

Effects of Patient Safety Culture on Patient Satisfaction With Radiological Services in Nigerian Radiodiagnostic Practice

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Abstract

Introduction: Patient safety culture is believed to be the first step toward improvement in quality of health-care delivery which will impact patient satisfaction. **Objective:** To assess the effect of patient safety culture on patient satisfaction in radiodiagnostic practice. **Method:** Two validated questionnaires via Hospital Survey on Patient Safety Culture by Agency of Health Research and Quality and patient satisfaction questionnaire by Hays were administered to radiodiagnostic staff and patients who came for diagnostic care, respectively. These questionnaires were based on 5-point Likert scale. Questionnaires on patient safety culture and patient satisfaction were administered to 80 radiology health workers and 376 patients of radiology, respectively. Simple random sampling was used to enlist the participants for patient satisfaction while a population study was carried out to enlist patient safety culture participants. Data were analyzed using SPSS version 17. **Results:** Response rate for patient safety culture questionnaires was 94.6%, while that of patient satisfaction was 62.8%. Among the survey items of patient safety, teamwork has the highest positive response of 76.5%, while staffing has the least, 30%. Overall patient safety culture was 53.7%. The survey item with highest positive response in patient satisfaction survey was patient-provider relationship (80%), while service cost-effectiveness has the least of 59%. Overall patient satisfaction with radiological services was 72.6%. There is no correlation between patient safety culture and patient satisfaction. **Conclusion:** Even though there is an excellent level of patient satisfaction in this study, it is not related to the practice of patient safety culture in radiodiagnostic unit.

Keywords

patient safety culture, patient satisfaction, radiodiagnostic, Nigeria

Introduction

Patient Safety Culture

Medical errors are inevitable sad reality of medical practice (1). As such, establishment of patient safety culture in health-care organization has been shown to have a potential for improving patient safety (2). These medical errors, according to the study by Gadd and Collins (3), do not originate from just human error, chance, environmental factors, or technological failures alone, rather it is the ingrained organizational policies and standards which have repeatedly been shown to predate the catastrophe. Consequently, promoting culture of safety in workplace, which should focus on error as a source of improvement and not for blaming employees involved, is necessitated (4). Safety culture is the way in which safety is managed in the workplace. It often

reflects the attitudes, beliefs, perceptions, and values that employees share in relation to safety (5). The World Health Organization defined patient safety as a reduction of risk of unnecessary harm associated with health care to an acceptable level (2). Organizations that imbibe good patient safety culture are characterized by collaboration, mutual trust, communication, shared perception around safety, and

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confidence of effectiveness of preventive measures (4). The measurement of safety culture in health care is generally regarded as the first step toward improvement in health-care delivery (6). As such, it is regarded as an aspect of health-care delivery that is non-negotiable as far as the welfare of Nigerians are concerned. In lure of this, health-care providers have therefore been enjoined to make it a top priority in their practice (7).

Patient Satisfaction

Patient satisfaction is the extent to which patients feel that their needs and expectations are being met by service provided (8). Patient satisfaction has been a very important issue for researchers involved in health-care systems for the last few decades (9). This is because the patient is the most important person in the entire hospital setup (10). Interest in assessing patient satisfaction with health care arose with the consumer movement of the 1960s (11). Over the next 25 years from then, health service researchers reported that satisfied and dissatisfied patients behaved differently; satisfied patients were more likely to comply with treatment, keep follow-up appointments, and utilize health services (12). Such behavioral consequences related to satisfaction could affect the outcome of care and health-seeking behavior (8). However, it is the duty of the health personnel to give special attention to the management of a patient to enhance effective service delivery (10) and therefore adequate patient satisfaction. Consequently (13) opined that the way patients experience health care is completely dependent on the attitude, demeanor, and actions of the health-care professionals they come across. In medical imaging, Leite et al (14) reported that patient overall satisfaction completely depends on the radiographer communication skills, patient expectation of the examination, and whether patients have questions at the end of their examination. Patients' opinion-based outcomes are considered to be the primary means of assessing the effectiveness and quality of health-care services these days. Unfortunately in most cases, patient reports were not considered when assessment of quality service was carried out (11). Notwithstanding, patients' satisfaction remains a well-established tool to assess quality of health service (15).

Patient Safety and Patient Satisfaction

Patient safety and patient satisfaction goes hand-in-hand (16,17) examined inpatients' reports of service incidents and deficiencies in service quality such as waits/delays, poor communication, poor care coordination, lack of respect for personal preferences, or environmental issues. They found that roughly 40% of patients reported at least 1 incident and that reporting of incidents was associated with diminished patient satisfaction. A study by Meade et al (18) concluded that safety and satisfaction respond similarly to enhance nursing activities. A direct examination of the correlation between overall inpatient satisfaction scores and overall

employee ratings of patient safety from the same set of hospitals found a substantial relationship (19). Hospitals rated by employees as having adequate staffing levels generate high degrees of patient satisfaction. The study by Wolosin (16) found an association between an atmosphere of blame and lower levels of patient satisfaction, as well. A new study, funded by Agency for Health Research and Quality (AHRQ) to study the relationship between patient safety culture and satisfaction as assessed by patients was carried out by Larson (20). They found that a correlation exists between hospital patient safety culture and patients' positive assessments of the care they receive in those hospitals (20). The physician side of the quality equation was examined by Williams et al (21). They found that a practice of culture that emphasizes quality decreases physicians' estimates of both their likelihood of making errors and their delivery of suboptimal patient care. This includes failure to meet patient needs for information which is an important driver of patient satisfaction. Thus, there is evidence that there is a relationship between patient safety and patient satisfaction. The present study sets to verify this in radiodiagnostic unit.

Materials and Method

This is a prospective cross-sectional study. It was carried out in radiodiagnostic unit of a tertiary institution in Southeastern Nigeria. The enlisted participants were radiographers, radiologists, nurses, clerical staff, and radiology patients. The population size of the abovementioned staff was 37. They were not large in number, so a population study was carried out. The sample of 376 patients enlisted for the study was drawn from the population of 6356 patients who patronize the unit in the previous year using Taro Yamine formula (22). Simple random sampling was used to enlist and distribute the questionnaires to the patients.

The purpose and process of the study was explained to the target population. Patients were assured that their lack of participation will not affect the diagnostic care they came for. After explanation, those who were interested were enlisted for the study. Hospital Survey on Patient Safety Culture questionnaire, which was structured by AHRQ, was adopted and used to collect data. The questionnaire was pilot tested and released in 2004 (2). It has a Cronbach α of 0.63 to 0.84. A study by (23) found reliability expressed in terms Cronbach α to be between 0.62 and 0.85 and therefore concluded that the overall survey items and dimensions are psychometrically sound at individual, unit, and hospital levels of analysis.

Patient satisfaction questionnaire (PSQ) was structured by Hays et al (24). The content validity of the PSQ has been systematically examined against published satisfaction scales and theory about the universe of patient satisfaction concepts. Factor analytic and discriminant validity studies of the PSQ items and scales indicate that the scales assess distinct dimensions of attitudes toward care. Multitrait-multimethod analysis of the PSQ subscales and global scales with measures using

other methods provide convergent and discriminant validity for the PSQ scales. A number of validity studies have linked PSQ scores to health-care experiences, expectations, behavioral intentions, and various health and illness behaviors. The predictive validity of the PSQ has received empirical support as well. Modifications to the PSQ-II were made with several objectives in mind. Most involved addition or revision of items; for one concept, items were deleted entirely. These modifications were tested in several pilot studies before they were adopted for use in the Medical Outcome Study (24). However, for clarity on various dimensions being measured, this questionnaire will be divided into 6 dimensions. They include diagnostic facilities, service cost effectiveness, waiting time, patient-provider relationship, quality of service, and environmental neatness. The statements on environmental neatness were entirely coined by the researcher.

Data were collected using the above mentioned adopted questionnaires. These questionnaires were based on 5-point Likert scale. It was distributed among radiology staff (to assess patient safety culture) and patients (to assess patient's satisfaction) who gave their consent. Scientific Package for Social Sciences version 17 was used for data analysis. Descriptive statistics of respondent's demographics and survey items of the 2 variables was conducted first. Descriptive statistics of survey items was used to determine the level of patient safety culture and patient satisfaction with radiological services, respectively. Pearson correlation was carried out to determine the relationship between patient safety culture and patient satisfaction. A *P* value of .05 was adopted as a criterion for the level of significance.

Results

Table 1 shows that 37 questionnaires on patient safety culture were given out but 35 were recovered. This made it a response rate of 94.6%. The respondents were made up of 57% females and 43% males. Patient safety grade was rated as good and received the highest rating of 54%, while 43% of the respondents works for 20 to 40 hours per day. The highest number of events reported within the range of 3 to 5 as testified by 40% of the respondents. Questionnaires on patient satisfaction were administered to 376 patients. However, 236 of the questionnaires were recovered. This made it a response rate of 62.8%.

Table 2 shows that teamwork has the highest positive responses, while frequency of events reported has the least. Table 3 shows that environmental neatness scored highest percentage of 85%, while service cost-effectiveness scored the least (59%). Table 4 shows that there is no statistical significance between patient safety culture and patient satisfaction.

Discussion

This study was conducted to determine the relationship between patient safety culture and patient satisfaction with radiological services. It is a pioneer research in Nigerian

Table 1. Sociodemographic Data.

Variables	Specifics	Number	Percentage
Gender	Male	15	43
	Female	20	57
Patient safety grade	A	2	6
	B	10	29
	C	19	54
	D	2	6
	E	0	0
Hours of work	Nil	2	6
	<20	5	14
	20-39	15	43
Number of events Reported	>40	15	43
	1-2	5	14
	3-5	12	34
	6-10	3	9
	11-20	3	9
	>21	4	11
	Nil	8	23
Response rate for PSC			94.6
Response rate for PSAT			62.8

Abbreviations: PSAT, patient satisfaction; PSC, patient safety culture.

Table 2. Positive Responses in Percentage for Patient Safety Culture Variables.

Variables	Positive Responses
Teamwork	77
Staffing	30
Organizational learning	60
Nonpunitive response to error	52
Communication and feedback	67
Communication openness	61
Frequency of events reported	31
Overall perception of safety	51
Patient safety culture	54

Table 3. Positive Responses in Percentage of Patient Satisfaction Variables.

S/N	Variables	Positive responses (%)
1	DF	73
2	SCE	59
3	WT	63
4	PPR	80
5	QS	76
6	EN	85
7	Overall patient satisfaction	73

Abbreviations: DF, diagnostic facility; EN, environmental neatness; PPR, patient-provider relationship; QS, quality of service; SCE, service cost effectiveness; WT, waiting time.

radiology department. Patient safety culture is a new concept (25) implicated to improve health-care delivery and hence patient satisfaction if applied positively. This relationship has not been ascertained in radiology department of South-eastern Nigeria.

Table 4. Pearson's correlation between patient safety culture and patient satisfaction.

Variables	r Value	r ² Value	P Value
PSC vs PXSAT	0.501	0.251	.311

Abbreviations: PSC, patient safety culture; PXSAT, patient satisfaction.

Patient safety culture in this study was barely above average, while patient satisfaction with radiological services was excellent. From the correlation analysis, there is no relationship between patient safety culture and patient satisfaction with radiological services. This implies that patient safety culture consists of psychosocial variables which should be adopted by health workers in radiology department to ensure effective health-care delivery irrespective of patient satisfaction, as the aim of patient safety culture is to reduce medical errors to barest minimum (2) and improve quality of health-care delivery. Patient satisfaction on the other hand is the way patient feels that they have been treated, which is subjective and hence varies from individual to individual. Satisfaction can be affected by emotional state of the different patients since it is noted by Mulisa et al (26) that patients who arrive at radiology department are often worried or apparently in aggressive attitude. Meirovich et al (27) posited that customer emotions constitute an essential element of satisfaction construct as customer emotions influence relationship satisfaction and impact satisfaction as a whole and every step of service delivery.

Radiology department makes use of gigantic equipments that need constant electricity supply, effective standby alternative electricity supply, adequate cooling system, and regular maintenance to ensure its sustainability. Unfortunately, in Nigeria, constant electricity supply is a mirage. Erratic power supply is the order of the day, hence contributes to equipment malfunction and breakdown (28). Furthermore, there is poor maintenance culture in the department. Noteworthy, poor maintenance culture has been recognized as a problem in Nigeria as Nigerian maintenance culture has been rated the lowest in the world (29). Maintenance culture is the habit of regularly and consistently keeping a building, equipment, facilities infrastructure, and so on, in good and working conditions (30). This culture of maintenance is sadly lacking in Nigeria (29) due to lackadaisical attitude of Nigerians (31). This is evident in improper functioning of medical imaging equipments, frequent equipment breakdown, and longtime/permanent downtime of equipments. This poor culture, which have been accepted by Nigerians as a Nigerian factor, is not part of patient safety culture dimension and can affect accessibility of diagnostic facilities, patient waiting time due to erratic power supply, and improper functioning equipments and therefore quality of service even when the department imbibes an excellent patient safety culture. This could be the cause of lack of correlation between patient culture and patient satisfaction with radiological services in Southeastern Nigeria as some extraneous variables can impact satisfaction in radiodiagnosis.

However, studies at hospital level in Lagos Nigeria by Ogundimu (25) shows that there is a relationship between patient safety culture and patient satisfaction. A study by Aiken et al (32) conducted among nurses in Europe and United States concluded that good work environment via managerial support and staffing aspects of safety culture is strongly related to patient satisfaction. The study by Meterko et al (33) equally concluded that teamwork, an aspect of patient safety culture, has a strong positive relationship with patient satisfaction.

Conclusion

This pioneer study in radiodiagnostic practice has established that there is no correlation between patient safety culture and patient satisfaction with radiological services. Even though patient satisfaction in this study was excellent, it is not as a result of the practice of patient safety culture in the unit.

Recommendations

1. Anonymous easy channel of reporting errors should be established to improve on frequency of events report.
2. Adequate number of appropriate staff should be employed in the study unit.
3. Issue of patient safety culture should be taken seriously in radiodiagnostic units in order to improve overall perception of patient safety.

There is a need for downward review of cost of radio-diagnosis to ease the burden of payment on patients especially as the country where the study is carried out is under recession.

Declaration of Conflicting Interests

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