Section B surveyed the perspective of the patient and the radiographer on the waiting time in the radiology department. These questionnaires were shared and collected by the author to the respondents.

RESULT

Patient's perception

Two hundred questionnaires was designed and distributed to patients that came to the department for various diagnostic purposes. Out of the two hundred

questionnaires distributed, only 136 questionnaires were filled and returned giving a return rate of 68%.

The male respondents comprised 53.7% (n=73) of the entire respondents while the female respondents made up 46.3% (n=63) of the respondents.

Table 1: Respondents Gender.

	Frequency	Percentage
Male	73	53.7
Female	63	46.3
Total	136	100

41.5% (n=54) of the respondents were married, 52.3% (n=68) of the respondents were single while the rest comprising 6.2% (n=8) were divorced.

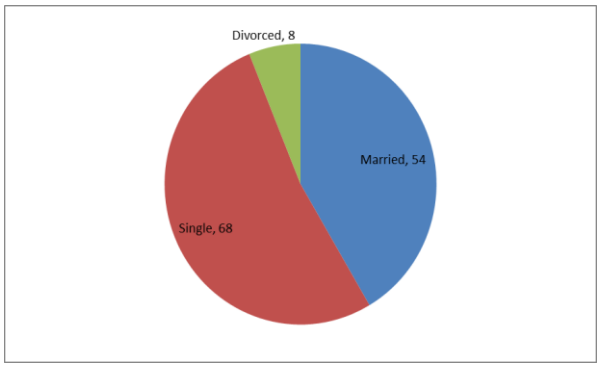

Fig 1: Marital Status of the respondents.

21.3%(n=29) of the respondents were within the age range of 18-24 years, 25%(n=34) were within the age range of 25-30 years,22.8%(n=31) were within the age range of 30-34 years, 14%(n=19) of the respondents were within the age range of 35-40 years while the rest comprising 16.9%(n=23) of the respondents were within the age range of 40-45 years.

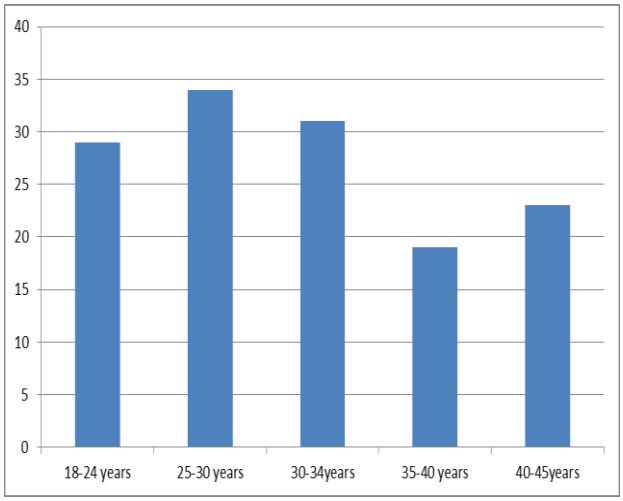

Fig. 2: Respondents age.

Respondents comprising 36.3% (n=49) of the whole respondents were civil servants, 38.5% (n=52) were business men, while respondents comprising 25.2% (n=34) were unemployed.

Table 2: Employment Status.

	Frequency	Percentage
Civil servant	49	36.3
Business	52	38.5
Unemployed	34	25.2
Total	135	100

The first part of the questionnaire assessed the perception of the patients to waiting time. Questions here were designed using the likert format of question designs.

From the mean of their responses, the patients were undecided on whether they waited too long to be attended in the department. Also, the respondents disagreed that the distance to the department is too long. They also agreed that they arrived late to the department. It was noted from the mean of their responses that the respondents were undecided on whether the volume of patients they met when they arrived was much. They were also undecided on whether the radiographers attended to on the basis of first come first serve. The respondents were found to be undecided on the waiting time being long because of the size of the department compared to patient's throughput. They disagreed that they came before the staff for their appointment. From the mean responses of the respondents, it was observed that they were undecided on whether it took long before they were attended to by the staff available. They disagreed that the waiting time was long because they noticed that the radiology staff was busy doing something else which increased the time they waited in the department. Also from the mean of their responses, they disagreed that the waiting time was long because they noticed that the staff do not want to work. They disagreed also that the waiting time was long because of power failure in the department. They also disagreed that the waiting time was long because of the breakdown in the functioning capacity of the equipment in the department.

The respondents disagreed that they spent less time in the department and finally, they were undecided on whether they were satisfied with the services rendered in the department.

Table 3: Patient's perception to waiting time.

Test Criteria	Mean	Standard Deviation
Waited too long	3.06	1.29
Distance to the department long	2.82	1.16
Arrived late	4.10	0.45
Volume of patient was much	3.52	1.37
First come first serve	3.20	1.17
Department small compared to patient throughput	3.06	1.17
Came before staff	2.50	1.01
Took long before I was attended	3.25	1.22
Staff were busy with something else	2.70	1.03
Staffs do not want to work	2.44	0.45
Power failure	2.48	0.93
Equipment breakdown	2.59	0.98
Spent less time	2.84	1.29
Satisfied with the services rendered	3.38	1.17

Radiographers Perception to Waiting Time

A total of fifty questionnaires were printed and distributed to radiographers. Out of these fifty questionnaires, only 46 questionnaires were filled and returned giving a return rate of 92%.

The male respondents that participated in this study comprised 43.5% (n=20) of the respondents while the female respondents made up of 56.5% (n=26) of the respondents.

Table 4: Radiographers gender.

	Frequency	Percentage
Male	20	43.5
Female	26	56.5
Total	46	100

87% (n=40) of the respondents had B.sc as their highest educational qualification, while the rest comprising 13% (n=6) of the respondents had M.sc as their highest academic qualification.

Table 5: Academic qualification of the respondents.

	Frequency	Percentage
B.sc	40	87
M.sc	6	13
Total	46	100

78.3% (n=36) of the respondents were within the age range of 20-29 years, 13% (n=6) were within the age range of 30-39 years while the rest comprising 8.7%(n=4) of the whole respondents were within the age range of 40-49 years.

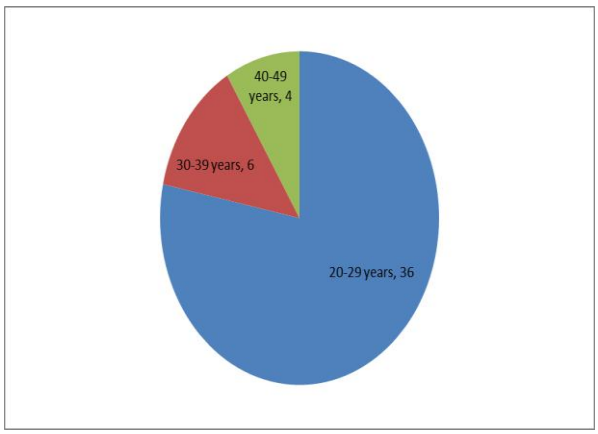

Fig. 3: Age range of Radiographers.

Respondents comprising 34.8% (n=16) of the respondents had worked as radiographer below 2 years and 2-5 years respectively. 26.1% (n=12) had worked as radiographers for 5-10 years while the rest comprising 4.3% (n=2) had worked as radiographers for a period of 10-15 years.

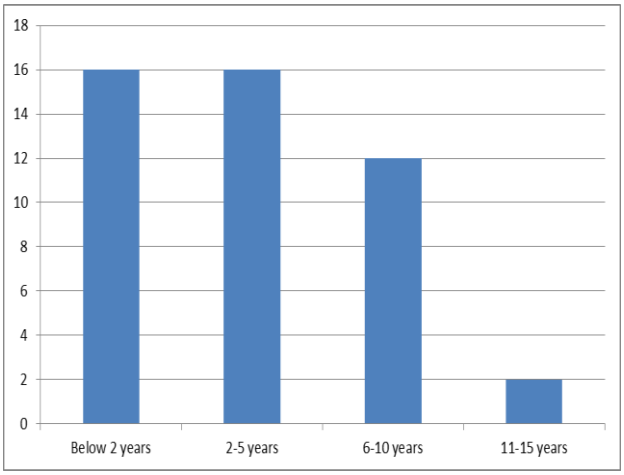

Fig. 4: Radiographers years of experience.

The second part of the questionnaire was designed in likert format to determine the perception of radiographers to waiting time in the department.

From the mean of their responses, the respondents indicated that they were undecided on whether the patients waited too long in the department. They were also undecided on whether the patients arrived late to the department. They were also undecided that due to complicated cases in the department, the patients wait time was extended. They however agreed that longer wait time is to be expected when there are complicated cases to handle. The respondents were however undecided on whether the patients that came to the department were attended to on the basis of first come first serve. They were also undecided on the patient waiting time being long due to the size of the department compared to patients' throughput. They however agreed that lack of staff contributed to longer wait time of patient. Also, they agreed that faulty equipment has an influence in the longer wait time of patients in the department. The respondents were undecided on whether staff satisfaction influenced the patients wait time. However, they agreed that restriction of radiographers to report on images influenced patients wait time. They also agreed that lack of role extension by the radiographers influenced patients wait time. Also, they also agreed that the longer time taken by the radiologist to report on images influenced waiting time in the department.

The respondents from the mean value of their responses agreed that the lack of supporting staff in the department also influence waiting time. However, they were undecided on lack of auxiliary staff contributing to longer wait time. Finally, the respondents were undecided on whether the patients wait long in the department.

Table 6: Radiographers perception of waiting time.

Test Criteria	Mean	Standard Deviation
Patient wait long	3.17	0.97
Patient arrive late	3.13	0.96
Complicated cases	3.35	0.97
Special investigation	4.00	1.19
First come first serve	3.48	1.19
Department small compared to patients throughput	3.13	1.44
Lack of staff	4.07	1.13
Faulty equipment	4.13	1.32
Radiology staff satisfaction	3.39	1.11
Restriction of radiographers to report images	4.83	1.29
Lack of role extension	4.00	1.31
Time taken by radiologists to report images	4.96	1.28
Lack of supporting staff	4.57	1.07
Lack of auxiliary workers	3.22	1.49
Patients do not wait long	3.00	1.15

DISCUSSION

Patient waiting time has been attributed to be identified through the cause and effect, Mohammed (2005) found that four major elements influenced waiting time. This includes availability of facilities and equipment, human resources, patients and registration process.

Radiographer that practiced in this study indicated that lack of staff and faculty equipment leads to increased patient waiting time in the department. This agreed with the work done by Mohammed (2005) who conducted a study on waiting time in outpatient clinic. Here he indicated availability of equipment and facilities and also human resources as the lead course of prolonged wait time in the department.

The patient here anteceded on the volume of patient affecting the wait time. This agreed with the work by Digiacons and Kramer (1982), who investigated the relationship between daily patient cause, patient minimal rate and mean patient waiting. They found that there was no significant correlation between waiting time and patient volume. They speculated that patient had to wait longer on baby days but no relationship has observed when spearman's RHO was used to check for relationship. However in a more recent work they did decor a significant circulation between median waiting time to see a physician and patient volume per shift.

Other factors here figured to influencing waiting time in the department. The radiographers indicated that lack of role extension, restriction of radiographers to report on images etc. This has affected the wait time as the period of collection of result has now been extended.

The perception of satisfaction with services rendered shows that majority of the patients were indifferent to the services rendered. It is the duty of the radiology department to provide satisfactory services to its patients as they present. Allen (1981) recommended that supply of recent magazines and newspapers, suitable for different rates and age groups, pictures and toys for children, music, aquarium and flowers well help in engaging the interest of the patients while they wait. The patient indicated to not being early to the department as a cause of long waiting time. The overall impression indicated that the patient were really satisfied or dissatisfied with the service.

CONCLUSION

The patient waiting time in the department has been implicated to be the leading cause of patient's satisfaction in the department.

From this study, it was observed that the patient was indifferent in their level of satisfaction in the department. This cruel imply that there are either satisfied or not satisfied with the service provides in the department.

Also, the radiographer identified some factors that can influence want time , which include lack of staff, faculty equipment, lack of role extension, restriction of radiographers in certain fields in the department etc. it only when these inefficiencies are addressed that the patient satisfaction will be met.

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