

Patients' Perception of Cleanliness in Radiology Department: A Single Centre Study

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Abstract: Cleanliness in hospitals means more than just maintaining a clean and safe environment. It makes a statement to patients and visitors about the attitudes of staff and management. Cleanliness is the attempt to prevent the spread of infection to minimize contamination. The way patients perceive the cleanliness of the radiology and hospital environment goes a long way in determining the quality of health care. *Objectives:* This study assessed patients' perception of cleanliness in the radiology department of Chukwu Emeka Odumegwu University Teaching Hospital Awka. It also determined patients' reactions and opinions towards cleanliness in the department. *Materials and Methods:* A validated questionnaire designed towards the objectives and was developed based on three sections was used to obtain data from 300 respondents using convenient sampling. Adult patients from 18 years to 70 years of age were used for the study. The data were analyzed using a statistical package for Social Science (SPSS) version 21.0. Statistical significance was considered at <0.05 . *Results:* The findings revealed that the patients perceive cleanliness highly and are concerned about the radiology department's environment and other factors such as changing gowns, neatness of staff, the seats, waste bin disposal, floors, entrance into the radiology department and provision of hand washing basins. *Conclusion:* The patients perceived the level of cleanliness in the radiology department highly which increased their trust for the quality of care obtained. The study also alerted the department about the concern of the patients for adequate cleanliness in the quality of care they receive.

Key words: Patients' • Perception • Cleanliness • Radiology and Single center

INTRODUCTION

Cleanliness is the state of being clean or the habit of keeping things clean [1]. Cleanliness in hospitals means more than just maintaining a clean and safe environment. It makes a statement to patients and visitors about the attitudes of staff, managers and the trust board. It reflects attention to detail, the level of care and the way the hospital is organized and run. In the health care context, cleanliness is the attempt to prevent the spread of infection through good hand hygiene, good personal hygiene, and handling techniques to minimize contamination. There has been an increasing awareness of patients in relation to the quality of health care they receive in hospitals. The hospital environment is the first point of call to a patient in this perspective and the way a patient perceives the hospital environment goes a long

way in determining his belief in the quality of health care. The perception of a patient in the area of cleanliness in the radiology department is a very important factor to consider.

There is increasing evidence that the quality of the physical environment has an impact on clinical outcomes for patients [2]. The perception a patient has about the standards of cleanliness in a hospital, whether they affect clinical care or not, can harm confidence in the care that they will receive. The success or failure of any hospital largely depends on the satisfaction met by the patients in any section of the hospital they attend for care. The radiology department is one of the important areas of the hospital that need to be maintained always for tidy environment so as to reassure the patients of their safety and comfort in the department. There is a strong link between the patient's perceptions of cleanliness in the

radiology department and his satisfaction of the quality of care and this appears to be a major device in order to take important decisions for the radiology staff.

A clean, tidy and well-maintained environment is part of the decent standard of health-care that patients have a right to expect. Although a clean and tidy environment will not in itself provide a sufficient guarantee that patients will not run the risk of contracting an infection as a result of their care, it is clear that a failure to maintain a clean environment can break the fundamental cycle for good control of infection [3]. The appearance of the environment is a complex set of perceptions based on what individuals believe to be important, what they observe and what they expect [4]. Every accessory in the radiology department may appear contaminated in the eye of the uninformed patient. Therefore, to gain the patients confidence, adequate communication is important which removes fear amongst patients that come into the radiology departments for various examination procedures. Reducing infections in hospitals depends on environmental measures [5]. It is of utmost importance that adequate measures are undertaken. There is a need to disinfect electronic devices used by radiologists, technologists, and staff [6]. Most electronic devices used by radiologists are often contaminated because these pathogens are present in the air so there is a need for adequate air filtration in the X-ray rooms. The physical appearance of a radiographer also affects patients' perceptions either negatively or positively; it required that the radiographer appears neat before the patient.

Patients across Anambra state may have a high expectancy for clean environment and other good quality services in the hospital. The result of their different perceptions may affect diagnostic results positively or negatively and the various factors influencing this need to be determined. In view of this, there is a great need to ascertain how patients in Anambra state perceive cleanliness in the radiology department of a tertiary hospital and this research hereby is a great tool in filling this gap so that good quality patient care will be met.

MATERIALS AND METHODS

Study Design: A prospective cross-sectional survey with the purpose of assessing patients perception of cleanliness in the radiology departments was used for the study. This design is chosen since the survey design is centered on people's opinions, attitudes, and behaviors. In order to ascertain the validity of the

instrument, the instrument was presented to two research experts for face and content validity. After that, the instrument was also presented to a specialist in the field of test and measurement, who helped to determine if the items in the instrument are measurable. Only the copies of the questionnaire that were duly filled and completed by the patients were used in the final data analysis.

Target Population: The target population constituted all adult patients (outpatients and inpatients) visiting the radiology departments of Chukwu Emeka Odumegwu University Teaching Hospital Awkabetween June 2021 to March 2022.

Inclusion Criteria: Adult patients from 18 years to 70 years of age.

Exclusion criteria: Patients below 18 years of age and patients above 70 years of age were excluded in the study. These patients were excluded based on the fact that their perception of cleanliness may not be meaningful to the study due to a lack of optimal reasoning at these ages (Paediatrics and Geriatrics). Also patients who are too ill and those who are unconscious were excluded from the study.

Sample Size Determination: Was calculated using Yaroyamni formula [7] : The average population of adult patients for the period under study was 1200.

$N = \text{population}$ $l = \text{constant}$ $e = \text{error}$

$N/1 + N(e)^2$

$1200/1 + 1200(0.05)^2$

$1200/1 + 3$

$1200/4 = 300$

$n = 300$

Ethical approval

In line with the Helsinki Declaration, approval of this study was obtained from the Human Research and ethical committee of the Faculty of Health Science, Nnamdi Azikiwe University Nnewi, Anambra State.

Method of Data Collection: The source of data collection for this study was primary. A structured Questionnaire having 3 sections was utilized for the data collection. Section A covered the demographic aspects of the patients. Section B assessed patients' perception of cleanliness in the radiology department. Section C

Table 1: Showing the demographic data of the respondents.

Item	Frequency / %	STD	Mean ± S.E
Age			
18-30 year	38(12.7)	1.14	2.82±0.066
31-40 years	97(32.3%)		
41-50 years	61(20.3%)		
51-60 years	89(29.7%)		
61-70 years	15(5.0%)		
Total	300(100%)		
Gender			
Male	190(63.3%)	0.483	1.37±0.028
Female	110(36.7%)		
Total	300(100%)		
Occupation			
Student	66(22.0%)		
Self employed	113(37.7%)		
Pensioner	95(31.7%)		
Others	26(8.7%)		
Total	300(100%)		
Marital Status			
Single	78(26.0%)	0.568	1.83±0.033
Married	195(65.0%)		
Divorced	27(9.0%)		
Total	300(100%)		

assessed the resulting psychology of the patients with respect to their perceived level of cleanliness in the department. The procedure was explained to the subjects and informed consent was obtained before enrolling in the study. The confidentiality of elicited information was ensured by the omission of subjects' names from the questionnaire.

Statistical Analysis: The data collected were analyzed using a statistical package for social science (SPSS) version 21.0. The responses from patients were graded numerically as Strongly agree, =4 Agree=3, Disagree =2, Strongly disagree=1, Nil=0. For the purpose of proper data

collection, descriptive inferential statistics were carried out. Statistical significance was considered at <0.05.

RESULTS

Social demographic variables: Table 1 shows the socio-demographic data of the respondent. The most recorded respondent fell into the age bracket 31-40 years and 51-60 years. With the least falling into the age bracket 61-70 years. It was also observed that 190 male respondents were recorded and 110 female was recorded. The majority of the respondent were students with 113(37.7%) followed by pensioners. The least was those that fell into the others category with a frequency of 26(8.7).

195(65.0%) of the respondent were married and 78(26%) were single. 27(9.0%) were divorced.

Table 2 shows the respondent's thoughts on the level of neatness in the radiology department. The majority of the respondents did not agree that the radiology department is dirty, while few agreed that it is dirty and very few had no contribution to make. From the option of provision of dustbins, sit neatness, floor, the toilet neatness, respondents tend to agree that most of these facilities are actually neat but from the options of ceiling neatness, x-ray accessories neatness, facilities not properly arranged, the x-ray machine parts look un-kept the responded tend to agree to the fact that this facility were actually dirty. But from the overall review of the table majority of the response still points out that most of the radiology practice is hygienic except a few already mentioned.

Table 3 shows respondent reaction to the level of cleanliness in the radiology department. From the table, it was observed that 88.3% were not happy to wear the gown because it was dirty while only 11.7% actually said

Table 2: Showing level of neatness in the department

Item	SA	A	D	SD	N	Total
The entrance into the x-ray department is not neat	6(2.0%)	33(11%)	126(42%)	82(27.3%)	53(17.7%)	300(100%)
There are dustbins provided for waste disposal	158(52.7%)	117(39%)	17(5.7%)	6(2.0%)	2(0.7%)	300(100%)
Were hand gloves, syringes and needles disposed properly?	76(25.3%)	185(61.7%)	30(10.0%)	6(2.0%)	3(1.0%)	300(100%)
The floors are not neat	32(10.7%)	82(27.3%)	166(55.3%)	6(2.0%)	14(4.7%)	300(100%)
The seats are dirty	0(0.0%)	38(12.3%)	233(77.7%)	6(2.0%)	23(7.7%)	300(100%)
There is poor ventilation in the waiting area	115(38.3%)	96(32.0%)	27(9.0%)	27(9.0%)	35(11.7%)	300(100%)
The toilet is not clean	0.0(0%)	96(32.0%)	99(33.0%)	76(25.3%)	29(9.7%)	300(100%)
The changing gowns are dirty	6(2.0%)	121(40.3%)	162(54.0%)	7(2.3%)	4(1.3%)	300(100%)
The x-ray machine and its parts look untidy	170(56.7%)	92(30.7%)	0.0(0%)	13(4.3%)	25(8.3%)	300(100%)
There was provision of disinfectant like Dettol	82(27.3%)	145(48.3%)	69(23.0%)	0.0(0%)	4(1.3%)	300(100%)
The facilities inside the room are not properly arranged	46(15.3%)	245(81.7%)	0.0(0%)	9(3.0%)	0.0(0%)	300(100%)
The staff I met in the department dressed neatly	87(29.0%)	205(68.3%)	6(2.0%)	0.0(0%)	2(0.7%)	300(100%)
The ceiling tops looks dirty /dusty	256(85.3%)	20(6.7%)	22(7.3%)	2(0.7%)	0.0(0%)	300(100%)
Hand washing basins / bucket was provided	12(4.0%)	103(34.3%)	122(40.7%)	63(21.0%)	0.0(0%)	300(100%)
The x-ray accessories like the foam pads and cassettes looked untidy	58(19.3%)	106(35.3%)	125(41.7%)	11(3.7%)	0.0(0%)	300(100%)
The department were the radiology department was situated happens to be dirty	73(24.3%)	163(54.3%)	43(14.3%)	21(7.0%)	0.0(0%)	300(100%)

Key: SA= strongly agree. A= agree. D= disagree. SD= strongly disagree. N= nil

Table 3: Showing respondent reaction to the level of cleanliness in the radiology department

Item	Frequency /%	STD	Mean ±S.E
I wasn't happy to wear the changing gown because it was dirty.			
Yes	265(88.3%)	0.322	1.12±.019
No	35(11.7%)		
Total	300(100%)		
The level of neatness of the staff increased my confidence.			
Yes	262(87.3%)	0.333	1.13±.019
No	38(12.7%)		
Total	300(100%)		
the level of neatness of the staff demoralized my confidence			
Yes	15(5.0%)	0.218	1.95±.013
No	285(95.0%)		
Total	300(100%)		
I was not happy to be examined on the x-ray machine because of how dirty it looked.			
Yes	57(19.0%)	0.393	1.81±.023
No	243(81.0%)		
Total	300(100%)		

no to this option. This reaction might have been triggered by many factors considering the fact that many patients think that all gowns have been worn by another patient. And think that these gowns have been worn by another patient. And think that these gowns must have been there all through the week, some of them answer with a biased mind. It was also noticed that 87.3% of the respondent said that the neatness of the staff increased their confidence while only 12.7% said that it does not. 95% said that the neatness do not demoralize them while a few 5% said it does. 19% of the respondents said that they were not happy to be examined on the x-ray machine because of how dirty it is while 81.0% said no to this option. Hence from the table it can be seen that judging from the responses that the patient's reaction to the cleanliness in the radiology department was positive due to the fact that most of them have already agreed to the neatness option.

DISCUSSION

From this research, it was observed that the majority of the respondents were male when compared to female because, during the period of study, male patients were more in the population. Also, students were more of the respondents followed by pensioners. It was also observed that the majority of the respondents did not agree that the radiology department is dirty whereas few persons agreed that it is dirty, and very few persons had no contribution to make, judging from the options such as provision of dustbins, floor, the toilet neatness, respondents tend to agree that most of this facilities are actually neat.

The options of ceiling neatness, x-ray accessories neatness, facilities not arranged properly, and the x-ray

machine parts looks unkempt, the respondents agree that this facility is actually dirty. This is in agreement with the work of Akinci *et al.* [8] which reported that patients rightly expect everything to be clean; not just the floors, surfaces, furniture and toilets normally cleaned by the cleaning-service departments, but the intravenous bag stands, wheelchairs, bed frames and blood pressure equipments are used in their treatment and care. The research suggests that the appearance of the environment is the most important factor. The items in the questionnaire related to aspects of outpatient hospitals, including attractiveness and size, cleanliness, ease in finding a seat to wait for a physician, room temperature and conditions of the waiting areas.

The findings of this work also revealed that majority of the respondents were not happy to wear the changing gown because it was dirty while few objected to that. On the other hand, the research also showed that large number of the respondents answered that their level of confidence was increased because of the staff neatness while few were demoralized by the level of neatness of the staff in the radiology department. This is in agreement with Bunhill Row [3] findings which stated that the perception a patient has of the standards of cleanliness in a hospital, whether they affect clinical care or not, can harm confidence in the care that they will receive. Hand hygiene in the radiology department is also an important factor to consider, it was noted that majority of patient disagreed that washing basins were provided.

This study also revealed that the patients' choice of hospital is highly affected by the level of cleanliness in the hospital as well the radiology departments they are significant factors in the hospital selection process. The research done by Page and Bryam [9] to identify the aspects important to patients when choosing a hospital

supported this result. Their findings revealed that cleanliness was one of the most important factors and it ranked as the top mentioned by 54% of those they interviewed. Also, Coulter *et al.* [10] evaluation of London patient choice scheme found that a high standard of cleanliness was rated as the second most important factor that would influence patients' choice of hospital.

Different factors influence patient's perception of cleanliness such as the seats, waste bins, floors, entrance into the radiology department, changing gown, and neatness of the staff. Most patients are satisfied with the level of neatness of the departmental staff. The level of cleanliness in the hospital including the radiology department highly affects the patient's choice of the hospital because patients believe that quality health care is achieved in a clean and neat hospital environment.

CONCLUSIONS

The patient in the radiology department of Amaku Teaching hospital Awka, Anambra state rated cleanliness highly and several factors influenced their perception of cleanliness. Most patients are satisfied with environmental cleanliness, the neatness of staff and their choice of hospital was highly determined by the level of the hospital cleanliness. The negative views given by some patients need to be given due consideration. The X-Ray machine and other equipment in the department should be properly arranged and kept clean. The changing gowns should always be kept clean so that patients will be encouraged to wear them. These recommendations given by the researchers are believed to enhance a more positive view of departmental cleanliness and quality of care.

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Availability of Data and Material: The dataset generated and analysed during the study are not publicly available but will be made available from the corresponding author on reasonable request.

Ethical Approval: The study was approved by the Institutional Ethics Committee.

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